Project Manual

BASEBALL AND SOFTBALL FIELD LIGHTING
PROJECT NO. 2648276

NEW SMYRNA BEACH HIGH SCHOOL
1015 10TH STREET
NEW SMYRNA BEACH, FL 32168

THE SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
200 NORTH CLARA AVENUE
DELAND, FLORIDA

MATERN PROFESSIONAL ENGINEERING, INC.
130 CANDACE DRIVE
MAITLAND, FLORIDA 32751-331
407/ 740-5020

DATE: MARCH 23, 2026

REVISED:

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SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

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Project Name: Baseball And Softball Field Lighting
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All references herein that conflict with processes, procedures, or other terms outlined in the Owner contracts, as associated with this Project, the Owner contracts shall take precedence.

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Note:
Project $200,000 or more, utilize the A101-2017 Standard Form of Agreement, A101-2017 Exhibit A and the A201-2017 General Conditions of the Contract (Standard Bid); project is less than $200,000 utilize the 625 Standard Form of Agreement (Proposals).

Specific documents listed above may not apply to this project. Select "N/A" for document(s) which do not apply to this project. ***Required: consult the Owner's Construction Project Manager in charge to make this determination.***

Facility Name: New Smyrna Beach High School
Project Name: Baseball And Softball Field Lighting
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ADVERTISEMENT FOR BID

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 630

NOTICE is hereby given that sealed bids for: *(Facility Name)* New Smyrna Beach High School, *(Project Name)* Baseball and Softball Field Lighting , VCS Project Number 2648276, will be received by the School Board of Volusia County Florida, until *(date)* June 16, 2026 at *(time)* 1:00 PM**,** in the Volusia County Schools Facilities Services Building, at which time all bids will be publicly opened and read aloud. Bids received after this time will not be accepted. Bids may be mailed or hand delivered to Volusia County Schools, Facilities Services, 3750 Olson Drive, Daytona Beach Florida 32124.

A MANDATORY PRE-BID CONFERENCE is scheduled for *(date)* May 28, 2026, *(time)* 9:30 AM at *(location)* 1015 10th Street, New Smyrna Beach, FL 32168**. All bidders must attend**. The representative of each bidder shall be an authorized employee of the bidder and shall sign in accordingly.

Documents, including complete specifications, may be examined by appointment at the office of the Construction Project Manager of record at Facilities Services, 3750 Olson Drive, Daytona Beach Florida (386) 947-8786.

BID DOCUMENTS ARE AVAILABLE VIA THE VOLUSIA COUNTY SCHOOLS WEBSITE AT: https://www.vcsedu.org/facilities-design The documents are in PDF format and may be viewed, printed or saved to your computer.

A310 BID BOND INCLUDED
(The following sentence applies if the A310 Bid Bond is included for this project) Bids must be accompanied by a bid bond, certified check or cashier's check in an amount equal to five (5) percent of the total bid.

Bidders for this project are required to hold a current Certificate of Prequalification issued by the School Board of Volusia County Florida at the time of bid opening. To pre-qualify contact Purchasing, 200 North Clara Avenue, DeLand Florida 32720; telephone (386)734-7190.

All bids shall be binding for a period of 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first. The bid amount of the successful bidder, once approved by the School Board, shall not be subject to change or withdrawal.

All bids shall be subject to the provisions of the Solicitation, as defined in FAC Document 631, Instructions to Bidders. It is the sole responsibility of all bidders to fully comply with the provisions of the Solicitation during this bidding process.

The School Board reserves the right to reject any one or more bids as provided by law.

The School Board of Volusia County Florida

Ruben Colon, Board Chair

INSTRUCTIONS TO BIDDERS

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 631

TO BIDDERS: You are hereby invited to submit a sealed bid for the following project. Bids will be publicly opened and read aloud at the time and place designated. Bids received after this time will not be accepted.

1. PROJECT INFORMATION

FACILITY NAME:	NEW SMYRNA BEACH HIGH SCHOOL
PROJECT NAME:	BASEBALL AND SOFTBALL FIELD LIGHTING
PROJECT NUMBER:	2648276
OWNER:	THE SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
ENGINEER:	MATERN PROFESSIONAL ENGINEERING, INC
BID DATE AND TIME:	June 16, 2026, 1:00 PM
LOCATION:	Volusia County Schools Facilities Services Bid Conference Room 3750 Olson Drive Daytona Beach, Florida 32124 Phone: 386-947-8786

MANDATORY PRE-BID CONFERENCE

DATE AND TIME:	May 28, 2026, 9:30 AM
LOCATION:	New Smyrna Beach High School 1015 10th Street New Smyrna Beach, FL 32168

All Bidders must attend the pre-bid conference. The representative of each Bidder shall be an authorized employee of the Bidder and shall sign in accordingly.

CONSTRUCTION TIME:
One Hundred Eighty (180) consecutive calendar days after written “Notice to Proceed”.

BID DOCUMENTS:

Documents, including drawings and specifications, may be examined at the office of:

Matern Professional Engineering, Inc., 130 Candace Drive, Maitland, FL 32751,

Bid documents are available in digital format. Bidders may view, print or save copies of the bid documents via the Volusia County Schools website at: https://www.vcsedu.org/facilities-design
(Note: documents for proposals not published online.)

BID RESULTS:

The bid results will be available on the district web site at https://www.vcsedu.org/facilities-design
(Note: proposal results not published online.)

DIRECTIONS TO SCHOOLS AND FACILITIES

Directions to School Board of Volusia County schools and facilities are available via the district website at: https://www.vcsedu.org/community-information-services/maps-and-directions.

2. DEFINITIONS

2.1 **Contract**: *(select contract applicable to Project)*
☒ Standard Form Agreement between Owner and Contractor, AIA Document A101-2017, as modified by the Owner and General Conditions of the Contract for Construction, AIA Document A201-2017, as modified by the Owner.
☐ Standard Form of Agreement Between Owner and Contractor for a Small Project, FAC Document 625.

2.2 **Contractor**: The term Contractor as used in this Solicitation shall be defined as provided in Section 489.105(3), Florida Statutes (2003) and shall be licensed to perform that work and in direct contractual relationship with Owner.

2.3 **Bidder**: Contractor which has received a certificate of prequalification by the School Board in conformance with State Board of Education Rules and School Board Policy 604. Certificate of prequalification shall only entitle a Contractor to submit a bid and shall not constitute proof of Bidder's ability to perform a contract or serve as a substitute for any of the qualifications imposed on Contractor in the Solicitation.

2.4 **Lowest Responsible Bidder**: A Contractor who has the skills, qualifications, ability and experience to perform the contract, in all respects, as required by the Solicitation and who has submitted the lowest responsible bid.

2.5 **Non-responsive bid**: Shall include, but not be limited to, submission of a subcontractor without required licensing, submission of incomplete forms or documentation, failure to demonstrate the skills, qualifications, ability and experience to perform the contract as required by the Solicitation of both the Bidder and its subcontractor(s), or any other reason provided by law.

2.6 **Self-performance**: Performance of work by the Bidder in one or more of the types of work as disclosed under FAC Document 633, List of Subcontractors, which is undertaken and completed entirely by his own forces through the use of skilled and unskilled labor, supervision and equipment owned, operated and controlled by the Bidder without the assistance, employ, contract or reliance on any third parties, individual or corporate, except that a total of not more than 10% of the cost of performing the work, that is to be self-performed, may be expended to utilize outside sources to perform the work and then only when the third party assistance is so specialized as to be commonly employed in the industry as it is otherwise not economically reasonable to maintain it internally.

2.7 **School Board**: The School Board of Volusia County Florida. The term "Owner" may be used interchangeably.

2.8 **Solicitation**: Consists of the following documents: Project Manual, Advertisement for Bid, Drawings, Addenda. The term includes what is generally defined as "Invitation to Bid" and "Request for Proposals" in Section 287.012, Fla. Stat. (2003).

2.9 **Subcontractor**: Any person or entity under contract with a Contractor to provide services or labor for the construction, installation, or repair of an improvement of real property. For purposes of this Solicitation, this term does not include suppliers who provide only materials, equipment or supplies to a Contractor.

3. PREQUALIFICATION OF BIDDERS

The prequalification process and terms and conditions of certificates of prequalification shall be governed by Volusia County School Board Policy 604.

A Bidder's failure to hold a certificate of prequalification at the time of bid submittal shall result in the automatic rejection of that bid.

4. BID SUBMITTAL

Each Bidder, on or before the bid date and time specified above, shall sign and submit, to Volusia County Schools, Facilities Services, 3750 Olson Drive, Daytona Beach Florida 32124, one (1) original and one (1) copy of the FAC Document 632, Bid Form, of the Solicitation in the format provided herein, with all bid information completed and two (2) copies of all other required bid documentation. If bids are delivered by U.S. mail, or some other form of delivery other than hand-delivery, a return receipt may be requested. Submittals containing any condition, omissions, unexplained erasures, alterations, items not called for or irregularities of any kind may be rejected by the School Board. Any additions or deletions made before bid opening shall be made solely on FAC Document 632, Bid Form. Verbal or digital bid submittals will not be considered.

Each Bidder's submittal shall be placed in an envelope and sealed and marked with the name of the project. Required bid documents included with the Bid Form shall be assembled as follows: FAC Document 632 Bid Form, AIA Document A310 Bid Bond (if required for this project), Power of Attorney (if required for this project), FAC Document 633 List of Subcontractors and then any other documents required. Bid documents (original set and copy set) shall be stapled or paperclipped, binders of any kind as well as separation pages should not be used. Failure to submit any bid document or bid information with the bid, as specified, shall result in the bid being rejected as non-responsive.

The School Board expressly reserves the right to waive minor technicalities, and to use sufficient time to investigate the bids and the skills, qualifications, experience and ability of the Bidders and its subcontractor(s) to fully perform the contract requirements. Any refusal by a Bidder or subcontractor(s) to respond to the School Board's request for information shall deem a bid non-responsive and serve as grounds for rejection of the bid by the School Board. Any documentation requested by School Board during this investigation process shall not be deemed a supplement to a bid, but as part of its good faith investigation process. Any withdrawal of a subcontractor by a Bidder without good cause shown shall deem a bid non-responsive and serve as grounds for rejection of the bid by the School Board; however, in no event shall any substitution of a subcontractor result in an increase in the bid amount.

A Bidder's failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, shall constitute a waiver of the right to protest under Chapter 120, Florida Statutes, or by any other means.

Award of the contract will be made to the lowest responsible Bidder for the actual amount bid; however, the School Board reserves the right to reject all bids as provided by law.

All bids shall be binding for a period of 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first. The bid amount of the successful Bidder, once approved by the School Board, shall not be subject to change or withdrawal.

5. AIA DOCUMENT A310, BID BOND - REQUIRED

If a Bid Bond is required, the Bid and Bid Bond must be accompanied by a certified check or cashier's check in an amount equal to five (5) percent of the total bid and shall be made payable to the "School Board of Volusia County Florida." The bond or check shall be irrevocable for 60 calendar days from the date of bid opening or until School Board approval of the bid, whichever occurs first.

All Bidders shall submit one (1) copy of the Bid Bond on form AIA Document A310 Bid Bond. Surety companies providing Bidders' bonds shall be licensed to operate in the State of Florida and shall be rated "excellent" or better by Best Insurance Rating Guide. The bond shall be signed or countersigned by a

Florida Resident Agent. You must provide a signed Power of Attorney for each copy of the bond. A Bidder may, at its option, submit a certified check from a Florida bank or a cashier's check as bid security, original and one photostat copy required.

6. SUBCONTRACTOR DISCLOSURE

Bidders shall furnish, on the FAC Document 633, List of Subcontractors form, a full disclosure of subcontractors to be utilized on the project or a clear representation of the Bidder's intent to self-perform the work, as defined, as an attachment to FAC Document 632, Bid Form.

7. EXAMINATION OF SITE

Bidders are required to visit the construction site, prior to bidding, compare the Drawings and Specifications with any work in place and inform themselves of all conditions thereof. Failure to visit site will in no way relieve the successful Bidder from furnishing materials or performing any work necessary to complete the project in accordance with the contract documents, and specifications.

8. ADDENDA

Only those Contractors who attend the mandatory pre-bid meeting will be notified via email of the issuance of Addenda for this project. All addenda will be published on the Owner's website.
(Note: addenda for proposal projects not published online.)

9. PUBLIC ENTITY CRIME INFORMATION STATEMENT

All invitations to bid as defined by Section 287.012(11), Florida Statutes, requests for proposals as defined by Section 287.012(16), Florida Statutes, and any contract document described by Section 287.058, Florida Statutes, shall contain a statement informing persons of the provisions of paragraph (2)(a) of Section 287.133, Florida Statutes, which reads as follows:

> "A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases or real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

10. BID PROTEST BOND

As a condition precedent to filing a bid protest pursuant to Section 120.57(3)(f), Florida Statutes, a protestor shall post a bid protest bond consistent with Section 255.0516, Florida Statutes Any failure by a protestor to file a bid protest bond with the School Board at the time of filing a bid protest shall result in a dismissal with prejudice of the protest for failure to comply with Section 255.0516, Florida Statutes All bid protests must be accompanied by a bid protest bond in the form provided herein and a certified check or cashier's check in an amount consistent with that identified in Section 255.0516(1) or (2), Florida Statutes for this project.

11. CONTRACTOR ACKNOWLEDGMENT FORM

The successful Contractor shall submit an executed Contractor Acknowledgment Form (included in these specifications) to Facilities Services before work begins. On this form the Contractor acknowledges that it has been given access to and has read the asbestos survey, management plan, re-inspection report (if applicable) and/or the certificate of final inspection (if applicable) for the school it will be working in. Further, it acknowledges that the Contractor must cease work and notify the project manager and asbestos program manager in the event of encountering materials not previously identified by the aforementioned reports.

This document must be submitted with the executed contract documents.

12. CONTRACT

The successful Bidder shall execute the Contract for the amount as submitted by the Bidder and approved by the School Board, within ten (10) working days after written notification of acceptance. A binding contract exists upon the issuance of the School Board's Notice of Acceptance of Bid.

The terms and conditions of this Solicitation shall prevail over any other conflicting language until the award of the contract to the lowest responsible Bidder and issuance of the School Board's Notice of Acceptance of Bid.

13. FAC DOCUMENT 640, PERFORMANCE AND PAYMENT BOND - REQUIRED

If a Performance and Payment is required, the successful Bidder shall submit four (4) signed copies of a Performance and Payment Bond from a surety insurer authorized to do business in the State of Florida equal to one hundred percent (100%) of the total contract amount. The School Board's standard Bond Form, included herein, shall be used to submit the information. The Performance and Payment Bond shall be submitted simultaneously with the execution of the Contract. The Performance and Payment Bond shall be subject to the provisions of Section 255.05, Florida Statutes, and shall not expire until one (1) year after the date of the Certificate of Final Payment. The Performance and Payment Bond shall be executed on the same day as the Contract and shall include a Power of Attorney for each copy of the Bond.

14. LIQUIDATED DAMAGES

The parties acknowledge the School Board will suffer damages if the project has not reached Substantial Completion and Final Completion on the dates set forth in the Contract. The damages suffered by the School Board, in the event of a delay, are not readily ascertainable. Due to the difficulty in ascertaining the damages, the Contractor and the Contractor's surety shall be liable for and shall pay, as liquidated damages, the sum of Three Hundred dollars and Zero cents ($300.00) per calendar day for each calendar day or part thereof, the delay in the project continues beyond the deadline set by the terms of the Contract for Substantial Completion of the work. The parties acknowledge that these sums are not a penalty, but are the amount agreed upon by the parties as liquidated damages representing the losses to the School Board which would be incurred in the event the project is delayed by the Contractor beyond the date of Substantial Completion and the date of Final Completion as set forth in the Contract.

15. TIME OF THE ESSENCE

Any time periods provided for herein which shall end on a Saturday, Sunday, or a legal holiday shall extend to 5:00 p.m. of the next business day. Time is of the essence in this Contract.

BID FORM

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 632

TO: School Board of Volusia County Florida
Facilities Services
3750 Olson Drive, Daytona Beach Florida 32124
(386) 947-8786

The undersigned, having become familiarized with the local conditions affecting the cost of the work and with the Drawings and Specifications as prepared by Matern Professional Engineering, Inc hereby submits the following bid / proposal:

Facility Name: New Smyrna Beach High School
Project Name: Baseball And Softball Field Lighting
VCS Project No.: 2648276

COMPANY NAME: _____
ADDRESS: _____
PHONE: _____

I (We) propose to furnish all labor, materials, equipment and services necessary for the completion of the above project, all in accordance with the Drawings and Specifications hereof, including any addenda issued, as indicated below.

BASE BID
Note: modify the format in the box below as needed for this project.

As shown on the drawings and specifications, the sum of:
_____ ($_____).

ALTERNATES - AS DESCRIBED BELOW.
(Note: A/E insert description below; add additional Alternates as needed.)

ALTERNATE NO.1: Provide area lighting.
If the owner elects to proceed with Alternate No. 1, as described in the Contract Documents:

☐ add / ☐ deduct

_____

($_____).

UNIT PRICES - NO UNIT PRICES FOR THIS PROJECT.
(Note: A/E insert description below; add additional Unit Prices as needed.)

BID SECURITY - REQUIRED
If required, bid security in an amount equal to 5% of the total bid proposal is enclosed with the understanding that this proposal shall remain in full effect for a period of 60 days starting at the bid opening date and time.

The undersigned agrees to commence work under the Contract on or before a date to be specified in the written FAC Document 650 Notice to Proceed, and to substantially complete the project within One Hundred Eighty (180) consecutive calendar days thereafter, as specified in Article 3 of AIA Document A101-2017 Agreement, or Article 2 of FAC Document 625 Agreement, which ever is applicable to this project.

The Bidder acknowledges the following addendum (addenda) is made an integral part of the bid documents:

Addendum No.	Date Issued	Addendum No.	Date Issued

In submitting this bid / proposal, the Bidder acknowledges this bid / proposal is based on all construction documents and addenda as posted on the Owner's website or otherwise provided by the Owner's representative. The Owner reserves the right to accept or reject any or all bids / proposals and is not obligated to accept the lowest responsible bid / proposal.

OFFICIAL COMPANY NAME AND ADDRESS:

_____ By: _____
(Signature)

_____

_____ _____
(Print Name, Title)

_____

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

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

OWNER:
(Name, legal status and address)

BOND AMOUNT: $

PROJECT:
(Name, location or address, and Project number, if any)

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

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

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

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

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

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User Notes:

Signed and sealed this day of ,

	(Contractor as Principal) *(Seal)*
(Witness)	*(Title)*
	(Surety) *(Seal)*
(Witness)	*(Title)*

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User Notes:

LIST OF SUBCONTRACTORS

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 633

Bidder Company Name:	
Facility Name:	New Smyrna Beach High School
Project Name:	Baseball And Softball Field Lighting
VCS Project Number:	2648276

This form shall be considered an integral part of FAC Document 632, Bid Form, and shall be submitted with the Bid Form.

The term Subcontractor as used herein shall be used as defined in FAC Document 631, Instructions to Bidders.

For each "TYPE OF WORK" listed below, list the name of the subcontractor who will be performing any portion of that work. Use additional sheets, if needed.

Bidder may list itself to self-perform, as defined in FAC Document 631, Instructions to Bidders, a type of work when the Bidder is currently licensed to and shall perform that type of work and provides completed FAC Document 634, Bidder Project Data for Self-Performed Projects, within five (5) days to the date of this bid, for at least two (2) previously self-performed projects of comparable size and scope of this Contract for the last five (5) years.

There shall be no exceptions to a Bidder's obligation to provide the aforementioned documentation in the time frame provided. Failure to provide any of the aforementioned documentation or comply with the requirements of this form shall constitute a material deviation from the requirements of this Solicitation and shall serve as grounds for rejecting the bid as non-responsive.

(Consultant: modify the list of work in the table below as needed for the Project.)

TYPE OF WORK	SUBCONTRACTOR
1. Earthwork	
2. Cutting and Patching	
3. Painting	
4. Concrete	
5. Pole Installation	
6. Directional Boring	

BIDDER PROJECT DATA
FOR SELF-PERFORMED PORTIONS OF THE WORK

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 634

Facility Name: New Smyrna Beach High School
Project Name: Baseball And Softball Field Lighting
VCS Project No.: 2648276

Instructions to Bidder: Work completed in the past 5-years. For each type of work proposed to be self-performed by Bidder in FAC Document 633 of the Solicitation, provide full responses to this form. In the event Bidder requires additional space, Bidder is authorized to reproduce this form.

Submitted by - Firm Name: _____

Firm Address: _____

Self-performed Project No. 1

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

Self-performed Project No. 2

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

Self-performed Project No. 3

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

Self-performed Project No. 4

Project: _____

A. Type of Work: _____

Description: _____ Date Completed: _____

Location: _____

Value of Self-performed Work: _____ Total Project Value: _____

B. Owner: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

C. Arch. or Eng.: _____

Contact Person(s): _____ Phone: _____

Email: _____

Office Address: _____

The foregoing is a statement of fact. Any inaccurate information disclosed in this form shall constitute a major deviation from the Solicitation and result in the rejection of bid as non-responsive to the requirements of the Solicitation.

_____ _____

Print Name *Title*

_____ _____

Signature *Date*

TRENCH SAFETY ACT FORM

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 635

Facility Name: New Smyrna Beach High School
Project Name: Baseball And Softball Field Lighting
VCS Project No.: 2648276

This form shall be completed, signed and submitted with FAC Document 632, Bid Form. Failure to submit this form at the time of bid will constitute automatic disqualification and non-acceptance of bid proposal.

The undersigned, herein called "Bidder", has determined to his own complete satisfaction that all portions of the Florida Trench Safety Act (90-96, Laws of Florida) as the OSHA Excavation Safety Standards 29, CFR part 1926.650 Subpart P, will be fully complied with and executed properly on this project.

Bidder acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990. The bidder further identifies the costs to be summarized below:

	Trench Safety Measure (Description)	Units of Measure (LF, SY)	Unit (Quantity)	Unit Cost	Extended Cost
A.	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____
				Total	_____

In Witness whereof, the Bidder as hereunto set his signature and affixed his seal

this _____ day of _____ in the year _____

Firm: _____ *(SEAL)*

By: _____

Name and Title: _____

BID PROTEST BOND

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 636

Bond Number:
Facility Name:
Project Name:
VCS Project No.:

KNOW ALL PERSONS BY THESE PRESENTS:

That we, _____ a *(select one)* ☐ corporation ☐ joint venture ☐ partnership ☐ proprietorship ☐ limited liability company organized and existing under the laws of the State of _____, and duly authorized to do business in the State of Florida and having its principal place of business at _____ as PRINCIPAL; and _____, a surety company, organized under the laws of the State of _____, and duly authorized to do business in the State of Florida, whose principal place of business is _____ as SURETY, are held and firmly bound unto the School Board of Volusia County Florida as OBLIGEE in the amount of _____ Dollars ($_____) for the payment of which sum we bind ourselves, our heirs, personal representatives, successors and assigns, jointly and severally.

THIS BOND is issued under provisions of Section 255.0516, Florida Statutes. The above-named principal has initiated an administrative protest pursuant to Section 120.57, Florida Statutes, regarding the School Board of Volusia County's (Board) bid solicitation, bid rejection or contract award for the above-referenced project, which protest is conditioned upon the posting of a bond. The bond shall be conditioned upon the payment of all costs and attorneys' fees which may be adjudged against the person filing the protest in the administrative hearing in which the action is brought and any subsequent appellate court proceeding.

NOW, THEREFORE, if the Principal, after conclusion or termination of the administrative hearing process, and/or any appellate court proceedings regarding the protest, shall satisfy all attorneys' fees, costs and interest thereon, rendered by final order and/or judgment, in favor of the Board as the prevailing party, then the obligation shall be null and void; otherwise this bond shall remain in full force and effect.

The Board may bring an action in a proper court on this bond for the amount of such liability, including all additional costs and attorneys' fees associated with a claim against the bond.

PRINCIPAL _____

BY _____

TITLE _____ (CORPORATE SEAL)

ATTEST _____

TITLE _____

SURETY _____

BY _____ (CORPORATE SEAL)

TITLE _____

Florida Licensed Insurance Agent _____

NOTE: Power of attorney showing authority of Surety's agent or Attorney in fact must be attached.

AIA Document A101 – 2017

Standard Form of Agreement Between Owner and Contractor
where the basis of payment is a Stipulated Sum

AGREEMENT made as of the _____ day of _____ in the year _____.
(In words, indicate day, month, and year.)

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

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

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

_____

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

_____

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

_____

The Owner and Contractor agree as follows.

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TABLE OF ARTICLES

1 THE CONTRACT DOCUMENTS

2 THE WORK OF THIS CONTRACT

3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

4 CONTRACT SUM

5 PAYMENTS

6 DISPUTE RESOLUTIONS

7 TEMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONSTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9. Contract documents include the Contractor's bid or proposal.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1. The date of commencement of the Work shall be:

[ ] The date of this Agreement.

[X] A date set forth in a notice to proceed issued by the Owner.

[ ] Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

_____

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

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

§ 3.3 Substantial Completion

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§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[X] Not later than _____ (_____) consecutive calendar days from the date of commencement of the Work.

[ ] By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

~~§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.~~
~~*(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*~~

~~Item~~	~~Price~~	~~Conditions of Acceptance~~

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

The parties acknowledge the Owner will suffer damages if the project has not reached Substantial Completion and Final Completion on the dates set forth in the Contract. The damages suffered by the Owner, in the event of a delay, are not readily ascertainable. Due to the difficulty in ascertaining the damages, the Contractor and the Contractor's surety shall be liable for and shall pay, as liquidated damages, the sum of _____ dollars _____ cents ($_____) per calendar

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day for each calendar day or part thereof, the delay in the project continues beyond the deadline set by the terms of the Contract for Substantial Completion of the work. The parties acknowledge that these sums are not a penalty, but are the amount agreed upon by the parties as liquidated damages representing the losses to the Owner which would be incurred in the event the project is delayed by the Contractor beyond the date of Substantial Completion as set forth in the Contract. Time is of the essence. Any such liquidated damages may, at the option of the Owner, be withheld and deducted from any unpaid portion of the Contract sum.

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

_____

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Document.

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

_____

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first day of a month and certified to the Owner by the seventh day of the month, the Owner shall make payment of the amount certified to the Contractor not later than the last day of the same month. If an Application for Payment is received by the Architect and certified to the Owner after the application date fixed above, payment of the amount certified shall be made by the Owner not later than thirty (30) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect and Owner may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner.

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

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing.~~; and~~

~~.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.~~

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Retainage, not to exceed five percent (5%), shall be withheld from each progress payment to the Contractor for Projects with a total cost of construction services identified in the contract of more than two hundred thousand dollars ($200,000.00), 218.735 F.S.

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

_____

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

_____

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

_____

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

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

§ 5.2 Final Payment

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

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 applicable for Final Payment along with all warranties, guarantees, close out documents including all as built drawings in paper document and digital combined PDF format, transmitted via FTP or other Owner accepted protocol, and items required under the Contract Documents as submitted to the Architect or Engineer for review and transmittal to the Owner; and

.3 Board acceptance of the Certificate of Final Inspection (CFI); and

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

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

_____

~~§ 5.2 Interest~~
~~Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.~~
~~*(Insert rate of interest agreed upon, if any.)*~~

ARTICLE 6 DISPUTE RESOLUTION
§ 6.1 Initial Decision Maker
The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017~~, unless the parties appoint below another individual, not party to this Agreement, to serve as the Initial Decision Maker~~.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

_____

§ 6.2 Binding Dispute Resolution
For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[X] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

_____

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

ARTICLE 7 TERMINATION OR SUSPENSION
§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

~~§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:~~
~~*(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)*~~

_____

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS
§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

_____

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

_____

§ 8.4 ~~Neither the Owner's nor the Contractor's representative shall be changed without ten days prior notice to the other party.~~ The Contractor's representative shall not be changed without prior written approval by the Owner.

§ 8.5 Insurance and Bonds
§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Other provisions:

_____

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS
§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 Drawings

Exhibit	Title	Date
B	List of Drawings	

.5 Specifications

Exhibit	Title	Date
C	List of Specifications	

.6 Addenda, if any:

Number	Date	Pages

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

.7 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

Supplemental and other Conditions of the Contract:

_____

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.8 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

_____

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

School Board of Volusia County Florida _____

OWNER *(Signature)*	CONTRACTOR *(Signature)*
, Board Chair *(Printed name and title)*	*(Printed name and title)*
WITNESS *(Signature)*	WITNESS *(Signature)*
, Superintendent *(Printed name and title)*	*(Printed name and title)*

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Exhibit A – Insurance and Bonds
to AIA Document A101 – 2017 Agreement

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the _____ day of _____ in the year _____.
(In words, indicate day, month, and year.)

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

_____

THE OWNER:
(Name, legal status and address)

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

THE CONTRACTOR:
(Name, legal status and address)

_____

TABLE OF ARTICLES

A.1 GENERAL

A.2 OWNER'S INSURANCE

A.3 CONTRACTOR'S INSURANCE AND BONDS

A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction. The Owner, at its discretion, may modify this document at any time during the preparation of the Contract to conform to the Project.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under ~~this Article~~ Section A.2.2 and, upon the Contractor's request, provide a copy of the ~~property~~ insurance policy or policies required ~~by Section A2.3~~. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability and Property Insurance

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

§ A.2.3 Required Property Insurance

§ A.2.3.1 ~~Unless this obligation is placed on the~~ The Contractor, pursuant to Section A.3.3.2.1, ~~the Owner~~ shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The ~~Owner's~~ Contractor's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:
(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:
(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the ~~Owner~~ Contractor shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the ~~Owner~~ Contractor shall be responsible for all loss not covered because of such deductibles or retentions. Deductibles in excess of $50,000 shall not be permitted.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the ~~Owner~~ Contractor shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Contractor shall be responsible for all co-insurance penalties.

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§ A.2.4 Optional Extended Property Insurance.
The ~~Owner~~ Contractor shall purchase and maintain the insurance selected and described below.
(Select the types of insurance the ~~Owner~~ Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

[ ] § 2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

[X] § 2.4.2 Ordinance or Law Insurance, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

[ ] § 2.4.3 Expediting Cost Insurance, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

[ ] § 2.4.4 Extra Expense Insurance, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

[ ] § 2.4.5 Civil Authority Insurance, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

[ ] § 2.4.6 Ingress/Egress Insurance, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

[ ] § 2.4.7 Soft Costs Insurance, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.
The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[X] § 2.5.1 Cyber Security Insurance for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

[ ] § 2.5.2 Other Insurance
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage	Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage or limits. Failure of the contractor to obtain and maintain required insurance shall be grounds for termination of the Contract by the Owner. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured, including a copy of the additional insured form attached to the certificate of insurance, on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies. Umbrella excess liability shall be provided for Projects with a contract sum in excess of one million dollars ($1,000,000); not less than one million dollars ($1,000,000) over primary insurance; and retention for self-insured hazards for one million dollars ($1,000,000).

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. The Contractor, for your Work, shall maintain completed operations coverage for itself and each additionally insured for at least five (5) years or the Florida Statute of Repose whichever is greater. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies, rated by A.M. Best "A-" or better, lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ 3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than one million dollars ($1,000,000) each occurrence, one million dollars ($1,000,000) per claimant, two million dollars ($2,000,000) general aggregate, and two million dollars ($2,000,000) aggregate for products-completed operations hazard, providing coverage for claims including

.1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;

.2 personal injury and advertising injury;

.3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;

.4 bodily injury or property damage arising out of completed operations; ~~and~~

.5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions;

.6 contractual liability for bodily injury and property damage not less than one million dollars ($1,000,000) per claimant and each occurrence; and for property damage two million dollars ($2,000,000) general aggregate; and

.7 property damage liability shall provide X, C and U coverage.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

.1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.

.2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.

.3 Claims for bodily injury other than to employees of the insured.

.4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.

.5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.

.6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.

.7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.

.8 Claims related to roofing, if the Work involves roofing.

.9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.

.10 Claims related to earth subsidence or movement, where the Work involves such hazards.

.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ 3.2.3 Automobile Liability covering vehicles owned, hired, leased and non-owned vehicles used, by the Construction Manager, with policy limits of not less than one million dollars ($1,000,000) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage. The Owner is to be named as additionally insured. The State of Florida has no-fault automobile insurance requirements; the Contractor shall be certain coverage is provided which conforms to any specific stipulation in this law.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

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§ A.3.2.5 Workers' Compensation at State, Chapter 440 Florida Statutes, and Federal, e.g. Longshoremen's Statute, statutory limits with policy limits not less than one million dollars ($1,000,000.00) each accident, each employee and policy limit.

§ A.3.2.5.1 In the event the Contractor is using leased employees (PEO arrangement), provide the same workers' compensation policy limits as Section 3.2.5; and a waiver of subrogation in favor of alternate employers' endorsement showing the subcontractor as the alternate employer.

§ 3.2.6 Employers' Liability with policy limits not less than one million dollars ($1,000,000) each accident, one million dollars ($1,000,000) each employee, and one million dollars ($1,000,000) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks.

§ 3.2.8 If the Construction Manager is required to furnish professional services as part of the Work, the Construction Manager shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than one million dollars ($1,000,000) per claim and one million dollars ($1,000,000) in the aggregate.

§ 3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Construction Manager shall procure Pollution Liability insurance, with policy limits of not less than one million dollars ($1,000,000) per claim and one million dollars ($1,000,000) in the aggregate.

§ 3.2.10 Coverage under Sections 3.2.8 and 3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than _____ ($ _____) per claim and _____ ($ _____) in the aggregate.

§ 3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than _____ ($ _____) per claim and _____ ($ _____) in the aggregate.

§ 3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than _____ ($ _____) per claim and _____ ($ _____) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ 3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section 3.3.1.
(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[X] § 3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance ~~except insurance required by Section A.2.3.1.3 and Section A.2.3.3~~. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle

the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below.
(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

[ ] § 3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than _____ ($ _____) per claim and _____ ($ _____) in the aggregate, for Work within fifty (50) feet of railroad property.

[ ] § 3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than _____ ($ _____) per claim and _____ ($ _____) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[X] § 3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site, including scaffolding and other equipment used on the Project, on an "all-risks" completed value form.

[ ] § 3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Construction Manager and used on the Project, including scaffolding and other equipment.

[ ] § 3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Construction Manager and any applicable limits.)

Coverage **Limits**

§ A.3.4 Performance Bond and Payment Bond
§ A.3.4.1 The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located~~, as follows:~~.
~~*(Specify type and penal sum of bonds.)*~~

~~Payment and Performance Bonds shall be AIA Document A312, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312, current as of the date of this Agreement.~~

§ A.3.4.2 Unless otherwise agreed in writing prior to beginning Work, the Contractor shall furnish and pay for a Performance and Payment Bond on the Project in the amount of one-hundred percent (100%) of the Contract Price. The liability under said Bond shall be coextensive with the Contractor for all damages arising out of Contractor's breach of this agreement or failure to perform, including, but not limited to, delay damages, liquidated damages (if any), completion of punch lists and the Contractors responsibilities under Section 12.2.2.1 of the General Conditions. "Conditional" Payment Bonds under Florida Statutes, Section 713.245, shall not be acceptable. Proper Power of Attorney shall accompany said bonds.

§ A.3.4.3 The Contractor shall provide a Public Construction Bond as required by 255.05 F.S.; the Performance and Payment Bonds shall be on forms provided and approved by the Owner.

§ A.3.4.4 Bonds shall be secured through sources acceptable to the Owner. To be acceptable to the Owner as Surety for Performance and Payment Bonds, a Surety Company shall comply with the following provisions:

.1 the Surety Company must be authorized to do business in the State of Florida; and
.2 the Surety Company shall have been in business and have a record of successful continuous operations for at least five years; and

.3 the Surety Company shall have at least A.M. Best Company Policyholder's Rating of "A-" and "Financial Size Category" of class XI or an equivalent rating from the Insurance Commissioner if not rated by A.M. Best.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

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AIA Document A201 – 2017

General Conditions of the Contract for Construction

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

_____

THE OWNER:
(Name, legal status and address)

School Board of Volusia County Florida
200 North Clara Avenue, DeLand Florida 32720

Document mailing address: 3750 Olson Drive, Daytona Beach Florida 32124

THE ARCHITECT:
(Name, legal status and address

_____

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

All references herein to "Contractor" shall mean "Construction Manager" for Construction Management contract Projects in lieu thereof. 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 (A201-2017 General Conditions of the Contract as modified by Owner hereinafter "A201-2017", 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 (3) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.~~

§ 1.1.2.1 Three (3) original Contract documents shall be signed by both parties with one (1) signed document delivered to Contractor after Owner approval.

§ 1.1.3 The Work

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

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

The Architect ~~Initial Decision Maker~~ is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 Third Party Beneficiary

Nothing contained in the Contract Documents shall create a contractual relationship between the Owner and any third party; however, it is understood and agreed that the Owner is an intended third-party beneficiary of all contracts for design or engineering services, all subcontracts, purchase orders as well as all agreements between the Contractor and third parties. The Contractor shall incorporate the obligations of this Contract into its respective subcontracts, supply agreements and purchase orders.

§ 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 intended ~~indicated~~ results.

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

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

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

§ 1.2.4 The term "Provide", as used in the Contract Documents, includes furnishing all labor, supervision, tools, materials, supplies, equipment, shop drawings, product data and samples, together with all services, accessories and costs associated with performance of the work, for production of an item or system usable in the completed project.

§ 1.2.5 Where conflict or discrepancies exists within or between the Contract Documents or between the Contract Documents and applicable industry standards or applicable codes, ordinances, or other legal requirements, the more stringent requirements shall apply; otherwise, the following order of precedence shall be used.

.1 The Agreement
.2 Supplementary Conditions, if any
.3 These General Conditions
.4 Addenda, if any, with those of later date having precedence over those of earlier date
.5 Specifications
.6 Drawings

§ 1.2.6 Any organization's document referred to, unless otherwise specified in the Specifications, shall mean the latest edition of such document adopted and published prior to the date of the Specifications, and such documents shall be a part of the Specifications with the same effect as if written therein in full.

§ 1.2.7 Dimensions indicated on any Drawings are required dimensions, regardless of measurement per given scale. The Contractor shall verify at the Site necessary levels, measurements, etc., for proper and complete fabrication, assembly and installation of Work. Where dimensions are not indicated, and exact location is not apparent, the Contractor shall notify the Owner and Architect. Inadvertent discrepancies or omissions of details, figures or notes on one drawing, where another drawing correctly sets forth such information, shall not be cause for additional charges or claims.

§ 1.2.8 The interrelation of the Specifications, the Drawings and the Schedules is as follows: The Specifications determine the nature of the setting of the various materials; the Drawings establish the quantities, dimension and details; and the Schedules give the locations. Should the Drawings disagree in themselves, or with the Specifications, the better quality or greater quantity of work or materials shall be estimated upon and, unless otherwise ordered by the Architect in writing, shall be performed or furnished. Explanatory notes on Drawings take precedence over Specifications. Figures given on Drawings take precedence over scaled measurements, and large-scale details take precedence over small Drawings.

§ 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 Unless otherwise provided in the Owner's Agreement with the Architect, the Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

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

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

§ 1.6.3 Written notice requirements of this Contract imposed upon the Contractor shall be strictly construed and such requirements are a condition precedent to Contractor pursuing any rights or remedies hereunder. Contractor expressly waives its rights to claim any waiver by the Owner of such notice requirements based upon the Owner having actual knowledge, implied, verbal or constructive notice, suffering lack of prejudice or any other grounds as substitute for the failure of the Contractor to comply with the express written notice requirements herein.

§ 1.7 Digital Data Use and Transmission

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

§ 1.7.2 The Owner, at its discretion and direction, intends to utilize Procore Construction Management software platform which is licensed to the Owner. Access to the platform shall be provided to the Contractor at no cost to the Contractor.

- .1 The Procore Certification Program, as applicable to the Contractor's software access, shall be provided to those deemed necessary by the Contractor and Owner for the Project. The program is a self-paced webinar format intended to familiarize the user with the software. Time will be allotted to the Contractor for this purpose.
- .2 The Contractor shall perform the following:
  - .1 upload pertinent documents and files within the Procore software as established by the Owner; and
  - .2 utilize Procore Tools to manage specific data based documents and information; and
  - .3 collaborate and communicate with the Owner and Consultants within the Procore software; and
  - .4 modify the drawings within the Procore software throughout the Project in order to create as built drawings; and

.5 other Owner assigned and/or required Procore software processes necessary for the successful completion of the Project.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model ~~and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form,~~ shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.9 Public Records Compliance

§ 1.9.1 If the Contractor has questions regarding the application of Chapter 119, Florida Statutes, to the Contractor's duty to provide public records relating to this contract, contact the Custodian of Public Records at (386) 734-7190 extension 20119, custserv@volusia.k12.fl.us or 200 North Clara Avenue, DeLand Florida 32720. The Contractor shall:

.1 Keep and maintain public records required by the school district to perform the service; and

.2 Upon request from the school district's custodian of public records, provide the school district with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law; and

.3 Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the Contractor does not transfer the records to the school district; and

.4 Upon completion of the contract, transfer, at no cost, to the school district all public records in possession of the Contractor or keep and maintain public records required by the school district to perform the service. If the Contractor transfers all public records to the school district upon completion of the contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the school district, upon request from the school district's custodian of public records, in a format that is compatible with the information technology systems of the school district.

§ 1.9.2 Failure of the Contractor to abide by the terms of this provision shall be deemed a material breach of this agreement and the School District of Volusia County may enforce the terms of this provision in the form of a court proceeding and shall, as a prevailing party, be entitled to reimbursement of all attorney's fees and costs associated with that proceeding. This provision shall survive termination or expiration of the contract.

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 term "Owner" means the Owner or the Owner's authorized representative, who shall be the Superintendent or designee. The Owner's Representative is authorized to act on the Owner's behalf as provided herein and in applicable law, regulation or ordinance. The Owner's Representative has the authority to reject unsatisfactory work and to stop the work if necessary to ensure its proper execution. Failure of the Owner's Representative, in any one or more instances, to insist on strict performance of any of the terms of the Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment of future insistence of any such terms or options. ~~Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.~~

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information

shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information. ~~Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.~~

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

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

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

§ 2.3 Information and Services Required of the Owner

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

§ 2.3.2 The Owner ~~shall~~ may, at Owner's sole discretion, retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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

§ 2.3.4 The Owner shall furnish surveys to the extent available to the Owner, without being responsible for the accuracy of completeness of same, 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 such survey information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.~~

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

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

§ 2.4 Owner's Right to Stop the Work

§ 2.4.1 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. The Owner shall incur no liability for delays occasioned by any stop-work order issued in accordance with this paragraph.

§ 2.4.2 If, after consultation with the Architect, suspension of the Work is warranted by reason of unforeseen conditions which may adversely affect the quality of the Work if such Work were continued, the Owner may suspend the Work by written notice to the Contractor. In such event, the Contract Time shall be adjusted accordingly, and the Contract Sum shall be adjusted to the extent, if any, that additional costs are incurred by reason of such suspension. If the Contractor, in its reasonable judgment, believes that a suspension is warranted by reason of unforeseen circumstances which may adversely affect the quality of the Work if the Work were continued, the Contractor shall immediately notify the Owner and the Architect of such belief and describe with particularity the reasons therefor.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ~~five~~ ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, ~~correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect~~ commence and continue to carry out the Work. The Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. ~~If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.~~ The right of Owner to stop the Work pursuant to this Section 2.5 shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

ARTICLE 3 CONTRACTOR

§ 3.1. General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become ~~generally~~ familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents. Familiarity with local conditions shall include, without limitation, (1) the condition and layout of the Project site and surrounding locale, (2) available labor supply and costs, (3) available subcontractors and suppliers, (4) the prevailing climate, including the impact of rain and saltwater environment, (5) available material and equipment and costs, and (6) other similar issues. Extra payments will not be authorized for Work that could have been foreseen by careful examination of the Site. Execution of the Contract shall constitute acceptance, by the Contractor, of existing Site conditions as a part of the requirements for this Work, except as to concealed and unknown conditions as provided in Section 3.7.4. Contractor shall make no claim for additional time or money based upon its failure to comply with this Paragraph.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention and in accordance with all local and Florida licensing requirements and Florida Building Code. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors. The Contractor agrees to remove from the Project any employee, Subcontractor, or Subcontractor employee that commits any breach of the Contract Documents or any breach of the Owner's written rules and regulations regarding jobsite conduct.

§ 3.3.3 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. The Contractor shall require all construction personnel to maintain a neat general appearance at all times. Shirts, trousers and proper shoes are required apparel. The display of vulgar words, signs or figures is prohibited. Sandals and flip-flops are prohibited on the Project site. The use of radios, sound producing devices and the like are prohibited on the Project site. The Contractor shall not be permitted to use restrooms or other sanitary facilities within the Owner's existing buildings or on-site facilities.

§ 3.3.4 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. Neither the presence or absence of the Owner or Architect shall relieve the Contractor from any requirements of the Contract Documents.

§ 3.3.5 The Contractor will be responsible for all building grades, lines, levels, etc., required for layout of the Work.

§ 3.3.6 If required by Owner on a Project where applicable, at the earliest possible time after the commencement of the Work on the Project site, the Contractor shall have all property corners and benchmarks verified or established by a state-licensed land surveyor, shall locate the Project on the Project site, establishing necessary reference marks and axes from which the Work accurately can progress, shall furnish Architect evidence of such verification and shall report at once any errors discovered during the process of such verification.

§ 3.3.7 If any of the Work is required to be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. No inspection performed or failed to be performed by the Owner hereunder shall be a waiver of any of the Contractor's obligations hereunder or be construed as an approval or acceptance of the Work or any part thereof.

§ 3.3.8 The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall use its best efforts to maintain labor peace for the duration of the Project. In the event of a labor dispute of the Contractor, its subcontractors or suppliers, the Contractor shall not be entitled to any increase in the Contract Sum.

§ 3.4 Labor and Materials

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

§ 3.4.2 Equal Opportunity

§ 3.4.2.1 ~~Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.~~ The Contractor shall maintain policies of employment as follows: (1) the Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, gender, religion, national origin, ethnicity, sexual orientation, age or disability; (2) the Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, gender, religion, national origin, ethnicity, sexual orientation, age or disability.

§ 3.4.3 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order of other appropriate written directive by the Owner ~~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 Value Engineering Incentive

§ 3.4.4.1 Any proposal initiated and developed by the Contractor for variation from contractual requirements, which to be acceptable under the Contract would necessitate issuance of a contractual change and which reduces the cost of performing the Contract, without degrading operational functions: e.g., performance, reliability or maintainability of the item. Such proposals would be submitted by the Contractor to the Architect in the same form as prescribed for any other proposal, which would likewise necessitate a change in the contractual requirements but would include a statement that they are a proposed Value Engineering Change subject to the operation of this clause.

§ 3.4.4.2 The Architect will be the sole judge of acceptability, and no substitute will be ordered, installed, used or initiated without the Architect's prior written acceptance which will be evidenced by Change Order. However, any Value Engineering Change accepted by the Architect shall not result in any increase in the Contract Price or Contract Time. By making a request for a Value Engineering Change, the Contractor agrees to pay directly to the Architect all Architect's fees and charges related to the Architect's review of the request for Value Engineering Change, whether or not the Architect accepts the request. The Owner may require the Contractor to furnish at the Contractor's expense a special performance guarantee or other surety with respect to any substitute approved after award of the Contract.

§ 3.4.5 Owner Direct Purchase

§ 3.4.5.1 The Owner is tax exempt and may wish to exercise its right to purchase directly various construction materials, supplies and equipment that may be part of the Contract. The Owner will, via its purchase orders, purchase that material and the Contractor shall assist the Owner in the preparation of purchase orders. The Owner may direct the Contractor to prepare the purchase order on the Owner's form and make ready for verification and execution by the Owner. The materials shall be purchased from the vendors and or suppliers originally selected by the Contractor, for the price originally negotiated by the Contractor. Within thirty (30) days of the Notice to Proceed (NTP) the Contractor shall prepare a complete list of materials, supplies and equipment, including the cost of each item, for the Project and the Owner will advise the Contractor in writing which items from the list the Owner wishes to purchase directly.

§ 3.4.5.2 At a time deemed acceptable to the Owner, the Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus all sales taxes and surtax as levied. Issuance of the purchase orders by the Owner does not change any of the Contractor's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The Contractor remains responsible for coordination, correct quantities ordered, submittals, protection, storage, scheduling, shipping, security, expedition, receiving and unloading, certifying the accuracy of shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the Contract Documents. The Contractor shall certify all invoices as accurate and acceptable and forward to the Owner the certified invoices for payment by the Owner.

§ 3.4.5.3 In the event that materials, supplies or equipment purchased under this option are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the Contractor to initiate legal action against the responsible party, the Owner agrees to assign and subordinate to the Contractor any claims the Owner has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the Contractor in such legal action.

§ 3.4.5.4 The Contractor agrees to execute the Owner's document "Contractor's Direct Material Purchase Affidavit" and to submit the affidavit to the Owner along with the above described list of materials, supplies and equipment, as agreed to between the Owner and Contractor. Tax savings will be returned to the Owner via Change Order.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements, including substitutions not properly approved and authorized, 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 or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

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

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work in accordance with the laws of the state and other taxing authorities in the jurisdiction where the Project is located ~~provided by the Contractor~~ that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Contractor shall procure all certificates of inspection, use, occupancy, permits and licenses, pay all charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the Work. Certificates of inspection, use and occupancy shall be delivered to the Owner upon completion of the Work in sufficient time for occupation of the Project in accordance with the approved schedule for the Work. The costs of such procurement, payment and delivery are included within the Contract Sum.

§ 3.7.1.1 Certain permits, regulations and fees may apply to work involved in this Project when such work takes place beyond the limits of the school site. This may include but not be limited to hauling and disposal of materials and debris resulting from demolition. The Contractor shall obtain any such permits, comply with all applicable regulations and pay the cost of any and all fees required by such offsite work.

§ 3.7.1.2 The Owner's building department is the authority having jurisdiction for building code compliance unless otherwise provided in the Contract Documents. The Owner's building permit is required to be issued before construction may commence and will be furnished to the Contractor at no cost upon compliance with permit application requirements.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. The Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA) as amended from time to time.

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

§ 3.7.4 Concealed or Unknown Conditions (Excluding Claims for Unsuitable Soils)

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. No adjustment in Contract Sum or Contract Time shall be allowed pursuant to this Article to the extent the concealed or unknown condition should have been reasonably discovered by the Contractor during pre-bid site inspections, review, or preconstruction services. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

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

§ 3.7.6 Claims for Unsuitable Soils "Unsuitable soil" does not include soil with high or low moisture content or soil adversely affected by weather conditions and no claim for additional cost will be accepted based solely on the moisture content of excavated material. If the excavated material is unsatisfactory for the specified use on the project solely because of either high or low moisture content or the soil is adversely affected by weather conditions, the Contractor may, in its discretion, either (1) process the material to adjust the moisture content to the specified condition or an acceptable condition if not specified, or (2) remove the material and replace it with satisfactory material. Contractor's election of either option will be at Contractor's expense with no additional cost to the Owner.

§ 3.7.7 E-Verify

§ 3.7.7.1 State of Florida, Office of the Governor, Executive Order 11-116 (superseding Executive Order 11-02) requires all agencies under the direction of the Governor to verify the employment eligibility of all new employees through the U.S. Department of Homeland Security's E-Verify system. Further, in conjunction with Section 448.095 F.S., the Contractor is directed to include as a condition of all contracts for the provision of goods or services to the School Board of Volusia County in excess of nominal value, an express requirement that the Contractor utilizes the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term, and an express requirement that the Contractor include in such subcontracts the requirement that subcontractors performing work or providing services pursuant to the state contract utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term. To enroll in the E-Verify system employers should visit www.e-verify.gov.

§ 3.7.7.2 Failure to comply shall be cause for termination of contract by the Owner, at its sole discretion. The Contractor is liable for any additional costs incurred as a result of the termination of Contract, Section 448.095(2) F.S.

§ 3.7.7.3 The Contractor is required to submit to the Owner FAC Document 639, Contractor E-Verify Affidavit, upon contract execution.

§ 3.7.8 Use of Coercion for Labor and Services

§ 3.7.8.1 Section 787.06(13) F.S., requires all nongovernmental entities executing, renewing or extending a contract with a governmental entity to provide an affidavit signed by an officer or representative of the nongovernmental entity under penalty of perjury that the nongovernmental entity does not use coercion for labor or services as defined in that statute. The School Board of Volusia County Florida is a governmental entity for purposes of this statute. Unless otherwise directed by the Owner, said affidavit shall be submitted as part of the Contractor's Pre-qualification via the School District's Purchasing Department.

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2

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

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during all performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case. The superintendent shall be satisfactory to the Owner in all respects, and Owner shall have the right to require Contractor to dismiss from the Project any superintendent whose performance is not satisfactory to Owner, and to replace such superintendent with a superintendent satisfactory to Owner. The Contractor shall not replace the superintendent without the written consent of the Owner.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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

§ 3.9.4 If required by Owner, a list of all supervisory personnel, including the project manager and superintendent, that the Contractor intends to use on the Project and a chain-of-command organizational chart shall be submitted to the Owner for approval. The Contractor shall not engage supervisory personnel or utilize an organization and chain-of-command other than as approved by Owner in writing and shall not change such personnel or form of organization without the written approval of the Owner.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, ~~promptly~~ within thirty (30) days after ~~being awarded~~ execution of the Contract, shall submit for the Owner's and Architect's ~~information~~ written approval a Contractor's construction schedule for the Work. The construction schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the Owner and conditions of the Work and Project.

§ 3.10.2 Within thirty (30) days of Notice to Proceed (NTP), the Contractor shall prepare, for the Architect's approval, and thereafter keep current, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals. No payment shall be due until this schedule is submitted and approved. ~~The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.~~

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

§ 3.10.4 If the Contractor submits a schedule indicating an intention to achieve completion of the Work prior to contractually required dates, including milestones, no liability of the Owner to the Contractor for any failure of the Contractor to complete early shall be created, whether or not the Owner approve such schedule.

§ 3.10.5 At the Owner's option, the Contractor shall provide a schedule utilizing critical path techniques to measure the progress of the Work. Such schedules shall be subject to the Owner's and Architect's written approval.

§ 3.10.6 Float or slack is not for the exclusive use or benefit of either the Owner or the Contractor. Extensions of time for performance will be granted only to the extent that the equitable time adjustments for the activity or activities affected exceed the total float along the activity chain involved at the time the change was ordered or the delay occurred. Notwithstanding the above, the Contractor shall only be entitled to an extension of the time for an excusable delay to the critical path of the Work that delays completion of the Project beyond the completion date stated in the Agreement.

§ 3.10.7 The Contractor acknowledges that the Owner may retain the services of a scheduling consultant at the Owner's expense. The Contractor shall cooperate with any such scheduling consultant at the Owner's direction, including, without limitation, with regard to the preparation of the Project schedule.

§ 3.11 As Built Drawings, Documents and Samples at the Site

§ 3.11.1 As Built drawings shall be updated monthly, which shall be a condition precedent to all Progress Payments, and shall provide as much accuracy as possible. As built drawings of the completed Project are precedent to final payment and shall be submitted in paper document and combined PDF, or other Architect and Owner acceptable digital format, on CD, DVD or other approved file transfer protocol (FTP), transmitted from the Contractor to the Architect for review and acceptance ~~as-built drawings to the Owner shall be a condition precedent to Final Payment. Completed as-built drawings shall be submitted as paper documents and on CD or DVD in combined PDF format~~.

§ 3.11.2 The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, ~~Construction Change Directives,~~ and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form ~~or~~ and paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.11.3 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved drawings shall be appropriately identified and delivered to the Owner within sixty (60) days of final completion of the Work.

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with

the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor shall be returned by the Architect without action.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

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

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

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional in Florida, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

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

§ 3.12.11 The Contractor shall assemble for the Architect's approval two (2) complete binders of all operating and maintenance data from all manufacturers whose equipment is or will be installed in the Work.

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§ 3.12.12 The Contractor shall submit to Owner one copy of all submissions made to the Architect pursuant to this Section 3.12.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The Contractor shall be responsible for the permitting, erection, maintaining and removal of all construction signage. The Contractor must submit all sign copy for approval prior to erecting or displaying. The Contractor and Owner shall meet promptly after execution of the Agreement to determine reasonable requirements for ingress and egress from the site. Reasonable locations for staging, parking and a single construction entrance shall be designated by the Contractor, subject to the Owner's approval.

§ 3.13.2 The Contractor shall assure free, convenient, unencumbered and direct access to properties neighboring the Project site for the owners of such properties and their respective tenants, agents, invitees and guests.

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. The Contractor shall prevent paint, mortar and concrete splatter on concrete sidewalks and stair tower floors. Any such splatter shall be immediately removed so no evidence of splatter remains. All construction debris shall be removed in a timely manner. Surrounding graded and grassed areas shall be regularly magnetically scanned to collect miscellaneous nails and other sharp objects; the Contractor shall remove such objects from the construction site. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

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

§ 3.15.3 Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises utilizing a licensed cleaning service. Concrete and ceramic surfaces shall be cleaned and washed. Woodwork and resilient shall be dusted and cleaned. Sash, fixtures and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at the Contractor's expense.

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings,

Specifications, or ~~other documents~~ Instruments of Service prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 For one hundred dollars ($100.00), which is included in the contract price, the other good and valuable considerations, receipt of which is hereby acknowledged by the Contractor as consideration for the indemnity herein; said Contractor hereby agrees to defend and indemnify the Owner and the Architect/Engineer and their Agents and employees, from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of Work, provided that any such claim, damage, loss or expense is (1) attributed to bodily injury, sickness, disease or death, or to injury to, or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom, and (2) caused in whole or in part by any act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which otherwise exist as to any party or person described in this Article. ~~To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.~~

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

§ 3.18.3 The Contractor acknowledges that for one hundred dollars ($100.00) of the Contract Price, as recited in Paragraph 3.18.1 above, and other good and valuable consideration from the Owner and Architect/Engineer, constitutes consideration for giving the Owner and the Architect/Engineer, respectively, the indemnifications required in this Agreement and the Contract Documents. The limit of dollar amount of Contractor's indemnity obligations required by the Agreement and the Contract Documents specifically for those claims caused in whole or in part by the Owner and Architect/Engineer shall be $1,000,000 or the Contract Sum of the Project, whichever is more. The parties agree that the indemnity provided herein bears a reasonable commercial relationship to the Agreement and is incorporated by this reference into the Project specifications and bid documents, if any.

§ 3.18.4 Notwithstanding the above and without monetary limitation, the Contractor hereby indemnifies and holds harmless the Owner, their officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of the construction Contract.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

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

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until final payment is due and with the Owner's authorization, from time to time during the one-year period for correction of Work described in Section 12.2. ~~the date the Architect issues the final Certificate for Payment~~. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

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

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner ~~reasonably~~ informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) ~~known~~ deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies ~~observed~~ in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

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

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

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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

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

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing no later than fifteen (15) days after receipt of the request ~~within any time limits agreed upon or otherwise with reasonable promptness~~.

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

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

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

§ 4.2.15 Upon request of the Owner, claims, disputes and other matters in question relating to the execution or progress of the Work or the interpretation of the Contract Documents may be referred to the Architect for initial decision, which the Architect shall render in writing within a reasonable time, not to exceed fifteen (15) days after the date on which such request is made.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Subcontractors must be properly licensed in accordance with Florida law. ~~Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.~~

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable ~~and timely~~ objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

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

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected ~~if~~ without due cause ~~unless the Owner or Architect makes reasonable objection to such substitution~~. The Owner may require the Contractor to change any Subcontractor, person, or entity in situations where the Owner determines that their Work is inadequate and adversely affects the Project.

§ 5.2.5 The Contractor shall disclose the existence and extent of any financial interest, whether direct or indirect, it has in any subcontractors or material suppliers which it proposes for the Project.

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 or Termination for Convenience by the Owner pursuant to Paragraph 14.4 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

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

§ 5.4.1.3 When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract subsequent to the date of acceptance of the assignment; however, in no event shall the Owner's acceptance of such an assignment release the Contractor from its obligations under the subcontract agreement or this Agreement. Subcontracts between the Contractor and its Subcontractors shall provide for the assignment of those subcontracts from the Contractor to the Owner at election of the Owner upon termination of the Contractor.

§ 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 direct cost resulting from the suspension beyond the thirty (30) days.

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

~~Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.~~

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

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

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

§ 6.1.3 The Owner, at its option, shall either (1) 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 or (2) shall require that the Contractor provide for such coordination, which the Contractor shall perform when directed by Owner to do so. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

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

§ 6.2 Mutual Responsibility

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

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

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

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

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

§ 6.2.6 If any Subcontractor initiates legal or any other proceedings against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at its own expense, and if any settlement, judgment or award against the Owner arises therefrom, the Contractor shall pay or

satisfy it and shall indemnify and reimburse the Owner for all monies paid or to be paid including attorneys' fees and court or other costs which the Owner has incurred.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, ~~Construction Change Directive~~ or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Agreement on and execution of any Change Order shall constitute a final settlement and a full accord and satisfaction of all matters relating to the change and to the impact of the change on unchanged Work, including all direct and indirect costs of whatever nature, and all adjustments to the Contract Schedule.

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

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, ~~Construction Change Directive,~~ or order for a minor change in the Work. A change in Contract Sum or Contract Time shall be accomplished only by Change Order. No course of conduct, verbal discussions or dealings between the parties shall be the basis of claims by the Contractor to any change in the Contract Sum or Contract Time.

§ 7.1.4 If the Architect determines that a change or changes in the Work might be or are necessary or desirable, the Architect shall issue a proposal request to the Contractor in which the Architect describes the proposed change or changes in the Work. The Contractor shall respond to each such proposal request in writing within a reasonable time, but in no event more the fourteen (14) days after receipt, such response to contain (1) the amount of any increase or decrease in the Contract Price or Guaranteed Maximum Price for effecting the proposed change or changes in the Work (2) a written comprehensive and itemized cost breakdown of the estimated reasonable additional or reduced costs to the Contractor of all labor, materials and equipment required by such proposal requests and (3) the length of any extension or reduction of the Contract Time for effecting the proposed change or changes in the Work.

§ 7.1.5 If any Change Order, signed by the Owner and the Contractor, results in or contains an adjustment to the Contract Price, the amount of such adjustment shall be conclusively deemed and held to include the Contractor's applicable profit, Fee and costs of and for all applicable taxes, bond premiums, insurance premiums, supervision, overhead, profit, labor, labor impact and materials related to the Change Order and the additional Work required and/or contemplated thereby, and the Contractor shall be conclusively deemed and held to have waived any claim for any additional sum or time extension for delays, disruption, acceleration, loss of productivity, ripple effect, inefficiency or any other matter arising out of or in any way related to such Change Order and the additional Work contemplated thereby.

§ 7.2 Change Orders

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

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

§ 7.2.2 If the Change Order 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 7.2.3.

§ 7.2.3 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.2.2, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.2.3 shall be limited to the following:

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

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

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

§ 7.2.6 In subparagraph 7.2.3 above, the reasonable allowance for overhead and profit, including the Contractor's Fee, if any, included in the total cost to the Owner, shall be based on the following schedule, which shall be full compensation for all overhead and profit of whatever nature associated with the Change:

.1 For the Contractor, for any Work performed by the Contractor's own forces, ten percent (10%) of the cost.
.2 For the Contractor, for Work performed by its Subcontractor, five percent (5%) of the amount due the Subcontractor.
.3 For each Subcontractor or Sub-subcontractor, for any Work performed by that Subcontractor's or Sub-subcontractor's own forces, ten percent (10%) of the cost.
.4 For each Subcontractor, for Work performed by its Sub-subcontractor, five percent (5%) of the amount due the Sub-subcontractor.
.5 Costs to which overhead and profit are to be applied shall be determined in accordance with subparagraphs 7.2.3.1 through 7.2.3.5.
.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of all increased and decreased costs to both Contractor and its Subcontractors as follows:
    .1 Material quantities and unit costs.
    .2 Labor costs identified with the specific item of material to be placed or operation to be performed.
    .3 Construction equipment
    .4 Workmen's Compensation and Public Liability Insurance.
    .5 Overhead and Profit.
    .6 Employment taxes under FICA and FUTA.
    .7 In no case will a change over $500.00 be approved without such itemization.

§ 7.3 ~~Construction Change Directives~~

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

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

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

- ~~.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;~~
- ~~.2 Unit prices stated in the Contract Documents or subsequently agreed upon;~~
- ~~.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or~~
- ~~.4 As provided in Section 7.3.4.~~

~~§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:~~

- ~~.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;~~
- ~~.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;~~
- ~~.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;~~
- ~~.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and~~
- ~~.5 Costs of supervision and field office personnel directly attributable to the change.~~

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

~~§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.~~

~~§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.~~

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

~~§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably~~

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~~justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.~~

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

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing and approved by the Owner. ~~If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.~~ The Contractor shall not receive any additional compensation, nor shall there be any adjustment to the Contract Time as a result thereof.

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor ~~and Owner~~.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. To ensure that Substantial Completion of the Work is achieved within the Contract Time, the Contractor will, before commencing the Work, submit to Owner a progress schedule showing milestone dates for completion of major portions of the Work which, if the milestone dates are met, will achieve Substantial Completion of the Work within the Contract Time. In the event any milestone date is missed, the Contractor will immediately accelerate the progress of the Work by taking those steps necessary to ensure that the next milestone date is achieved as originally planned, including without limitation, working seven days a week and overtime and employing additional employees or subcontractors. Unless the failure to meet a milestone date is caused by act of the Owner, the additional cost resulting from such acceleration shall not increase the Contract Sum.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 Except as provided in Subparagraph 8.3.2, no adjustment in Contract Sum shall be made for any delays hereunder and no damages shall be paid by the Owner for such delay. The Contractor shall delay or suspend the progress of the Work, or of any part thereof, whenever he shall be so required by written order of the Owner, and for such periods of time as the Owner may order, providing that in the event of such delay or delays or of such suspension or suspensions of the progress of the Work, or any part thereof, the Contract Time for the Work so suspended or of Work delayed by such suspension shall be extended for a period equivalent to the time lost by reason of the suspension(s), except when the Contractor is notified to suspend Work on account of faulty construction or construction methods that endanger the

Work. Such order of the Owner shall not otherwise modify or invalidate in any way any of the provisions of this Contract, and the Contractor shall not be entitled to any damages or compensation from the Owner on account of such delay or delays, suspension or suspensions, except as provided below. ~~If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.~~

§ 8.3.2 When alterations or additions on the critical path are made to the Work, and such alterations or additions increase the overall completion date, the Contractor shall submit to the Architect in writing any resultant claim for an extension in the Contract Time, and shall deliver such claims to the Architect within ten (10) days after the occurrence of the event giving rise to the claim. The recommendation of the Architect regarding extension of Contract Time shall be submitted to the Owner for approval. ~~Claims relating to time shall be made in accordance with applicable provisions of Article 15.~~

§ 8.3.2.1 Any approved changes in Contract Time shall be incorporated in a Change Order. No changes in Contract Time shall be made for any alterations or additions to the Work which are not demonstrated to affect the overall completion of the job. The provision of this Article 8 shall in no way alter, change or invalidate the provisions of the Contract Documents with respect to liquidated damages. The Contractor shall not be entitled to any delay damages or other compensation solely on account of an increase in Contract Time except in accordance with Section 8.3.4 below.

§ 8.3.3 Notwithstanding Subparagraph 8.3.1, if the Work is delayed due to the fault or neglect of the Owner, and such delays have a cumulative total impact of more than fifteen (15) calendar days to the critical path, the Contractor may make claim pursuant to Article 4 for its actual and direct costs arising out of the delay. The Contract Sum shall be adjusted for such actual and direct costs, but in no event shall indirect, impact, inefficiency, offsite or home office overhead, loss of productivity, consequential damages, legal or consulting costs be paid on account of such delays. The Contractor hereby expressly waives its right to such delay or time-related costs or damages.

§ 8.3.4 In the event the Contractor accelerates its Work, without written authorization of the Owner, the Owner shall pay no overtime inefficiencies to the Contractor for such acceleration and the Contractor hereby expressly waives its right to recover such overtime inefficiencies. ~~This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.~~

§ 8.3.5 The Contractor's written claims for extension of Contract Time shall be accompanied by detailed dates, correspondence, notices and any other data which provides proof of the events which are the basis for the claim, including a network analysis justifying the time extension. Said network analysis shall specifically detail the extension of the critical path of the Project caused by the events, which underlie the time extension request. Any claim not including said data and network analysis shall be deemed waived.

§ 8.3.6 Should the Contractor be obstructed or delayed in the commencement, prosecution or completion of any part of the Work by any act or delay of the Owner; or by any acts or neglect by any separate contractor employed by the Owner; material or appurtenances for the Work; or by riot, insurrection, war (excluding wars involving the United States in the Mid-Eastern portion of the World), pestilence, fire, earthquakes, cyclones, floods, epidemics; or through any act, default or delay of other parties under contract with the Owner; then the Contract Time for the Work so delayed shall be extended for a period equivalent to the time lost. Such allowance shall not be made unless a claim for extension of time is made by the Contractor to the Owner and Architect in writing within ten (10) days from the time when the alleged cause for delay occurs.

§ 8.3.7 It is further expressly agreed that the Contractor shall not be entitled to any damages or compensation from the Owner on account of any delays resulting from any of the causes specified above except those circumstances where delays are caused by the Owner or by parties under contract with the Owner, in which circumstances the Contractor shall be entitled to compensation (1) for Contractor's actual costs of increased direct jobsite wages resulting from the extended completion date caused by Owner; and (2) for extra premiums on bonds actually paid by the Contractor on account of the

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additional time required to complete all Work hereunder. Any change in the Contract Time resulting from any claims for delays shall be incorporated in a signed Change Order upon approval of the change by the Owner.

§ 8.3.8 Except for weather events listed in Section 8.3.6 above, Contractor expressly assumes the risk for all weather delays of every kind and nature.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

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

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. The schedule of values shall be prepared in such manner that each major item of the Work and each subcontracted item of the Work is shown as a separate line item on AIA Document G703, Application and Certificate for Payment, Continuation Sheet, or other form acceptable to the Owner. This schedule, unless objected to by the Architect or Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Contractor shall not make changes in the Schedule of Values without prior approval of the Architect and Owner. The form for the Application for Payment shall be AIA Document G702, supported by AIA Document G703, or other Owner approved form. The Schedule of Values shall be prepared in such a manner that each major item of Work and each subcontracted item of Work is shown as a single item on AIA Document G703 Application and Certificate for Payment Continuation Sheet, or other Owner approved form.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

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

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

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing and bonded or insured as required by the Owner. 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. The Contractor shall submit, within 30 days after the date of commencement of the Work and thereafter as the Owner

requires, schedules of materials and equipment for each category or subcontract for which application for payment under this Section 9.3.2 will be made, which schedules shall include items, quantities, value of unit prices with extensions. Schedules shall be updated on a monthly basis and submitted as an attachment to the Contractor's Application for Payment.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment, in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When ~~either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15~~ the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

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

§ 9.5.4 If the Contractor disputes any determination by the Architect and/or Owner with respect to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to complete the Work. ~~If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.~~

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

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

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

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

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. ~~Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.~~

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

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within ~~seven~~ fourteen days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within ~~seven~~ fourteen days after the date established in the Contract Documents, the amount certified by the Architect ~~or awarded by binding dispute resolution~~, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount ~~owing~~ not in dispute 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 direct costs of shutdown, ~~delay~~ and start-up~~, plus interest~~ as provided for in the Contract Documents. Notwithstanding the preceding sentence, the Contractor shall not stop the Work during the pendency of a bona fide dispute between the Owner and the Contractor, provided all sums not in dispute claimed by the Contractor are paid.

§ 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. For the Work or any designated portion thereof to be "Substantially Complete", the Work must also satisfy all of the following conditions, except to the extent the same shall be specifically waived or modified in writing by the Owner:

.1 the Work has been completed in accordance with the Contract Documents, except for Punch List Work, to the extent required for the Owner to obtain an occupancy permit and such permit(s) shall have been granted by the appropriate authorities for all of the Work; and

.2 all HVAC, plumbing and electrical systems included in the Work are functioning substantially in accordance with the Contract Documents; and

.3 all life safety systems included in the Work are functioning in accordance with the Contract Documents; and

.4 a Certificate of Substantial Completion has been issued by the Architect as required under Paragraph 9.8; and

.5 all elevators, if any, included in the Work are functioning in accordance with the Contract Documents; and

.6 all offices, rooms and public areas are ready to receive, or have received if required for issuance of a Certificate of Occupancy, furniture, fixtures and equipment supplied by the Owner.

§ 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 and Owner 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 and Owner will ~~make~~ perform an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's and or the Owner's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect and Owner to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is determined to be substantially complete, the Architect will prepare a Certificate of Substantial Completion, utilizing the Owner's Procore platform, that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time of thirty (30) days within which the Contractor shall finish all items on the list. 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 ~~When the Work or designated portion thereof is substantially complete,~~ The Architect, as the Owner's representative, including all Project Consultants, shall prepare a single list of items (Punch List) to be completed by the Contractor. The Punch List shall include close out requirements, not limited to, Operations and Maintenance Manual, warrantees, and as built drawings, contingent on Project completion, which will be submitted to the Contractor. The

Contractor will assign a cost estimate for each item then submit the Punch List to the Architect and Owner for review and acceptance. Estimated costs to render the Project complete, satisfactory and acceptable are to be agreeable to the Contractor, Owner and Architect. The development and review of the Punch List shall be completed within 30 calendar days, or 45 calendar days by applicable law and mutual agreement of Contractor and Owner, of the substantial completion date and shall be issued by the Architect to the Contractor and Owner within five (5) days of acceptance by all parties. Within twenty (20) business days after the final Punch List is issued, the Owner must pay the Contractor the remaining contract balance that includes all retainage previously withheld less an amount equal to one hundred fifty percent (150%) of the estimated cost to complete the Punch List items. ~~will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.~~

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

§ 9.8.7 The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding that the time for completing the entire Work or such portions of the Work may not yet have expired. However, such action on the part of the Owner shall not be deemed to be an acceptance of any Work not completed in accordance with the Contract Documents. Likewise, absent the issuance of a Certificate of Substantial Completion by the Project Architect, no portion of the Work shall be subject to the running of the Contractor's bonded one (1) year guarantee on workmanship and materials, despite the fact that the building may be partially utilized. Where mechanical equipment is used prior to final inspection, the Owner shall perform routine maintenance and furnish those supplies that normally wear out in use, such as seals, packings, lubricants, etc. However, any major failure or breakdown of equipment not attributable to lack of maintenance or improper use or abuse of the equipment by the Owner shall be made good by the Contractor under terms of its contract warranty, guarantee, bonds, etc.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2, 9.8.3, 9.8.4 and 9.8.5. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

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

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

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract

Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees. As a condition precedent to Final Payment, and as part of the Application for Payment, the Contractor shall deliver to the Owner all warranties, guarantees and other close out documents required under the Contract Documents.

§ 9.10.2.1 Final Payment is also contingent upon Building Official final inspection and Owner acceptance of the Department of Education (DOE) document OEF 209, Certificate of Final Inspection (CFI).

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

.1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents;
.3 terms of special warranties required by the Contract Documents; or
.4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

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

§ 9.10.6 After execution of the Certificate of Substantial Completion and the Certificate of Final Inspection (CFI), and prior to the submittal of the Final Certificate and Application for Payment, the Contractor shall submit to the Architect, along with the affidavits and other documents set forth in Section 9.10.2 above:

.1 Validated warranties and notarized copies of all guarantees for equipment and materials as required by the Construction Documents, and, if applicable, as referred to in the Supplementary Conditions;
.2 Copies of all approved Shop Drawings or installation diagrams and three (3) copies of all brochures, manuals, etc. of all equipment as offered by the manufacturers;
.3 List of subcontractors and major material suppliers (shall include address, telephone number and name of individual to contact regarding this Project); and

.4 As built drawings of the completed Project in paper document and combined PDF or other Architect and Owner acceptable digital format, on CD, DVD or other approved file transfer protocol (FTP), transmitted from the Contractor to the Architect for review and acceptance; Architect shall review for inclusion in the record drawings then transmit to the Owner.

§ 9.10.7 Prior to submission of the Final Certificate and Application for Payment, Contractor and manufacturer's representatives shall provide free instruction in the proper use of installed equipment to representatives of the Owner as designated by the Architect. Instruction shall be given in presence of the Architect.

§ 9.10.7.1 Instruction of the Owner's designated Maintenance Supervisor in the proper methods of cleaning and maintaining all of the finished surfaces and the proper methods of replacement of the consumable items such as filters, light bulbs, washers, etc. shall be the responsibility of the Contractor.

§ 9.10.8 Prior to submission of the Final Certificate and Application for Payment, the Contractor shall start up, test, adjust, balance and otherwise place in a satisfactory working condition all items of mechanical and electrical systems and shall fully instruct representatives of the Owner in the care and operation of such systems.

§ 9.10.8.1 Contractor shall submit to the Architect, along with final requisition for payment, two (2) copies of a manual for the Project, assembled and bound, presenting for the Owner's guidance full details for care and maintenance of equipment included in the Contract.

§ 9.10.8.2 Contractor shall, for this manual, obtain from subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same in overall operation and maintenance.

§ 9.10.9 During a valid warranty period, if the Contractor is unable or unwilling to respond immediately to make emergency repairs under conditions which the Owner may determine to be an emergency situation, the Owner reserves the right to make such emergency repairs and then to bill the Contractor for a fair and reasonable amount in the reimbursement for such repair.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss. Contractor shall comply with all applicable federal, state and county, and city statutes, safety regulations, codes, ordinances and orders, including the Occupational Safety and Health Administration Act of 1970 (OSHA).

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

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

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

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

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

§ 10.2.9 Contractor shall protect adjoining private or municipal property and shall provide barricades, temporary fences, and covered walkways required to protect the safety of passers-by, as required by prudent construction practices, local building codes, ordinances or other laws, or the Contract Documents.

§ 10.2.10 Contractor shall maintain Work, materials and apparatus free from injury or damage from rain, wind, storms, frost or heat. If adverse weather makes it impossible to continue operations safely in spite of weather precautions, the Contractor shall cease Work and notify the Owner and the Architect of such cessation. The Contractor shall not permit open fires on the Project site.

§ 10.2.11 In addition to its other obligations pursuant to this Article 10, the Contractor shall, at its sole cost and expense, promptly repair any damage or disturbance to walls, utilities, sidewalks, curbs and the property of third parties (including municipalities) resulting from the performance of the Work, whether by it or by its Subcontractors at any tier. The Contractor shall maintain streets in good repair and traversable condition.

§ 10.3 Hazardous Materials and Substances
§ 10.3.1 The Owner has on file at each school and the department of Facilities Services, the following information: (1) Asbestos Management Plan, and (2) Asbestos Survey Report. These documents are available for the Contractor's review at the above locations. The Contractor shall determine if the information contained therein is relevant to the Project. The Contractor shall execute the Owner's "Contractor Acknowledgement Form" of these documents. ~~The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.~~

§ 10.3.1.1 If during the construction of the Project any known hazardous material, or friable asbestos is suspected or encountered, Work in that area shall be suspended and the Owner's Representative shall be notified immediately.

§ 10.3.1.2 The Owner shall be responsible for investigation, removal and disposition of any such material in accordance with applicable laws and regulations. The Contractor will be directed by the Owner on further procedures concerning the project as a result of investigation, removal and disposition of such material.

§ 10.3.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect. ~~Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.~~

§ 10.3.3 The Contractor shall not be required, pursuant to Article 13, perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB). ~~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 To the fullest extent permitted by law, the Owner shall defend, indemnify and hold harmless the Contractor and its agents and employees from and against claims, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work in the affected area if in fact the material is asbestos or polychlorinated biphenyl (PCB) 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, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner, or anyone for whose acts the Owner may be liable. ~~The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

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

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

§ 11.2.3 ~~Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-~~

~~subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.~~

§ 11.3 Waivers of Subrogation

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

§ 11.3.2 If 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. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7. ~~If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.~~

§ 11.3.3 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 be made, the Owner shall not make any settlement with respect to such loss until a resolution has been reached by agreement between such parties in interest and the insurers or by a court of competent jurisdiction.

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

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

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the ~~Owner~~ Contractor as fiduciary and made payable to the ~~Owner~~ Contractor as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The ~~Owner~~ Contractor shall pay the Architect and ~~Contractor~~ Owner their just shares of insurance proceeds received by the ~~Owner~~ Contractor, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the ~~Owner~~ Contractor shall notify the ~~Contractor~~ Owner of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The ~~Contractor~~ Owner shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the ~~Contractor~~ Owner does not object, the ~~Owner~~ Contractor shall settle the loss and the ~~Contractor~~ Owner shall be bound by the settlement and allocation. Upon receipt, the ~~Owner~~ Contractor shall deposit the insurance proceeds in a separate account and make the

appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. ~~Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.~~

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's or Owner's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect or Owner, be uncovered for the Architect's or Owner's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. ~~During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.~~ If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

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

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

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

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§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work nor to Owner's right to make claim with respect to latent defects.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate ~~and equitable~~. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located ~~excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4~~.

§ 13.1.2 Historical lack of enforcement of any local law shall not constitute a waiver of Contractor's responsibility for compliance with such law in a manner consistent with the Contract Documents unless and until the Contractor has received written consent for the waiver of such compliance from the Owner and the agency responsible for the local law enforcement.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. ~~Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party~~ Contractor may not assign its rights or obligation under this Contract. If Contractor attempts to make such an assignment, it shall nevertheless remain legally responsible for all obligations under the Contract.

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

§ 13.3 Rights and Remedies

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

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

§ 13.3.3 The invalidity of any part or provision of the Contract Documents shall not impair or affect in any manner the validity, enforceability or effect of the remaining parts and provisions of the Contract Documents.

§ 13.4 Tests and Inspections

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

concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.1.1 During construction, periodic building code compliance inspections are required and will be performed by the Owner's building department inspectors when requested by the Contractor. It is the responsibility of the Contractor to properly request such code inspections and no Work shall be covered until such Work has been inspected for code compliance.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity assigned by the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense, including the cost of retesting for verification of compliance if necessary, until the Architect certifies that the Work in question does comply with the requirements of the Contract Documents, and all such costs shall not be included in computing the Contract Sum.

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

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

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

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.6 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law.

§ 13.7 Financial Disclosures

§ 13.7.1 During the term of this Contract, Contractor covenants and agrees that it will keep adequate books and records of accounts in accordance with Generally Accepted Accounting Principles (GAAP). Contractor further covenants and agrees that, upon request from Owner, Contractor shall provide to Owner financial statements of Contractor, including current income and expense statements of Contractor, consolidated balance sheets signed by a financial officer of Contractor, and audited reports provided to Contractor's Surety, audited financial statements certified by a Certified Public Accountant concerning the financial affairs of Contractor and all affiliates of Contractor, and such other financial information requested by Owner. All such financial information shall comply with GAAP.

§ 13.7.2 In the event the Contractor becomes insolvent and/or fails to pay its current obligations when they become due, Contractor shall so advise Owner of such situation. Contractor hereby authorizes its sureties, lenders, financial institutions and other third parties to release to Owner financial information requested by Owner, including, but not limited to, the financial information described in the preceding Section 13.7.1.

§ 13.8 Waiver of Jury Trial

All parties hereby waive any and all right to any trial by jury in any action or proceeding arising directly or indirectly hereunder.

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 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

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

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

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

~~.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.~~

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

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, ~~as well as reasonable overhead and profit on Work not executed,~~ and costs incurred by reason of such termination excluding profit on unexecuted Work.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to material matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

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

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

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

.5 is adjudged a bankrupt or insolvent, or if it makes a general assignment for the benefit of its creditors, or if a trustee or receiver is appointed for the Contractor or for any of its property, or if it files a petition to take advantage of any debtor's loss, or to reorganize under the bankruptcy or similar laws.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, ~~and upon certification by the Architect that sufficient cause exists to justify such action,~~ the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the ~~Initial Decision Maker~~ Architect, 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 direct cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall not 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 adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

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

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

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

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

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

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; ~~and the termination fee, if any, set forth in the Agreement~~ along with reasonable overhead and profit on the Work performed to date, but in no event shall the Contractor be entitled to anticipated profits on unperformed Work.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

Any statutes of limitations shall commence to run, and all causes of action shall be deemed to have accrued, in accordance with applicable Florida law. ~~The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the~~

~~Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.~~

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either party must be made 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. Claims must be made by written notice to the Architect and the other party. Claims must specifically detail all facts and issues substantiating the Claim, including all costs and expenses incurred. Contractor Claims must be made in writing and timely filed in accordance with the specific requirements of the Contract Documents and under no circumstances whatsoever be based upon actual or verbal notice or lack of prejudice to the other party. An additional Contractor Claim after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner. ~~the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.~~

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

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.5.1 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Section 15.1.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

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

§ 15.1.7 Waiver of Claims for Consequential Damages

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

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

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Decision of the Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Section 10.3 shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner. ~~Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.~~

§ 15.2.2 The ~~Initial Decision Maker~~ Architect will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the ~~Initial Decision Maker~~ Architect is unable to resolve the Claim if the ~~Initial Decision Maker~~ Architect lacks sufficient information to evaluate the merits of the Claim or if the ~~Initial Decision Maker~~ Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the ~~Initial Decision Maker~~ Architect to resolve the Claim.

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

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

§ 15.2.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefore and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and litigation. ~~The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.~~

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

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

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

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

§ 15.3 Mediation

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

§ 15.3.2 Claims, disputes or other matters in question between the parties to this Agreement shall be first subject to pre-suit mediation prior to the filing of any legal claims or litigation. Completion of pre-suit mediation is a condition precedent to litigation. The obligation to mediate is a material and essential provision of the Agreement. ~~The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.~~

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

§ 15.3.4 Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any mediation or litigation, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents. ~~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.~~

§ 15.3.5 Either party may initiate a mediation preceding by a request in writing to the other party within a reasonable time after the claim, dispute or other matter in question has arisen or as provided in subparagraph 15.3.1, but in no event after the expiration of the applicable statute of limitations.

§ 15.3.6 The parties shall endeavor in good faith to mutually agree upon an acceptable mediator. In the event the parties have not agreed upon a mediator within thirty (30) days of the request for mediation, the Orlando office of the American Arbitration Association, upon the written request of either party, shall appoint a mediator from its pool of approved mediators.

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§ 15.3.7 Unless otherwise mutually agreed, the mediation shall be held in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect, each party to bear its own fees, costs and expenses.

§ 15.3.8 In the event that pre-suit mediation is unsuccessful, all claims, disputes or other matters in question shall be resolved in the Circuit Courts of Volusia County Florida. The Parties, including the Contractor's Surety, waive Venue and Jurisdiction of any Federal Court and expressly waive Trial by Jury.

§ 15.3.9 All references to Arbitration in the Contract Documents are deleted.

~~§ 15.4 Arbitration~~

~~§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.~~

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

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

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

~~§ 15.4.4 Consolidation or Joinder~~

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

~~§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.~~

~~§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.~~

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CONTRACTOR E-VERIFY AFFIDAVIT

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 639

PURSUANT TO STATE OF FLORIDA, OFFICE OF THE GOVERNOR, EXECUTIVE ORDER 11-116 (Superseding Executive Order 11-02) AND SECTION 448.095 F.S.

Executive Order 11-116 requires all agencies under the direction of the Governor to verify the employment eligibility of all new employees through the U.S. Department of Homeland Security's E-Verify system. Further, in conjunction with Section 448.095 F.S., the Contractor is directed to include as a condition of all contracts for the provision of goods or services to the School Board of Volusia County in excess of nominal value, an express requirement that the Contractor utilizes the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term, and an express requirement that the Contractor include in such subcontracts the requirement that subcontractors performing work or providing services pursuant to the state contract utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.

In accordance with Executive Order 11-116 and Section 448.095 F.S. the School Board of Volusia County Florida requires all contractors who are awarded state funded contracts to verify newly hired employees using the U.S. Department of Homeland Security's E-Verify system. It is the responsibility of the awarded Contractor to insure compliance. To enroll in the E-Verify system employers should visit www.e-verify.gov.

By affixing your signature below you hereby affirm that you will comply with all applicable E-Verify requirements for the following project:

Facility Name: _____ Project No.: _____

Project Name: _____

The undersigned has hereunto set his/her hand this _____ day of _____ , _____

_____ _____
(Print or Type Name, Title) *(Signature of Affiant)*

_____ _____
(Federal Employer ID Number – FEIN) *(E-Verify Number)*

_____
(Firm Name)

_____ _____ _____ _____
(Firm Address) *(City)* *(State)* *(Zip Code)*

NOTARY PUBLIC

STATE OF FLORIDA, COUNTY OF _____

Before me, the undersigned authority, personally appeared _____
known to me to be the person described herein and who executed the foregoing instrument and acknowledged before me executed the same.
IN WITNESS WHEREOF, I have hereunto set my hand and official seal this
_____ day of _____ , _____

(Notary Seal)

My commission expires: _____
(Notary Signature)

_____ _____
(Date) *(Print, type or stamp name of notary public)*

☐ Personally known to me ☐ Produced ID _____
(Type of ID, if applicable)

PERFORMANCE AND PAYMENT BOND

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 640

PUBLIC CONSTRUCTION BOND

Bond No. _____

BY THIS BOND, WE *(Contractor Firm)* _____, *(Physical Address)* _____, *(Phone)* _____, a corporation, *(Surety Firm)* _____, *(Physical Address)* _____, *(Phone)* _____, as Surety, are bound to *(Owner)* School Board of Volusia County Florida, *(Address)* 200 North Clara Avenue, DeLand Florida 32720, *(Phone)* (386) 734-7190, herein called Owner, in the sum of _____ ($_____) for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated _____, between Principal and Owner for construction of *(Facility Name)* _____, *(Address)* _____, *(Project Name)* _____,*(Contract/Project No.)* _____, the contract being made a part of this bond by reference, at the times and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal, in the prosecution of the work provided for in the contract; and
3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED ON _____ day of _____, _____ _____

Signed, sealed and delivered in the presence of:

_____	By: _____
As to President / Principal	President / Principal
_____	_____
(Print/Type Name of Witness to Contractor)	*(Print/Type Name of Contractor)*
	By: _____
	Attorney-in-Fact
_____	_____
As to Surety	*(Print/Type Name of Attorney-in-Fact)*
_____	_____
(Print/Type Name of Witness to Surety)	Florida Resident Agent
	_____
	(Print/Type Name of Florida Resident Agent)

NOTE: If both Principal and Surety are corporations, the respective corporate seals should be affixed and attached. Power-of- Attorney to be attached.

APPROVED _____

Signature

_____

Printed Name

_____

Florida Bar Number

Approved as to form only and for reliance only by the School Board of Volusia County.

CONTRACTOR'S DIRECT MATERIAL PURCHASE AFFIDAVIT

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 641

STATE OF FLORIDA
COUNTY OF VOLUSIA

COMES NOW _____, and after being duly sworn, does depose and state as follows:

1. My name is: _____, I am employed in the position of *(title)* _____ for *(Contractor)* _____.

2. I am over the age of eighteen years and I have personal knowledge of the facts stated herein.

3. All of the materials which the School Board of Volusia County Florida has purchased directly for the project known as *(Facility Name)* _____, *(Project Name)* _____, *(VCS Project No.)* _____, and pursuant to AIA Document A201-2017, Article 3.4.5 have been purchased from subcontractors, suppliers or vendors who provided bids to the Contractor for this Project and whose bids were relied upon by the Contractor in submitting its bid to Volusia County Schools.

4. All materials purchased directly by Volusia County Schools from the Contractor's subcontractors, suppliers and vendors were purchased at or below the price originally negotiated by the Contractor.

FURTHER AFFIANT SAYETH NAUGHT _____

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

_____ _____

Signature of Notary Public, State of Florida

Print, Type or Stamp Commissioned Name of Notary Public

Personally Known ☐ or Produced Identification ☐

Type of I. D. Produced _____

CONTRACTOR'S ACKNOWLEDGMENT FORM

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 642
(Asbestos Survey)

TO: Volusia County Schools
Facilities Design and Construction
3750 Olson Drive
Daytona Beach, Florida 32124

I acknowledge that I have been given access to and have read the Asbestos Survey, Management Plan, Re-inspection Report (if applicable) and/or Certificate of Final Inspection (if applicable).

Facility Name: _____

Address: _____

☐ Not applicable - Reason: _____

I further acknowledge that I must cease work and notify the project manager and environmental specialist, 3750 Olson Drive, Daytona Beach Florida 32124, telephone number (386) 947-8786, in the event of encountering materials not previously identified by the aforementioned reports. In addition, I understand that any questions regarding the aforementioned reports should be directed to the environmental specialist as stated above.

My reason for being in the school is: _____

My signature is acknowledgement of the above.

_____ Date: _____
(Signature)

Printed Name: _____

Firm's Name: _____

Address: _____

Telephone: _____

AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER:

PROJECT: G Series Form

APPLICATION NO: 001
PERIOD TO:
CONTRACT FOR: General Construction
CONTRACT DATE:
PROJECT NOS: / /

Distribution to:
OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
FIELD: ☐
OTHER: ☐

FROM CONTRACTOR:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

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

1. ORIGINAL CONTRACT SUM		$0.00
2. NET CHANGE BY CHANGE ORDERS		$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)		$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)		$0.00
5. RETAINAGE:		
a. 0 % of Completed Work (Column D + E on G703)	$0.00	
b. 0 % of Stored Material (Column F on G703)	$0.00	
Total Retainage (Lines 5a + 5b or Total in Column I of G703)		$0.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)		$0.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)		$0.00
8. CURRENT PAYMENT DUE		$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$0.00	

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

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

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:
My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

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

AMOUNT CERTIFIED $0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

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

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User Notes: (3B9ADA39)

AIA® Document G703™ – 1992

Continuation Sheet

AIA Document, G702™–1992, Application and Certification for Payment, or G736™–2009, Project Application and Project Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:	001
APPLICATION DATE:	
PERIOD TO:	
ARCHITECT'S PROJECT NO:	

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE RATE)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
		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	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
		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
	GRAND TOTAL	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**$0.00**	**0.00%**	**$0.00**	**$0.00**

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User Notes:

(3B9ADA34)

PARTIAL RECEIPT AND RELEASE
PROGRESS PAYMENT
SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 655

The undersigned _____, of _____ was heretofore on _____ day of _____, _____ awarded a contract by the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, to furnish all of the materials and labor in the construction project entitled *(Facility Name)* _____, *(Address)* _____, *(Project Name)* _____, *(VCS Project No.)* _____ , in accordance with the plans and specifications therefore, as prepared by _____, ARCHITECT, and the undersigned has completed said work and fully complied with said contract and has heretofore received the sum of _____, ($_____) as progress payment thereon.

That the undersigned has this date received from the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, the sum representing the balance due as of this progress payment, under terms of said contract, and certifies that said work has been performed in accordance with terms thereof and that, as Contractor, has received monies due and to become due to thereunder for work performed and materials furnished in connection with said work, and that, as Contractor, has paid in full all persons furnishing labor and/or materials in connection therewith, including all subcontractors and suppliers, and that there are no unpaid bills for labor performed or materials furnished in connection with said Work or improvements to date.

That the undersigned, for value received, does hereby forever release and discharge the said building and premises as described in said contract, from any and all liens, claims or demands whatsoever that, as Contractor, has or may have for work performed or materials furnished in connection therewith, or for work performed or materials furnished thereon by any subcontractor or supplier, and will hold the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, safe and harmless from any and all loss and liability arising or to arise by reason of any unpaid bills for labor performed or materials furnished on said building or premises in connection with said work or improvements as of this progress payment.

IN WITNESS WHEREOF,
the undersigned has hereunto set hand and seal this _____ day of _____ , _____
Witnessed by:

_____ _____ (SEAL)
(Witness Signature) *(Contractor Signature)*

_____ _____
(Print or Type Name, Title) *(Print or Type Name, Title)*

STATE OF FLORIDA, COUNTY OF
Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged before me executed the same.
IN WITNESS WHEREOF, I have hereunto set my hand and official seal this
_____ day of _____ , _____

(Notary Seal)

My commission expires: _____
Notary Public, State of Florida

_____ _____
(Date) *(Print, type or stamp name of notary public)*

☐ Personally known to me ☐ Produced ID _____
(Type of ID, if applicable)

AIA® Document G707A™ – 1994

Consent of Surety to Reduction in or Partial Release of Retainage

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐
	CONTRACT FOR:	ARCHITECT: ☐
		CONTRACTOR: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

, SURETY,

on bond of
(Insert name and address of Contractor)

, CONTRACTOR,

hereby approves the reduction in or partial release of retainage to the Contractor as follows:

The Surety agrees that such reduction in or partial release of retainage to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

_____
(Surety)

_____
(Signature of authorized representative)

Attest:
(Seal):

_____
(Printed name and title)

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Consent Of Surety to Final Payment

PROJECT: *(Name and address)*	**ARCHITECT'S PROJECT NUMBER:**	OWNER: ☐
	CONTRACT FOR:	ARCHITECT: ☐
		CONTRACTOR: ☐
TO OWNER: *(Name and address)*	**CONTRACT DATED:**	SURETY: ☐
		OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

, SURETY,

on bond of
(Insert name and address of Contractor)

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety of any of its obligations to
(Insert name and address of Owner)

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date:
(Insert in writing the month followed by the numeric date and year.)

_____
(Surety)

_____
(Signature of authorized representative)

Attest:
(Seal):

_____
(Printed name and title)

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CONTRACTOR AFFIDAVIT

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 661

PURSUANT TO SECTION 713.06(3), FLORIDA STATUTES

TO: SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA

The undersigned, as Contractor, has heretofore, on the _____ day of _____, in the year _____, been awarded a contract by you, as Owner, to furnish all of the materials and labor in the construction project entitled *(Facility Name)* _____, *(Address)* _____, *(Project Name)* _____,*(VCS Project No.)* _____, for the final contract price of _____ ($_____) in accordance with plans and specifications therefore, as prepared by _____, ARCHITECT.

The said project has been completed and the contract and plans therefore fully complied with, and all of the contract price has been paid by you, except the final payment thereon, which is now due, but is being withheld until a sworn statement is furnished as required by law, showing whether there are any unpaid and outstanding bills in connection with said building.

That the undersigned hereby certified, under oath, that all lienors contracting directly with or directly employed by the undersigned, on said contract, have been paid in full, and further certified, under oath, that there are no outstanding or unpaid bills for labor performed or materials furnished in connections with said work or improvements.

That this sworn statement is furnished by the Contractor to the Owner pursuant to Section 713.06(3), Florida Statutes.

IN WITNESS WHEREOF,
the undersigned has hereunto set his hand and seal this _____ day of _____ , _____
Witnessed by:

_____ _____ *(SEAL)*
(Witness Signature) *(Contractor Signature)*

_____ _____
(Print or Type Name, Title) *(Print or Type Name, Title)*

STATE OF FLORIDA, COUNTY OF VOLUSIA
Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and he acknowledged before me that he executed the same.
IN WITNESS WHEREOF, I have hereunto set my hand and official seal this
_____ day of _____ , _____

(Notary Seal)

My commission expires: _____
Notary Public, State of Florida

_____ _____
(Date) *(Print, type or stamp name of notary public)*

☐ Personally known to me ☐ Produced ID _____
(Type of ID, if applicable)

RECEIPT AND RELEASE

SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA
FAC DOCUMENT 662

The undersigned _____, of _____ was heretofore on _____ day of _____, _____ awarded a contract by the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, for the final contract price of _____, ($_____) to furnish all of the materials and labor in the construction project entitled *(Facility Name)* _____, *(Address)* _____, *(Project Name)* _____, *(VCS Project No.)* _____, in accordance with the plans and specifications therefore, as prepared by _____, ARCHITECT, and the undersigned has completed said work and fully complied with said contract and has heretofore received the sum of _____, ($_____) as payment thereon.

That the undersigned has this date received from the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, the sum of _____, ($_____) representing the full balance due him as Contractor, under terms of said contract, and certifies that said contract has been fully performed in accordance with terms thereof and that, as Contractor, has received all monies due and to become due thereunder for work performed and materials furnished in connection with said work, and that, as Contractor, has paid in full all persons furnishing labor and/or materials in connection therewith, including all subcontractors and suppliers, and that there are no unpaid bills for labor performed or materials furnished in connection with said work or improvements.

That the undersigned, for value received, does hereby forever release and discharge the said building and premises as described in said contract, from any and all liens, claims or demands whatsoever that, as Contractor, has or may have for work performed or materials furnished in connection therewith, or for work performed or materials furnished thereon by any subcontractor or supplier, and will hold the SCHOOL BOARD OF VOLUSIA COUNTY FLORIDA, safe and harmless from any and all loss and liability arising or to arise by reason of any unpaid bills for labor performed or materials furnished on said building or premises in connection with said work or improvements.

IN WITNESS WHEREOF,
the undersigned has hereunto set hand and seal this _____ day of _____ , _____
Witnessed by:

_____ _____ (SEAL)
(Witness Signature) *(Contractor Signature)*

_____ _____
(Print or Type Name, Title) *(Print or Type Name, Title)*

STATE OF FLORIDA, COUNTY OF
Before me, the undersigned authority, personally appeared _____
to me well-known and known to me to be the person described in and who executed the foregoing instrument, and acknowledged before me executed the same.
IN WITNESS WHEREOF, I have hereunto set my hand and official seal this
_____ day of _____ , _____

(Notary Seal)

My commission expires: _____
Notary Public, State of Florida

_____ _____
(Date) *(Print, type or stamp name of notary public)*

☐ Personally known to me ☐ Produced ID _____
(Type of ID, if applicable)

SECTION 01 11 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY THIS CONTRACT

A. Project Description: An existing school, New Smyrna Beach High, to receive Baseball and Softball Field Lighting.

B. Location: 1015 10th St New Smyrna Beach, FL 32168 (386) 424-2555.

C. No Impact Fees or Permit Fees are required.

D. Contractor's Duties:

1. Provide and Pay for:
   - a) Labor, Materials, Equipment and Installation of items described above.
   - b) Tools, Construction Equipment.
   - c) Protection of Existing Work.
2. Comply with listed codes and Specifications.

1.2 CONTRACTOR USE OF PREMISES

A. Comply with established User Policies.

B. Be responsible for items of work stored on premise.

C. Maintain 'Good Housekeeping' on site as established by principal and custodian.

1.3 OWNER'S ACCESS TO THE WORK

A. The Owner reserves access to the work for observation during installation/construction of the work.

1.4 WORK SCHEDULE

A. A time schedule shall be made to include:

1. A starting of work date.
2. A reasonable progression of work by Phase, i.e.
   - a) Start Work
   - b) Complete Retrofit
   - c) Install New Equipment
   - d) Substantial Completion
   - e) Final Completion

B. At the time of work completion and owner acceptance the contractor shall furnish the owner record drawings as described in this specification.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 JOB DESCRIPTION SUMMARY

A. Provide all labor and materials for Baseball and Softball Field Lighting at New Smyrna Beach HS as described in this Specification and on Drawings.

B. Contractor shall replace, repair and shall be responsible for items damaged during construction/installation. Items of concern include:

1. ceiling tile
2. plaster
3. gypsum board
4. concrete block
5. cabinet work
6. carpet
7. painted surfaces
8. roof penetrations
9. brick
10. sidewalks
11. pavement
12. landscaping
13. grass

C. Painting of construction areas shall be done by Contractor.

END OF SECTION

SECTION 01 23 00 – ALTERNATES

PART 1- GENERAL

1.1 REQUIREMENTS INCLUDED

A. Identification and description of Alternate work.

1.2 RELATED REQUIREMENTS

A. Bid Documents: Quotation of cost of each Alternate.

B. Owner-Contractor Agreement: Alternates accepted by Owner for incorporation into the Work.

C. Sections of Specifications identified in each Alternate.

1.3 PROCEDURES

A. Alternates will be exercised at the option of Owner.

B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance is designated in Owner-Contractor Agreement.

C. Base Bid to include:

1. All work shown on drawings or these specifications that is not specifically identified as an alternate.

1.4 ALTERNATE SCHEDULE

A. Alternates: Additive Alternate No. 1: Provide area lighting.

PART 2- PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 30 00 - ADMINISTRATIVE PROVISIONS

PART 1- GENERAL

1.1 REQUIREMENTS INCLUDED

A. Title of Work, and type of Contract.

B. Work Sequence.

C. Contractor Use of Premises.

D. Owner Occupancy.

E. Coordination.

F. Reference Standards.

G. Project Meetings.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Work of this Contract at New Smyrna Beach HS comprises Baseball and Softball Field Lighting.

1.3 CONTRACT NEEDED

A. Construct the Work under a single lump sum contract.

1.4 WORK SEQUENCE

A. Construct Work in stages to accommodate Owner's occupancy requirements during the construction period; coordinate construction schedule and operations with Owner and Engineer.

B. All work shall be performed during standard school/office hours and on weekends. Work to be performed during the following hours: 7:00 a.m. to 10:00 p.m. weekdays and 24 hours a day on Saturday, Sunday or Holidays. Drilling shall only be performed during non-standard school/office hours and on weekends/holidays.

C. Work on new and existing construction shall begin no later than seven (7) days after receipt of Notice to Proceed and be completed in accord with the number of days listed in the Contract.

D. Substantial Completion shall be One Hundred and Eighty (180) consecutive calendar days from the date of Notice to Proceed.

E. Final Completion shall be seven (7) days after date of Substantial Completion.

1.5 CONTRACTOR USE OF PREMISES

A. Limit use of premises for Work and for construction operations, to allow for Owner Occupancy.

B. Coordinate use of premises under direction of Owner.

1.6 OWNER OCCUPANCY

A. Owner will occupy premises during entire period of construction, for the conduct of his normal operations. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

B. Contractor will ensure the continuous operation of all life safety systems (including fire alarm, intercom, etc.) and all exits during the entire duration of the contract. Provide fire watches as required during outages of fire alarm system.

1.7 COORDINATION

A. Coordinate work of the various sections of Specifications as to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.

1.8 REFERENCE STANDARDS

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

B. The date of the standards is that in effect as the Bid date, except when a specific date is specified.

C. Obtain copies of standards when required by Contract Documents. Maintain copy at job site during progress of the specific work.

1.9 PROJECT MEETINGS

A. The Engineer shall schedule and administer Project meetings throughout progress of the Work: progress meetings at weekly intervals, and called meetings.

B. The Engineer shall make physical arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within two days to participants, and those affected by decisions made at the meetings.

C. Attendance shall include Contractor's Project Manager and Job Superintendent(s), major subcontractors and suppliers; Engineer and Owner as appropriate to agenda topics for each meeting.

D. Agenda may include review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affect progress of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 31 00 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 SURVEYS AND RECORDS/REPORTS

A. General: Working from lines and levels established by the property survey establish and maintain benchmarks and other dependable markers. Establish benchmarks and markers to set lines and levels for work at each story of construction and elsewhere as needed to properly locate each element of the project. Calculate and measure required dimensions as shown within recognized tolerances. Drawings shall not be scaled to determine dimensions. Advise entities performing work, of marked lines and levels provided for their use.

1.2 LIMITATIONS ON USE OF THE SITE

A. General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents. In addition to these limitations and requirements administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance of the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on size.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Installer's Inspection of Conditions: Require the Installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until satisfactory conditions have been corrected in a manner acceptable to the Installer.

B. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the contract documents.

C. Inspect each item of materials or equipment immediately prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods for securing work. Secure work true to line and level, and within recognized industry tolerances. Allow expansion and building movement. Provide uniform joint width in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable visual-effect choices to the Engineer for final decision.

E. Install each unit-of-work during weather conditions and project status which will ensure the best possible results in coordination with the entire work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.

F. Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.

G. Mounting Heights: Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting heights for the particular application indicated. Refer questionable mounting height choices to the Engineer for final decision.

3.2 CLEANING AND PROTECTION

A. General: During handling and installation of work at the project site, clean and protect work in progress and adjoining work on the basis of continuous maintenance. Apply protective covering on installed work where it is required to ensure freedom from damage or deterioration at time of substantial completion.

B. Clean and perform maintenance on installed work as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

END OF SECTION

SECTION 01 32 00 - SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL

1.1 PROGRESS SCHEDULE AND REPORTS

A. General: Within 15 days of date established for "commencement of the work," submit a comprehensive bar-chart type progress schedule indicating a time bar for each significant category or unit of work to be performed at the site. Arrange schedule to indicate required sequencing of units, and to show time allowances for submittals inspections and similar time margins.

1. Show critical submittal dates related to each time bar, or prepare separate coordinated listing of critical submittal dates.

2. Show double cost line immediately below date line in heading, showing pre-calculated dollar-volume and space for recording actual dollar-volume of completed work at end of each period scheduled.

B. Submittal: Following initial revision of schedule after Engineer's review, print and distribute schedule to entities with a need-to-know responsibility, including three copies to Engineer. Post in temporary office space. Revise at intervals matching payment requests, and redistribute/repost. Provide copies required with payment requests.

1.2 MEETINGS AND REPORTING

A. Project Meetings: Conduct general progress and coordination meetings at least once each month, attended by a representative of each primary entity engaged for performance of work. Record discussions and decisions, and distribute copies to those attending and others affected including Engineer. Schedule meetings to coordinate with preparation of payment requests.

1.3 SCHEDULE OF VALUES

A. General: Prepare a schedule of values to show breakdown of Contract Sum corresponding with payment request breakdown and progress schedule line items. Show dollar value and per cent of total for each unit of work scheduled. Submit not less than 7 days prior to first payment request, and revise each time schedule is affected by change order or other value revision (by Contractor).

1.4 PAYMENT REQUESTS

A. General: Except as otherwise indicated, the progress payment cycle is to be regular. Each application must be submitted in triplicate, and consistent with previous applications and payments. Certain applications for payment, such as the initial application, the application at substantial completion, and the final payment application involve additional requirements.

1. Waivers of Lien: For each payment application, submit waivers of lien from every entity (including Contractor) who could lawfully and possibly file a lien in excess of $100 arising out of the Contract and related to work covered by the payment. Submit partial waivers for the amount requested, prior to deduction or retainage, on each item. When the application shows completion of item, submit final or full waivers. The Owner reserves right to designate which entities involved in the work must submit waivers.

B. Payment Application Times: Refer to the "General Conditions of the Contract for Construction", Article 9; Payments and Completion.

C. Payment Application Forms: AIA Document G702 and Continuation Sheets.

D. Prior to initial payment request, submit:

1. List of principal subcontractors and suppliers.
2. Schedule of values.
3. Progress schedule and first progress reports.

E. Following issuance by Engineer of Certificate of Substantial Completion, Contractor may submit special payment request, provided the following have been completed:

1. Obtain permits, certificates of inspection and other acceptance and releases by governing authorities, required for Owner's occupancy and use of project.
2. Submit warranties and similar documentation.
3. Submit maintenance manuals and provide instruction of Owner's operational/maintenance personnel.
4. Complete final cleaning of the work.
5. Submit record documents.
6. Submit listing of work to be completed before final acceptance.

F. Following completion of the following requirements, final payment request may be submitted.

1. Complete work listed as incomplete at time of substantial completion, or otherwise assure Owner of subsequent completion of individual complete items.
2. Settle liens and other claims, or assure Owner of subsequent settlement.
3. Submit proof of payment of fees, taxes and similar obligations.
4. Submit final "Receipt and Release" Form, and "Contractor's Affidavit" Form.
5. Transfer operational, access, security and similar provisions to Owner; and remove temporary facilities, tools and similar items.
6. Complete of requirements specified in "Project Closeout" section.
7. Obtain consent of surety for final payment.
8. Issuance of "Certificate of Final Acceptance" by the Florida Department of Education and the School Board of Volusia County, Florida.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 33 00 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 - GENERAL

1.1 PROCEDURAL REQUIREMENTS:

A. Coordination: Coordinate the preparation and processing of work-related submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities that require sequential activity. Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the necessity of reviewing a related submittal. Prepare and transmit each submittal sufficiently in advance of the scheduled performance of related work and similar activities.

1. Substitutions: Submit substitution requests in the specified manner (Section "Products and Substitutions"). Shop drawing submittal of substitutions is not an acceptable method of substitution request.

B. Review Time: Allow two weeks for the Engineer's initial processing of each submittal. No extension of time will be authorized because of failure to transmit submittals to the Engineer sufficiently in advance of the work.

C. Submittal Preparation: Mark each submittal with a permanent label for identification. Provide project name, date, name of Engineer, name of Contractor, number and title of appropriate specification section and similar definitive information. Provide a space on the label for Contractor's and Engineer's review markings.

D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Send each submittal from the Contractor to the Engineer and other destinations using transmittal form.

E. Additional Copies: Provide additional copies of submittals required by governing authorities that are in addition to copies specified for submittal to the Engineer.

1.2 SPECIFIC SUBMITTAL REQUIREMENTS:

A. General: Where it is necessary to provide intermediate submittals between the initial and final submittals, provide and process intermediate submittals in the same manner as for initial submittals.

B. Shop Drawings:

1. Initial Submittal: Submit one opaque blue/black line print and one correctable, reproducible transparency. The transparency will be processed and returned. After approval print, processed transparency for job use and distribution.

2. Final Submittal: After approval, submit 3 prints; if the drawing is required for maintenance manuals, submit 5 prints; with final submittal, include additional prints as necessary for job use and distribution. Owner to receive copy of approved submittals, Engineer will retain 2 prints, and will return the remainder. Maintain one print as mark-up copy for record drawings.

C. Product Data: Mark each copy to indicate the actual product to be provided; show selections from among options in the manufacturer's printed product data. Submit 2 copies to Engineer; submittal is for information and record purposes only. Where the product data is required for maintenance manuals, submit 2 additional copies which will be returned. Maintain one additional copy at the project site for reference purposes.

1. Do not proceed with the installation of manufactured products until a copy of related product data is in the installer's possession at the project site.

D. Samples: Submit 3 samples; one set will be returned. Provide 3 or more samples in each set where variations in color, pattern or texture are observable; show average condition and extreme range of variations. Submit full documentation with each set. Sample submittals are for Engineer's observations of color, texture, pattern and "kind." Maintain returned set at project site for purposes of quality control comparisons.

E. Miscellaneous Submittals: Provide copies of miscellaneous submittals as follows:

1. Warranties: Submit two executed copies, plus additional copies as required for maintenance manual.

2. Inspection and Test Reports: Where not processed as shop drawings or product data, provide two copies plus additional copies as required for maintenance manuals.

3. Field Records: four copies, including one copy which will be returned for inclusion in the submittal of record documents.

4. Maintenance Manuals: Submit three copies.

5. Record Drawings: Submit original maintained mark-up prints, plus two photographic copies which may, at the Contractor's option, be reduced to not less than half size.

6. Miscellaneous Record Documentation: Provide the original maintained marked-up copy.

1.3 ENGINEER'S ACTION:

A. Stamp: The Engineer will stamp each submittal to be returned with a uniform, self explanatory action stamp, appropriately marked and executed to indicate the status of the submittal.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - (Not Applicable)

END OF SECTION

SECTION 01 37 00 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 DEFINITIONS

A. General: Except as specifically defined otherwise, the following definitions supplement definitions of the Contract, General Conditions, Supplementary Conditions and other general contract documents, and apply generally to the work.

B. General Requirements: Provisions of Division-1 sections of these specifications.

C. Indicated: Shown on drawings by notes, graphics or schedules, or written into other portions of contract documents. Terms such as "shown", "noted", "scheduled", and "specified" have the same meaning as "indicated", and are used to assist the reader in locating particular information.

D. Directed, Requested, Accepted, etc.: These terms imply "by the Engineer", unless otherwise indicated.

E. Approved by Engineer: In no case releases Contractor from responsibility to fulfill requirements of contract documents.

F. Project Site: Space available to Contractor at location of project, either exclusively or to be shared with separate contractors, for performance of the work.

G. Furnish: Supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar subsequent requirements.

H. Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.

I. Provide: Furnish and install, complete and ready for intended use.

J. Installer: Entity (firm or person) engaged to install work, by Contractor, subcontractor or sub-subcontractor. Installers are required to be skilled experts in work they are engaged to install.

K. Testing Laboratory: Independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report, and (if required) interpret results of those inspections or tests.

1.2 FORMAT AND SPECIFICATION CONTENT EXPLANATION:

A. Specification Text Format: Underscoring facilitates scan reading, no other meaning. Imperative language is directed at Contractor, unless otherwise noted.

B. Overlapping/Conflicting Requirements: Most stringent (generally) requirement written directly into contract documents is intended and will be enforced, unless specifically detailed language written into the contract documents clearly indicates that a less stringent requirement is acceptable. Refer uncertainties to Engineer for decision before proceeding.

1. Where optional requirements are specified in a parallel manner, option is intended to be Contractor's unless otherwise indicated.

C. Minimum Requirements: Indicated requirements are for a specific minimum acceptable level of quality/quantity, as recognized in the industry. Actual work must comply (within specified tolerances), or may exceed minimums within reasonable limits. Refer uncertainties to Engineer before proceeding.

D. Abbreviations, Plural Words: Abbreviations, where not defined in contract documents, will be interpreted to mean the normal construction industry terminology, determined by recognized grammatical rules, by the Engineer. Plural words will be interpreted as singular and singular words will be interpreted as plural where applicable for context of contract documents.

E. Testing Laboratory: An independent entity engaged for the project to provide inspections, tests, interpretations, reports and similar services.

1.3 INDUSTRY STANDARDS:

A. Industry Standards: Applicable standards of construction industry have same force and effect on performance of the work as if copied directly into contract documents or bound and published therewith. Standards referenced in contract documents or in governing regulations have precedence over non-referenced standards, insofar as different standards may contain overlapping or conflicting requirements. Comply with standards in effect as of date of contract documents, unless otherwise indicated.

1. Abbreviations: Where abbreviations or acronyms are used in contract documents, they mean the well recognized name of entity in building construction industry; refer uncertainties to Engineer before proceeding, or consult "Encyclopedia of Associations" by Gale Research Co.

1.4 GOVERNING REGULATIONS/AUTHORITIES:

A. Trade Union Jurisdictions: Maintain current information on jurisdictional matters, regulations, actions and pending actions; and administer/supervise performances of work in a manner which will minimize possibility of disputes, conflicts, delays, claims or losses.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 40 00 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Description: Quality control services include inspections and tests performed by independent agencies and governing authorities, as well as by the Contractor. Inspection and testing services are intended to determine compliance of the work with requirements specified. Specific quality control requirements are specified in individual specification sections.

1.2 RESPONSIBILITY

A. Contractor Responsibilities: Except where indicated as being the Owner's responsibility, quality control services are the Contractor's responsibility, including those specified to be performed by an independent agency and not by the Contractor. The Contractor shall employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified.

1. The Owner will engage and pay for services of an independent agency to perform the inspections and tests that are specified as Owner's responsibilities.

B. Retest Responsibility: Where results of inspections or tests do not indicate compliance with contract document, retests and the cost related to retesting are the Contractor's responsibility.

C. Responsibility for Associated Services: The Contractor shall cooperate with independent agencies performing inspections or tests. Provide auxiliary services as are reasonable. Auxiliary services include:

1. Provide access to the work.
2. Assist taking samples.
3. Deliver samples to test laboratory.

D. Coordination: The Contractor and independent test agency shall coordinate the sequence of their activities. Avoid removing and replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections and tests.

E. Qualifications for Service Agencies: Engage inspection and test service agencies which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories.

F. Submittals: Submit a certified written report of each inspection, test or similar service, in duplicate to the Engineer. Submit additional copies of each report to governing authority, when the authority so directs.

G. Report Data: Written inspection or test reports shall include:
1. Name of testing agency or test laboratory.
2. Dates and locations of samples, tests or inspections.
3. Names of individuals present.
4. Complete inspection of test data.
5. Test results.
6. Interpretations.
7. Recommendations.

H. Repair and Protection: Upon completion of inspection or testing repair damaged work and restore substrates and finishes. Comply with requirements for "Cutting and Patching."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 50 00 - CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 UTILITIES CONNECTIONS

A. Immediately after the award of the Contract, the Contractor shall consult and reach agreement with the authorized representatives of each utility company as to details of service installation.

B. The Contractor shall pay all costs of providing temporary utility services.

1.2 UTILITY SERVICES DURING CONSTRUCTION

A. Owner: Will provide and pay for electrical power. Contractor shall exercise energy conservation procedures such as turning off air conditioning and non-security or safety lighting when not required.

B. Contractor: Will provide and pay for:

1. Temporary work necessary to maintain continuous electrical service when making connections to existing facilities and shall not interrupt service without prior consent of the Owner. Contractor shall be guided by the Owner's representative in all matters affecting existing facilities.

2. Costs for all temporary power connections, wiring and fixtures required for construction.

3. Costs related to temporary power, power drops, meters, and electrical energy consumed when temporary power is obtained from sources other than that provided by the Owner.

4. All resultant cost due to the disabling of any electrical system (accidental) or intentional) if the Owner is not given a minimum of 24 hours advance notice of shutdown.

1.3 WATER

A. The Owner will provide water. The Contractor shall be responsible for temporary and permanent connections. Temporary connection shall be removed when permanent connections are made.

1.4 SANITARY/TOILETS

A. Contractor may use Owner’s toilets. A selected group will be identified for use by Contractor. Contractor to monitor and ensure that they are maintained in a sanitary way at all times. Contractor is required to provide paper products and hand soap for his designated toilets until completion of job.

1.5 TELEPHONE

A. The Contractor shall provide and pay for the installation of temporary telephone service for all personnel engaged in construction activities. If the Contractor chooses he may use a cellular phone.

B. The Owner and A/E shall be informed of the jobsite telephone number.

1.6 CONTRACTOR'S FIELD OFFICE

A. Provide and maintain adequate weathertight office space for field office personnel. Contractor’s field office may be a “Conex type box” for storage of material with a plan table.

1.7 FENCE

A. Provide such temporary fencing as is necessary to protect the public (particularly school children) around the entire construction and staging area(s). The Contractor's temporary fencing may connect to existing fencing where such existing fencing boarders the work area and provide adequate protection. The temporary fencing may be of any construction that provides security and protection of the public, however, it must be a minimum of six (6) feet high. At trenches, a four foot high orange plastic safety fence may be utilized for up to one week.

1.8 INTERIOR ENCLOSURES

A. Provide temporary partitions required to separate work areas from Owner occupied areas. Prevent penetration of dust and moisture into Owner occupied areas. Prevent damage to existing materials and equipment.

1.9 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.10 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Remove waste materials, debris, and rubbish from site.

E. Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Temporarily store waste in a dumpster (provided by contractor) located within the construction site. Dispose of material in a lawful manner.

F. Use of Owner's cleaning equipment is not permitted.

1.11 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Application for Payment.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 60 00 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Products.
B. Transportation and handling.
C. Storage and protection.
D. Product options.
E. Substitutions.

1.2 RELATED SECTIONS:

A. Section 01 40 00 - Quality Control Services: Product quality monitoring.

1.3 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. All products shall be new unless noted otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

C. Provide interchangeable components of the same manufacturer, for similar components. All products installed shall be compatible with existing components and systems as necessary.

D. Direct Purchase By The Owner:

1. The OWNER is tax exempt and may exercise its right to purchase directly various construction materials, supplies and equipment that may be part of this contract. The OWNER will, via its purchase orders, purchase the materials and the CONTRACTOR shall assist the OWNER in the preparation of purchase orders. The OWNER will direct the CONTRACTOR to prepare the purchase order on the OWNER's form and make ready for verification and execution by the OWNER. The materials shall be purchased from the vendors/suppliers originally selected by the CONTRACTOR, for the price originally negotiated by the CONTRACTOR. The CONTRACTOR will within seven (7) calendar days from the date of the Bid Opening, prepare a complete list of lighting fixtures, including the cost of each item, for the project and the OWNER will advise the CONTRACTOR within seven (7) calendar days which items from the list the OWNER wishes to purchase directly.

2. At a time deemed acceptable to the OWNER, the Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus sales tax of six percent (6%). The Owner shall approve all final calculations. Issuance of the purchase orders by the OWNER does not change any of the CONTRACTOR's responsibilities regarding material purchases, or installations, with the exception of the payments for the materials purchased. The CONTRACTOR remains responsible for coordination, correct quantities ordered, submittals, protection, storage, insurance, scheduling, shipping, security, expediting, receiving and unloading, verifying the accuracy of shipping tickets and invoices, installation, cleaning, all applicable warranties and that all materials purchased meet the requirements of the CONTRACT DOCUMENTS. The CONTRACTOR shall certify all invoices as accurate and acceptable and forward to the OWNER the certified invoices for payment by the OWNER.

3. In the event that materials, supplies, or equipment purchased under this option, are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the CONTRACTOR to initiate legal action against the responsible party, the OWNER agrees to assign and subordinate to the CONTRACTOR any claims the OWNER has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the CONTRACTOR in such legal action.

4. The CONTRACTOR agrees to execute the attached CONTRACTOR'S DIRECT MATERIALS PURCHASE AFFIDAVIT and to submit the affidavit to the OWNER along with the above described list of materials, supplies and equipment, within seven (7) calendar days from the date of the Bid Opening.

1.4 TRANSPORTATION AND HANDLING:

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.5 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.

B. For exterior storage of fabricated products, place on sloped supports, above ground.

C. Provide off-site storage and protection when site does not permit on-site storage or protections. Off-site storage shall be in a bonded warehouse with Volusia County Schools named as additional insured.

D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.

E. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.

F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.6 SUBSTITUTIONS

A. Section 26 05 08 Substitutions specifies time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this Section. Use format as specified in Section 26 05 08 Substitutions.

B. No substitution will be considered prior to receipt of Bids unless written request approval has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of Bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other work that incorporation of the substitute would require shall be included. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's acceptance of a proposed substitution shall not relieve the Contractor from his responsibility to insure substitutes are compatible with the specified products.

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

D. No substitutions will be considered after the Contract award unless the specified products are not available or as otherwise specifically provided in the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3- EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 63 00 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 PROCEDURAL REQUIREMENTS:

A. General Limitations: to the fullest extent possible, provide products of the same generic kind, from a single source, for each unit of work. Where it is not possible to do so, match separate procurements as closely as possible. To the extent that the product selection process is under the Contractor's control, provide products that are compatible with previously selected products. Where standard products are available that comply with specified requirements, provide those standard products that have been used successfully before in similar applications, and that are recommended by the manufacturers for the applications indicated.

1.2 PRODUCT SELECTION LIMITATIONS:

A. Product Selections: Except for products required to specifically match existing products, products/materials manufactured or fabricated in the State of Florida have preference over products manufactured outside the State. Comply with the following in the selection of products, materials, and equipment:

1. Single Product Name: Where only a single product or manufacturer is named, provide the product, unless it is not available, is incompatible with existing work, or does not comply with specified requirements or governing regulations.
2. Two or More Products Named: Where two or more products or manufacturers are named, the selection is at the Contractor's option, provided the product selected complies with specified requirements.
3. "Accepted Substitution" Provisions: Where products or manufacturers are specified by name accompanied by the term "Accepted Substitution", provide either the product named, or comply with the requirements for gaining acceptance of "substitutions" for the use of an unnamed product.
4. Compliance with Standards: Where the specifications require only compliance with an imposed standard, code or regulation, the Contractor has the option of selecting any product that complies with specified requirements provided no product names are indicated.
5. Performance Requirements: Where the specifications require compliance with indicated performance requirements, the Contractor has the option of selecting any product that complies with the specific performance requirements, provided no product names are indicated.
6. Visual Requirements: Where the specifications indicate that a product is to be selected from the manufacturer's standard options, without naming the manufacturer, the Engineer has the option of making the selection, after the Contractor has determined or selected the manufacturer.

B. Nameplates: Except as otherwise indicated for required labels and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on the exterior of the completed project.

1.3 SUBSTITUTIONS:

A. Conditions: The Contractor's requests for substitutions will be considered when they are reasonable, timely, fully documented, and when they qualify under the requirements of Section 16013 and one or more of the following circumstances:

1. The proposed substitution is related to an "accepted substitution" or similar provision in the contract documents.
2. The required product cannot be supplied in time for compliance with Contract time requirements.
3. The required product is not acceptable to the governing authorities.
4. The required product cannot be properly coordinated with other materials in the work, or cannot be warranted or insured as specified.
5. Requests submitted by subcontractor, suppliers, or entities other than the General Contractor will be rejected.

B. Submittals: Include the following information, as appropriate, in each request for substitution (in addition to requirements of Section 26 05 08 Substitutions):

1. Provide complete product documentation, including product data and samples, where appropriate.
2. Provide detailed performance comparisons and evaluation, including testing laboratory reports where applicable.
3. Provide coordination information indicating the effect of the substitution on other work and the time schedule.
4. Provide cost information for the proposed change order.
5. Provide the Contractor's general certification of the recommended substitution.

C. Change Order: Acceptance of substitution is possible only by change order procedure. Substitution by Shop Drawing submittal is not acceptable.

1.4 DELIVERY, STORAGE AND HANDLING:

A. General: Receive, store and handle products, materials and equipment in a manner that will prevent loss, deterioration and damage. Schedule deliveries so as to minimize long-term storage at the project site.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 70 00 - CONTRACT CLOSEOUT

PART 1- GENERAL

1.1 REQUIREMENTS INCLUDED

A. Closeout Procedures.

B. Final Cleaning.

C. Warranties and Bonds.

1.2 RELATED REQUIREMENTS

A. Conditions of the Contract: Fiscal provisions, legal submittals, and other administrative requirements.

B. Section 01 30 00 - Administrative Provisions.

C. Section 01 11 00 - Summary of Work.

D. Section 01 50 00 - Construction Facilities.

1.3 CLOSEOUT PROCEDURES

A. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.

B. Owner will continue to occupy Project for the purpose of conducting business, under provisions stated in Certificate of Substantial Completion.

C. When Contractor considers work has reached final completion, submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Engineer's inspection.

D. In addition to submittals required by the conditions of the Contract, provide submittals required by governing authorities, and submit a final statement of account giving total adjusted Contract Sum, previous payments, and sum remaining due.

E. Engineer will issue a final change order reflecting accepted adjustments to contract Sum not previously made by Change Order.

1.4 FINAL CLEANING

A. Execute prior to final inspection.

B. Clean interior and exterior surfaces under this contract exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Clean site; sweep paved areas and rake grass areas and clean other surfaces used during construction operation. Plant sod of same species of surrounding grass in all areas damaged during construction.

D. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site.

1.5 WARRANTIES AND BONDS

A. Provide triplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.

B. Submit material prior to final application of payment. For equipment put into use with Owner's permission during construction, submit within ten (10) days after first operation. For items of work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01 71 00 - SELECTIVE DEMOLITION

PART 1- GENERAL

1.1 SECTION REQUIREMENTS

A. Unless otherwise indicated, demolished materials become Contractor's property. Remove from project site.

B. Items indicated to be removed and salvaged remain Owner's property. Remove, clean, and deliver to Owner's designated storage area.

C. Comply with EPA regulations and disposal regulations of Authorities Having Jurisdiction.

D. Conduct demolition without disrupting Owner's use of the building.

PART 2 -PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DEMOLITION

A. Maintain and protect existing utilities to remain in service before proceeding with demolition, providing bypass connections to other parts of the building.

B. Locate, identify, shut off, disconnect, and cap off utility services to be demolished.

C. Employ a certified, licensed exterminator to treat building and to control rodents and vermin.

D. Conduct demolition operations and remove debris to prevent injury to people and damage to adjacent buildings and site improvements.

E. Provide and maintain shoring, bracing, or structural support to preserve building stability and prevent movement, settlement, or collapse.

F. Protect building structure or interior from weather and water leakage and damage.

G. Protect remaining walls, ceilings, floors, and exposed finishes. Erect and maintain dustproof partitions. Cover and protect remaining furniture, furnishings, and equipment.

H. Neatly cut openings and holes plumb, square and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

I. Promptly patch and repair holes and damaged surfaces of building caused by demolition. Restore exposed finishes of patched areas and extend finish restoration into remaining adjoining construction.

J. Promptly remove demolished materials from Owner's property and legally dispose of them. Do not burn demolished materials.

END OF SECTION

SECTION 01 73 00 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 GENERAL:

A. Definition: "Cutting and Patching" includes cutting into existing construction to provide for the installation of performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

1. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

B. Structural Work: Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio. Submit proposal and request and obtain Engineer's and Owner's acceptance before proceeding with cut-and-patch of structural work.

C. Operational/Safety Limitations: Do not cut-and-patch operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance. Submit proposals and requests and obtain Engineer's and Owner's acceptance before proceeding with cut-and-patches.

D. Visual/Quality Limitations: Do not cut-and-patch work exposed to view (exterior and interior) in a manner resulting in noticeable reduction of aesthetic qualities and similar qualities, as judged by Engineer and Owner.

E. Limitation on Acceptance: Engineer's and Owner's acceptance to proceed with cutting and patching does not waive right to later require removal/replacement of work found to be cut-and-patched in an unsatisfactory manner, as judged by Engineer and Owner.

1.2 ALTERNATES:

A. Refer to Division 01 for description of alternates involving work and materials herein specified.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. General: Use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

PART 3 - EXECUTION

3.1 EXECUTION:

A. Inspection: Before cutting, examine surfaces to be cut and patched and conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

B. Temporary Support: To prevent failure provide temporary support of work to be cut.

C. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

2. Take precautions not to cut existing pipe, conduit or duct serving the building but scheduled to be relocated until provisions have been made to bypass them.

D. Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.

1. Where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut and drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

E. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.

END OF SECTION

SECTION 01 89 00 - STRUCTURAL EXCAVATION, BACKFILL, AND COMPACTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specifications sections and Division 2 Existing Conditions - Earthwork and Landscape Specifications sections.

1.2 DESCRIPTION OF WORK:

A. All work included in this section of the specifications shall be as required to perform the work of the Contract. Work in this section will include but not be limited to the following:

1. Excavations
2. Trenching
3. Site Backfilling

B. Work of this section will be field tested by an independent certified testing laboratory. Costs of tests will be borne by the Owner. Submit copies of all tests and records that are performed as indicated under this section.

C. All excavation, regardless of character, performed under this section is designated as unclassified excavation. Perform all excavation required for the work regardless of the type material encountered or method of removal required.

1.3 QUALITY ASSURANCE

A. Perform work in accordance with plans and guidelines in a neat and accurate manner.

PART 2 - EXECUTION

2.1 EXCAVATIONS:

A. Contractor shall take precautions to guard against movements, settlement, or collapse of any sidewalks or street passages on site or on adjoining property; be liable for any such movement, settlement, or collapse; repair promptly such damage. Install such shoring, including sheet piling, as may be required during excavation to protect trench banks, adjacent paving, structure and utilities.

B. Provide barricades and warning lights on all open excavations for duration of scheduled work.

C. Underpin adjacent structures which may be damaged by excavation work, including service utilities and pipe chases.

D. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

E. Grade excavation top perimeter to prevent surface water runoff into excavation.

2.2 BACKFILLINGS:

A. Backfill excavated material in loose layers eight inches (8") thick. Compact each layer to 95 percent (98 percent under slabs, walks, or paving) of its maximum density at optimum moisture content as determined by ASTM D1557-70, Method D. Do not backfill against concrete and masonry structures until they have attained sufficient strength to withstand the pressure due to backfilling and compaction. Before backfilling, remove all forms and clean the excavation of debris. Do not operate heavy equipment for spreading and compacting backfill closer to a wall than a distance equal to the depth of the backfill from top of footing. Dispose of excavated material in excess of backfill requirements or unsuitable material off-site at a location determined by the Owner.

2.3 INSPECTION:

A. Verify areas to be backfilled are free of debris and water.

B. If tests indicate work does not meet indicated requirements, remove work, replace and retest at no cost to Owner.

2.4 TOLERANCES

A. Top Surface of Backfilling: Plus or minus one inch.

END OF SECTION

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work under this section of the Specifications includes all labor, materials, equipment and services necessary to complete the concrete work, as shown on the drawings and therein specified.

1.2 QUALITY ASSURANCE

A. Work performed shall be in accordance with American Concrete Institute (ACI) Standards.

B. Specifications for Structural Concrete for Buildings (ACI 301-05)

C. Building Code Requirements for Reinforced Concrete (ACI 304-78).

1.3 DESIGN MIXES

A. Design mixes for each class of concrete shall be submitted for review prior to pouring any concrete. The design mixes shall list all ingredients and admixtures and shall list the slump.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type I.

B. Aggregates: ASTM C33/Fine and coarse aggregates.

C. Water: Portables, clean and free from deleterious amounts of acids, alkalis, or organic materials.

D. Fly Ash: ASTM C-618 <u>not</u> permitted.

E. Water-Reducing Admixtures: ASTM C494, Type A, containing no calcium chloride.

F. Air-Entertaining Admixture: ASTM C260.

G. Curing Materials: ASTM C309, method as selected to keep concrete moist during curing period.

H. Expansion Joint Fillers: Preformed, resilient type of asphalt impregnated fiber strips, ASTM D1751.

I. Non-Shrink Grout: CRD-C588, factory pre-mixed grout. (May be used for any repairs necessary).

2.2 MIXES

A. Classes of Concrete:

1. Standard Weight Concrete: 3000 psi strength at 28 days, 564 lbs. cement per cu. yd. minimum, w/c ratio, 0.58 maximum, coarse aggregate 3/8" minimum.

2. Air Entertainment: 2% to 4% air, all concrete.

3. Ready-Mix Concrete: Concrete shall be transit-mixed concrete batched, mixed and supplied in accordance with ASTM.C94.

B. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. All concrete: Not less than 3" and not more than 5".

C. Addition of Water at the Site:

1. Site addition of water is not permitted.

PART 3 - EXECUTION

3.1 PREPARATION

A. The Contractor shall coordinate the setting of all miscellaneous items as work progresses.

3.2 INSTALLATION

A. Placement: Concrete shall be placed in final position to avoid separation due to rehandling or flowing. Full vibration of mix shall be used to consolidate concrete.

B. Finishing:

1. Joints: Finish edge along joints neatly with edging tool.

2. Float and Trowel Finish: All floor slabs to receive finish floorings shall be floated and steel troweled. Slab shall be level with a tolerance of 1/8" in 10'.

C. Curing: Concrete shall be cured in a manner to establish the full strength and to avoid premature drying. All exposed surface concrete slabs shall be sprayed with curing compound. Concrete slabs on grade shall be placed over 6 mil. polyethylene vapor barrier.

3.3 JOINTS

A. Construction Joints:

1. There shall not be any construction joints.

3.4 CONCRETE TESTING

A. Quality Control Testing During Construction:

1. The Owner will employ a testing laboratory to perform tests and to submit test reports.

2. Sampling and testing for quality control during placement of concrete will include the following and as directed by the Architect.

3. Sampling Fresh Concrete: ASTM C172, except modified for slump to comply with ASTM C94.

4. Slump: ASTM C143; one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.

5. Air Content: ASTM C173, volumetric method for lightweight or normal weight concrete; ASTM C231 pressure for normal weight concrete; one for each set of compressive strength test specimens.

6. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens is made.

7. Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders (from same batch of concrete) for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

8. Compressive Strength Tests: ASTM C 39; one set for the project; 1 specimen tested at 7 days, 2 specimens tested at 28 days with the average used for concrete evaluation, and 1 specimen retained in reserve for later testing if required.

9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and not

individual strength test falls below specified compressive strength by more than 500 psi.

10. Test Results will be reported in writing and sent directly to the Engineer and Contractor on the same day that test are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and material; compressive breaking strength and type of break for 7-day test, and 28-day tests.
11. Defective Work: Concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes, shall be corrected at the tolerances, and finishes, shall be corrected at the Contractor's expense, without extensions of time.
12. The Contractor shall also be responsible for the cost of corrections to any other work affected by or resulting from corrections of the concrete work.

END OF SECTION

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. All field painting of interior items and surfaces required to complete the work of this project including the following:

1. Painting of existing damaged finishes and patching.

1.2 QUALITY ASSURANCE

A. Manufacturer: Provide primers and undercoat paint produced by same manufacturer as finish coats.

1.3 SUBMITTALS

A. Manufacturer's Product Data: Submit clearly indicating technical information including paint label analysis and application instruction for each material proposed for use.

B. Color Schedule:

1. Match existing.

1. Upon completion of painting work, Contractor shall return "Color Schedule" to Engineer, complete with manufacturer's formula for each scheduled color.

a) "Color Schedule" to be used as information for maintenance paint.

1.4 DELIVERY, STORAGE, HANDLING

A. Deliver products to site in factory sealed and labeled containers in accordance with Section 01610.

1. Container labeling shall include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

B. Store paint materials at minimum ambient temperature of 45 degrees F (32 degrees C), in well ventilated area, unless required otherwise by manufacturer's instructions.

C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

PART 2 - PRODUCTS

2.1 GENERAL

A. For purpose of designating type and quality of paint required, "Painting Schedule" specified in this section is based on paints manufactured by Coronado Paint Company.

1. "Paint Schedule" specifies the minimum number of primer and finish coats acceptable, which establishes the paint "system" required for the work.

2.2 SUBSTITUTIONS

A. The following manufacturers are acceptable only after compliance with requirements of this section:

1. Benjamin Moore & Co.

2. DuPont Paint Co.

3. Glidden Paint Co.

4. Porter Paint Co.
5. The Sherwin-Williams Co.
6. Devoe & Raynolds Co.
7. Coronado

B. Other manufacturers are acceptable for evaluation only after compliance substitution requirements.

2.3 PAINT SCHEDULE

A. Prime Coat: As recommended by manufacturer.

B. Second Coat: To match existing

C. Third Coat: To match existing

PART 3 - EXECUTION

3.1 PREPARATION

A. Surfaces scheduled to be finished shall be examined prior to commencement of work.

1. Painting Subcontractor shall report to General Contractor any condition that may potentially affect proper application.

B. Prepare ALL surfaces in strict accordance with paint manufacturer's published instructions for each particular substrate condition.

1. Clean surfaces to be painted before applying paint or surface treatments.
2. Remove oil and grease prior to mechanical cleaning.
3. Schedule the cleaning and painting so that contaminants from cleaning process will not fall on wet, newly painted surfaces.

C. Correct minor defects and clean surfaces which affect work of this Section.

3.2 CLEAN-UP AND PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfigurement.

B. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

C. Repair damage to other surfaces caused by work of this Section.

D. During progress of painting work:

1. Remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
2. Maintain premises free of unnecessary accumulation of tools, equipment, surplus materials and debris.
3. Remove paint where spilled, splashed, or spattered.

3.3 APPLICATION

A. All painting work shall be completed before floor finish work is started.

B. Apply all coatings in accordance with manufacturer's published instructions.

1. Do not paint over dirt, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of paint film.

2. Provide barrier coats over incompatible primers or remove and re-prime as required.
3. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.
4. Do not paint over code-required labels.

C. Application Temperatures (unless required otherwise by manufacturer's instructions):

D. Unless otherwise noted, all surfaces which will remain exposed to view (except factory finished items) shall receive field painting.

1. Unless otherwise noted, factory primed items which will remain exposed to view shall receive field painting.

E. The number of coats specified herein for various finishes is customarily sufficient to obtain satisfactory finish, but should such finish not be obtained, it shall be responsibility of Contractor to apply additional coats as may be required.

F. Do not apply finishes to surfaces that are not dry.

G. Apply each coat to uniform finish.

H. Apply each coat of paint slightly darker than preceding coat unless otherwise accepted.

I. Sand lightly between coats to achieve required finish.

J. Allow applied coat to dry before next coat is applied.

END OF SECTION

SECTION 26 01 00 - OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. O & M Manuals contain copies of all warranties, operation and maintenance instructions, and other pertinent information relative to the project that is used throughout the life of the facility. This section contains additional requirements for the preparation of Electrical (Power and Lighting) and Systems Operation and Maintenance Manuals.

1.3 OPERATION AND MAINTENANCE MANUALS

A. O& M Manuals shall consist of a minimum of one hard cover view type 3-ring binder sized to hold 8 1/2 inch x 11 inch sheets for Electrical and Systems. Refer to Division 01, General Requirements for additional requirements.

1. Each binder is to be adequately sized to comfortably hold required submittals. Minimum spline size to be 1 inch, maximum spline size to be 3 inch. Provide additional binders if 3 inch size is not sufficient to properly hold submittals.

2. Binder cover and spline to have outer clear vinyl pockets. Provide correct designation of project in each pocket; see Binder Examples for O & M Manuals at the end of this section. Description sheet is to be white with black letters, minimum of 11 inches high and full width of pocket. Description is to describe project and match project drawing/project manual description. Description to include submittal type, i.e. Operation and Maintenance for Electrical (Power and Lighting).

B. O & M Data:

1. Manufacturers' operation and maintenance data is required for all items as called for in the specifications. O & M Manuals shall include manufacturer's name, model number(s), characteristics, manufacturer's agent, service agent, supplier, where and/or what item(s) are used for and description (i.e. surge suppression - switchboard MDPA).

2. Include troubleshooting instructions, list of special tools required, theory of operation, manufacturer's care and cleaning, preventative maintenance instructions, wiring diagrams, and point-to-point schematics.

C. O & M Manuals to include but are not limited to:

1. Completed forms and information per Division 01, General Requirements, and this section of the specifications. Reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule.
   a) Table of Contents
   b) Project Information Sheet
   c) Reinforced Separation Sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule
   d) Check Out Memo
   e) Conductor Insulation Resistance Test
   f) Ground Test Information
   g) Voltage and Amperage Readings (Tabulated Data)

h) Progress and Record Drawing Certification
i) Spare Parts Certification Memo

2. Shop Drawings: Shop drawings shall be a copy of the final and accepted shop drawing submitted as required in Section Submittals. These shall be inserted in binder in proper order.

3. Product Data: Product data and/or Catalog sheets shall be a copy of the final and accepted submittal submitted as required in Section Submittals. These shall be inserted in binder in proper order.

4. Warranties/Guarantees: Provide copy of warranties/guarantees. Original warranties/guaranties are to be incorporated into separate project warranty book with warranties/guarantees provided for other sections and divisions of the specifications and submitted for Architectural/Owner acceptance.

5. Copies of electrical panel schedules and electrical panel directories included with the corresponding specification section.

6. Wiring diagrams, schematic, etc. inserted in proper order, for:
   a) Control devices
   b) Transformers.
   c) Panelboards.
   d) Distribution panelboards.

7. For Sections 26
   a) Product data and/or catalog sheets on all equipment applicable to this project.
   b) Equipment supplier list for each section's equipment.
   c) Ground fault wiring devices; in addition to above provide:
      1. Wiring diagram.
   d) Grounding; in addition to above provide:
      1. Test results on each ground rod.
      2. Ground Test Information Form

8. Sections 26
   a) Product data and/or catalog sheets on equipment applicable to this project.
   b) Equipment supplier list for each sections equipment.
   c) Transformers; in addition to above provide:
      1. Recommended periodic testing procedures.
      2. Parts list.
      3. Any special manufacture suggested O & M information.
      4. Installation/removal instructions.
      5. Check-Out Memo Form
   d) Panels, distribution panelboards, switchboards; in addition to above provide:
      1. Internal wiring diagrams.
      2. Bus diagrams.
      3. Operation and maintenance requirements, instructions, and recommended testing.
      4. Parts list.
      5. Copy of directory.
      6. Voltage and Amperage Readings Tabulated Data Form
      7. Check-Out Memo Form
   e) Overcurrent protective devices; in addition to above provide the following for large circuit breakers:
      1. Parts list.

2. Operation and maintenance requirements.
3. Wiring diagrams.
4. Testing data.
5. Installation/removal instructions.
6. Check-Out Memo Form

9. Sections 26
   a) Product data and/or catalog sheets on all equipment applicable to this project.
   b) Equipment supplier list for each sections equipment.
   c) Lighting fixtures; in addition to above provide the following:
      1. Operation and maintenance requirements/instructions for special light fixtures (these fixtures to be determined by A/E) including:
         (a) installation/removal instructions.
         (b) special re-lamping instructions.
      2. Parts list.

10. Sections 26
    a) Product data and/or catalog sheets on all equipment applicable to this project.
    b) Equipment supplier list for each sections equipment.
    c) Surge Suppression:
       1. Product data and/or catalog sheets on equipment applicable to this project.
       2. Parts list.
       3. Recommended testing and replacement procedures.

1.4 SUBMITTALS

A. Initial submittals shall be comprised of electronically created and annotated PDF files. Once the PDFs have been approved by Engineer print hard copies for Owner.

B. The Contractor shall review the manuals before submitting to the A/E. No request for payment will be considered until the brochure has been reviewed and submitted for acceptance.

C. Print a minimum of three (3) sets of O & M Manuals, for Owner.

D. Provide additional copies if additional copies are required in other Divisions and/or sections of these specifications.

1.5 DELAYS

A. Contractor is responsible for delays in job project accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data.

1.6 RESUBMITTALS

A. The A/E shall be reimbursed cost to review re-submittals subsequent to the second submittal.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

CHECK OUT MEMO

Check Out Memo shall be completed and a copy provided to the Owner at the Owner's Performance Verification and Demonstration meeting. A copy shall also be included in the specification section of each O & M Manual for the equipment checked.

Project Name_____

Type of Equipment Checked_____

Equipment Number _____

Manufacturer of Equipment_____

Signature below by the manufacturer's authorized representative signifies that the equipment has been satisfactorily tested and checked out on the job by the manufacturer.

- The attached Test and Data and Performance Verification information was used to evaluate the equipment installation and operation.
- The equipment is properly installed, has been tested by the manufacturer's authorized representative, and is operating satisfactorily in accordance with all requirements, except for items noted below.*
- Written operating and maintenance information has been presented and reviewed in detail with the Contractor.
- Sufficient copies of all applicable operating and maintenance information, parts lists, lubrication checklists, and warranties have been furnished to the Contractor for insertion in the Operation and Maintenance Manuals.

_____
MANUFACTURER'S REPRESENTATIVE – PRINT NAME

_____
ADDRESS

_____
TELEPHONE, FAX, E-MAIL

_____
MANUFACTURER'S REPRESENTATIVE – SIGNATURE AND TITLE

_____
DATE CHECKED

WITNESSED BY:

_____
CONTRACTOR'S REPRESENTATIVE – SIGNATURE AND TITLE

***EXCEPTIONS NOTED AT TIME OF CHECK-OUT (USE ADDITIONAL PAGE IF NECESSARY)**

CONDUCTOR INSULATION RESISTANCE TEST

PROJECT NAME_____

CONDUCTOR FROM _____ TO _____

SIZE _____

INSULATION TYPE _____

INSULATION VOLTAGE RATING_____

DATE_____ TIME_____

WEATHER CONDITIONS_____

TEST VOLTAGE (DC)_____

RANGE _____

MEGGER INSTRUMENT/SERIAL NUMBER_____

TESTING METHODOLOGY _____

INSULATION RESISTANCE MEASUREMENT (ACCEPTABLE MEASUREMENT NOT TO BE LESS THAN (100) MEGOHM):

PHASE A TO GROUND _____

PHASE B TO GROUND _____

PHASE C TO GROUND _____

NEUTRAL TO GROUND _____

ISOLATED GROUND TO GROUND _____

CONTRACTOR'S REPRESENTATIVE _____
DATE_____

OWNER'S REPRESENTATIVE _____
DATE:_____

ENGINEER'S REPRESENTATIVE:_____
DATE:_____

GROUND TEST INFORMATION

PROJECT NAME:_____

GROUND TYPE:_____

TEST BY:_____

DATE OF TEST:_____

GROUND LOCATION:_____

GROUND TYPE (Rod, Water pipe, etc.):

PRIOR TO CONNECTION TO SYSTEM

GROUND _____ (OHMS)

AFTER CONNECTION TO SYSTEM

GROUND _____ (OHMS)

WEATHER CONDITIONS (Wet/Dry) _____

SOIL CONDITIONS (Wet/Dry) _____

CONTRACTOR’S REPRESENTATIVE_____

DATE _____

ENGINEER'S REPRESENTATIVE_____

DATE:_____

OWNER'S REPRESENTATIVE _____

DATE_____

VOLTAGE AND AMPERAGE READINGS (TABULATED DATA)

PROJECT NAME _____

SWITCHGEAR/PANELBOARD _____

FULL LOAD AMPERAGE READINGS:
DATE _____
TIME _____

PHASE A _____
B _____
C _____
N _____
GROUND _____

FULL LOAD VOLTAGE READINGS:
DATE _____
TIME _____

PHASE A TO N _____ A TO B _____

B TO N _____ A TO C _____

C TO N _____ B TO C _____

VOLTAGE AT THE END OF THE LONGEST BRANCH _____

TYPE OF LOAD _____

NO LOAD VOLTAGE READINGS:
DATE_____
TIME _____

PHASE A TO N _____ A TO B _____

B TO N _____ A TO C _____

C TO N _____ B TO C _____

ENGINEER'S REPRESENTATIVE
_____
DATE _____

OWNER'S AUTHORIZED REPRESENTATIVE _____
DATE _____

CONTRACTOR'S REPRESENTATIVE _____
DATE _____

PROGRESS AND RECORD DRAWING CERTIFICATION

NAME OF PROJECT: _____

DIVISION NUMBER AND NAME: _____

This is to certify that the attached marked-up design prints were marked as the items were installed at the site during construction, and that these prints represent as accurate "As-Builts" record of the work as actually installed. One copy will be turned over to the Owner at the instruction in Operation Conference. The duplicate copy is for the Engineer's files.

_____
General Contractor

_____
By Authorized Signature And Title

_____
Date

_____
Subcontractor

_____
By Authorized Signature And Title

_____
Date

SPARE PARTS / MAINTENANCE STOCK CERTIFICATION

This form verifies that the parts/stock listed below has been delivered to and received by Maintenance Department. Original shall be included in the Closeout Documentation Manual. Copies shall also be included in the O & M Manual.

Project Name: _____

Type/Name of Spare Parts/Attic Stock: _____

_____

Specification Reference: _____

Quantity of Spare Parts/Attic Stock: _____

_____

_____

Signature below by the Contractor and Subcontractor signifies that the spare parts/maintenance stock, required by the Contract Documents, have been delivered to the Owner.

_____
Contractor/CM

_____ Date: _____
Authorized Signature, Title

_____
Subcontractor

_____ Date: _____
Authorized Signature, Title

Signature by the Owner acknowledges receipt of the same spare parts/maintenance stock.

_____
Department

_____ Date: _____
Authorized Signature, Title

BINDER EXAMPLES FOR SUBMITTALS
Insert In Vinyl Pockets (Front & Spline) 3-Ring Binder

MANUAL COVER (face)

NEW SMYRNA BEACH HIGH
BASEBALL AND SOFTBALL FIELD
LIGHTING
1015 10TH ST
NEW SMYRNA BEACH, FL 32168

VCS No. 2648276
MPE No. 2025-134

ELECTRICAL
OPERATION AND MAINTENANCE MANUAL

DATE
(substantial completion date)

MANUAL COVER (Spine)

NEW SMYRNA
BEACH HIGH
BASEBALL AND
SOFTBALL FIELD
LIGHTING

VCS No.2648276
MPE No.2025-134

E
L
E
C
T
R
I
C
A
L

OPERATION AND
MAINTENANCE
MANUAL

DATE

SECTION 26 01 03 - MINOR ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all equipment, labor, material, accessories, and mounting hardware for minor electrical demolition for remodeling.

1.3 REFERENCES

A. NFPA 70 National Electrical Code
B. Underwriters Laboratories

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work as specified in individual sections.

B. Provide all materials necessary for work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on field observation and existing record documents. Report discrepancies to Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

B. Coordinate utility service outages with utility company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner, Architect/Engineer at least 96 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove, relocate, and extend existing installations to accommodate new construction.

B. Remove abandoned wiring to source of supply.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit

servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.

E. Disconnect and remove abandoned panelboards and distribution equipment.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Seal openings in walls, floors, etc. and fire stop in accordance with the accepted UL detail to maintain integrity of assembly.

J. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate and as required to comply with the requirements of the NEC.

K. Extend existing installations using materials and methods compatible with existing electrical installations. Extension must meet or exceed the materials/methods specified in the contract documents.

3.4 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment which remain or are to be reused, including but not limited to:

1. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION

SECTION 26 01 05 - INVESTIGATION OF EXISTING ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes testing and documentation of existing electrical systems.

B. Test the essential features of the following existing electrical systems:

1. Fire detection devices, smoke detection devices.
2. Controls and alarms.
3. Intercom System
4. Outlets: Convenience.
5. Switches: Regular, time.

C. Each system shall be tested once only, and after completion of testing, results given to the Owner, Engineer and/or Owner's Representative. Point out any non-operational function noticed during testing.

D. Document the existing conditions and operation of the existing electrical systems prior to any work.

E. Contractor is responsible for all non-working systems and their components unless non-working status is verified prior to work on system.

1.3 REFERENCES

A. IEEE Recommended Practices

1.4 DESCRIPTION

1.5 TIME

A. The testing shall be held at a date to be agreed upon in writing by the Owner or his representative.

1.6 ATTENDING PARTIES

A. The testing shall be held in the presence of the Owner, or his Representative and Contractor.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PERFORMANCE VERIFICATION

A. Test the operation of each of the following existing devices and associated systems:

1. Fire Alarm System:

a) Test Fire Alarm System sufficiently to determine existing operating condition of system. Pull the pull stations, check automatic detectors. Test minimum of one manual device per zone, and one automatic device per zone.

b) Upon alarm activation verify that the fire alarm zone lights and audible/visual signals function properly. Verify that the local fire department or responding agency receives an automatic signal.

2. Intercom System:

a) Test intercom system sufficiently to determine existing operating condition of system. Check minimum of one call-in station/handset per switchbank and per building.

b) Check for call-in annunciation and communication.

c) Check all call, emerg. call, etc.

3. Lighting and Exit Lighting Fixtures In Areas of Remodel and/or Renovation:

a) Test all lighting fixtures and exit lights for proper operation, list bad ballasts, lamps or broken lenses. Record location of fixtures tested.

b) Test light switches, relay controls, and photo cell controls for proper operation. Record location of tested device; note operational or non-operational.

4. Wiring Devices (Outlets) In Areas of Remodel and/or Renovation:

a) Test receptacles for continuity, open grounds, open neutrals etc. Use circuit testers and record location and results of tested device.

B. The Electrical Contractor shall investigate all existing systems as called out in this performance verification prior to the beginning of any work which could affect these systems.

C. Each system shall be retested after completion of remodel and/or renovation to ensure proper operation is maintained. Demonstrate operation per Section 26 05 06 Demonstration of Completed Electrical Systems.

3.2 INVESTIGATION/TESTING FORMS

A. Submit Existing Facilities Investigation Form (included at the end of this Section) and advise Owner/Engineer of all deficiencies in system(s) prior to work. All systems will be assumed to be fully operational if Form is not received by Engineer prior to work on system.

B. Submit five copies of Existing Facilities Investigation Form for each device tested, signed by the Contractor, Subcontractor and Owner and submit each test result to the Owner's Authorized Representative.

Attachments:
Existing Facilities Investigation

END OF SECTION

EXISTING FACILITIES INVESTIGATION

PROJECT:_____

The existing systems on the above project have been investigated and checked to determine the existing condition of all existing electrical systems within the area(s) affected by the scope of work of this project. The investigation consisted of testing all electrical systems/devices as required by Section 26 01 05 Investigation of Existing Electrical Systems.

All equipment was found to be operational except as noted herein (list below):

_____
PRIME CONTRACTOR

_____
AUTHORIZED SIGNATURE AND TITLE

DATE_____

_____
OWNER'S AUTHORIZED REPRESENTATIVE

_____
AUTHORIZED SIGNATURE AND TITLE

DATE_____

Note To Contractor: Upon completion of investigation and one week prior to the commencement of work, submit five copies of the completed Existing Facilities Investigation Form to the Owner's Authorized Representative, signed and dated by the Contractor. The Owner's Authorized Representative's signature and date is required to verify receipt of Form. Retain copy and submit copy of Form in each Operation and Maintenance Manual. Contractor shall submit quantities of Forms as required to present required information.

SECTION 26 05 00 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes Basic Electrical Requirements specifically applicable to Divisions 26, 27 28 Sections.

1.3 DESCRIPTION OF WORK

A. The work required under this Division shall include all materials, labor and auxiliaries required to install a complete and properly operating electrical system.

B. The Contractor shall furnish, perform, or provide all labor including planning, purchasing, transporting, storing, installing, testing, cutting and patching, trenching, excavating, backfilling, coordination, field verification, equipment (installation and safety), supplies, and materials necessary for the correct installation of complete electrical systems (as described or implied by these specifications and the applicable drawings) in strict accordance with applicable codes, which may not be repeated in these specifications, but are expected to be common knowledge of qualified Bidders.

C. The Division 26 Sections refer to work required in addition to (or above) the minimum requirements of the NEC and applicable local codes. All work shall comply with all applicable codes as a minimum and with the additional requirements called for in these Contract Documents.

D. Only trained and qualified personnel shall be used by the Contractor to perform work. The Contractor shall not perform work which violates applicable Codes, even if called for in the Contract Documents. The Contractor's Bid shall include work necessary to completely install the electrical systems indicated by the Contract Documents in accordance with applicable Codes.

E. Refer to other Division 26 Sections for additional work requirements.

F. Connections of all items using electric power shall be included under this division of the specifications, including necessary wire, conduit, circuit protection, disconnects and accessories. Securing of roughing-in drawings and connection information for equipment involved shall also be included under this division. See other divisions for specifications for electrically operated equipment.

1.4 WORK SEQUENCE

A. Install work in stages and/or phases to accommodate Owner's occupancy requirements. Coordinate electrical schedule and operations with Owner and Architect/Engineer.

1.5 CODES, FEES, AND STANDARDS

A. Conform to all applicable requirements of Section 26 05 09 Reference Standards and Regulatory Requirements.

B. Obtain permits and request inspections from authority having jurisdiction and applicable utility companies.

C. Pay for all required licenses, fees, and inspections.

D. Contact the utility companies to determine if fees, charges or costs are required by the utility

company for for disconnections and reconnections of power. These fees, charges or costs shall be included in Contractor's bid.

E. Material shall be new and free of defects with UL listing or be listed with an approved, nationally recognized Electrical Testing Agency if and only if UL listing is not available for material.

1.6 PROJECT/SITE CONDITIONS

A. Install Work in locations shown or described in the Contract Documents, unless prevented by Project conditions.

B. The Contractor shall install all equipment so that all Code required and manufacturer recommended servicing clearances are maintained. Contractor shall be responsible for the proper arrangement and installation of all equipment within any designated space. Should the Contractor determine that a departure from the Contract Documents is necessary, he shall submit to the A/E, for approval, detailed drawings of his proposed changes with his written reasons for the changes. No changes shall be implemented by the Contractor without the issuance of the required drawings, clarifications, and/or change orders.

C. The Contractor shall verify finish dimensions at the project site in preference to using dimensions noted on Contract Documents.

1.7 INVESTIGATION OF SITE

A. Check site and existing conditions thoroughly before bidding. Advise A/E of discrepancies or questions noted.

B. Each Bidder shall visit the site and shall thoroughly familiarize himself with existing field conditions and the proposed work as described or implied by the Contract Documents. During the course of the site visit, the electrical bidder shall verify every aspect of the proposed work and the existing field conditions in the areas of construction and demolition which will affect his work. The Contractor will receive no compensation or reimbursement for additional expenses he incurs due to failure to make a thorough investigation of the existing facilities. This shall include rerouting around existing obstructions.

C. Submission of a proposal will be construed as evidence that such examination has been made and later claims for labor, equipment or materials required because of difficulties encountered will not be recognized.

D. Existing conditions and utilities indicated are taken from existing construction documents, surveys, and field investigations. Unforeseen conditions probably exist and existing conditions shown on drawings may differ from the actual existing installation with the result being that new work may not be field located exactly as shown on the drawings. Contractor shall field verify dimensions of all site utilities, conduit routing, boxes, etc., prior to bidding and include any deviations in the contract. Notify A/E if deviations are found.

E. All existing electrical is not shown. The Contractor shall become familiar with all existing conditions prior to bidding, and include in his bid the removal of all electrical equipment, wire, conduit, devices, fixtures, etc. that is not being reused, back to its originating point.

F. The Contractor shall locate all existing utilities and protect them from damage. The Contractor shall pay for repair or replacement of utilities or other property damaged by operations in conjunction with the completion of this work.

G. Remove existing power, lighting, systems, material and equipment which are made obsolete or which interfere with the construction of the project. Reinstall power, lighting, systems, materials and equipment which are required to remain active for the facility to be fully functional.

H. All items removed and not re-used shall be immediately turned over to Owner as they are made available by renovation. Remove items from job site and deliver to Owner's storage location(s)

as directed by project manager. Discard complete items which Owner elects to refuse.

I. Investigate site thoroughly and reroute all conduit and wiring in area of construction in order to maintain continuity of existing circuitry. Existing conduits indicated in Contract Documents indicate approximate locations only. Contractor shall verify and coordinate existing site conduits and pipes prior to any excavation on site. Bids shall include hand digging and all required rerouting in areas of existing conduits or pipes.

J. Work is in connection with existing buildings which must remain in operation while work is being performed. Work shall be in accord with the schedule required by the Contract. Schedule work for a minimum outage to Owner. Notify Owner 72 hours in advance of any shut-down of existing systems. Perform work during non-school operating hours unless otherwise accepted by Owner. Protect existing buildings and equipment during construction.

K. Bid shall include all removal and relocation of all piping, fixtures or other items required for completion of alterations and new construction.

L. See Section 26 01 03 Minor Electrical Demolition for Remodeling for additional requirements due to existing conditions.

1.8 CONTRACT DOCUMENTS

A. These specifications and applicable drawings shall be considered supplementary, one to the other and are considered Contract Documents. All workmanship, methods, and/or material described or implied by one and not described or implied by the other shall be furnished, performed, or otherwise provided just as if it had appeared in both sets of documents.

B. Where a discrepancy or conflict is found between these specifications and any applicable drawing, the Contractor shall notify the A/E in written form. In the event that a discrepancy exists between specifications and any applicable drawing, the most stringent requirement shall govern unless the discrepancy conflicts with applicable codes wherein the code shall govern. The most stringent requirement shall be that work, product, etc which is the most expensive and costly to implement.

C. The drawings are diagrammatic and are not intended to include every detail of construction, materials, methods, and equipment. They indicate the result to be achieved by an assemblage of various systems. Coordinate equipment locations with Architectural and Structural drawings. Layout equipment before installation so that all trades may install equipment in spaces available. Coordinate installation in a neat and workmanlike manner.

D. Wiring arrangements for equipment shown on the drawings are intended to be diagrammatic and do not show all required conductors and functional connections. All wiring and appurtenances required for the proper operation of all equipment to be connected shall be provided.

E. Specifications require the Contractor to provide shop drawings which shall indicate the fabrication, assembly, installation, and erection of a particular system's components. Drawings that are part of the Contract Documents shall not be considered a substitute for required shop drawings, field installation drawings, Code requirements, or applicable standards.

F. Locations indicated for outlets, switches, and equipment are approximate and shall be verified by instructions in specifications and notes on the drawings. Where instructions or notes are insufficient to locate the item, notify the A/E.

G. The Contractor shall take finish dimensions at the project site in preference to scaling dimensions on the drawings.

H. Where the requirements of another division, section, or part of these specifications exceed the requirements of this division those requirements shall govern.

1.9 MATERIALS AND EQUIPMENT

A. Material shall be new (except where specifically noted, shown or specified as "Reused") and/or denoted as existing) and shall be UL listed and bear UL label. Where no UL label listing is available for a particular product, material shall be listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the Engineer that equipment meets or exceeds available standards.

B. Where Contract Documents list design selection or manufacturer, type, this model shall set the standard of quality and performance required. Where no brand name is specified, the source and quality shall be subject to A/E's review and acceptance. Where Contract Documents list accepted substitutions, these items shall comply with Section 26 05 08 Substitutions and requirements.

C. When a product is specified to be in accordance with a trade association or government standard and at the request of A/E the Contractor shall furnish a certificate that the product complies with the referenced standard and supporting test data to substantiate compliance.

D. Where multiple items of the same equipment or materials are required, they shall be the product of a single Manufacturer.

E. Where the Contract Documents require materials and/or equipment installed, pulled, or otherwise worked on, the materials and/or equipment shall be furnished and installed by the Contractor responsible for Division 26 methods and materials unless specifically noted otherwise.

F. Where the contract documents refer to the terms "furnish," "install," or "provide," or any combination of these terms) the materials and/or equipment shall be supplied and delivered to the project including all labor, unloading, unpacking, assembly, erection, anchoring, protecting supplies and materials necessary for the correct installation of complete system unless specifically noted otherwise.

G. Before the Contractor orders equipment, the physical size of specified equipment shall be checked to fit spaces allotted on the drawings, with NEC working clearances provided. Internal access for proposed equipment substitutions shall be provided.

H. Electrical equipment shall be protected from the weather during shipment, storage, and construction per manufacturer's recommendations for storage and protection. Should any apparatus be subjected to possible damage by water, it shall be thoroughly dried and put through a dielectric test, at the expense of the Contractor, to ascertain the suitability of the apparatus, or it shall be replaced without additional cost to the Owner. No additional time will be allowed and the project completion date shall be maintained.

I. Inspect all electrical equipment and materials prior to installation. Damaged equipment and materials shall not be installed or placed in service. Replace or repair and test damaged equipment in compliance with industry standards at no additional cost to the Owner. Equipment required for the test shall be provided by the Contractor with no additional cost to the Contract.

J. Material and equipment shall be provided complete and shall function up to the specified capacity/function. Should any material and/or equipment as a part or as a whole fail to meet performance requirements, replacements shall be made to bring performance up to specified requirements. Damages to finish by such replacements, alterations, or repairs shall be restored to prior conditions, at no additional cost to the Owner.

K. Where tamperproof screws are specified or required, Phillips head or Allen head devices shall not be accepted. For each type used, provide Owner with three tools. Owner will designate the

specific hardware design to correspond with existing devices elsewhere in the building, to limit special tool requirements.

L. Where the Contract Documents denote equipment and/or material to be 'new' and/or 'existing' and also provide no denotation for other equipment as to it being 'new' and/or 'existing,' this is not to infer that the non-denoted equipment is either new or existing, or opposite of the equipment that is denoted. The use of the terms 'new' or 'existing' is meant to clarify denoted equipment/materials for that item only, and the lack of the terms 'new' or 'existing' in relation to identifiers/notes/denotations on the drawings is not to infer that this non-denoted equipment or materials is new or existing.

1.10 SUPERVISION OF THE WORK

A. Reference the General Conditions for additional requirements.

B. The Contractor shall provide experienced, qualified, and responsible supervision for work. A competent foreman shall be in charge of the work in progress at all times. If, in the judgement of the A/E, the foreman is not performing his duties satisfactorily, the Contractor shall immediately replace him upon receipt of a letter of request from the A/E. Once a satisfactory foreman has been assigned to the work, he shall not be withdrawn by the Contractor without the written consent of the A/E.

C. Provide field superintendent who has had a minimum of four (4) years previous successful experience on projects of comparable size and complexity. Superintendent shall be on the site at all times during construction and must have, as a minimum, an active Journeyman's Electrical License in the State of Florida.

D. Superintendent shall be employed by a currently licensed Florida Certified Electrical Contractor (EC).

1.11 COORDINATION

A. Provide all required coordination and supervision where work connects to or is affected by work of other trades, and comply with all requirements affecting this Division. Work required under other divisions, specifications or drawings to be performed by this Division shall be coordinated with the Contractor and such work performed at no additional cost to Owner.

B. Contractor shall obtain set of Contract Documents from Owner for all areas of work noted above and include all electrical work in bid whether included in Division 26 Sections or not.

C. Installation studies shall be made to coordinate the electrical work with other trades. Work shall be preplanned. Unresolved conflicts shall be referred to the A/E prior to installation of the equipment for final resolution.

D. For locations where several elements of electrical or combined mechanical and electrical work must be sequenced and positioned with precision in order to fit into the available space, prepare coordination drawings at 1/4" scale showing the actual physical dimension required for the installation to assure proper integration of equipment with building systems and NEC required clearances. Coordination drawings shall be provided for all areas of conflict as determined by the A/E.

E. Secure accepted shop drawings from all required disciplines and verify final electrical characteristics before roughing power feeds to any equipment. When electrical data on accepted shop drawings differs from that shown or called for in Construction Documents, make adjustments to the wiring, disconnects, and branch circuit protection to match that required for the equipment installed.

F. Damage from interference caused by inadequate coordination shall be corrected at no additional cost to the Owner and the contract time for completion will not be extended.

G. The Contractor shall maintain an up-to-date set of Contract Documents (Drawings and Specifications) of all trades on the project site.

H. The Contract Documents describe specific sizes of switches, breakers, fuses, conduits, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). The Contractor shall coordinate the requirements of each load with each load's respective circuitry shown and with each load's requirements as noted on its nameplate data and manufacturer's published electrical criteria. The Contractor shall adjust circuit breaker, fuse, conduit, and conductor sizes to meet the actual requirements of the equipment being provided and installed and change from single point to multiple points of connection (or vice versa) to meet equipment requirements. Changes due to these coordination efforts shall be made at no additional cost to the Owner.

1.12 PROVISION FOR OPENINGS

A. Locate openings required for work. Provide sleeves, guards or other accepted methods to allow passage of items installed.

B. Coordinate with roofing Contractor on installation of electrical items which pierce roof. Roof penetrations shall not void roof warranty.

C. Where work pierces waterproofing, it shall maintain the integrity of the waterproofing. Coordinate roofing materials which pierce roof for compatibility with membrane or other roof types with Contractor prior to installation.

1.13 CONCRETE PADS

A. Furnish and install reinforced concrete housekeeping pads for transformers, switchgear, motor control centers, and other free-standing equipment. Unless otherwise noted, pads shall be four (4) inches high and shall exceed dimensions of equipment being set on them, including future sections, by six (6) inches each side, except when equipment is flush against a wall where the side against the wall shall be flush with the equipment. Pads shall be reinforced with W1.4 x 1.4 6 x 6 welded wire mesh. Chamfer top edges 1/2". Trowel all surfaces smooth. Provide 3000 psi concrete.

1.14 SURFACE MOUNTED EQUIPMENT

A. Surface mounted fixtures, outlets, cabinets, conduit, panels, etc. shall have factory applied finish and/or shall be painted as directed by Engineer. Paint shall be in accordance with other applicable sections of the specifications for this project.

1.15 CUTTING AND PATCHING

A. New Construction:

1. Reference Division 01 - General Requirements.

2. Cutting of work in place shall be cut, drilled, patched and refinished by trade responsible for initial installation.

3. The Contractor shall be responsible for backfilling and matching new grades with adjacent undisturbed finished surface.

B. Existing Construction:

1. See Section 26 01 03 Minor Electrical Demolition for Remodeling for additional requirements.

1.16 TRENCHING

A. Trench excavations in excess of 5 feet deep shall comply with OSHA Standard 29 CFR 1926.

650 Subpart P. Contractor shall complete form as referenced in Section Instructions to Bidders.

1.17 INSTALLATION

A. Erect equipment to minimize interferences and delays in execution of the work.

B. Take care in erection and installation of equipment and materials to avoid marring finishes or surfaces. Any damage shall be repaired or replaced as determined by the A/E at no additional cost to the Owner.

C. Equipment requiring electrical service shall not be energized or placed in service until A/E is notified and is present or have waived their right to be present in writing. Where equipment to be placed in service involves service or connection from another Contractor or the Owner, the Contractor shall notify the Owner in writing when the equipment will be ready. The Owner shall be notified as far in advance as possible of the date the various items of equipment will be complete.

D. Equipment supports shall be secured and supported from structural members except as field accepted by the A/E in writing.

E. Plywood material shall not be used as a backboard for mounting panel boards, disconnects, motor starters, and dry type transformers. Provide "cast in place" type inserts or install expansion type anchor bolts. Electrical equipment shall not be mounted directly to dry wall for support without additional channels as anchors. Channels shall be anchored to the floor and structure above. Panelboards and terminal cabinets shall be provided with structural framing located within drywall partitions.

F. The Contractor shall keep the construction site clean of waste materials and rubbish at all times. Upon completion of the work, the Contractor shall remove from the site all debris, waste, unused materials, equipment, etc.

G. Inserts, pipe sleeves, supports, and anchorage of electrical equipment shall be provided. Where items are to be set or embedded in concrete or masonry, the items shall be furnished and a layout made prior to the setting or embedment thereof, so as to cause no delay to the project schedule.

1.18 PROGRESS AND RECORD DRAWINGS

A. Keep two sets of blueline prints on the job and neatly markup design drawings each day as components are installed. Different colored pencils shall be used to differentiate each system of electrical work. Cost of prints and this labor task shall be included under this Division. All items on Progress Drawings shall be shown in actual location installed. Change the equipment schedules to agree with items actually furnished.

B. Prior to request for substantial completion observation, furnish a set of neatly marked prints showing "as-installed" (as-built) condition of all electrical installed under this Division of the specifications. Marked up prints are to reflect all changes in work including change orders, field directives, addenda from bid set of Contract Documents, request for information responses, etc. Marked up set of prints to show:

1. All raceways 1-1/2" and above, exactly as installed.

2. All site raceways exactly as installed.

3. Any combining of circuits (which is only allowed by specific written permission) or change in homerun outlet box shall be made on as-builts.

4. Any circuit number changes on plan shall be indicated on as-builts.

5. Any panelboard schedule changes shall be indicated on as-builts and final panelboard schedules.

C. Marked up prints as noted above are to be submitted to A/E for review.. Contractor shall review submitted "as-builts" with Engineer in the field. Contractor shall verify every aspect for accuracy.

D. After acceptance of marked up prints by A/E with all changes, additions, etc. included on accepted marked up prints, submit set prior to request for final payment and/or request for final observation.

E. Where the Contractor has failed to produce representative "as-built" drawings in accordance with requirements specified herein, the Contractor shall reimburse Engineer all costs to produce a set of "as-built" drawings to the Architect/Owner satisfaction.

1.19 "OBSERVATION OF WORK" REPORT

A. Reference the General Conditions.

B. Items noted by A/E or his representative during construction and before final acceptance which do not comply with the Contract Documents will be listed in a "Observation of Work" report which will be sent to the Contractor for immediate action. The Contractor shall correct all deficiencies in a prompt concise manner. After completion of the outstanding items, provide a written confirmation report for each item to the A/E. The report shall indicate each item noted, and method of correction. Enter the date on which the item was corrected, and return the signed reports so items can be rechecked. Failure to correct the deficiencies in a prompt concise manner or failure to return the signed reports shall be cause for disallowing request for payments.

C. Items noted after acceptance during one-year guarantee period shall be checked by the Contractor in the same manner as above. The signed reports are to be returned by him when the items have been corrected.

1.20 SYSTEMS WARRANTY

A. Reference the General Conditions.

B. The work shall include a one-year warranty. This warranty shall be by the Contractor to the Owner for any defective workmanship or material which has been furnished at no cost to the Owner for a period of one year from the date of substantial completion of each System. Warranty shall not include lamps in service after one month from date of substantial completion of the System. Explain the provisions of warranty to the Owner at the "Demonstration of Completed System" meeting to be scheduled with the Owner upon project completion.

C. Where items of equipment or materials carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material.

D. Where extended warranty or guarantee are called for herein, furnish three copies to be inserted in Operation and Maintenance Manuals.

E. All preventative maintenance and normal service will be performed by the Owner's maintenance personnel after final acceptance of the work which shall not alter the Contractor's warranty.

1.21 WASTE MATERIALS DISPOSAL

A. Contractor shall include in his bid the transport and disposal or recycling of all waste materials generated by this project in accordance with all rules, regulations and guidelines applicable. Contractor shall comply fully with Florida statute 403.7186 regarding mercury containing devices and lamps. Lamps, ballasts and other materials shall be transported and disposed of in accordance with all DEP and EPA guidelines applicable at time of disposal. Contractor shall provide owner with written certification of accepted disposal.

1.22 SUBSTANTIAL COMPLETION

A. The Contractor shall be fully responsible for contacting all applicable parties (A/E and VCS Project

Manager) to schedule required observations of the work by Engineer. A minimum of 72 hours notice shall be given for all required observations of the work by Engineer, and minimum of 120 hours for substantial completion observation. Time and date shall be agreed on by all applicable parties in writing.

B. Work shall be complete as required by authorities having jurisdiction and the general conditions of the contract prior to request for substantial completion observation. Work must be deemed substantially complete by A/E to fulfill requirements.

1.23 PROHIBITION OF ASBESTOS AND PCB

A. The use of any process involving asbestos or PCB, and the installation of any product, insulation, compound of material containing or incorporating asbestos or PCB, is prohibited. The requirements of this specification for complete and operating electrical systems shall be met without the use of asbestos or PCB.

B. Prior to the final review field visit, the Contractor shall certify in writing that the equipment and materials installed in this Project under Division 26 contain no asbestos or PCB's. Additionally, all manufacturers shall provide a statement with their submittal that indicates that their product contains no asbestos or PCB's. This statement shall be signed and dated by a duly authorized agent of the manufacturer.

PART 2 - PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 26 05 06 - DEMONSTRATION OF COMPLETED ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes the requirements for demonstration of completed electrical systems:

B. Demonstrate to Owner the essential features of the following electrical systems:

1. Electrical Entrance Equipment
   a) Circuit breakers
   b) Fuses and fuseholders
2. Miscellaneous Electrical Equipment
   a) Electrical systems controls and equipment
   b) Electrical power equipment
   c) Relays
   d) Surge suppression equipment
3. Lighting Fixtures (include relamping and replacing lenses)
   a) Fixtures, outdoor
4. Lightning Protection System
5. Distribution Equipment
   a) Lighting and appliance panelboards
   b) Distribution panels
6. Wiring Devices
   a) Low-voltage controls
   b) Switches: regular, time

C. Upon completion of testing, each system is to be demonstrated only once.

1.3 TIME

A. The demonstration shall be held upon completion of testing of all systems at a date to be agreed upon in writing by the Owner or his representative.

1.4 ATTENDING PARTIES

A. The demonstration shall be held by this Contractor in the presence of the Owner and the manufacturer's representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 DEMONSTRATION

A. Demonstrate the function and location (in the structure) of each system, and indicate its relationship to the riser diagrams and drawings.

B. Demonstrate by "start-stop operation" how to work the controls, how to reset protective devices, how to replace fuses, and what to do in case of emergency.

C. Performance Verification and Demonstration to Owner

1. Submit Check Out Memo form for each item, equipment and system. Copy to be

included in each Operation and Maintenance Manual.

END OF SECTION

CHECK OUT MEMO

Check Out Memo shall be completed and a copy provided to the Owner at the Owner's Performance Verification and Demonstration Meeting. A copy shall also be included in the specification section of each O & M Manual for the equipment checked.

Project Name _____

Type of Equipment Checked _____

Equipment Number _____

Equipment Manufacturer _____

Signature below by the manufacturer's authorized representative signifies that the equipment has been satisfactorily tested and checked out on the job by the manufacturer.

1. The attached Test and Data and Performance Verification information was used to evaluate the equipment installation and operation.
2. The equipment is properly installed, has been tested by the manufacturer's authorized representative, and is operating satisfactorily in accordance with all requirements, except for items noted below.*
3. Written operating and maintenance information has been presented and reviewed in detail with the Contractor.
4. Sufficient copies of all applicable operating and maintenance information, parts lists, lubrication checklists, and warranties have been furnished to the Contractor for insertion in the Operation and Maintenance Manuals.

CHECKED BY:

_____
MANUFACTURER'S REPRESENTATIVE (print)

_____
ADDRESS

_____
TELEPHONE, FAX, E-MAIL

_____
MANUFACTURER'S REPRESENTATIVE (signature, title)

_____
DATE CHECKED

WITNESSED BY:

_____
CONTRACTOR'S REPRESENTATIVE (signature, title)

***EXCEPTIONS NOTED AT TIME OF CHECK-OUT (USE ADDITIONAL PAGE IF NECESSARY)**

SECTION 26 05 07 - SUBMITTALS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Requirements for submittals specifically applicable to Division 26 Sections.

B. See Section 26 05 08 Substitutions for additional requirements when submittal consists of accepted substitution equipment.

1.3 SUBMITTAL OF "ACCEPTED SUBSTITUTE" EQUIPMENT/PRODUCT

A. Representation: In submitting item, equipment, product, etc. that has been listed on contract drawings, in contract documents or in an addenda, Contractor represents that he:

1. Has investigated substituted item and has determined that it is equal or superior to specified product in all aspects and that use of substituted item will not require any additional time to the Contract.

2. Will coordinate installation of accepted substitution into work, making changes as may be required to complete work in all aspects.

3. Waives all claims for additional costs related to substitution which may subsequently become apparent.

4. Will provide the same warranties for the substitution as for the product specified.

5. Will absorb all costs incurred by the substitution when affecting other trades including but not limited to electrical, structural, architectural, etc.

6. Will absorb any cost incurred by the Engineer in review of the substituted product if the acceptance of the substituted item creates the need for system modification and/or redesign, or if the substituting contractor exhibits negligence in his substituting procedure thus submitting inferior, misapplied or miss-sized equipment. In the event of additional engineering costs, the billing structure shall be agreed upon prior to review by all involved parties.

B. Substitutions that cannot meet space requirements or other requirements of these Specifications, whether accepted or not, shall be replaced at the Contractor's expense with no additional time added to the Contract.

1.4 SUBMITTALS

A. Submittals shall initially be created and submitted in PDF format. Once approved Contractor shall print hard copies of approved submittals and provide Owner with hard copies.

B. Hard copies of submittals for Owner shall consist of a minimum of one view type 3-ring binder, white, sized to hold 8-1/2" x 11" sheets for "ELECTRICAL SUBMITTALS" (Power and Lighting). Submittals shall consist of a minimum of one view type 3-ring binder, white, sized to hold 8-1/2" x 11" sheets for "ELECTRICAL SUBMITTALS" (Power and Lighting).

1. Binder is to be adequately sized to comfortably hold required submittals. Minimum spline size to be 1", maximum spline size to be 3" (provide additional binders if 3" size is not sufficient to properly hold submittals).

2. Binder cover and spline to have outer clear vinyl pockets. Provide correct designation of

project in each pocket; see Binder Examples for Submittals included at end of this Section. Description sheet is to be white with black letters, minimum of 11" high and full width of pocket. Description is to describe project and match project drawing/project manual description. Description to include submittal type, i.e., "ELECTRICAL SUBMITTALS" for Power and Lighting.

C. Submittals Binders to include:

1. First sheet shall be prepared and filled out by Contractor and shall list project addresses, telephones, etc.; see "PROJECT ADDRESSES" Form included at end of this section.

2. Second sheet in binder shall be a photocopy of the Electrical Index pages in Specifications.

3. Provide reinforced separation sheets tabbed with the appropriate specification reference number and typed index for each section in the Systems Schedule.

4. Submittals consisting of marked catalog sheets or shop drawings shall be inserted in the binder in proper order. Submittal data shall be presented in a clear and thorough manner. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Markings shall be made with arrows or circles (highlighting is not acceptable).

5. Shop Drawings: Drawings to include identification of project and names of Architect, Engineer, General Contractor, subcontractor and supplier, data, number sequentially and indicate the following:

   a) Fabrication and erection dimensions.

   b) Arrangements and sectional views.

   c) Necessary details, including complete information for making connections with other work.

   d) Kinds of materials and finishes.

   e) Descriptive names of equipment.

   f) Modifications and options to standard equipment required by the work.

   g) Leave blank area, size approximately 4 by 2 1/2 inches, near title block (for A/E's stamp imprint).

   h) In order to facilitate review of drawings, insofar as practicable, they shall be noted, indicating by cross reference the contract drawings, note, and specification paragraph numbers where items occur in the Contract Documents.

   i) Conduit/raceway rough-in drawings.

   j) Items requiring shop drawings include (but not limited to):

      1. Special built light fixtures

      2. Special and/or modified equipment

      3. U.L. listed fire and smoke stopping assemblies for each applicable penetration

   k) See specific sections of Specifications for further requirements.

6. Product Data: Technical data is required for all items as called for in the Specifications regardless if item furnished is as specified.

a) Submit technical data verifying that the item submitted complies with the requirements of the Specifications. Technical data shall include manufacturer's name and model number, dimensions, weights, electrical characteristics, and clearances required. Indicate all optional equipment and changes from the standard item as called for in the Specifications. Furnish drawings, or diagrams, dimensioned and in correct scale, covering equipment, showing arrangement of components and overall coordination.

b) In order to facilitate review of product data, insofar as practicable, they shall be noted, indicating by cross reference the contract drawings, note, and/or specification paragraph numbers where and/or what item(s) are used for and where item(s) occur in the contract documents.

c) See specific sections of Specifications for further requirements.

1.5 PROCESSING SUBMITTALS

A. Submit under provisions of the General Requirements of the Contract and this section of the Specifications, whichever is the most strict.

B. Submittals with marking on each section shall be submitted under provisions of General Requirements of the Contract, Division 01, and this and other sections of the Specifications. PDF file for each specification section shall have a consistent file naming convention that includes the specification section number and the submittal number for section. Initial set of PDF files shall include submittal for each of the following:

1. Project Addresses
2. Index
3. Separation Sheets
4. Basic Materials
5. Panelboards
6. Light Fixtures
7. Long Lead Items

C. Remainder of submittals are to be submitted no later then 60 days after award of contract or 60 days prior to Request for Substantial Completion whichever is earlier.

D. The Contractor shall review all submittals before submitting to the A/E. No request for payment will be considered until the submittals have been reviewed and submitted for approval.

E. Product Data: For standard manufactured materials, products and items, submit electronically annotated PDF files of manufacturers product data sheets. If submittal is rejected, resubmittal shall contain a complete set of new data sheets.

F. Shop Drawings: For custom fabricated items and systems installations.

G. Shop Drawing Review Notation.

	Action	Description
1.	No Exception Noted	No exceptions taken. Resubmittal not required.
2.	Rejected	Not in compliance with Contract Documents. Resubmit.
3.	Submit Specific Item	Resubmit item as specified.

4.	Make Corrections Noted	Make corrections noted, resubmittal not required.
5.	Revise and Resubmit	Make corrections noted, resubmittal is required
6.	Review not Required	Not required for review. No action taken. Copy retained for reference.

H. Acceptance: When returned to Contractor, submittals will be electronically marked with A/E's stamp. If box marked "Rejected" "Revise and Resubmit" or "Submit Specific Item" is checked, submittal is not accepted and Contractor is to correct and resubmit as noted, otherwise submittal is accepted and Contractor is to comply with notation making necessary corrections on submittal. Review comments will generally not be on each individual submittal sheet and will be on a separate sheet inserted into to shop drawing transmittal, submittal as a whole or each submittal section.

I. Note that the acceptance of shop drawings or other information submitted in accordance with the requirements specified above does not assure that the Engineer, Architect, or any other Owner's Representative, attests to the dimensional accuracy or dimensional suitability of the material or equipment involved, the ability of the material or equipment involved or the Mechanical/Electrical performance of equipment. Acceptance of shop drawings does not invalidate the plans and Specifications if in conflict, unless a letter requesting such change is submitted and accepted on the Engineer's letterhead.

1.6 DELAYS

A. Contractor is responsible for delays in job progress accruing directly or indirectly from late submissions or resubmissions of shop drawings, or product data.

1.7 RE-SUBMITTALS

A. The A/E shall be reimbursed for all costs to review resubmittals subsequent to the second submission for the same product. Cost will be billed to Contractor at Engineer's standard hourly rate.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

PROJECT ADDRESSES

OWNER:

ENGINEER:

Matern Professional Engineering, Inc.
130 Candace Drive
Maitland, Florida 32751
Telephone No.: (407) 740-5020
Fax No.: (407) 740-0365

GENERAL CONTRACTOR:

SUBCONTRACTOR:

BINDER EXAMPLES FOR SUBMITTALS
Insert In Vinyl Pockets (Front & Spline) 3-Ring Binder

NEW SMYRNA BEACH HIGH
BASEBALL AND SOFTBALL FIELD LIGHTING
1015 10TH ST.
NEW SMYRNA BEACH, FL 32168

VCS NO. 2648276
MPE NO. 2025-134

ELECTRICAL SUBMITTALS

(Size To 8-1/2" x 11")

NEW SMYRNA
BEACH HIGH
BASEBALL AND
SOFTBALL FIELD
LIGHTING

VCS NO. 2648276
MPE NO. 2025-134

ELECTRICAL

OPERATION
AND
MAINTENANCE
MANUAL

DATE

(Size To 11")

SECTION 26 05 08 - SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies general, administrative and procedural requirements for substitutions for Divisions 26 above and beyond the requirements of Division 01 General Requirements and any Supplemental requirements/conditions.

B. Request for substitutions must be submitted no later than 10 days prior to bid due date.

C. Request for substitution will not be considered after bid due date.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Products, materials, equipment, finishes, and methods of construction are considered substitutions if they meet any one of the following conditions:

1. Does not meet all the requirements of these specifications under Part 1 - General or Part 2 - Products for any section included in Divisions 26.
2. Is a different design which accomplishes the same result as that design specified in Division 26 Sections.
3. Is of similar or different design that:
   a) Requires more space.
   b) Requires more power.
   c) Requires changes in other elements of the work such as (but not limited to) architectural, mechanical, structural, or other electrical work.
   d) Affects the construction schedule.
4. Is listed in these specifications on the Contract Documents or in any addenda as an accepted substitution.

1.4 REQUEST FOR SUBSTITUTION SUBMITTALS (10 Days Prior to Bid Due Date)

A. A separate request for substitutions shall be submitted for each product, material, etc. that is defined as a substitution.

B. Submittal must consist of written request for substitution with data as required below. Request must be very specific as to what specified item, request for substitution is submitted for.

C. Each request for substitution submittal for each product, etc. shall include:

1. Name of material or equipment for which it is to be substituted.
2. Drawings, product data, performance data and/or other information necessary for the engineer to determine that the equipment meets all specifications and requirements.

3. Proof that pole lighting fixture and pole meet applicable wind loading requirements. Pole lighting fixtures must be submitted showing proof that they comply with the applicable wind loading requirements for location of this project.

4. Compliance Statement. Each request shall include the following compliance statement typed on letterhead of submitting company:

   a) Submittal complies with all aspects/requirements of Contract Documents. (Yes or No). If no, state deviance.

   b) Submittal complies with all applicable codes. (Yes or No). If no, state deviance.

   c) Submittal complies with all other elements of the work and does not require any other changes. (Yes or No). If No, state required change.

   d) Meets or exceeds the performance of specified product. (Yes or No). If no, state required change.

1.5 REQUEST FOR SUBSTITUTION SUBMITTALS (AFTER BID)

A. Substitution requests submitted after bid will not be reviewed.

B. Submittals for items noted as an Accepted Substitution on Contract Drawings, these specifications, or listed in an addenda, shall be submitted as required in Section 26 05 07 Submittals.

1.6 CONSIDERATION AND ACCEPTANCE

A. Request for substitutions will not be considered if:

1. Submittal does not comply with all requirements as noted above or contain all information required above.

2. If submittal does not contain Compliance Statement, fully filled out.

3. If Compliance Statement contains a 'no' or 'N'.

4. Submittals are submitted beyond time limitations noted above.

B. Samples.

1. Sample may be required to be submitted, if deemed necessary by the A/E to determine if the substitution meets specifications.

2. Where required by A/E on an individual basis, samples may be required after written notice of acceptance and approval has been made of each substitution.

3. The A/E reserves the right to reject sample and consequently the substitution should the sample not meet the requirement of the contract documents.

C. Substitutions will be considered on basis of design, concept of the Work, and overall conformance with information given in Contract Documents, including but not limited to:

1. Design criteria, which shall be equal or superior to the specified item.

2. Finishes, which shall be identical or superior to finishes of specified product.

3. Lenses or louvers, which shall be identical size, thickness and type material specified.

4. Physical size and dimension which are identical or within design criteria limitations as determined by the Engineer.

5. Photometric data, which shall be identical or superior in quantity and quality.

6. Trim detail and mechanical qualities, which shall be identical or within design criteria limitations as determined by the Engineer.

D. The Engineer's decision on acceptance or rejection of substitutions will be final.

E. Substitution requests, if accepted, will be included in an addenda.

F. Approval of a substituted item or listing a substituted item as an accepted substitution does not modify or act as a waiver in any way, the requirements of the contract documents. See Section 26 05 07 Submittals for additional requirements on accepted substitution submittals, equipment, etc.

G. The naming of any manufacturer as an accepted substitution does not imply automatic approval as a substitution. It is the sole responsibility of the Contractor to ensure that any price quotations received and submittals made are for systems that meet or exceed these specifications.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 26 05 09 - REFERENCE STANDARDS AND REGULATORY REQUIREMENTS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Reference Standards and Regulatory Requirements applicable to Divisions 26, 28 sections.

1.3 REFERENCES

A. The following references may be referenced within these specifications:

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
AHERA	Asbestos Hazard Emergency Response Act
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	ASME International American Society of Mechanical Engineers International
ASTM	ASTM International American Society for Testing and Materials International
BICSI	BICSI, Inc.
BOCC	Board of County Commissioners Volusia County
CODB	City of Daytona Beach
CRSI	Concrete Reinforcing Steel Institute
DCA-ADAIA	Department of Community Affairs - Florida Americans with Disabilities Accessibility Implementation Act
DCA-ADAAG	Department of Community Affairs - Florida Americans with Disabilities Act Accessibility Guidelines
DCA-ARM	Department of Community Affairs - Accessibility Requirements Manual

DMS/DOC	Department of Management Services Division of Communications
DOCA or DCA	State of Florida Department of Community Affairs
EIA/TIA	Electronics Industries Alliance/Telecommunications Industry Association
EJCDC	Engineers Joint Contract Documents Committee American Consulting Engineers Council
FAC	Florida Administrative Code
FBC	Florida Building Code
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FFPC	Florida Fire Prevention Code
FGC	Florida Building Code (Fuel Gas)
FLA	State of Florida
FMC	Florida Building Code (Mechanical)
FMG	FM Global (formerly Factory Mutual System)
FPC	Florida Building Code (Plumbing)
FS	Florida Statutes
ICC	International Code Council
IEEE	Institute of Electrical and Electronics Engineers, Inc
IES	Illumination Engineering Society of North America
ICPEA	International Power Cable Engineer's Association
LPCR	Local Power Company Requirements
LPI	Lightning Protection Institute
LTCR	Local Telephone Company Requirements
NEC	National Electrical Code
NECPA	National Energy Conservation Policy Act
NESC	National Electrical Safety Code

NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NHRF	Nursing Homes and Related Facilities
OEF	Office of Educational Facilities
OSHA	Occupational Safety and Health Act
SBE	State Board of Education
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UFSRS	Uniform Fire Safety Rules and Standards of Insurance Division of State Fire Marshal
UL	Underwriters Laboratories, Inc.
VCS	Volusia County Schools
VCSB	Volusia County School Board
SREF	Florida Building Code Section 453 State Requirements for Educational Facilities

1.4 REGULATORY REQUIREMENTS

A. Conform to all the applicable requirements of the following codes, standards, guidelines, etc.. If there should be conflicting requirements between these codes, standards, guidelines, etc., the more or most stringent requirement shall apply that does not violate any codes or laws.

1. Standards and Miscellaneous Codes/Requirements (Comply with latest edition or notice available unless otherwise adopted by Authority Having Jurisdiction):

a) Americans with Disabilities Act of 1990, as amended
b) ADA Standards for Accessible Design, 2010
c) American National Standards Institute
d) American Society of Heating, Refrigerating and Air Conditioning Engineers
e) American Society of Mechanical Engineers
f) American Society for Testing and Materials
g) Concrete Reinforcing Steel Institute
h) Department of Community Affairs
i) Electronics Industries Association/Telecommunications Industry Association
j) Florida Building Code, 8th edition 2023
k) Florida Fire Prevention Code, 8th edition 2023
l) Institute of Electrical and Electronics Engineers
m) Illumination Engineering Society
n) Local Power Company Requirements
o) Lightning Protection Institute
p) Local Telephone Company Requirements
q) National Electrical Code, 2020 edition

r) National Energy Conservation Policy Act
s) National Electrical Safety Code
t) National Electrical Manufacturers Association
u) NFPA 1 Fire Code, 2021 edition with Florida Amendments
v) NFPA 101 Life Safety Code, 2021 edition with Florida Amendments
w) Occupational Safety and Health Act
x) Safety Code for Elevators and Escalators
A17.1 (2019)
y) Safety Code for Existing Elevators and Escalators
A17.3 (2020)
z) Sheet Metal and Air Conditioning Contractors
aa) Underwriters Laboratories, Inc.
bb) Applicable Federal, State, Local Codes, Laws and Ordinances, Florida Statutes and Referenced Codes/Standards

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 26 05 10 - ELECTRICAL SYMBOLS AND ABBREVIATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Symbols and abbreviations specifically applicable to all Division 26 sections in addition to those in Division 01 - General Requirements and any supplemental requirements/conditions.

1.3 SYMBOLS

A. In general, the symbols used on the drawings conform to the Standard Symbols of the Institute of Electrical and Electronic Engineers with the exception of special systems or agencies as hereinafter noted.

Corps of Engineers.

Special Symbols as shown in schedules or legends.

1.4 ABBREVIATIONS

A. The following abbreviations or initials are used.

A/C	Air Conditioning
AFD	Adjustable Frequency Drive
A.C.	Alternating Current
ADD #	Addendum #
A/E	Architect/Engineer (or Engineer when Architect not applicable)
AFF	Above Finished Floor
AFG	Above Finished Grade
AHU	Air Handler Unit
AIC	Amps Interrupting Capacity
AL	Aluminum
ALT	Alternate
AMP	Ampere
ANSI	American National Standards Institute
AWG	American Wire Gauge
@	At
B.C.	Bare Copper
BIDS	Baggage Information Display System
BLDG	Building
BRKR	Breaker
BTU	British Thermal Unit
BTUH	BTU Per Hour
C.	Conduit
C.B.	Circuit Breaker
CBM	Certified Ballast Manufacturers
cd	Candela
CFM	Cubic Feet per Minute
CKT.	Circuit
CKT BRKR	Circuit Breaker
C/L	Center Line

Clg.	Ceiling
Comp.	Compressor
Conn.	Connection
Cond.	Condenser
Cont.	Continuous
C.R.I.	Color Rendering Index
C.T.	Current Transformer
CU.	Copper
C.U.	Compressor Condenser Unit
C.W.	Cold Water
D.B.	Direct Burial
D.C.	Direct Current
Disc.	Disconnect
DN.	Down
DPST	Double Pole Single Throw
DWG	Drawing
E.C.	Electrical Contractor (or General Contractor)
ELEV.	Elevator
EMT	Electrical Metallic Tubing
Equip.	Equipment
EST	Estimate
FAAP	Fire Alarm Annunciator Panel
FACP	Fire Alarm Control Panel
FARP	Fire Alarm Remote Panel
FATC	Fire Alarm Terminal Cabinet
FCCP	Fire Alarm Command Center Panel
FHC	Fire Hose Cabinet
FIDS	Flight Information Display System
FLA	Full Load Amperes
FT.	Feet
FLR	Floor
F.C.	Footcandles
FVNR	Full Voltage Non-Reversing
GAL.	Gallon
Galv.	Galvanized
GPH	Gallons per Hour
GPM	Gallons per Minute
GFI	Ground Fault Interrupting
GRS	Galvanized Rigid Steel Conduit
GND.	Ground
HTG	Heaters
HT	Height
HZ	Hertz (Cycles)
HPF	High Power Factor
HPS	High Pressure Sodium
HP	Horsepower
HR	Hour
H.S.	Heat Strip
IMC	Intermediate Metallic Conduit
Incand.	Incandescent
in.	Inches
J.B.	Junction Box

KVA	KiloVolt Ampere
KW	Kilowatts
KWH	Kilowatt Hour
K	Kelvin
L.L.D.	Lamp Lumen Depreciation
LED	Light Emitting Diode
LIU	Light Interface Unit (Fiber Optic Patch Panel)
LT.	Light
LTG.	Lighting
LTS.	Lights
L.P.F.	Low Power Factor
M.C.B.	Main Circuit Breaker
M.L.O.	Main Lugs Only
Maint.	Maintenance
MH.	Manhole; Metal Halide
MFG.	Manufacturer
max.	Maximum
MCM/KCMIL	Thousand Circular Mils
MPH	Miles Per Hour
MM	Millimeter
Min.	Minimum
MCP	Motor Circuit Protector
MTD	Mounted
N.	Neutral
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
N.P.T.	National Pipe Thread
NF	Non Fused
N.C.	Normally Closed
N.O.	Normally Open
NIC.	Not in Contract
No.	Number
OB	Outlet Box
OD	Outside Diameter
O.L.	Overload
OLS	Overloads
OS&Y	Outside Screw and Yoke (Sprinkler)
%	Percent
Ø	Phase
P.	Pole
PL	Compact Fluorescent Lamp
P.T.	Potential Transformer
PSF	Pounds per Square Foot
PSI	Pounds per Square Inch
PB	Pullbox
PNL	Panel
PR	Pair
Pri.	Primary
PTZ	Pan, Tilt, Zoom
PVC	Polyvinyl Chloride
Recept.	Receptacle

RPM	Revolutions per Minute
R.S.	Rapid Start
SCA	Short Circuit Amps
Sec.	Secondary
SHT	Sheet
S/N	Solid Neutral
SPST	Single Pole Single Throw
SF	Square Foot
SW.	Switch
SWBD	Switchboard
Sys.	System
THHN; THWN	Nylon Jacketed Wire
TSP	Twisted Shielded Pair
TTB	Telephone Terminal Board
TTC	Telephone Terminal Cabinet
TV	Television
TVTC	Television Terminal Cabinet
TVEC	Television Equip. Cabinet
TYP	Typical
Temp.	Temperature
U.L.	Underwriters' Laboratories
UTP	Unshielded Twisted Pair
VFD	Variable Frequency Drive
VHF	Very High Frequency
VHO	Very High Output
V	Volt
VA	Volt Amperes
Vol.	Volume
W	Wire
W.P.	Weatherproof
XFMR	Transformer
Y	Wye
Yd.	Yard
Yr.	Year
3R	Rainproof
4X	Stainless Steel Dust-tight, Watertight

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 26 05 19 - BUILDING WIRE AND CABLE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for provision and installation of building wire and cable.

B. Provide all equipment, labor, material, accessories, and mounting hardware to properly install all conductors and cables rated 600 volts and less for a complete and operating system for the following:

1. Building wire and cable.
2. Wiring connectors and connections.

C. No aluminum wiring shall be permitted.

D. All sizes shall be given in American Wire Gauge (AWG) or in thousand circular mils (MCM/kcmil).

1.3 REFERENCES:

A. ANSI/NFPA 70 National Electrical Code
B. UL 486A-486B

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Product Data: Submit catalog cut sheet showing, type and UL listing of each type of conductor, connector and termination.

B. Submit catalog cut sheet(s) showing each type of conductor is manufactured in the United States.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

B. All building wire and cable shall be manufactured in the United States.

1.7 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Conductor sizes are based on copper.

C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet project conditions.

D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.8 COORDINATION

A. Determine required separation between cable and other work.

B. Determine cable routing to avoid interference with other work.

PART 2 - PRODUCTS

2.1 BUILDING WIRE AND CABLE

A. Description: Single conductor insulated wire.

B. Conductor: Stranded Copper.

C. Insulation Voltage Rating: 600 volts.

D. Insulation: ANSI/NFPA 70,

1. #10 AWG and smaller: Type THHN/THWN and XHHW.

a) THHN/THWN-2 insulation is acceptable substitute for THHN/THWN insulation.

b) XHHW-2 insulation is acceptable substitute for XHHW insulation.

2. #8 AWG and larger: Type THHN/THWN-2 and XHHW-2.

E. Acceptable Manufacturers:

1. Southwire

2. Encore

PART 3 - EXECUTION

3.1 GENERAL

A. Install products in accordance with manufacturer's instructions.

B. Conductors #10 AWG or #12 AWG shall be 600-volt type THWN/THHN unless noted otherwise, rated 90 degrees C. dry, 75 degrees C. wet.

C. Conductors #8 AWG and larger shall be Type THWN-2/THHN unless noted otherwise, rated 90 degrees C, wet or dry.

D. Use stranded conductors for all feeders and branch circuits including 10 AWG and 12 AWG.

E. Use conductor no smaller than 12 AWG for power and lighting circuits.

F. Neatly train and lace wiring inside boxes, equipment, and panelboards.

G. All conductors shall be installed in raceway.

H. Conductor sizes indicated on circuit homeruns or in schedules shall be installed over the entire length of the circuit, unless noted otherwise on the Drawings or in these Specifications.

I. Before installing raceways and pulling wire to any mechanical equipment, verify electrical characteristics with final submittal on equipment to assure proper number and AWG of conductors. (As for multiple speed motors, different motor starter arrangements, etc.).

J. Coordinate all wire sizes with lug sizes on equipment, devices, etc. Provide/install lugs as required to match wire size.

K. Where oversized conductors are called for (due to voltage drop, etc.) provide/install lugs as required to match conductors, or provide/install splice box, and splice to reduce conductor size to match lug size.

3.2 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that mechanical work likely to damage wire has been completed.

3.3 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.4 WIRING METHODS

A. Use only building wire type (THHN/THWN for #10 and #12 and THHN/THWN-2 for #8 and larger) insulation in raceway, unless noted otherwise.

B. Wiring in vicinity of heat producing equipment: Use only XHHW insulation in raceway.

C. Conductors installed within fluorescent fixture channels shall be Type THHN or XHHW rated 90 degrees C dry. Conductors for all other light fixtures shall have temperature ratings as required to meet the UL listing of the fixture; however, in no case shall the temperature rating be less than 90 degrees Centigrade. Remove incorrect insulation types in new work.

3.5 INTERFACE WITH OTHER PRODUCTS

A. Identify wire and cable under provisions of Section 26 05 53 Identification for Electrical Systems.

B. Identify each conductor with its circuit number or other designation indicated on Drawings.

C. Identify neutrals with its associated circuit number(s).

3.6 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of the General Requirements of the Contract Documents and Section 26 08 13 Tests and Performance Verification.

B. Inspect wire for physical damage and proper connection.

C. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.

D. Verify continuity of each branch circuit conductor.

3.7 VERTICAL RISERS

A. Provide vertical cable riser supports per NEC 300.19. Cable supports shall be O-Z/Gedney Type "S" or equal. These shall be located in accessible pullboxes of adequate size. Provide for adequate structural connection of cable supports to pullbox, which will transfer cable weight to building.

3.8 PULLING

A. No wire shall be pulled until the conduit system is complete from pull point to pull point and major equipment terminating conduits have been fixed in position.

B. Mechanical pulling devices shall not be used on conductors sized #8 and smaller. Pulling means which might damage the raceway shall not be used.

C. Use only powdered soapstone or other pulling lubricant acceptable to the Architect/Engineer. Compound or lubricant shall not cause the conductor or insulation to deteriorate.

D. All conductors to be installed in a common raceway shall be pulled together. The manufacturer's recommended pulling tensions shall not be exceeded.

E. Bending radius of insulated wire or cable shall not be less than the minimum recommended by the manufacturer.

F. Where communications type conductors are installed, special requirements shall apply as outlined under that specific system detail specifications.

3.9 CONTROL AND SIGNAL CIRCUITS

A. For control and signal circuits above 50 VAC, conductors shall be #14 AWG minimum size, Type XHHW or THWN-THHN as permitted by NFPA 70, within voltage drop limits, increased to #12 AWG as necessary for proper operation.

B. For control and signal circuits 50 VAC and below, conductors, at the Contractor's option, may be #16 AWG, 300 volt rated, PVC insulated, except where specifically noted otherwise in the Contract Documents.

C. Conductor insulation for fire alarm systems shall be as accepted by Code Inspection Authority only. Wire acceptance by the Architect/Engineer shall not supersede this final acceptance for conditions of this specific project.

D. Install circuit conductors in conduit.

E. Circuit conductors to be stranded.

3.10 COLOR CODING

A. All power feeders and branch circuits regardless of size shall be wired with color-coded wire with the same color used for a system throughout the building.

B. Unless otherwise accepted or required by Architect/Engineer to match existing, color-code shall be as follows:
Neutrals: 120/208V system white; 277/480V system natural grey
Ground Wire: green, bare
120/208V: Phase A black, Phase B red, Phase C blue
277/480V: Phase A brown, Phase B orange, Phase C yellow.

C. All switchlegs, other voltage system wiring, control and interlock wiring shall be color-coded other than those above.

3.11 TAPS/SPLICES/CONNECTORS/TERMINATIONS

A. Clean conductor surfaces before installing lugs and connectors.

B. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

C. Power and lighting conductors shall be continuous and unspliced where located within conduit. Splices shall occur within troughs, wireways, outlet boxes, or equipment enclosures where sufficient additional room is provided for all splices. No splices shall be made in in-ground pull boxes (without written acceptance of engineer).

D. Splices in lighting and power outlet boxes, wireway, and troughs shall be kept to a minimum. Pull conductors through to equipment, terminal cabinets, and devices.

E. No splices shall be made in junction box, and outlet boxes (wire No. 8 and larger) without written acceptance of Engineer.

F. No splices shall be made in communications outlet boxes, pull boxes or wireways (i.e., fire alarm, computer, telephone, intercom, sound system, etc.) without written acceptance of Engineer. Pull cables through to equipment cabinets, terminal cabinets and devices.

G. Allow adequate conductor lengths in all junction boxes, pull boxes and terminal cabinets. All termination of conductors in which conductor is in tension will be rejected and shall be replaced with conductors of adequate length. This requirement shall include the Contractor to provide

sleeve type vertical cable supports in vertical raceway installations, provided in pullboxes at proper vertical spacings.

H. A calibrated torque wrench shall be used for all bolt tightening.

I. Interior Locations:

1. All (non-electronic systems) copper taps and splices in No. 8 or smaller shall be fastened together by means of spiral wound "spring type" connectors. All taps and splices in wire larger than No. 8 shall be made with compression type connectors and taped to provide insulation equal to wire.

J. Light Poles:

1. Make splices, taps and terminations above grade in light pole hand holes. Do not splice any wire in ground or below finished grade. Terminations, taps and splices in No. 6 or smaller shall be fastened together by means of weatherproof silicone filled "spiral wound spring type" connectors.

K. Exterior Locations:

1. Make splices, taps and terminations above grade in splice or termination cabinets. Do not splice any cable in ground or below finished grade.

2. All taps and splices shall be made with compression type connectors and covered with Raychem heavywall cable sleeves (type CRSM-CT, WCSM or MCK) with type "S" sealant coating with sleeve kits as per manufacturer's installation instructions or be terminated/connected to terminal strips in above grade terminal boxes suitable for use.

3. Provide and install above grade termination cabinets sized to meet applicable codes and standards, where required for splicing.

END OF SECTION

SECTION 26 05 26 - GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes

1. Grounding electrodes and conductors.
2. Equipment grounding conductors.
3. Bonding.
4. Counterpoise System.

B. Provide all labor, materials, and equipment necessary to properly install a grounding system conductor in all new branch wiring and feeder installations, which shall be in full compliance with all applicable codes as accepted by the Authorities Having Jurisdiction. The secondary distribution system shall include a grounding conductor in all raceways in addition to the return path of the metallic conduit.

C. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of NEC 250, and state codes. Bonding conductor through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.

D. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors that run with feeders in PVC conduit outside of building(s) shall be bare only.

E. Provide and install all grounding and bonding as required by the National Electrical Code (NEC) including but not limited to NEC 250.

1.3 REFERENCES

A. ANSI/NFPA 70 National Electrical Code
B. NFPA 780 Standard for the Installation of Lightning Protection Systems
C. UL 467 Grounding and Bonding Equipment

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Submit catalog cut sheets/product data on:

1. Ground rods and couplings.
2. Mechanical connectors.

3. Ground wells.
4. Ground bus bars and associated components.
5. Counterpoise conductor.
6. Exothermic welding materials and molds.
7. Testing equipment and procedures

B. Product data shall prove compliance with specifications, National Electrical Code, manufacturers' specifications, and written installation data.

1.6 PROJECT RECORD DOCUMENTS

A. Submit record documents to accurately record actual locations of grounding electrodes.

B. Submit test results of each ground rod. See Section 26 08 13 Tests and Performance Verification of Electrical System.

PART 2 - PRODUCTS

2.1 ROD ELECTRODE

A. Material: Copper-clad steel.

B. Diameter: 5/8".

C. Length: 60' (minimum). Increase lengths as required to meet and achieve specified resistance.

2.2 MECHANICAL CONNECTORS

A. All grounding connectors shall be in accordance with UL 467 and UL listed for use with rods, conductors, reinforcing bars, etc., as appropriate.

B. Connectors and devices used in the grounding systems shall be fabricated of copper or bronze materials and properly applied for their intended use. Specified items of designated manufacturers indicate required criteria and equal products may be provided if approved. All connectors and devices shall be compatible with the surfaces being bonded and shall not cause galvanic corrosion by dissimilar metals. Materials in items not listed herein shall be of equal quality to the following specified items:

1. Lugs: Substantial construction, of cast copper or cast bronze, with "ground" (micro-flat) surfaces, twin clamp, two-hole tongue, equal to Burndy QQA Series or T&B equal. Lightweight and "competitive" devices shall be rejected.
2. Grounding and Bonding Bushings: Malleable iron, Thomas and Betts (T&B), or equal.
3. Piping Clamps: Burndy GAR-TC Series with two hole compression terminal or T&B equal.
4. Grounding Screw and Pigtail: Raco No. 983 or equal.
5. Building Structural Steel, Existing: Thompson 701 Series heavy duty bronze "C" clamp with two-bolt vise-grip cable clamp.

C. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.

2.3 WIRE

A. Material: Stranded copper.

B. Size: Size to meet NFPA 70 requirements as a minimum, increase size if called for on drawings, in these specifications, or as required for voltage drop.

C. Insulated THWN (or bare as noted elsewhere).

2.4 GROUNDING WELL COMPONENTS

A. Grass Non-Traffic Areas:

1. Well: Sleeve 18” long, diameter 12” (minimum.)
2. Well Cover: High-density plastic, composolite, or cast iron with legend "GROUND" embossed on cover.
3. Material: Structural plastic, composolite, or concrete.
4. Manufacturer: Carson 2200 Series or equal by Quazite, Harger or Glassmasters.
5. Increase depth, diameter or size as required to provide proper access at installed location.

B. Paving and Low Traffic Areas:

1. Well: Minimum 12” long by 12” wide by 18” deep with open bottom.
2. Well Cover: Traffic rated for use with "GROUND" embossed on cover. Cover shall have an ANSI Tier 15 load rating as a minimum. Cover shall be secured by 3/8” or larger stainless-steel bolts.
3. Material: Composolite or similar polymer concrete.
4. Manufacturer:
   a) Quazite
   b) Harger
   c) Glassmasters.
5. Increase depth, diameter or size as required to provide proper access at installed location.

PART 3- EXECUTION

3.1 GENERAL

A. Install products in accordance with manufacturer’s instructions.

B. Install grounding electrodes conductor, bonding conductors, ground rods, etc. with all required accessories.

C. Grounding shall meet (or exceed as required to meet these specifications) all the requirements of the NEC, the NFPA, and applicable standards of IEEE.

D. Where there is a conflict between these specifications and the above applicable codes/standards, or between this section of these specifications and other sections, then the most stringent or excessive requirement shall govern. Where there is an omission of a code/standard requirement in these specifications, then the code/standard requirements shall be complied with.

E. Requirement in these specifications to comply with a specific code/standard article, etc. is not to be construed as deleting of requirements of other applicable codes/standards and their articles, etc.

3.2 GROUNDING ELECTRODES

A. All connections shall be exothermic welded unless otherwise noted herein. All connections above grade and in accessible locations may be by exothermic welding or by braising or clamping with devices UL listed as suitable for use except in locations where exothermic welding is specifically specified in these specifications or called for on Drawings.

B. Each rod shall be die stamped with identification of manufacturer and rod length.

C. Install rod electrodes at locations indicated and/or as called for in these specifications.

D. Ground Resistance:

1. Main Electrical Service (to each building) and Generator Locations:

a) Grounding resistance measured at each main service electrode system and at each generator electrode system shall not exceed 5 ohms.

2. Other Locations:

a) Resistance to ground of all non-current carrying metal parts shall not exceed 5 ohms measured at motors, panels, busses, cabinets, equipment racks, light poles, transformers, and other equipment.

3. Resistance called for above shall be maximum resistance of each ground electrode prior to connection to grounding electrode conductor. Where ground electrode system being measured consists of two or more ground rod electrodes then the resistance specified above shall be the maximum resistance with two or more rods connected together but not connected to the grounding electrode conductor.

E. Install additional rod electrodes as required to achieve specified resistance to ground (specified ground resistance is for each ground rod location prior to connection to ground electrode conductor). Depending on soil condition, etc. of ground rod locations it has been found that the ground rod lengths required to achieve the specified resistance may range from the minimum specified length to up to 80’ or more in length.

F. Provide grounding well with cover at each rod location. Install grounding well top flush with finished grade.

G. Verify that final backfill and compaction has been completed before driving rod electrodes.

H. Install ground rods not less than 1’ below grade level and not less than 2’ from structure foundation.

3.3 GROUNDING ELECTRODE CONDUCTORS

A. Conductor shall be sized to meet (or exceed as required to meet these specifications and/or Drawings) the requirements of NEC 250.

3.4 EQUIPMENT GROUNDING CONDUCTOR

A. Grounding conductors shall be provided with every circuit to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250.

B. At every voltage level, new portions of the electrical power distribution system shall be grounded with a dedicated copper conductor, which extends from termination back to power source in supply panelboard.

C. Provide separate, insulated (bare if with feeder in PVC conduit outside of building(s)) conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

D. Except as otherwise indicated, each feeder raceway on the load side of the service entrance shall contain a ground conductor sized as indicated and where not shown shall be sized to meet (or exceed as required to meet these specifications and/or drawings) the requirements of NEC 250. Conductor shall be connected to the equipment grounding bus in switchboards and panelboards, to the grounding bus in all motor control centers, and as specified, to lighting fixtures, motors and other types of equipment and outlets. The ground shall be in addition to

the metallic raceway and shall be properly connected thereto, using a lug device located within each item enclosure at the point of electric power connections to permit convenient inspection.

E. Provide green insulated ground wire for all grounding type receptacles and for equipment of all voltages. In addition to grounding strap connection to metallic outlet boxes, a supplemental grounding wire and screw equal to Raco No. 983 shall be provided to connect receptacle ground terminal to the box.

F. All plugstrips and metallic surface raceway shall contain a green insulation ground conductor from supply panel ground bus connected to grounding screw on each receptacle in strip and to strip channel. Conductor shall be continuous.

G. Where integral grounding conductor is specified elsewhere in bus duct construction, provide equivalent capacity conductor from supply switchboard or panelboard grounding bus to the bus duct grounding conductor. Bond integral conductor to bus duct enclosure at each tap and each termination.

H. All motors, all heating coil assemblies, and all building equipment requiring flexible connections shall have a green grounding conductor properly connected to the frames and extending continuously inside conduit with circuit conductors to the supply source bus with accepted connectors regardless of conduit size or type. This shall include Food Service equipment, Laundry equipment, and all other "Equipment By Owner" to which an electric conduit is provided under this Division.

3.5 MAIN ELECTRICAL SERVICE

A. Complete installation shall meet and exceed the requirements of the NEC 250.

B. Artificial electrodes shall be provided for the main service in sufficient number and configuration to secure resistance specified.

C. Provide and bond to all of the following:

1. Ground rods.
2. Metal water pipe (interior and exterior to building).
3. Building metal frame, structural steel and/or reinforced structural concrete.
4. All piping entering or leaving all buildings (including chilled water piping).
5. Encased Electrodes.
6. Site distribution counterpoise ground system.

D. A main ground, bare copper conductor, sized per applicable table in NEC 250, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to the building steel in respective building. This ground conductor shall also be run individually from the main switchgear and be bonded to the main water service ahead of any union in pipe and must be metal pipe of length and location as acceptable by authorities having jurisdiction. Provide properly sized bonding shunt around water meter and/or dielectric unions in the water pipe. Also required is the same size ground wire to ground rod electrode as called for below:

1. Three 60’ ground rods in a delta configuration at no less than 60’ spacing driven to a minimum depth of 60’ plus 1’ below grade.
2. Bond ground rod electrodes together with a bare copper ground conductor that matches size required by applicable table in NEC 250, but in no case less than #2/0.
3. Provide additional rod electrodes as required to achieve specified ground resistance.

E. Ground/bond neutral per NEC 250.

F. A main ground, bare copper conductor, sized per applicable table in NEC 250, but in no case less than #2/0, shall be run in conduit from the main switchgear of each building to a concrete encased electrode per NEC 250.52(A)(3).

1. For new buildings: Provide and install and bond to concrete encased electrode in compliance with the NEC.

2. For existing buildings: Bond to existing concrete encased electrode when available.

G. Bond grounding electrodes to site counterpoise grounding system.

H. Provide and install ground bus bar on wall near main service disconnect/switchboard. Connect to ground bar in disconnect/switchboard bonded to switchboard/disconnect enclosure/neutral with copper grounding conductor sized per applicable table in NEC 250.

I. Bond to ground ring where provided.

3.6 TRANSFORMER GROUNDING

A. Ground all transformers and enclosures of 120/208V and 277/480V "separately derived systems" as specified herein.

1. Ground per NEC 250 and these specifications.

2. Bond neutral to transformer frame/enclosure and the equipment grounding conductors of the derived system with copper ground conductor sized per applicable table in NEC 250.

3. Connect transformer neutral/ground to grounding electrode per NEC 250 with grounding electrode conductor sized per applicable table in NEC 250.

4. In addition to connection to grounding electrode conductor called for above (i.e. per NEC 250) provide, install and connect supplemental grounding electrode as follows:

a) Where grounding required per NEC 250 is to building steel/structure, supplement this grounding with connection to nearest available effectively grounded metal water pipe.

b) Where grounding connection required per NEC 250 is to grounded metal water pipe, supplement this grounding with connection to building steel/structure in addition to any other available electrode specified in NEC 250.

c) Where supplemental grounding electrodes required above is a ground rod electrode, provide, install and connect two or more 60’ ground rod electrodes at no less than 60’ spacing, driven vertical to a minimum depth of 60’ plus 1’ below grade.

5. Where neither building steel nor water pipe grounding electrodes are available (i.e. exterior locations with no available water pipe electrode) provide two ground connections: each to two or more 60’ ground rod electrodes at no less than 60’ spacing, driven vertical to a minimum depth of 60’ plus 1’ below grade.

6. Where transformer is mounted exterior to building one of the two ground electrodes required shall be ground rod electrode as called for in paragraph 5. above. This ground rod electrode shall also be connected to counterpoise system (wherever counterpoise system is available).

7. Ground to water system service pipe as required by NEC 250.

B. Provide additional ground electrodes as required to achieve specified ground resistance.

C. Where two or more ground electrodes are used at any one required ground location, they shall be bonded together with a copper ground conductor, sized to meet applicable table in NEC 250, but in no case less than #2/0.

D. Complete installation shall exceed the minimum requirements of NEC 250.

E. Equipment ground conductors shall be provided in addition to above grounding. See “Equipment Grounding Conductor.”

F. Provide and install ground bus bar on wall near transformer (or in associated electrical room for exterior mounted transformers). Connect to ground lug in transformer bonded to transformer enclosure/neutral with copper ground conductor sized per applicable table in NEC 250.

G. Multiple separately derived systems may be grounded as allowed in NEC 250.30(A)(4).

3.7 EXTERIOR GRADE (OR FREE-STANDING ABOVE GROUND) MOUNTED EQUIPMENT

A. General:

1. All equipment (including chillers, pumps, disconnects, starters, control panels, panels, etc) mounted exterior to building shall have their enclosures grounded directly to a grounding electrode at the equipment location in addition to the building equipment ground connection.

2. Bond each equipment enclosure, metal rack support, mounting channels, etc. to ground electrode system at each rack with an insulated copper ground conductor sized to match the grounding electrode conductor required by applicable table in NEC 250 based on equipment feeder size, but in no case shall conductor be smaller than #6 copper or larger than #2 copper. This connection is in addition to grounding electrode connections required for services.

B. Main electrical service rack mounted equipment.

1. Ground per “Main Electrical Service.”

2. Bond all metal parts as noted above.

C. Electrical sub service rack mounted equipment.

1. Ground per "Main Electrical Service,” except do not bond neutral to ground.

2. Bond all metal parts as noted above.

D. Electrical equipment connection rack mounted equipment.

1. Bond all metal parts as noted above.

E. Grounding electrodes (ground electrodes system) shall be:

1. Located at each rack location.

2. For service equipment: Ground electrode required per "Main Electrical Service.”

3. For equipment connection equipment: Two or more 60 ft. ground rods at no less than 60’ spacing, driven vertical to a minimum depth of 1’ below grade. Bond the two or more ground rods together with a size to meet applicable table in NEC 250, but no less than a #2 copper ground conductor. Provide additional rod electrodes as required to achieve specified ground resistance.

F. Complete installation shall exceed the minimum requirements of NEC 250 and, when applicable, NFPA 780.

3.8 LIGHTING FIXTURES

A. All new fixtures in building interior, and exterior fixtures shall be provided with green grounding conductor, solidly connected to unit. Individual fixture grounds shall be with lug to fixture body, generally located at point of electrical connection to the fixture unit.

B. All suspended fixtures and those supplied through flexible metallic conduit shall have green ground conductor from outlet box to fixture. Cord connected fixtures shall contain a separate green ground conductor.

C. Pole Light Fixtures:

1. Metal Pole Light Fixtures:

a) Freestanding pole mounted lighting fixtures shall each have a Class I or Class II lightning protection main copper down conductor connected to grounding electrodes at base of pole.

b) Conductor shall be bonded to metal pole via UL Listed ground clamp suitable for use. Locate ground lug opposite to handhole (or adjacent if visible through handhole).

2. Concrete or Non-Metallic Pole:

a) Freestanding pole mounted lighting fixtures shall each have a Class I or Class II lightning protection main copper down conductor connected to grounding electrodes at base of pole.

b) Conductor shall be extended from grounding electrode to top of pole and terminate at the top of pole in a Class I or Class II copper lightning protection air terminal.

c) Each metal part of light fixture assembly, bracket, ballast cabinet, disconnect, transformer, etc. that is mounted to pole shall be bonded to down conductor.

3. Fixtures located on elevated roadway ramps shall be specially provided with a connection to lightning counterpoise grounding system, properly installed.

4. Grounding electrode(s) at each pole shall be connected (bonded) to site distribution counterpoise system.

5. Grounding Electrodes:

a) Two or more 10’ ground rods at no less than 10’ spacing shall be driven vertically to a minimum depth of 10’ plus 1’ below grade.

b) Bond the two or more ground rod electrodes together with a Class I or Class II lightning protection main copper conductor.

c) Provide additional rod electrodes as required to achieve specified ground resistance.

d) The two or more grounding rod electrodes shall be installed at each light pole.

6. Installation shall exceed minimum requirements of NFPA 780.

3.9 PULLBOX, MANHOLE, HANDHOLE GROUNDING.

A. One 60’ ground rod electrode shall be driven vertically to a minimum depth of 60’ plus 1’ below grade in each manhole, handhole or pullbox (in ground).

B. The complete installation shall exceed the minimum requirements of the NEC.

C. Provide additional ground rod electrodes as required to provide resistance called for herein.

D. Where more than one ground rod electrode is required bond the two or more ground rod electrodes together with a copper ground conductor.

E. Bond to counterpoise system (whenever counterpoise system is provided.)

F. Bond grounding electrode to all exposed metal parts of manhole, handhole, and pullbox (including metal cover) with #6 copper ground conductor. Connect to ground rod electrode with

exothermic weld. Connect to metal cover with exothermic weld. Connect to other metal parts with exothermic weld or UL accepted grounding clamp. Provide 3' or more slack ground cable on cover connection as required to facilitate removal of cover.

3.10 MISCELLANEOUS GROUNDING CONNECTIONS

A. Provide bonding to meet regulatory requirements.

B. Required connections to building steel shall be with UL accepted non-reversible crimp type ground lugs exothermically welded to bus bar that is either exothermically welded to steel or bolted to steel in locations where weld will affect the structural properties of the steel. Required connections to existing building structural steel purlins/I beams shall be with heavy duty bronze "C" clamp with two bolt vise-grip cable clamp.

C. Grounding conductors shall: be installed to permit the shortest and most direct path from equipment to ground; be installed in conduit; be bonded to conduit at both ends when conduit is metal; have connections accessible for inspection; and made with accepted solderless connectors brazed (or bolted) to the equipment or to be grounded; in NO case be a current carrying conductor; have a green jacket unless it is bare copper; be run in conduit with power and branch circuit conductors. The main grounding electrode conductor shall be exothermically welded to ground rods, water pipe, and building steel.

D. All surfaces to which grounding connections are made shall be thoroughly cleaned to maximum conductive condition immediately before connections are made thereto. Metal rustproofing shall be removed at grounding contact surfaces, for 0 ohms by digital Vm. Exposed bare metal at the termination point shall be painted.

E. All ground connections that are buried or in otherwise inaccessible locations, shall be welded exothermically. The weld shall provide a connection which shall not corrode or loosen and which shall be equal or larger in size than the conductors joined together. The connection shall have the same current carrying capacity as the largest conductor.

F. Install ground bushings on all metal conduits entering enclosures where the continuity of grounding is broken between the conduit and enclosure (i.e. metal conduit stub-up into a motor control center enclosure or at ground bus bar). Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.

G. Install ground bushings on all metal conduits where the continuity of grounding is broken between the conduit and the electrical distribution system (i.e. metal conduit stub-up from wall outlet box to ceiling space. Provide an appropriately sized bond jumper from the ground bushing to the respective equipment ground bus or ground bus bar.

H. Each feeder metallic conduit shall be bonded at all discontinuities, including at switchboards and all subdistribution and branch circuit panels with conductors in accordance with applicable table in NEC 250 for parallel return with respective interior grounding conductor.

I. Grounding provisions shall include double locknuts on all heavywall conduits.

J. Bond all metal parts of pole light fixtures to ground rod at base.

K. Install grounding bus in all existing panelboards of remodeled areas, for connection of new grounding conductors, connected to an accepted ground point.

L. Where reinforced concrete is utilized for building grounding system, proper reinforced bonding shall be provided to secure low resistance to earth with "thermite" type devices, and #10AWG wire ties shall be provided to not less than ten full length rebars which contact the connected rebar (by Division 26 Contractor). Provide size and length of rod to meet NEC requirements.

3.11 COUNTERPOISE SYSTEM

A. Install counterpoise and ground over all sections of underground ductbanks, conduits, or cables outside (exterior) to building.

B. No. 2 bare stranded copper counterpoise shall be run 6” above all underground duct banks, conduits and cables outside (exterior) to building.

C. Provide one counterpoise conductor for ductbanks (or conduit groupings) 12” wide or less. Provide two counterpoise conductors above outside edge of ductbank (or conduit groupings) over 12” wide.

D. Counterpoise shall run to building and be grounded at each building to the main building electrical service ground rod electrode (exterior to building). Counterpoise shall be bonded to ground rod at all light poles, pullboxes, manholes, handholes and at each building. Provide and install appropriate ground rod every 150’ length of counterpoise conductor (see "Grounding Electrodes.”) Counterpoise conductor shall not be run into interior of building. Route counterpoise underground around exterior perimeter of building to main service ground rod installation.

3.12 TESTING AND REPORTS

A. Raceway Continuity: Metallic raceway system as a component of the facilities ground system shall be tested for electrical continuity. Resistance to ground throughout the system shall not exceed specified limits.

B. Ground resistance measurements shall be made on each system utilized in the project. The ground resistance measurements shall include building structural steel, driven grounding system, water pipe grounding system and other accepted systems as may be applicable. Ground resistance measurements shall be made in normally dry weather, not less than twenty-four hours after rainfall, and with the ground under test isolated from other grounds and equipment. Resistances measured shall not exceed specified limits.

C. Upon completion of testing, the testing conditions and results shall be certified by the Contractor and submitted to the Architect/Engineer as called for in Section 26 08 13 Tests and Performance Verification.

3.13 INTERFACE WITH OTHER PRODUCTS

A. Interface with site grounding system.

3.14 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

END OF SECTION

SECTION 26 05 29 - HANGERS AND SUPPORTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Conduit and equipment supports.
2. Anchors and fasteners.

B. Furnish and install all supports, hangers and inserts required to mount fixtures, conduit, cables, pullboxes and other equipment furnished under this Division.

1.3 REFERENCES

A. NECA National Electrical Contractors Association

B. ANSI/NFPA 70 National Electrical Code

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

PART 2- PRODUCTS

2.1 PRODUCT REQUIREMENTS

A. Materials and Finishes: Provide corrosion resistance.

B. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Provide anchors, fasteners, and supports in accordance with NECA National Electrical Installation Standards.

C. Do not fasten supports to pipes, ducts, mechanical equipment or conduit.

D. Do not use spring steel clips and clamps.

E. Do not use gas or powder-actuated anchors.

F. Obtain permission from A/E before drilling or cutting structural members.

G. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.

H. Install surface-mounted cabinets and panelboards with minimum of four anchors.

I. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1” off wall.

J. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

K. All items shall be supported from the structural portion of the building, except standard ceiling-mounted lighting fixtures, and small devices may be supported from ceiling system where permitted by Ceiling Contractor, however, no sagging of the ceiling will be permitted. Wire shall not be used as a support. Boxes and conduit shall not be supported or fastened to ceiling suspension wires or to ceiling channels.

L. This Contractor shall lay out and install his work in advance of the laying of floors or walls, and shall furnish and install all sleeves that may be required for openings through floors, wall, etc. Where plans call for conduit to be run exposed, this Contractor shall furnish and install all inserts and clamps for the supporting of conduit. If this Contractor does not properly install all sleeves and inserts required, he will be required to do the necessary cutting and patching later at his own expense to the satisfaction of the Architect.

M. All conduits shall be securely fastened in place per NEC. Hangers, supports or fastenings shall be provided at each elbow and at the end of each straight run terminating at a box or cabinet. The use of perforated iron for supporting conduits will not be permitted. The required strength of the supporting equipment and size and type of anchors shall be based on the combined weight of conduit, hanger and cables. Horizontal and vertical conduit runs may be supported by one-hole malleable straps, clamp-backs, or other accepted devices with suitable bolts, expansion shields (where needed) or beam-clamps for mounting to building structure or special brackets.

N. Where two or more conduits are run parallel or in a similar direction, they shall be grouped together and supported by means of Kindorf type trapeze hanger system (racking) consisting of concrete inserts, threaded solid rods, washers, nuts and galvanized "L" angle iron, or Unistrut cross members. These conduits shall be individually fastened to the cross member of every other trapeze hanger with galvanized cast one-hole straps, clamp backs, bolted with proper size cadmium machine bolts, washers and nuts. If adjustable trapeze hangers are used to support groups of parallel conduits, U-bolt type clamps shall be used at the end of a conduit run and at each elbow. J-bolts, or accepted clamps, shall be installed on each third intermediate trapeze hanger to fasten each conduit.

O. Hanger assemblies shall be protected after fabrication by galvanizing. Hangers for PVC coated conduit shall be PVC coated galvanized conduit or stainless steel. All hangers exterior to the building shall be stainless steel.

P. On concrete or brick construction, insert anchors shall be installed with round head machine screws. In wood construction, round head screws shall be used. An electric or hand drill shall be used for drilling holes for all inserts in brick, concrete or similar construction. In brick, inserts shall be near center of brick, not near edge or in joint. Where steel members occur, same shall be drilled and tapped, and round head machine screws shall be used. All screws, bolts, washers, etc., used for supporting conduit or outlets shall be fabricated from rust-resisting metal, or accepted substitution. No tapcons permitted whatsoever. Fasteners similar to tapcon self-tapping power-driven type are not acceptable. Plastic and metal anchors are acceptable. All hardware exterior to the building shall be stainless steel.

Q. Anchors that do not readily permit removal/replacement of the attached item are not acceptable. Unacceptable anchors include: pin grips, drive pin anchors, split drive anchors, spike anchors, and similar.

R. Conduit supporting devices such as spring type conduit clips manufactured by Caddy

Corporation may not be used.

S. Threaded rod hangers shall be galvanized continuous thread type, minimum 3/8" diameter.

T. Concrete/insert anchors, threaded rods, or similar fasteners installed on side or bottom of prestressed beams are not acceptable.

U. Treat cut ends of support struts, support rods, conduit threads, etc. zinc rich coating or as required to prevent corrosion.

END OF SECTION

SECTION 26 05 33 - CONDUIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for electrical conduit.

B. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:

1. Rigid Metal Conduit (RMC) NEC 344
2. Rigid Metal Conduit PVC Coated (RMC-PVC Coated) NEC 344
3. Flexible Metal Conduit (FMC) NEC 348
4. Liquidtight Flexible Metal Conduit (LFMC) NEC 350
5. Electrical Metallic Tubing (EMT) NEC 358
6. Rigid Polyvinyl Chloride Conduit (Type PVC) NEC 352
7. Fittings and Conduit Bodies

1.3 REFERENCES

A. ANSI C80.1 Electrical Rigid Steel Conduit, Zinc Coated
B. ANSI C80.3 Electrical Metallic Tubing, Zinc Coated
C. ANSI/NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
D. ANSI/NFPA 70 National Electrical Code
E. NECA Standard Practice of Good Workmanship in Electrical Contracting
F. NEMA RN 1 Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
G. NEMA TC 2 Electrical Polyvinyl Chloride (PVC) Conduit (EPC 40, EPC 80)
H. NEMA TC 3 Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 DESIGN REQUIREMENTS

A. Conduit Size: ANSI/NFPA 70. (See Drawings and this and other sections of these Specifications for additional requirements).

B. Raceways and conduits shall begin at an acceptable enclosure and terminate only in another such enclosure except conduit/raceway stub-outs.

C. A raceway shall be provided for all electrical power and lighting, and electrical systems unless specifically specified otherwise.

1.6 SUBMITTALS

A. Submit catalog cut sheet showing brand of conduit to be used and showing that conduit is UL listed and labeled and manufactured in the United States.

B. Submit catalog cut sheet on all types of conduit bodies and fittings.

C. Product data shall be submitted for acceptance on:

1. Conduits.
2. Conduit straps, hangers and fittings.
3. PVC solvent(s) and bending box.
4. Fitting entering and leaving the ground or pavement
5. Coatings.
6. Strap wrenches that will be utilized to minimize damage to conduit finishes.

D. Submit UL listed fire and smoke stopping assemblies for each applicable application.

E. Product data shall prove compliance with Specifications, National Electrical Code, National Board of Fire Underwriters, manufacturers' specifications and written installation data.

1.7 PROJECT RECORD DOCUMENTS

A. Submit record documents to accurately record actual routing of conduits larger than 1.25".

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, properly store and protect products at the site.

B. Accept conduit on site. Inspect for damage.

C. Protect conduit from sun, rain, corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

1.9 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 - PRODUCTS

2.1 GENERAL

A. All conduits shall bear UL label or seal and shall be manufactured in the United States.
B. Conduit systems and all related fittings, boxes, supports, and hangers must meet all the requirements of national, state, and other federal codes where applicable.

2.2 MINIMUM TRADE SIZE

A. Homeruns and Branches Underground: 3/4" C.
B. Branches Aboveground: 1/2" C.

2.3 RIGID METAL CONDUIT

A. Comply with:
1. ANSI C80.1.
2. UL 6.
3. NEC 344.

B. Conduit material:
1. Zinc coated or hot dipped galvanized steel.

C. Fittings:
   1. Threaded.
   2. Insulated bushings shall be used on all rigid steel conduits terminating in panels, boxes, wire gutters, or cabinets, and shall be impact resistant plastic molded in an irregular shape at the top to provide smooth insulating surface at top and inner edge. Material in these bushings must not melt or support flame.
   3. Zinc plated or hot dipped galvanized malleable iron or steel.

D. Conduit Bodies:
   1. Comply with ANSI/NEMA FB 1.
   2. Threaded hubs.
   3. Zinc plated or hot-dipped galvanized malleable iron.

2.4 RIGID METAL CONDUIT PVC COATED

A. Comply with:
   1. UL 6.
   2. ANSI C80.1.
   3. NEC 344.
   4. NEMA RN1.

B. Conduit material: Hot-dipped galvanized rigid steel with external PVC coating, 40 mil thick.

C. Fittings:
   1. Threaded.
   2. Insulated bushings on terminations.
   3. Zinc plated or hot-dipped galvanized malleable iron or steel with external PVC coating, 40 mil thick.

D. Conduit Bodies:
   1. Comply With:
      a) ANSI/NEMA FB 1.
      b) Threaded hubs.
   2. Zinc plated or hot-dipped galvanized malleable iron with external PVC coating 40 mil thick.

2.5 FLEXIBLE METAL CONDUIT

A. Comply With:
   1. NEC 348.
   2. ANSI/UL 1.

B. Conduit Material:
   1. Steel, interlocked.

C. Fittings:
   1. ANSI/NEMA FB 1.
   2. ANSI/UL 514B.
   3. Malleable iron, zinc plated.
   4. Threaded rigid and IMC conduit to flexible conduit coupling.
   5. Direct flexible conduit bearing set screw type not acceptable.

2.6 LIQUID-TIGHT FLEXIBLE METAL CONDUIT

A. Comply with:
   1. NEC 350.
   2. ANSI/UL 360.

B. Conduit material:
   1. Flexible hot-dipped galvanized steel core, interlocked.

2. Continuous copper ground built into core up to 1-1/4” size.
3. Extruded polyvinyl gray jacket.

C. Fittings:
1. Threaded for IMC/rigid conduit connections.
2. Accepted for hazardous locations where so installed.
3. Provide sealing washer in wet/damp locations.
4. Compression type.
5. ANSI/NEMA FB 1.
6. ANSI/UL 514B.
7. Zinc plated malleable iron or steel.

2.7 ELECTRICAL METALLIC TUBING

A. Comply with:
1. UL 797.
2. ANSI C80.3.
3. NEC 358.
4. ANSI/UL 797.

B. Conduit material: Galvanized steel tubing.

C. Fittings:
1. ANSI/NEMA FB 1.
2. Set screw.
3. Zinc plated malleable iron or steel.
4. Concrete tight.

2.8 RIGID POLYVINYL CHLORIDE CONDUIT

A. Comply with:
1. NEMA TC 2.
2. UL 651.
3. NEC 352.

B. Conduit material:
1. Shall be high impact PVC, tensile strength 55 PSI, flexural strength 11000 PSI.

C. Fittings:
1. Comply with:
a) NEMA TC 3.
b) UL 514.

D. General:
1. UL listed and identified.
2. Conform to all national, state and local codes.
3. Manufacturer shall have 5 years experience in manufacturing PVC conduits.

2.9 EXPANSION FITTINGS

A. Expansion fittings shall be:
1. UL Listed, hot dipped galvanized inside and outside providing a 4” expansion chamber when used with rigid conduit, intermediate metal conduit and electrical metallic conduit, or:
2. Be polyvinyl chloride and shall meet the requirements of and as specified elsewhere for non-metallic conduit and shall provide a 6” expansion chamber.
3. Hot dipped galvanized expansion fitting shall be provided with an external braided grounding and bonding jumper with accepted clamps, UL listed for the application.
4. Expansion fitting, UL listed for the application and in compliance with the NEC without the

necessity of an external bonding jumper may be considered. Submit fitting with manufacturer's data and UL listing for acceptance prior to installation.

2.10 CONDUIT COATINGS FOR METAL CONDUITS BELOW GRADE

A. Coating shall be an ultra-high build, single-component coal tar mastic for protecting steel subject to aggressive conditions.

B. Coating shall be applied in two coats, achieving a minimum dry thickness of 25 mils.

C. Basis of Design:

1. Carboline: Bitumastic 50

2.11 COLD GALVANIZING COMPOUND

A. Coating shall be a coating that provides a dry film with a 93% pure zinc content.

B. Coating shall be applied in two in two light coats a few minutes apart and an additional two light coats after the initial coat has dried.

C. Basis of Design:

1. Rust-Oleum® Stops Rust® Cold Galvanizing Spray

PART 3 - EXECUTION

3.1 LOCATION REQUIREMENTS

A. Underground Installations:

1. Use rigid non-metallic conduit (PVC) only unless local Authority Having Jurisdiction or applicable codes/utility requirements, etc. require rigid steel conduit.

2. All conduits or elbows entering or leaving the ground shall be rigid steel conduit coated with asphaltic coating.

3. All underground raceways (with exception of raceways installed under floor slab) shall be installed in accordance with NEC 300.5 except the minimum cover for any conduit shall be 2' . Included under this Section shall be the responsibility for verifying finished lines in areas where raceways will be installed underground before the grading is complete.

4. Where rigid metallic conduit is installed underground as noted above it shall be coated with waterproofing black coal tar mastic before installation, and all joints shall be re-coated after installation.

5. PVC runs over 150' in length shall utilize rigid steel 90-degree elbows at each riser and at each change in direction. Elbows shall be coated with black mastic or PVC coating. Bond all metal elbows per NEC 250.80 and NEC 300.5.

6. All underground service lateral raceways shall be protected as required by NEC 300.5, including requirements for installation of warning tape.

B. In Slab Above or on Grade:

1. Use coated rigid steel conduit, coated intermediate metal conduit (if accepted) or rigid non-metallic conduit.
2. Coating of metallic conduit to be black asphaltic or PVC.

C. Penetration of Slab:

1. Exposed Location:
   a) Where penetrating a floor in an exposed location from underground or in slab, a black mastic coated or PVC coated galvanized rigid steel conduit shall be used.
2. Concealed Location:

a) Where penetrating a floor in a location concealed in block wall and acceptable by applicable codes, rigid non-metallic conduit may be used up to first outlet box, provided outlet box is at a maximum height of 48” above finished floor.
b) Where penetrating a floor in location other than that above use a black mastic coated or PVC coated galvanized rigid steel conduit.

D. Outdoor Location:
1. Above Grade:
a) Where penetrating the finished grade, black mastic coated or PVC coated galvanized rigid steel conduit shall be used.
b) In general all exterior conduit runs shall be rigid conduit with PVC coating and threaded connectors as specified elsewhere.
c) Electrical metallic tubing (thin wall) is permitted under roof, overhangs, etc. provided it is not subjected to physical damage and is not in direct contact or directly subject to exterior elements including sunlight.
2. Metal Canopies:
a) Conduit runs except for canopy lighting raceways are not to be run on (top or bottom) of metal canopies roof systems. All new conduit shown on or at these areas shall be run underground.
3. Roofs:
a) Conduit is not to be installed on roofs, without written authorization by A/E for specific conditions.
b) When accepted by written authorization conduit shall comply with the following:
1. Be PVC coated rigid galvanized metal conduit.
2. All fittings, etc., are to be PVC coated.
3. Conduit shall be supported above roof at least 6” using accepted conduit supporting devices. Refer to applicable sections of specifications on roofing, etc.
4. Supports to be fastened to roof using roofing adhesive or means as accepted by roofing contractor.

E. Interior Dry Locations:
1. Concealed: Use rigid metal conduit or electrical metallic tubing. Rigid non-metallic conduit may be used inside block walls up to first outlet to a maximum of 40” AFF except where prohibited by the NEC (Places of Assembly, etc.).
2. Exposed: Use rigid metal conduit or electrical metallic tubing. EMT may only be used where not subject to damage, which is interpreted by this specification to be above 90” AFF.
3. Concealed or Exposed Flexible Conduit:
a) Concealed flexible steel conduit or seal tight flexible steel conduit in lengths not longer than 6’ in length with a ground conductor installed in the conduit or an equipment ground conductor firmly attached to the terminating fitting at the extreme end of the flex. Exposed flexible steel conduit or seal tight flexible steel conduit shall not exceed 2’ in length, unless written authorization by A/E for specific conditions is granted.

F. Interior Wet and Damp Locations:
1. Use rigid galvanized steel or intermediate metal conduit.

G. Concrete Columns or Poured in-place Concrete Wall Locations:
1. Use rigid non-metallic conduit. Penetration shall be by accepted metal raceway (i.e. metal

conduit as required elsewhere in these specifications).

3.2 ADDITIONAL REQUIREMENTS FOR RIGID STEEL CONDUIT

A. Rigid steel conduit shall be cut and threaded with tools accepted for the purpose and by qualified personnel.

1. Accepted pipe vise.
2. Roller/bade type cutter or band saw.
3. Reamer capable of completely removing all ridges or burrs left by the cutter. Reaming with pliers is not acceptable.

B. Hangers shall be installed 8’ apart.

C. Conduits stubbed through floor slabs, above grade and not contained inside walls, shall be rigid galvanized metallic conduit.

D. Conduit threads and scratches in galvanizing shall be treated with not less than two coats of zinc rich coating.

3.3 ADDITIONAL REQUIREMENTS FOR EMT

A. Electrical metallic tubing (thin wall) may be installed inside buildings above ground floor where not subject to mechanical injury.

B. All cuts shall be reamed smooth and free of sharp and abrasive areas by use of an accepted reamer.

3.4 ADDITIONAL REQUIREMENTS FOR FLEXIBLE STEEL CONDUIT AND SEAL-TITE FLEXIBLE STEEL CONDUIT

A. Shall be properly grounded.

B. Shall be installed with accepted fittings.

3.5 ADDITIONAL REQUIREMENTS FOR RIGID NON-METALLIC CONDUIT (PVC CONDUIT)

A. Rigid non-metallic PVC conduit is not allowed anywhere inside building(s) except underground, in slab, in poured in place concrete, and in block wall up to first outlet box (if not over 40” AFF) if allowed by codes. Rigid non-metallic PVC conduit may be used exterior to building as stated elsewhere in these specifications.

B. Join rigid non-metallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

C. Threads will not be permitted on rigid non-metallic PVC conduit and fittings, except for rigid steel to rigid non-metallic PVC couplings.

D. Installation of rigid non-metallic PVC conduit shall be in accordance with manufacturer's recommendations.

E. Rigid non-metallic PVC conduit shall not be used to support fixture or equipment.

F. Field bends shall be made with accepted hotbox. Heating with flame and handheld dryers are prohibited.

3.6 SUPPORTS

A. Arrange supports to prevent misalignment during wiring installation.

B. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis

hangers, and split hangers.

C. Group related conduits; support using conduit rack. Construct rack using steel channel; (minimum 24", increase distance as required) provide space on each for 25 percent additional conduits.

D. Fasten conduit supports to building structure and surfaces under provisions of Section 26 05 29 Hangers and Supports.

E. Do not support conduit with wire, metal banding material, or perforated pipe straps. Remove wire used for temporary supports

F. Do not attach conduit to ceiling support wires.

G. Conduits shall not be supported from ceiling grid supports, plumbing pipes, duct systems, heating or air conditioning pipes, or other building systems.

H. Non-bolted conduit clamps, as manufactured Caddy Corp. are not accepted. Supporting conduit and boxes with wire is not accepted. All raceways except those from surface-mounted switches, outlet boxes or panels shall be supported with clamp fasteners with toggle bolt on hollow walls, and with lead expansion shields on masonry.

3.7 EXPANSION FITTINGS

A. Provide expansion fittings to accommodate expansion and deflection where conduit crosses control and expansion joints.

B. Expansion fittings shall be installed in the following cases: In each conduit run wherever it crosses an expansion joint in the concrete structure; on one side of joint with its sliding sleeve end flush with joint, and with a length of bonding jumper in expansion equal to at least three times the normal width of joints; in each conduit run which mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other; in straight conduit run above ground which is more than 100’ long and interval between expansion fittings in such runs shall not be greater than 100’.

3.8 GROUNDING

A. All raceways shall have a copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC codes.

B. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings.

C. Grounding conductors run with exterior/ underground feeders shall be bare only.

D. Grounding conductors run with feeders shall be bonded to portions of conduit that are metal by accepted ground bushings.

E. See other sections of these specifications for additional requirements.

F. Grounding conductors (including lightning protection down conductors) run in metal conduit shall be bonded to metal conduit at both ends.

3.9 FIRE AND SMOKE STOPPING

A. Contractor is to provide fire stopping and/or smoke stopping for all penetrations of existing (or new if applicable) fire or smoke barrier walls, chases, floors, etc. as required to maintain existing rating of floor, wall, chase, etc.

B. Install conduit to preserve fire resistance rating of partitions and other elements.

C. Install fireproofing material to maintain existing rating of floor, beams, etc. damaged or removed

by renovation.

D. Fire and smoke stopping material: A two-part silicone foam or a one-part putty, UL classified and FM accepted with flame spread of 0 and smoke development not to exceed 50 in compliance with ASTM E84. Material shall be suitable for penetration seals through fire-rated floors and walls when tested in compliance with ASTM E119. Material shall not melt or soften at high temperatures, shall be suitable for direct outdoor and ultraviolet exposures, shall cure to give a tight compression fit, and shall not produce toxic fumes. Material, when heated, shall expand to fill and hold penetration closed where burn out of cable insulation or ATC tubing occurs.

3.10 VERTICAL RACEWAYS

A. Cables in vertical raceways shall be supported per NEC 300.19. Provide and install supporting devices for cables, including any necessary accessible pullbox as required regardless if shown on drawings or not. Provide and install access panels as required. Coordinate location of pull box and access panel with architect prior to installation. This includes empty raceways for future use.

3.11 GENERAL

A. Install conduit in accordance with NECA Standard Practice of Good Workmanship in Electrical Contracting. Contractor shall layout all work prior to rough-in.

B. Utilize strap wrenches to tighten conduits and fittings so as to prevent damage to galvanized finishes.

C. Install nonmetallic conduit in accordance with manufacturer's instructions.

D. Arrange conduit to maintain headroom and present neat appearance.

E. Route conduit installed above accessible ceilings or exposed to view parallel or perpendicular to walls. Do not run from point to point.

F. Route conduit in and under slab from point-to-point.

G. Do not cross conduits in slab.

H. Maintain adequate clearance between conduit and piping.

I. Maintain 12” clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

J. Cut conduit square using saw or pipe cutter; de-burr cut ends.

K. Bring conduit to shoulder of fittings; fasten securely.

L. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

M. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2” size.

N. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

O. Provide and install pullboxes, junction boxes, fire barrier at fire rated walls etc., as required by NEC 300, whether shown on Drawings or not.

P. Provide continuous fiber polyline 1000 lb. minimum tensile strength pull string in each empty conduit except sleeves and nipples. This includes all raceways which do not have conductors furnished under this Division of the Specifications. Pullcord must be fastened to prevent

accidental removal. A phenolic or brass nameplate shall be attached to each end indicating the location of both ends of conduit as follows: THIS END = "LOCATION," OTHER END = "LOCATION."

Q. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

R. Ground and bond conduit under provisions of Section 26 05 26 Grounding and Bonding.

S. Identify conduit under provisions of Section 26 05 53 Identification for Electrical Systems.

T. Install all conduits concealed from view unless specifically shown otherwise on drawings

U. Rigid steel box connections shall be made with double locknuts and bushings.

V. All raceways shall be kept clear of plumbing fixtures to facilitate future repair or replacement of said fixtures without disturbing wiring. Except where it is necessary for control purposes, all raceways shall be kept away from items producing heat.

W. All raceway runs in masonry shall be installed at the same time as the masonry so that no face cutting is required, except to accommodate boxes.

X. All raceways shall be run from outlet to outlet as shown on the drawings, unless permission is granted to alter arrangement shown. If permission is granted arrangement shall be marked on field set of drawings as previously specified.

Y. Spare conduit stubs shall be capped and location and use marked with concrete marker set flush with finish grade. Marker shall be 6” round x 6” deep with appropriate symbol embedded into top to indicate use. Also, tag conduits in panels where originating.

Z. All conduit stubbed above floor shall be strapped to Kindorf channel supported by conduit driven into ground or tied to steel. Spare conduit stubs shall be capped with a UL listed and accepted cap or plug for the specific intended use and identified with ink markers as to source and labeled "Spare."

AA. All connections to motors or other vibrating equipment including dry type transformers or at other locations where required shall be made with not less than 12” of flexible steel conduit. Use angle connectors wherever necessary to relieve angle strain on flex conduit.

BB. Provide conduit seal-offs wherever conduit crosses obvious temperature changes (i.e. from inside to outside of coolers, freezers, etc.).

CC. Route conduit through roof openings for piping and ductwork or through suitable roof flashing or boot. Coordinate location with roofing installation specified under other Sections of these specifications.

DD. All raceways shall be run in neat and workmanlike manner and shall be properly in accordance with latest edition of NEC with accepted conduit clamps, hanger rods and structural fasteners.

EE. All raceway runs, whether terminated in boxes or not, shall be capped during the course of construction and until wires are pulled in, and covers are in place. No conductors shall be pulled into raceways until construction work which might damage the raceways has been completed.

FF. Electrical raceways shall be supported independently of all other systems and supports and shall in every case avoid proximity to other systems which might cause confusion with such systems or might provide a chance of electrolytic actions, contact with live parts or excessive induced heat.

END OF SECTION

SECTION 26 05 34 - OUTLET BOXES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes wall and ceiling outlet boxes (and/or small junction/pullboxes).

B. Provide and install all outlet boxes (flush or surface) complete with all accessories as required to facilitate installation of electrical system and as required by the NEC.

1.3 REFERENCES

A. ANSI/NEMA FB 1 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable

B. ANSI/NEMA OS 1 Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports

C. ANSI/NFPA 70 National Electrical Code

D. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Submit catalog cut sheets/product data on:

1. Surface cast boxes.

B. For pullboxes and junction boxes not covered in Section 26 05 35 Pull and Junction Boxes. Submit product data showing dimensions, covers, and construction.

1.6 PROJECT CONDITIONS

A. Verify field measurements are as shown on Drawings.

B. Verify locations of outlets in offices and work areas prior to rough-in.

C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose.

PART 2 - PRODUCTS

2.1 GENERAL

A. All boxes and fittings shall be labeled by Underwriters Laboratories.

B. Provide box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, outlet boxes, and corrosion-resistant knockout closures compatible with outlet boxes being used and meeting requirements of individual wiring situations.

C. All boxes shall be of the size and shape required by NFPA 70 for their respective locations.

D. Boxes shall be of such form and dimensions as to be adapted to the specific use and location,

type of device or fixtures to be used, and number and size of conductors and arrangement, size and number of conduits connecting thereto.

E. Handy boxes shall not be used.

F. Outlet boxes to be one-piece.

G. 4" x 4" boxes and 4 11/16" x 4 11/16" boxes used as junction boxes shall be one piece.

2.2 SHEET METAL OUTLET BOXES: ANSI/NEMA OS 1, GALVANIZED STEEL

A. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2” male fixture studs where required.

B. Concrete Ceiling Boxes: Concrete type.

C. Interior flush outlet boxes shall be galvanized steel constructed with stamped knockouts in back and sides, and threaded holes with screws for securing box coverplates or wiring devices. T&B, Steel City, Raco or accepted substitution.

D. Ceiling outlet boxes shall be 4" octagonal or 4" square X 1 1/2" deep or larger as required for number and size of conductors and arrangement, size and number of conduits terminating at them.

E. Switch, wall receptacle, telephone and other recessed wall outlet boxes in drywall shall be 4" square X 1 1/2" deep. For recessing in exposed masonry, provide one piece 4" square x 1-1/2" deep wall boxes with appropriate 4" square cut tile wall covers Steel City series #52-C-49/52-C-52 or accepted substitution. For recessing in furred-out block walls, provide 4" square box with required extension for block depth and required extension for drywall depth.

F. Sheet metal boxes shall be stainless steel fully weatherproof and watertight where installed outside.

2.3 CAST BOXES NEMA FB 1:

A. Interior surface outlet boxes and conduit bodies installed from 0" AFF to 90" AFF (including fire alarm device backbox) shall be the heavy cast aluminum or iron with external threaded hubs for power devices and threaded parts for low voltage devices; Appleton, Crouse Hinds or accepted substitution. Trim rings shall also be of one-piece construction.

B. Weatherproof outlet boxes shall be constructed of corrosion-resistant cast metal suited to each application with threaded conduit hubs, cast metal faceplate with spring-hinged waterproof cap suitably configured, gasket, and corrosion-proof fasteners.

C. Boxes to be Type FD unless otherwise noted on drawings.

D. Freestanding cast boxes are to be type FSY (with flange). Other cast zinc boxes are not acceptable.

PART 3 - EXECUTION

3.1 GENERAL

A. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

B. Install electrical boxes to maintain headroom and to present neat mechanical appearance.

C. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6” from ceiling access panel or from removable recessed luminaire.

D. Install boxes to preserve fire resistance rating of partitions and other elements.

E. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.

F. Use flush mounting outlet boxes in finished areas.

G. Do not install flush mounting boxes back-to-back in walls; provide minimum 6” separation. Provide minimum 24” separation in acoustic rated walls.

H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

I. Use stamped steel bridges to fasten flush mounting outlet box between studs.

J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

K. Support all outlet boxes from structure with minimum of one 3/8" all-thread rod hangers. Boxes larger than 25 square inches shall be supported with two all-thread rod hangers, minimum.

L. Do not fasten boxes to ceiling support wires.

M. Support boxes independently of conduit.

N. Use gang box where more than one device is mounted together. Do not use sectional box.

O. Use gang box with plaster ring for single device outlets.

P. Use cast outlet box in exterior locations and wet locations.

Q. Comply with applicable portions of the NECA National Electrical Installation Standards.

R. Install outlets in the locations shown on the Drawings; however, prior to rough-in, the Owner shall have the right to make slight changes in locations to reflect room furniture layouts.

S. The Contractor shall coordinate his work with that of the General Contractor so that each electrical box is the type suitable for the wall or ceiling construction provided and suitable fireproofing is inbuilt into fire rated walls.

T. The Contractor shall relocate electrical boxes as required so that once installed, electrical devices will be symmetrically located with respect to the room layout.

U. All boxes shall be installed in a flush rigid manner with box lines at perpendicular and parallel angles to finished surfaces. Boxes shall be supported by appropriate hardware selected for the type of surface from which the box shall be supported. For example, provide metal screws for metal, wood screws for wood, and expansion devices for masonry or concrete.

V. For locations exposed to weather or moisture (interior or exterior), provide weatherproof boxes and accessories.

W. As a minimum, provide pull boxes in all raceways over 150’ long. The pull box shall be located near the midpoint of the raceway length.

X. Provide knockout closures to cap unused knockout holes where blanks have been removed and plugs for unused threaded hubs.

Y. Provide conduit locknuts and bushings of the type and size to suit each respective use and installation.

Z. Boxes and conduit bodies shall be located so that all electrical wiring is accessible.

AA. Avoid using round boxes where conduit must enter box through side of box, which would result in a difficult and insecure connection with a locknut or bushing on the rounded surface.

BB. All flush outlets shall be mounted so that covers and plates will finish flush with finished surfaces without the use of shims, mats or other devices not submitted or accepted for the Steel

City #SBEX) are not acceptable. Plates shall not support wiring devices. Gang switches with common plate where two or more are indicated in the same location. Wall-mounted devices of different systems (switches, thermostats, etc.) shall be coordinated for symmetry when located near each other on the same wall. Outlets on each side of walls shall have separate boxes. Through-wall type boxes shall not be permitted. Back-to-back mounting shall not be permitted. Trim rings shall be extended to within 1/8" of finish wall surface.

CC. Outlet boxes mounted in metal stud walls are to be supported to studs with two screws inside of outlet box to a horizontal stud brace between vertical studs, or one side of outlet box supported to stud with opposite side mounted to section of stud or device to prevent movement of outlet box after wall is finished.

DD. All outlet boxes that do not receive devices in this contract are to have blank plates installed matching wiring device plates.

EE. Mount Height.

1. Height of wall outlets to bottom above finished floors shall be as follows, unless specifically noted otherwise, or unless otherwise required by applicable codes including ADA. Verify with the Architectural Drawings and Shop Drawings for installing:

Switches	4'-0" AFF to top
Receptacles	1'-4" AFF to bottom
Lighting Panels	6'-6" AFF to centerline of highest breaker/fuse
Phone outlets	1'-4" AFF to bottom
Intercom Call-in button/handsets	4'-0" AFF to top
Fire Alarm Pull Stations	4'-0" AFF to top
Fire Alarm Strobe Lights	80" AFF to bottom

2. Bottoms of outlets above countertops or base cabinets shall be minimum 2" above countertop or backsplash, whichever is highest. Outlets may be raised so that bottom rests on top of concrete block course, but all outlets above counters in same area shall be at same height. It is the responsibility of this Division to secure cabinet drawings and coordinate outlet locations in relation to all cabinets as shown on Architectural Drawings, prior to rough-in, regardless of height shown on Division 26 Drawings.

3. Height of wall-mounted fixtures shall be as shown on the Drawings or as required by Architectural Drawings and conditions. Fixture outlet boxes shall be equipped with fixture studs when supporting fixtures.

FF. Special Purpose Outlets.

1. Locate special purpose outlets as indicated on the drawings for the equipment served. Location and type of outlets shall be coordinated with appropriate trades involved. The securing of complete information for proper electrical roughing-in shall be included as work required under this section of specifications. Provide plug for each outlet.

GG. Outlets in Fire/Smoke and Smoke Partitions/Walls.

1. Electrical outlet boxes may be installed in vertical fire resistive assemblies classified as fire/smoke and smoke partitions without affecting the fire classification, provided such openings occur on one side only in each framing space and that openings do not exceed 16 square inches. All clearances between such outlet boxes and the gypsum board must be completely filled with joint compound or other accepted materials. The wall must be built around outlets of larger size so as not to interfere with the integrity of the wall rating.

3.2 INTERFACE WITH OTHER PRODUCTS

A. Coordinate installation of outlet box for products furnished under all Sections of these specifications.

B. Coordinate locations and sizes of required access doors with applicable sections in these specifications.

C. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

D. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.

E. Position outlet boxes to locate luminaires as shown on reflected ceiling plan.

3.3 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closure in unused box opening.

END OF SECTION

SECTION 26 05 35 - PULL AND JUNCTION BOXES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install pull and junction boxes as shown on drawings or as required by the NEC.

B. Provide and install pull and junction boxes wherever required for a complete and operating distribution system whether shown on drawings or not.

C. Where outlet boxes are used for pull and/or junction boxes, they shall meet the requirements of Section 26 05 34 Outlet Boxes.

1.3 REFERENCES

A. ANSI/NEMA FB 1 Fittings and Supports for Conduit and Cable Assemblies

B. ANSI/NEMA OS 1 Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports

C. ANSI/NEMA OS 2 Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports

D. ANSI/NFPA 70 National Electrical Code

E. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Submit actual shop drawings of all pull boxes showing:

1. Covers.
2. Dimensions - inside and out.
3. Rating of concrete or gauge of metal.
4. Manufacturer.

1.6 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations and mounting heights of pull and junction boxes.

1.7 PROJECT CONDITIONS

A. Verify field measurements are as shown on Drawings.

B. Verify locations of pull and junction boxes prior to rough-in.

C. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Install at location required for box to serve intended purpose and to maintain required access.

PART 2 - PRODUCTS

2.1 GENERAL

A. Dimensions of pull and junction boxes shall meet dimensions shown on Drawings or dimensions required by NEC, whichever is largest.

B. Pull and junction boxes shall meet all requirements of UL and NEC.

C. Small pull boxes (i.e. 4" x 4") shall meet the requirements of these Specifications for outlet boxes as a minimum.

D. All boxes (above ground) of 100 cubic inches or more shall be constructed of 14 gauge steel with hot dip galvanized coating.

2.2 SHEET METAL BOXES

A. NEMA OS 1, galvanized steel.

B. Box to be stainless steel fully weatherproof and watertight where installed outside.

2.3 SURFACE-MOUNTED CAST METAL BOX

A. NEMA 250, Type 4; flat-flanged, surface-mounted junction box.

B. Material: Cast aluminum.

C. Cover: Furnish with ground flange, neoprene gasket, and stainless-steel cover screws.

D. Provide all hubs as required for conduit connections.

2.4 IN-GROUND PULL BOXES

A. Material: Precast concrete with steel reinforcement.

B. Bottom: Open with 6" of gravel for drainage.

C. Cover: Meet Florida Dept. of Transportation requirements for installed location (pedestrian, heavy traffic, light traffic).

D. Solid sides constructed to facilitate conduit entries.

PART 3- EXECUTION

3.1 GENERAL

A. Install per NEC.

B. Install electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

C. Install electrical boxes to maintain headroom and to present neat mechanical appearance.

D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

E. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6” from ceiling access panel or from removable recessed luminaire.

F. Install boxes to preserve fire resistance rating of partitions and other elements.

G. Align adjacent wall-mounted boxes with each other.

H. Use flush mounting boxes in finished areas.

I. Do not install flush mounting boxes back-to-back in walls; provide minimum 6” separation. Provide minimum 24” separation in acoustic rated walls.

J. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

L. Pull and junction boxes larger than 25 square inches shall be supported with two 3/8" all-thread rod hangers minimum.

M. Do not fasten boxes to ceiling support wires.

N. Support boxes independently of conduit.

O. Large Pull Boxes:

1. Boxes larger than 100 cubic inches in volume or 12” in any dimension:

a) Interior dry locations per NEC with screw covers.

b) Other locations use hinged enclosure under provisions of Section 26 27 16 Cabinets and Enclosures.

P. Outdoor Locations: All boxes installed outdoors to be NEMA 4, fully weatherproof and watertight.

3.2 IN-GROUND PULL BOXES

A. Provide and install ground rod in each pull box. Connect #2 copper ground wires (counterpoise) to ground rod, run out pullbox 6" over conduits to next pull box; tie to respective building electrical ground rod at each building.

B. Install pull boxes flush with finished grade. Provide extensions as required.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations and sizes of required access doors with applicable sections in these Specifications.

B. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

3.4 ADJUSTING

A. Install knockout closure in unused box opening.

END OF SECTION

SECTION 26 05 37 - SURFACE RACEWAYS

PART 1 - GENERAL

1.1 DESCRIPTION OF SYSTEM

A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:

1. Surface metal raceways.
2. Wireways.

1.2 REFERENCES

A. NECA (National Electrical Co Association) Standard of Installation.

B. NEMA WD 6 - Wiring Device Configurations.

1.3 SUBMITTALS

A. Submit under provisions of the General Requirements of the Contract Documents and Section 26 05 07 Submittals.

B. Submit Product Data: Provide dimensions, knockout sizes and locations, materials, fabrication details, finishes, and accessories.

C. Submit Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with NECA Standard of Installation.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum five years experience.

1.6 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.1 SURFACE METAL RACEWAY

A. Manufacturers:

1. Wiremold Model 500 or 700 as required for conductors.
2. Substitutions: Under provisions of Section 26 05 08 Substitutions.

B. Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.

C. Size: As required to house wires and match connecting equipment.

D. Finish Ivory enamel unless otherwise noted on drawings, paint as directed by Architect.

E. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories, complete

as required for a complete enclosed installation.

F. Boxes shall be a minimum of 2-3/4" deep.

2.2 WIREWAY

A. Manufacturers:

1. Hoffman.
2. Square "D"
3. Electrical Enclosures
4. Substitutions: Under provisions of Section 26 05 08 Substitutions.

B. Description: General purpose, Oiltight and dusttight or Raintight type wireway as indicated on drawings. If not indicated provide type required to meet applicable codes.

C. Knockouts: Manufacturer’s standard.

D. Size: As indicated on Drawings, or larger as required by the NEC.

E. Cover: Hinged cover with full gasketing for raintight and oiltight types.

F. Connector: Slip-in for general purpose and raintight types and flanged for oiltight types.

G. Fittings: Lay-in type with removable top, bottom, and side; captive screws for general purpose, and drip shield for raintight type, and removable top for oiltight type.

H. Finish: Rust inhibiting primer coating with gray enamel finish for interior applications. Stainless steel for exterior applications.

PART 3- EXECUTION

3.1 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.

B. Use flat-head screws, clips, and straps to fasten raceway channel to surfaces. Mount plumb and level.

C. Use suitable insulating bushings and inserts at connections to outlets and corner fittings.

D. Wireway Supports: Provide a steel channel as specified in Section 26 05 09 Hangers and Supports.

E. Close ends of wireway and unused conduit openings.

F. Ground and bond raceway and wireway under provisions of Section 26 05 26 Grounding and Bonding.

G. Install only in locations deemed accessible by the NEC. and local authority. Provide all access panels, etc., as required to maintain required access.

END OF SECTION

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all equipment, labor and material for a complete identification system including but not limited to:

1. Nameplates and labels.
2. Wire and cable markers.
3. Conduit markers.

B. Identify all new and existing conduit, boxes, equipment, etc. as specified herein.

1.3 REFERENCES

A. ANSI/NFPA 70 National Electrical Code

B. Americans with Disabilities Act

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

PART 2- PRODUCTS

2.1 NAMEPLATES

A. Nameplates shall be laminated phenolic plastic, chamfered edges.

1. 120/208 Volt System:

a) Black front and back, white core, lettering etched through outer covering, white engraved letters on black background.

B. Letter Size:

1. 1/8” letters for identifying individual equipment and loads.
2. 1/4” letters for identifying grouped equipment and loads.

C. Nameplates shall adequately describe the function of the particular equipment involved. Where nameplates are detailed on the Drawings, inscription and size of letters shall be as shown and shop drawing submitted for acceptance. Nameplates for panelboards, switchboards, motor control centers, disconnects and enclosed breakers shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 120/208V, 3-phase, 4-wire." In addition, provide phenolic label in panel to describe where the panel is fed from and location. For example, "Fed From MDP-1:3:5 Electrical Room #E101 Level 1." Nameplates for equipment listed below shall describe particular equipment name and associated panel/circuit, if applicable. The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and pushbutton station nameplates for that machine.

D. The following items shall be equipped with nameplates:

1. All motors, motor starters, motor-control centers, pushbutton stations, control panels, time switches, disconnect switches, transformers, panelboards, circuit breakers (i.e., all 2-pole, 3-pole circuit breakers), contactors or relays in separate enclosures, power receptacles where the nominal voltage between any pair of contacts is greater than 150V, wall switches controlling outlets that are not located within sight of the controlling switch, high voltage boxes and cabinets, large electrical, and junction and pull boxes (larger than 4-11/16"), terminal cabinets, terminal boards, and equipment racks. Nameplates shall also describe the associated panel and circuit number, if applicable.

2.2 WIRE MARKERS

A. Description: Cloth, tape, split sleeve or tubing type wire markers.

B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

C. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on Drawings including neutral conductor.

2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on shop drawings.

2.3 CONDUIT/JUNCTION BOX COLOR CODE

A. All conduit system junction boxes (except those subject to view in public areas) shall be color coded as listed below:

COLOR CODE FOR JUNCTION BOXES	KRYLON PAINT NUMBER
Fire Alarm	Safety Orange K02410
Normal Power 120/208 volt	Gloss Black K01601A00
Fiber Optics	Safety Purple K01929
Sound System	Daisy Yellow K01813A00
Intercom	True Blue K01910
Computer/Data	Bright Gold K01701
BAS	Gloss White K01501A00
Security/CCTV	Saddle Tan K03554
Telephone	Safety Green K02012
Grounding	Fluorescent Green K10339

B. Conduit (not subject to public view) longer than 20’ shall be painted with above color paint band 20’ on center. Paint band shall be 4" in length applied around entire conduit. Where conduits are parallel and on conduit racking, the paint bands shall be evenly aligned. Paint shall be neatly applied and uniform. Paint boxes and raceways prior to installation, or tape conduits and surrounding surfaces to avoid overspray. Paint overspray shall be removed.

C. Junction boxes and conduits located in public areas (i.e. areas that can be seen by the public) shall be painted to match surface attached to. Provide written request to A/E for interpretation of public areas in question.

2.4 CONDUIT/JUNCTION BOX MARKER

A. All new and existing junction boxes/cover plates for power, lighting and systems (except those installed in public areas) shall adequately describe its associated panel and circuit reference number(s) within (i.e. ELRW-2, 4, 6), or systems within (i.e. fire alarm, intercom, etc.). Identification shall be neatly written by means of black permanent marker. Paint one-half of cover plate with appropriate color above, and one-half with associated panel/circuit or system as described above. Junction box cover plates located in public areas shall be identified with small phenolic labels securely attached. Label colors to be determined by A/E. Large pull/junction boxes (8" x 8" or larger) shall be color identified by painting the corners of box cover plate with specified colors at 45-degree angles; phenolic labels as specified herein.

B. Identify conduit not installed in public areas with corresponding panel/circuit numbers or corresponding system type as described above. Spacing 20 ft. on center adjacent to color identification bands.

2.5 UNDERGROUND WARNING TAPE

A. Description: Minimum 6” wide plastic tape, detectable type, with suitable warning legend describing buried lines. Systems conduit shall have orange colored tape. Power/lighting conduit shall have red colored tape.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

3.2 APPLICATION

A. Install nameplate parallel to equipment lines.

B. Secure nameplate to equipment front using stainless steel pop rivets.

C. Secure nameplate to inside surface of door on panelboard that is recessed in finished locations.

D. Nameplates installed inside on dead front cover shall be self-adhesive tape. Do not drill or install screws in dead front.

E. Identify new and existing conduit, junction boxes, and outlet boxes using field painting.

F. Identify new underground conduit using underground warning tape. Install a minimum of one tape per trench at 6” below finished grade. For trenches exceeding 24” in width, provide one tape per 24” of trench width spaced evenly over trench width.

G. Install wire markers at all new connections and terminations, and at existing connections and terminations modified or altered.

END OF SECTION

SECTION 26 05 73 – POWER SYSTEM STUDY WITH ARC FLASH ANALYSIS

PART 1 - GENERAL

1.1 SCOPE

A. The Contractor shall furnish short-circuit and protective device coordination studies as prepared by the electrical equipment manufacturer or an approved engineering firm.

B. The Contractor shall furnish an Arc Flash Hazard Analysis Study per the requirements set forth in NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE Std. 1584-2018 equations that are presented in NFPA70E-2018, Annex D.

C. The scope of the studies shall include:

1. All new distribution equipment supplied by the equipment manufacturer under this contract complete up to new or existing power company transformers.
2. All equipment requiring short circuit and arc flash labeling for compliance with NEC including:
   a) Industrial Control Panels
3. Electrical distribution and control equipment to include all equipment installed under this contract and all existing equipment that this project is connecting to, complete from new equipment to existing power company transformer(s) via all applicable existing power distribution and control equipment. All existing distribution equipment associated or effected by/with this Project.
4. All existing distribution equipment upstream or downstream of equipment effected by the project.
5. Study and adjustments shall also include selective coordination as required by NEC Articles 700 and 701.

1.2 DESCRIPTION

A. Provide all labor, materials, and equipment necessary to properly and completely perform a Power System Study for the electrical distribution and control equipment and submit results in a report.

B. Electrical distribution and control equipment is to include all equipment installed under this contract and all existing equipment that this project is connecting to, complete from new equipment to existing power company transformer(s) via all applicable existing power distribution and control equipment.

C. Provide an up-to-date electrical system single-line diagram as required by NFPA 70E, “Standard for Electrical Safety in the Workplace”, as referenced in OSHA 29 CFR 1910 Subpart S, Appendix A. This information shall include nameplate data for electrical components (e.g. transformers, medium voltage switchgear, panelboards, switchboards, motor control centers, etc.) for all portions of the electrical system from the utility intertie through the lowest rated panel.

D. Cable sizes, types and lengths between electrical equipment components and up to date utility source data shall be provided for an accurate single-line representation of the electrical system. Unique characteristics of the equipment installation shall be provided which may impact the magnitude of the potential hazard (e.g. open space versus enclosure). Overcurrent device settings shall be verified.

E. Data collection may require removal of barriers, opening of front panels, etc. while equipment is energized. The Contractor must provide proof (written documentation) that its employees working on the premises have been properly trained in the use and application of personal protective equipment (PPE) and the hazards of working on or near energized equipment. The Contractor must provide its own PPE protection with a minimum arc thermal performance rating (ATPV) of 40 calories/cm^2.

F. The contractor shall be responsible for obtaining all required data of all equipment.

G. The study shall verify adequacy of all equipment implemented under these specifications and to verify the correct application of circuit protective devices and other system components specified completely coordinated with the existing system.

H. A comprehensive analysis of the Building electrical system noted above shall be performed for all equipment 480 volt and higher and 240 volt served by a 125kVA or larger transformer based on the up to date single-line diagram provided from “Section A”. This analysis shall include the following:

1. Short Circuit Study – A short circuit analysis shall be performed in accordance with ANSI Standard C37 and IEEE Standard 141-1993 (Red Book) for each electrical component as defined in Section A.

2. Coordination Study – A coordination study shall be performed in accordance with IEEE 242-2001 “Buff” to determine the proper overcurrent device settings that will balance system reliability through selective coordination while minimizing the magnitude of an electrical arc flash hazard incident.

3. incident energy study shall be done in accordance with the IEEE 1584-2018, ”IEEE Guide for Performing Arc Flash Hazard Calculations” as referenced in NFPA 70, “Standard for Electrical Safety in the Workplace”, latest revision, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE selection are not acceptable.

I. Reconcile arc flash protective device setting recommendations with the protective device time-current coordination study.

J. Adjust the System Design to optimize the results of the study as it relates to safety and reliable electrical system operation (e.g. overcurrent device settings, working distances, current limiting devices). This includes mitigation, where possible, of incident energy levels that exceed 40 calories/cm^2. A qualified engineer with power systems design experience shall provide this assistance

K. The intent /goal of the protective system included herein is to establish arc flash levels that result in PPE levels of Category 2 or less.

L. Identify locations where Category 2 cannot be achieved.

M. The study shall address the case when the system is being powered from the normal source.

N. Minimum as well as maximum possible fault conditions shall be covered in the study.

O. Fault conditions of all motors shall be considered.

1.3 REFERENCES

A. Institute of Electrical and Electronics Engineers, Inc. (IEEE):

1. IEEE 141 – Recommended Practice for Electric Power Distribution and Coordination of Industrial and Commercial Power Systems.

2. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.

3. IEEE 399 – Recommended Practice for Industrial and Commercial Power System Analysis.
4. IEEE 241 – Recommended Practice for Electric Power Systems in Commercial Buildings.
5. IEEE 1015 – Recommended Practice for Applying Low-Voltage Circuit Breakers Used In Industrial and Commercial Power Systems.
6. IEEE 1584 – Guide for Performing Arc Flash Hazard Calculations.

B. American National Standards Institute (ANSI):

1. ANSI C57.12.00 – Standard General Requirements for Liquid Immersed Distribution, Power and Regulating Transformers.
2. ANSI C37.13 – Standard for Low Voltage AC Power Circuit Breakers Used in Enclosures
3. ANSI C37.010 – Standard Application Guide for AC High Voltage Circuit Breakers Rated on a Symmetrical Current Basis
4. ANSI C 37.41 – Standard Design Tests for High Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches and Accessories.

C. The National Fire Protection Association (NFPA)

1. NFPA 70 - National Electrical Code latest edition
2. NFPA 70E – Standard for Electrical Safety in the Workplace

1.4 SUBMITTALS FOR REVIEW/APPROVAL

A. The short-circuit and protective device coordination results shall be submitted prior to receiving final approval of the distribution equipment shop drawings and prior to release of equipment drawings for manufacturing. This preliminary submittal of study data shall be sufficient to ensure that the selection of device and characteristics will be satisfactory. .

1.5 SUBMITTALS FOR CONSTRUCTION

A. Six weeks prior to request for pre-power an updated study shall be submitted if any of the equipment characteristics in previous submittal were assumed or any actual characteristics or settings of the in place installation will be different than what is shown in the previous study submission. Study shall include a fault current letter from utility that is not more than 60 days old.

B. Two weeks prior to request for substantial completion an updated study shall be submitted if any of the equipment characteristics in previous submittal were assumed or any actual characteristics or settings of the in place installation will be different than what is shown in the previous study submission. Study shall include a fault current letter from utility that is not more than 60 days old. Submit check out memo signed by equipment manufacturer that all equipment characteristics and equipment setting match the study.

C. Two weeks prior to request for final substantial completion an updated study shall be submitted if any of the equipment characteristics in previous submittal were assumed or any actual characteristics or settings of the in place installation will be different than what is shown in the previous study submission.

D. The results of the short-circuit, protective device coordination and arc flash hazard analysis studies shall be summarized in a final report. For large system studies, submittals requiring more than five (5) copies of the report will be provided without the section containing the computer printout of the short-circuit input and output data. Additional copies of the short-circuit input and output data, where required, shall be provided on CD in PDF format.

E. The report shall include the following sections:

1. Executive Summary.
2. Descriptions, purpose, basis and scope of the study
3. Tabulations of circuit breaker, fuse and other protective device ratings versus calculated short circuit duties
4. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip unit settings, fuse selection
5. Fault current calculations including a definition of terms and guide for interpretation of the computer printout
6. Details of the incident energy and flash protection boundary calculations
7. Recommendations for system improvements, where needed
8. One-line diagram

F. Arc flash labels shall be provided in hard copy and electronic format.

G. Report shall include:

1. Available fault current at each equipment location with comparison to equipment rating
2. Overcurrent device settings (e.g. pick-up, time delay, curve), “as found” and “as recommended”
3. Incident energy level (calories/cm^2) for each equipment location and recommended PPE
4. Overcurrent device coordination curves including related section of the single-line diagram
5. List of prohibited energized work locations based on arc flash results.

1.6 OPERATIONS AND MAINTENANCE DATA

A. Submit copy of final study (in separate binder) with Operation and Maintenance Manual. The final study shall be conformed to match equipment settings in field at time final study is submitted.

B. Submit check out memo signed by equipment manufacturer that all equipment characteristics and equipment settings match the final study. Check out memo and equipment manufacturers’ verification of settings at site shall have occurred not more than two weeks prior to the substantial completion date. Check out memo shall include reference to the date of the study that findings are based on.

1.7 QUALIFICATIONS

A. The short-circuit, protective device coordination and arc flash hazard analysis studies shall be conducted under the supervision and approval of a Registered Professional Electrical Engineer skilled in performing and interpreting the power system studies.

B. The Registered Professional Electrical Engineer shall be a full-time employee of the equipment manufacturer or an approved engineering firm that is under contract with the equipment manufacturer.

C. The Registered Professional Electrical Engineer shall have a minimum of five (5) years of experience in performing power system studies.

D. The equipment manufacturer or approved engineering firm shall demonstrate experience with Arc Flash Hazard Analysis by submitting names of at least ten actual arc flash hazard analysis it has performed in the past year.

1.8 QUALITY ASSURANCE

A. The equipment manufacturer is responsible for the study and providing equipment that conforms to the study.

B. The equipment manufacturer shall assign a sales engineer (directly employed by the equipment manufacturer) to the project that shall be responsible for coordinating all equipment submittals and study submittals.

C. Study shall be performed by the equipment manufacturer or by firm that is under contract with the equipment manufacturer.

D. Equipment manufacturer is responsible for confirming characteristics of electrical equipment at site and that said equipment setting match the most recent study submittal.

1.9 COMPUTER ANALYSIS SOFTWARE

A. The studies shall be performed using the latest revision of the SKM Systems Analysis Power*Tools for Windows (PTW) software program or prior approved equal.

PART 2 – PRODUCTS

2.1 STUDIES

A. Contractor to furnish short-circuit and protective device coordination studies as prepared by equipment manufacturer or an approved engineering firm.

B. The contractor shall furnish an Arc Flash Hazard Analysis Study per NFPA 70E - Standard for Electrical Safety in the Workplace, reference Article 130.3 and Annex D.

2.2 DATA COLLECTION

A. Contractor shall furnish all data as required by the power system studies. The Engineer performing the short-circuit, protective device coordination and arc flash hazard analysis studies shall furnish the Contractor with a listing of required data after award of the contract. The Contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to the release of the equipment for manufacturing.

B. Source combination shall include present and future motors and generators.

C. Load data utilized may include existing and proposed loads obtained from Contract Documents provided by Owner, or Contractor when available.

D. Include fault contribution of existing motors in the study. The Contractor shall obtain required existing equipment data, if necessary, to satisfy the study requirements.

2.3 SHORT-CIRCUIT AND PROTECTIVE DEVICE EVALUATION STUDY

A. Use actual conductor impedances if known. If unknown, use typical conductor impedances based on IEEE Standard 141-1993.

B. Minimum transformer design impedances shall be used when test impedances are not available.

C. Provide the following:

1. Calculation methods and assumptions
2. Selected base per unit quantities
3. One-line diagram of the system being evaluated
4. Source impedance data, including electric utility system and motor fault contribution characteristics
5. Tabulations of calculated quantities

6. Results, conclusions, and recommendations.

D. Calculate short-circuit momentary and interrupting duties for a three-phase bolted fault at each:

1. Electric utility's supply termination point
2. Incoming switchgear
3. Low voltage switchgear
4. Branch circuit panelboards
5. Other significant locations throughout the system.

E. For grounded systems, provide a bolted line-to-ground fault current study for areas as defined for the three-phase bolted fault short-circuit study.

F. Protective Device Evaluation:

1. Evaluate equipment and protective devices and compare to short circuit ratings
2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses
3. Notify Owner in writing, of existing, circuit protective devices improperly rated for the calculated available fault current.

2.4 PROTECTIVE DEVICE COORDINATION STUDY

A. Proposed protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.

B. Include on each TCC graph, a complete title and one-line diagram with legend identifying the specific portion of the system covered.

C. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.

D. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

E. Plot the following characteristics on the TCC graphs, where applicable:

1. Electric utility's overcurrent protective device
2. Medium voltage equipment overcurrent relays
3. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands
4. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands
5. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
6. Conductor damage curves
7. Ground fault protective devices, as applicable
8. Pertinent motor starting characteristics and motor damage points, where applicable
9. Pertinent generator short-circuit decrement curve and generator damage point
10. The largest feeder circuit breaker in each motor control center and applicable panelboard.

F. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.

2.5 ARC FLASH HAZARD ANALYSIS

A. The arc flash hazard analysis shall be performed according to the IEEE Std. 1584-2018 equations that are presented in NFPA70E-2018, Annex D.

B. The flash protection boundary and the incident energy shall be calculated at all significant locations in the electrical distribution system (switchboards, switchgear, motor-control centers, panelboards, busway and splitters) where work could be performed on energized parts.

C. The Arc-Flash Hazard Analysis shall include all significant locations in 240 volt and 208 volt systems fed from transformers equal to or greater than 125 kVA where work could be performed on energized parts.

D. Safe working distances shall be based upon the calculated arc flash boundary considering an incident energy of 1.2 cal/cm^2.

E. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations

F. The short-circuit calculations and the corresponding incident energy calculations for multiple system scenarios must be compared and the greatest incident energy must be uniquely reported for each equipment location. Calculations must be performed to represent the maximum and minimum contributions of fault current magnitude for all normal and emergency operating conditions. The minimum calculation will assume that the utility contribution is at a minimum and will assume a minimum motor contribution (all motors off). Conversely, the maximum calculation will assume a maximum contribution from the utility and will assume the maximum amount of motors to be operating. Calculations shall take into consideration the parallel operation of synchronous generators with the electric utility, where applicable.

G. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time. Fault contribution from motors and generators should be decremented as follows:

1. Fault contribution from induction motors should not be considered beyond 3-5 cycles.

2. Fault contribution from synchronous motors and generators should be decayed to match the actual decrement of each as closely as possible (e.g. contributions from permanent magnet generators will typically decay from 10 per unit to 3 per unit after 10 cycles).

H. For each equipment location with a separately enclosed main device (where there is adequate separation between the line side terminals of the main protective device and the work location), calculations for incident energy and flash protection boundary shall include both the line and load side of the main breaker.

I. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.

J. Miscoordination should be checked among all devices within the branch containing the immediate protective device upstream of the calculation location and the calculation should utilize the fastest device to compute the incident energy for the corresponding location.

K. Arc Flash calculations shall be based on actual overcurrent protective device clearing time.

Maximum clearing time will be capped at 2 seconds based on IEEE Std. 1584-2018 section B.1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash event, a maximum clearing time based on the specific location shall be utilized.

2.6 REPORT SECTIONS

A. Input data shall include, but not be limited to the following:

1. Feeder input data including feeder type (cable or bus), size, length, number per phase, conduit type (magnetic or non-magnetic) and conductor material (copper or aluminum).
2. Transformer input data, including winding connections, secondary neutral-ground connection, primary and secondary voltage ratings, kVA rating, impedance, % taps and phase shift.
3. Reactor data, including voltage rating, and impedance.
4. Generation contribution data, (synchronous generators and Utility), including short-circuit reactance (X”d), rated MVA, rated voltage, three-phase and single line-ground contribution (for Utility sources) and X/R ratio.
5. Motor contribution data (induction motors and synchronous motors), including short-circuit reactance, rated horsepower or kVA, rated voltage, and X/R ratio.

B. Short-Circuit Output Data shall include, but not be limited to the following reports:

1. Low Voltage Fault Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
   a) Voltage
   b) Calculated fault current magnitude and angle
   c) Fault point X/R ratio
   d) Equivalent impedance
2. Momentary Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
   a) Voltage
   b) Calculated symmetrical fault current magnitude and angle
   c) Fault point X/R ratio
   d) Calculated asymmetrical fault currents
      1. Based on fault point X/R ratio
      2. Based on calculated symmetrical value multiplied by 1.6
      3. Based on calculated symmetrical value multiplied by 2.7
   e) Equivalent impedance
3. Interrupting Duty Report shall include a section for three-phase and unbalanced fault calculations and shall show the following information for each applicable location:
   a) Voltage
   b) Calculated symmetrical fault current magnitude and angle
   c) Fault point X/R ratio
   d) No AC Decrement (NACD) Ratio

e) Equivalent impedance

f) Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a symmetrical basis

g) Multiplying factors for 2, 3, 5 and 8 cycle circuit breakers rated on a total basis

C. Recommended Protective Device Settings:

1. Phase and Ground Relays:

a) Current transformer ratio

b) Current setting

c) Time setting

d) Instantaneous setting

e) Recommendations on improved relaying systems, if applicable.

2. Circuit Breakers:

a) Adjustable pickups and time delays (long time, short time, ground)

b) Adjustable time-current characteristic

c) Adjustable instantaneous pickup

d) Recommendations on improved trip systems, if applicable.

D. Incident energy and flash protection boundary calculations

1. Arcing fault magnitude

2. Protective device clearing time

3. Duration of arc

4. Arc flash boundary

5. Working distance

6. Incident energy

7. Hazard Risk Category

8. Recommendations for arc flash energy reduction

PART 3 - EXECUTION

3.1 FIELD ADJUSTMENT

A. Adjust relay and protective device settings according to the recommended settings table provided by the coordination study. Field adjustments to be completed by the contractor and/or electrical equipment manufacturer's field service personnel.

B. Make minor modifications to equipment as required to accomplish conformance with short circuit and protective device coordination studies.

C. Notify Owner in writing of any required major equipment modifications.

3.2 ARC FLASH WARNING LABELS

A. The contractor of the Arc Flash Hazard Analysis shall provide a 3.5 in. x 5 in. thermal transfer type label of high adhesion polyester for each work location analyzed.

B. All labels will be based on recommended overcurrent device settings and will be provided after the results of the analysis have been presented to the owner and after any system changes, upgrades or modifications have been incorporated in the system.

C. The label shall include the following information, at a minimum:

1. Location designation
2. Nominal voltage
3. Flash protection boundary
4. Hazard risk category
5. Incident energy or energy range corresponding to reported Hazard risk category.
6. Working distance
7. Engineering report number, revision number and issue date.

D. Labels shall be machine printed, with no field markings.

E. Arc flash labels shall be provided in the following manner and all labels shall be based on recommended overcurrent device settings.

1. For each 600, 480 and applicable 208 volt panelboard, at least one arc flash label shall be provided.
2. For each switchboard, one arc flash label shall be provided.
3. For each main switchboard with Utility Service, one flash label shall be provided for each section.
4. For each industrial control panels one arc flash label shall be provided

F. Labels shall be field installed by the contractor.

END OF SECTION

SECTION 26 08 13 - TESTS AND PERFORMANCE VERIFICATION OF ELECTRICAL SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section pertains to the furnishing of all labor, materials, equipment and services necessary to test and prove performance of the electrical system.

B. Operate system for a three-day period. Do performance verification work as required to show that the system is operating correctly in accordance with design. Supply instruments required to read data. Adjust system to operate at the required performance levels.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 TESTS

A. System:

1. General: After installation of all conductors and before final acceptance, make required tests to determine proper functioning of all circuits. Furnish all necessary instruments required to make tests and correct any deficiencies found. Prior to energizing, circuits shall be "rung-out" to verify opens, intentional and non-intentional grounds, continuity and detect short circuits by accepted constant megger.

2. Procedure:

a) All wires in conduit that are shorted or unintentionally grounded shall be replaced.

b) Insulation resistance of all feeder conductors and all conductors AWG #1 and larger shall be tested. This is to include all new conductors and/or all existing conductors that are connected and/or extended. Each conductor shall have its insulation resistance tested after the installation is completed and all splices, taps, and connections are made, except connection to source and point of final termination at distribution or utilization equipment.

c) Insulation resistance of conductors that are to operate at 600 volts or less shall be tested by using AVO Biddle (or accepted equal) megger at not less than 1000 volts dc. Resistance shall be measured from conductor to conduit (ground). Testing methodology shall conform to short-time or spot-reading procedural recommendations of AVO Biddle Instruments for specific megger being used. Acceptable insulation resistance of conductors rated at 600 volts shall not be less than 100 megohm.

d) Conductors that do not satisfy test requirements of paragraph c) above, shall be removed, replaced, and testing repeated on new cable at no additional cost to the Owner. All tests shall be performed by licensed electrician trained in the use of test instruments. Contractor shall furnish all instruments and personnel required for tests, shall tabulate readings observed and complete Conductor Insulation Resistance Test form (see Section 26 01 00 Operation and Maintenance Manuals) and submit five copies to Engineer for acceptance. Test shall be witnessed by Owner's Representative and Engineer (if so desired). Final acceptance data is to be submitted in O & M Manual.

e) Test reports shall identify each feeder conductor tested, date, time and result of test, weather conditions and range, test voltage, and serial number of the megger instrument used. Any conductor or splice that is found defective shall be promptly removed and replaced, and additional test shall be performed.

f) Observe all safety instructions set by testing equipment manufacturer. Application of voltage testing involves risk of electric shock and sparking.

3. Take readings of voltage and amperage at building main disconnect switch and at main for each panel, at primary and secondary side of each transformer, and at the end of the longest branch circuit at each panel. The above readings shall be taken 1) "no load" conditions and 2) "full load" conditions with all equipment using electricity. Tabulate readings, complete Voltage and Amperage Readings (Tabulated Data) form (see Section 26 01 00 Operation and Maintenance Manuals) and submit five copies to the Engineer for acceptance. Final accepted data is to be submitted in O & M Manual.

B. Grounds:

1. Test each raceway for raceway continuity as called for in Section 26 05 26 Grounding and Bonding.

2. Test each grounding system used in the project as called for in Section 26 05 26 Grounding and Bonding.

3. Submit Ground Test Information form (see Section 26 01 00 Operation and Maintenance Manuals) for every grounding system in the project, including but not limited to, each ground rod installation, each water pipe and ground installation (test water pipe to ground and test water pipe to building service equipment), and each building steel ground connection (test building steel to ground and test building steel to building service equipment).

4. Grounding resistance shall be as called for in Section 26 05 26 Grounding and Bonding.

5. Testing shall be 3-point method in accordance with IEEE recommended practice.

6. Transformer grounding.

3.2 DATA PROCESSING

A. Testing Data.

1. Tabulate data for submission.

2. Submit data on 8 1/2" x 11" sheets with date and name of checker with one copy for each O & M Manual.

3. Where specific performance verification information is called for in the Specifications, use copies of the sheets provided for recording readings.

4. Data shall be submitted and accepted before Check Out Memos are signed or a request for final inspection is made.

B. Equipment Check-Out:

1. At completion of construction after all performance verification and testing information has been gathered, submitted, and approved, provide one copy of this information to the Authorized Manufacturer's Representative of the equipment.

a) Manufacturer's Authorized Representative must be trained by the manufacturer and authorized to inspect, adjust, test, and repair equipment.

2. Work required under this section shall include having the representative examine the

performance verification information, check the equipment in the field while it is in operation, and sign a Check Out Memo form for a record. (See Section 26 01 00 Operation and Maintenance Manuals).

a) Check out of equipment is to include examining performance of equipment and certifying equipment has been installed per manufacturer's recommendations that all necessary adjustments have been performed and that equipment is operating properly.

3. Submit one copy (for each O & M Manual) of the memo on each major item of equipment. Accepted memos shall be inserted in each O & M manual with the performance verification information and submittal data. Memos shall be submitted and accepted before instruction to Owner or a request for final inspection.

4. Items requiring Check Out Memos are all major items of equipment such as (but not limited to):

   a) Panels, distribution panels, switchboards.

   b) Equipment/system installed per Systems sections.

   c) Any other equipment noted to be checked-out by Engineer during construction.

   d) Main Switchboard

5. Do not submit Check Out Memo form at the time submittal brochures are submitted. This form shall be completed and submitted before instruction in operation to Owner or a request for final inspection.

END OF SECTION

SECTION 26 09 21 – EXTERIOR LIGHTING CONTROL DEVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating lighting control device installations that include the following:

1. Time switches.
2. HOA Switches.
3. Photocells.
4. Contactors.

1.3 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.4 SUBMITTALS

A. Product Data: Provide manufacturer's catalog information showing dimensions, and configurations.

1. Submit product data on all types of control devices including wiring diagrams.

B. Manufacturer's Instructions:

1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.

C. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

D. Shop Drawings:

1. Provide scale drawings of electrical rooms showing placements of all equipment within each electrical room including: time clocks, contactors, metering equipment, and surge suppression equipment.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience. Refer to drawings for manufacturers and models allowed.

1.6 PROJECT RECORD DOCUMENTS

A. Submit record documents to record actual locations of products, control id and the loads associated with each control device.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit Maintenance Data: Include spare parts data listing, source and current prices of replacement parts and supplies, and recommended maintenance procedures and intervals.

B. Submit Instructions: Include complete manufacturer’s instructions for products.

1.8 FIELD MEASUREMENTS

A. Verify that adequate space is provided for installation of equipment.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged boxes/pallets with identification labels intact.

B. Handle equipment carefully to prevent damage.

C. Store equipment indoors and protect from weather. Materials must protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

PART 2- PRODUCTS

2.1 GENERAL

A. Refer to drawings for requirements.

B. All equipment shall bear UL labels.

PART 3- EXECUTION

3.1 EXAMINATION

A. Verify conditions under provisions of Division 01 General Requirements and any other applicable supplemental requirements/conditions.

B. Verify equipment will be installed at proper height.

3.2 PREPARATION

A. Provide clean mounting surface for equipment.

B. Clean debris from outlet boxes, enclosures, etc.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install devices plumb and level.

C. Electrical boxes and enclosure shall be cleaned and completely free of any debris, dust, etc. prior to the installation of wiring devices.

D. Label HOA switches, time switches and contactors with a unique designations.

E. Set time and hours of operation per requirements identified by owner.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under other sections of these Specifications to obtain mounting heights specified and indicated on Drawings.

3.5 IDENTIFICATION

A. Refer to Section 26 05 53 Identification for Electrical Systems for products and content.

B. Provide engraved plastic nameplates under the provisions of Section 26 05 53 Identification for Electrical Systems for each control device.

C. Nameplate shall state device id and identify the loads that are being controlled.

3.6 CLEANING AND PROTECTION

A. Protect installed devices/equipment from damage during for remainder of construction period, in accordance with manufacturer's recommendations.

3.7 FIELD QUALITY CONTROL

A. Inspect each device for defects.

B. Operate each HOA and time switch with circuit energized and verify proper operation.

3.8 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

END OF SECTION

SECTION 26 22 13 – DRY TYPE TRANSFORMERS

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Dry-type distribution transformers with primary and secondary voltages of 600V and less and capacity ratings through 2000kVA.

B. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for energy efficient dry type transformers per TP-1 and CSA 802.2-00.

1.3 REFERENCES

A. Comply with all rules and/or standards from:

1. NECA National Electrical Contractors Association
2. NFPA 70 - National Electrical Code
3. NEMA ST 1 Specialty Transformers
4. NEMA ST20
5. Underwriters Laboratory (UL) and Canadian Standard Association
   a) UL 1561 – Dry-Type General Purpose and Power Transformers
6. UL 250 Enclosure for Electrical Equipment
7. 2005 Energy Act PUBLIC LAW 109–58 - AUG. 8, 2005

B. Comply with all rules from Department of Energy

1. 10 CFR 429
2. 10 CFR 431

1.4 SUBMITTALS

A. Submit Product Data: Provide outline and support point dimensions of enclosures and accessories, unit weight, voltage, kVA and impedance ratings and characteristics, tap configurations, insulation system type, and rated temperature rise, energy code compliance, and compliance with all standards/rules referenced above.

B. Shall Include the following:

1. Confirmation that transformer(s) are UL 1561 Listed
2. Construction Details including enclosure dimensions, kVA rating, primary and secondary nominal voltages, voltage tap, unit weight.
   a) Wire Access Points – showing Wire Bending Dimensions
   b) Location for Ground Lug Provisions
3. Basic Performance characteristics including insulation class, temperature rise, core and coil materials, impedances & audible noise level, unit weight, inrush data RMS.
4. Efficiency Data
5. No load and full load losses will be calculated per NEMA ST20 test methods.

6. Efficiency Curves
   a) Linear Loads
   b) Data per the non-linear load test program.

1.5 STANDARDS

A. Transformers 1000kVA and smaller shall be listed by Underwriters Laboratories.

B. Conform to the requirements of ANSI/NFPA 70.

C. Transformers are to be manufactured and tested in accordance with NEMA ST20.

D. Efficiency – Per DOE 10 CFR 431.192 April 2013

Prior to January 1, 2016 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)	kVA	Efficiency (%)
15	97.7	15	97.0
25	98.0	30	97.5
37.5	98.2	45	97.7
50	98.3	75	98.0
75	98.5	112.5	98.2
100	98.6	150	98.3
167	98.7	225	98.5
250	98.8	300	98.6
333	98.9	500	98.7
		750	98.8
		1000	98.9

After January 1, 2016 Energy Conservation Standards for Low-Voltage Dry-Type Distribution Transformers			
Single phase		Three phase	
kVA	Efficiency (%)[1]	kVA	Efficiency (%)[1]
15	97.70	15	97.89
25	98.00	30	98.23
37.5	98.20	45	98.40
50	98.30	75	98.60
75	98.50	112.5	98.74
100	98.6	150	98.83
167	98.70	225	98.94
250	98.80	300	99.02
333	98.90	500	99.14
		750	99.23
		1000	99.28

Note: All efficiency values are at 35 percent of nameplate-rated load, determined according to the DOE Test Method for Measuring the Energy Consumption of Distribution Transformers under Appendix A to Subpart K of 10 CFR part 431.

E. Seismic Standards:
   1. Florida Building Code 8th edition

F. Conform to all requirements of the Florida Building Code 8th Edition, in addition to all other applicable codes and standards.

1.6 PACKAGING FOR SHIPMENT

A. Transformers shall be packaged for shipment using materials that will protect transformer during shipping and facilitate handling of transformers.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store, protect, and handle products to site.

B. Deliver transformers, packaged as noted above.

C. Accept transformers on site. Inspect for damage.

D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

E. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for

the purpose. Handle carefully to avoid damage to transformer internal components, enclosure and finish.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Same manufacturer as panelboards

2.2 RATINGS INFORMATION

A. All insulating materials are to exceed standards and be rated for 220°C UL component recognized insulation system

B. Transformers 15kVA and larger shall be 150°C temperature rise above 40°C ambient.

C. The maximum temperature of the top of the enclosure shall not exceed 50°C rise above a 40°C ambient.

D. The transformer(s) shall be rated as indicated on panel schedules and/or riser diagrams

2.3 CONSTRUCTION

A. Transformer windings shall be continuous wound copper with brazed or welded terminations.

B. Transformer coils shall be of the continuous wound construction and shall be impregnated with non-hygroscopic, thermosetting varnish

C. All cores to be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating.

D. The completed core and coil shall be bolted to the base of the enclosure but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.

E. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NEC standards.

F. All terminals, including those for changing taps, must be readily accessible by removing a front cover plate.

G. Taps shall have a 5% FCAN and 10% FCBN (150C Rise)

1. 2.5% Steps On all voltages 350 V and above

a) 15 to 300kVA

b) 500 and 750kVA range change to 5% FCBN instead of 10%

c) 1000kVA and greater per Manufacture Design

2. 5% Steps On all voltages below 350 V

a) 15 to 300kVA

b) 500 and 750kVA range change to 5% FCBN instead of 10%

c) 1000kVA and greater per Manufacture Design

H. Transformers shall have provisions for Bonding Neutral to Ground

I. Transformers ventilated OPENS shall not be located in wire access areas.

J. Transformer access areas shall allow for NEC bending radius for the following cable ranges by Kva:

kVA	Entering Bottom Access Point Wire Range Bending Space 480V / 600V	Entering Side Access Point Wire Range Bending Space 480V / 600V	Entering Bottom Access Point Wire Range Bending Space 208V / 240V	Entering Side Access Point Wire Range Bending Space 208V / 240V
15	(1) #14-#2AWG	(1) #14-#2/0 AWG	(1) #14-#2AWG	(1) #14-#2/0 AWG
30	(1) #14-#2AWG	(1) #14-#2/0 AWG	(1) #14-#3/0 AWG	(1) #14-250kcmil
45	(1) #14-#2/0 AWG	(1) #14-500kcmil	(1 or 2) #6-#4/0 AWG	(1) #6-500kcmil (2) #6 - 250kcmil
75	(1) #14-#4/0 AWG	(1) #14-500kcmil	(1 or 2) 1/0 - 500kcmil	(1 or 2) 1/0 - 500kcmil
112.5	(1 or 2) #6-#4/0 AWG	(1) #6-500kcmil (2) #6 - 250kcmil	(2) 2/0 - 500kcmil (3) 2/0 - 400kcmil	(2 or 3) 2/0 - 500kcmil
150	(1 or 2) #4 - 350kcmil	(1 or 2) #4 - 500kcmil	(2) 2/0 - 500kcmil (4) 2/0 - 250kcmil (3) 2/0 - 400kcmil	2, 3 or 4) 2/0 - 500kcmi
225	(1 or 2) 3/0 - 500kcmil	(1 or 2) 3/0 - 500kcmil	(4) 2/0 - 500kcmil	(4) 3/0 - 500kcmil
300	(2) 2/0 - 500kcmil (3) 2/0 - 400kcmil	(2 or 3) 2/0 - 500kcmil	(6) 2/0 - 500kcmil	(6) 3/0 - 600kcmil
500	(4) 2/0 - 500kcmil	(4) 3/0 - 500kcmil	(9) 2/0 - 500kcmil	(9) 3/0 - 600kcmil
750	(6) 2/0 - 500kcmil	(6) 3/0 - 600kcmil	(15) 2/0 - 500kcmil	(15) 3/0 - 600kcmil

K. Terminals shall be sized to handle cables for the following wire range as standard/minimum. Increase sizes as required for feeders called for in feeder schedule:

	480 / 600 V		208 / 240 V	
kVA	Terminal Mechanical Lugs	Terminal Compression Lugs NEMA TWO HOLE	Terminal Mechanical Lugs	Terminal Compression Lugs NEMA TWO HOLE
15	2/0-14 AWG	(1) #12-10 AWG (1) #8-#1/0 AWG	2/0-14 AWG	(1) #8-#1/0 AWG
30	2/0-14 AWG	(1) #8-#1/0 AWG	350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil (1) 250kcmil-350kcmil
45	2/0-14 AWG 350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil	350 kcmil-6 AWG (1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (1) #2/0-500kcmil (2) #4-300kcmil
75	2/0-14 AWG 350 kcmil-6 AWG	(1) #8-#1/0 AWG (1) #4-300kcmil (1) 250kcmil-350kcmil	(1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(2) #2/0-500kcmil (1) 400kcmil-600kcmil (AL) (2) #4-300kcmil (2) 250kcmil-350kcmil
112.5	350 kcmil-6 AWG (1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (1) #2/0-500kcmil (2) #4-300kcmil	(2) 350 kcmil-6 AWG (2) 600 kcmil-2 AWG	(3) 250kcmil-350kcmil (3) #4-300kcmil (2) 400kcmil-600kcmil(AL)
150	(1) 600 kcmil-4 AWG or (2) Equal 250 kcmil-1/0 AWG	(1) 250kcmil-350kcmil (2) #4-300kcmil	(3) 350 kcmil-6 AWG (2) 600 kcmil-2 AWG	(3) #2/0-500kcmil (3) #4-300kcmil (3) 400kcmil-600kcmil(AL) (4) 250kcmil-350kcmil
225	(1) 600 kcmil-2 AWG (2) 600 kcmil-2 AWG	(2) #2/0-500kcmil (2) 400kcmil-600kcmil (AL) (2) #4-300kcmil	(3) 600 kcmil-2 AWG	(4) #4-300kcmil (4) #2/0-500kcmil
300	(2) 600 kcmil-2 AWG	(3) 250kcmil-350kcmil (3) #2/0-500kcmil (3) 400kcmil-600kcmil(AL)	(4) 600 kcmil-2 AWG	(6) #2/0-500kcmil (6) 400kcmil-600kcmil(AL)
500	(3) 600 kcmil-2 AWG	(4) #4-300kcmil (4) #2/0-500kcmil	(6) 600 kcmil-2 AWG	(9) #2/0-500kcmil (9) 400kcmil-600kcmil(AL)
750	(4) 600 kcmil-2 AWG	(6) #2/0-500kcmil (6) 400kcmil-600kcmil(AL)	(9) 600 kcmil-2 AWG	(15) #2/0-500kcmil (15) 400kcmil-600kcmil(AL)

L. The transformer enclosures shall be ventilated and be fabricated of heavy gauge, sheet stainless steel construction

1. Minimum clearance from rear and sides 1/2”.
2. Transformers located outdoors shall have enclosures constructed of stainless steel and shall be configured for outdoor installation.

M. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.

N. Nameplate: Include transformer connection data.

2.4 SOUND LEVELS

A. Sound levels shall be warranted by the manufacturer not to exceed Nema ST 20 and/or the following:

1.	15 to 50 kVA	45dB
2.	51 to 150 kVA	50dB
3.	151 to 300 kVA	55dB
4.	301 to 500 kVA	60dB
5.	501 to 700 kVA	62dB
6.	701 to 100 kVA	64dB
7.	1001 to 1500 kVA	65dB
8.	1501 to 2000 kVA	66dB

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify site condition.

B. Verify that surfaces are suitable for installing transformer supports.

3.2 PREPARATION

A. Provide concrete pad sized minimum of 3" larger on all sides of the transformer.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Set transformer plumb and level.

C. Use flexible conduit, under the provisions of Section 26 05 33 Conduit, 1’ minimum length for connections to transformer case. Make conduit connections to side panel of enclosure.

D. Mount transformers on vibration isolating pads suitable for isolating the transformer noise from the building structure.

E. Provide grounding and bonding in accordance with Section 26 05 26 Grounding and Bonding.

F. Ground per NEC 250.26 and all applicable codes per Authority Having Jurisdiction.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed.

B. Check for damage and tight connections prior to energizing transformer.

C. Measure primary and secondary voltages and make appropriate tap adjustments.

3.5 SOURCE QUALITY CONTROL

A. Provide testing of transformers under provisions of Section 26 08 13 Tests and Performance Verification of Electrical Systems.

B. Provide production testing of each unit in accordance with NEMA ST 20.

END OF SECTION

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide all labor, materials, and equipment necessary to properly and completely install panelboards as scheduled on the drawings and as required by this Section.

1.3 REFERENCES

A. NECA National Electrical Installation Standards
B. NEMA PB 1 Panelboards
C. NEMA PB 1.1 General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less
D. NFPA 70 National Electrical Code
E. UL 50 Enclosures for Electrical Equipment
F. UL 67 Panelboards
G. UL 489 Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Furnish products listed and classified by UL as suitable for purpose specified and indicated.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with NECA National Electrical Installation Standards.

B. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum ten years experience.

1.6 SUBMITTALS

A. Product data shall be submitted on:

1. Panel.
2. Cabinet.
3. Bus.
4. Dimensions.
5. Construction.

B. Shop drawing shall be submitted for each and every panel for this project, each and every panel drawing shall clearly indicate the following information:

1. UL label.
2. Each circuit breaker amperage rating, circuit number and position/location in panel.
3. Electrical characteristics of panel.
4. Mains rating.
5. Main device rating.
6. Mounting.
7. Dimension, width, depth, height.
8. Bus material.
9. Interrupting capacity of minimum rated breaker.

10. Panel type.
11. Series AIC rating with upstream breakers.

1.7 PROJECT RECORD DOCUMENTS

A. Submit record documents to record actual locations of products, indicate actual branch circuit arrangement.

1.8 OPERATION AND MAINTENANCE DATA

A. Submit Maintenance Data: Include spare parts data listing, source and current prices of replacement parts and supplies, and recommended maintenance procedures and intervals.

1.9 FIELD MEASUREMENTS

A. Verify that field measurements are as instructed by manufacturer.

1.10 MAINTENANCE MATERIALS

A. Provide two of each panelboard key.

1.11 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Handle panelboards and enclosures carefully to prevent damage.

B. Store equipment indoors and protect from weather.

C. Deliver tubs and internal assemblies sufficiently in advance of installation period as necessary to prevent delay of work. This time shall be established by a CPM provided by the Contractor and accepted by the supervising authorities.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Square D.

B. Manufacturers (including accepted substitutions) must provide equipment equal to or superior than the basis of design used on this project.

1. Panels or circuit breakers with an AIC rating less than that shown on the drawings will not be approved.

2. Where basis of design panelboard can accept a certain type, frame, and/or AIC rated breaker, the accepted substitution manufacturer must also be able to accept all equal breaker type, frame, and/or AIC rating.

2.2 GENERAL

A. Lighting and Appliance Branch Circuit Panelboards: NEMA PB 1, circuit breaker type, dead front UL 67.

B. Panelboard Bus: Copper ratings as indicated. Provide copper ground bus in each panelboard. Provide isolated full size neutral bus where neutral is applicable. Provide non-linear load panelboards as specified on drawings. Non-linear panelboards shall have 200 percent rated neutral busbar.

C. Short Circuit Rating:

1. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 240-volt panelboards; 14,000 amperes rms symmetrical for 480-volt panelboards. Bus shall be braced for minimum capacity equal to or greater than the lowest breaker symmetrical interrupting capacity. Minimum short circuit rating shall be increased to meet the following requirements:

   a) Individual CB AIC rating shown on panel schedules indicate lowest AIC rating allowed for individual circuit breaker in panel.

   b) Panel series AIC rating shown is the required rating of panel and its circuit breakers based on series rating of individual panel circuit breakers with panel main circuit breaker or upstream feeder breaker.

   c) Circuit breaker types are not shown or called for. The Contractor must provide breakers in panel or feeder breakers in upstream breakers to comply with the required AIC ratings given, including providing current limiting breakers where required to achieve all ratings given.

2. Short Circuit Rating Label:

   a) Panelboards shall be labeled with a UL short-circuit rating.

   b) Series ratings shall not be used to achieve short circuit ratings.

D. Enclosure:

1. Enclosures shall be at least 20” wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electrical Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided.

2. Enclosures shall be provided with blank ends.

3. Where indicated on the drawings, branch circuit panelboards shall be column width type.

4. Regulatory requirements:

   a) NEMA PB 1, Type 1 or Type 4X as indicated on Drawings. Use only Type 4X for units to be installed outdoors.

5. Cabinet Box: Depth 6”, width 20” minimum, constructed of code gauge steel, galvanized or bonderized to prevent rust.

E. Cabinet Front: Flush or surface (as indicated on Drawings) cabinet front with concealed trim clamps, concealed hinge, and flush lock all keyed alike. Finish in manufacturer's standard baked enamel finish for interior panels. Exterior panels to be painted with rust inhibit primer painted over on all surfaces with epoxy paint.

F. Panels and breakers shall be rated for voltage and class of service to which applied.

G. Spaces:

1. Space provisions or spaces for future breakers shall be located at the bottom of the panel and be fully bused complete with all necessary mounting hardware less the breaker.

H. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.

2.3 MAINS

A. Provide main lug only (MLO) or main circuit breaker (MCB) as noted on Drawings either by riser diagram or by schedule. Where conflict exists, provide MCB.

B. Regardless of what is shown on Drawings, provide the following minimum requirements:

1. Main circuit breaker on each panel serving building main if required by applicable codes.

2. Main circuit breaker on each panel fed directly from a transformer (unless disconnect with overcurrent devices is installed in feeder between transformer and panel).

C. Provide lugs as required for conductors being connected to panelboard lugs, circuit breakers, etc.

D. Main circuit breaker is not to be mounted as branch breaker or subfeed breaker.

2.4 CIRCUIT BREAKERS

A. General

1. Molded Case Circuit Breakers: Plug-in type for 250V or less, bolt-on type for over 250V, thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled. Do not use tandem circuit breakers.

2. Current Limiting Molded Case Circuit Breakers: Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

B. Main Breakers:

1. Main breakers shall be individually mounted separate from branch breakers.

2. Covered by a metal plate, except for operating handle.

3. Connection from the load's side to the panel bus shall be bus bar. Insulated wire not permitted.

C. Branch Breakers:

1. Thermal-magnetic, molded case, with inverse time-current overload and instantaneous magnetic tripping, unless otherwise shown. Breakers shall be calibrated for 40 degrees C or shall be ambient compensating.

2. Quick-make, quick-break, with tripped indication clearly shown by breaker handle taking a position between ON and OFF.

3. Multi-pole breakers shall have common internal trip. No handle ties between single pole breakers are acceptable for this project.

4. Multi-wire branch circuit breakers shall have multi-pole breakers as required by the NEC. Handle ties between breaker handles are not acceptable.

5. Single pole 15 and 20 ampere circuit breakers shall be rated for switching duty and shall be labeled as "SWD."

6. AIC rating shall be as called for in paragraph 2.2 General.

7. Ground Fault Circuit Interrupters (GFCI):

a) Provide UL Class (5 milliamp sensitivity) ground fault circuit protection on 120 VAC

branch circuits for exterior location receptacles and for interior locations where required by NEC. (These may not be indicated on Panel Schedule.) This protection shall be an integral part of the branch circuit breaker, which also provides overload, and short circuit protection for branch circuit wiring. Tripping of a branch circuit breaker containing ground fault circuit interruption shall not disturb the feeder circuit to the panelboard. Provide separate neutral for circuits on GFCI breakers whether indicated on drawings or otherwise.

8. Breakers feeding heating and air-conditioning equipment shall be rated HACR type breaker.

9. Breakers feeding high intensity discharge lamps systems shall be HID rated.

D. All breakers are to have lugs sized to match conductors called for on drawings.

2.5 SERVICE ENTRANCE EQUIPMENT

A. Panelboards used as service entrance equipment shall be listed and labeled by UL for use as service equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboards in accordance with NEMA PB 1.1. Install all panelboards and panelboard enclosures in accordance with the manufacturer's written instructions, NECA National Electrical Installation Standards, the applicable requirements of the National Electrical Code, and recognized industry practices.

B. Install panelboards plumb. Install recessed panelboards flush with wall finishes. Provide supports in accordance with Section 26 05 29 Hangers and Supports.

C. Height: 6’ to top of panelboard; install panelboards taller than 6’ with bottom no more than 4” above housekeeping curb.

D. Provide filler plates for unused spaces in panelboards.

E. Provide typed circuit directory for each branch circuit panelboard. Mount a typewritten directory showing the actual circuit numbers, type of load and room names on inside of door. Room names shall be actual names or numbers used, not necessarily shown on the drawings. Progress drawings shall show same arrangements as the directory. Revise directory to reflect circuiting changes required to balance phase loads.

F. Provide engraved plastic nameplates under the provisions of Section 26 05 53 Identification for Electrical Systems.

G. Provide spare conduits out of each recessed panelboard to an accessible location above ceiling. Minimum spare conduits: 4 empty 1”. Identify each as “SPARE”.

H. Proper working clearances shall be maintained at every panelboard location. The working space in front of a panelboard shall be as a minimum, 30” wide extending 3’, 3.5’, or 4’ (per NEC 110.26) out perpendicular to the panelboard.

I. All enclosures shall be firmly anchored to walls and supporting structures (where used) using appropriate hardware. Provide supporting (unistrut type) channels on walls constructed of gypsum board or where otherwise necessary to provide a mechanically secure and permanent installation. Enclosures shall be installed so that the top is 6’-6” above finished floor. Where the size of the enclosure is such that the top cannot be installed at 6’-6”, the top of the enclosure shall be kept as low as possible.

J. Clean the interior of each panelboard before installing conductors. At all times, keep the

interior trim and exterior surfaces of the panelboard free of rust and debris. Repaint finishes if necessary.

K. Coordinate all raceways and conductors with their respective panelboards so that all connections and conductors routing present an orderly appearance. Conductors in the panelboards shall be laced and arranged in orderly manner.

L. Collect all keys upon delivery of panelboard. Store keys on one ring to be kept by project superintendent. Forward key ring with keys to Owner upon Substantial Completion.

M. Provide a separate neutral conductor for each GFI breaker. These shall not be combined to serve more than 1 circuit, even where on different phases. Increase plan indications of conductors for neutral wires required, as necessary.

3.2 IDENTIFICATION

A. Refer to Section 26 05 53 Identification for Electrical Systems for products and content.

B. Provide engraved plastic nameplates under the provisions of Section 26 05 53 Identification for Electrical Systems.

C. Nameplate shall state panel name and voltage of this panel, name of panel that feeds this respective panel, and UL short-circuit rating of this panel.

D. Provide labels and identification as required by the NEC.

E. All circuit identifications and directories shall be checked to verify accuracy of the description of the load and/or equipment being fed

3.3 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed.

B. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multiwire branch circuits.

C. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

D. Feeder conductors shall be checked by accepted means to establish the absence of shorts to ground, insulation value, etc., and the result recorded and submitted to the Engineer.

E. All circuits shall be operated to establish a good working order and checked for shorts.

F. All panel directory circuit numbers shall be checked to verify accuracy of the number.

G. Where and when requested by Engineer provide:

1. Inspection of equipment by authorized equipment manufacturer’s technician complete with submittal of statement of findings by technician and providing any adjustments deemed necessary for a complete and operating system.

2. Ground, voltage, and/or load readings complete with submittal on legible form with applicable data.

END OF SECTION

SECTION 26 27 16 - CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:

1. Hinged cover enclosures.
2. Cabinets.

B. Cabinets and enclosures are to include:

1. Terminal blocks,
2. Mounting panel,
3. Ground bus/bar, and
4. All accessories as required for a complete and operating system.

C. Provide and install cabinets and enclosures as specified herein for all systems specified in Divisions 26 Specifications.

1.3 REFERENCES AND REGULATORY REQUIREMENTS

A. Conform to the requirements of the following:

1. NEMA 250 Enclosures for Electrical Equipment (1000 Volts Maximum)
2. NEMA ICS 4 Terminal Blocks
3. ANSI/NFPA 70 National Electrical Code

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.4 SUBMITTALS

A. Submit Product Data: Provide manufacturer's standard data for enclosures and cabinets.

B. Submit Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under “References and Regulatory Requirements.” Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

C. Submit actual shop drawings on all cabinets and enclosures showing:

1. Covers.
2. Dimensions - inside and out.
3. Gauge of metal.
4. Manufacturer.
5. Terminal mounting plate, construction, etc.
6. Ground bus/bar.

1.5 EXTRA MATERIALS

A. Provide two of each cabinet key.

PART 2 - PRODUCTS

2.1 GENERAL

A. Unless specifically called for otherwise on Contract Drawings, provide cabinets as specified herein for terminal cabinets mounted indoors. Similarly, provide hinged cover enclosures as specified herein for terminal cabinets mounted outdoors or in locations other then NEMA 1 locations. Also provide hinged cover enclosures for locations where size required is not available in cabinet construction, or if specifically specified as enclosure in Contract Documents.

B. Size:

1. Dimensions of cabinets and enclosures shall meet the dimensions shown on Drawings, dimensions required by NEC, or dimensions sized as required to facilitate all equipment/connections involved installation, whichever is largest.

2. Coordinate with Division 27 Sections of these Specifications to ensure size of equipment cabinet or enclosure will house and facilitate proper installation and access to equipment, to be installed/mounted in cabinet or enclosure.

C. Provide metal barriers to separate compartments containing control wiring operating at less than 50 volts from power wiring.

D. Provide accessory feet and/or mounting brackets for free-standing equipment.

E. Cabinets and enclosures installed outdoors shall be fully weatherproof and watertight.

2.2 HINGED COVER ENCLOSURES

A. Construction:

1. Interior Locations: NEMA Type 1 steel (unless otherwise noted).

2. Exterior Locations: NEMA Type 4X: 304 stainless-steel.

B. Covers: Continuous hinge.

C. Enclosure Finish:

1. NEMA 1: manufacturer’s standard metallic gray enamel over phosphatized surfaces.

2. NEMA 4X: 304 stainless-steel.

D. Lock/Handle:

1. Provide/install key lock handle on all enclosures mounted in rooms/areas/spaces that are not electrical rooms or mechanical rooms. Enclosures installed in electrical rooms need not be and are not required to be lockable.

E. Interior Mounting Plate:

1. Each enclosure is to have interior mounting plate/panel for mounting terminal blocks and electrical components.

2. Plate/panel is to be metal.

F. Ground Bus/Bar:

1. Each enclosure housing surge protective devices or other equipment shall have local ground bar/bus installed. See "Local Ground Bus/Bar" included with this Section.

G. Manufacturers:

1. Hoffman.
2. Electromate Corporation.
3. Austin Enclosures

2.3 CABINETS

A. Construction: Code gauge steel with removable endwalls.

B. Finish:

1. Boxes: galvanized steel.
2. Fronts: gray baked enamel.

C. Fronts:

1. Electrical or Mechanical Room Locations: Screw cover with flush handle or as noted below.
2. Other Locations: Mono-flat with concealed trim clamps, concealed hinges, and flush lock lockable handle.
3. Flush or surface type as shown or called for in Contract Documents.

D. Interior Mounting Plate:

1. Each enclosure is to have interior mounting plate/panel for mounting terminal blocks and electrical components.
2. Panel/plate may be constructed of wood if painted with fire retardant paint of a flame spread rating of Class A, if it meets all applicable codes, and it is acceptable to the Authority Having Jurisdiction, otherwise plate to be metal.
3. Panel/plate shall be metal.

E. Ground Bus/Bar:

1. Each cabinet housing surge suppression equipment or other equipment shall have local ground bar/bus installed. See "Local Ground Bus/Bar" included within this Section.

F. Manufacturer:

1. Sq. "D" Class 6650 Series.
2. Austin Enclosures
3. Hoffman

2.4 TERMINAL BLOCKS

A. Terminal Blocks: ANSI/NEMA ICS 4.

B. Power Terminals: Unit construction type with closed back and tubular pressure screw connectors rated 600 volts.

C. Signal and Control Terminals: Modular construction type suitable for channel mounting with tubular pressure screw connectors rated 300 volts.

D. Provide ground bus terminal block with each connector bonded to enclosure.

2.5 LOCAL GROUND BUS/BAR

A. Size to handle #6 through #14 AWG copper ground wire.

B. Length as required for circuits.

C. Manufacturer:

1. Sq. "D" #PK***GTA Series.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work.

3.2 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.

B. Install enclosures and cabinets plumb. Anchor securely to wall and structural supports at each corner.

C. Install cabinet fronts plumb.

D. Install per NEC and as required for proper clearance. Coordinate with panels.

E. Provide and install terminal cabinets as shown on Drawings or as required by the NEC.

F. Provide and install terminal cabinets wherever required for a complete and operating distribution system whether shown on Drawings or not.

G. Install local ground bus/bar in each terminal cabinet/enclosure that houses surge protective devices or other equipment and bond to cabinet enclosure via mounting screws or #6 AWG copper ground wire.

H. Ground local ground bus to systems ground bus/bar with minimum #6 AWG copper ground wire. Increase size if so required on drawings.

I. Install enclosures.

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Provide and install all equipment, labor, material, accessories, and mounting hardware for a complete and operating system for the following:

1. Wall switches.
2. Receptacles.
3. Device plates and decorative box covers.

1.3 REFERENCES

A. NEMA WD 1 General Requirements for Wiring Devices

B. NEMA WD 6 Wiring Devices Dimensional Specifications

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Submit Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

1. Submit product data on all types of wiring devices including plates and engraving.

B. Submit Manufacturer's Instructions:

1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years experience.

1.7 EXTRA MATERIALS

A. Provide a minimum of two screwdrivers of each type of tamper proof screw used on project.

B. Turn over to Owner and submit Spare Parts/Maintenance Stock Certification. (See Section 26 01 00 Operation and Maintenance Manual).

PART 2 - PRODUCTS

2.1 GENERAL

A. All devices shall be Specification Grade as minimum.

B. General purpose wiring devices shall meet NEMA standard WD-1, Wiring Devices, General Purpose. Special purpose devices shall conform to the requirements of NEMA standard WD-5, Wiring Devices, Special Purpose.

C. All wiring devices shall bear UL labels.

D. All devices of one type (i.e. all snap switches, all duplex receptacles, etc.) shall be by the same manufacturer. Hazardous Location and Special Purpose Devices may not be available from the same manufacturer; this shall constitute the only exception to this requirement of single-source.

E. Corrosion resistant devices shall be as specified for normal usage, and fabricated of yellow color melamine plastic. Where "Weatherproof" type is indicated for exterior or wet locations, provide matching self-closing cover with gasketed seals at plate/wall junctions and for cover.

F. Provide factory packaged wiring devices having high impact strength molded plastic bodies.

G. Except where specifically required in these Specifications, use of interchangeable type or combination switch-receptacle-pilot devices is not acceptable and shall be removed.

H. All devices are to have terminals, terminations, lugs, etc rate at 75 degree C as a minimum for use with 75 degree C and higher conductor ratings.

2.2 WALL SWITCHES

A. Manufacturers:

1. See Drawings.

B. General:

1. Snap switches for general use shall be maintained contact types, and shall be single-pole, double-pole, three-way, or four-way as required for the specific switching arrangements shown on the drawings. They shall be quiet tumbler operation types, having silver alloy contacts, and meeting all NEMA performance standards. Color to match plates unless specifically noted otherwise in Specifications and/or on Drawings.

2. Switches shall be toggle or key-operated types, as indicated on the Drawings. All key-operated switches shall be keyed alike.

3. Where switches are denoted as having pilot lights, pilot lights shall glow when the switches are "On". Provide pilot light switch with lamp and miniature step-down transformer. The pilot light shall have a red lens, and the lamp shall be long-life type.

4. Jewels for use with switches controlling motors shall be green, and jewels for other purposes shall be amber. All units shall be front relampable.

5. Snap switches installed in hazardous locations shall be UL listed for the type of location (class and division).

6. Voltage and ampere rating of switches shall be marked on switch, and shall conform to voltage of system to which applied.

C. Description: NEMA WD 1, heavy-duty, ac only general-use snap switch.

D. Voltage Rating: 120-277 volts, ac.

E. Current Rating: 20 amperes minimum.

F. Ratings: Match branch circuit and load characteristics.

2.3 RECEPTACLES

A. General:

1. All receptacles shall be of standard NEMA configuration, as indicated on the Drawings, and shall comply with the respective ANSI C73 series standard for the NEMA configuration. Color to match plates unless specifically noted otherwise in specifications and/or on drawings.

2. Duplex receptacles shall have integral UL listed self-grounding clips. Similar, single receptacles shall be provided for plug-in connections of Industrial Fluorescent light fixtures on the same switching circuit. Receptacle face to be impact resistant nylon.

3. Weatherproof duplex receptacles shall be provided in all exterior locations, and shall be ground fault circuit interrupting (GFCI) types, with weatherproof cover plates allowing use of receptacle with cover in closed position.

4. Special purpose receptacles for specific equipment shall be grounding types, having the number of poles, voltage and ampere ratings, and NEMA configurations required by the equipment. For each special purpose receptacle, provide an identical mating plug equipped with cord grip, secured to cord.

5. Duplex receptacles shall have back and side wired screw pressure terminals.

B. Description: NEMA WD 1; heavy-duty general use receptacle.

C. Configuration: NEMA WD 6; heavy-duty, general use type as specified and indicated.

D. Convenience Receptacle: Type 5-20.

E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

F. Manufacturers:

1. See Drawings.

2.4 COVER PLATES

A. All wiring devices shall be provided with standard size one-piece cover plates of suitable configuration for the number and type of devices to be covered.

B. Metallic cover plates shall be used in interior spaces, except as noted below, and shall be fabricated of corrosion-resistant #302 stainless steel having a nominal thickness of .04" and a brushed finish. Screws securing the plates shall have flush (when installed) heads with finish to match plates. Metallic cover plates shall meet all requirements of the National Electrical Code and Federal Specifications.

C. Cover plates for switches located in corrosive atmospheres (where vapor proof is not indicated) shall be equal to Hubbell #17CM81/#17CM82/#17CM83/#17CM84 one-piece neoprene with matching presswitch.

D. Cover plates for exterior receptacles shall be gasketed covers with hinge allowing plug and cord to be plugged in and activated with cover closed..

E. Cover plate engraving, where required, shall be accomplished by cover plate manufacturer in accordance with instructions given on the Drawings. Metallic plates shall be engraved with black fill.

F. Unless specifically noted otherwise in Specifications or on Drawings, all outlets for telephone and other communications and data systems shall be provided with standard size one-piece cover plates having a minimum 3/4" diameter bushed hole in the center unless specifically noted otherwise in Specifications and/or on Drawings. Where telephone conductors are installed, plates shall contain telephone type, polarized plug-in receptacles.

2.5 COLOR

A. Wiring devices connected to normal power and located in unfinished spaces shall be grey color. Devices connected to normal power and located in finished interior spaces shall be of color selected by Architect from the following list of standard colors: ivory, beige, gray, white, brown, black.

B. Cover plates for devices connected to normal power and located in finished interior spaces shall be of color selected by Architect from the above list of standard colors or #302 stainless steel.

C. All devices and coverplates in paneled walls shall have finish to match paneling.

D. Contractor shall modify any given catalog numbers as required to procure devices and plates of the proper color.

PART 3- EXECUTION

3.1 EXAMINATION

A. Verify conditions under provisions of Division 01 General Requirements and any other applicable supplemental requirements/conditions.

B. Verify outlet boxes are installed at proper height.

C. Verify wall openings are neatly cut and will be completely covered by wall plates.

D. Verify floor boxes are adjusted properly.

E. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install devices plumb and level.

C. Install switches with OFF position down.

D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

E. Do not share neutral conductor on load side of dimmers.

F. Install receptacles with grounding pole on bottom.

G. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

H. Electrical boxes shall be cleaned and completely free of any debris, dust, etc. prior to the installation of wiring devices.

I. Where two or more switches or receptacles are to be installed adjacent to one another, provide

Normal and Emergency Systems.

J. Provide device coverplates for every device installed. Cover plates shall be installed so that they appear straight with no gaps between plate edges and the wall. Maintain vertical and horizontal to within 1/16 of an inch.

K. In finished areas provide same type of plate for all surface mounted devices as for recessed mounted devices.

L. In any room where new and existing construction is present, all receptacles, switches, and coverplates which are existing to remain shall be changed as required to match new work.

M. Wiring devices shall not be installed in exposed masonry until cleaning of masonry with acids has been completed.

N. All receptacles and switches shall be grounded by means of a ground wire from device ground screw to outlet box screw and branch circuit ground conductor. Strap alone will not constitute an acceptable ground.

O. All wiring devices, relays, contactors, pushbuttons, selector switches, pilot lights, etc. shall be installed in approved enclosures rated for the appropriate NEMA classified environment.

P. All devices shall be installed so that only one wire is connected to each terminal.

Q. Once construction is substantially completed, replace all damaged, burned, or scorched wiring devices.

R. Receptacles shown to be floor mounted shall be installed in floor boxes (with coverplates) which are approved for this use.

S. Do not wrap stranded conductors around screw terminals. Provide devices suitable for terminating stranded conductors or provide suitable compression terminal for connections to devices.

T. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

U. Install protective rings and split nozzle on active flush cover service fittings.

V. Install local room area wall switches at door locations on the lock side of the door approximately 4” from the jamb. Where locations shown on the Drawings are in question, provide written request for information to A/E prior to rough-in.

3.4 NEUTRAL CONDUCTOR CONNECTIONS

A. Each receptacle’s "in" and "out" phase and neutral conductors shall have an additional conductor for connection to device. The practice of "looping" conductors through receptacle boxes shall not be acceptable.

3.5 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under other Sections of these Specifications to obtain mounting heights specified and indicated on Drawings.

3.6 FIELD QUALITY CONTROL

A. Inspect each wiring device for defects.

B. Operate each wall switch with circuit energized and verify proper operation.

C. Verify that each receptacle device is energized.

D. Test each receptacle device for proper polarity.

E. Test each GFCI receptacle device for proper operation.

3.7 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

END OF SECTION

SECTION 26 43 00 - SURGE PROTECTIVE DEVICES

PART 1- GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for surge protective devices.

1.3 REFERENCES

A. The latest edition of the following references shall apply to the work of this section:

1. ANSI/IEEE C62.33 Standard Test Specifications for Varistor Surge Protective Devices
2. ANSI/IEEE C62.41 IEEE Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits
3. ANSI/IEEE C62.45 IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits
4. NFPA 70 National Electrical Code
5. NFPA 780 Standard for Installation of Lightning Protection Systems
6. UL 96A Standard for Lightning Protection Components
7. UL 1363 Standard for Safety Relocatable Power Taps
8. UL 1449, 4th Edition Standard for Surge Protective Devices

1.4 REGULATORY REQUIREMENTS

A. Equipment Certification: Surge protective devices shall be listed by Underwriters Laboratories shall bear the UL seal and be marked in accordance with referenced standard. Surge protective devices shall be UL listed and labeled for intended use.

B. Surge protective devices shall be installed and located in accordance with requirements of all applicable National Fire Protection Association (NFPA) codes (including NFPA 70 and NFPA 780).

C. Comply with all standards and guides as listed under “References” above.

1.5 DESIGN REQUIREMENTS

A. Provide and install all materials, labor and auxiliaries required to furnish and install complete surge suppression for the protection of building electrical and electronics systems from the effects of line induced transient voltage surge and lightning discharge as indicated on Drawings or specified in this Section for systems with voltages between 120 VAC and 480VAC (single phase or three phase).

B. Equipment specified covers Surge Protective Devices (SPD).

C. Provide surge protective devices for the following equipment:

1. On each main electrical service panel at each building.
2. On distribution and branch panels as called for on Drawings or in these Specifications.

1.6 SUBMITTALS

A. Submit under provisions of the General Requirements of the Contract Documents and Section Submittals.

B. Submit Product Data for each type of surge protective device:

1. Dimensions.
2. Means of mounting.
3. Compliance with UL Standards referenced.
4. Compliance with IEEE Standards referenced.
5. Design type (Hybrid, MOV).
6. Internal fusing.
7. Recommended overcurrent protection.
8. Size of wire leads.
9. Visual failure indicator.
10. Warranty.
11. Performance data showing compliance with performance as specified herein.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance (O & M) data as called for in Section 26 01 00 Operation and Maintenance Manuals.

B. O & M data to include:

1. All accepted shop drawings, product data, and/or cutsheets.
2. Installation, connection, and maintenance information on each type of surge suppression.
3. Procedure and/or timetable for recommended periodic inspection of devices to determine continued usefulness.

1.8 QUALITY ASSURANCE

A. All surge protective devices shall be manufactured by a company normally engaged in the design, development, and manufacture of such devices for electrical and electronics systems equipment.

B. The surge protective device manufacturer shall offer technical assistance through support by a factory representative and local stocking distributor. Factory representatives are to accept installation prior to Substantial Completion.

1.9 COORDINATION/PROJECT CONDITIONS

A. Verify proper grounding is in place.

B. Verify proper clearances, space, etc. is available for surge protective devices.

C. Coordinate so that proper overcurrent device, as recommended by manufacturer, is installed to feed each surge protective device.

1.10 WARRANTY

A. All surge protective devices shall be warranted to be free from defects in materials and workmanship for a period of ten years.

B. Any surge protective device which shows evidence of failure or incorrect operation during the warranty period shall be repaired or replaced by the manufacturer and installer at no cost to the Owner.

1.11 DEFINITIONS/ABBREVIATIONS

A. VPR: UL Voltage Protection Rating

B. MCOV: Maximum Continuous Operating Voltage

C. SCCR: Short Circuit Current Rating

D. IN: Inominal

PART 2 - PRODUCTS

2.1 GENERAL

A. Surge protective devices shall be designed for the specific type and voltage of electrical service and shall provide clamping action for both normal (L-N) and common (N-G) mode protection.

B. Surge protective devices shall be of a hybrid design, and include circuitry with tight, wave-tracking clamping characteristics.

C. Surge protective devices shall be designed to withstand a maximum continuous operating voltage of not less than 115 percent of nominal RMS line voltage.

D. Surge protective devices shall contain internal safety fusing to disconnect the surge protective device from the electrical source if the surge protective device fails, in order to prevent catastrophic failure modes.

E. Surge protective devices shall be fail safe, shall allow no follow-through current, shall have repeated surge capability, shall be solid state, shall be self-restoring, and shall be fully automatic.

F. Surge protective devices shall be UL 1449 listed under UL Category Code VZCA and shall be accepted for the location in which they are installed.

2.2 SERVICE ENTRANCE SURGE PROTECTIVE DEVICES

A. General: Provide service entrance surge protective devices on each main electrical service panel at each building and/or structure. Surge protective devices shall meet or exceed the following (in addition to requirements under ‘General’ above):

1. Surge protective devices shall be tested per UL 1449 requirements to determine voltage protection rating (VPR).

2. Surge protective devices shall be sequential surge tested as per IEEE C62.45, and shall withstand 1000 test cycles at 10 kA, Cat. C3 test criteria.

3. Enclosure:

a) UL listed

b) Fire retardant

c) NEMA 1, 2, 3R, 3S, 12, or 13, as required for each location.

d) Flush, Switchboard and/or Surface mounted as required for each location.

e) NEMA 4X Polycarbonate for exterior applications.

B. Modular Design With Remote Monitoring:

1. Remote Monitoring. Provide complete with:

a) Normally open and normally closed dry contacts for remote annunciation of unit status for interfacing with building management system.

2. Replaceable module design. The panel mounted surge protective device shall be designed with replaceable modules for purposes of in-service replacement.

3. The surge protective device shall be designed with redundant back-up surge protection in the event of a module failure.

4. Module status indicators shall be provided to indicate individual module status. When a module has failed, the module LED status indicator shall indicate said failure.

5. Unit status indicators shall be provided to indicate the status of the complete surge protective device. The LED status indicators shall be located on the hinged front cover to redundantly indicate module or unit failure.

6. Minimum Surge Capacity:

a) 300 kA per phase.

7. Voltage Protection Rating (VPR) and Maximum Continuous Operating Voltage. Comply with the following maximum voltages for UL 1449 testing requirements:

300 kA Unit	L-L	L-N	L-G	N-G	MCOV	In
120/208 V, 3ph, 4W, wye					150V	
UL 1449	1000V	700V	600V	600V		20 kA
277/480 V, 3ph, 4W, wye					320V	
UL 1449	1800V	1200V	1000V	1000V		20 kA

8. Minimum Short Circuit Current Rating:

a) 200,000 amps.

9. Manufacturers:

a) 300 kA Units.

1. Schneider Electric Model EMB for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes. Must be ordered and supplied as a factory special with stainless steel enclosure or polycarbonate enclosure for exterior locations. Standard NEMA 4 steel enclosure is not acceptable for exterior locations.

2. Siemens TPS3 12 Series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.

3. Siemens TPS4 12 Series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.

4. Atlantic Scientific ZoneMaster All-Mode series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable

codes.

2.3 SECOND LEVEL SURGE PROTECTIVE DEVICES.

A. General. Provide second level surge protective devices on each second level of the distribution system (including sub panels). Surge protective devices shall meet or exceed the following (in addition to requirements under 'General' above):

1. Surge protective devices shall be tested as per UL 1449 requirements to determine voltage protection ratings (VPR – 3 kA).

2. Surge protective devices shall be sequential surge tested as per IEEE C62.45, and shall withstand 1000 test cycles at 3 kA, Cat. B3 test criteria.

3. Enclosure:

a) UL listed.

b) Fire retardant.

c) NEMA 1, 2, 3R, 3S, 12, or 13 as required for each location.

d) Flush, Switchboard and/or Surface mounted as required for each location.

e) NEMA 4X Polycarbonate for exterior applications.

B. Non-Modular Design with remote monitoring.

1. Remote Monitoring. Provide complete with:

a) Normally open and normally closed dry contacts for remote annunciation of unit status for interfacing with building management system.

2. Status indicators shall be provided to indicate individual module status. When a module has failed, the module LED status indicator shall indicate said failure. The LED status indicators shall be located on the front cover to redundantly indicate module or unit failure.

3. Minimum Surge Capacity:

a) 200 kA per phase.

4. Voltage protection rating (VPR) and maximum continuous operating voltage. Comply with the following maximum voltages for UL 1449 testing requirements:

200 kA Unit	L-L	L-N	L-G	N-G	MCOV	In
120/208 V, 3ph, 4W, wye					150V	
UL 1449	1000V	700V	700V	600V		20 kA
277/480 V, 3ph, 4W, wye					320V	
UL 1449	2000V	1200V	1200V	1200V		20 kA

5. Short Circuit Current Rating: 100,000 amps.

6. Manufacturers:

a) 200 kA Units:

1. Schneider Electric Model EMB for applied voltage for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.

2. Siemens TPS3 11 Series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.
3. Square D XDSE (Previous Model Name APT TE/***XDS/20) for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.
4. Siemens TPS4 11 Series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.
5. PQ Protection PQC320 Plus series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.
6. Atlantic Scientific ZoneMaster All-Mode series for applied voltage in enclosure as required on drawings, as specified above, and/or as required by applicable codes.

2.4 SERVICE SURGE ARRESTER

A. Service surge arrester shall be UL listed as Type 1 surge arrester and as required to comply with Local Authority Having Jurisdiction and UL 96A requirements.

B. This suppressor shall be connected on the line side of service to each building and where required to meet UL 96A.

C. 50 kA per phase rating.

D. Minimum short circuit current rating: 200,000 amps

E. Enclosure:

1. NEMA 4X polycarbonate

F. Manufacturers:

1. Schneider Electric Model SPDE for applied voltage
2. Siemens TPS3 03 series for applied voltage.
3. Siemens TPS4 03 series for applied voltage.
4. PQ Protection PQC160 Plus series for applied voltage.

PART 3 – EXECUTION

3.1 GENERAL

A. Provide, install and connect surge protective devices at first piece of electrical equipment (panel, switchboard, etc.) that the electrical service encounters as it enters the facility.

B. Provide, install and connect surge protective devices at each branch panel as noted on drawings.

3.2 INSTALLATION OF SURGE PROTECTIVE DEVICES

A. Surge protective devices shall be installed as close as practical to the electric panel or electronic equipment to be protected, consistent with available space.

B. Surge protective devices shall be close nippled to the device being protected in a position near the neutral bus which will minimize lead length between surge protective devices and the buses or control breaker to which the surge protective device connects. Suppressor leads shall not extend beyond the surge protective device manufacturer's recommended maximum lead length without specific acceptance of the Engineer.

C. Location shown on Drawings is diagrammatic only. Provide flush mount trim for surge protective device units at flush mounted panelboards. Provide NEMA 4X enclosures for TVSS units in exterior locations.

D. Surge protective devices shall be installed in a neat, workmanlike manner. Lead dress shall be as short and as straight as possible and be consistent with recommended industry practices for the system on which these devices are installed.

E. Supplementary grounding and bonding connections required between the bonding bus or ground plane for each equipment cluster and other locations as indicated herein shall be accomplished using #6 AWG core copper conductor and accepted connections unless otherwise noted. Referenced to a common earth ground.

F. Surge protective devices shall be installed in a manner that allows simple replacement within short periods of downtime.

G. Surge protective devices other than point of use type and those for exterior lighting poles shall be installed with a means of disconnecting the suppressor at the panel. At the main service entrance location, provide a dedicated 30 amp, 3 phase CB, 100,000 AIC for the surge protective device. At the distribution secondary and/or subpanels location, provide dedicated 20 amp or 30 amp, 3 phase CB, for the surge protective device. Label disconnect or CB "Surge Protector." Fused disconnects may be substituted for the CB, with the acceptance of the Engineer. Contractor to change rating of CBs noted above as required to properly provide system as recommended by manufacturer.

END OF SECTION

SECTION 26 55 68 - ATHLETIC FIELD LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Exterior luminaires and accessories.
2. Poles.
3. Controls

B. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

C. The purpose of these specifications is to define the lighting system performance and design standards for New Smyrna Beach High School Baseball and Softball Field using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.

D. The sports lighting will be for the following venues:

1. Baseball Field
2. Softball Field

E. The primary goals of this sports lighting project are:

1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for a period of 25 years.
2. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to the players, spectators and neighbors. The LED design should provide better control than a good HID design.
3. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy-efficient and cost-effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
4. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.

1.3 Lighting Performance:

A. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Appropriate light loss factors shall be applied and submitted for the basis of design. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Baseball Infield	50 foot-candles	2	25	30'x 30'
Baseball Outfield	30 foot-candles	2.5	98	30'x 30'
Softball Infield	50 foot-candles	2	25	20'x 20'
Softball Outfield	30 foot-candles	2.5	77	20'x 20'

B. Hours of usage: Designs shall be based on the following hours of usage

Area of Lighting	Annual Usage Hours	25 year Usage Hours
Baseball	250	6,250
Softball	250	6,250

C. Color: The lighting system shall have a minimum color temperature of <5700K and a CRI of <75+.

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of the following:

1. ANSI/NFPA 70 National Electrical Code
2. FBC Florida Building Code
3. ASCE 7-22 Minimum Design Loads for Building and Other Structures
4. IES Illuminating Engineering Society
5. NESC National Electrical Safety Code

1.5 SUBMITTALS

A. Submit point to point photometric analysis of the entire job site to the property line. Utilize photometric data obtained from submitted fixtures only. Verify that all submitted fixture types and light levels are compliant with all local codes, ordinances, and the authority having jurisdiction. Submittal will not be reviewed by the A/E without this narrative data.

B. Product Data: Provide dimensions, ratings, and performance data. Product data shall be submitted for all light fixtures showing:

1. Dimensions
2. UL label
3. Fusing
4. Luminaire disconnect

5. Metal gauge
6. Lens thickness
7. Finish
8. Voltage
9. Lightning arrestor, surge arrestor/, and/or surge protection device

C. Submit drawings on concrete base complete with rebars, etc.

1.6 PROJECT RECORD DOCUMENTS

A. Submit record documents to accurately record actual locations of each luminaire.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit Maintenance Data and include instructions for maintaining luminaires.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

1.9 REGULATORY REQUIREMENTS

A. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and protect products at site.

B. Accept products on site. Inspect for damage.

C. Protect poles from finish damage by handling carefully.

1.11 COORDINATION

A. Confirm exact location of each pole and its placement with respect to home plate and base lines prior to submitting shop drawings. Contractor is responsible for field measurements.

B. Perform soft digs at each pole location to confirm that existing conditions do not require a pole to be relocated within 30 days of Notice to Proceed. Provide any updates on pole to locations to lighting manufacturer 45 days prior to pole shipment to facilitate refinement of fixture aiming prior to shipment.

1.12 WARRANTY

A. 25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.

B. Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

PART 2 - PRODUCTS

2.1 GENERAL

A. All lighting fixtures mounted outdoors subject to dampness and insects shall have gasketing material between lens door and frame to completely seal interior of fixture. Knockouts and holes in fixtures housing shall be closed and sealed. All fixtures shall be complete with lamps, shielding, brackets, concrete bases, and all necessary fittings and accessories for a complete installation.

B. Furnish products as specified on Drawings.

C. All exterior light fixtures shall not have any labels exposed to normal viewing angles. This includes manufacturer labels and UL labels. All labels shall be concealed within the body of the fixture and/or luminaire. No manufacturers name or logo shall appear on the exterior of any light fixtures unless accepted in writing by the Engineer.

D. All light fixtures shall adhere to UL Test Standard #1598 and NEC 410.115(C). All manufacturers shall provide the required thermal protection as required.

E. Pole luminaires, poles, and concrete bases shall comply with applicable requirements of IES, NESC, ASCE, FBC, .and including but not limited to their requirements for illumination, uniformity, construction, wind loading, pole setback, breakaway, installation, glare criteria.

F. All site lighting fixtures/luminaries that may spill light onto adjacent properties shall have glare control shield installed on all fixtures/luminaries as required to meet the glare control requirements of applicable codes and standards. Add required glare control shield to order/model number of all site lighting fixtures.

G. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.

H. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

I. System Description: Lighting system shall consist of the following:

1. Galvanized steel poles and cross-arm assembly. Alternate: Concrete pole with a minimum of 8,000 psi and installed with concrete backfill will be an acceptable alternative provided building code, wind speed and foundation designs per specifications are adhered to.

2. Non-approved pole technology:

a) Square static cast concrete poles will not be accepted.

b) Direct bury steel poles which utilize the extended portion of the steel shaft for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long-term performance concerns.

3. Lighting systems shall use concrete foundations.

4. Foundation shall use a pre-stressed concrete base embedded in concrete backfill the concrete shall be air-entrained and have a minimum compressive design strength at 28 days of 3,000 PSI. 3,000 PSI concrete specified for early pole erection, actual required minimum allowable concrete strength is 1,000 PSI. All piers and concrete backfill must bear on and against firm undisturbed soil.
5. Manufacturer will supply all drivers and supporting electrical equipment
6. Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure.
7. Manufacturer shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2_2002.
8. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
9. All luminaires, visors, and cross-arm assemblies shall withstand 155 mph winds and maintain luminaire aiming alignment.
10. Control cabinet to provide remote on-off control and monitoring of the lighting system. See Section 2.4 for further details.
11. Manufacturer shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
12. Integrated grounding via concrete encased electrode grounding system.
13. If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780.The grounding electrode shall be minimum size of 5/8 inch diameter and 80 feet long, with a minimum of 80 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of Class I conductor for poles with 75 feet mounting height or less, and Class II conductor for poles with more than 75 feet mounting height.
14. Enhanced corrosion protection package: Due to the potentially corrosive environment for this project, manufacturers must provide documentation that their products meet the following enhanced requirements in addition to the standard durability protection specified above:
15. Exposed carbon steel horizontal surfaces on the crossarm assembly shall be galvanized to no less than a five (5) mil average thickness.
16. Exposed die cast aluminum components shall be Type II anodized per MIL-STD-8625 and coated with high performance polyester.
17. Exposed extruded aluminum components shall be Type II anodized per MIL-STD-8625 and coated with high performance polyester.

2.2 STRUCTURAL PARAMETERS

1. Wind Loads: Wind loads shall be based on the 2023 Florida Building Code. Wind loads to be calculated using ASCE 7-22, a risk category III ultimate design wind speed of 155mph, and exposure category C.
2. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to

2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).

3. Foundation Design: The foundation design shall be based on soils at site.

4. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

2.3 CONTROL

A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

B. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

C. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

D. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute “early off” commands by phone. Scheduling tool shall be capable of setting curfew limits.

E. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

F. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

G. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.

H. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

I. Cumulative hours: shall be tracked to show the total hours used by the facility

J. Report hours saved by using early off and push buttons by users.

K. Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine excavation and concrete foundation for lighting poles.

3.2 INSTALLATION

A. Install all fixtures in accordance with manufacturers’ written instructions, NEC, IES, ASCE, FBC, and NESC.

B. Install lighting poles at locations indicated.

C. Install poles plumb.

D. Install lamps in each luminaire.

E. Bond luminaires, metal accessories and metal poles to branch circuit equipment grounding conductor. Provide supplementary grounding electrodes at each pole. See Section 16170 Grounding and Bonding.

F. All exterior post/pole mounted light fixtures shall have hand hole near base. Hand hole shall provide easy access to lightning protection ground lug. Lightning protection ground lug shall be provided inside post/pole, electrically in contact with pole, for connection to ground rod. Provide and install ground wire from ground lug to ground rod, concealing ground wire through post/pole base.

G. Pole installation shall comply with windloading criteria stated in ASCE 7-22 and Florida Building Code. Use V velocity = 155 Mph and the formulas and tables presented in ASCE 7-22.

H. Provide soil compacting and/or treatment to assure windloading can be achieved for direct buried poles.

I. Ducseal shall be installed to seal all conduits entering exterior light fixtures from underground.

3.3 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

3.4 ADJUSTING

A. Aim and adjust luminaires to provide illumination levels and distribution as directed.

B. Re-lamp luminaires which have failed lamps at Date of Substantial Completion.

3.5 GLARE CONTROL

A. Provide, install and adjust glare control shields to prevent light glare on adjacent properties.

3.6 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photometric control surfaces as recommended by manufacturer.

D. Clean finishes and touch up damage.

E. Luminaires:

1. Clean free from dust and dirt. Wash lens and glassware using cleaner such as Windex and dry with absorbent paper. Clean plastic per manufacturer's recommendations; do not wipe. Lenses which are kept in original containers until immediately prior to final inspection may not require cleaning. Clean Alzak aluminum surfaces (reflectors, fixture cones and the like) per manufacturer's recommendations being careful to remove fingerprints and smudges.

2. It is the Contractor's responsibility to remove any UL labels or manufacturer’s labels from areas of fixture exposed to view and relocate label to non-obtrusive area on fixture.

END OF SECTION

SECTION 26 56 00 - EXTERIOR LIGHTING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes:

1. Exterior luminaires and accessories.
2. Poles.

B. Light fixtures furnished under this Division shall be furnished as complete operational units with all necessary trim and mounting hardware and installed as shown on the Drawings.

C. Light fixtures shall be neatly and firmly mounted.

1.3 REFERENCES

A. ANSI C78.379 Classification of Beam Patterns

B. IES RP-8 Roadway Lighting

C. IES RP-20 Lighting for Parking Facilities

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of the following:

1. ANSI/NFPA 70 - National Electrical Code
2. ASCE 7-22 - Minimum Design Loads for Building and Other Structures
3. FBC - Florida Building Code
4. IES - Illuminating Engineering Society
5. NESC - National Electrical Safety Code
6. ANSI/UL8750 - Standards for Light Emitting Diode(LED) Equipment for Use in Lighting Products
7. ANSI C78.377-2011 - Specifications for the Chromaticity of Solid-State Lighting Products
8. IES LM-79-08 - Electrical and Photometric Measurements of Solid-State Lighting Products
9. IES LM-80-8 - Measuring Lumen Maintenance of LED Light Sources
10. IES TM-21-11 - Projecting Long Term Lumen Maintenance of LED Light Sources
11. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.5 SUBMITTALS

A. Submit point to point photometric analysis of the entire job site to the property line. Utilize photometric data obtained from submitted fixtures only. Verify that all submitted fixture types and light levels are compliant with all local codes, ordinances, and the authority having jurisdiction. Submittal will not be reviewed by the A/E without this narrative data.

B. Product Data: Provide dimensions, ratings, and performance data. Product data shall be

submitted for all light fixtures showing:

1. Dimensions
2. UL label
3. Fusing
4. Luminaire disconnect
5. Metal gauge
6. Lens thickness
7. Finish
8. Voltage
9. LED Driver
10. LED Light Engine
11. Integral Surge protection device

C. Submit signed and sealed structural drawings and calculations for all poles and foundations.

1.6 PROJECT RECORD DOCUMENTS

A. Submit record documents to accurately record actual locations of each luminaire.

1.7 OPERATION AND MAINTENANCE DATA

A. Submit Maintenance Data and include instructions for maintaining luminaires.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

1.9 REGULATORY REQUIREMENTS

A. Furnish products listed and classified by Underwriters Laboratories as suitable for purpose specified and shown.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and protect products at site.

B. Accept products on site. Inspect for damage.

C. Protect poles from finish damage by handling carefully.

D. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 501 (exterior lighting), NECA/IESNA 502 (industrial lighting), and all manufacturer's written instructions.

1.11 MAINTENANCE MATERIALS

A. Provide to Owner:

1. Ten of each size/type of fuses.
2. Two additional LED drivers for each type of driver used in the project. For fixtures that do not have field replaceable LED drivers one additional complete fixture head may be provided in lieu of the two additional LED drivers.
3. One additional fixture head of each type of fixture used in the project.

1.12 WARRANTY

A. All fixtures furnished under this Division shall be covered by a 10-year warranty.

PART 2 - PRODUCTS

2.1 GENERAL

A. All lighting fixtures mounted outdoors subject to dampness and insects shall have gasketing material between lens door and frame to completely seal interior of fixture. Knockouts and holes in fixtures housing shall be closed and sealed. All fixtures shall be complete with shielding, brackets, concrete bases, anchor bolts and all necessary fittings and accessories for a complete installation.

B. Furnish products as specified on Drawings.

C. All exterior light fixtures shall not have any labels exposed to normal viewing angles. This includes manufacturer labels and UL labels. All labels shall be concealed within the body of the fixture and/or luminaire. No manufacturers name or logo shall appear on the exterior of any light fixtures unless accepted in writing by the Engineer.

D. All light fixtures shall adhere to UL Test Standard 1598 and NEC 410-115(C). All manufacturers shall provide the required thermal protection as required.

E. Pole luminaires, poles, and concrete bases shall comply with applicable requirements of IES, NESC, ASCE, FBC, .and including but not limited to their requirements for illumination, uniformity, construction, wind loading, pole setback, breakaway, installation, glare criteria.

F. All site lighting fixtures/luminaries that may spill light onto adjacent properties shall have glare control shield installed on all fixtures/luminaries as required to meet the glare control requirements of applicable codes and standards. Add required glare control shield to order/model number of all site lighting fixtures.

2.2 LED DRIVERS

A. Manufacturers:
   1. Lutron, Phillips Advance, Hatch, or accepted substitution

B. Drivers:
   1. Driver shall be integral into fixture.
   2. Voltage: Match luminaire voltage and voltage of system to which applied.
   3. Efficiency > 90%
   4. Total Harmonic distortion < 20%
   5. Power Factor: 0.9
   6. Expected lifetime: 50,000 hours
   7. Drivers to be protected with in-line fuse/fuseholder.

2.3 LED Chips / Light Source

A. Manufacturers
   1. Cree, Phillips, Samsung, Bridgelux, or approved equivalent

B. Correlated Color Temperature (CCT):
   1. 4100K(Unless noted otherwise) for estimated product life.
   2. Derived: Phosphor conversion, RGB, Color Tuning.

C. Efficacy: Minimum 100 lumens/watt

D. Lumen Maintenance:

1. A minimum of 50,000 hours at L90

2. A minimum of 70,000 hours at L70

E. Color rendering index (CRI):

1. A minimum of 80 unless noted otherwise

2.4 SURGE PROTECTION

A. Pole mounted lights to include integral surge protection as follows:

1. Field replaceable surge protection device that provides 20kA protection meeting ANSI/IEEE C62.41.2 Category C High and Surge Location Category C3.

2. Device shall automatically take fixture off-line for protection when device is compromised.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine excavation and concrete foundation for lighting poles.

3.2 INSTALLATION

A. Install all fixtures in accordance with manufacturers written instructions, NEC, IES, ASCE, FBC, and NESC.

B. Install lighting poles at locations indicated.

C. Install poles plumb. Provide double nuts to adjust plumb. Grout around each base.

D. Bond luminaires, metal accessories and metal poles to branch circuit equipment grounding conductor. Provide supplementary grounding electrodes at each pole. See Section 26 05 26 Grounding and Bonding.

E. Where ceiling mounted fixtures are called for in the Light Fixture Schedule and on the drawings, this Contractor shall provide fixture trims and supports as required to match type of ceiling system which will be furnished. No ceiling fixtures shall be ordered until the Ceiling System Installer has given written acceptance of the method and location of fixture hanging and fixture type. Fixtures supported by suspended ceiling systems shall be securely fastened to the ceiling framing member by mechanical means, such as bolts, screws, or rivets. Clips identified for use with the type of ceiling framing member(s) and fixture(s) shall also be permitted.

F. All exterior post/pole mounted light fixtures shall have hand hole near base. Hand hole shall provide easy access to light fixture fusing and lightning protection ground lug. Lightning protection ground lug shall be provided inside post/pole, electrically in contact with pole, for connection to ground rod. Provide and install ground wire from ground lug to ground rod, concealing ground wire through post/pole base.

G. Pole installation shall comply with windloading criteria stated in ASCE 7-22 and 2023 Florida Building Code. Use V velocity = 155 Mph) and the formulas and tables presented in ASCE 7-22.

H. Provide soil compacting and/or treatment to assure windloading can be achieved for direct buried poles.

I. Ducseal shall be installed to seal all conduits entering exterior light fixtures from underground.

J. In-line fusing to be located at handhole location of pole for easy access.

3.3 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

3.4 ADJUSTING

A. Aim and adjust luminaires to provide illumination levels and distribution as directed.

B. Replace any luminaires that have failed prior to Date of Substantial Completion.

3.5 GLARE CONTROL

A. Provide, install and adjust glare control shields to prevent light glare on adjacent properties.

3.6 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photometric control surfaces as recommended by manufacturer.

D. Clean finishes and touch up damage.

E. Luminaires:

1. Clean free from dust and dirt. Wash lens and glassware using cleaner such as Windex and dry with absorbent paper. Clean plastic per manufacturer's recommendations; do not wipe. Lenses which are kept in original containers until immediately prior to final inspection may not require cleaning. Clean Alzak aluminum surfaces (reflectors, fixture cones and the like) per manufacturer's recommendations being careful to remove fingerprints and smudges.

2. It is the Contractor's responsibility to remove any UL labels or manufacturer’s labels from areas of fixture exposed to view and relocate label to non-obtrusive area on fixture.

END OF SECTION

SECTION 31 00 00 - GEOTECHNICAL REPORT

PART 1 - GENERAL

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions.

B. A geotechnical investigation report for Project, prepared by Engineering Consulting Services is appended to this section and consists of the following:

1. Subsurface Evaluation dated December 09, 2025.

END OF SECTION

ECS Florida, LLC

Geotechnical Engineering Report

Proposed New Smyrna Beach HS –

Baseball & Softball Field Lighting

1015 10th Street
New Smyrna Beach, Florida

ECS Project Number 56:2109

December 9, 2025

ECS FLORIDA, LLC

"One Firm. One Mission."

Geotechnical • Construction Materials • Environmental • Facilities

December 9, 2025

Mr. James Bott
Volusia County Schools
3750 Olsen Dr.
Daytona Beach, Florida 32124

ECS Project No. 56:2109

Reference: Geotechnical Engineering Report
Proposed New Smyrna Beach HS – Baseball & Softball Field Lighting
1015 10th Street
New Smyrna Beach, Florida

Dear Mr. Bott:

ECS Florida, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analysis for the above-referenced project. Our services were performed in general accordance with our agreed-to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our foundation design.

It has been our pleasure to be of service to **Volusia County Schools** during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Florida, LLC

Giovanni Mafiol, EI
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David Spangler, P.E.
Chief Engineer
Registered Florida No 58770
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David W. Spangler, State of Florida, Professional Engineer, License No. 58770

This item has been digitally signed and sealed by David W. Spangler on the date indicated here.

Signature must be verified on any electronic copies.

David W Spangler

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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Exploration Procedures
- Boring Logs

Appendix C – Laboratory Test Results

- Laboratory Testing Summary

EXECUTIVE SUMMARY

This Executive Summary is intended as a very brief overview of the primary geotechnical conditions that are expected to affect design and construction of the proposed light pole structures in the New Smyrna Beach High School at 1015 10th Street, New Smyrna Beach, Florida. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

- Organic-laden soils were encountered at depths approximately at depths ranging from 4 to 15 feet below existing grades with a notable exception of boring B-02 that encountered organic content of 20.8% at approximate depths of 8 to 10 feet below ground surface. The designer should account for foundations that bear below these organic soil layers.

- Groundwater was encountered at the boring locations at approximate depths ranging from 5 to 5.5 feet below existing grades. We estimate the normal seasonal high groundwater level at the boring locations to be approximately 4 to 4.5 feet below the ground surface at the boring locations, as indicated on the boring logs.

- We recommend that ECS be provided the opportunity to review the foundation plans and earthwork specifications to verify that our recommendations have been properly interpreted and implemented. ECS should also be retained to perform the construction material testing and observations required for this project, to verify that our recommendations have been satisfied.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide geotechnical information for the proposed baseball and softball field lighting at New Smyrna Beach High School at 1015 10th Street, New Smyrna Beach, Florida. Based on information provided to us the project will include installation of light poles to be constructed with drilled pier foundations anticipated to be approximately 4 feet in diameter extending to approximately 22 to 25 feet below existing ground surface. This report contains the results of our subsurface exploration, site characterization, engineering analyses, and geotechnical engineering recommendations for the design and construction of the proposed improvements.

1.2 SCOPE OF SERVICES

To obtain geotechnical information across the site area, nine (9) soil borings were performed at locations selected by the client along bordering the baseball and softball fields. A laboratory-testing program was also implemented to characterize the physical and engineering properties of the subsurface soils.

This report includes the following.

a. A review of published soils mapping.
b. Observations from our site reconnaissance and personnel on the drill rig, including current site conditions, surface drainage features, and surface topographic conditions, and available satellite imagery.
c. A description of the field exploration and laboratory tests performed.
d. A site location diagram and a boring location diagram.
e. Final logs of the soil borings in accordance with industry standard practices for geotechnical engineering. Elevations were interpolated from publicly available information.
f. The results of the laboratory tests are plotted on the final exploration logs and included on separate test report pages.
g. Discussion of the subsurface materials encountered along with groundwater conditions observed.
h. Recommended soil design parameters for the light pole foundations.

1.3 AUTHORIZATION

Our services were provided in accordance with our Proposal No. 56:2795-GP, dated October 28, 2025 – Revised, as authorized by you on via the master subcontract dated October 30, 2025.

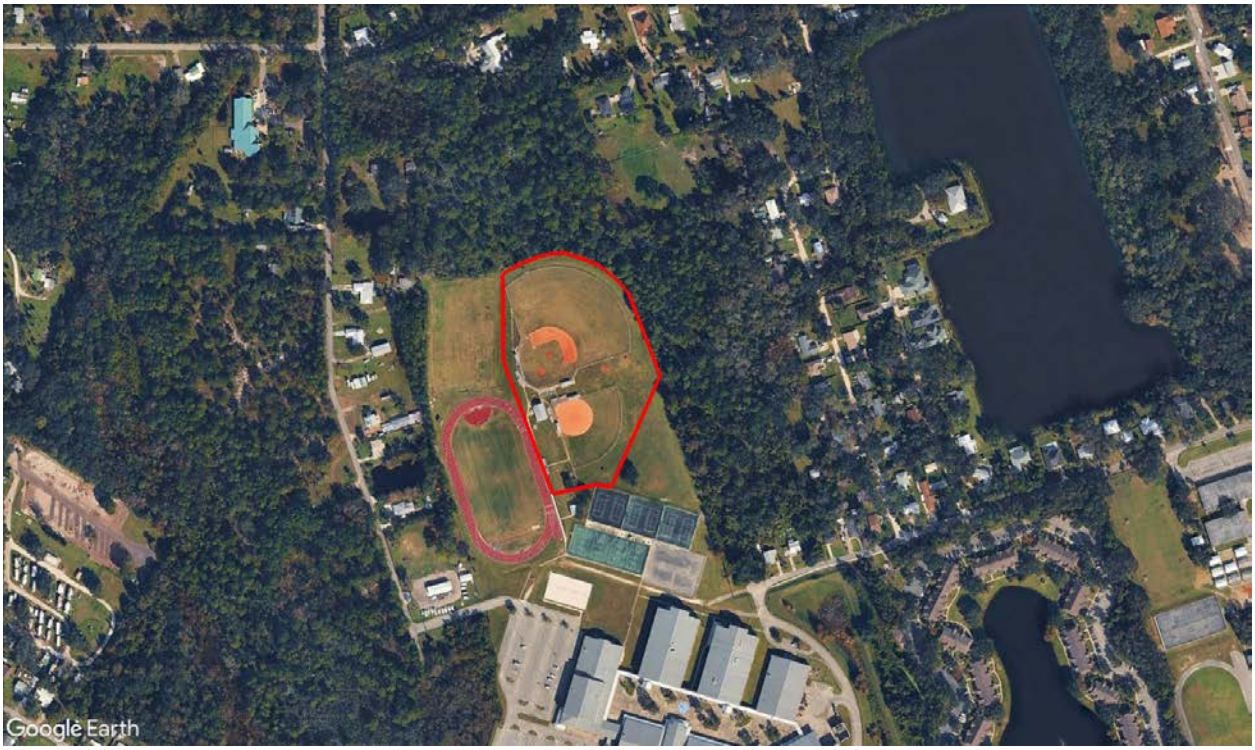
2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE

The project site is located at 1015 10th Street in New Smyrna Beach, Florida. The conditions surrounding the site are as follows:

- to the north were woodlands;
- to the south there was the New Smyrna Beach High School Tennis and Basketball Courts followed by the New Smyrna Beach High School;
- to the east were woodlands; and
- to the west was the High School Track and Field and adjoining empty grass field.

The general site location is shown below.



Site Location

At the time of our exploration, the site consisted of baseball and softball fields with adjoining track and field bordered by the New Smyrna Beach High School Tennis Courts to the south of the site. Based on review of online topographic information available through TopoView and Google Earth, the site has an elevation ranging between approximately EL. 10 and El. 13 feet, relatively flat across the site. Note these elevations are approximate within several feet and should not be used for design.

2.2 PAST SITE HISTORY/USES

ECS has reviewed aerial photographs of the subject site on Google Earth and Historic Aerials (NETR Online). The aerial photographs reviewed were dated from 1952 to 2024. The 1952 photograph showed the site populated by wetlands. By 1984 and 1999 the photographs showed the site populated by sparce woodlands and brush. The 2004 aerial photograph showed the site stripped

and grubbed with indications grading work was started. By late 2005 the photograph showed the track and field pavement already constructed along with the start of the tennis and basketball courts' construction. From 2006 to 2007 the construction of the baseball and softball fields were started and completed with the aerial photographs from 2008 to 2025 the aerial photographs showed the site relatively unchanged from current site conditions at the time of this report.

2.3 SOIL SURVEY MAPPING

Based on the Web Soil Survey for Volusia County, Florida, as prepared by the U.S. Department of Agriculture Natural Resource Conservation Service (USDA-NRCS), the predominant soil types anticipated within the site area boundaries are described in the following table. The site area is illustrated superimposed on the USDA-NRCS Soil Survey Map in the following figure.

Web Soil Survey Data

Soil Type	Constituents	Drainage Class	Water Table
17 – Daytona sand, 0 to 5 percent slopes	0 to 80" Sand	Moderately Well Drained	More than 80 inches
32 – Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	0 to 80" Sand	Poorly Drained	About 6 to 18 inches

Soil mapping of the site vicinity included soil types and numbers are presented in figure below, obtained from the USDA Web Soil site.

Site Soil Survey, Volusia County, Florida

2.4 PROPOSED CONSTRUCTION

Based on the email correspondence on October 23, 2025 from Adrian Baus of Matern Professional Engineering, Inc, we understand that light pole structures are proposed at New Smyrna Beach High School at 1015 10th Street, New Smyrna Beach, Florida. The development will include parking and entrance drives and a SWMF in the eastern portion of the site. For the purposes of this report, we understand the foundations are anticipated to be drilled pier foundations expected to extend to approximately 22 to 25 feet below the existing ground surface.

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our scope of exploration work included drilling nine (9) Standard Penetration Test (SPT) borings to depths of approximately 50 feet below the ground surface for the proposed light poles. Our borings were located with a handheld GPS unit and their approximate locations are shown on the Boring Location Diagram (Figure 2) in Appendix A. Our exploration procedures are explained in greater detail in Appendix B including the inserts titled Reference Notes for Boring Logs and Subsurface Exploration Procedure for SPT.

3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata. Please refer to the boring logs in Appendix B for more detailed information.

Subsurface Stratigraphy for Light Poles

Approximate Depth Range (ft)	Stratum	Description
0 – 4	I	Fine Sand (SP), Fine Sand with Silt (SP-SM) and Silty Fine Sand (SM) with trace to some organics.
4 - 27	II	Very Loose to Medium Dense Fine Sand (SP), Fine Sand with Silt (SP-SM), Silty Fine Sand (SM) and Fine Sand with Clay (SP-SC) with some to many organics. **As exception B-02 encountered organics up to 20.8% at approximate depths of 8 to 10 feet below existing grades.**
27 - 37	III	Very Loose to Medium Dense Clayey Fine Sand (SC) with varying amounts of shell fragments and Soft to Firm Lean Clay (CL) with varying amounts of shell fragments
37-50	IV	Medium Dense to Very Dense Fine Sand (SP) and Clayey Fine Sand (SC) with C-01 & C-02 encountering Stiff to Very Stiff Lean Clay (CL) with varying amounts of shell fragments at approximate depths of 42 to 50 feet below existing grades.

3.2 GROUNDWATER OBSERVATIONS

3.2.1 Encountered Groundwater

The groundwater was measured at depths of approximately 5 and 5.5 feet below the existing ground surface. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

3.2.2 Estimated Seasonal High Groundwater

The normal seasonal high groundwater level is affected by a number of factors. The drainage characteristics of the soils, land surface elevation, relief points such as drainage ditches, lakes, rivers, swamp areas, etc., and distance to relief points are some of the more important factors influencing the normal seasonal high groundwater level.

Based on our interpretation of the site conditions, including the boring logs and Web Soil Survey information, we estimate the normal seasonal high groundwater level to range between 4 to 4.5 feet below the ground surface at the boring locations, as indicated on the boring logs. It is possible that groundwater levels may exceed the estimated normal seasonal high groundwater level as a result of significant or prolonged rain.

3.3 LABORATORY TESTING

Each sample from the borings was visually classified on the basis of texture and plasticity in accordance with ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)) and ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols. After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples and included percent fines (ASTM D1140), moisture content (ASTM D2216), organic content (ASTM D2974), and Atterberg Limit (ASTM D4318) tests. The test results are shown on the boring logs in Appendix B, and are tabulated in Appendix C.

4.0 DESIGN RECOMMENDATIONS

4.1 SOIL PARAMETERS FOR LIGHT POLE

The light pole foundations are understood to be planned on past projects and to be drilled pier foundations and expected to extend 22 to 25 feet below existing grades with 155mph wind loading, the structural light pole loadings were not available during the time of the writing of the report.

Based on the results of the borings, we consider the subsurface conditions adaptable for support of the proposed light pole structures. The following table presents our recommended geotechnical design values based on the soils encountered at the A-01 to A-03, B-01 to B-04, and C-01 to C-02 boring locations.

Soil Parameters for Light Pole Foundation Design

Boring Location	Soil Type[1]	Average N-Value	Approx. Depth (ft)[2]	γ_T, Total Unit Weight (lb/ft^3)	γ', Effective Unit Weight (lb/ft^3)	ϕ, Internal Friction Angle (Degrees)	c, Cohesion (lb/ft^2)
A-01 & A-02, B-01 & B-03	SP / SP-SM/ SM	3	0-4	100	100	28	0
	SP / SP-SM / SM / SP-SC	12	4-13	112	50	30	0
	SP / SP-SC	9	13-23	108	46	30	0
	SC / CL	2	23-38	110	48	0	250
	SP / SC	18	38-50	118	56	32	0
A-03, B02	SP / SP-SM/ SM	3	0-4	100	100	28	0
	SP / SP-SM / SM / SP-SC	12	4-23	112	50	30	0
	(B-02) SM	10	8-12	100	38	0	100
	SP / SP-SM / SP-SC	4	23-27	100	38	28	0
	SC / CL	6	27-33	120	58	0	750
	CL	2	33-38	110	48	0	250
	SP / SC	15	38-50	116	54	31	0
B-04	SP / SP-SM	3	0-4	100	100	28	0
	SP / SM	14	4-23	115	53	31	0
	SP / SC	7	23-38	105	43	29	0
	SP / SP-SC / SC	14	38-50	115	53	31	0
C-01	SP / SM	3	0-4	100	100	28	0
	SP / SP-SM / SP-SC	22	4-12	122	60	34	0
	SP / SP-SM / SP-SC	7	12-27	105	43	29	0
	CL	4	27-38	120	58	0	500
	SP	50+	38-47	138	76	38	0
	CL	12	47-50	120	58	0	1500
C-02	SP-SM	3	0-4	100	100	28	0
	SP / SM / SP-SC	6	4-33	104	42	29	0

Boring Location	Soil Type(1)	Average N-Value	Approx. Depth (ft)(2)	γ_T, Total Unit Weight (lb/ft^3)	γ', Effective Unit Weight (lb/ft^3)	ϕ, Internal Friction Angle (Degrees)	c, Cohesion (lb/ft^2)
C-02	CL	2	33-38	120	58	0	500
	SP	24	38-43	124	62	34	0
	CL	27	43-48	126	64	0	2500

Notes: (1) Unified Soil Classification System (USCS)
(2) Feet below the existing ground surface

5.0 CONSTRUTION CONSIDERATION AND QUALITY CONSTROL TESTING

When using drilled piers, an engineering technician that is (1) familiar with the installation of drilled piers into subsurface soil conditions similar to those at this site and (2) acting under the direction and supervision of the geotechnical engineer should witness the installation of the production piers. His/her duties should include, but not be limited to, the following:

1. Keep an accurate record of pier installation and installation procedures.
2. Verify that all piers are installed to the proper driving resistance and to recommended depths.
3. Confirm that the pier drilling equipment is operating properly.
4. Inspect the piers prior to installation for defects and confirm that the piers are not damaged during installation.

If the installation of the piers cannot be witnessed by a qualified engineering technician, we recommend as a minimum construction control measure that all pier drilling records be reviewed by the geotechnical engineer.

6.0 CLOSING

Our geotechnical exploration has been performed, our findings obtained, and our recommendations prepared, in accordance with generally accepted geotechnical engineering principles and practices. ECS is not responsible for any independent conclusions, interpretation, opinions, or recommendations made by others based on the data contained in this report.

Our scope of services was intended to evaluate the soil conditions within the zone of soil influenced by the buildings foundation systems, pavements and stormwater management area. Our scope of services does not address geologic conditions, such as sinkholes or soil conditions existing below the depth of the soil borings.

If any of the project description information discussed in this report is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

We recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise.

Appendix A - Drawings and Reports

Site Location Diagram

Boring Location Diagram(s)

SITE LOCATION DIAGRAM

New Smyrna Beach HS Baseball & Softball Field Lighting

1015 10th Street, New Smyrna Beach, Florida
Volusia County Schools

ENGINEER	DS05
SCALE	1" = 200'
PROJECT NO.	56:2109
SHEET	1 of 2
DATE	12/8/2025

BORING LOCATION DIAGRAM

New Smyrna Beach HS Baseball & Softball Field

1015 10th Street, New Smyrna Beach, Florida

Volusia County Schools

ENGINEER	DS05
SCALE	1" = 60'
PROJECT NO.	56:2109
SHEET	2 of 2
DATE	12/8/2025

Appendix B – Field Operations

Reference Notes
Exploration Procedures
Boring Logs

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]

		ASPHALT
		CONCRETE
		GRAVEL
		TOPSOIL
		VOID
		BRICK
		AGGREGATE BASE COURSE
	GW	WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP	POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM	SILTY GRAVEL gravel-sand-silt mixtures
	GC	CLAYEY GRAVEL gravel-sand-clay mixtures
	SW	WELL-GRADED SAND gravelly sand, little or no fines
	SP	POORLY-GRADED SAND gravelly sand, little or no fines
	SM	SILTY SAND sand-silt mixtures
	SC	CLAYEY SAND sand-clay mixtures
	ML	SILT non-plastic to medium plasticity
	MH	ELASTIC SILT high plasticity
	CL	LEAN CLAY low to medium plasticity
	CH	FAT CLAY high plasticity
	OL	ORGANIC SILT or CLAY non-plastic to low plasticity
	OH	ORGANIC SILT or CLAY high plasticity
	PT	PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION

DESIGNATION		PARTICLE SIZES
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, QP[4]	SPT[5] (BPF)	CONSISTENCY[7] (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT[7]	COARSE GRAINED (%)[8]	FINE GRAINED (%)[8]
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective *(ex: "Silty")*	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT[5]	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS[6]

- WL (First Encountered)
- WL (Completion)
- WL (Seasonal High Water)
- WL (Stabilized)

FILL AND ROCK

FILL | POSSIBLE FILL | PROBABLE FILL | ROCK

[1]Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

[2]To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

[3]Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

[4]Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

[6]The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

[7]Minor deviation from ASTM D 2488-17 Note 14.

[8]Percentages are estimated to the nearest 5% per ASTM D 2488-17.

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SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

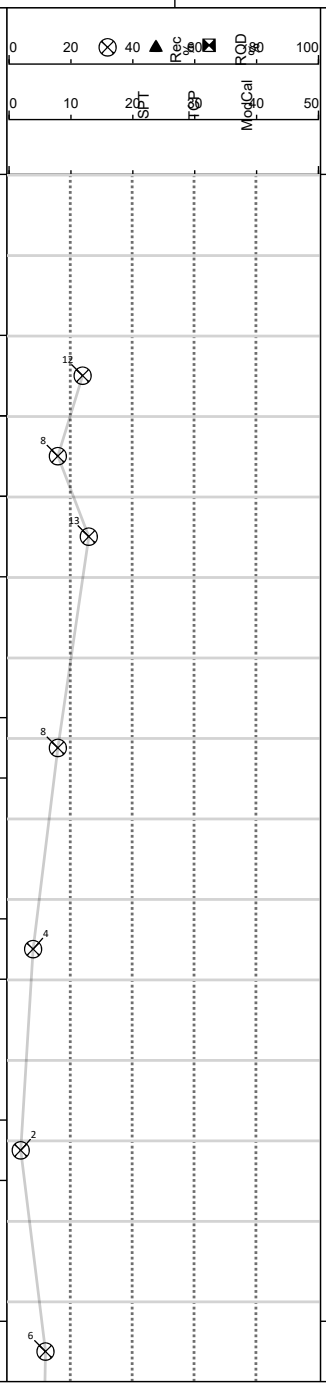
- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.

**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-01**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006814**	LONGITUDE: **-80.932096**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish brown, moist, trace shell.		10							
	S-2	Soil	24											
5	S-3	SS 24	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark greyish brown, moist to saturated, medium dense, with shell.				7-6-6-4 (12)					
	S-4	SS 24	24		(SM) SILTY SAND - fine sand, dark brown/black, contains roots, saturated, loose to medium dense, with many organic materials. OC%= 8.5.		5		8-4-4-7 (8)			67.6		14.1
	S-5	SS 24	24						4-4-9-6 (13)					
10							0							
	S-6	SS 18	18		(SP) POORLY GRADED SAND - fine sand, brown, saturated, loose.				4-4-4 (8)					
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greenish grey, saturated, very loose.				4-2-2 (4)			27.1		3.1
20							-10							
	S-8	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, grey, saturated, very loose, trace shell.				2-1-1 (2)					
25							-15							
	S-9	SS 18	18		(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell.				2-3-3 (6)	31	13			



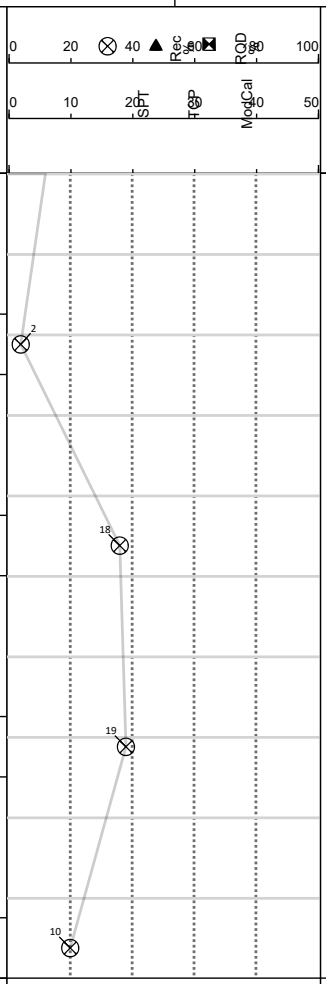
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BADUAL

WL (First Encountered):	5.5 FT	BORING STARTED:	11/17/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/17/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4.5 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-01**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006814**	LONGITUDE: **-80.932096**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell. (continued)		-20							
35	S-10	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish/greenish grey, saturated, very loose to medium dense, trace shell.		-25		1-1-1 (2)					
40	S-11	SS 18	18				-30		10-10-8 (18)					
45	S-12	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, medium dense, with shell.		-35		7-9-10 (19)					
	S-13	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish/greenish grey, saturated, loose, with shell.				4-4-6 (10)					
					END OF BORING at 50.0 FT									



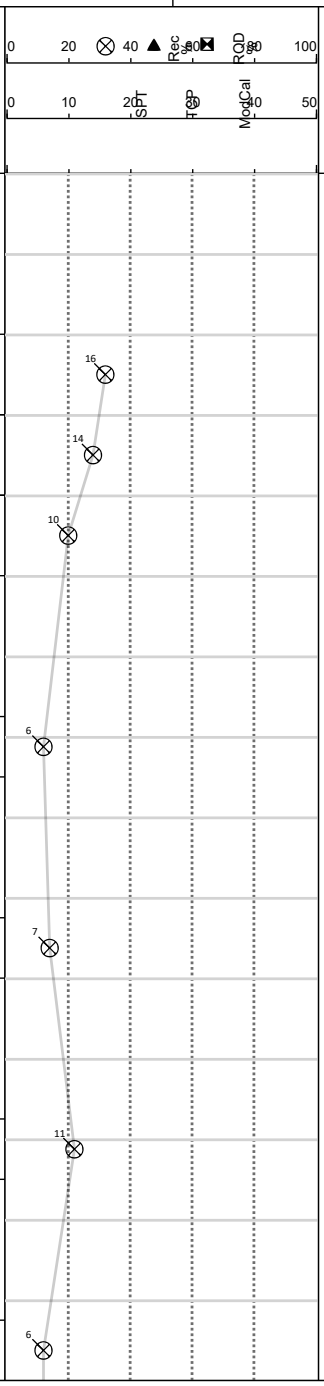
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5.5 FT**	**BORING STARTED:**	**11/17/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/17/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4.5 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-02**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006569**	LONGITUDE: **-80.931579**	STRUCTURE:	SURFACE ELEVATION: **13** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish brown, moist, trace shell.									
	S-2	Soil	24		(SM) SILTY SAND - fine sand, dark grey/black, moist, trace shell.		10							
5	S-3	SS 24	24		(SP) POORLY GRADED SAND - fine sand, dark brown, moist to saturated, loose to medium dense, with some organic materials. OC%= 4.8.			▼ ▽	9-8-8-6 (16)			71.5		7.7
	S-4	SS 24	24						6-7-7-10 (14)					
	S-5	SS 24	24				5		4-4-6-7 (10)					
10														
							0							
	S-6	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark greyish orange, saturated, loose.				2-3-3 (6)					
15														
							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greenish grey, saturated, loose to medium dense.				3-3-4 (7)					
20														
							-10							
	S-8	SS 18	18						5-5-6 (11)					
25														
							-15							
	S-9	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish/greenish grey, saturated, loose,				3-3-3 (6)			29.6		41.4



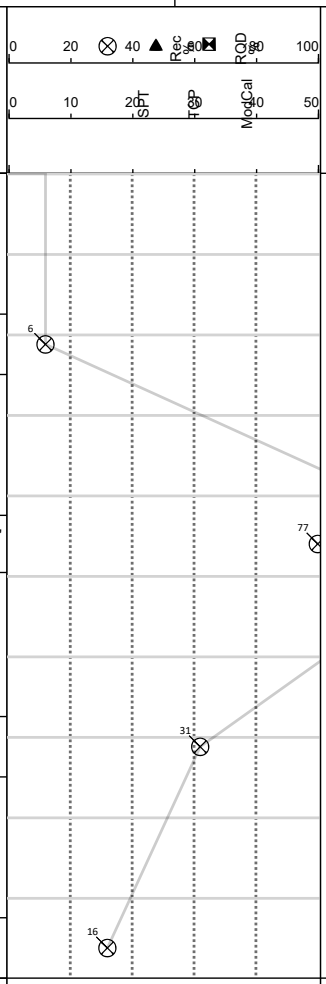
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**5.5 FT**	**BORING STARTED:**	**11/18/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**11/18/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**4.5 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-02**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006569**	LONGITUDE: **-80.931579**	STRUCTURE:	SURFACE ELEVATION: **13** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(SC) CLAYEY SAND - fine sand, bluish/greenish grey, saturated, loose, Trace shell. (continued)		-20							
35	S-10	SS 18	18		(SP) POORLY GRADED SAND - fine sand, trace clay, bluish/greenish grey, saturated, loose, trace shell.		-25		1-3-3 (6)					
40	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, bluish/greenish grey, saturated, very dense, trace shell.		-30		18-21-50/5" (77)					
45	S-12	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish grey, saturated, dense, trace shell.		-35		13-11-20 (31)					
	S-13	SS 18	18		(SP) POORLY GRADED SAND - fine sand, bluish grey, saturated, medium dense, trace shell.				12-8-8 (16)					
					END OF BORING at 50.0 FT									



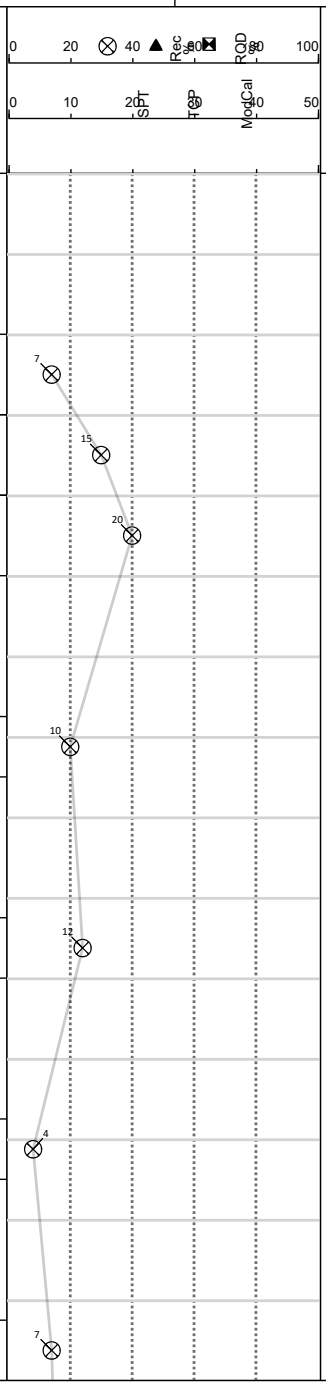
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5.5 FT**	**BORING STARTED:**	**11/18/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/18/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4.5 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-03**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006272**	LONGITUDE: **-80.931719**	STRUCTURE:	SURFACE ELEVATION: **13** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark greyish brown, contains slight roots, moist, trace shell.									
	S-2	Soil	24		(SP) POORLY GRADED SAND - fine sand, trace clay, greyish brown, moist.		10							
5	S-3	SS 24	24		(SP) POORLY GRADED SAND - fine sand, grey, moist to saturated, loose.				3-3-4-7 (7)					
	S-4	SS 24	24		(SM) SILTY SAND - fine sand, black, saturated, medium dense.				6-6-9-20 (15)					
	S-5	SS 24	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark grey, saturated, medium dense.		5		8-10-10-13 (20)					
10							0							
	S-6	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, black, saturated, loose, with some organic materials. OC%= 6.7.				7-5-5 (10)			45.3		8.8
15							-5							
	S-7	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark greyish brown, saturated, medium dense.				3-6-6 (12)					
20							-10							
	S-8	SS 18	18		(SP) POORLY GRADED SAND - fine sand, grey, saturated, very loose.				4-3-1 (4)					
25							-15							
	S-9	SS 18	18		(CL) LEAN CLAY - light greenish grey, saturated, firm, Trace shell.				3-3-4 (7)					



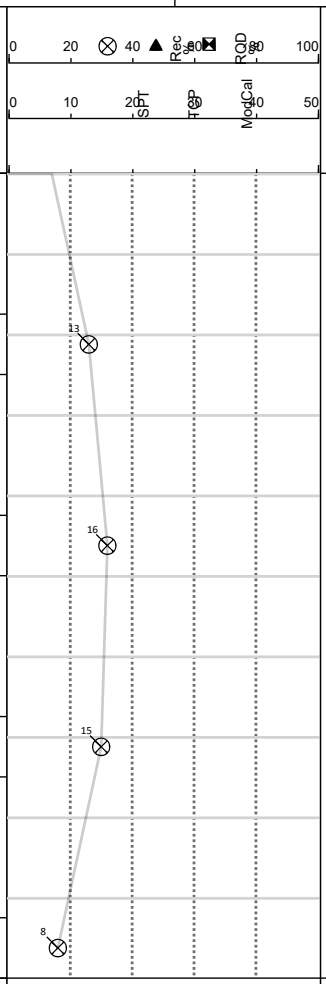
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	5 FT	BORING STARTED:	11/19/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/19/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **A-03**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006272**	LONGITUDE: **-80.931719**	STRUCTURE:	SURFACE ELEVATION: **13** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(CL) LEAN CLAY - light greenish grey, saturated, firm, Trace shell. (continued)		-20							
	S-10	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish grey, saturated, medium dense, Trace shell.				7-7-6 (13)			26.7		14.4
35							-25							
	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, bluish grey, saturated, medium dense, trace shell.				20-8-8 (16)					
40							-30							
	S-12	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, greyish brown, saturated, medium dense, with shell.				10-9-6 (15)					
45							-35							
	S-13	SS 18	18		(SP) POORLY GRADED SAND - fine sand, trace clay, bluish grey, saturated, loose, trace shell.				5-4-4 (8)					
					END OF BORING at 50.0 FT									



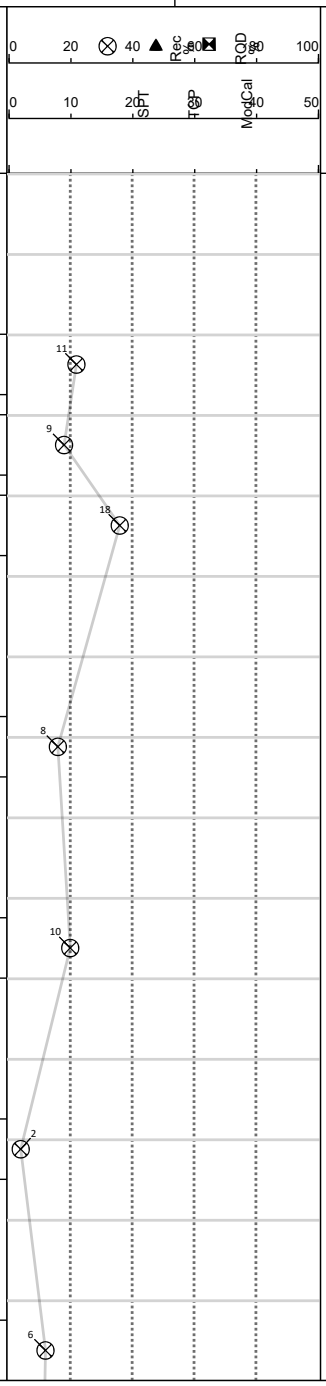
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/19/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/19/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-01**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007203**	LONGITUDE: **-80.932087**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish orange, moist.									
	S-2	Soil	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, grey, moist.		10							
5	S-3	SS 18	18		(SP) POORLY GRADED SAND - fine sand, light grey, moist to saturated, medium dense.			▼ ▽	3-4-7 (11)					
	S-4	SS 18	18		As above but loose.		5		3-3-6 (9)			21.1		2.8
	S-5	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, mottled light grey and brown, saturated, medium dense.				6-9-9 (18)					
10							0							
	S-6	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark brown, saturated, loose.				4-4-4 (8)					
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, grey, saturated, loose.				3-4-6 (10)					
20							-10							
	S-8	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey, saturated, very loose, trace shell.				2-1-1 (2)					
25							-15							
	S-9	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish grey, saturated, loose, trace shell.				3-3-3 (6)					



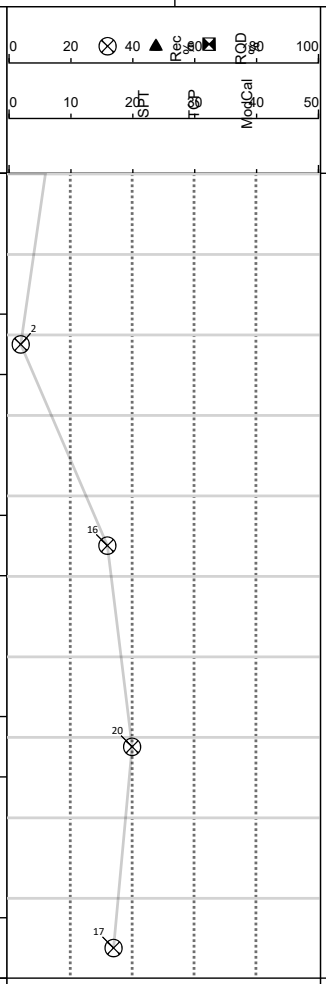
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ **WL (First Encountered):**	**5 FT**	**BORING STARTED:**	**11/17/2025**	**CAVE IN DEPTH:**	**Not Observed**
▼ **WL (Completion):**		**BORING COMPLETED:**	**11/17/2025**	**HAMMER TYPE:**	**Automatic**
▼ **WL (Seasonal High Water):**	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
▽ **WL (Stabilized):**		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-01**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007203**	LONGITUDE: **-80.932087**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(SC) CLAYEY SAND - fine sand, bluish grey, saturated, loose, trace shell. (continued)		-20							
	S-10	SS 18	18		(CL) LEAN CLAY - bluish grey, saturated, soft, trace shell.				1-1-1 (2)			51.0		53.1
35							-25							
	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, light greyish brown, saturated, medium dense, trace shell.				11-9-7 (16)					
40							-30							
	S-12	SS 18	18		(SP) POORLY GRADED SAND - fine sand, bluish grey, saturated, medium dense, trace shell.				7-8-12 (20)					
45							-35							
	S-13	SS 18	18						9-9-8 (17)					
					END OF BORING at 50.0 FT									



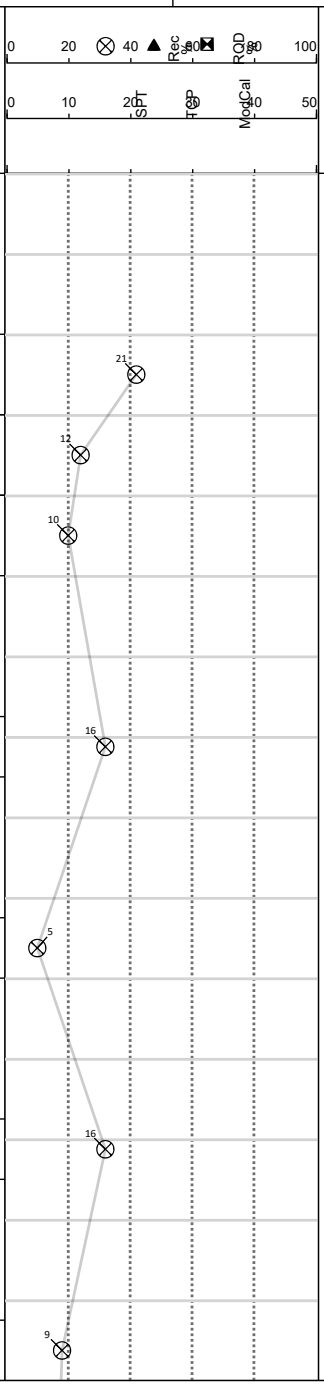
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/17/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/17/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-02**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006799**	LONGITUDE: **-80.931192**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish brown, moist, trace shell, organics.									
	S-2	Soil	24		(SM) SILTY SAND - fine sand, dark grey, moist.		10							
5	S-3	SS 24	24		(SP) POORLY GRADED SAND - fine sand, grey, moist to saturated, medium dense, trace organics.				9-10-11-9 (21)					
	S-4	SS 24	24		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, medium dense.		5		7-6-6-6 (12)					
	S-5	SS 24	24		(SM) SILTY SAND - fine sand, mottled black and white, saturated, loose, with many organic materials. OC%= 20.8.				5-4-6-6 (10)			70.4		15.2
10							0							
	S-6	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark brown, saturated, medium dense.				6-6-10 (16)					
15							-5							
	S-7	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark greyish brown, saturated, loose.				2-2-3 (5)					
20							-10							
	S-8	SS 18	18		(SP) POORLY GRADED SAND - fine sand, light grey, saturated, medium dense.				4-8-8 (16)					
25							-15							
	S-9	SS 18	18		(CL) LEAN CLAY - bluish/greenish grey, saturated, stiff, Trace shell.				3-3-6 (9)					



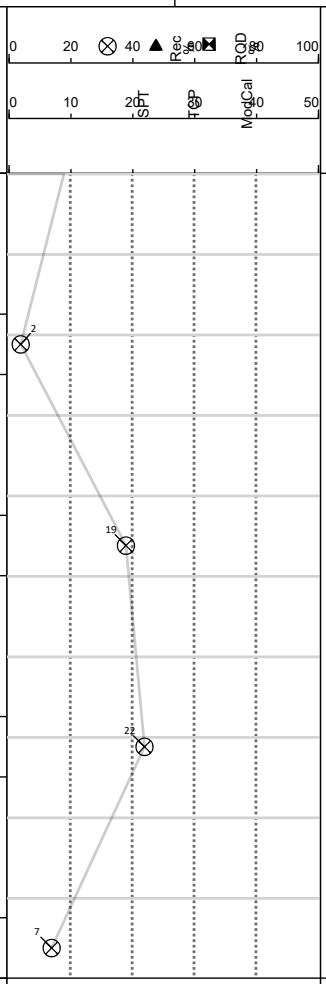
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/18/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/18/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-02**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006799**	LONGITUDE: **-80.931192**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(CL) LEAN CLAY - bluish/greenish grey, saturated, stiff, Trace shell. (continued)		-20							
35	S-10	SS 18	18		(CL) LEAN CLAY - bluish/greenish grey, saturated, soft, trace shell.		-25		1-1-1 (2)					
40	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, medium dense, with shell.		-30		6-8-11 (19)					
45	S-12	SS 18	18		As above but bluish grey.		-35		11-12-10 (22)					
	S-13	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish grey, saturated, loose, With shell.				3-4-3 (7)			46.4		44.2
					END OF BORING at 50.0 FT									



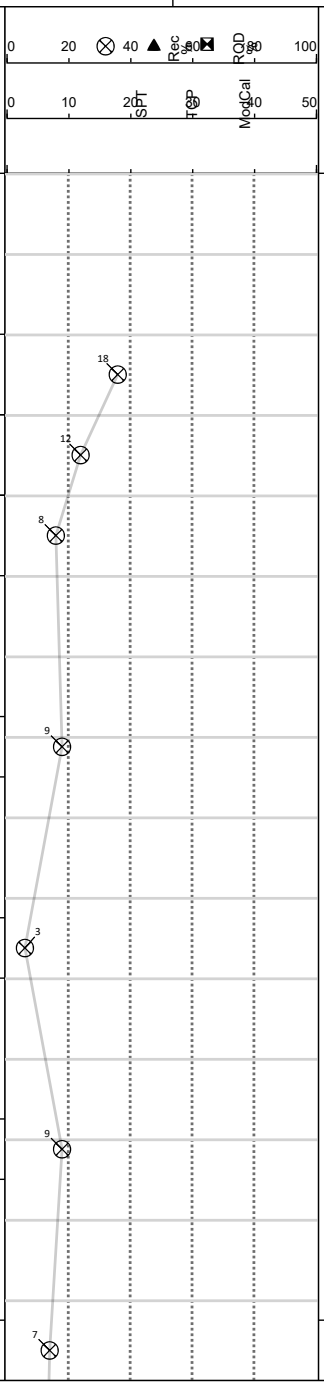
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	5 FT	BORING STARTED:	11/18/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/18/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-03**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006582**	LONGITUDE: **-80.930983**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish brown, moist, trace shell.									
	S-2	Soil	24		(SM) SILTY SAND - fine sand, black, contains roots, moist, with organics.		10							
5	S-3	SS 24	24		(SP) POORLY GRADED SAND - fine sand, light grey, moist to saturated, medium dense.				11-9-9-12 (18)					
	S-4	SS 24	24		(SP) POORLY GRADED SAND - fine sand, grey, saturated, medium dense.		5		7-6-6-4 (12)					
	S-5	SS 24	24		(SM) SILTY SAND - fine sand, dark brown/black, saturated, loose, with many organic materials. OC%= 8.5.				3-4-4-3 (8)			67.4		13.3
10							0							
	S-6	SS 18	18		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark brown, saturated, loose.				4-5-4 (9)					
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, very loose to loose, trace organics.				2-1-2 (3)					
20							-10							
	S-8	SS 18	18						4-4-5 (9)					
25							-15							
	S-9	SS 18	18		(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell.				4-4-3 (7)	31	10			



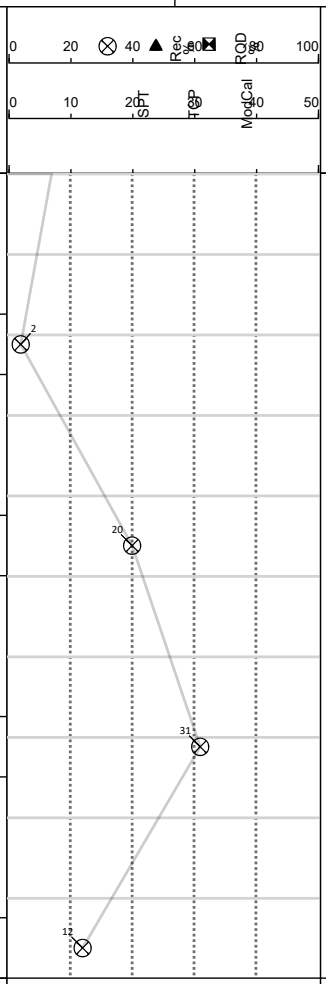
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	5 FT	BORING STARTED:	11/18/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/18/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-03**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.006582**	LONGITUDE: **-80.930983**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell. (continued)		-20							
35	S-10	SS 18	18		(SC) CLAYEY SAND - fine sand, greenish grey, saturated, very loose, trace shell.		-25		1-1-1 (2)					
40	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, medium dense, with shell.		-30		8-10-10 (20)					
45	S-12	SS 18	18		(SP) POORLY GRADED SAND - fine sand, bluish grey, saturated, dense, trace shell.		-35		20-13-18 (31)					
	S-13	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey, saturated, medium dense, trace shell.				8-6-6 (12)					
					END OF BORING at 50.0 FT									



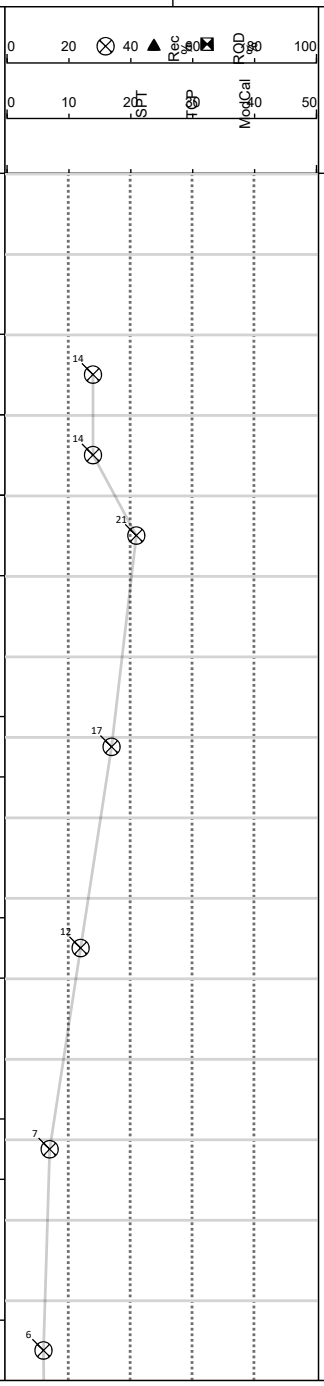
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/18/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/18/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-04**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.005819**	LONGITUDE: **-80.931428**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP) POORLY GRADED SAND - fine sand, greyish brown and orange, moist.									
	S-2	Soil	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, dark grey/black, contains roots, moist, with some organic materials. OC%= 5.7.		10					52.3		6.3
5	S-3	SS 24	24		As above but moist to saturated, medium dense.				8-7-7-10 (14)					
	S-4	SS 24	24				5		9-8-6-10 (14)					
	S-5	SS 24	24		(SM) SILTY SAND - fine sand, dark grey, contains slight roots, saturated, medium dense, trace organics.				11-12-9-9 (21)					
10							0							
	S-6	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, medium dense.				4-8-9 (17)					
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greenish grey, saturated, medium dense.				5-5-7 (12)					
20							-10							
	S-8	SS 18	18		(SP) POORLY GRADED SAND - fine sand, grey, saturated, loose, trace shell.				3-4-3 (7)					
25							-15							
	S-9	SS 18	18		(SC) CLAYEY SAND - fine sand, bluish grey, saturated, loose, trace shell.				3-3-3 (6)			31.7		48.8



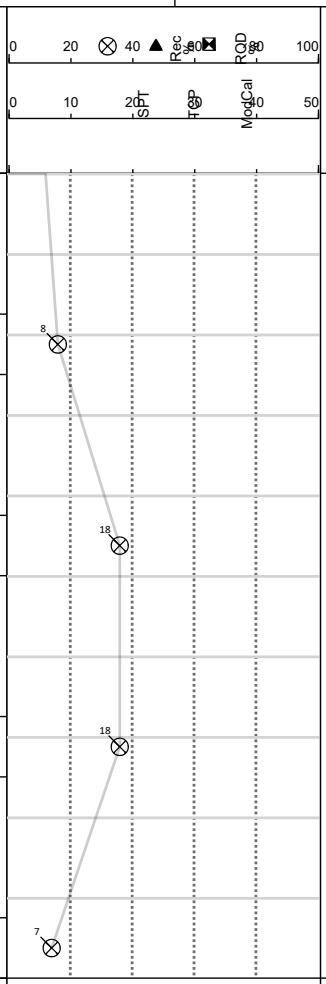
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/19/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/19/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **B-04**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.005819**	LONGITUDE: **-80.931428**	STRUCTURE:	SURFACE ELEVATION: **12** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(SC) CLAYEY SAND - fine sand, bluish grey, saturated, loose, trace shell. (continued)		-20							
35	S-10	SS 18	18				-25		4-3-5 (8)					
40	S-11	SS 18	18		As above but medium dense.		-30		8-12-6 (18)					
45	S-12	SS 18	18		(SP) POORLY GRADED SAND - fine sand, trace clay, bluish grey, saturated, medium dense, trace shell.		-35		6-9-9 (18)					
	S-13	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey, saturated, loose, with shell.				5-4-3 (7)					
					END OF BORING at 50.0 FT									



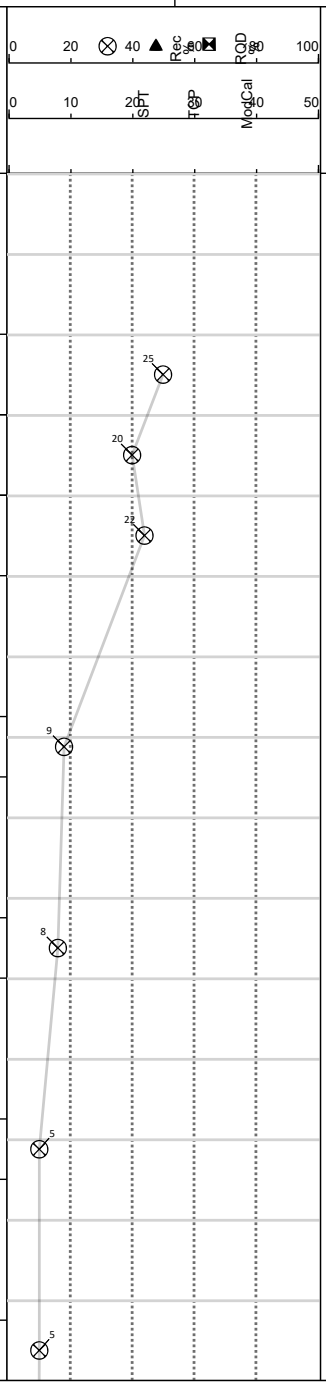
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/19/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/19/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **C-01**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007718**	LONGITUDE: **-80.931821**	STRUCTURE:	SURFACE ELEVATION: **10** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SM) SILTY SAND - fine sand, dark greyish brown/black, moist, trace organics.									
	S-2	Soil	24		(SP) POORLY GRADED SAND - fine sand, grey, moist.									
5	S-3	SS 24	24		(SP) POORLY GRADED SAND - fine sand, dark greyish orange, moist to saturated, medium dense.		5		7-10-15-13 (25)					
	S-4	SS 24	24						7-10-10-14 (20)					
	S-5	SS 24	24						8-12-10-11 (22)					
10							0							
	S-6	SS 18	18		(SP) POORLY GRADED SAND - fine sand, dark brown, saturated, loose.				4-4-5 (9)			30.6		4.6
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greyish brown, saturated, loose.				3-3-5 (8)					
20							-10							
	S-8	SS 18	18						2-2-3 (5)					
25							-15							
	S-9	SS 18	18		(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell.				2-2-3 (5)					



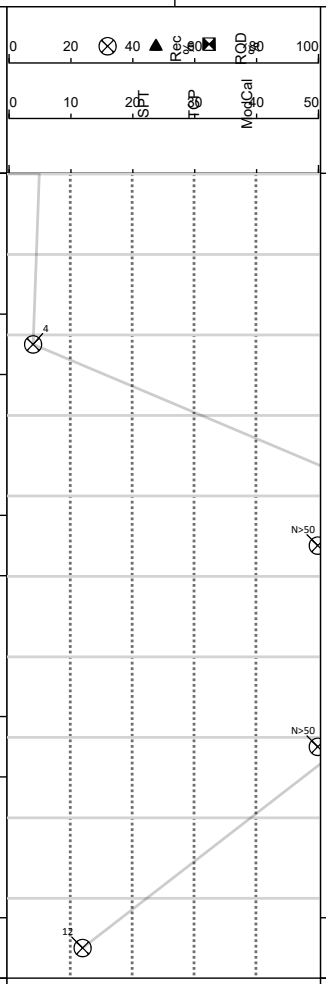
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	5 FT	BORING STARTED:	11/13/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/13/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **C-01**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007718**	LONGITUDE: **-80.931821**	STRUCTURE:	SURFACE ELEVATION: **10** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(CL) LEAN CLAY - bluish/greenish grey, saturated, firm, Trace shell. (continued)									
	S-10	SS 18	18						2-2-2 (4)					
35							-25							
	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, greenish grey, saturated, very dense, with shell.				12-44-37 (N>50)					
40							-30							
	S-12	SS 18	18		(SP) POORLY GRADED SAND - fine sand, grey, saturated, very dense, trace shell.				15-23-31 (N>50)					
45							-35							
	S-13	SS 18	18		(CL) LEAN CLAY - bluish grey, saturated, stiff, Trace shell.				4-4-8 (12)	35	6			
							-40							
					END OF BORING at 50.0 FT									



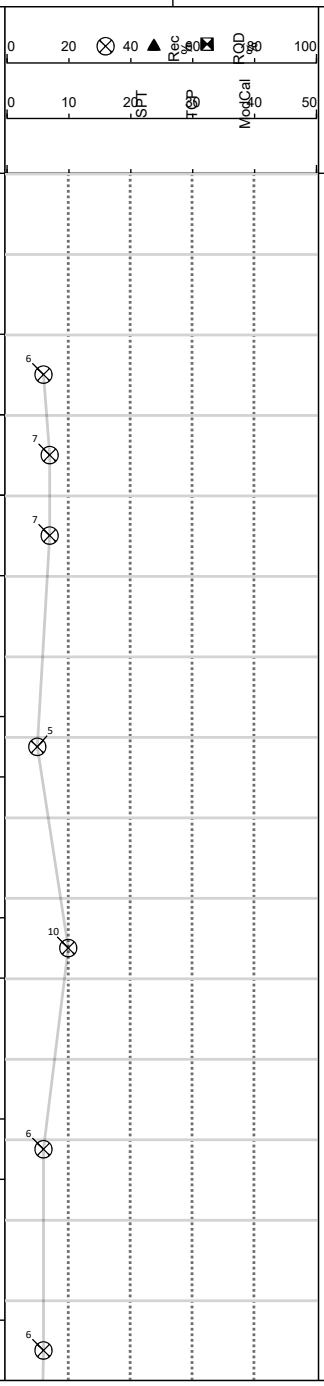
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5 FT**	**BORING STARTED:**	**11/13/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/13/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **C-02**	SHEET: **1 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007342**	LONGITUDE: **-80.930918**	STRUCTURE:	SURFACE ELEVATION: **10** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
	S-1	Soil	24		(SP-SM) POORLY GRADED SAND WITH SILT - fine sand, greyish brown, moist.									
	S-2	Soil	24		As above but grey.									
5	S-3	SS 24	24		(SM) SILTY SAND - fine sand, dark brown/black, moist to saturated, loose.		5		3-3-3-4 (6)					
	S-4	SS 24	24						3-4-3-4 (7)					
	S-5	SS 24	24		(SP) POORLY GRADED SAND - fine sand, dark brown, saturated, loose.				4-4-3-3 (7)			24.4		4.9
10							0							
	S-6	SS 18	18						4-2-3 (5)					
15							-5							
	S-7	SS 18	18		(SP) POORLY GRADED SAND - fine sand, grey, saturated, loose.				3-4-6 (10)					
20							-10							
	S-8	SS 18	18		As above but trace clay.				3-3-3 (6)			34.0		5.0
25							-15							
	S-9	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey,				2-3-3 (6)					



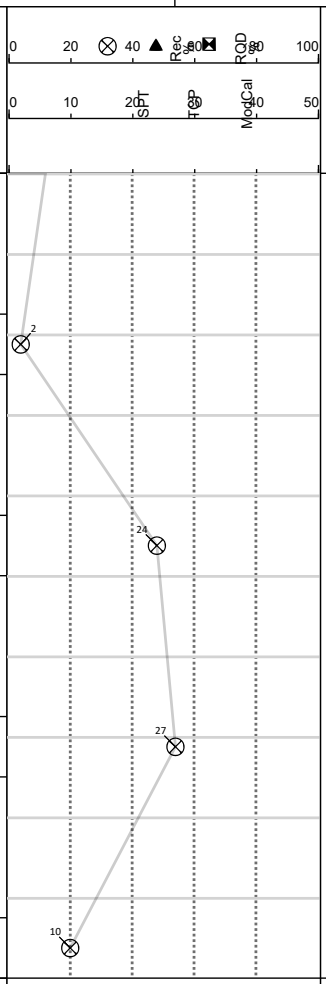
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	5.5 FT	BORING STARTED:	11/14/2025	CAVE IN DEPTH:	Not Observed
WL (Completion):		BORING COMPLETED:	11/19/2025	HAMMER TYPE:	Automatic
WL (Seasonal High Water):	4.5 FT	EQUIPMENT:	LOGGED BY:	DRILLING METHOD:	
WL (Stabilized):		Track	Francisco	Fluid Rotary (0'-50')	

GEOTECHNICAL BOREHOLE LOG

CLIENT: **Volusia County Schools**	PROJECT NO.: **56:2109**	BORING NO.: **C-02**	SHEET: **2 OF 2**
PROJECT NAME: **New Smyrna Beach HS Baseball & Softball Field Lighting**	DRILLER/CONTRACTOR: **Allstate Geotechnical Drilling Inc.**		
SITE LOCATION: **1015 10th Street, New Smyrna Beach, Florida, 32168**			LOSS OF CIRCULATION
LATITUDE: **29.007342**	LONGITUDE: **-80.930918**	STRUCTURE:	SURFACE ELEVATION: **10** ■ BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT N-VALUE)	LIQUID LIMIT	PLASTICITY INDEX	MOISTUE CONTENT (%)	QP (TSF)	FINES CONTENT
					(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey, saturated, loose, trace shell. (continued)									
	S-10	SS 18	18		(CL) LEAN CLAY - bluish grey, saturated, soft, with shell.				1-1-1 (2)					
35							-25							
	S-11	SS 18	18		(SP) POORLY GRADED SAND - fine sand, trace clay, bluish grey, saturated, medium dense, trace shell.				17-15-9 (24)					
40							-30							
	S-12	SS 18	18		(CL) LEAN CLAY - bluish grey, saturated, very stiff, trace shell.				19-12-15 (27)					
45							-35							
	S-13	SS 18	18		(SP-SC) POORLY GRADED SAND WITH CLAY - fine sand, bluish grey, saturated, loose, trace shell.		-40		8-4-6 (10)					
					END OF BORING at 50.0 FT									



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered):	**5.5 FT**	**BORING STARTED:**	**11/14/2025**	**CAVE IN DEPTH:**	**Not Observed**
WL (Completion):		**BORING COMPLETED:**	**11/19/2025**	**HAMMER TYPE:**	**Automatic**
WL (Seasonal High Water):	**4.5 FT**	**EQUIPMENT:**	**LOGGED BY:**	**DRILLING METHOD:**	
WL (Stabilized):		**Track**	**Francisco**	**Fluid Rotary (0'-50')**	

GEOTECHNICAL BOREHOLE LOG

Appendix C – Laboratory Testing

Laboratory Testing Summary

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		@ LBR (%)	#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)		
A-01	S-4	6-8	67.6	**SM**				14.1				8.5
A-01	S-7	18.5-20	27.1	**SP**				3.1				
A-02	S-3	4-6	71.5	**SP-SM**				7.7				4.8
A-02	S-9	28.5-30	29.6	**SC**				41.4				
A-03	S-6	13.5-15	45.3	**SP-SM**				8.8				6.7
A-03	S-10	33.5-35	26.7	**SC**				14.4				
B-01	S-4	6-8	21.1	**SP**				2.8				
B-01	S-10	33.5-35	51.0	**CL**				53.1				
B-02	S-5	8-10	70.4	**SM**				15.2				20.8
B-02	S-13	48.5-50	46.4	**SC**				44.2				

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, @FM 5-515, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: New Smyrna Beach HS Baseball & Softball Field
Client: Volusia County Schools

Project No.: 56:2109
Date Reported: 12/5/2025

Office / Lab	Address	Office Number / Fax
ECS Florida LLC - Daytona Beach	2330 South Nova Road Suite A South Daytona, FL 32119	(386)944-9588 (386)944-9589

Tested by	Checked by	Approved by	Date Received
vbandaru	RRawson	RRawson	11/24/2025

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		@ LBR (%)	#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)		
B-03	S-5	8-10	67.4	**SM**				13.3				8.5
B-04	S-2	2-4	52.3	**SP-SM**				6.3				5.7
B-04	S-9	28.5-30	31.7	**SC**				48.8				
C-01	S-6	13.5-15	30.6	**SP**				4.6				
C-02	S-5	8-10	24.4	**SP**				4.9				
C-02	S-8	23.5-25	34.0	**SP**				5.0				

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, @FM 5-515, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

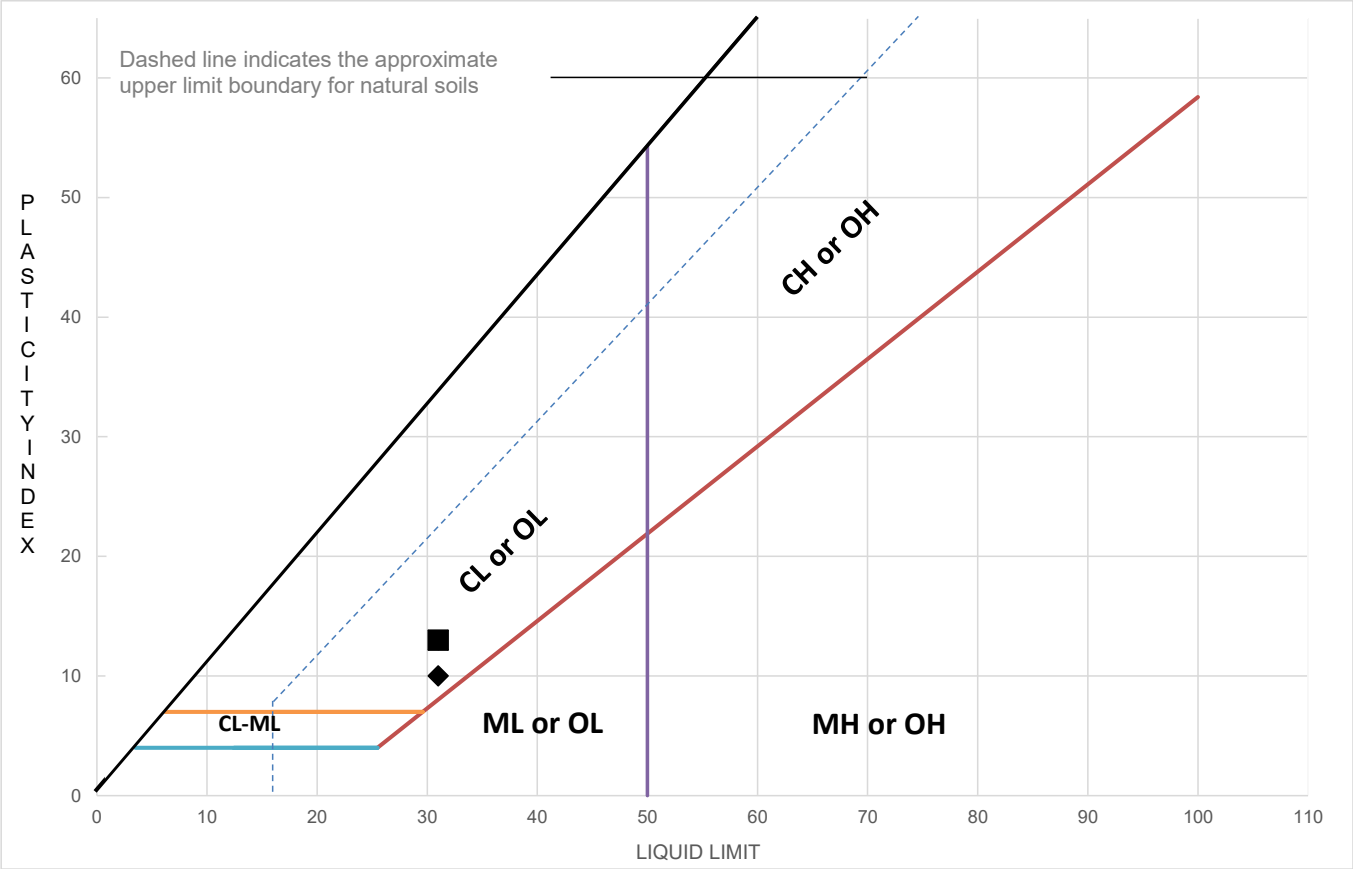
Project: New Smyrna Beach HS Baseball & Softball Field
Client: Volusia County Schools

Project No.: 56:2109
Date Reported: 12/5/2025

Office / Lab	Address	Office Number / Fax
ECS Florida LLC - Daytona Beach	2330 South Nova Road Suite A South Daytona, FL 32119	(386)944-9588 (386)944-9589

Tested by	Checked by	Approved by	Date Received
vbandaru	RRawson	RRawson	11/24/2025

LIQUID AND PLASTIC LIMITS TEST REPORT



TEST RESULTS (AASHTO T 89-13 & AASHTO T 90-16)

	Sample Location	Sample Number	Sample Depth (ft)	LL	PL	PI	%<#40	%<#200	AASHTO	USCS	Material Description
■	A-01	S-9	28.50-30.00	31	18	13				CL	
◆	B-03	S-9	28.50-30.00	31	21	10				CL	

Project: New Smyrna Beach HS Baseball & Softball Field Lighting
Client: Volusia County Schools

Project No.: 56:2109
Date Reported: 12/5/2025

Office / Lab	Address	Office Number / Fax
ECS Florida LLC - Daytona Beach	2330 South Nova Road Suite A South Daytona, FL 32119	(386)944-9588 (386)944-9589

Tested by	Checked by	Approved by	Date Received
RRawson	RRawson	RRawson	

SECTION 32 31 13 - CHAIN LINK FENCING

PART 1 - GENERAL

1.1 SCOPE

A. Provide all the labor, materials, tools, equipment and services necessary to furnish and install a complete, operable and straight 6 foot high black vinyl coated chain link fence complete with gate in complete accordance with these specifications.

B. Reference Standards

1. Concrete work shall be in strict compliance with the following standards: "American Society of Testing and Materials: (ASTM); "American Concrete Institute" (ACI); "Portland Cement Association" (PCA).

2. Fencing materials and workmanship shall meet or exceed the Florida Chapter International Fence Industry Association, Incorporated, for Medium Weight Commercial Chain Link Fence.

3. As a general guide, applicable sections of the above reference is listed for various portions of the work. However, the contractor is responsible for all applicable sections of the above reference whether specifically listed or not.

PART 2 - MATERIALS

2.1 CONCRETE

A. Cement Concrete Mixture: Type I with a compression strength of 3,000 psi at 28 days.

2.2 MEDIUM WEIGHT CHAIN LINK FENCE

A. Fencing Fabric shall be 2-1/4" mesh, No. 11 1/2 gauge wire. Fabric shall have black vinyl coating.

B. Posts shall have a black vinyl coating.

1. Intermediate (line) posts shall be 1.900" O.D. by 8 feet long with a wall thickness of .090.

2. End, Corner Pull and Gate (terminal) posts shall be 2.375" O.D. by 8 feet long with a wall thickness of .095.

C. Top rail shall be 1.660" O.D. and a wall thickness of .085" with black vinyl coating.

D. Tension bars shall be a minimum of 3/16" x 5/8" black vinyl coated material, to be provided at each end, corner, gate post and gate frame.

E. Tension wires shall be 14 gauge black vinyl coated wire.

F. Tension bands shall be minimum width of 3/4" x 14 gauge, complete with a 5/6" x 1-1/4" carriage bolt and nut. Minimum required: one less than height of fabric.

G. Brace bands shall be a minimum width of 3/4" x 14 gauge, complete with a 5/16" x 1-1/4" carriage bolt and nut.

H. Sleeves shall be a 6" minimum length.

I. Caps shall be malleable, pressed steel with black vinyl coating.

J. Line Post Eye Tops shall be semi-steel, malleable or pressed steel with black vinyl coating.

K. Sockets (rail ends) shall be semi-steel, malleable or pressed steel with black vinyl coating.

L. Ties shall be 9 gauge aluminum.

M. Gates shall be equipped with latches and the adequate number of hinges.

1. Gate fabric shall be same as specified for the fence.

2. Gate frame shall be 1.660" O.D., wall thickness of .085 with corners notched, welded and black vinyl coated. Gate frame shall come complete with all internal bracing to give adequate support.

PART 3 - EXECUTION

3.1 CHAIN LINK FABRIC

A. Shall be stretched tight from terminal posts. Fabric shall be fastened to lines posts by ties spaced approximately 12" apart. The top edge of the fabric shall be fastened by ties spaced approximately 24" apart. Fabric may be placed on either side of the line posts. The fabric shall be cut and fastened to each terminal post independently by tension bar with bands spaced approximately 12" apart. The fabric shall be fastened to bottom tension wire by means of ties or hog rings spaced approximately 24" apart. All fabric shall be knuckled to knuckled.

B. Rolls of wire fabric shall be joined by weaving a single strand into the ends of the rolls to form a continuous mesh.

3.2 INTERMEDIATE (LINE) POSTS

A. Posts shall be spaced a maximum of 10'-0" apart on centers, in line and plumb.

B. Posts set in concrete paving shall have a 21" deep by 6" diameter concrete footing. Posts must protrude 3" through base of concrete footing to allow for dissipation of condensation.

3.3 END, CORNER, AND GATE POSTS

A. Posts set in concrete paving shall have a 24" deep 6" diameter concrete footing. Posts must protrude 3" through base of concrete footing to allow for dissipation of condensation.

B. Post shall be vertical and plumb.

3.4 INSTALLATION

A. Install fence as required to prevent unauthorized persons from having access to electrical service equipment.

B. Maintain all code required and power company required clearances.

C. Provide gates as required to provide access to fenced in area and as required to facilitate maintenance on electrical equipment.

END OF SECTION