# Invitation to Bid

# WSRE Generator Installation

# 7-2014/2015

**Due: April 6, 2015 @ 2:00 PM, Local Time**

Pensacola State College is soliciting sealed bids for the installation of a Generator, according to the contract documents, drawings, specifications and general conditions pertaining thereto for the work as prepared by the Engineer:

Schmidt Consulting Group
40 S. Palafox Street
PENSACOLA, FLORIDA 32502
PH# (850) 438-0050
FAX# (850) 432-8631

Please review and deliver your formal bid as the original and two copies by the date and time shown on the Bid Form to:

**SEALED BID # ITB -7-2015/2016**
Cassie Boatwright, Director of Purchasing and Auxiliary Services
1000 College Blvd.
Pensacola, FL 32504

Please indicate the bid number on the outside of your sealed bid envelope to assist in identifying your bid.

Pensacola State College is a political subdivision of the State of Florida and as such is exempt from all Federal and State taxes. Pensacola State College reserves the right to reject any portion or all bids, to resolicit bids or not and to waive informalities as deemed in the best interest of Pensacola State College.

Public bid opening: Pensacola State College will conduct a Public bid opening on the date and time listed above at Pensacola State College Board Room, 1000 College Blvd. Pensacola, FL 32504 Room 736. The College may choose to only open the individual bids and publicly announce who a bid was received from. The actual bid prices submitted will not be a public record until the date of posting or the number of days as defined in FS 119.071. Immediately following the bid opening, the Bid Evaluation Committee will evaluate the bids. This may require additional review by the committee or representative.

ANTI-COLLUSION STATEMENT: The Bidder by signing and submitting a bid has "not" divulged to, discussed or compared his/her bid with any other Bidders and has not colluded with any other Bidders or parties to a bid whatsoever. (NOTE: Including there have been No premiums, rebates or gratuities paid or permitted either with, prior to, or after any delivery or personal contact. Any such violation will result in the cancellation of award of any resulting contract from this bid and the Bidder being debarred for not less than three (3) years of doing business with Pensacola State College.)

1.0 OVERVIEW

Pensacola State College is soliciting qualified bids from qualified firms to provide installation of a generator as defined in Attachment A.

1.01 Bidders may contact Cassie Boatwright, Director of Purchasing and Auxiliary Services by email cboatwright@pensacolastate.edu for questions related to the College's requirement relative to this ITB.

1.02 In order to maintain a fair and impartial competitive process, Pensacola State College shall avoid any oral communication with prospective bidders other than through the purchasing office during the bid process. However, all solicited bidders will be provided a copy of all written questions submitted and Pensacola State College's responses to them, unless the written inquiry pertained to an administrative or procedural matter. Send all inquiries to the attentions of:

Cassie Boatwright, Director of Purchasing and Auxiliary Services
Pensacola State College
1000 College Blvd.
Pensacola, FL 32504
PHONE: (850) 484-1779 FAX: (850) 484-1839
Email: cboatwright@pensacolastate.edu

All written questions and inquiries are due no later than 10:00 AM, local time, March 26, 2015.

1.03 Any addenda issued prior to the opening of the ITB for the purpose of changing the specifications of this request for proposal or related documents, or clarifying the meaning of the same, shall be binding in the same way as if originally written in the ITB specifications and related documents. Since all addenda are available to proposers at the office of the Pensacola State College Director of Purchasing and Auxiliary Services, it is each bidder's responsibility to check with the issuing office and immediately secure all addenda before submitting your bid. The Pensacola State College Director of Purchasing and Auxiliary Services emails addenda to all known prospective bidders, but no guarantee can be made that addenda will be received.

1.04 The bidder is assumed to be familiar with all Federal, State of Florida and local laws, ordinances, rules and regulations that in any manner affect the work. Ignorance on the part of the proposer will in no way relieve you from your contractual responsibility. Any resultant award shall include requirements that the resultant contract shall be governed by the laws of the State of Florida.

1.05 As deemed in the College's best interest, the College reserves the right to:

1. Reject any or all bids submitted.
2. To resolicit bids or not.
3. To award any portion(s) of this ITB.
4. To waive informalities.
5. To issue to all responsive bidders request for information (RFI's).
6. To issue requests to negotiate with finalist and solicit best and final offers.
7. To evaluate to determine technical equivalents.
8. To award this ITB on a Lot by Lot basis to the responsive low bidder meeting specifications.
9. To award on an outright purchase or lease basis.

1.07 NON-MANDATORY PRE-BID MEETING: All prospective bidders are invited to a non-mandatory pre-bid meeting, March 25, 2015 at 8:00 AM, local time, at the site location. This location is identified on the engineered drawings.

1.08 A bid bond or deposit, in the amount of five percent (5%) of the base bid will be required to accompany each bid, as guarantee that the successful bidder, will enter into a contract with the Owner, if desired by same. Any deposit must be in the form of a Certified Check, or a Cashier's Check. The bid bond or deposit will be held as liquidated damages, in the event that the successful bidder refuses to enter into a contract with the Owner. In addition, the successful bidder shall provide a one hundred percent (100%) Performance Bond and one hundred percent (100%) Labor and Material Payment Bond(s), with a surety insurer authorized to do business in the State of Florida as surety, satisfactory to the Owner.

1.09 The bid shall remain in force for thirty (30) days after the time of opening.

1.10 SCHEDULE: All items with exception of owner-supplied generator and fuel tank must be complete by May 8, 2015. The actual tie-in and startup of the system must be completed within (1) week of delivery of unit. Anticipated delivery is May 13, 2015.

1.11 QUALIFICATIONS: Bidders shall furnish documentation of the following:

a. He or She is currently registered with or hold an unexpired License issued by the Florida Construction Industry Licensing Board in accordance with current applicable regulations, Licensing of Construction Industry, Florida Statutes.
b. He or She presently maintains a permanent bona fide place of business practicing this type of work and has had the appropriate experience.
c. He or She has available, or can obtain, adequate equipment and financial resources to undertake and execute the Contract properly and expeditiously, in accordance with present day practices.
d. All subcontractors shall be fully licensed in the State of Florida and shall be bondable. Submit copies of current license and documentation from bonding company showing compliance.
e. He or She shall submit with the Bid the enclosed document entitled "Sworn Statement under Section 287.133(3) (a), Florida Statutes. On Public Crimes".

The apparent successful bidder shall also, at the request of the College, submit a fully executed "Contractor's Qualification Statement" AIA Document A305.

1.12 LICENSE: In accordance with Chapter 489.113, Florida Statutes, all individuals or entities engaging in and providing construction services shall be licensed in the State of Florida for that activity. This license requirement includes general and sub-contractors.

The successful low bidder shall be required to submit a list of all contractors to be involved in said project with applicable license numbers (see form included in these documents), including a photographic copy of current license certificates. Submittal of proof of license shall be made with, and as a part of signed contract.

Prime Contractor shall submit proof of licensure with the Bid Form. Failure to submit required proof of license shall be cause for Owner to reject bid as non-responsive, and award bid to second lowest qualified bidder.

1.13 DISQUALIFICATION OF BIDDER: More than one Bid from an individual, firm, partnership, corporation or association under the same or different names will not be considered. Reasonable grounds for believing that a Bidder is interested in more than one Bid for the same will cause the rejection of all Bids which such Bidder is believed to be interested. Bids will be rejected if there is reason to believe that collusion exists between Bidders. Bids in which the prices are obviously unbalanced may be rejected.

1.14 MODIFICATION OF BID: Bid modifications will be accepted from Bidders if addressed to the Owner at the place where Bids are to be received and if received prior to the opening of the Bids. Modifications may be in written or telegraphic form. Modifications will be acknowledged by the Owner before opening of formal Bids.

1.15 WITHDRAWAL OF BIDS: Bids may be withdrawn by written or telegraphic request received from Bidders prior to the time fixed for opening. Negligence on the part of the Bidder in preparing the Bid confers no right for the withdrawal of the Bid after it has been opened.

1.16 BUILDING PERMIT: A permit will be issued to the Contractor by the Facilities Planning and Construction Department of Pensacola State College.

1.17 SECURITY: The Contractor shall be responsible for maintaining security, and the contractor shall be responsible for replacement or repair of items and/or equipment stolen, lost or damaged while the building security is under the care of the Contractor. The Contractor shall be responsible for having a job superintendent present whenever work is in progress. The Contractor shall not change superintendent without the Owners approval.

2.00 GENERAL

Must meet or exceed the specifications listed in Attachment A.

2.01 BASIC DEFINITIONS: Unless otherwise expressly stated, wherever in the Contract Documents the word 'provide' is used, it shall mean furnished and installed in place, complete and tested. The terms Architect and Engineer are used interchangeably.

2.02 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS: If a discrepancy occurs on drawings, in specifications, or between drawings and specifications, the greater quantity or value takes precedence.

2.03 WARRANTY: The warranty herein guarantees the proper operation of all structures, components and systems constructed or installed by the contractor for a period of one year after the date of substantial completion.

If within the guarantee period, repairs or changes are required in connection with the guarantee work, which in the opinion of the Architect is rendered necessary as the result of the use of materials, equipment, or workmanship, which are defective, or inferior, or not in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the Owner, and without expense to the Owner, proceed to:

Place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein; and

Make good all damages to the structure or site, or equipment or contents thereof which, in the opinion of the Architect are the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the Contract, or the equipment and contents or structures or site disturbed in fulfilling any such guarantee.

2.04 INDEMNIFICATION: The Contractor shall, for the sum of one hundred dollars ($100.00) and other good and valuable consideration paid by the Owner and Architect, individually, receipt of which is hereby acknowledged by the Contractor, indemnify and hold harmless the Owner and Architect and their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees, out of or resulting from the performance of the work provided that such claims, damage, loss or

expense: (1) is attributable to bodily injury, sickness, disease or death, or injury to or destruction of tangible property other than the work itself, including the loss of use resulting there-from, and (2) is caused in whole or in part by a negligent act or omission of the Contractor, subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any one of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. This obligation shall not be construed to reduce or negate any other right or obligation of indemnity which would otherwise exist as to any party or person described in this invitation to bid.

2.05 SUBCONTRACTORS: The Contractor shall not contract with any person or entity declared ineligible under Federal laws or regulations from participating in federally assisted construction projects or to whom the Owner or the Architect has made reasonable objection.

2.06 CHANGES IN WORK: Maximum percentages of overhead and profit which may be added by the Contractor to actual costs of such changes in the work are specifically set forth as follows:

For all work done by his organization, or subsidiaries of his organizations, including work traditionally considered as subcontractor work, the Contractor may add 15% of his actual costs for combined overhead and profit.

For any work performed by a subcontractor or forces under the respective subcontractor including any sub-subcontractors or persons not in the direct employ of the subcontractor, a total of 15% of the cost of the change, with 10% to be assigned to the subcontractor and any forces under him and the General Contractor may add 5% of the cost above subcontractor's cost for his overhead and profit.

The above percentages shall be considered reasonable allowance for overhead and profit due to the contractor.

The Contractor shall submit receipts or other evidence showing his costs and his right to the payment claims. All changes in work shall be provided with a detailed cost breakdown indicating material and labor units for all work to be performed. In addition, the cost breakdown shall contain all current tax and labor burden. The allowable amount for the material tax shall be 7.25% and for labor burden shall be 30%.

2.07 INSURANCE AND BONDS: The Contractor shall not commence any work in connection with this agreement until he has obtained all of the following types of insurance with the Owner as additional named insured and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor to commence work on his subcontract has been obtained and approved.

All insurance policies shall be with insurers qualified and doing business in Florida.
THE CONTRACTOR SHALL PROCURE AND MAINTAIN FOR THE LIFE OF THIS CONTRACT:

1. Workers Compensation and Employers' Liability as follows:
    a. WC Statutory Limits per FS 440
    b. E.L. - Each Accident $500,000
    c. E.L. Disease – Each Employee $500,000
    d. E.L. Disease – Policy Limit $500,000
2. Comprehensive General Liability with minimum limits as follows:
    a. Each Occurrence - $ 1,000,000
    b. Damage to Rented Premises (Each occurrence)- $100,000
    c. Medical Expense (Any one person) $5,000
    d. Personal Advertising Injury - $1,000,000

e. General Aggregate - $2,000,000
f. Products-Completed Aggregate - $2,000,000
g. General Aggregate applies to Per Project

3. Automobile Liability providing coverage on any auto to include all owned, hired and non-owned vehicle with following minimum limits:
    a. Combined Single Limit (Each Accident) - $1,000,000 OR
    b. Bodily Injury per person - $500,000, Bodily Injury per Accident - $1,000,000, Property Damage per Accident - $500,000
4. Excess/Umbrella Liability on Occurrence Form with following limit:
    a. $1,000,000 each occurrence
    b. $2,000,000 aggregate
    c. Retention /Deductible - $5,000

The Contractor liability policy shall provide "XCU" (Explosion, Collapse, Underground Damage) coverage for those classifications in which they are included.

Broad Form Property Damage shall be required on Contractor's public liability so that completed operations coverage extends to work performed by the Contractor.

Builders Risk Insurance: Contractor shall purchase and maintain in effect a completed value builder's risk policy issued by an admitted carrier in an amount equal to the full completed value of the project. Such insurance shall be issued on an all risk form. The Contractor shall be responsible for any deductible amounts.

The Contractor shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of this Contract and also a Labor and Material Payment Bond in an amount not less than one hundred percent (100%) of the Contract Sum or in a penal sum not less than that prescribed by State, Territorial or local law, as security for the payment of persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract. The Performance Bond and the Labor and Material Payment Bond may be in one or in separate instruments in accordance with local law and shall be delivered to the Owner not later than the date of execution of the Contract. The premium for the required bonds shall be paid by the Contractor. "These bonds shall be executed on behalf of the Contractor in the same manner and by the same person who executed the agreement.

To be acceptable as surety on Performance and Payment Bonds, a surety company shall comply with the following provisions:

The Surety Company must be admitted to do business in the State of Florida. The surety Company shall have been in business and have a record of successful continuous operations for at least five years. The Surety Company shall have at least the following minimum ratings:

| Contract Amount | Policy Holders | Required Rating |
|---|---|---|
| 0 - 100,000 | B | CLASS VII |
| 100,000 - 500,000 | A | CLASS VIII |
| 500,000 - 750,000 | A | CLASS IX |
| 750,000 - 1,000,000 | A | CLASS X |
| 1,000,000 - 1,250,000 | A | CLASS XI |
| 1,250,000 - 1,500,000 | A | CLASS XI |
| 1,500,000 - 2,000,000 | A | CLASS XII |
| 2,000,000 - 2,500,000 | A | CLASS XII |

*From Best's key rating guide.
Best's Policy Holder's Rating of "A" and "B" (which signifies A--Excellent, and B-Good, based upon good underwriting, economic management, adequate reserves for undisclosed liabilities, net resources for unusual stock and sound investment) or an equivalent rating from the Insurance Commissioner, if not rated by Best's. Neither the Surety Company nor any reinsurer shall expose itself to any loss on any one risk in an amount exceeding ten (10%) percent of its surplus to policyholders.

In the case of a surety insurance company, there shall be deducted in addition to the deduction for reinsurance, the amount assumed by any co-surety, the value of any security deposited, pledged or held subject to the content of the Surety and for the protection of the Surety."

Furnish in triplicate a Performance Bond and a Payment Bond, each in the amount of 100% of the Contract Sum, written by a surety licensed to do business in the state where the Project is located. The prescribed form of the Performance Bond and Payment Bond is AIA Document A313.

2.08 LIQUIDATED DAMAGES: If the Contractor fails to complete the working within the time specified, the Contractor shall pay liquidated damages to the College in the amount of $220 for each calendar day until the work is completed or accepted.

3.00 SPECIAL CONDITIONS

3.01 Florida sales tax exemption no: 85-8012557294C-2. This project is funded utilizing Federal Funds. As such all applicable Federal Laws must be followed. This includes but it not limited to the Davis Bacon Act.

3.02 Pensacola state college reserves the right to reject any or all RFPs/proposals received, to resolicit or not and to waive informalities as deemed in the best interests of the College.

3.03 As a bidder/proposer our company attests we have not been convicted of a public entity crime of the State of Florida or any federal agency and are not listed in the excluded parties list system (EPLS) maintained by the General Services Administration(GSA).

Pursuant to OMB Circular a-110,subpart b, section 13 a person or affiliate who has been placed on either the federal excluded parties list system or the state of Florida convicted vendor list following a conviction for a public entity crime may not submit a bid or enter into a contract to provide any goods or services to a public entity, may not submit a bid or enter into a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of 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 (i.e. $25,000)while on the convicted vendor list. The excluded parties' list system can be found at http://epls.gov/epls/servlet/EPLSGETInputSearch

3.04 Any entity or affiliate who has been placed on the discriminatory vendor list may not submit a ITB on a contract to provide goods or services to a public entity, may not submit a ITB on a contract with a public entity for the construction or repair of a public building or public work, may not submit ITBs on leases of real property to a public entity, may not award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity. All invitations to ITB, as defined by 287.012(11)FS, request for proposals, as defined by 287.012(15)FS, and any written contract document of the state shall contain a statement informing entities of the discrimination provisions.

3.05 Pensacola State College reserves the right to award an individual lot or a combination of lots; reject any or all lots, whatever seems in the best interest of the College.

3.06 The specifications listed are meant to demonstrate the work parameters required, and the functional limits listed are to be considered minimal unless changed by addendum to the bid. Bid evaluation will be made strictly from the minimal specification. Each particular specification which the equivalent offered which does not meet must be identified and submitted along with the detailed specification sheet of the equivalent offered.

3.07 The successful bidder shall fully guarantee all items furnished against defect in materials and/or workmanship for a period of 365 days from date of final acceptance by Pensacola State College. Should any such defect, except for normal wear and tear, appear during the warranty period, the successful bidder shall commence repair or replace same at no cost to Pensacola State College within 72 hours after notice.

3.08 Any "notice of protest" involving the specifications, the terms and conditions or any other aspect of this invitation to bid (ITB), request for proposal (RFP) or request for qualification (RFQ) must be filed in writing within 72 hours after the receipt notice of the project plans and the solicitation specifications. Formal written protest must be filed within 10 days after the date of the notice of protest is filed. (Saturdays, Sundays and legal holidays shall be excluded in these computations.) The formal written protest shall state with particularity the facts and law upon which the protest is based. Failure to file a notice of protest or failure to file a formal written protest within the time prescribed in section 120.57(3), Florida Statutes shall constitute a waiver of proceedings under chapter 120, Florida Statutes.

3.09 Bid tabulations with recommended awards will be posted on the purchasing web page http://pensacolastate.edu/purchasing/current_solicitations.asp
Unless changed by addendum, and will remain posted for a period of 72 hours (not including Saturdays, Sundays and legal holidays). Any notice of protest of award or recommendation of award shall be filed in writing to the Director of Purchasing, within 72 hours after the posting of the ITB/RFP/RFQ bid tabulation. "Failure to file a protest within the time prescribed in section 120.57 (3), Florida statutes shall constitute a waiver of proceedings under chapter 120, Florida Statutes." A formal written protest must be filed within 10 days (excluding Saturdays, Sundays, and legal holidays) after the date the notice of protest was filed. The formal written protest shall state with particularity the facts and law upon which the protest is based upon. Failure to file a formal written protest within the time prescribed shall constitute a waiver of proceedings under chapter 120.57(3) Florida Statutes. Inspection or examination of sealed bids or proposals are available for inspection during normal working hours by appointment, upon notice of a decision or intended decision, or 10 days after invitation to bid or proposal public opening, whichever is earlier.

3.10 As this solicitation may be federally funded. The sections within this ITB are an overview of Federal Compliance Conditions and Regulations that all bidders must comply with.

3.11 SPECIAL POLICY AND PROCEDURES: Contractor and subcontractor personnel are not permitted to use the campus facilities.
Smoking is not permitted in any campus facility.
Profane language or improper behavior will result in immediate termination from the construction site.
The Contractor shall erect temporary barricades and fencing as required to keep the unauthorized out of the construction area, and provide signs that read. “This area is a designated construction site; anyone who trespasses on this property commits a felony per Florida Statute 810.09(2d).

**BID FORM**

Total Lump Sum Cost installation as specified $ _____

Payment Terms: Net 30 days or prompt payment discount of ____%, _____ Days offered by Proposer.

| | | |
|---|---|---|
| Corporate Name | DBA Name (if applicable) | |
| Purchasing Address | Street/PO Box | City |
| | State | Zip |
| | Email Address | |
| Remit to Address | Street/PO Box | City |
| | State | Zip |
| | Email Address | |
| Contact Person | Name | Phone # |
| | Email Address | |
| Address of Parent Company (if applicable) | Street/PO Box | City |
| | State | Zip |

Check applicable boxes for ownership of company

__ Black American __ Hispanic American __ Asian Pacific American
__Asian Indian American __ Native American __ Woman-Owned __ Disabled Veteran

Attach current MBE/WBE Certifications

_____ _____ _____
Authorized Agent Name Signature Date

Firms certify by their signature they have read and understand the conditions and specifications of this Invitation to Bid and they have the authority, capacity, and capability to perform all conditions and specifications of this Invitation to Bid.

CERTIFICATION OF DRUG-FREE WORKPLACE PROGRAM

IDENTICAL TIE BIDS - Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program, or if all of the tied vendors have drug-free workplace programs. In order to have a drug-free workplace program a business shall:

(1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

(2) Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

(3) Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

(4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

(5) Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

(6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

AS THE PERSON AUTHORIZED TO SIGN THE STATEMENT, I CERTIFY THAT THIS FIRM COMPLIES FULLY WITH THE ABOVE REQUIREMENTS.

BIDDING FIRM OR ENTITY NAME: _____

SIGNATURE OF VENDOR REPRESENTATIVE: _____

TYPED OR PRINTED NAME OF VENDOR REPRESENTATIVE: _____

DATE: _____

MINORITY BUSINESS ENTERPRISE/WOMAN BUSINESS
ENTERPRISE CERTIFICATE

I HEREBY DECLARE AND AFFIRM that I am the _____ (Title) representative of the firm of _____ (Company Name) minority business enterprise (MBE/WBE)_____ (Minority Type) as defined by Pensacola State College in the specifications for _____(ITB Name & Number) that I will provide information requested by PENSACOLA STATE COLLEGE to document this fact. The foregoing statements are true and correct and include all material necessary to identify and explain the operations of _____ (Company Name) as well as the ownership thereof. Further, the undersigned does agree to provide PENSACOLA STATE COLLEGE current, complete and accurate information regarding actual work performed on the project, the payment therefor and any proposed changes in any of the arrangements hereinabove stated and to permit and audit an examination of the books, records and files of the above named company by authorized representative of PENSACOLA STATE COLLEGE. It is recognized and acknowledged that the statements herein are being given under oath and material misrepresentation will be grounds for terminating any contract which may be awarded in reliance hereon. Termination is understood to forfeiture of payment for all work not performed at time of notification.

I DO SOLEMNLY DECLARE OR AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THE FOREGOING DOCUMENTS ARE TRUE AND CORRECT, AND THAT I AM AUTHORIZED, ON BEHALF OF THE ABOVE FIRM, TO MAKE THIS AFFIDAVIT.

_____
Signature of Company's Authorized Representative

State of _____County of _____City of _____

On this _____ day of _____, 20_____, before me, in the foregoing affidavit and acknowledged that he (she) executed the same in the capacity therein stated and for the purpose therein contained.

In witness thereof, I hereunto set my hand and official seal.

Signed: _____ (SEAL)
Notary Public

My commission Expires:

Minority Type: # M1 Black American Man; M2 Hispanic American; M3 Asian American; M4 Native American (Eskimo & Aleutian); M5 Native Hawaiian; M6 Small Business; M7 Disabled; M8 American Woman; M9 Black American Woman; and NM Not Minority. (Must have greater than 51% minority ownership). "Minority/Woman Business Enterprises that file false misrepresentation of their MBE/WBE status shall be found guilty of a felony of the second degree and be debarred from bidding no less than 36 months pursuant to 287.094 Florida Statute".

EQUAL OPPORTUNITY CERTIFICATE OF COMPLIANCE

This is to certify that the undersigned contractor on subject project does now and will during the entire length of this project comply with all applicable laws, rules and regulations relating to equal employment opportunity, and any Federal, State, or Local laws, rules, or regulations pertaining thereto; and further certifies compliance specifically with Executive Order 11246 originally issued by the President of the United States on September 24, 1965, as amended from time to time thereafter, including:

1. The Contractor does not discriminate in any manner in its employment policies as to race, color, religion, sex or national origin; and,

2. The Contractor does maintain an affirmative action plan to recruit, employ, and promote qualified members of groups that may have been formerly excluded because of race, color, religion, sex or national origin.

BIDDING FIRM OR ENTITY NAME: _____

SIGNATURE OF VENDOR REPRESENTATIVE: _____

TYPED OR PRINTED NAME OF VENDOR REPRESENTATIVE: _____

DATE: _____

LIST OF DESIGNATED SUBCONTRACTORS

TO BE RESPONSIVE THIS FORM (WITH DEFINED TRADE SUBCONTRACTOR'S NAME AND SUBCONRACT AMOUNT COMPLETED) SHALL BE SIGNED AND PLACED IN AN ENVELOPE, SEALED AND SUBMITTED WITH CONTRACTOR'S BID. (F.S. 255.0515) The College will require the apparent low bidder meeting specification to submit in writing (on this form) within 24 hours after notice all additionally required information defined below (i.e. address, minority type and subcontractor license numbers) if not provided at bid opening.

NOTE: The College reserves the right to consider a bidder/proposer non responsive if they have not submitted with their bid/proposal a comprehensive, completed, signed minority outreach statement, as deemed in the Colleges best interest.

The following names are the subcontractors for designated trades who will perform the phases of the work indicated (use additional forms as needed to specify any additional subcontractors):

| **Subcontractors to be used** | | | | | |
|---|---|---|---|---|---|
| Required to be submitted with Proposal | | | Required from the apparent low bidder within 24 hours of notice | | |
| **Trade** | **Name of Company (if self-performed, so indicate** | **Subcontract Value** | **Address** | **Minority Type** | **FL Trade License/ Occupational Number** |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

The undersigned declares that he/she has fully investigated each subcontractor listed and has received and has in his/her files evidence that each entity is currently licensed in the State of Florida and maintains a fully equipped, licensed organization capable, technically and financially, capable of performing the pertinent work, and that he has made similar installations in a satisfactory manner, and that no employees of the subcontractor are currently employees of by the College.

BIDDING FIRM OR ENTITY NAME: _____

SIGNATURE OF VENDOR REPRESENTATIVE: _____

TYPED OR PRINTED NAME OF VENDOR REPRESENTATIVE: _____

DATE: _____

PUBLIC ENTITY CRIMES

Any person submitting a Request for Proposal in response to this invitation must execute the enclosed for PUR 7068, SWORN STATEMENT UNDER PARAGRAPH 287.133(3)(A), FLORIDA STATUTES**,** ON PUBLIC ENTITY CRIMES, including proper check(s), in the space(s) provided, and enclose it with the said statement. However, if you have provided the completed form to the submittal address listed in this invitation and it was received on or after January 1, 2009, another completed form is not required for the remaining calendar year.

THIS FORM **MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC** OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to:

_____

(print name of the public entity)

By_____

(Print name of entity submitting sworn statement)

Whose business address is

_____

And (if applicable) its Federal Employer Identification No. (FEIN) is:

_____

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement:_____

I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes**,** means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any proposal or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

A predecessor or successor of a person convicted of a public entity crime: or

An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

I understand that a "person" as defined in Paragraph 287.133(1) (e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which proposals or applies to proposal on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement **(indicate which statement applies).**

_____Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of the officers, directors, executive, partners, shareholders, employees, members, or agents who are active in management of the entity or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

_____The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list **(attach a copy of the final order).**

**I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT**

**IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.**

Sworn to and subscribed before me this_____day of_____20_____

Personally known_____

OR Produced identification_____Notary Public - State of_____

_____. My commission expires_____(Type of identification)

_____

(Printed, typed and/or stamped commissioned name of Notary Public)

A person or affiliate who has been placed on the convicted Firm list following a conviction for a public entity crime may not submit a proposal on a contract to provide any goods or services to a public entity, may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work, may not submit proposals on leases of real property to a public entity, may not be awarded or perform work as a Firm, supplier, Sub-Firm, 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 thirty-six (36) months from the date of being placed on the convicted Firm list.

UNITED STATES FEDERAL ATTESTATION FORM

Note: Certain of these assurances may not be applicable to sale of your products or services. If you have questions, please contact the Pensacola State College Purchasing and Auxiliary Services Department. Further, certain Federal awarding agencies may require PENSACOLA STATE COLLEGE certify additional assurances. If such is the case, you will be notified.

Our company understands this purchase has Federal funding and by signing this Federal Attestation Form we agree to:

1. Give the Federal Government, the Comptroller General of the United States, through their authorized representative, access to and the right to examine all records, books, papers or documents related to this purchase, as well as establish a proper accounting system in accordance with generally accepted accounting standards and to retain all records a minimum of five years.

2. Establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

3. Initiate and complete the scope of work within the applicable time frame after receipt of an approved PENSACOLA STATE COLLEGE purchase order.

4. Comply with the Intergovernmental Personnel Act of 1970 (42 U.S. C. 4728-4763 relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

5. Comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L.. 88.352) which prohibits discrimination on the basis of race, color, or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. 1681 – 1683, and 1685 – 1686), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. 6101 – 6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92.255) as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91.616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd.3 and 290 ee-3), as amended, relating to confidentially of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. 3601 et seq.) as amended, relating to nondiscrimination in the sale, rental, or financing of housing; (i) any other nondiscrimination provisions in the specific statue(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statue(s) which may apply to the application.

6. Comply, or has already complied, with the requirements of Title II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91.646) which provides for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

7. Comply with the provision of the Hatch Act (U.S.C. 1501 – 1508 and 7324 – 7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

8. Comply as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. 276a - 276a 7), the Copeland Act (40 U.S.C. 276c and 18 U.S.C. 874, and the Contract Work Hours and Standards Act (40.327 – 333), regarding labor standards for federally assisted construction sub-agreements.

9. Comply, as applicable, with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L.91.190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in flood plains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.) (f) conformity of Federal actions to State (Clear Air) implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C. 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93.523; and (h) protection of endangered species under the Endangered Species Act of 1973, as amended. (P.L 93.205).

10. Comply, as applicable, with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

11. Assist the United States Federal Government (as requested) in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a.1 et seq.).

12. Comply, as applicable, with P.L. 93.348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

13. Comply, as applicable, with the Laboratory Animal Welfare Act of 1966 (P.L) 89.544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance

14. Comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this purchase.

15. Strongly strive to provide subcontracting opportunities to small businesses owned and controlled by socially and economically disadvantaged individuals (WBE/MBE) in accord with Executive Order 12928.

16. Compliance with Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Federal regulations (41 CFR Chapter 60).

17. Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h), section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency Regulations (40 CFR part 15).

18. Compliance with mandatory standards and policies (as applicable) relating to energy efficiency which is contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94 – 163, 89 Stat. 871).

19. Compliance with the Federal agency requirements and regulations (as applicable) pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract, as well as awarding agency requirements and regulations pertaining to copy-rights and rights in data
    B. Supplier agrees to provide access to the Federal grantor agency, the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents papers, and records or documents of the supplier which are directly pertinent to this specific contract for the purpose of making audit, examination, excerpts, and transcriptions.
    C. Supplier agrees to retain all records relative to this procurement for five full years after PENSACOLA STATE COLLEGE makes final payment and all other pending matters are closed.

Our business _____attests that it is in full compliance with all of the cited U.S. Federal Attestations.

_____ _____ _____

Authorized Signature Signer's Title Date

Please return this signed form to with your bid submittal.

**ATTACHMENT A**

**Section 5.0**

PROJECT SPECIFICATIONS:

**SECTION 26 00 05 - ELECTRICAL GENERAL**

PART 1 - GENERAL

1.1 The work covered by this division consists of providing all labor, equipment and materials and performing all operations necessary for the installation of the electrical work as herein called for and shown on the Drawings. The work shall include but shall not be limited to the following:

Provide all power, lighting, fire alarm, intercom, telephone, communications, and other electrical systems for the project. Fully coordinate all electrical requirements of equipment being furnished by other Divisions under this construction contract. Each system shall be complete and fully functional.

**The work covered by this division shall be performed by a Contractor with a current type "EC" license classification issued by the Florida Department of Business Regulation.**

1.2 Related Documents:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.
B. Provisions of this Section apply to work of all Division 26, 27 and 28 Sections.
C. All control wiring for Divisions 23 and 25 shall be governed by Division 26 requirements. All control wiring shall be in conduit in compliance with the Specifications.
D. Review all project Drawings to be aware of conditions affecting work herein.

1.3 Definitions:

A. Provide: Furnish, install, and test, complete and ready for intended use.
B. Furnish: Supply and deliver to project site, ready for subsequent requirements.
C. Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.

1.4 Permits and Fees: Contractor shall purchase all necessary permits, meters, and pay for any inspections required for his work and pay all fees and charges incidental thereto.

1.5 Verification of Owner's Survey Data: Prior to commencing any excavation or grading the Contractor shall satisfy himself as to the accuracy of all survey data indicated on the Drawings and/or provided by the Owner. Should the Contractor discover any inaccuracies, errors, or omissions in the survey data, he shall immediately notify the Engineer. Commencement by the Contractor of any excavation or upgrading shall be held as an acceptance of the survey data by him after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions or inaccuracies of the said survey data.

1.6 Delivery and Storage of Materials: Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. All material shall be stored to provide protection from the weather and accidental damage.

1.7 Extent of work is indicated in the Drawings, Schedules, and Specification. Singular references shall not be construed as requiring only one device if multiple devices are shown on the Drawings or are required for proper system operation.

1.8 Field Measurements and Coordination:

A. The intent of the Drawings and Specifications is to obtain a complete and satisfactory installation. Separate divisional Drawings and Specifications shall not relieve the Contractor or Subcontractors from full compliance of work of his trade indicated on any of the Drawings or in any Section of the Specifications. Report conflicts prior to start of work.
B. Verify all field dimensions and locations of equipment to insure close, neat fit with other trades' work. Make use of all Contract Documents and approved shop drawings to verify exact dimension and locations. Do not scale electrical

drawings; rely on dimensions shown on architectural or structural drawings.

C. Coordinate work in this Division with all other trades in proper sequence to insure that the total work is completed within Contract time schedule and with minimum cutting and patching.

D. Locate all equipment, materials, and apparatus symmetrical with architectural elements. Install to exact height and locations when shown on architectural drawings. When locations are shown only on mechanical drawings, be guided by architectural details and conditions existing at job and correlate this work with that of others. Provide all required work clearances as defined in the NEC.

E. Install work as required to fit structure, avoid obstructions, and retain clearance, headroom, openings and passageways. Cut no structural members without written approval from Engineer or Architect.

F. Carefully examine any existing conditions, piping, and premises. Compare Drawings with existing conditions. Report any observed discrepancies. Written instructions will be issued by the Engineer to resolve discrepancies.

G. Because of the small scale of the Drawings, it is not possible to indicate all offsets and fittings or to locate every accessory. Drawings are essentially diagrammatic. Study carefully the sizes and locations of structural members, wall and partition locations, trusses, and rooms dimensions and take actual measurements on the job. Locate material, equipment and accessories with sufficient space for installing and servicing. Contractor is responsible for accuracy of his measurements and shall not order materials or perform work without verification. No extra compensation will be allowed because field measurements vary from the dimensions on the Drawings. If field measurements show that equipment or material cannot be fitted, the Engineer shall be consulted. Remove and relocate, without additional compensation, any item that is installed and is later found to encroach on space assigned to another use.

H. Coordinate all equipment being supplied in other divisions to ensure proper electrical connections. Obtain full manufacturer's electrical information and coordinate with electrical system specified. Make adjustments prior to submitting electrical shop drawings. Mark on shop drawings necessary modifications due to equipment being supplied. Contractor shall be responsible for replacement and upgrade of electrical equipment if at time of completion, it is apparent that electrical requirements do not meet the electrical system's supply.

I. Verify all ceiling clearances prior to ordering panelboards and switchboards. Dimensioned drawings are required for all electrical rooms showing actual plan and elevation layouts. Any equipment ordered prior to verifying that it will fit, will be returned at the contractor's expense. Coordinate panelboard and switchboard locations with structural members, beams and column foundations.

J. Coordinate location of electrical equipment with pipes and duct work being supplied by other Divisions. The equipment space included all referenced NEC clearances shall be maintained. If any pipes or duct work violate any electrical clearance requirements, it shall be removed and relocated at the contractor's expense. Drip pans are not permitted unless specifically called for in the construction documents.

K. Guarantee and Service:

1. The Contractor shall guarantee labor, materials and equipment for a period of one (1) year from Substantial Completion, or from Owner's occupancy, whichever is earlier. Contractor shall make good any defects and shall include all necessary adjustments to and replacement of defective items without expense to the Owner.
2. In addition to the manufacturer's guarantee of each item, Contractor shall provide his standard guarantee after final acceptance and make good any defects of materials or workmanship occurring during this period without expense to the Owner.
3. Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding Contractor's Guarantee Bond nor relieving Contractor of his responsibilities during guarantee period.

1.9 Shop Drawings:

A. Before ordering any materials or equipment, and within 30 days after the award of Contract the Contractor shall submit to the Engineer one complete schedule showing the make, type, manufacturer's name and trade designation of all equipment.

1. This schedule shall be accompanied by six (6) copies of the manufacturer's printed specifications and shop drawings for each piece of equipment or specialty and shall give dimensions, diagrams, descriptive literature, capacity or rating, kind of material, finish, guarantee, etc., and such other detailed information as the Engineer may require.
2. When approved, such schedule shall be an addition to these Specifications, and shall be of equal force in that no deviation will be permitted except with the approval of the Engineer.
3. Each shop drawing shall reference the Specification section.
4. The submittal should reference any delivery/scheduling problems with the equipment being supplied.

5. The submittal shall not contain any equipment and/or systems that have not been either listed in the construction documents or provided in an addendum as “approved for bidding”. This formality may be waved by the Engineer, if in his opinion, it is to the Owner’s benefit.

B. If shop drawings show variation from the requirements of the Contract Documents, the Contractor shall make specific mention of such variation in his letter of transmittal. If acceptable, Contractor will not be relieved of the responsibility for executing the work in accordance with the Contract.

C. Review of shop drawings, descriptive literature, catalog data, or schedules by the Engineer shall not relieve the Contractor from responsibility for deviations from Contract Drawings or Specifications, unless he has in writing called to the attention of the Engineer such deviation at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings, descriptive literature, catalog data, or schedules.

D. Submit shop drawings and any other drawings specifically called for in other sections. Shop drawings shall consist of plans, sections, elevations and details to scale (not smaller than 1/4" per foot), with dimensions clearly showing the installation. Direct copies of small-scale project drawings issued to the Contractor are not acceptable. Drawings shall take into account equipment furnished under other Sections and shall show space allotted for it. Include construction details and materials.

E Submit product data after award of the Contract and before any equipment or materials are purchased. Product data are defined as manufacturer's printed literature specifically marked to indicate size and model and accompanied by rating sheets listing values showing that equipment meets scheduled or specified values. Properly coded stamp from the Engineer on returned submittal is required before ordering equipment.

F. Coordinate with other division’s supplying equipment prior to submitting shop drawings.

G. Shop drawings shall be submitted in one package unless approved otherwise by the Engineer. Provide an index of sections list manufacturers and “as-specified” or not. Each Specification Section shall be tabbed with equipment inserted.

H. Electrical Room Drawings: A detailed, 1/4"=1'-0" scaled plan view drawing shall be submitted for each electrical room to ensure that the equipment being supplied will fit properly. Include on the drawings and obstruction from building structural or mechanical. Review all duct work and piping shop drawings to ensure proper clearance. Specific grounding requirements shall be noted on the drawings. This includes additional driven grounds and bonding to building steel, water piping, and foundation rebar. This drawing shall make specific mention of any NEC violation. Conduit and/or equipment placement shall take into account any structural or foundation interference. All equipment within the electrical room shall be labeled and actual dimensions shown. The drawings shall be submitted with the shop drawings and manufacturer's product sheets. ***Failure to supply scaled drawings shall be the basis of rejecting the entire submittal package.***

PART 2 - PRODUCTS

2.1 All materials shall be new and unused, Owner-supplied, or reused as shown on the Drawings, the best of their respective kinds, suitable for the conditions and duties imposed on them. The description, characteristics, and requirements of materials to be used shall be in accordance with qualifying conditions established in the following Sections.

2.2 Equipment and Materials

A. Equipment and materials furnished under this Division shall be the product of a manufacturer regularly engaged in the manufacture of such items for a period of three years. Where practical, all of the components shall be products of a single manufacturer in order to provide proper coordination and responsibility. Where required, Contractor shall furnish proof of installation of similar equipment or materials.

B. Each item of equipment shall bear a nameplate showing the manufacturer's name, trade name, model number, serial number, ratings and other information necessary to fully identify it. This plate shall be permanently mounted in a prominent location and shall not be concealed, insulated or painted.

C. The label of the approving agency, such as UL or NEMA, by which a standard has been established for the particular item shall be in full view. Materials shall be UL-listed for the application specified or indicated on the Drawings or Specifications.

D. Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality, material and type of construction desired. Manufacturer's products shown on the Drawings have been used as basis for design; it shall be the Contractor's responsibility to ascertain that alternate manufacturer's products meet detailed specifications and that size and arrangement of equipment are suitable for installation.

E. Model Numbers: Catalog numbers and model numbers indicated in the Drawings and Specifications are used as a guide in the selection of the equipment and are only listed for the Contractor's convenience. The Contractor shall determine the actual model numbers for ordering equipment and materials in accordance with the written description of each item and with the intent of the Drawings and Specifications.

2.3 Requests for Substitution:

A. Where a particular system, product or material is specified by name, consider it as standard basis for bidding, and base proposal on the particular system, product or material specified. Other systems, products, equipment or materials may be accepted only if in the opinion of the Engineer, they are equivalent in quality and workmanship and will perform satisfactorily its intended purpose. The Engineer shall approve all such substitutions in materials or equipment in writing. This shall occur prior to bidding.

B. In making requests for substitutions, the Contractor shall list the particular system, product, equipment or material he wishes to substitute and at bid time the Contractor shall state the amount he will add or deduct from his base bid if the substitution is approved by the Engineer. If the Contractor allows no deduction or addition to the base bid for such substitution, it shall be so stated on the request.

C. Requests by Contractor for substitution will be considered only when reasonable, timely, fully documented, and qualifying under one or more of the following circumstances.

1. Required product cannot be supplied in time for compliance with Contract time requirements.
2. Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted or insured, or has other recognized disability as certified by Contractor.
3. Substantial cost advantage is offered Owner after deducting offsetting disadvantages including delays, additional compensation for redesign, investigation, evaluation and other necessary services and similar considerations.

D. All requests for substitution shall contain a "Comparison Schedule" and clearly and specifically indicate any and all differences or omissions between the product specified as the basis of design and the product proposed for substitution. Differences shall include but shall not be limited to data as follows for both the specified and substituted products:

1. Principle of operation.
2. Materials of construction or finishes.
3. Thickness of materials.
4. Weight of item.
5. Deleted features or items.
6. Added features or items.
7. Changes in other work caused by the substitution.
8. Performance and rating data.

If the approved substitution contains differences or omissions not specifically called to the attention of the Engineer, the Owner reserves the right to require equal or similar features to be added to the substituted products at the Contractor's expense.

2.4 Prior Approval: Prior Approval shall be required for any manufacturer other than those listed for all specified items in the Drawings and Specifications. Submit all requests for approval of the alternate manufacturer's products two weeks prior to bid opening. Approval will be in the form of an Addendum to the Specifications and Drawings. Clearly indicate all differences between the specified and proposed product following the guidelines for substitution herein. This requirement may be waived if, in the opinion of the Engineer, it is in the best interest of the Owner. Submittals received after the award of the bid for equipment that has not been Prior Approved is subject to immediate rejection. ***Any Engineering time required due to equipment that has not been Prior Approved is subject to billing charged directly to the contractor at the Engineer's current billing rate.***

PART 3 - EXECUTION

3.1 Workmanship: All materials, fixtures, and equipment shall be installed and completed in a first-class workmanlike manner and in accordance with the best modern methods and practice. Any materials installed which do not present an orderly and reasonably neat and/or workmanlike appearance, or do not allow adequate space for maintenance, shall be removed and replaced when so directed by the Engineer.

3.2 Coordination

A. The Contractor shall be responsible for full coordination of the electrical systems with shop drawings of the building construction so the proper openings and sleeves or supports etc., are provided for conduit, devices, or other equipment passing through slabs or walls.
B. Any additional steel supports required for the installation of any electrical equipment, etc., shall provided by the Contractor.
C. It shall be the Contractor's responsibility to see that all equipment that may require maintenance and operation are made easily accessible, regardless of the diagrammatic location shown on the Drawings.
D. All connections to fixtures and equipment shown on the Drawings shall be considered diagrammatic unless otherwise indicated by a specific detail on the Drawings. The actual connections shall be made to fully suit the requirements of each case and adequately provide for servicing.
E. The Contractor shall protect equipment and fixtures at all times during storage and construction. He shall replace all equipment and fixtures, which are damaged as a result of inadequate protection. Any electrical equipment with electronic components shall be stored off-site in a climate controlled facility until the building conditions are suitable for installation. Any equipment damaged or compromised by unprotected climate control, in the opinion of the Engineer, shall be replaced at contractor's cost with factory new equipment.
F. Prior to starting and during progress of work, examine work and materials installed by others as they apply to work in this division. Report conditions, which will prevent satisfactory installation.
G. Start of work will be construed as acceptance of suitability of work of others.
H. The Contractor shall review all equipment being supplied by other divisions prior to ordering electrical equipment. Any conflicts between equipment being supplied and the electronic requirements on the drawings shall be corrected and incorporated into the electrical submittals prior to ordering equipment. Installation of the electrical system is the contractor's acceptance of equipment requirements. Any conflict with equipment's electrical requirements after electrical system has been installed shall be the responsibility of the contractor to make corrective action. Any corrective action shall be at the contractor's expense.

3.3 Utilities Coordination: The Contractor shall meet with respective personnel of the telephone, cable TV and electric utilities and review all details of the service and distribution. All details shown on contract documents shall be verified for adequacy and accuracy. The Contractor shall incorporate any required revisions without additional cost to the Owner.

3.4 Construction Electrical Utilities: Provide all temporary wiring for power and light required for construction purposes and remove such temporary wiring when use is no longer required. The contractor shall be responsible to provide all cabinets, meter enclosures and conduit required by the local utility for the permanent electrical service.

3.5 Interruption of Service: Before any equipment is shut down for disconnecting or tie-ins, arrangements shall be made with the Engineer and this work shall be done at the time best suited to the Owner. Outages must be scheduled through the Engineer. The Engineer shall review extent, length, and timing of outages. Services shall be restored the same day. Provide temporary power or other services as required during outages.

3.6 Cutting and Patching: Contractor shall be responsible for cutting and patching of all holes, chases, sleeves, and other openings required for installation of equipment furnished and installed under these Specifications. Obtain permission from Engineer before cutting any structural items.

3.7 Equipment Setting: Bolt equipment directly to concrete pads or foundations, using hot-dipped galvanized anchor bolts, nuts and washers. Level equipment. All floor mounted equipment shall be provided with an 4" housekeeping pad.

3.8 Painting: Touch-up factory finishes on equipment located inside and outside shall be done under Division 26. Obtain matched color coatings from the manufacturer and apply as directed by manufacturer. If corrosion is found during inspection on the surface of any equipment, clean, prime, and paint, as required. If corrosion is found to be extensive by the Engineer, the equipment shall be removed and replaced with factory new at the expense of the contractor.

3.9 Clean-up: Thoroughly clean all exposed parts of apparatus and equipment of cement, plaster, and other materials and remove all oil and grease spots. Repaint or touch up as required to look like new. During progress of work, Contractor is to carefully clean and leave premises free from debris and in a safe condition.

3.10 Start-up and Operational Test: Start each item of equipment in strict accordance with the manufacturer's instructions; or where noted under equipment specification, a qualified representative of the manufacturer shall do start-up. Alignment, lubrication, safety, and operating control shall be included in start-up check.

3.11 Record Drawings:

A. During the progress of the work the Contractor shall record on their field set of Drawings the corrections, variations, and deviations for systems which are not installed exactly as shown on the Contract Drawings.
B. Upon completion of the work, record drawings shall be prepared as described in the General Conditions, Supplementary Conditions, and Division 1 Sections.

3.12 Certificate of Occupancy:

Following items are required for issue of Certificate of Occupancy. These shall be provided at or before of Substantial Completion Inspection:

A. Provide certification that asbestos containing products were not used in the project.
B. Fire Alarm Certification. In addition, the documentation shall contain witnessed accounts of the shut-down of electrical and mechanical equipment and the operation of fire doors as required by Code and the Construction Documents.
C. Provide certification that the Intercommunications System is fully operational (If applicable).
D. Provide certification that all emergency lights and exit signs are operational.
E. Provide certification that all selective protective devices have been set according to the coordination study/recommendations including all ground fault selections.

3.13 ACCEPTANCE

A. Request inspections as required under the Supplementary or General Conditions. Conceal no work until inspected.
B. Punch List: Submit written confirmation that all punch lists have been checked and the required work completed. **The contractor at the Engineer's current billing rate shall pay for additional field time required by the Engineer to report or check on past punch list deficiencies.**
C. Instructions: At completion of the work, provide a competent and experienced person who is thoroughly familiar with the project, for a period deemed necessary by the Owner to instruct permanent operating personnel in the operation of equipment and control systems.
D. Operation and Maintenance Manuals: Furnish two complete manuals bound in ring binders and organized by system or section. Manuals shall contain:

1. Detailed operating instructions and instructions for making minor adjustments.
2. Complete wiring and control diagrams.
3. Routine maintenance operations.
4. Manufacturer's catalog data, service instructions, and parts list for each piece of operating equipment.

E. Control Diagrams: Frame under plexi-glass and mount on equipment room wall. Include copy in O and M Manuals.
F. Test together and separately to determine that:
   1. System is free from short circuits and other faults.
   2. Motor starter overload devices are sized correctly.
   3. Motors rotate correctly.
   4. All equipment operates correctly and as specified.
G. Warranties: Submit copies of all manufacturers' warranties.
H. Record Drawings: Submit "Record Drawings".
I. Install engraved metal or plastic nameplates or tags on controls, panels, switches, starters, timers, and similar operable equipment, keyed by number to operating instructions. Dymo type labels are not acceptable. Must be mechanically fastened without the use of any adhesive.
J. Acceptance will be on the basis of tests and inspections of the work. A representative of the firm, which performed the testing, shall be in attendance to assist during inspection. Contractor shall furnish necessary electricians to operate system, make any necessary adjustments and assist with final inspection.

**END OF SECTION 26 00 05**

SECTION 26 00 20 - CODES AND STANDARDS

PART 4 - GENERAL

1.1 All work under Divisions 26, 27 and 28 shall be constructed in accordance with the codes and standards listed herein. The design has been based on the requirements of these codes and standards. While it is not the responsibility of the Contractor to verify that all work called for complies with these codes and standards, he shall be responsible for calling to the Engineer's attention any details on the Drawings and/or Specifications that are not in conformance with these or other codes and standards. Current issue of code applies unless specifically noted otherwise.

1.2 Comply with regulations and codes of suppliers of utilities.

1.3 Where no specific method or form of construction is called for in the Contract Documents, the Contractor shall comply with code requirements when carrying out such work.

1.4 Where code conflict exists, generally the most stringent requirement applies.

1.5 Codes or standards applying to a specific part of the work may be included in that section.

PART 5 - CODES AND STANDARDS

2.1 CODES:

a. Florida Building Code, 2010
b. National Electrical Code (NFPA 70), 2011
c. National Electrical Safety Code (NESC)
d. Life Safety Code (NFPA 101)
e. Physically Handicapped (ANSI A117.1)

2.2 STANDARDS: All electrical materials, installation and systems shall meet the requirements of the following standards, including the latest addenda and amendments:

a. American National Standard Institutes (ANSI)
b. Illuminating Engineering Society (IES).
c. Institute of Electrical and Electronics Engineers (IEEE).
d. National Electrical Manufacturer's Associations (NEMA).
e. National Fire Protection Association (NFPA).
f. Occupational Safety and Health Act (OSHA).
g. Underwriter's Laboratories, Inc. (UL).

PART 6 - GENERAL

1.1 The provisions of this Section are in addition to the provisions of Division 1, Building Modifications.

1.2 Building will be occupied by owner during construction.

PART 7 - PERFORMANCE

2.1 General:

A. All necessary additions and alterations to existing work shall be included as required to provide and maintain a complete and proper electrical installation. As necessary, relocate existing electrical work so other trades can pursue their work and maintain building in service, when occupied.

B. The work shall include, but not be limited to, the following:

1. Relocation of fixtures, pull-boxes, electrical ducts, and other similar items, to permit the installation of new equipment.

2. Installation of new conduits, conductors, wiring, and wiring devices, in order to maintain temporary and permanent use of electrical facilities.

3. Disconnection and reconnection of circuits as required for continued operation of services.

4. Provision for the relocation of all mechanical work as required for proper installation of electrical work where not shown or specified in other sections or on other drawings.

5. Repair or replace, as required, any damage due to the installation of the new electrical system in existing areas.

C. Unused, existing, surface mounted work shall be removed and concealed. Outlets shall be blanked off.

D. Existing work to be maintained shall be reconnected and shall have all outlets, boxes and devices accessible after completion of work by other trades.

E. Within NEC limitations, existing conduits may be reused after cleaning.

F. All new work in existing areas shall be exposed on walls in unfinished areas and concealed in finishes in finished areas. Where cutting and patching are required, finishes shall match existing surface finishes. In existing finished areas, all work shall be concealed in new finishes.

G. Consolidate existing and new building ground systems.

H. In general, all new work is intended to be concealed in finishes to be added under this project.

2.2 Existing Building Power Outages:

A. All necessary power outages in existing and in renovated areas shall be at a time approved by Owner in writing and of shortest possible duration. Coordinate details with Engineer, who will assist in determining Owner's requirements, prior to work.

B. Where portions of buildings are altered, and remainder of building continues in operation, temporary wiring shall be provided to maintain all necessary building functions. Provide all equipment, material, labor for a continuous functional system.

2.3 Temporary Wiring for Remodeled Areas:

A. Progress of the work will require temporary wiring installations to utilize a portion of the remodeled area. Wiring may not be the final, permanent installation, and shall be included, as necessary to supply required electrical function.

2.4 Planning for Sequence of the Work:

A. Electrical feeders, branch wiring, signal wiring, and other similar work as shown and specified shall be scheduled to correspond with the sequence of work necessary to demolish, remove and construct new work.

B. Close coordination in scheduling is required between the Owner, Contractor, and other trades to assure a smooth work flow with minimum interference and interruption to building power and communication systems.

2.5 Openings in Existing Work:

A. Provide cutting and patching of existing work as required. Verify exact locations and materials before performing work. Cutting of structural members and bearing walls shall not be done without written approval of the Engineer. Provide access covers were required to meet code requirements.

2.6 Verification of Existing Work:

A. Where shown on the Drawings, work which is "existing" is assumed to be in place and suitable for the necessary alterations and additions required. Contractor shall carefully field check these items and include alterations as may be necessary for proper installation and guarantee.

2.7 Removal and Ownership of Existing Work:

A. Unless noted otherwise, existing electrical work shall be removed. Parts of existing electrical systems that are required to maintain service after the alteration shall remain in service. Unless otherwise specified, all equipment and materials shall remain the property of the Owner except as that judged obsolete or unusable. The Engineer shall provide all final decisions about obsolete or unusable equipment.

B. Property of Owner shall be delivered to a location where directed by the Owner and all other items shall be promptly removed from the job site. The equipment shall be protected during demolition.

2.8 Cutting of Concrete Materials:

A. Holes for materials and supports shall be made with uniform speed rotation drilling equipment which does not provide effects associated with impact type equipment.

B. The use of impact drills, air drills, and the like is not acceptable for this project.

2.9 Maintenance of Existing Lighting Systems and Electric Outlets:

A. Where new lighting layouts are not shown on the Drawings, the existing lighting fixtures and wiring controls shall be reused. If necessary, these items shall be temporarily removed (as light fixtures), if necessary, and shall be reinstalled where removed. New wiring from existing sources shall be provided where remodeling operations require. These items are not shown on the Drawings and shall be site determined by the Contractor.

B. Where existing electrical outlets are located in areas of remodeling, these shall be maintained in service. This work is not shown on the Drawings and shall be site determined by the Contractor.

2.10 Concealed Work: Where required, provide accessed doors to make electrical devices accessible as required by the NEC. If impractical to install access doors, relocate existing electrical work so that access is not required. This shall include, but not limited to, adding additional conduit, pulling new wire, and adding junction boxes.

**END OF SECTION 26 00 40**

## SECTION 26 05 00 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 This Section is a Division-26 Basic Materials and Methods Section, and is part of each Division-26 Section making reference to or requiring products specified herein.

1.3 Submittals: Submit the producer's standard descriptive data sheets for each type of product being provided. Mark the data sheet for the product being provided with an identifying mark or arrow. The following shall be submitted:

a. All Conduit.
b. All conduit fittings.
c. Ground Rods.
d. Ground Rod Connections.
e. Cabinets.
f. Bitumastic Coating.
g. Any other special items being supplied on the project.

1.4 Other Divisions: The requirements of these specifications also apply to Divisions 23,25,26 and 27, unless clearly indicated within those Divisions.

PART 2 - PRODUCTS

2.1 Acceptable Producers: Allied Tube and Conduit; Appleton Electric; Belden Corporation; W.H. Brady Co.; Carlon; Challenger, Crouse-Hinds Co.; ETP; Elcen Metal Products Co.; General Cable Co.; General Electric Co.; Hoffman Engineering Co.; Harvey Hubbell, Inc.; Midland-Ross Corporation; Okonite Co.; 0-Z/Gedney; Raco, Inc.; Republic Steel Corporation; 3M; Southwire; Seton Nameplate; Square D Co.; Thomas and Betts; Triangle PWC, Inc.; Walker Parkersburg Textron; Wiremold Co., Westinghouse.

2.2 As indicated, products listed herein may be common to various Division 26 Sections for this project.

2.3 All materials and equipment specified herein shall be UL listed or approved according to the requirements of applicable NEC articles.

2.4 Raceways:

A. Surface raceways are not to be utilized without the written permission of the owner.

B. Intermediate Metal Conduit (Federal Specification WWC-581) shall be galvanized steel, protected inside and outside. Installation shall be in accordance with NEC Article 342.

C. Rigid Metal Conduit (NEC Art. 344) shall be galvanized steel, protected inside and outside.

D. Rigid Nonmetallic Conduit Shall be polyvinyl chloride (PVC), schedule 40 or schedule 80, as indicated on the Drawings. Installation shall be in accordance with NEC Article 352.

E. Electrical Metallic Tubing (EMT) Shall be steel, protected inside and outside by a coating of approved corrosion-resistant material such as zinc or cadmium. (Federal Specification WWC-563 and ANSI C80.3) Installation shall be in accordance with NEC Article 358.

F. Flexible Metal Conduit (NEC Art. 348) shall be galvanized steel, protected inside and outside.

G. Liquid Tight Flexible Metal Conduit (NEC Art. 350) shall be galvanized steel, protected inside and outside with an extruded outer liquid tight, non-metallic, sunlight resistant jacket. Use with standard liquid tight fittings.

2.5 Raceway Fittings:

A. Intermediate Metal Conduit shall have threaded galvanized steel fittings; threadless, compression, galvanized steel fittings or threadless, compression, cadmium plated malleable iron fittings. Fittings shall be rain tight/concrete tight.

B. Rigid Metal Conduit shall have threaded fittings, galvanized steel or threadless compression galvanized steel or threadless compression cadmium plated malleable iron. Fittings shall be rain tight/concrete tight.

C. Rigid Non-Metallic Conduit shall have polyvinyl chloride (PVC) fittings suited for the purpose and joined together by a method approved for the purpose. Schedule 80 conduit sections may be joined together with threaded fitting connectors.

D. Electrical Metallic Tubing (EMT): Federal Specification W-F-408, except only material of steel or malleable iron is acceptable. Couplings and connectors shall be concrete and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2" and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2". Use set screws of casehardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding. Indent type connectors or couplings are prohibited. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.

E. Flexible Metal Conduit fittings shall be zinc plated steel or cadmium plated malleable iron screw type with insulated throat and angular wedge fitting between convolutions of conduit. Federal Specification W-F-406 and UL 5.

F. Liquidtight Flexible Metal Conduit fittings shall be cadmium plated, malleable iron or steel with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat.

G. Wireway fittings shall be steel with rust resistant undercoat and finish coat to match the wireway. The fittings shall be so designed that the sections can be electrically and mechanically fitted together to form a complete system. Dead ends shall be closed.

H. Couplings and Unions shall be galvanized steel, tapered thread standard conduit couplings for intermediate metal conduit and rigid metal conduit. PVC couplings for rigid non-metallic conduit shall use approved adhesive, and threaded couplings shall be used for schedule 80 conduit. Split couplings shall be galvanized steel. Unions shall be ground joint type galvanized steel.

2.6 Bushings:

A. Bushings shall be one of the following types:

1. Zinc plated steel, threaded or threadless

2. Zinc plated steel of threaded or threadless, phenolic insulated with temperature rating of 150□C

3. Cadmium plated malleable iron, threaded or threadless

4. Cadmium plated malleable iron, threaded or threadless, phenolic insulated, with temperature rating of 150 □C

5. Phenolic with temperature rating of 150 □C

6. Zinc plated steel, or cadmium plated malleable iron; threaded or threadless; non-insulated or insulated with grounding connector or grounding lug

B. Insulated bushings shall have phenolic insulation molded to the bushing

2.7 Conduit Seals: Conduit Seals shall be galvanized steel, tapered threads for intermediate metal conduit and rigid metal conduit with sealing compound and fiber.

2.8 Boxes: All boxes shall be 4"x 4" x 1-1/2" deep or larger.

A. For indoor work, flush type junction, outlet and switch boxes shall be galvanized pressed steel.

B. Junction Boxes for exposed work shall be FS or FD type. Boxes shall be threaded, cadmium plated malleable iron with weatherproof galvanized steel or stainless steel cover and neoprene cover gaskets.

C. Boxes for exposed work in indoor finished spaces shall be FS or FD type, with the appropriate covers for the device and location. Surface type pressed steel boxes shall be used in non-finished spaces only.

D. Fabricated Boxes shall be steel with inside and outside surfaces coated with corrosion-resistant paint or weather resistant coating. Covers shall be hinged or screwed with or without gaskets depending on location. All exterior boxes shall be rated NEMA 3R. Boxes shall be sized to meet the NEC Article 370-6 fill requirements.

E. Floor Boxes shall be cast iron for watertight application, galvanized steel for standard applications on buildings greater than one story unless noted otherwise on the Drawings. Boxes shall be adjustable for both height and tilt and shall have a bronze hinged lid for receptacles and 2" hinged lid for telephone and sound outlets. Brass carpet rings shall be

provided when carpet is to be installed. Boxes housing power and data shall be divided with a manufacturer installed divider. See Drawings for special boxes and additional requirements.

2.9 Cabinets: Cabinets shall be flush or surface mounted as indicated on the Drawings, and fabricated of code gauge galvanized steel with turned lip on front. Cover shall be flat steel sheet with hinged door (concealed hinges) and flush catch and lock. All cabinets for the project shall be keyed alike. Cover shall be treated with rust-resistant undercoat and gray baked finish coat.

2.10 Conductors:

A. Conductors shall be 98% conductivity copper, medium or soft drawn. Sizes shall be as indicated on the Drawings. Sizes No. 10 and smaller may be solid unless noted on the drawings. Sizes No. 8 and larger shall be stranded. Insulation may be THW, THWN or XHHW unless noted otherwise on the Drawings.

B. Conductor Identification: Conductor Size No. 6 and smaller shall be factory colored insulation. Conductors larger than No. 6 may have factory colored insulation or black insulation with color-coded identification tape. In wireways and junction boxes where multiple circuits exist, identify each conductor with its source and load.

C. Refer to the section "Conductor and Cable Identification" for color-coding and identification of conductors.

D. Identification tags or labels shall be vinyl coated, with 1/8" minimum height, black characters on white background. Tag or label shall be 1/4" wide minimum.

E. Wire Connectors for 600-volt conductors Size No. 18 to No. 6 AWG shall be pressure type, spring connectors. Use 600 volt splicer-reducer pressure connectors for copper conductors to 500 KCMIL. Use rectangular, solderless pressure connectors or split bolt-copper alloy connectors for copper conductors to 1000 KCMIL.

F. Wire Pulling Lubricant shall be a product produced specifically for wire pulling lubrication.

2.11 Ground Rods: Ground rods shall be copper clad steel, 3/4" diameter, 10' length minimum or as indicated on the Drawings. Use thermic welding to connect grounding conductor to ground rod.

2.12 Sleeves: Sleeves shall be galvanized metal flanged type or schedule 40 galvanized steel pipe.

2.13 Concrete Inserts: Concrete inserts shall be galvanized steel, minimum 14 gauge cut to necessary length for the purpose. Use galvanized hardware.

2.14 Metal Framing System:

A. Steel channel sections shall be rolled from commercial grade steel.

B. The cross-sectional width dimension of the channel shall be a minimum of 1-1/2." The depth shall be sized to satisfy the load requirements and deflection.

C. Channels 1-1/2" in depth or greater shall be rolled from 12 gauge steel. Channels smaller than 1-1/2" in depth may be 14-gauge steel.

D. Attachment holes shall be factory punched on hole centers equal to the channel cross-sectional width dimension and shall be maximum of 9/16" diameter.

E. The finish on steel components shall be electro-galvanizing.

F. Nuts, bolts, washers, straps, threaded rod and other parts shall be protected with the same finish as the channels.

2.15 Fire Barrier Penetration Seals:

A. Provide seals for any opening through fire-rated walls, floors, or ceilings used as passage for electrical components such as conduit or electrical boxes.

B. Cracks, voids, or holes up to 4" diameter shall be filled with putty, caulking, or one-piece intumescent elastomer which is non-corrosive to metal, compatible with synthetic cable jackets, and capable of expanding 10 times when exposed to flame or heat.

C. For openings 4" or greater use a sealing system capable of passing 3-hour fire test in accordance with ASTM E-814. Sealing system shall consist of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350 □F.

2.16 Painting: Painting products are specified in Division 9 - "Finishes."

2.17 Equipment Identification: Provide nameplate for equipment identification sized as indicated on the Drawings. Nameplate shall be 3" x 1" minimum. Plates shall be laminated plastic (micarta) with white core. Mount plates with a minimum of two chrome plated screws, with round head or filister head. Normal power nameplates shall be Black. Emergency Power nameplates shall be Red. Screws to attach nameplates to wet/damp location devices shall be stainless steel.

2.18 Pull Wire and Pull Rope:

A. Pullwire shall be galvanized steel wire, No. 14 AWG minimum size.

B. Pullrope shall be ply cord with 2000 lbs. tensile strength, minimum.

2.19 Terminal Strips: Terminal strips shall be sectional barrier type made of molded phenolic for use in wiring control panels. Number of terminals and ampacity shall be as indicated on the Drawings. The binding head shall be screw in type.

2.20 Equipment Backboards: Equipment Backboards shall be BC grade 3/4" plywood finished on one side. Finish backboard with two coats of fire retardant gray paint before mounting. Exposed side of plywood shall be smooth interior grade. A copper ground bus shall be supplied with each backboard. The ground bus shall be Harger #TGBI14412TMGB or approved equal. The ground bus shall terminate the #6 AWG ground wire provided from the electrical system.

2.21 Conduit Straps: All conduit shall be secured with two hole galvanized straps where the following conditions exist:

1. All exterior locations.
2. All interior locations other than mechanical and electrical rooms where the conduit is below 10'. Conduit concealed in wall finishes and ceilings may use single hole strap if allowed by NEC.
3. All other locations not listed in a or b above and approved by the NEC may use single hole galvanized straps.
4. Single hole or double hole straps may not be used on direct grade. All conduits on grade shall be mounted to strut and properly attached and anchored.

PART 3 - EXECUTION

3.1 General:

A. Materials and equipment shall be installed in a neat and workmanlike manner according to the standards of the industry. Materials and equipment installed and not meeting the standards of the industry may be rejected and required to be removed and reinstalled by the Contractor at no additional cost to the Owner.

B. Contractor is responsible for the safety and conditions of the materials and equipment installed until Owner's beneficial occupancy or acceptance.

C. Minor location changes from those indicated may be necessary so that work can conform with the building as constructed, to fit work of other trades or to comply with the rules of authorities having jurisdiction.

3.2 Raceways:

A. Install wiring in metallic raceway systems including grounding, unless specifically indicated otherwise in other Sections herein or on the Drawings.

B. Refer to structural drawings for framed openings for raceways, etc., in floors and roofs. Contractor shall be responsible for locating and providing proper dimensions for all required electrical openings.

C. Layout and install raceways with sufficient clearance to permit proper installation.

D. Install raceways straight and plumb. Squarely cut conduit and properly ream to remove all constriction and burrs before making up joints. Paint exposed threads to retard rusting. Bending of conduit with a pipe tee or vise is prohibited.

E. EMT conduit shall be installed only in interior spaces and in concrete slabs above grade. EMT installed in concrete shall have concrete tight fittings.

F. Maximum size of EMT shall be 4". Minimum size shall be 1/2" unless noted otherwise on the Drawings. EMT shall only be used with cables rated 600 volts or less and in indoor locations not subject to physical abuse.

G. Hazardous Locations:

1. Raceways in hazardous areas shall be rigid metal conduit.

2. Install UL approved sealing fittings that prevent passage of explosive vapors, in hazardous areas equipped with explosive proof lighting fixtures, switches, and receptacles as required by the NEC.

H. Raceways below grade and in concrete slabs at or below grade shall be rigid metal conduit. Power raceways 3/4" and greater may be PVC, at the contractor's option. Communication raceways shall be run overhead within the building except for connection to floor boxes. Communication raceways that exit from under the building slab shall be metallic. All exposed raceways penetrating concrete slab shall be rigid metal conduit. If PVC is used underground, elbows and risers through grade or slab shall be rigid metal conduit with 2 coats of bitumastic. Bitumastic coating shall be applied to conduit prior to installation. Any raceway not meeting this requirement shall be replaced at the contractor's expense. Additional construction time and compensation for the correction of the deficiency will not be allowed.

I. Rigid metal conduit installed in concrete or underground shall be made watertight by applying compound to the threads or using concrete-tight thread-less fittings when installed in concrete, or using rain-tight threadless fittings when installed on outside walls or in wet locations.

J. Rigid metal conduit installed underground shall be painted with two coats of alkali and acid resistant paint such as bitumastic or equal. Coating shall not be diluted.

K. PVC coated rigid metal conduit may be provided as an option in lieu of the two coats of the alkali and acid resistant paint. The joints shall be protected with PVC tape applied after the joints are made. Tools for the purpose shall be used in making up the joints so as not to damage the coating.

L. Conduit may be exposed in equipment rooms, vertical chases, mechanical and electrical rooms, other similar spaces not normally habitable or exposed to public view, and where electrical drawings specifically note "exposed conduit." PVC conduit in these areas is unacceptable.

M. Approved types of galvanized wall brackets, ceiling trapeze with threaded rod support, or pipe straps shall support raceways. Conduit shall not be supported at any point by wire or wire clips.

N. Job cut threads shall be given a coat of rust resistant paint such as zinc chromate or equal.

O. Conduit in masonry shall be installed ahead of the masons.

P. Cutting of chases is prohibited.

Q. Conduit shall be closed during construction to prevent entrance of foreign material. After the building has been dried in, all conduits shall be cleaned so that they are free of any foreign material and water. Do not wait until the wire is pulled to clean the conduit.

R. Flexible metal conduit shall be installed only in dry locations and shall be of nominal trade size not less than 1/2" or as permitted by "Exceptions" in NEC. Flexible metal conduit shall be used with UL approved type fittings. Flexible metal conduit shall be used as a raceway for motors, transformers, or other equipment that may be provided with an adjustable mounting or vibration base.

S. Liquid-tight flexible metal conduit shall be installed in wet locations, in both concealed and exposed work, where required for protection from liquids, vapors or solids. Liquid-tight flexible metal conduit shall be used as a raceway for motors, transformers or other equipment that may be provided with an adjustable mounting or vibration base.

T. Surface raceway and fittings shall be installed in dry locations.

U. Wet or Damp Locations:

1. Use rigid steel or IMC unless noted otherwise.

2. Provide sealing fittings, to prevent passage of water vapor, where conduits pass from warm to cold locations, i.e., (refrigerated spaces, constant temperature rooms, air conditioned spaces building exterior walls, roofs) or similar spaces.

3. Use rigid steel or IMC conduit within five feet of the exterior and below concrete building slabs in contact with soil, gravel, or vapor barriers. Cover conduit on the outside with factory coating of 20 mil bonded PVC or field coat with asphaltum before installation. After installation, completely coat damaged areas of coating.

4. Wireways and wireway fittings shall be used for exposed work and when installed outdoors or in wet locations shall be approved weatherproof construction.

V. Expansion Joints:

1. Conduits 3” and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install couplings in accordance with the manufacturers’ recommendations.

2. Provide conduits smaller than three inches with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5” vertical drop midway between end. Flexible conduit shall have a green copper ground-bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for three inches and larger conduits are acceptable.

3. Expansion fittings shall be provided for raceways to compensate for thermal expansion and contraction in conduit runs 200 feet or greater and at building expansion joints. Bonding jumpers shall be provided for electrical continuity of the raceway system at the expansion fittings.

W. Bushings shall be provided at the end of all conduits to protect the insulation of the conductor. Provide grounding bushings for metal raceways, boxes, and cabinets to insure that all metallic surfaces are effectively grounded. Metallic raceway may be bonded to cabinets, boxes and panelboards by double locknut and bushing to ensure the metallic parts are all effectively grounded.

X. Conduit or raceways through which moisture may enter and contact energized live parts shall be sealed or plugged at either or both ends with conduit seals where portions of an interior raceway system are exposed to widely different temperatures, e.g., circulation of air from a warmer to a cooler section through the raceway shall be prevented by conduit seals.

Y. Install pull boxes in conduit at intervals of 200 feet or less except when these intervals will place the pull box cover in a finished floor area or non-accessible place, the interval may be extended to a maximum distance of 300 feet. Request for each deviation or extension of interval shall be made and approval granted by the Engineer before proceeding with the installation. If any conduit run is found to be greater than 300 feet and the contractor has not secured prior approval from the engineer, a new raceway shall be installed to replace the deficient one at the contractor's expense.

Z. Underground Work:

1. Excavation and backfilling for underground conduit systems shall be in accordance with Division 2 "Sitework" and Section on "Excavation and Backfill." Minimum cover for exterior underground conduit shall be 30" over conduit unless otherwise noted on the Drawings.

2. Place color-coded metallic identification tape approximately 12" above all underground systems. Tape shall be continuously printed with "CAUTION" in large bold letters. A second printed line shall indicate the type of cable beneath (i.e. 12 kV, 480 V, 208V, telephone, etc). Use yellow tape for electric and green for telephone.

3. All raceways exiting from under the building slab shall be metallic as allowed by the NEC, unless the drawings specifically indicate otherwise.

AA. Conduit Installed in Concrete:

1. Conform to applicable portion of Section 703 of ACI Standard Code for reinforced concrete.

2. Conduit: Rigid Steel, IMC or EMT; except do not install EMT in concrete slabs that are in contact with soil, gravel or vapor barriers.

3. Align and run conduit in direct lines.

4. Locate conduits in center third of concrete slab thickness. Outside conduit diameter not to exceed 1/3 concrete slab thickness. Install no conduit in concrete slabs of less than 3" thick.

5. Conduits in concrete slabs shall not cross at an angle of less than 45 degrees.

6. Conduits shall not pass through beams except when shown on the Drawings.

7. Space vertical installation of conduit through concrete slabs not closer than three diameters on center.

8. Space between conduit in slabs not closer than six diameters apart, except one conduit diameter at conduit crossings.

9. Where conduits rise through floor slabs, curved portion of bends shall not be visible above finish floor.

BB. Cleaning: Clean conduit systems by wire rat brush and mandrel. Totally remove all moisture prior to building finishes being installed.

CC. Conduit Straps: All straps used to hold surface mounted conduit shall have two holes. These shall be installed in all accessible areas to 12’ above grade.

DD. Install Conduit as Follows:

1. In complete runs before pulling in cables or wires.

2. Flattened, dented or deformed conduit is not permitted. Remove and replace the damaged conduits with new undamaged material.

3. Assure conduit installation does not encroach into the ceiling height headroom, walkways, or doorways.

4. Cut square with a hacksaw, ream, remove burrs, and draw up tight.

5. Mechanically and electrically continuous.

6. Independently support conduit. Do not use other supports i.e. (suspended ceilings, suspended ceiling support members, lighting fixtures, mechanical piping, or mechanical ducts).

7. Support within one foot of changes of direction, and within one foot of each enclosure to which is connected.

8. Close ends of empty conduit with plugs or caps at the rough-in stage to prevent entry of debris, until wires are pulled in.

9. Conduit installations under fume and vent hoods are prohibited.

10. Secure conduits to cabinets, junction boxes, pull boxes and outlet boxes with bonding type locknuts. For rigid and IMC conduit installations, provide a locknut on the inside of the enclosure, made up wrench tight. Do not make conduit connections to junction box covers.

EE. Conduit Bends:

1. Make bends with standard conduit bending machines.

2. Conduit hickey may be used for slight offsets, and for straightening stubbed out conduits.

3. Bending of conduits with a pipe tee or vice is prohibited.

FF. Layouts and Homeruns:

1. Install conduit with wiring, including homeruns, as shown.

2. Deviations: Make only where necessary to avoid interference's and only after drawings showing the proposed deviations have been submitted to and approved by the Engineer.

GG. Conduit Identification: Paint all conduit runs every ten feet. This painting shall be accomplished by painting the conduit fittings to comply with the space limitation. Conduits shall be painted the following colors:

| | |
|---|---|
| 120V, 208V and 240V | White |
| 480V | Orange |

HH. Furnish and install pull wire in all empty conduits.

3.3 <u>Boxes</u>:

A. Attach boxes to concrete formwork, or to other surrounding building material. Provide additional junction and pull boxes where injury to insulation or deformation of wire would occur due to excessive pulling resistance. When several feeders pass through a common pull box, tag each feeder separately, indicating electrical characteristics and destination.

1. Boxes shall be accurately located. Consult Architectural plans for dimensions.

2. Mount boxes in the course nearest to the height specified when installed in finished block, brick or tile walls.

3. Boxes for use with raceway systems shall be minimum 1 1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets shall be minimum 4 inches square, except 4-by-2 inch boxes may be used where only one raceway enters outlet.

4. Pull boxes shall be at least the minimum size required by NFPA 70 and of code-gauge galvanized sheet steel, or compatible with nonmetallic raceway systems, except where cast-metal boxes are required in locations specified herein. Furnish boxes with screw-fastened covers. Where several feeders pass through a common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation.

5. Extension rings shall not be used. Any extension rings found shall be removed at the contractor's expense.

B. Recessed Installation: Boxes and covers shall be installed so that the covers are flush with the finished surfaces. Boxes in masonry or tile construction shall have masonry boxes or boxes with square cut tile covers. Do not cut concrete block through its entirety in order to accommodate any type box. "Handy" boxes shall not be used.

C. Boxes in Partitions: Through type boxes are not permitted except where shown on electrical drawings. Recessed outlet boxes, cabinets, consoles, etc., when shown located back-to-back shall be provided with 1/2" fiberglass insulation between the boxes.

D. Lighting Outlets:

1. Coordinate location of electrical outlets with architectural features of the building and with the equipment of other trades.

2. Paneled or patterned ceilings shall have outlets located according to the ceiling pattern.

3. Boxes mounted between bar joists or "T" bars shall be supported from two bars or joists.

4. Mounting heights of wall lighting outlets shall be as listed below except when otherwise indicated on the Drawings.

   General - 7'6" above the finished floor.
   Over lavatories - 6" to center above top of mirror.
   Over doors - 18" to center above door.
   Pendant Fixtures - 8'0" above finished floor.
   Height may be adjusted to allow wall blocks to be cut to nearest edge. Mounting heights in areas with ceilings greater than 10' the mounting height shall be 2' below the ceiling or 12', which ever is lower. Contractor shall verify all mounting heights with Engineer prior to rough in.

3.5 Wiring:

A. General: Conductors shall not be installed until conduit system is complete. Bending radius of insulated wire or cable shall not be less than the minimum recommended by wire or cable manufacturer. Maximum pulling tension of any wire or cable shall not exceed manufacturer's recommended values. Do not injure insulation while installing wire in conduits.

B. Color Coding: Conductors of size No. 6 and smaller shall have color-coded insulation. Sizes larger than No. 6 may have color-coded insulation or color-coded tape for the purpose. Should tape be used, cover not less than 2" of conductor within the enclosure.

C. Switchleg conductors shall be a color other than white, green or the phase or line color.

D. Green shall be used only as the grounding conductor. White or gray shall be used only as the grounded conductor which is the neutral conductor. The neutral shall not be used as the grounding conductor or the grounding conductor shall not be used as the neutral.

E. When more than one neutral is installed in a single raceway, the first neutral shall be identified with white color, and the second neutral shall be identified with gray color.

F. Intercommunications, communications, temperature control, and fire alarm conductors shall be color coded or permanently tagged for identity. If tagged, conductor colors shall not include white, gray or green base color or stripes. Colors shall comply with the Insulated Power Cable Engineers Association (IPCEA) method K-2. Chart is included with Section 260519, "Conductor and Cable Identification."

G. Conductors in Parallel: Conductors connected in parallel (electrically joined at both ends to form a single conductor) shall be of the same length, of the same conductor material, the same circular-mil area, the same insulation types and terminate in the same manner. Where installed in separate raceways or cables, the raceways or cables shall have the same physical characteristics.

H. Wiring in switchboards, panelboards, junction cabinets, etc., shall be neatly formed to present a neat and orderly appearance.

I. A single neutral may be installed for three branch circuits (power) provided each of the three is from a different phase. A dedicated neutral conductor is required on all lighting circuit because of the electronic ballast. A single neutral may be installed for two circuits (other than circuits with electronic ballast) provided each is from a different phase or a different line.

J. Except for control wiring, the minimum size of wire shall be No. 12 AWG. For all lighting and receptacle circuits that are in excess of 100', the minimum wire size shall be No. 10 AWG. The contractor shall verify circuit length prior to pulling wire. Circuits found to be greater than 100' with #12 AWG wire shall be removed and re-pulled with #10 AWG wire at the contractor's expense. The #10 AWG wire shall be for the home run circuits and travelers in three-way switching only.

K. Interconnections of control wiring shall be on identified numbered terminal strips.

L. Splices: Splices shall be permitted in junction boxes, outlet boxes of other permanently accessible locations. Conductors No. 6 or smaller shall be spliced with devices approved by Underwriters Laboratories, Inc., as splicing connectors. Splices in conductors larger than No. 6 shall be accomplished with devices approved by Underwriters Laboratories as pressure cable connectors.

M. Splices shall not be made in underground boxes or wet location without specific written approval by engineer. Approved splices made in underground boxes or wet locations shall be made with commercial, UL approved cast resin splicing kit (120 volt circuits or greater). Splices for low voltage circuits may not be made below grade or in wet/damp locations.

3.6 Wire Pulling Lubrication: Shall be used when any wire is pulled by mechanical means. Wire and cable shall be carefully handled during installation. Soap flakes or vegetable soaps shall not be used for lubrication.

3.7 Equipment Identification: Secure tags and markers to each item of equipment. Secure all cabinet nameplates with self-tapping screws or machine screws and nuts. Do not rely on adhesive mounting. Name tags for equipment operated from normal power shall be "Black." Name tags for equipment operated from emergency power shall be "Red."

3.8 Sleeves, Inserts and Supports:

A. Equipment Supports: Concrete bases and structural steel to support this Division's equipment and raceways, and not specifically shown on Structural or Architectural Drawings shall be furnished by Contractor whose equipment or raceways is to be supported. Provide a raised reinforced 4" concrete base for all floor supported equipment. Equipment installed outdoors on concrete slabs shall be provided with a 4" raised concrete base.

B. Setting in Concrete: Place all inserts in concrete forms prior to time concrete is poured. If additional inserts are required in existing concrete work, use self-drilling screw anchors.

C. Support Spacing: Comply with codes and regulations referenced earlier and as follows:

1. Support no electrical work from piping, ductwork, etc. Where metal decking is used, provide supports independent of decking so that loads will not be transferred to decking. Drill through decking and secure supports to concrete slab.

2. Vertical conduit inside building shall be supported at each floor level and at 10'0" intervals.

3. Support conduit within one foot of changes of direction, and within one foot of each enclosure to which it is connected.

D. Sleeves Through Roofs: Coordinate setting with Division 7. Contractor setting sleeves for his electrical conduit is responsible for filling sleeve pockets with roof bitumen and insuring there is no moisture leakage during roof guarantee period.

E. Conduit through Slab Supports: Conduit supports for conduits routed from below grade up through concrete slabs shall be solid, metallic type. Metallic or nonmetallic conduit shall not be used to support conduits through slab. After concrete slab has been poured and set, supports shall be cut flush with slab.

3.9 Caulking and Seals:

A. Where conduits, wireways, and other electrical raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases. Fire stop shall be rock wool fiber, silicone foam sealant or approved equal. Completely fill and seal clearances between raceways and openings with the fire stop material. Adhere to manufacturer's installation instructions.

B. At floor, exterior wall, and roof conduit penetrations, completely seal clearances around the conduit and make watertight.

3.10 Painting:

A. Painting for Division 26 work shall be by the Division 9 finishes contractor and as provided in the Division 9 - finishes of the Project Manual.

B. The Division 26 Contractor shall be responsible for coordinating with the Division 9 - Finishes Contractor the painting of the materials and equipment of Division 26.

C. Refer to the Finish Schedule on drawings for location and type of paint.

D. Finish in areas not listed or otherwise noted shall be black enamel.

E. Hangers, supports, structural steel and equipment that are not factory finished shall be prime coated and finished coated with color to match the area in which it will be located.

F. Electric cabinets, switchboards, panelboards and equipment that is factory finished and has damaged finish shall be touched up to match the factory finish.

G. All surfaces that are to be painted shall be free of rust, scale, oil and grease before prime coat is applied.

H. Paint all junction boxes and conduit as described herein.

3.11 Grounding: Ground and bond in accordance with NEC Article 250 and other applicable articles. All low voltage surge suppression and shields shall be bonded to the electrical system ground by a #6 AWG green wire. The ground shall be bonded to the electrical panel serving the area that the ground is required.

A. Provide an equipment grounding conductor which shall be separate from the electrical system neutral conductor. The equipment grounding conductor shall be colored green. It shall be continuous from a connection at the Service Entrance Equipment Ground to all switchboards, distribution and branch panelboards. Equipment grounding conductors shall be provided in all branch circuits serving convenience outlets, receptacles, portable and permanently installed electrical appliances, equipment apparatus and other miscellaneous metal enclosing bodies including light switch boxes normally within contact of personnel. Branch circuit grounding conductors shall be sized in accordance with the National Electrical Code. Connections at panelboards, outlets, equipment and apparatus shall be made in an approved and permanent manner. Resistance to ground shall not exceed 15 ohms.

B. Bond bushings of the raceway system to ground lugs in boxes, cabinets, motors and equipment to assure electrical continuity of all metallic components of the electrical systems. Comply with the requirements of NEC Articles 250D, 250E, 250F, 250G, 250J and 250K.

3.12 Equipment Backboards: Locate equipment backboards where indicated on the Drawings. Install straight and plumb. Secure to structure using screws, toggle bolts or masonry anchors. DO NOT use plastic or wood plugs in masonry or concrete. Do not install combustible backboards in air handling space, plenums or where prohibited by the local governing authority.

A. Underground Raceway Markings: Provide monument marker above underground junction or pull boxes and at the ends of any "Stub Out" raceway. See monument marker detail in these Specifications.

B. Junction Box Marking: All junction boxes shall be provided with the following markings.

C. 120, 208 or 240 volt boxes: Paint white and mark with panelboard/circuit number.

D. 480 volt boxes: Paint Orange and mark with panelboard/circuit number.

E. Junction Boxes Containing Emergency Circuits: Paint box color of voltage and provide a Red Strip. Label with panelboard/circuit number.

F. Testing:

G. At the completion of the installation of the conductors or cables into the raceway systems, tests shall be conducted by "megger" to ascertain that the insulation for the conductors or cables has not been damaged. Megger test each feeder and branch circuit conductor or cable with an instrument capable of producing approximately 500 volts for conductors or cables insulated with 600 volt insulation.

H. The minimum insulation resistance shall be 100 megohms per 1000 feet of 500 kCMIL conductors or smaller insulated with THW or THWN, and 1,000 megohms per 100 feet of 500 kCMIL conductors or smaller insulated with XHHW or other cross-linked insulation.

**END OF SECTION 26 05 00**

## SECTION 26 05 19 - CONDUCTOR AND CABLE IDENTIFICATION

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 This Section is a Division-26 Basic Materials and Methods Section, and is part of each Division-26 Section making reference to or requiring products specified herein.

1.3 This Section provides the requirements for identification of grounded conductors (neutral); grounding conductors ungrounded conductors and terminals.

1.4 Grounded Conductor (neutral), Size No. 6 AWG or smaller, shall be identified by a continuous white or natural gray outer finish along its entire length. Sizes larger than No. 6 AWG shall be identified either by a continuous white or natural gray outer finish along its entire length or at the time of installation by a distinctive white or gray marking at its terminations.

1.5 A continuous white or natural gray covering on a conductor or a termination marking of white or natural gray color shall be used only for the grounded conductor (neutral).

1.6 Terminals to which a grounded conductor is to be connected shall be substantially white in color or identified by white markings. Other terminals shall be a different, readily distinguishable color, or by markings in different, readily distinguishable colors.

1.7 Grounding Conductor Size No. 6 AWG or smaller shall be identified by a continuous green outer finish along its entire length. Sizes larger than No. 6 AWG shall be identified either by a continuous green outer finish along its entire length or at the time of installation by a distinctive green marking at its termination.

1.8 Terminals to which grounding conductors are connected shall be green in color.

1.9 A continuous green covering on a conductor or a termination marking of green shall be used only for the grounding conductor.

PART 2 - PRODUCTS

2.1 Comply with the Section 260500, "Basic Materials and Methods."

PART 3 - EXECUTION

3.1 Identification of conductors shall follow the colors set forth herein for the electrical characteristics as indicated:

120/208 Volt Three Phase 4 Wire WYE

| | |
|---|---|
| Neutral | White or Gray |
| Phase A | Black |
| Phase B | Red |
| Phase C | Blue |
| Grounding Conductor | Green |

277/480 Volt Three Phase 4 Wire WYE

| | |
|---|---|
| Neutral | White or Gray with Stripe (tracer) |
| Phase A | Brown |
| Phase B | Orange |
| Phase C | Yellow |
| Grounding Conductor | Green with Stripe (tracer) |

3.2 Communication, temperature control and fire alarm conductors shall be color coded or permanently tagged for identification. The colors shall not include white, gray, or green base colors or stripes (tracers) unless these colors are used as grounded conductors or grounding conductors.

3.3 Colors shall comply with the Insulated Power Cable Engineers Association (IPCEA) Method K-2 chart included at the end of this Section.

3.4 For direct current (DC) systems, Black shall be negative and Red shall be positive.

3.5 A single color conductor other than white, gray or green may be used when the conductors are identified with number tags or numbered wire.

3.6 Identification shall be provided at terminations of the conductors and at junction boxes, terminals or cabinets when multi conductors are installed at these locations.

**IPCEA METHOD K-2**

**(Colored Compound with Tracers)**

| Conductor Number | Background or Base Color | Tracer Color | Conductor Number | Background or Base Color | Tracer Color |
|---|---|---|---|---|---|
| 1 | Black | ---- | 19 | Orange | Blue |
| 2 | Red | ---- | 20 | Yellow | Blue |
| 3 | Blue | ---- | 21 | Brown | Blue |
| 4 | Orange | ---- | 22 | Black | Orange |
| 5 | Yellow | ---- | 23 | Red | Orange |
| 6 | Brown | ---- | 24 | Blue | Orange |
| 7 | Red | Black | 25 | Yellow | Orange |
| 8 | Blue | Black | 26 | Brown | Orange |
| 9 | Orange | Black | 27 | Black | Yellow |
| 10 | Yellow | Black | 28 | Red | Yellow |
| 11 | Brown | Black | 29 | Blue | Yellow |
| 12 | Black | Red | 30 | Orange | Yellow |
| 13 | Blue | Red | 31 | Brown | Yellow |
| 14 | Orange | Red | 32 | Black | Brown |
| 15 | Yellow | Red | 33 | Red | Brown |
| 16 | Brown | Red | 34 | Blue | Brown |
| 17 | Black | Blue | 35 | Orange | Brown |
| 18 | Red | Blue | 36 | Yellow | Brown |

NOTE: No Green or White Conductors or Stripes are present.

**END OF SECTION 26 05 19**

**SECTION 26 05 26 - GENERAL GROUNDING ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 This Section is a Division-26 Basic Materials and Methods Section, and is part of each Division-26 Section making reference to or requiring products specified herein.

1.3 Submittals

A. Submit product data for each type of product being provided. Mark the data sheet for the product being provided with an identifying mark or arrow. Provide the following:

1. Ground rod.
2. Exothermic ground rod connections.
3. Above grade grounding connections.

PART 2 - PRODUCTS

2.1 Ground rods shall be copperclad 3/4"x10'0".

2.2 Grounding conductors shall be copper with green insulation.

2.3 Exothermic Connections: All grounding system connections below finished grade shall be made by exothermic connection. Connections shall include, but not limited to, all cable to cable splices, tees, x's, etc., all cable to ground rods, ground rod splices, cable to steel and cast iron and cable lug terminations. Procedures outline in manufacturer's instructions shall be followed. Molds shall not be altered in the field. All material used (molds, welding metal, tools and accessories, etc.) shall be Cadweld, manufactured by Erico Products, Inc. or Approved Equal. Material of different manufacturers shall not be mixed.

PART 3 - EXECUTION

3.1 Grounding Conductor Size No. 6 AWG or smaller shall be identified by a continuous green outer finish along its entire length. Sizes larger than No. 6 AWG shall be identified by either a continuous green outer finish along its entire length or at the time of installation by a distinctive green marking at its termination.

3.2 Provide an equipment grounding conductor, which shall be separate from the electrical system neutral conductor. The equipment grounding conductor shall be colored green. It shall be continuous from a connection at the Service Entrance Equipment Ground to all switchboards, transformers and distribution and branch panelboards. Equipment grounding conductors shall be provided in all branch circuits serving convenience outlets, receptacles, portable and permanently installed electric appliances, equipment apparatus and other miscellaneous metal enclosing bodies including light switch boxes normally within contract of personnel. Branch circuit grounding conductors shall be sized in accordance with the National Electric Code. Connections at panelboards, outlets, equipment apparatus shall be made in an approved and permanent manner. Resistance to ground shall not exceed 25 ohms.

3.3 All ground connections shall be made on surfaces, which have been cleaned of all paint, dirt, oil, etc., so that connections are bare metal to bare metal contact. All ground connections shall be tight, and shall be made with UL listed grounding device fittings, bushings, etc.

3.4 The service entrance equipment ground bus shall be grounded to a ¾ inch minimum cold water pipe, building foundation rebar and to the ground grid as indicated on the Drawings. The protecting conduits shall be bonded to the grounding conductor at both ends. The CONTRACTOR shall not allow the water pipe connections to be painted. If the connections are painted, they shall be disassembled and remade with new fittings. Foundation rebar shall be extended above the slab so that a visual connection can be made with the service equipment.

3.5 Grounding electrodes shall be driven as required. Where rock is encountered, grounding plates may be used in lieu of grounding rods.

3.6 All equipment enclosures, motor and transformer frames, conduits systems, cable armor, and similar items shall be grounded.

3.7 Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or approved equal. All buried connections shall be made by welding process equal to Cadweld.

3.8 All underground conductors shall be laid slack and where exposed to mechanical injury, shall be protected by rigid conduit. Conductors in rigid conduit shall be electrically connected to both ends of the guard.

3.9 The CONTRACTOR shall exercise care to insure good continuous ground, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.10 Provide a #4 ground conductor from each telephone terminal cabinet to the main telephone terminal board. Provide a #4 ground conductor from the main telephone terminal board to the building ground bar. Provide a #4 ground conductor from each equipment backboard to serving electrical panel.

3.11 Multiple conductors in a single lug are not permitted. Each grounding conductor shall terminate in its own terminal lug.

3.12 Provide a ground conductor from each transformer location to the building ground system. This conductor shall be used to ground the secondary side neutral, case and core in accord with grounding requirements for a separately derived system. In addition, ground transformer to the nearest building steel and provide a connection to building foundation rebar. The building rebar shall be extended above the slab so that a visual connection can be made.

3.13 Provide a 3/4"x10' copperclad ground rod for each exterior light pole. Each metal and concrete pole shall be provided with a grounding lug. Provide a #6 AWG copper conductor from the ground rod to the pole-grounding lug. In cases were fiberglass poles are used, bond ground wire to electrical system ground wire. All connections made below grade shall be exothermic type.

3.14 Flexible metal conduit, liquid tight flexible conduit or nonmetallic rigid conduit is not permitted to be used as a grounding conductor. In all cases where flexible metallic conduit, liquid tight flexible conduit or nonmetallic rigid provided with the phase conductors in the conduit. This green wire ground conductor shall be used to provide ground continuity between the equipment or device and the metallic conduit-raceway system.

3.15 The metallic electrical raceway may not be used as the grounding conductor.

3.16 Ground-Resistance Tests

The resistance of each grounding electrode shall be measured using the fall-of-potential method defined in IEEE Std 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes must still be provided. A maximum of up to two additional sectional type ground rods (for each driven rod) will be used at any location requiring reduced resistance. The additional ground rods shall be provided at no additional cost to the Owner. In the event that additional rods are required, a per rod cost shall be approved by the engineer to meet the ground resistance requirements.

A. Single rod electrode - 25 ohms.

B. Multiple rod electrodes - 20 ohms.

C. Ground ring - 15 ohms.

D. System grounding – 10 ohms (all grounds tied together)

**END OF SECTION 26 05 26**

**SECTION 26 05 42 - PVC RACEWAYS**

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section

1.2 This Section is a Division-26 Basic Materials and Methods Section, and is part of each Division-26 Section making reference to or requiring products specified herein.

1.3 Submittals: Submit the producer's standard descriptive data sheets for each type of product being provided. Mark the data sheet for the product being provided with an identifying mark or arrow.

PART 2 - PRODUCTS

2.1 PVC Conduit and Fittings: Conduit shall be made of polyvinylchloride, Schedule 40, pipe, conforming to ASTM D 1785. Fittings shall be Schedule 40, socket type, solvent weld, complying with ASTM C 2466. Joints shall be watertight. Threaded type fittings may be used only for Schedule 80 Conduit. Fittings for Schedule 80 conduit shall comply with ASTM D2464.

2.2 Bends:

A. Conduits less than 1 ½": Conduit elbows may be either rigid non-metallic or non-corrosive rigid metallic conduit. See Execution Section below for conditions for installation.

B. Conduits 1 ½" and Larger: Conduit elbows shall be rigid non-corrosive metallic conduit only. Schedule 40 PVC elbows shall not be used. See Execution Section below for conditions for installation.

C. Stub-ups: Rigid metallic conduit Schedule 40 PVC. See Execution Section below for conditions for installation.

PART 3 - EXECUTION

3.1 Installation:

A. Floor Penetrations: Rigid metallic conduit for all exposed conduits and conduits greater than 1 ½". Schedule 40 PVC for conduits less than 1 ½" concealed in walls. PVC conduits concealed in walls shall extend to first device box or 18" above finish floor, whichever is lower, then transition to EMT. All conduit concealed by floor mounted equipment may be schedule 40 PVC or rigid metallic conduit.

B. Bends:

1. Conduits less than 1 ½": Conduit elbows may be either rigid non-metallic or non-corrosive rigid metallic conduit. In circuit runs exceeding 100', all bends shall be non-corrosive rigid metallic conduit. Bends may be factory or field fabricated using manufacturer approved heat boxes. Field fabricated bends using blowtorch are not acceptable.

2. Conduits 1 ½" and Larger: Conduit elbows shall be rigid non-corrosive metallic conduit only. Schedule 40 PVC elbows shall not be used.

3.2 Minimum Size: Minimum size of PVC conduit to be installed below slab shall be 3/4".

3.3 Jointing: Pipe and fittings shall be cement welded or threaded (only for Schedule 80 conduit) and made watertight. All joints shall be cleaned with solvent or sanded smooth prior to application of cement.

3.4 Supports: Support conduit in compliance with Table 347-8 of the National Electrical Code. Where conduit racks are used, do not bundle or lay conduit on top of each other. A minimum 1/8 inch spacing shall be maintained between parallel runs.

**END OF SECTION 26 05 42**

**SECTION 26 05 80 - EXCAVATION AND BACKFILL**

PART 1 - GENERAL

1.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to the work of this Section.

1.2 This Section is a Division-26 Basic Materials and Methods Section, and is part of each Division-26 Section making reference to or requiring products specified herein.

PART 2 - PRODUCTS

2.1 Sand: Clean, hard, uncoated grains free from organic matter or other deleterious substances. Sand for backfill shall be of a grade equal to mortar sand, with 95% passing a No. 8 sieve, and not more than 8% passing a No. 100 sieve.

2.2 Gravel: Clean, well-graded hard stone or lime rock gravel, free from organic material. Size range to be from No. 4 screen retentions to 1".

2.3 Earth: Must be free of stones, wood, roots or rubbish.

2.4 Identification Tape: Polyethylene 0.004" thickness minimum, with metalized locator, 6" wide, yellow or green in color, black letters indicating service and voltage.

PART 3 - EXECUTION

3.1 Ditching and Excavation: Shall be performed by hand wherever the possibility of encountering obstacles or any existing utility lines. The Contractor will be totally responsible to insure that no utility or service interruptions shall be caused and that no existing utilities or obstructions will prohibit installations of service under this Contract at proper grade and location. Where clear and unobstructed areas are to be excavated, appropriate machine excavation methods may be employed. Avoid use of machine excavations within the limits of the building lines except when machine weights and operation will not damage sub-surface structural components or piping.

3.2 Bedding: Excavate to bottom grade of raceway to be installed, and shape bed of undisturbed earth to contour of conduit for a width of at least 5% of the conduit diameter. If earth conditions necessitate excavation below raceway grade, bring the bed up to the proper elevation with clean, dry sand deposited in 6" layers and firmly tamped by mechanical means. If sub-cut exceeds 12" or if bed is of an unstable nature, a 6" minimum layer of rock will be required before sand bedding begins.

3.3 Placing: Conduit shall be carefully handled into place in the excavation. Avoid knocking loose soil from the banks of the trench into the conduit bed. Coated conduit shall have special handling slings to prevent damage to the coating. All holidays in the conduit coating shall be touched in before beginning back filling.

3.4 Backfilling: Deposit earth or sand carefully in 6" layers, maintaining adequate side support. Compact fill in 6" layers, using mechanical means up to the top elevation of the conduit and 12" layers to finish grade.

3.5 Identification: Provide identifying metalized plastic warning tape above non-metallic conduit and standard plastic warning tape above metal conduit. Warning tape shall be placed approximately 12" above the conduit. Replace surface to the original condition, i.e., sodding, sprigging, and fine grading.

3.6 Excavation shall be maintained in satisfactory condition during the progress of the work. Sub-surface structures shall be constructed in adequately sized excavations and dewatering equipment shall be installed and properly maintained. Shoring shall be employed in the event of unstable soil conditions, and in all cases to protect materials and personnel from injury.

**END OF SECTION 26 05 80**

**SECTION 26 05 90 - WORK REQUIRED FOR EQUIPMENT FURNISHED BY OTHER DIVISIONS**

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.

B. Division-26 Basic Electrical Materials and Methods Sections apply to work of this Section.

C. Review all project drawings to be aware of conditions affecting work herein.

PART 2 - PRODUCTS

2.1 Materials for this section are specified in the Section "Basic Materials and Methods."

PART 3 - EXECUTION

3.1 Make connections for the electrical power to equipment furnished and installed in other Divisions.

3.2 Provide raceway boxes, fittings, devices and conductors for the electrical power to equipment furnished and installed in the other Divisions.

3.3 Coordinate wiring and conduit requirements with equipment being furnished prior to rough-in.

3.4 Verify voltage, phase, and current requirements for all equipment being supplied by other divisions. Any modifications shall be incorporated into the electrical submittals with references to any modification and reason. The electrical system is designed around the specified equipment. Any change in the equipment shall be coordinated so that proper electrical protection is obtained. In addition, if the supplied equipment has higher minimum circuit ampacity that the equipment specified, the contractor shall call the modification to the Engineer's attention and make necessary conduit, wire, circuit breaker and equipment changes to accommodate the higher ampacity requirements.

3.5 Any change from the specified equipment requirements shall be the responsibility of the contractor.

3.6 The electrical contractor shall meet with the Division 15 contractor and fully coordinate locations of mechanical equipment, duct work and piping to ensure that proper working clearance as required in the NEC is obtained. Any conflict shall be reported to the Engineer in writing prior to the installation of any of the equipment. Refer to additional requirements for planning drawings.

3.7 Coordinate exact locations and electrical rough-in requirements with other Divisions prior to installation to ensure proper clearances and code requirements are met.

**END OF SECTION 26 05 90**

**SECTION 26 28 17 - DISCONNECT SWITCHES**

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this Section.

1.2 Division-26 Basic Electrical Materials and Methods Sections apply to work of this Section.

1.3 Submittals: Submit the producer's standard descriptive data sheets for each type of product being provided. Mark the data sheet for the product being provided with an identifying mark or arrow.

1.3.1 Substitutions - Prior approval required.

PART 2 - PRODUCTS

2.1 Acceptable Producers: General Electric, Cutler-Hammer, and Square D.

2.2 General: Provide NEMA Heavy Duty type H.D., Underwriters Laboratories listed safety switches of voltage, amperes, and number of poles as indicated on the Drawings. Label for service entrance use where indicated on the Drawings.

2.3 Mechanism: Switch operating mechanism shall be quick make, quick break. Switches shall have a dual interlock to prevent opening of door when switch is in "ON" position or closing of switch when door is in "OPEN" position.

2.4 Switch Interior: Interior of switch shall have fully visible switchblades in "OFF" position when door is open. Switches shall be dead front construction with permanently attached arc suppressors hinged or otherwise attached to permit easy access to line-side lugs, without removal of arc suppressor. Lugs shall be UL listed for copper conductors and shall be front removable. All current carrying parts shall be tin or silver-plated by electrolytic processes. Provide ground lug in each switch for grounding conductor.

2.5 Enclosures: Use NEMA 3R enclosures for all exterior locations and interior locations in wet or humid areas. Use NEMA 1 enclosures elsewhere, except as noted otherwise on the Drawings. Furnish NEMA 1 switches with knockouts. Enclosures for NEMA 1 switches shall be code gauge (UL 98) sheet steel with rust inhibiting phosphate treatment and baked enamel finish. NEMA 3R enclosures shall be of code gauge (UL 98) galvanized steel with rust inhibiting phosphate and baked enamel finish.

2.6 Ratings: Safety switches for motors shall be horsepower rated for AC or DC as specified on the Drawings. All fusible switches rated 100 through 600 amperes at 240 volts, and 30 through 600 amperes at 600 volts, shall have the capability of field conversion from standard Class H fuse spacing to Class J fuse spacing without affecting the UL listing. The switch also must accept Class R fuses and have field installable UL listed rejection feature to reject all fuses except Class R. UL listed short circuit ratings, when equipped with Class R fuses shall be 200,000 ampere RMS symmetrical. 800 and 1200 ampere switches shall have provisions for Class L fuses.

2.7 Fuses: Fuses shall be provided where indicated and sized as shown on the drawings. See Section "Fuses."

PART 3 - EXECUTION

3.1 Provide unfused or fused disconnect switch as indicated on the Drawings at each motor which is out of sight of its controller or 50 or more feet away from the controller.

3.2 Do not stack switches to touch each other, either horizontal or vertically. Allow space between enclosures.

3.3 Switch symbols on electric Drawings do not indicate exact switch locations. Locate switches adjacent to motor or equipment with all necessary NEC clearances.

3.4 Clean and touch-up paint on disconnect switches damaged or scratched during installation.

**END OF SECTION 26 28 17**

**SECTION 26 28 18 - CIRCUIT BREAKERS, MOLDED CASE**

PART 1 - GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this Section.

1.2 Division-26 Basic Electrical Materials and Methods Sections apply to work of this Section.

1.3 Submittals: Submit the producer's standard descriptive data sheets for each type of product being provided. Mark the data sheet for the product being provided with an identifying mark or arrow.

PART 2 - PRODUCTS

2.1 Acceptable Producers: Cutler-Hammer, General Electric, and Square "D". Products shall be furnished by one producer.

2.2 General: Products listed herein may be common to various Divisions and Specification Sections.

2.3 Provide molded case circuit breakers with a minimum AIC rating of 14,000 amperes RMS symmetrical at 120/240 volts or with AIC rating as indicated on the Drawings. Circuit breakers added to existing panels shall be provided with same KAIC rating as existing panel.

2.4 Individual circuit breakers shall be safety dead front units in NEMA Type enclosure.

2.5 Molded case circuit breakers shall have overcenter, trip free, toggle-type operating mechanisms with quick-make, quick-break action and positive handle indication. All breakers shall be bolt-on type.

2.6 Two and three pole circuit breakers shall have a common trip.

2.7 Each circuit breaker shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole.

2.8 The circuit breaker shall be constructed to accommodate the supply connections at either end.

2.9 Circuit breaker operating handle shall assume a center position when tripped.

2.10 Circuit breakers shall be calibrated for operation in an ambient temperature of 40°C.

2.11 Provide molded case circuit breakers with shunt trip features where indicated on the Drawings.

PART 3 - EXECUTION

3.1 Provide circuit breakers as specified in the Panelboard Schedules on the Drawings. Ampere ratings and the number of poles are indicated on the Panelboard Schedules.

3.2 Circuit breakers shall be suitable for mounting and operating in any position.

3.3 Circuit breakers shall be UL listed.

3.4 Shunt trip device where required shall operate in conjunction with contact closure of push button, ground fault relay or other pilot device to trip open associated circuit breakers upon command.

3.5 Coils of shunt trip device shall be rated continuous duty and shall include interlock arrangement to clear power from coil after operation.

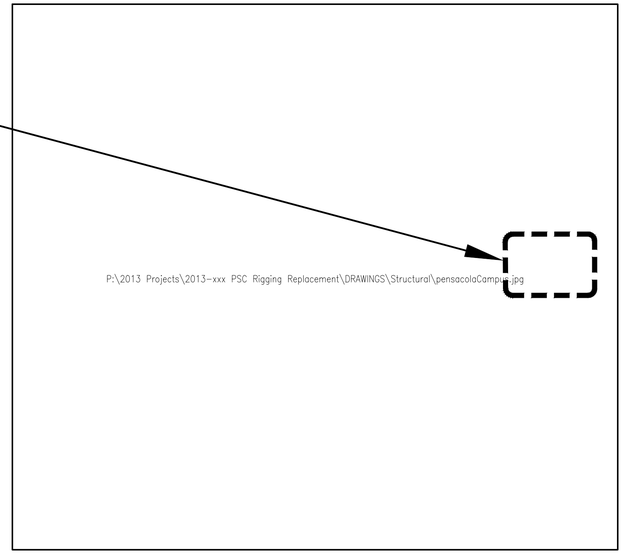
3.6 Provide proper lug sizes for the conductors scheduled on the drawings.

**END OF SECTION 26 28 18**

# GENERATOR SYSTEM MODIFICATIONS
# WSRE TV

## PENSACOLA, FL

PROJECT SITE




## DRAWING INDEX

| SHEET REFERENCE | DRAWING TITLE |
|---|---|
| GENERATOR SYSTEM MODIFICATIONS | |
| G001 | COVER SHEET |
| S001 | STRUCTURAL NOTES, PLAN |
| S100 | STRUCTURAL DETAILS |
| E001 | LEGEND, NOTES, SINGLE LINE DIAGRAM |
| E100 | ELECTRICAL SITE PLAN |

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FLORIDA LICENSE NUMBER 56882
SCG project: 2014-188

SEAL

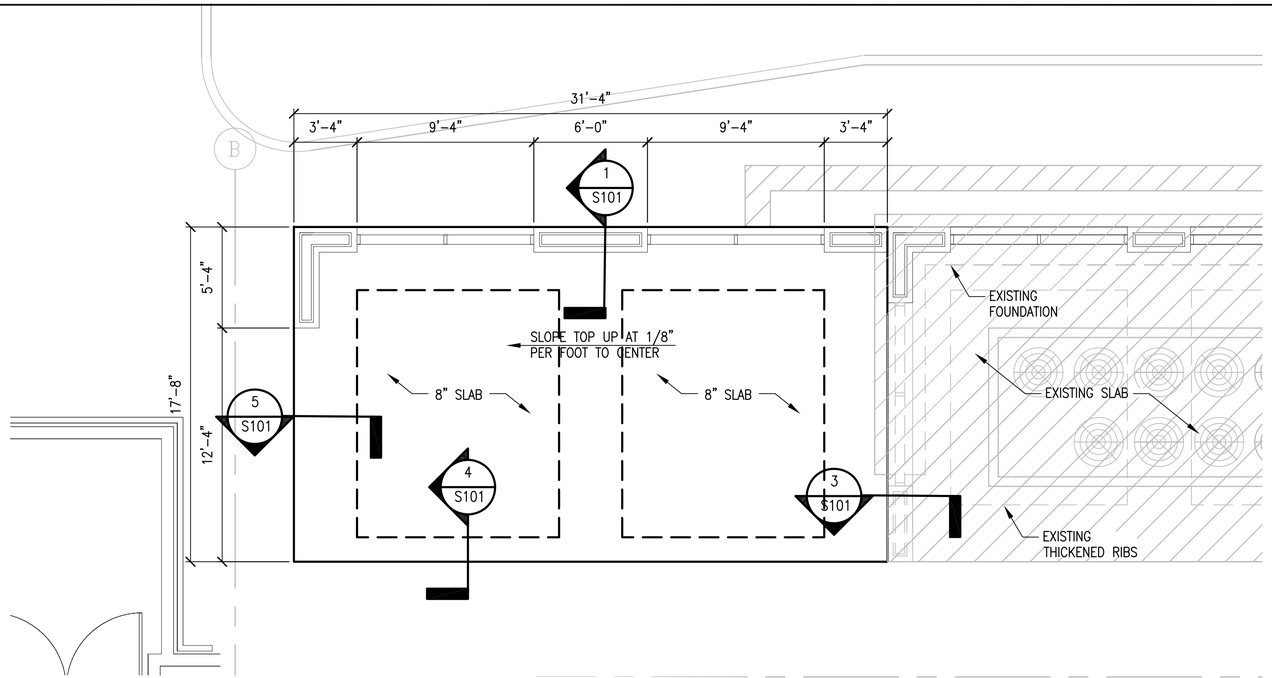
| REVISION NUMBER | REVISION DESCRIPTION |
|---|---|

GENERATOR SYSTEM MODIFICATIONS WSRE TV
PENSACOLA STATE COLLEGE

DESIGNED BY:
DRAWN BY:
CHECKED BY: T. NICHOLSON
DATE: MARCH 11, 2015

SHEET TITLE:

SHEET: G001




PROJECT NORTH

1 STRUCTURAL PLAN

4' 0' 4' 8'

SCALE: 1/4"=1'-0"

## GENERAL NOTES

1. THE STRUCTURAL PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2010 EDITION.
2. ALL REFERENCED STANDARDS REFER TO THE EDITION IN FORCE AT THE TIME THESE PLANS AND SPECIFICATIONS ARE ISSUED FOR BIDDING.
3. REVIEW ALL CONTRACT DOCUMENTS, DIMENSIONS AND SITE CONDITIONS AND COORDINATE WITH FIELD DIMENSIONS AND PROJECT SHOP DRAWINGS PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES IN WRITING TO ENGINEER. DO NOT CHANGE SIZE OR DIMENSIONS OF STRUCTURAL MEMBERS WITHOUT WRITTEN INSTRUCTIONS FROM THE STRUCTURAL ENGINEER OF RECORD.
4. ANY DISCREPANCIES, OMISSIONS OR VARIATIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS DISCOVERED DURING THE BIDDING PERIOD SHALL BE IMMEDIATELY COMMUNICATED IN WRITING TO THE ENGINEER.
5. PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM ALL DAMAGE. EACH CONTRACTOR SHALL PROTECT HIS WORK, ADJACENT PROPERTY AND THE PUBLIC. EACH CONTRACTOR IS SOLELY RESPONSIBLE FOR DAMAGE OR INJURY DUE TO HIS ACT OR NEGLECT.
6. DESIGN LOADS AND CRITERIA:
   C. WIND CRITERIA (ASCE7-10)

| | |
|---|---|
| -BASIC DESIGN WIND SPEED | 145 MPH |
| -EXPOSURE | B |
| -RISK CATEGORY | I |

## SHALLOW FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF 1500 PSF FOR FOOTINGS.
2. IF SOIL IS DISTURBED DURING FOOTING EXCAVATION RECOMPACT TO 95% STANDARD PROCTOR DENSITY IN 8" LIFTS.
3. CENTER ALL FOOTINGS UNDER THEIR RESPECTIVE COLUMNS OR WALLS, U.N.O. ON PLANS.
4. DO NOT EXCAVATE FOR ANY PURPOSE WITHIN ONE FOOT OF THE ANGLE OF REPOSE OF ANY SOIL BEARING FOOTING OR FOUNDATION UNLESS SUCH FOOTING OR FOUNDATION IS FIRST PROPERLY PROTECTED AGAINST SETTLEMENT.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL ACCUMULATED WATER FROM EXCAVATIONS AND DEWATERING OPERATIONS IN SUCH A WAY AS NOT TO CAUSE INCONVENIENCE TO THE WORK AND DAMAGE TO THE STRUCTURAL ELEMENTS.
6. SOIL COMPACTION SHALL BE FIELD CONTROLLED BY A SOILS ENGINEER OR TESTING LABORATORY. A REPORT BEARING THE SIGNATURE AND SEAL OF THE REGISTERED PROFESSIONAL ENGINEER WHO CONTROLLED AND TESTED THE SOIL COMPACTION SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEER OF RECORD AS AN INDICATION THAT THE REQUIREMENTS OF THE CONTRACT DOCUMENTS HAVE BEEN FOLLOWED.
7. SOIL COMPACTION, FILL, AND ITS REPLACEMENT SHALL BE FIELD CONTROLLED BY THE TESTING AGENCY OR GEOTECHNICAL ENGINEER OF RECORD. THE TESTING AGENCY SHALL SELECT ALL TESTING LOCATIONS.

## REINFORCED CONCRETE

1. USE STRUCTURAL CONCRETE AND CONCRETING PRACTICES CONFORMING TO ACI-316 AND PROPORTION CONCRETE IN ACCORDANCE WITH ACI-318 CH. 4 AND MEETING A MINIMUM ULTIMATE COMPRESSIVE STRENGTH IN 28 DAYS AS FOLLOWS:
   - STRUCTURAL SLABS.....3500 PSI
   - ALL OTHER CONCRETE.....4000 PSI

   PROVIDE CURRENT (MAX 1 YEAR OLD) STATISTICAL DATA FOR EACH CONCRETE MIX DESIGN SUBMITTED.
2. USE ASTM A-615 GR. 60 FOR ALL REINFORCING STEEL, CONFORM TO ACI-301, ACI-315, ACI-318, AND CRSI "MANUAL OF STANDARD PRACTICE: ALL REINFORCING SHALL BE ACCURATELY PLACED, RIGIDLY SUPPORTED AND FIRMLY TIED IN PLACE WITH BAR SUPPORTS AND SPACERS IN ACCORDANCE WITH THE ABOVE REQUIREMENTS. PROVIDE CLASS B LAP SPLICE FOR CONTINUOUS BARS, U.N.O. CONCRETE COVER OVER STEEL REINFORCING SHALL CONFORM TO THE MINIMUMS REQUIRED BY ACI 318-08, EXCEPT AS FOLLOWS:

| | BOTTOM | TOP | SIDES |
|---|---|---|---|
| SLABS ON GRADE | 3" | 1" | 2" |
| FOOTING | 3" | 1" | 2" |

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FLORIDA LICENSE NUMBER 49738
SCG project: 2014-188

SEAL

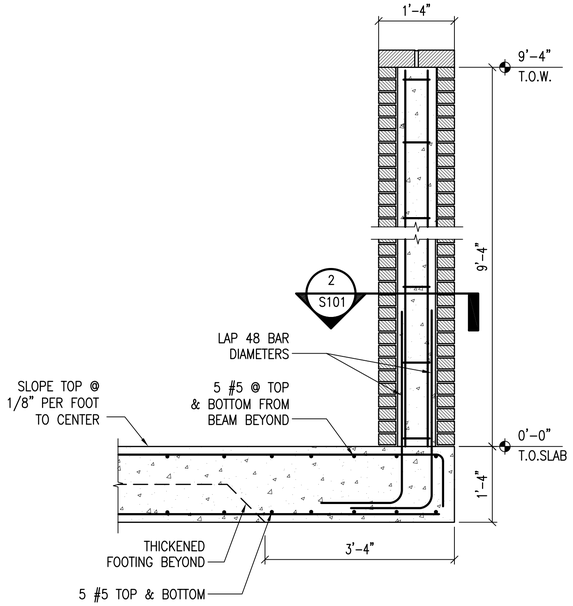
| REVISION NUMBER | REVISION DESCRIPTION |
|---|---|
| | |

GENERATOR SYSTEM MODIFICATIONS WSRE TV
PENSACOLA STATE COLLEGE

DESIGNED BY: S.SMITH
DRAWN BY: J. THOM
CHECKED BY: S. SMITH
DATE: MARCH 11, 2015

SHEET TITLE: STRUCTURAL PLAN & NOTES

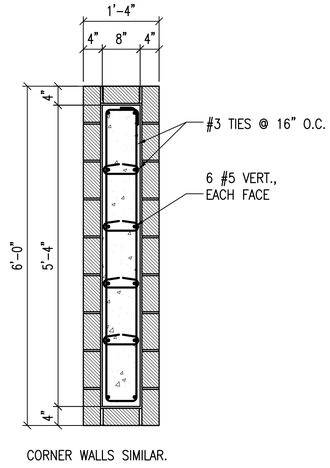
SHEET: S100




1 STRUCTURAL SECTION

12" 0' 1' 2' 3'

SCALE: 3/4"=1'-0"

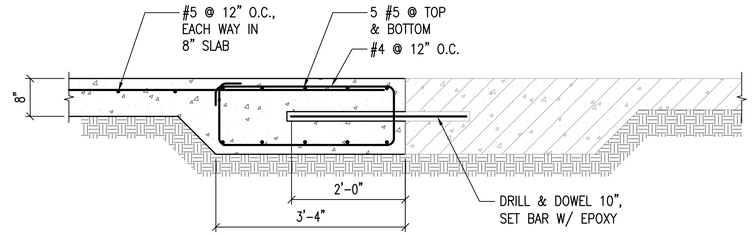



CORNER WALLS SIMILAR.

2 PLAN VIEW

12" 0' 1' 2' 3'

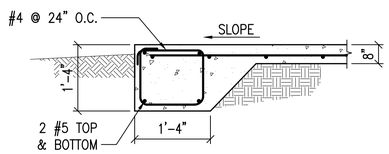
SCALE: 3/4"=1'-0"




3 SECTION TO EXISTING

12" 0' 1' 2' 3'

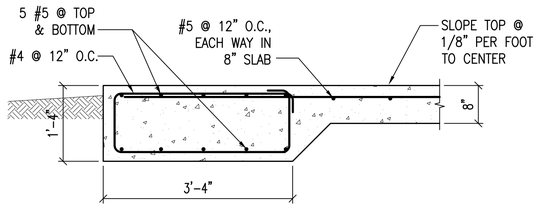
SCALE: 3/4"=1'-0"




4 TURNDOWN DETAIL

12" 0' 1' 2' 3'

SCALE: 3/4"=1'-0"




5 STRUCTURAL SECTION

12" 0' 1' 2' 3'

SCALE: 3/4"=1'-0"

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| REVISION NUMBER | REVISION DESCRIPTION |
|---|---|
| | |

# GENERATOR SYSTEM MODIFICATIONS WSRE TV

PENSACOLA STATE COLLEGE

DESIGNED BY: S. SMITH

DRAWN BY: J. THOM

CHECKED BY: S. SMITH

DATE: MARCH 11, 2015

SHEET TITLE: STRUCTURAL SECTIONS & DETAILS

SHEET: S101

## ELECTRICAL LEGEND

| | |
|---|---|
| J | JUNCTION BOX. |
| | NON-FUSED DISCONNECT SWITCH. SIZE FOR LOAD BEING SERVED. PROVIDE PHENOLIC LABEL. |
| | EXISTING PANELBOARD TO REMAIN. |
| | CIRCUIT RUN CONCEALED ABOVE CEILING OR IN WALL. |
| | CIRCUIT RUN CONCEALED IN OR BELOW FLOOR SLAB OR UNDERGROUND. |
| AFF | ABOVE FINISHED FLOOR. |
| C | CONDUIT. |
| WP | WEATHERPROOF. |
| C/L | CENTERLINE |
| JB | JUNCTION BOX. |
| MNT | MOUNTING HEIGHT AFF |
| 1 | SHEET NOTE MARK. SEE SHEET NOTES FOR SPECIFIC INSTRUCTIONS. |

## GENERAL NOTES

1. ENTIRE ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE.

2. CONDUIT ROUTINGS AND DEVICE/EQUIPMENT LOCATIONS SHOWN ARE DIAGRAMMATIC ONLY, CONTRACTOR SHALL FIELD ROUTE AND LOCATE AS REQUIRED. CONDUIT ROUTINGS SHALL BE NORTH/SOUTH OR EAST/WEST.

3. ALL ELECTRICAL EQUIPMENT AND DEVICES SHALL BE PROVIDED WITH SUITABLE PHENOLIC NAMEPLATES. ATTACHED WITH S.S. SCREWS OR POP RIVETS.

4. THE CONDUIT MATERIAL SHALL BE AS FOLLOWS:
   - A) BELOW GRADE – RIGID NON-METALLIC. (POWER ONLY) – 3/4" MINIMUM.
   - B) RISER FROM 36" BELOW GRADE – RIGID GALVANIZED STEEL.
   - C) CONCEALED RISER FROM 36" BELOW GRADE – RIGID NON-METALLIC. (POWER ONLY)
   - D) ABOVE GRADE SUBJECT TO PHYSICAL ABUSE – RIGID GALVANIZED STEEL OR INTERMEDIATE.
   - E) ABOVE GRADE NOT SUBJECT TO PHYSICAL ABUSE OR WEATHER – EMT.
   - F) INDOORS NOT SUBJECT TO PHYSICAL ABUSE – ELECTRICAL METALLIC TUBING.

5. ALL CONDUITS NOT LOCATED UNDER SLAB SHALL HAVE A MINIMUM BURIAL DEPTH OF 36" UNLESS NOTED OTHERWISE.

6. ALL SAFETY SWITCH DISCONNECTS LOCATIONS IN SHALL HAVE 3'-0" MIN. OF WORKING SPACE IN FRONT OF DISCONNECT.

7. FINAL CONDUIT CONNECTIONS TO EQUIPMENT SHALL BE FLEXIBLE METAL (LIQUID TIGHT IN FLAMMABLE, OUTSIDE AND OTHER DAMP AND WET LOCATIONS) UNLESS NOTED OTHERWISE IN EQUIPMENT CUTSHEETS.

8. CONDUITS LEAVING OR ENTERING BUILDING SHALL BE SEALED PER N.E.C. TO PREVENT ENTRANCE OF MOISTURE.

9. ALL DIMENSIONS TO DEVICES AFF SHALL BE TO CENTERLINE UNLESS NOTED OTHERWISE.

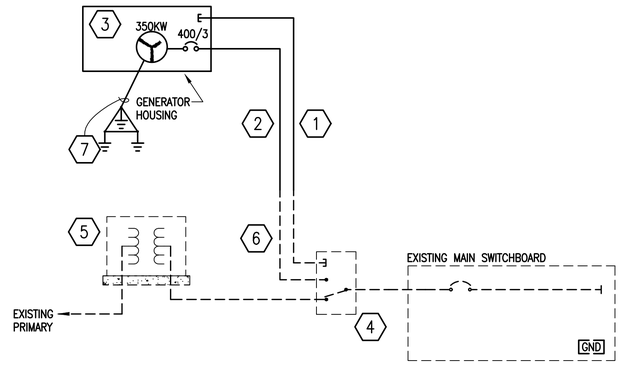
10. WORKING SPACE OF 36" FOR 120/208 SYSTEMS AND 42" FOR 277/480 SYSTEMS SHALL BE MAINTAINED IN FRONT OF ALL ELECTRICAL PANELS AND DEVICES.

11. ALL SIDEWALKS AND PARKING LOT ASPHALT AREAS THAT ARE CUT DUE TO NEW ELECTRICAL SERVICES SHALL BE REPAIRED.

12. FINAL CONNECTION TO ALL EQUIPMENT IS SHOWN DIAGRAMMATIC. PROVIDE FINAL CONNECTION AS REQUIRED PER MANUFACTURER OF EQUIPMENT.

## SINGLE LINE SHEET NOTES

1. PROVIDE NEW 1" CONDUIT UNDERGROUND, INTERCEPT AND CONNECT TO EXISTING 1" GENERATOR CONTROLS CONDUIT. PROVIDE ALL NECESSARY CONTROL WIRING AS REQUIRED.
2. PROVIDE NEW 3-1/2" CONDUIT UNDERGROUND. INTERCEPT AND CONNECT TO EXISTING 3-1/2" CONDUIT. ROUTE NEW 2 RUNS 3#300, #300 NEUTRAL, #2/0G TO EXISTING TRANSFER SWITCH.
3. NEW OWNER FURNISHED CONTRACTOR INSTALLED 350KW, 480/277V, 3ø/4W GENERATOR WITH 72 HOUR FUEL TANK. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT TO UNLOAD GENERATOR WHEN DELIVERED AND COMPLETE INSTALLATION OF THE GENERATOR.
4. EXISTING 1000A, 480V TRANSFER SWITCH TO REMAIN.
5. EXISTING PADMOUNT TRANSFORMER TO REMAIN.
6. EXISTING 3-1/2" CONDUIT FROM EXISTING TRANSFER SWITCH TO REMAIN.
7. #3/0 GROUND TO THREE 10' GROUND RODS ON 10' CENTERS IN EQUILATERAL DELTA ARRANGEMENT.




2 SINGLE LINE DIAGRAM
SCHEMATIC

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FLORIDA LICENSE NUMBER 56882
SCG project: 2014-188

SEAL

REVISION DESCRIPTION

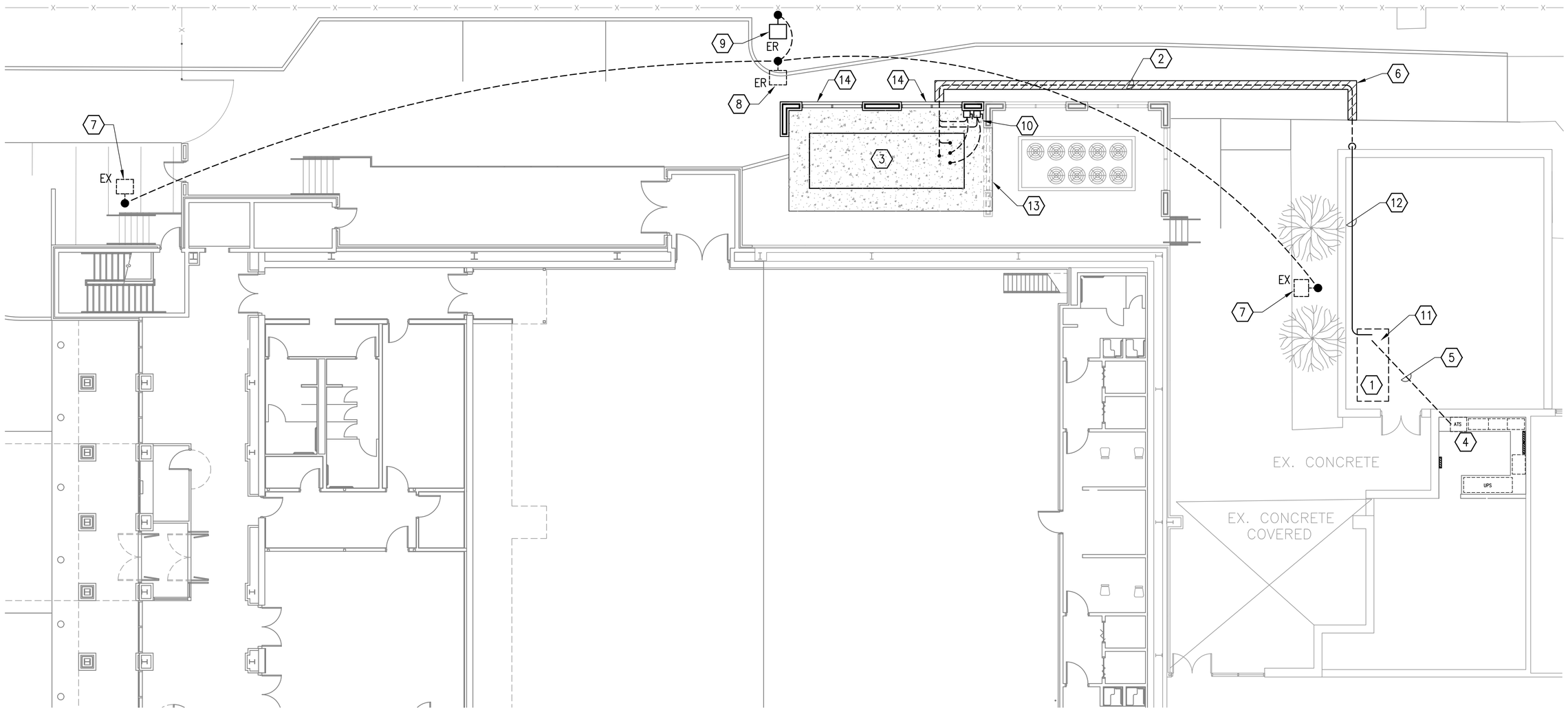
REVISION NUMBER

GENERATOR SYSTEM MODIFICATIONS WSRE TV
PENSACOLA STATE COLLEGE

DESIGNED BY: T. NICHOLSON
DRAWN BY: J. HAYES
CHECKED BY: T. NICHOLSON
DATE: MARCH 11, 2015

SHEET TITLE: ELECTRICAL LEGEND, GENERAL NOTES, SINGLE LINE DIAGRAM

SHEET: E001




1 ELECTRICAL SITE PLAN

PROJECT NORTH

8' 0' 8' 16'

SCALE: 1/8"=1'-0"

## SHEET NOTES

1. EXISTING GENERATOR TO BE DEMOLISHED IN ITS ENTIRETY. REMOVE EXISTING FEEDER BACK TO TRANSFER SWITCH. EXISTING 3-1/2" CONDUIT TO REMAIN IN PLACE FOR REUSE. EXISTING 3/4" CONDUITS FOR BATTERY CHARGER, BLOCK HEATER AND 1" CONDUIT FOR CONTROL CIRCUITS TO REMAIN IN PLACE FOR REUSE.
2. PROVIDE TWO (2) NEW 3/4" CONDUITS FOR BATTERY CHARGER AND BLOCK HEATER CIRCUITS. PROVIDE NEW 1" CONDUIT FOR CONTROLS CIRCUIT. PROVIDE NEW 3-1/2" CONDUIT UNDERGROUND. INTERCEPT AND CONNECT TO EXISTING 3-1/2" CONDUIT. PROVIDE NEW FEEDER TO EXISTING TRANSFER SWITCH. SEE SINGLE LINE DIAGRAM FOR REQUIREMENTS.
3. NEW OWNER FURNISHED CONTRACTOR INSTALLED 350KW, 480/277V, 3Ø/4W GENERATOR WITH 72 HOUR FUEL TANK. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY EQUIPMENT TO UNLOAD GENERATOR WHEN DELIVERED AND COMPLETE INSTALLATION OF THE GENERATOR.
4. EXISTING 1000A, 480V TRANSFER SWITCH TO REMAIN.
5. EXISTING 3-1/2" CONDUIT AND 1" CONDUIT FROM EXISTING TRANSFER SWITCH TO REMAIN.
6. CUT AND PATCH EXISTING ASPHALT DRIVEWAY TO RUN NEW CONDUITS FOR GENERATOR.
7. EXISTING POLE MOUNTED LIGHTING TO FIXTURE TO REMAIN. MAINTAIN EXISTING CIRCUIT.
8. EXISTING POLE MOUNTED LIGHTING FIXTURE TO BE RELOCATED. SEE NEW LOCATION THIS SHEET.
9. NEW LOCATION FOR RELOCATED POLE MOUNTED LIGHTING FIXTURE. INTERCEPT EXISTING 1" CONDUITS FOR EXISTING CIRCUIT AT THE CURRENT LOCATION OF THE FIXTURE TO BE RELOCATED AND EXTEND TO THE NEW LOCATION. REMOVE EXISTING CIRCUIT AND PROVIDE 2#8,#10G IN NEW AND EXISTING CONDUITS FROM THE NEW FIXTURE LOCATION TO THE EXISTING POLE MOUNTED FIXTURES TO REMAIN.
10. PROVIDE NEW 30/1 NEMA 3R DISCONNECT FOR BLOCK HEATER AND NEW 30/1 NEMA 3R DISCONNECT FOR BATTERY CHARGER. CONNECT CIRCUITS TO NEW GENERATOR EQUIPOMENT.
11. PROVIDE NEMA 3R JUNCTION BOXES FOR EACH OF THE FOLLOWING TO ALLOW FOR CONNECTION TO EXISTING CONDUITS OR CIRCUITS: NEW GENERATOR FEEDER, NEW BATTERY CHARGER, NEW BLOCK HEATER, GENERATOR CONTROLS CIRCUITS. NEW JUNCTION BOXES SHALL BE LOCATED AT LOCATIONS OF EXISTING CONDUITS STUBBED UP AT EXISTING GENERATOR LOCATION AND SHALL BE SIZED AS REQUIRED. EXISTING BATTERY CHARGER AND BLOCK HEATER CIRCUITS (2#10,#10G) SHALL BE CONNECTED TO EXISTING CIRCUITS IN NEW JUNCTION BOXES AND EXTENDED TO NEW EQUIPMENT. PROVIDE ALL NECESSARY GENERATOR CONTROL WIRING BETWEEN TRANSFER SWITCH AND GENERATOR AS REQUIRED.
12. ROUTE NEW CONDUITS ABOVE EXISTING CONCRETE SLAB.
13. REMOVE PORTION OF EXISTING BRICK AND 8" REINFORCED CONCRETE WALL. CHIP AROUND VERTICAL REINFORCING AT THE SLAB 1 ½" DEEP, BURN OFF BARS, SEAL WITH EPOXY GROUT.
14. PROVIDE NEW LOUVER TO MATCH EXISTING SIZE, MATERIALS AND COLOR AS EXISTING LOUVERS.

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FLORIDA LICENSE NUMBER 56882
SCG project: 2014-188

SEAL

REVISION NUMBER

REVISION DESCRIPTION

# GENERATOR SYSTEM MODIFICATIONS WSRE TV

PENSACOLA STATE COLLEGE

DESIGNED BY: T. NICHOLSON

DRAWN BY: J. HAYES

CHECKED BY: T. NICHOLSON

DATE: MARCH 11, 2015

SHEET TITLE: ELECTRICAL SITE PLAN

SHEET: E100