INVITATION FOR BID
IFB #13-1906CD
BLACKSTONE PARK EXPANSION ELECTRICAL WORK

Manatee County, a political subdivision of the State of Florida, (hereinafter the "County") will receive sealed Bids from individuals, corporations, partnerships, and other legal entities organized under the laws of the State of Florida or authorized to conduct business in the State of Florida.

NON-MANDATORY INFORMATION CONFERENCE
In order to insure that all prospective Bidders have sufficient information and understanding of the County's needs, an Information Conference will be held on: **Thursday, August 15, 2013 at 11:00 AM** at the **Manatee County Administrative Center, Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205.**. Attendance is not mandatory, but is highly encouraged.

NOTE: **Article B.05 Inspection of Site (page 00020-2)** – All potential Contractors, it is mandatory that a site visit be performed at the location to familiarize yourselves with the full scope of the construction site.

DEADLINE FOR CLARIFICATION REQUESTS: **August 26, 2013 at 3:00 PM**
(Reference Bid Article A.06)

TIME AND DATE DUE: **September 10, 2013 at 3:00 PM**

Important Note: Lobbying is prohibited (reference Bid Article A.08).

FOR INFORMATION CONTACT:
Chris Daley-CPPB, Contract Specialist
(941) 749-3048, Fax (941) 749-3034
chris.daley@mymanatee.org
Manatee County Financial Management Department
Purchasing Division

AUTHORIZED FOR RELEASE:

Table of Contents
IFB #13-1906CD

SECTION 00010

INFORMATION TO BIDDERS

A.01 OPENING LOCATION

Sealed Bids will be **publicly opened** at **Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, Florida 34205** in the presence of County officials at the time and date stated, or soon thereafter. All Bidders or their representatives are invited to be present.

Any Bids received after the stated time and date will not be considered. It shall be the sole responsibility of the Bidder to have their Bid delivered to the Manatee County Purchasing Division for receipt on or before the stated time and date. If a Bid is sent by U.S. Mail, the Bidder shall be responsible for its timely delivery to the Purchasing Division. Bids delayed by mail shall not be considered, shall not be opened at the public opening, and arrangements shall be made for their return at the respondent's request and expense.

A.02 SEALED & MARKED

One original and two copies of your **signed Bid** shall be submitted in one **sealed** package, clearly marked on the outside **"Sealed Bid #13-1906CD- Blackstone Park Expansion Electrical Work"** with your company name.

Address package to: Manatee County Purchasing Division
1112 Manatee Avenue West, Suite 803
Bradenton, Florida 34205

A.03 SECURING OF DOCUMENTS

Complete individual copies of the Bidding documents for the project and/or products can be obtained, free of charge, at the Manatee County Property Management Department, 1112 Manatee Avenue West, Suite 868 , Bradenton, FL 34205; (941) 748-4501, extension 3097 or 3003. Documents may be obtained between the hours of 8:00 AM and 4:00 PM Monday through Friday, with the exception of holidays. Complete set of the Bidding document must be used in preparing Bids. The County assumes no responsibility for errors and misinterpretations resulting from the use of incomplete sets of Bidding documents.

A.04 BID DOCUMENTS

Bids on http://www.mymanatee.org, Bid documents and the Notices of Source Selection related to those Bids are available for download in a portable document format (.PDF) file on the Manatee County web page on the Purchasing tab under "Bids." You may view and print these files using Adobe Acrobat software. You may download a free copy of this software (Adobe) from the Owner's web page if you do not have it.

A.04 BID DOCUMENTS (Continued)

Manatee County collaborates with the Manatee Chamber of Commerce on distributing solicitations using the RFP Tool web page on the Chambers website: http://www.Manateechamber.com to post Bid documents in a portable document format (.PDF) file. This step is in addition to the posting on Manatee County Government web pages.

Manatee County may also use an internet service provider to distribute Bids. A link to that service, http://www.DemandStar.com, is provided on this web site under the Tab "DemandStar". Participation in the DemandStar system is not a requirement for doing business with Manatee County.

Note: The County posts the Notice of Source Selection seven (7) calendar days prior to the effective date of the Award.

IT IS THE RESPONSIBILITY OF EACH CONTRACTOR, PRIOR TO SUBMITTING THEIR BID, TO CONTACT THE MANATEE COUNTY PURCHASING DIVISION (see contact information on page one of this document) TO DETERMINE IF ADDENDA WERE ISSUED AND TO MAKE SUCH ADDENDA A PART OF THEIR BID .

A.05 MODIFICATION OF BID SPECIFICATIONS

If a Bidder wishes to recommend changes to the Bid specifications, the Bidder shall furnish in writing, data and information necessary to aid the Owner in evaluating the request to modify the specifications. The Owner is not obligated to make any changes to the Bid specifications. Unless an addendum is issued, the Bid specifications shall remain unaltered. **Bidders must fully comply with the Bid specifications, terms, and conditions.**

A.06 DEADLINE FOR CLARIFICATION REQUESTS

August 26, 2013 at 3:00 PM shall be the deadline to submit all inquiries, suggestions, or requests concerning interpretation, clarification or additional information pertaining to the Invitation for Bids to the Manatee County Purchasing Division.

This deadline has been established to maintain fair treatment for all potential Bidders, while maintaining the expedited nature of the Economic Stimulus that the contracting of this Work may achieve.

A.07 CLARIFICATION & ADDENDA

Each Bidder shall examine all Invitation for Bid documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries, suggestions or requests concerning interpretation, clarification or additional information pertaining to the Invitation for Bids shall be made through the Manatee County Purchasing Division. The County shall not be responsible for oral interpretations given by any County employee, representative, or others. The

A.07 CLARIFICATION & ADDENDA (Continued)

issuance of a written addendum is the only official method whereby interpretation, clarification or additional information can be given.

If any addenda are issued to this Invitation for Bid, the County will broadcast the addenda on the DemandStar distribution system to "Planholders" on this web service, and post the documents on the Purchasing Division's web page at http://www.mymanatee.org which can be accessed by clicking on the "Purchasing" button and then clicking on the "Bids" button. It shall be the responsibility of each Bidder, prior to submitting their Bid, to contact Manatee County Purchasing (see contact on page 1) to determine if addenda were issued and to make such addenda a part of their Bid.

A.08 LOBBYING

After the issuance of any Invitation for Bid, prospective Bidders, or any agent, representative or person acting at the request of such Bidder shall not contact, communicate with or discuss any matter relating in any way to the Invitation for Bid with any officer, agent or employee of Manatee County other than the Purchasing Official or as directed in the Invitation for Bid. This prohibition includes the act of carbon copying officers, agents or employees of Manatee County on email correspondence. This requirement begins with the issuance of an Invitation for Bid, and ends upon execution of the final Contract or when the invitation has been canceled. Violators of this prohibition shall be subject to sanctions as provided in the Manatee County Purchasing Code of Law Chapter 2-26.

A.09 UNBALANCED BIDDING PROHIBITED

Manatee County recognizes that large and/or complex projects will often result in a variety of methods, sources, and prices. However, where in the opinion of the County such variation does not appear to be justified, given Bid specifications and industry and market conditions, the Bid will be presumed to be unbalanced. Examples of unbalanced Bids will include:

1. Bids showing omissions, alterations of form, additions not specified or required conditional or unauthorized alternate Bids.

2. Bids quoting prices that substantially deviate, either higher or lower, from those included in the Bids of competitive Bidders for the same line item unit costs.

3. Bids where the unit costs offered are in excess of or below reasonable cost analysis values.

A.09 UNBALANCED BIDDING PROHIBITED (Continued)

In the event the County determines that a Bid is presumed unbalanced, it will request the opportunity to, and reserves the right to, review all source quotes, Bids, price lists, letters of intent, etc., which the Bidder obtained and upon which the Bidder relied upon to develop the Bid. The County reserves the right to reject as non-responsive any presumptive unbalanced Bids where the Bidder is unable to demonstrate the validity and/or necessity of the unbalanced unit costs.

A.10 FRONT END LOADING OF BID PRICING PROHIBITED

Prices offered for performance and/or acquisition activities to occur early in the project schedule, such as mobilization; clearing and grubbing; or maintenance of traffic; that are substantially higher than pricing of competitive Bidders within the same portion of the project schedule, will be presumed to be front end loaded. Front end loaded Bids could reasonably appear to be an attempt to obtain unjustified early payments creating a risk of insufficient incentive for the Contractor to complete the Work or otherwise creating an appearance of an under-capitalized Bidder.

In the event the County determines that a Bid is presumed to be front end loaded, it will request the opportunity to, and reserves the right to, review all source quotes, Bids, price lists, letters of intent, etc., which the Bidder obtained and upon which the Bidder relied upon to develop the pricing or acquisition timing for these Bid items. The County reserves the right to reject as non-responsive any presumptive front end loaded Bids where the Bidder is unable to demonstrate the validity and/or necessity of the front end loaded costs.

A.11 WITHDRAWAL OF OFFERS

Contractors may withdraw offers as follows: a) Mistakes discovered before the opening of a solicitation may be withdrawn by written notice from the Bidder submitting the offer. This request must be received in the office designated for receipt of offers in the solicitation document prior to the time set for delivery and opening of the offers. A copy of the request shall be retained and the unopened offer returned to that Contractor. b) After the responses to a solicitation are opened or a selection has been determined, but before a Contract is signed, a Contractor alleging a material mistake of fact may be permitted to withdraw their offer if: (1) the mistake is clearly evident on the solicitation document; or (2) the Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made. Request to withdraw an offer must be in writing and approved by the Purchasing Official.

A.12 IRREVOCABLE OFFER

Any Bid may be withdrawn up until the date and time set for opening of the Bid. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of ninety (90) days to sell to Manatee County the goods or services set forth in the attached specifications until one or more of the Bids have been duly accepted by the County.

A.13 BID EXPENSES

All expenses for making Bids to the County are to be borne by the Bidder.

A.14 RESERVED RIGHTS

The County reserves the right to accept or reject any and/or all Bids, to waive irregularities and technicalities, and to request resubmission. Also, the County reserves the right to accept all or any part of the Bid and to increase or decrease quantities to meet additional or reduced requirements of the County. Any sole response received by the first submission date may or may not be rejected by the County depending on available competition and current needs of the County. For all items combined, the Bid of the lowest responsive, responsible Bidder will be accepted, unless all Bids are rejected. The lowest responsible Bidder shall mean **that Bidder who makes the lowest Bid to sell goods and/or services of a quality which** meets or exceeds the quality of goods and/or services set forth in the attached specifications or otherwise required by the County, and who is fit and capable to perform the Bid as made.

To be responsive, a Bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the Invitation for Bid. To be a responsible Bidder, the Bidder shall have the capability in all respects to perform fully the Contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance. Also, the County reserves the right to make such investigation as it deems necessary to determine the ability of any Bidder to furnish the service requested. Information the County deems necessary to make this determination shall be provided by the Bidder. Such information may include, but shall not be limited to current financial statements, verification of availability of equipment and personnel, and past performance records.

A.15 APPLICABLE LAWS

Bidder must be authorized to transact business in the State of Florida. All applicable laws and regulations of the State of Florida and ordinances and regulations of Manatee County will apply to any resulting Agreement. Any involvement with any Manatee County procurement shall be in accordance with Manatee County Purchasing Ordinance as amended. Any actual or prospective Bidder who is aggrieved in connection with the solicitation or award of a Contract may protest to the Board of County Commissioners of Manatee County as required in Manatee County Code of Laws.

A.16 COLLUSION

By offering a submission to this Invitation for Bid, the Bidder certifies that he has not divulged, discussed or compared their Bid with other Bidder, and has not colluded with any other Bidder or parties to this Bid whatsoever. Also, Bidder certifies, and in the case of a joint Bid each party thereto certifies as to their own organization, that in connection with this Bid:

A.16 COLLUSION (Continued)

a. any prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other Bidder or with any competitor;

b. any prices and/or cost data quoted for this Bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder, prior to the scheduled opening, directly or indirectly to any other Bidder or to any competitor;

c. no attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition;

d. the only person or persons interested in this Bid, principal or principals is/are named therein and that no person other than therein mentioned has any interest in this Bid or in the Contract to be entered into; and

e. no person or agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding or a commission, percentage, brokerage, or contingent fee excepting bona fide employees or established commercial agencies maintained by Bidder for purpose of doing business.

A.17 CODE OF ETHICS

With respect to this Bid, if any Bidder violates, directly or indirectly, the ethics provisions of the Manatee County Purchasing Ordinance and/or Florida criminal or civil laws related to public procurement, including but not limited to Florida Statutes Chapter 112, Part II, Code of Ethics for Public Officers and Employees, such Bidder will be disqualified from eligibility to perform the Work described in this Invitation for Bid, and may also be disqualified from furnishing future goods or services to, and from submitting any future Bids to supply goods or services to, Manatee County.

By submitting a Bid, the Bidder represents to the County that all statements made and materials submitted are truthful, with no relevant facts withheld. If a Bidder is determined to have been untruthful in its Bid or any related presentation, such Bidder will be disqualified from eligibility to perform the Work described in this Invitation for Bid, and may also be disqualified from furnishing future goods or services to, and from submitting any future Bids to supply goods or services to, Manatee County.

A.18 BID FORMS

Bids must be submitted on attached County forms, although additional pages may be attached. **Bidders must fully complete all pages of the Bid Forms. Bid Forms must be executed by an authorized signatory who has the legal authority to make the offer and bind the company. Bidders must fully comply with all Bid specifications, terms and conditions.** Failure to comply shall result in Contract default, whereupon, the defaulting Contractor shall be required to pay for any and all re-procurement costs, damages, and attorney fees as incurred by the County.

A.19 LEGAL NAME

Bids shall clearly indicate the legal name, address and telephone number of the Bidder. Bids shall be signed above the typed or printed name and title of the signer. The signer must have the authority to bind the Bidder to the submitted Bid.

A.20 PUBLIC CONTRACTING AND ENVIRONMENTAL CRIMES

A person or affiliate who has been placed on the State's convicted vendor list following a conviction for a public entity crime, as that term is defined in Florida Statute (F.S.) § 287.133, may not submit a Bid, Proposal, or reply on a Contract to provide any goods or services to a public entity; may not submit a Bid, Proposal, or reply on a Contract with a public entity for the construction or repair of a public building or public work; may not submit Bids, Proposals or replies 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 F.S. § 287.017 for CATEGORY TWO for a period of thirty-six (36) months following the date of being placed on the convicted list.

In addition, the Manatee County Code of Laws prohibits the award of any Contract to any person or entity who/which has, within the past five (5) years, been convicted of, or admitted to in court or sworn to under oath, a public entity crime or of any environmental law that, in the reasonable opinion of the Purchasing Official, establishes reasonable grounds to believe the person or business entity will not conduct business in a responsible matter. To insure compliance with the foregoing, the Code requires all persons or entities desiring to Contract with the County to execute and file with the Purchasing Official an affidavit, executed under the pain and penalties of perjury, confirming that person, entity and any person(s) affiliated with the entity, does not have such a record and is therefore eligible to seek and be awarded business with the County. In the case of a business entity other than a partnership or a corporation, such affidavit shall be executed by an authorized agent of the entity. In the case of a partnership, such affidavit shall be executed by the general partner(s). A Public Contracting and Environmental Crimes Certification form is attached for this purpose.

A.21 DISCOUNTS

Any and all discounts must be incorporated in the prices contained in the Bid and not shown separately. The prices as shown on the Bid Form shall be the price used in determining Award.

A.22 TAXES

Manatee County is exempt from Federal Excise and State Sales Taxes. (F.E.T. Exempt Cert. No. 59-78-0089K; FL Sales Tax Exempt Cert. No. 85-8012622206C-6); therefore, the Contractor is prohibited from delineating a separate line item in his Bid for any sales or service taxes. Nothing herein shall affect the Contractor's normal tax liability.

A.23 DESCRIPTIVE INFORMATION

Unless otherwise specifically provided in the specifications, all equipment, materials and articles incorporated in the Work covered by this Contract shall be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in the specifications, reference to any equipment, material, article or patented process, by trade name, brand name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition.

A.24 AMERICANS WITH DISABILITIES ACT

The Board of County Commissioners of Manatee County, Florida, does not discriminate upon the basis of any individual's disability status. This non-discrimination policy involves every aspect of the County's functions including one's access to, participation, employment, or treatment in its programs or activities. Anyone requiring reasonable accommodation for an **Information Conference** or **Bid Opening** should contact the person named on the first page of this Bid document at least twenty-four (24) hours in advance of either activity.

A.25 EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

In accordance with the provisions of Title VI of the Civil Rights Act of 1964 and Title 15, Part 8 of the Code of Federal Regulations, Manatee County hereby notifies all prospective offerors that they will affirmatively ensure minority business enterprises will be afforded full opportunity to participate in response to this advertisement and will not be discriminated against on the grounds of race, color or national origin in consideration for an Award of Contract.

A.26 MBE/WBE

The State of Florida, **Office of Supplier Diversity** provides the certification process and the database for identifying certified MBE/WBE firms. This service may be directly accessed at: http://www.osd.dms.state.fl.us/iframe.htm

If you have any questions regarding this State service, please contact their office at (850) 487-0915.

A.27 MATHEMATICAL ERRORS

In the event of multiplication/extension error(s), the unit price shall prevail. In the event of addition error(s) the extension totals will prevail. All Bids shall be reviewed mathematically and corrected, if necessary, using these standards, prior to additional evaluation.

A.28 DISCLOSURE

Upon receipt, all inquiries and responses to inquiries related to this Invitation for Bid becomes "Public Records", and shall be subject to public disclosure consistent with Chapter 119, Florida Statues.

Bids become subject to disclosure thirty (30) days after the opening or if a notice of intended Award decision is made earlier than this time as provided by F.S. 119.071(1)(b). No announcement or review of the offer shall be conducted at the public opening.

Based on the above, the County will receive Bids at the date and time stated, and will make public at the opening the names of the business entities of all that submitted an offer and any amount presented as a total offer without any verification of the mathematics or the completeness of the offer.

If the County rejects all Bids and concurrently notices its intent to reissue the solicitation, the rejected Bids are exempt from public disclosure until such time as the County provides notice of an intended decision concerning the reissued solicitation or until the County withdraws the reissued solicitation. A Bid is not exempt for longer than 12 months after the initial notice rejecting all Bids.

NOTE: ANY OR ALL STATEMENTS CONTAINED IN THE FOLLOWING SECTIONS: BASIS OF AWARD, TERMS AND CONDITIONS OF THE CONTRACT, OR SPECIFICATIONS, WHICH VARY FROM THE INFORMATION TO BIDDERS, SHALL HAVE PRECEDENCE.

END OF SECTION A

SECTION 00020

BASIS OF AWARD

B.01 BASIS OF AWARD

Award shall be to the lowest, responsive, responsible Bidder meeting specifications and having the lowest Total Bid Price for **Bid "A** for the requirements listed on the Bid Form for the Work as set forth in this Invitation for Bid. Bid prices shall include costs for furnishing all labor, equipment and/or materials for the completion of the Work in accordance with and in the manner set forth and described in the Contract documents to the County's satisfaction within the prescribed time.

Only one schedule for Completion of the Work shall be considered. Only one Award shall be made.

NOTE: Inspection of the site is a pre-requisite to be considered for award of this Bid.

In evaluating Bids, the County shall consider the qualifications of the Bidders; and if required, may also consider the qualifications of the Subcontractors, Suppliers, and other persons and organizations proposed. County may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work.

Whenever two or more Bids are equal with respect to price, the Bid received from a local business shall be given preference in Award. Whenever two or more Bids which are equal with respect to price are received, and neither of these Bids are from a local business, the Award shall be determined by a chance drawing, coin toss, or similar tie-breaking method conducted by the Purchasing Division and open to the public.

B.02 SUBCONTRACTORS

Subcontractors shall be bound by the terms and conditions of this Contract insofar as it applies to their work, but this shall not relieve the prime Contractor from the full responsibility of the County for the proper completion of all Work to be executed under this Contract.

The employment of unauthorized aliens by any Contractor is considered a violation of Section 274 (e) of the Immigration and Employment Act. If the Contractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this Agreement.

B.03 QUALIFICATIONS OF BIDDERS

No person who is not certified or registered as a Electrical Contractor pursuant to Florida Statutes, Chapter 489 on the day the Bid is submitted, and who has continuously held that certification or registration for a period of at least three (3) consecutive years immediately prior to the day the Bid is submitted, may be qualified to bid on this project. In the event that a Bidder is a business organization, including a partnership, corporation, business trust or other legal entity as set forth in F.S. 489.119(2), then the Bidder shall only be qualified to bid on this project if: 1) the Bidder (the business organization) is on the day the Bid is submitted, and for at least three (3) consecutive years immediately prior to the day the Bid is submitted has been, in continuous existence, properly licensed and registered as required by Florida law; and 2) the Bidder, on the day the Bid is submitted, has a certified or registered Qualifying Agent, as required by F.S. 489.119, and that Qualifying Agent has been the same Qualifying Agent of the Bidder for a period of at least three (3) consecutive years immediately prior to the day the Bid is submitted.

A complete list of all Subcontractors proposed for any portion of the Work may be requested of any Bidder deemed necessary by the County. Subcontracts shall be awarded only to those Subcontractors considered satisfactory by the County.

B.04 PREPARATION OF CONTRACT

A written notice confirming Award or recommendation thereof will be forwarded to the successful Bidder accompanied by the required number of unsigned counterparts of the Agreement. Within ten (10) days thereafter, successful Bidder shall sign and deliver the required number of counterparts of the Agreement with any other required documents to County. (Note: Contract must be approved in accordance with the Manatee County Code of Laws, Chapter 2-26, and the Administrative Standards and Procedures Manual approved by the County Administrator).

B.05 INSPECTION OF SITE

Inspection of the site is a requirement to be considered for award of this Bid. Prior to submitting a Bid, each Bidder shall examine the site and all conditions thereon fully familiarizing themselves with the full scope of the project. Failure to become familiar with site conditions will in no way relieve the successful Bidder from the necessity of furnishing any materials or performing any Work that is required to complete the project in accordance with the plans and specifications. Site visit (s) shall be acknowledged in Section 00300, Bid Form page # 00300-1.

END OF SECTION B

SECTION 00030

GENERAL TERMS AND CONDITIONS OF THE CONTRACT

C.01 CONTRACT FORMS

The Agreement resulting from the acceptance of a Bid shall be in the form of the Agreement stated in this Bid.

C.02 ASSIGNMENT OF CONTRACT

Contractor shall not assign, transfer, convey, sublet or otherwise dispose of this Contract or of his right, title, or interest therein, or his power to execute such Contract, or to assign any monies due or to become due there under to any other person, firm or corporation unless first obtaining the written consent of the County. The giving of such consent to a particular Subcontractor assignment shall not dispense with the necessity of such consent to any further or other assignment.

C.03 COMPLETION OF WORK

The Work will be completed and ready for final inspection within the specified calendar days from the date the Contract time commences to run. Only one Bid shall be considered based on **120 calendar days**. Only one Award shall be made.

C.04 LIQUIDATED DAMAGES

If the Contractor refuses or fails to prosecute the Work, or any separable part thereof, with such diligence as will hinder its completion within the time specified, the County may seek damages. The actual damages for delay will be impossible to determine and in lieu thereof, the Contractor shall pay to the County the sum of **$388** as fixed, agreed, and liquidated damages for each calendar day of the delay until the Work is finally accepted by the County and the Contractor and his Surety shall be liable for the amount thereof.

C.05 PAYMENT

Contractor may apply for partial payment on monthly estimates, based on the amount of work done or completed in compliance with the provisions of the Contract. Contractor shall submit an application, on a standard pay application form provided or approved by the County, of an approximate estimate of the proportionate value of the Work done, items and locations of the Work performed up to and including the last day of the period then ending. The County will then review said estimate and make any necessary revisions so that the estimate can receive approval for payment. If the Contractor and the County do not agree on the approximate estimate of the proportionate value of the Work done for any pay period, the determination of the County will be binding. The amount of said estimate after deducting any required retainage and all previous payments shall be due and payable to the Contractor, twenty (20) business days if County is its own Engineer of Record (EOR) or twenty-five (25) business days if outside agent

C.05 PAYMENT (Continued)

approval is required after the pay estimate has been approved by the agent for the County.

In accordance with the Prompt Payment Act, F.S. § 218.735(7), a Punch List shall be formulated.

Time allowed for development of punch list:

1. Awarded Contracts with an estimated cost of less than $10 million will be within thirty (30) calendar days after reaching substantial completion. Substantial completion is defined as reaching beneficial occupancy or use.

2. Awarded Contracts with a cost of $10 million dollars or more will be within thirty (30) calendar days OR if extended by Contract, up to sixty (60) calendar days after reaching substantial completion. Substantial completion is defined as reaching beneficial occupancy or use.

The final Contract completion date must be at least thirty (30) days after delivery of the list of items. If the list is not provided to the awarded Contractor by the agreed upon date, the Contract completion time must be extended by the number of days the County exceeds the delivery date.

It is the Contractor's responsibility for the care of the materials. Any damage to or loss of said materials is the full responsibility of the Contractor. Any periodical pay estimate signed by the Contractor shall be final as to the Contractor for any or all Work covered by the periodical pay estimate.

Any requests for payment of materials stored on site must be accompanied with a paid receipt. The Contractor warrants and guarantees that title to all work, materials and equipment covered by any application for payment, whether incorporated in the project or not, will pass to the County at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter referred to as "Liens").

The Contractor agrees to furnish an affidavit stating that all laborers, material men, and Subcontractors have been paid on the project for Work covered by the application for payment and that a partial or complete release of lien, as may be necessary, be properly executed by the material men, laborers, Subcontractors on the project for Work covered by the application for payment, sufficient to secure the County from any claim whatsoever arising out of the aforesaid Work.

When the Contractor has completed the Work in compliance with the terms of the Contract documents, he shall notify the County in writing that the project is ready for final inspection. The County will then advise the Contractor as to the arrangements for final inspection and what Work, if any, is required to prepare the project or a portion thereof for final inspection. When the County determines the project or portion thereof is ready for final inspection, the County shall perform same. Upon completion of final inspection, the County will notify Contractor of all particulars in

C.05 PAYMENT (Continued)

which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies. When all such errors have been corrected, a final re-inspection will be made. The process will be repeated until, in the opinion of the County, the project has been completed in compliance with the terms of the Contract documents.

When final acceptance has been made by the County, the County will make final payment of the Contract amount, plus all approved additions, less approved deductions and previous payments made. The Contract will be considered complete when all Work has been finished, the final inspection made, approved as-builts received, and the project finally accepted in writing by the County. The Contractor's responsibility shall then terminate except as otherwise stated.

C.06 RETAINAGE

A retainage of 2.5% of the total Work in place shall be withheld until 75% complete. After 75% completion, the retainage shall be reduced to 1% of the total Work in place until final completion and acceptance of the Work by the County. Upon final acceptance, the remaining retainage shall be included in the final payment.

C.07 WARRANTY AND GUARANTEE PROVISIONS

All work, materials, and equipment furnished as defined herein shall be guaranteed and warranted by the Contractor for a minimum period of three (3) years, unless otherwise specified, from final acceptance by the County to be free from defects due either to faulty materials or equipment or faulty workmanship.

All materials, equipment, and workmanship furnished and installed by the Contractor is warranted and guaranteed by the Contractor to meet the required standards and to accomplish the purposes and functions of the project as defined, detailed, and specified herein.

The County shall, following discovery thereof, promptly give written notice to the Contractor of faulty materials, equipment, or workmanship within the period of the guarantee and the Contractor shall promptly replace any part of the faulty equipment, material, or workmanship at his own cost. These warranty and guarantee provisions create no limitations on the County as to any claims or actions for breach of guaranty or breach of warranty that the County might have against parties other than the Contractor, and do not constitute exclusive remedies of the County against the Contractor.

C.08 ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees for equipment or processes in conjunction with the equipment and/or services being furnished. Contractor shall defend all suits or claims for infringement of any patent, trademark or copyright, and shall save the County harmless from loss on account thereof, including costs and attorney's fees.

C.09 AUTHORIZED PRODUCT REPRESENTATION

The Contractor, by virtue of submitting the name and specifications of a manufacturer's product, will be required to furnish the named manufacturer's product. Failure to perform accordingly may, in the County's sole discretion, be deemed a breach of Contract, and shall constitute grounds for the County's immediate termination of the Contract.

C.10 REGULATIONS

It shall be the responsibility of the Bidder to assure compliance with any OSHA, EPA and/or other federal or State of Florida rules, regulations or other requirements, as each may apply.

C.11 CANCELLATION

Any failure of the Contractor to furnish or perform the Work (including, but not limited to, commencement of the Work, failure to supply sufficient skilled workers or suitable materials or equipment) in accordance with the Contract, the County may order the stop of the Work, or any portion thereof, until the cause for such order has been eliminated. If the Contractor persistently fails to perform the Work in accordance with the Contract, the County reserves the right to terminate the Contract and select the next qualified Bidder or re-advertise this procurement in part or in whole. The County reserves the right to cancel all or any undelivered or unexecuted portion of this Contract with or without cause.

C.12 INDEMNIFICATION

The Contractor covenants and agrees to indemnify and save harmless the County, its agents and employees, from and against all claims, suits, actions, damages, causes of action, or judgments arising out of the terms of the resulting Agreement for any personal injury, loss of life, or damage to the property sustained as a result of the performance or non-performance of services or delivery of goods; from and against any orders, judgments, or decrees, which may be entered against the County, its agents or employees; and from and against all costs, attorney's fees, expenses and other liabilities incurred in the defense of any such claim, suit or action, and the investigation thereof. Nothing in the Award, resulting Agreement, Contract or Purchase Order shall be deemed to affect the rights, privileges and immunities of the County as set forth in F.S. § 768.28.

C.13 MANUALS, SCHEMATICS, HANDBOOKS (IF APPLICABLE)

All manuals, schematics and handbooks shall be provided which are applicable to the equipment delivered. An operators manual, parts manual and technician manual must also be provided. Parts lists (manuals) must include OEM part numbers for items not manufactured by the Bidder. Contractor shall furnish two (2) copies of each.

C.14 INSURANCE

The Contractor will not commence Work under a Contract until all insurance under this section and such insurance coverage as might be required by the County has been obtained. The Contractor shall obtain, and submit to purchasing within ten (10) calendar days of request, at his expense, the following minimum amounts of insurance (inclusive of any amounts provided by an umbrella or excess policy):

a. Workers' Compensation/Employers' Liability

Part One - There shall be no maximum limit (other than as limited by the applicable statute) for liability imposed by Florida Workers' Compensation Act or any other coverage required by the Contract documents which are customarily insured under Part One of the standard Workers' Compensation Policy.

Part Two - The minimum amount of coverage required by the Contract documents which are customarily insured under Part Two of the standard Workers' Compensation Policy shall be:

(Each Accident)	$100,000
(Disease-Policy Limit)	$500,000
(Disease-Each Employee)	$100,000

b. Commercial General Liability

The limits are to be applicable only to Work performed under this Contract and shall be those that would be provided with the attachment of the Amendment of Limits of Insurance (Designated Project or Premises) endorsement (ISO Form CG 25 03) a Commercial General Liability Policy with the following minimum limits.

General Aggregate:	
Products/Completed Operations Aggregate	$1,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000
Fire Damage (Any One Fire)	$Nil
Medical Expense (Any One Person)	$Nil

ADDITIONAL INSURED: Manatee County, apolitical subdivision of the State of Florida, shall be specifically named as additional insured on the Commercial General Liability Policy.

c. Business Auto Policy

Each Occurrence Bodily Injury and Property Damage Liability Combined	$300,000
Annual Aggregate (if applicable)	$1,000,000

ADDITIONAL INSURED: Manatee County, apolitical subdivision of the State of Florida, shall be specifically named as additional insured on the Business Auto Policy.

C.14 INSURANCE (Continued)

d. County's Protective Liability Coverage

The minimum Owner's Protective OPC Policy limits per occurrence and, if subject to an aggregate, annual aggregate to be provided by the Contractor shall be the same as the amounts shown above as the minimum per occurrence and general policy aggregate limits respectively required for the Commercial General Liability coverage. The limits afforded by the OPC Policy and any excess policies shall apply only to the County and the County's officials, officers, agents and employees and only to claims arising out of or in connection with the Work under this Contract.

e. Property Insurance

If this Contract includes construction of or additions to above ground buildings or structures, Contractor shall provide "**Builder's Risk**" insurance with the minimum amount of insurance to be 100% of the value of such addition(s), building(s), or structure(s).

f. Installation Floater

If this Contract does not include construction of or additions to above ground building or structures, **but does involve** the installation of machinery or equipment, Contractor shall provide an "**Installation Floater**" with the minimum amount of insurance to be 100% of the value of such addition(s), building(s), or structure(s).

g. Certificates of Insurance and Copies of Polices

Certificates of Insurance in triplicate evidencing the insurance coverage specified herein shall be filed with the Purchasing Official before operations are begun. The required certificates of insurance shall name the types of policy, policy number, date of expiration, amount of coverage, companies affording coverage, and also shall refer specifically to the Bid number and title of the project. All insurance policies required herein shall be issued by companies that are authorized to do business under the laws of the State of Florida and hold an A.M. Best rating of A- or better. Insurance, as specified herein, shall remain in force and affect for the duration of the project including any warranty periods.

h. **Complete Policies:** The entire and complete insurance policies required herein shall be provided to the County on request.

If the initial insurance expires prior to the completion of operations and/or services by the Contractor, renewal certificates of insurance and required copies of policies shall be furnished by the Contractor and delivered to the Purchasing Official thirty (30) days prior to the date of their expiration. Nothing herein shall in any manner create any liability of the County in connection with any claim against the Contractor for labor, services, or materials, or of Subcontractors; and nothing herein shall limit the liability of the Contractor or Contractor's sureties to the County or to any workers, suppliers, material men or employees in relation to this Contract.

C.14 INSURANCE (Continued)

i. Certification Requirements – In order for the certificate of insurance to be accepted it must comply with the following:

1. The certificate holder shall be:
   Manatee County Board of Commissioners, apolitical subdivision of the State of Florida
   P.O. Box 1000
   Bradenton, FL 34206-1000

2. Certificate shall be mailed to:
   Manatee County Purchasing Division
   1112 Manatee Avenue West, Suite 803
   Bradenton, FL 34205
   Attn: Chris Daley-CPPB, Contract Specialist

C.15 BID BOND/CERTIFIED CHECK

By offering a submission to this Invitation for Bid, the Bidder agrees should the Bidder's Bid be accepted, **to execute the form of Contract and present the same to Manatee County for approval within ten (10) calendar days after notice of Intent to Award**. The Bidder further agrees that failure to execute and deliver said form of Contract **within ten (10) calendar days** will result in damages to Manatee County and as guarantee of payment of same a Bid Bond/Certified Check shall be enclosed within the submitted sealed Bid in the amount of five (5%) percent of the total amount of the Bid. The Bidder further agrees that in case the Bidder fails to enter into a Contract, as prescribed by Manatee County, the Bid Bond/Certified Check accompanying the Bid shall be forfeited to Manatee County as agreed liquidated damages. If the County enters into a Contract with a Bidder, or if the County rejects any and/or all Bids, accompanying bond will be promptly returned.

C.16 PERFORMANCE AND PAYMENT BONDS

The successful Bidder shall furnish surety bonds using the Public Construction Bond form prescribed in F.S. § 255.05, which is provided herein, as security for faithful performance of the Contract awarded as a result of this Bid and for the payment of all persons performing labor and/or furnishing material in connection therewith. Failure to provide the required bonds on the prescribed form may result in successful Bidder being deemed nonresponsive. Bonds must be in the form prescribed in F.S. § 255.05, and must not contain notice, demand or other terms and conditions, including informal pre-claim meetings, not provided for in F.S. § 255.05.

Surety of such bonds shall be in an amount equal to the Bid Award (100% each) issued by a duly authorized and nationally recognized surety company, authorized to do business in the State of Florida, satisfactory to this County. The attorney-in-fact who signs the bonds must file with the bonds, a certificate and effective dated copy of power-of-attorney. Performance and Payment Bonds shall be issued to Manatee County, a political subdivision of the State of Florida, within ten (10) calendar days after notification of Intent to Award.

C.16 PERFORMANCE AND PAYMENT BONDS (Continued)

In addition, pursuant to F.S. § 255.05(1)(b), prior to commencing Work, the Contractor shall be responsible and bear all costs associated to record the Performance and Payment Bond with the Manatee County Clerk of the Circuit Court. A certified copy of said recording shall be furnished to the Purchasing Division upon filing. Pursuant to F.S. § 255.05(1)(b), the County will make no payment to the Contractor until the Contractor has complied with this paragraph.

Furnishing of the recorded Performance and Payment Bonds shall be requisite to execution of a Contract with the County. Said Performance and Payment Bonds will remain in force for the duration of the Contract with the premiums paid by the Contractor. Failure of the successful Bidder to execute such Contract and to supply the required bonds shall be just cause for cancellation of the Award. The County may then contract with another acceptable Bidder or re-advertise this Invitation for Bid. If another Bidder is accepted, and notice given within ninety (90) days after the opening of the Bids, this acceptance shall bind the Bidder as though they were originally the successful Bidder.

Failure of the County at any time to require performance by the Contractor of any provisions set out in the Contract will in no way affect the right of the County, thereafter, to enforce those provisions.

C.17 NO DAMAGES FOR DELAY

No claim for damages or any claim other than for an extension of time shall be made or asserted against the County by reason of any delays. The Contractor shall not be entitled to an increase in the Total Contract Price or payment or compensation of any kind from the County or direct, indirect, consequential impact or other costs, expenses for damages, including but not limited to costs of acceleration or inefficiency arising because of delay, disruption, interference or hindrance from any cause whatsoever; provided, however, that this provision shall not preclude recovery or damages by the Contractor for hindrance or delays due solely to fraud, bad faith, or active interference on part of the County or its agents. Otherwise, the Contractor shall only be entitled to extensions of the Contract time as the sole and exclusive remedy for such resulting delay, in accordance with and to the extent specifically provided above.

C.18 NO INTEREST

Any monies not paid by the County when claimed to be due to the Contractor under this Contract shall not be subject to interest including prejudgment interest. Any monies not paid by the County when claimed to be due to the Contractor for damages awarded in the case of construction delays shall not be subject to prejudgment interest.

C.19 CONSTRUCTION OF CONTRACT

This Contract and the rights and responsibilities hereunder shall not be construed more strongly against either party, regardless of the extent to which such party may have participated in the preparation hereof.

C.20 BE GREEN

All Bidders are encouraged to use as many **environmentally preferable** "green" products, materials, supplies, etc. as possible in order to promote a safe and healthy environment. **Environmentally preferable are products or services that have a reduced adverse effect on the environment**. Provide detail of your organization's initiative and its ability to meet the goal of environmental sustainability.

END OF SECTION C

SECTION 00100

BID SUMMARY

D.01 THE WORK

The Work included in this Bid consists of all labor, materials, equipment and incidentals required to provide new site electrical and lighting, and to install a County supplied Sports Lighting System with security lights for the expansion of new little league ball fields and parking lot at Blackstone Park located in Palmetto, Florida.

The successful Contractor shall furnish all shop drawings, working drawings, labor, materials, equipment, tools, services and incidentals necessary to complete all Work required by these specifications.

The successful Contractor shall perform the Work complete, in place and ready for continuous service and shall include any repairs, replacements, and/or restoration required as a result of damages caused prior to acceptance by the Owner.

The successful Contractor shall furnish and install all materials, equipment and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Bid documents or not.

D.02 SUBCONTRACTORS, SUPPLIERS AND OTHERS

The identity of Subcontractors, Suppliers, and other persons and organizations (including those who are to furnish the principal items of material and equipment) may be requested by the County for each Bid item from any of the Bidders; and the Bidder shall respond within five (5) days after the date of such request. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, persons or organization if requested by County. If County, after due investigation, has reasonable objection to any proposed Subcontractor, supplier, other person or organization, County may, before the Notice of Award is given, request the apparent successful Bidder to submit an acceptable substitute without an increase in Contract price or Contract time.

D.02 SUBCONTRACTORS, SUPPLIERS AND OTHERS (Continued)

If apparent successful Bidder declines to make any such substitution, County may award the Contract to the next lowest qualified Bidder that proposes to use acceptable Subcontractors, Suppliers, and other persons who County does not make written objection to. Contractor shall not be required to employ any Subcontractor, Supplier, other person or organization who Contractor has reasonable objection to.

Subcontractors shall be bound by the terms and conditions of this Contract insofar as it applies to their work, but this shall not relieve the prime Contractor from the full responsibility to the County for the proper completion of all Work to be executed under this Contract.

D.03 BIDS

Bids are to be submitted in **triplicate, one original and two copies**, upon the County supplied forms. All blank spaces must be filled in as noted with amounts extended and totaled and no changes shall be made in the wording of the forms or in the items mentioned therein. In the event a change is made in your submittal, the Bidder shall write its initials by the change. Any Bid may be rejected which contains any omissions, alterations, irregularities of any kind, or which shall in any manner fail to conform to Bid requirements.

A Bid made by an individual, either in his/her own or proper person or under a trade or firm name, shall be executed under the individual's signature. If made by a partnership, the Bid shall be executed by two or more of the general partners. If made by a corporation, the Bid shall be executed by its President or other legally authorized corporate officer or agent.

D.04 EXAMINATION OF BID DOCUMENTS AND SITE

It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Bid documents thoroughly; (b) visit the site to become familiar with local conditions that may affect cost, progress, performance, or furnishing of the Work; (c) consider federal, state, and local codes, laws, and regulations that may affect costs, progress, performance, or furnishing of the Work; (d) study and carefully correlate Bidder's observations with the Bid documents; and (e) notify County of all conflicts, errors, or discrepancies in the Bid document.

Each Bidder may, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies, and obtain any additional information and data which pertain to the physical conditions at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine his Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Bid documents. County will provide each Bidder access to the site to conduct such explorations and tests.

D.04 EXAMINATION OF BID DOCUMENTS AND SITE (Continued)

Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by Contractor in performing the Work are identified in the Bid documents.

All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by County unless otherwise provided in the Bid documents.

D.05 MATERIALS AND WORKMANSHIP

All materials and apparatus required for this Work, except as specified otherwise, shall be new, of first class quality, and shall be furnished, delivered, connected and finished in every detail. Construction shall be prescribed by good industry practice and in accordance with manufacturer's recommendations for the type being installed.

Use skilled workman trained and experienced in the necessary trades and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this section.

D.06 REGULATIONS AND MATERIAL DISPOSAL

It shall be the responsibility of the Contractor to assure compliance with any OSHA, EPA, federal, state, and/or local rules, regulations or other requirements as each may apply.

D.07 PROJECT CLOSE-OUT

Clean construction site and remove any and all excess materials. Correct any damages to property that may have occurred as a result of installation and/or delivery. Repair and patch all surfaces cut for installation. The Contractor shall remedy any deficiencies promptly should the County determine any Work is incomplete or defective.

When the County determines the Work is acceptable in accordance with this Invitation for Bid, the Contractor shall provide the close out submittals, including but not necessarily limited to the following:

1 set	Certificate of Warranties	
1 set	Manufacturer's Product Literature	(when applicable)
1 set	Project Record Drawings	
1 set	Subcontractor Information	(when applicable)

D.08 DISCRETIONARY WORK

This Bid item entails minor increases (that may be directed by staff) to existing Bid item quantities or minor modification items not bid which were unforeseen and necessary during the construction to provide a safe, complete project in accordance with Bid documents. (This will not affect the requirement for change orders involving major modifications to the project.) Payment for all Work under this item shall be made only at the County's discretion in order to satisfactorily complete the project. In general, this item is for unanticipated conflicts and/or design changes required during construction which are necessary to complete the project without changing the initial Scope of Work and without costly delays.

D.09 PROGRESS REQUIREMENTS

All Work done under this Contract shall be done with a minimum of inconvenience to the private property owners in the area. The Contractor shall coordinate his Work with private property owners such that existing utility services are maintained and they have access to their property at all times.

END OF SECTION D

SECTION 00150

MANATEE COUNTY LOCAL PREFERENCE LAW AND VENDOR REGISTRATION

E.01 Vendor Registration

All vendors are encouraged to register with Manatee County using the on-line "Vendor Registration" web page on www.mymanatee.org.

Enclosed are a copy of the current Manatee County law that details the County's Local Preference and the County's definition of a local business.

If you assert that your firm meets the stated definition of a local business, we ask that in addition to registering on the County's web page, you fill out the attached "**Affidavit As To Local Business Form"** that is included in this section, have the completed document notarized, and mail the original to the following address: Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205.

Your cooperation in registering your business with Manatee County will enhance our opportunities to identify sources for goods and services, plus identify local businesses. This information is used for soliciting quotations up to $250,000.00 and for competitive solicitations of larger purchases.

You will note that Manatee County collaborates with the Manatee Chamber of Commerce, posting Bids on www.manateechamber.com as well as using the same vendor categories for registration.

Our staff can assist you with your registration as needed. Our office hours are 8:00 A.M. to 5:00 P.M., Monday through Friday on regular business days. Please call (941) 749-3014 if you wish to have a Purchasing staff member assist you.

Quick steps to registration: **www.mymanatee.org**

A link to "Purchasing" is listed under "Quick Links" on page one of the County web site.

On the left hand side of the Purchasing web page, click on "Vendor Registration".

This will bring up the Vendor Registration form for on-line input. Please note that the definition of a "local business" changed on March 17, 2009. The web page will be updated to include the current law which has been provided in this section of the Bid.

Thank you for reviewing this information and considering registering your business with Manatee County. Registration is not mandatory; however, by taking the time to register, you are helping the County to provide timely notifications of Quotation, Bid and Proposal opportunities to your business.

E.02 Section 2-26-6. Local preference, tie Bids, **local business defined.**

a) Whenever a responsible local business Bidder and a responsible non-local business Bidder are found, upon the opening of Bids, to have both submitted the lowest responsive Bid, the Bid of the local Bidder shall be awarded the Contract. Should more than one responsible local business Bidder match the responsible non-local business Bidder's lowest responsive Bid, or should no responsible local business Bidder match the lowest responsive Bid but two or more responsible non-local business Bidders submit lowest responsive Bids for equal amounts, then the Award of the Contract shall be determined by a chance drawing, coin toss, or similar tie-breaking method conducted by the Purchasing Division and open to the public. Any Bidders seeking to be recognized as local businesses for purposes of this local business preference provision may be required by the terms of the Bid announcement to certify they meet the definition of local business set forth in this section, and to register as a local business with the County in the manner prescribed by the County to facilitate the County's ability to track the Award of Contracts to local businesses and to allow the County to provide future notifications to its local businesses concerning other Bidding opportunities.

b) Nothing herein shall be deemed to prohibit the inclusion of requirements with respect to operating and maintaining a local place of business in any Invitation for Bids when the Bidder's location materially affects the provisions of the services or supplies that are required by the invitation.

c) **Local business is defined as a business legally authorized to engage in the sale of the goods and/or services to be procured, and which certifies within its Bid that for at least six (6) months prior to the announcement of the solicitation of Bids it has maintained a physical place of business in Manatee, Desoto, Hardee, Hillsborough, Pinellas or Sarasota County with at least one full-time employee at that location.**

d) **Each solicitation for Bids made by the County shall contain terms expressly describing the local business preference policies of the County, and shall provide that by electing to submit a Bid pursuant to an Invitation for Bid, all Bidders are deemed to understand and agree to those policies**.

e) For all Contracts for architecture, professional engineering, or other professional services governed by Florida Statute § 287.055, the Consultants' Competitive Negotiation Act, the County shall include the local business status of a firm among the factors considered when selecting which firms are "most highly qualified." In determining which firm is the "most qualified" for purposes of negotiating a satisfactory Contract, preference shall be given to a local business where all other relevant factors are equal.

E.02 Section 2-26-6. Local preference, tie Bids, **local business defined** (Continued)

f) Local preference shall not apply to the following categories of Contracts:

1. Goods or services provided under a cooperative purchasing agreement or similar "piggyback" contract;

2. Contracts for professional services subject to Florida Statute § 287.055, the Consultants' Competitive Negotiation Act, except as provided for in subsection (e) above;

3. Purchases or Contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and conditions of receipt of the funds prohibit the preference;

4. Purchases or Contracts made pursuant to a non-competitive award process, unless otherwise provided by this section;

5. Any Bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the County Commission or County Administrator, or where such suspension is, in the opinion of the County Attorney, required by law.

g) To qualify for local preference under this section, **a local business must certify to the County that it:**

1. Has not within the five (5) years prior to the Bid announcement admitted guilt or been found guilty by any court or state or federal regulatory enforcement agency of violation of any criminal law, or a law or administrative regulation regarding fraud;

2. Is not currently subject to an unresolved citation or notice of violation of any Manatee County Code provision, except citations or notices which are the subject of a current legal appeal, as of the date of the Bid announcement;

3. Is not delinquent in the payment of any fines, liens, assessments, fees or taxes to any governmental unit or taxing authority within Manatee County, except any such sums which are the subject of a current legal appeal.

Ref: Ordinance 09-21 and 09-23 **PASSED AND DULY ADOPTED** in open session, with a quorum present and voting, on the 17th day of March, 2009.

END OF SECTION E

MANATEE COUNTY GOVERNMENT
AFFIDAVIT AS TO LOCAL BUSINESS
(*Complete and Initial Items B-F)*

A. Authorized Representative

I, [name] _____, am the [title] _____and the duly authorized representative of: [name of business] _____, and that I possess direct personal knowledge to make informed responses to these certifications and the legal authority to make this Affidavit on behalf of myself and the business for which I am acting; and by electing to submit a Bid pursuant to this Invitation for Bids, shall be deemed to understand and agree to the local business preference policies of Manatee County; and that I have the direct knowledge to state that this firm complies with all of the following conditions to be considered to be a local business as required by the Manatee County Code of Law, Section 2-26-6.

B. Place of Business: I certify that the above business is legally authorized to engage in the sale of goods and/or services and has a physical place of business in Manatee, DeSoto, Hardee, Hillsborough, Pinellas or Sarasota County with at least one (1) fulltime employee at that location. The physical address of the location which meets the above criteria is:_____ [Initial]____

Business Phone Number:_____

Email Address: _____

C. Business History: I certify that business operations began at the above physical address with at least one fulltime employee on [date] _____ [Initial] _____

D. Criminal Violations: I certify that within the past five (5) years of the date of this Bid announcement, this business has not admitted guilt nor been found guilty by any court or local, state or federal regulatory enforcement agency of violation of any criminal law or administrative regulation regarding fraud. [Initial]_____

E. Citations or Code Violations: I certify that this business is not currently subject to any unresolved citation or notice of violation of any Manatee County Code provision, with the exception of citations or notices which are the subject of a legal current appeal within the date of this Bid announcement. [Initial] _____

F. Fees and Taxes: I certify that this business is not delinquent in the payment of fines, liens, assessments, fees or taxes to any governmental unit or taxing authority within Manatee County, with the exception of those which are the subject of a current legal appeal. [Initial]_____

Each of the above certifications is required to meet the qualification of "local business" under Manatee County Code of Laws, 2-26-6.

Signature of Affiant_____

STATE OF FLORIDA
COUNTY OF_____

Sworn to (or affirmed) and subscribed before me this _____ day of _____, 20_____, by (name of person making statement).

(Notary Seal) Signature of Notary:_____

Name of Notary: (Typed or Printed)_____

Personally Known ____ OR Produced Identification ____ Type of Identification Produced _____

Submit executed copy to Manatee County Purchasing Division - 1112 Manatee Avenue West - Suite 803 - Bradenton, FL 34205

SECTION 00300

BID FORM

(SUBMIT IN TRIPLICATE)

For: IFB #13-1906CD-BLACKSTONE PARK EXPANSION ELECTRICAL WORK

TOTAL BID PRICE (BID "A"): _____
Based on a Completion Time of 120 calendar days

Only one schedule for Completion of the Work shall be considered. Only one Award shall be made.

We, the undersigned, hereby declare that we have carefully reviewed the Bid documents, and with full knowledge and understanding of the aforementioned herewith submit this Bid, meeting each and every specification, term, and condition contained in the Invitation for Bids, in its entirety.

We understand that the Bid package, in its entirety, including but not limited to, all specifications, terms, and conditions in their entirety shall be made a part of any Agreement or Contract between Manatee County and the successful Bidder. Failure to comply shall result in Contract default, whereupon, the defaulting Contractor shall be required to pay for any and all re-procurement costs, damages, and attorney fees as incurred by the County.

Communications concerning this Bid shall be addressed as follows: **(Complete all fields)**

Person's Name: _____

Address: _____Phone:_____

Date: _____FL Contractor License#_____

License in the Name of: _____

Bidder is a WBE/MBE Vendor? _____ Certification _____

COMPANY'S NAME: _____

AUTHORIZED SIGNATURE(S):_____

Name and Title of Above Signer(s) _____

CO. MAILING ADDRESS: _____

_____

STATE OF INCORPORATION_____ (if applicable)

TELEPHONE: (_____) _____ FAX: (_____) _____

Email address: _____

I,_____ **on** [date]_____**attest that I have visited the project site(s) to familiarize myself with the full Scope of Work required for the Bid.**

Acknowledge Addendum No.____ Dated: _____ Acknowledge Addendum No._____ Dated: _____
Acknowledge Addendum No.____ Dated: _____ Acknowledge Addendum No._____ Dated: _____
Acknowledge Addendum No.____ Dated: _____ Acknowledge Addendum No._____ Dated: _____

BID FORM

(Submit in Triplicate) Section 00300

BLACKSTONE PARK EXPANSION ELECTRICAL WORK

Bid "A" Based on Completion Time of 120 Calendar Days

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
	SITE ELECTRICAL AND LIGHTING- (100 SERIES)				
100	Furnish and Install Frame Mounted Uni-Strut Services on Concrete Post	LS	1	$ _____	$ _____
101	Furnish and Install Distribution Panels with Circuit Breakers	LS	1	$ _____	$ _____
102	Furnish and Install Conduit, Wiring, Raceways, Surge Protection Devices, and ancillary items for complete site electrical system	LS	1	$ _____	$ _____
103	Furnish and Install Entrance Spot Light - F2	EA	1	$ _____	$ _____
104	Furnish and Install Flag Pole Spot Lighting- F1	EA	2	$ _____	$ _____
105	Furnish and Install Parking Lot and Site Lighting, with one P1- Luminaire per Pole	EA	6	$ _____	$ _____
106	Furnish and Install Parking Lot and Site Lighting, with two P1- Luminaries per Pole	EA	1	$ _____	$ _____
107	Furnish and Install Parking Lot and Site Lighting, with one P2- Luminaire per Pole	EA	21	$ _____	$ _____
108	Furnish and Install Parking Lot and Site Lighting, with two P2- Luminaries per Pole	EA	1	$ _____	$ _____
109	Furnish and install Parking Lot Lighting Control System	LS	1	$ _____	$ _____
110	ALLOWANCE for new Electrical Utility service fees			$ _____	$15,000.00
	SUBTOTAL (SITE ELECTRICAL AND LIGHTING 100 SERIES ONLY)				$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

BLACKSTONE PARK EXPANSION ELECTRICAL WORK

Bid "A" Based on Completion Time of 120 Calendar Days

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
	BALL FIELD/SECURITY LIGHTING (200 SERIES)				
200	Furnish and install all conduit and wiring for the County Furnished Sports Lighting System	LS	1	$ _____	$ _____
201	Furnish all labor to install County Furnished Sports Lighting System w/ Security Lights	LS	1	$ _____	$ _____
	SUBTOTAL (BALL FIELD/SECURITY LIGHTING 200 SERIES ONLY)				$ _____
	MISCELLANEOUS (300 SERIES)				
300	Construction Surveying & Stakeout (includes collection of record information and record drawing preparation)	LS	1	$ _____	$ _____
301	MOBILIZATION	LS	1	$ _____	$ _____
	SUBTOTAL (MISCELLANEOUS 300 SERIES ONLY)				$ _____
	DISCRETIONARY WORK (USED ONLY WITH COUNTY APPROVAL)				$23,000.00
	TOTAL PRICE FOR BID "A" - Based on Completion Time of 120 Calendar Days				$ _____

Bidder Name: _____

Authorized Signature: _____

SWORN STATEMENT
THE FLORIDA TRENCH SAFETY ACT

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR BY AN OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with IFB No**. 13-1906CD**
2. This Sworn Statement is submitted by_____ whose business address is_____ and, if applicable, its Federal Employer Identification Number (FEIN) is_____. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement _____.
3. Name of individual signing this Sworn Statement is: _____, Whose relationship to the above entity is: _____.
4. The Trench Safety Standards that will be in effect during the construction of this project shall include, but are not limited to: Laws of Florida, Chapters 90-96, TRENCH SAFETY ACT, and OSHA RULES AND REGULATIONS 29 CFR 1926.650 Subpart P, effective October 1, 1990.
5. The undersigned assures that the entity will comply with the applicable Trench Safety Standards and agrees to indemnify and hold harmless the County and Engineer, and any of their agents or employees from any claims arising from the failure to comply with said standard.
6. The undersigned has appropriated the following costs for compliance with the applicable standards:

Trench Safety Measure (Description)	Units of Measure (LF, SY)	Unit Quantity	Unit Cost	Extended Cost
a. _____	_____	_____	$_____	_____
b. _____	_____	_____	$_____	_____
c. _____	_____	_____	$_____	_____
d. _____	_____	_____	$_____	_____

7. The undersigned intends to comply with these standards by instituting the following procedures:
_____
_____
_____

THE UNDERSIGNED, in submitting this Bid, represents that they have reviewed and considered all available geotechnical information and made such other investigations and tests as they may deem necessary to adequately design the trench safety system(s) to be utilized on this project.

_____
(AUTHORIZED SIGNATURE / TITLE)

SWORN to and subscribed before me this _____ day of _____, 20_____.
(Impress official seal)

Notary Public, State of Florida: _____

My commission expires: _____

SECTION 00430

CONTRACTOR'S QUESTIONNAIRE

(Submit in Triplicate)

The Bidder warrants the truth and accuracy of all statements and answers herein contained. (Attach additional pages if necessary.)

THIS QUESTIONNAIRE MUST BE COMPLETED AND SUBMITTED WITH YOUR BID

1. License #: _____

   License Issued to: _____

   Date License Received (MM/DD/YR): _____

   Company Name: _____

   _____

   Company's Physical Address

   _____

   City

   _____State of Incorporation, if applicable _____ (Zip Code)

   (_____) _____Telephone Number; (___) _____Fax Number

   Email Address: _____

2. Bidding as an individual ___a partnership: __ a corporation; ___a joint venture__

3. If a partnership: list names and addresses of partners; if a corporation: list names of officers, directors, shareholders, and state of incorporation; if joint venture: list names and address of ventures' and the same if any venture are a corporation for each such corporation, partnership, or joint venture:

   _____

   _____

   _____

   _____

4. Your organization has been in business (under this firm's name) as a

   _____

   For how many years? _____ Is this firm in bankruptcy? _____

   _____Years holding a Elctrical Contractors License

   _____

   _____

   _____Years experience performing this type of project

   (Attach a list of projects where this specific type of work was performed)

   BIDDER: _____

4. (Continued)

   Has license ever been suspended, revoked, removed or under investigation?
   _____

   _____

5. Describe and give the date and County of the last three government or private work of similar scope you've completed which are similar in cost, type, size, and nature as the one proposed (for a public entity), include contact name and phone number. Provide the budget, actual cost, size and summary of work for each project. Attach additional pages as necessary. (Note: If listing a Manatee County reference they should not be directly associated with this project)
   _____

   _____

   _____

6. Have you ever been assessed liquidated damages under a Contract during the past five (5) years? If so, state when, where (contact name, address and phone number) and why.
   _____

   _____

   _____

7. Have you ever failed to complete work awarded to you? Or provide projects not completed within Contract time. If so, state when, where (contact name, address, phone number) and why.
   _____

   _____

   _____

   _____

   _____

8. Have you ever been debarred or prohibited from bidding on a governmental entity's construction project? If yes, name the entity and describe the circumstances:
   _____

   _____

   _____

BIDDER: _____

9. What specific steps have you taken to examine the physical conditions at or contiguous to the site, including but not limited to, the location of existing underground facilities? Have you visited the site(s)? _____
Provide date(s) of site visit: _____

_____

_____

_____

10. What specific physical conditions, including, but not limited to, the location of existing underground facilities have you found which will, in any manner, affect cost, progress, performance, or finishing of the
Work?_____
_
_____

_____

11. Will you subcontract any part of this Work? If so, describe which major portion(s):
_____

_____

_____

12. If any, list (with Contract amount) WBE/MBE to be utilized:
_____

_____

_____

13. What equipment do you own to accomplish this Work? (A listing may be attached)
_____

_____

_____

14. What equipment will you purchase/rent for the Work? (Specify which)
_____

_____

_____

BIDDER: _____

15. List the following in connection with the Surety which is providing the Bond(s):

Surety's Name: _____

Surety's Address: _____

Surety's Address: _____

Name, address and phone number of Surety's resident agent for service of process in Florida:

_____

_____

_____

_____

Phone: (_____) _____

Email_____

BIDDER: _____

SECTION 00491

PUBLIC CONTRACTING AND ENVIRONMENTAL CRIMES CERTIFICATION

SWORN STATEMENT PURSUANT TO ARTICLE V,
MANATEE COUNTY PURCHASING ORDINANCE

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

This sworn statement is submitted to the Manatee County Board of County Commissioners by

_____

[Print individual's name and title]

____ for _____[print name of entity submitting sworn statement]

whose business address is _____

and (if applicable) its Federal Employer Identification Number (FEIN) is _____.If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____

I understand that no person or entity shall be awarded or receive a County Contract for public improvements, procurement of goods or services (including professional services) or a County lease, franchise, concession or management Agreement, or shall receive a grant of County monies unless such person or entity has submitted a written certification to the County that it has not:

(1) been convicted of bribery or attempting to bribe a public officer or employee of Manatee County, the State of Florida, or any other public entity, including, but not limited to the Government of the United States, any state, or any local government authority in the United States, in that officer's or employee's official capacity; or

(2) been convicted of an agreement or collusion among Bidders or prospective Bidders in restraint of freedom of competition, by agreement to bid a fixed price, or otherwise; or

(3) been convicted of a violation of an environmental law that, in the sole opinion of the County's Purchasing Official, reflects negatively upon the ability of the person or entity to conduct business in a responsible manner; or

(4) made an admission of guilt of such conduct described in items (1), (2) or (3) above, which is a matter of record, but has not been prosecuted for such conduct, or has made an admission of guilt of such conduct, which is a matter of record, pursuant to formal prosecution. An admission of guilt shall be construed to include a plea of nolo contendere; or

(5) where an officer, official, agent or employee of a business entity has been convicted of or has admitted guilt to any of the crimes set forth above on behalf of such an entity and pursuant to the direction or authorization of an official thereof (including the person committing the offense, if he is an official of the business entity), the business shall be chargeable with the conduct herein above set forth. A business entity shall be chargeable with the conduct of an affiliated entity, whether wholly owned, partially owned, or one which has common ownership or a common Board of Directors. For purposes of this Form, business entities are affiliated if, directly or indirectly, one business entity controls or has the power to control another business entity, or if an individual or group of individuals controls or has the power to control both entities. Indicia of control shall include, without limitation, interlocking management or ownership, identity of interests among family members, shared organization of a business entity following the ineligibility of a business entity under this Article, or using substantially the same management, ownership or principles as the ineligible entity.

(Cont'd.)

Any person or entity who claims that this Article is inapplicable to him/her/it because a conviction or judgment has been reversed by a court of competent jurisdiction shall prove the same with documentation satisfactory to the County's Purchasing Official. Upon presentation of such satisfactory proof, the person or entity shall be allowed to contract with the County.

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR MANATEE COUNTY IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT ANY CONTRACT OR BUSINESS TRANSACTION SHALL PROVIDE FOR SUSPENSION OF PAYMENTS, OR TERMINATION, OR BOTH, IF THE CONTRACTING OFFICER OR THE COUNTY ADMINISTRATOR DETERMINES THAT **SUCH PERSON OR ENTITY HAS MADE FALSE CERTIFICATION.**

_____
[Signature]

STATE OF FLORIDA
COUNTY OF _____

Sworn to and subscribed before me this ____ day of _____, 20_____ by _____

Personally known _____ OR Produced identification _____
[Type of identification]

_____ My commission expires _____
Notary Public Signature

_____
[Print, type or stamp Commissioned name of Notary Public]

Signatory Requirement - In the case of a business entity other than a partnership or a corporation, this affidavit shall be executed by an authorized agent of the entity. In the case of a partnership, this affidavit shall be executed by the general partner(s). In the case of a corporation, this affidavit shall be executed by the corporate president.

SECTION 00500

FORM OF AGREEMENT BETWEEN THE COUNTY OF MANATEE, FLORIDA AND THE CONTRACTOR AS IDENTIFIED BELOW ON THE BASIS OF A STIPULATED UNIT COST CONTRACT PRICE

THIS AGREEMENT is made and entered into by and between the COUNTY OF MANATEE, a political subdivision of the State of Florida, hereinafter referred to as the "COUNTY" and **XXXXXXXXXX**, hereinafter referred to as the "CONTRACTOR," duly authorized to transact business in the State of Florida, with offices located at **XXXXXXXXX**.

ARTICLE 1. WORK

CONTRACTOR shall furnish all labor, materials, supplies, and other items required to complete the Work for **IFB #13-1906CD Blackstone Park Expansion Electrical Work** in strict accordance with Contract documents and any duly authorized subsequent addenda thereto, all of which are made a part hereof.

ARTICLE 2. COMPENSATION

As compensation to the CONTRACTOR, the COUNTY shall pay and the CONTRACTOR will accept as full consideration for the performance of all Work required by **IFB #13-1906CD Blackstone Park Expansion Electrical Work**, subject to additions and deductions as provided therein, the sum of **$XXXXXX** for Bid "**A**" based on a completion time of **120** calendar days.

ARTICLE 3. LIQUIDATED DAMAGES

Time is of the essence in this Agreement. As of the date of this Agreement, the damages that will be suffered by the County in the event of the Contractor's failure to timely complete the Work are impossible to determine. In lieu thereof, it is agreed that if the Contractor fails to achieve substantial completion of the Work within 120 calendar days of issuance of the Notice to Proceed (accounting, however, for any extensions of time granted pursuant to approved change orders), the Contractor shall pay to the County, as liquidated damages (and not as a penalty), the sum of $388 per calendar

day for each day beyond 120 days until the Contractor achieves substantial completion. The County shall have the option of withholding said liquidated damages from any pay application(s) thereafter submitted by the Contractor. Alternatively, the Contractor shall immediately pay said sums to the County upon the County's demand for same.

ARTICLE 4. ENGINEER

The County of Manatee, Property Management Department, is responsible as the COUNTY and WilsonMiller Stantec as "ENGINEER," designed this project and is responsible for technical/engineering reviews and decisions. The ENGINEER is a member of the COUNTY'S project management team which is collectively responsible in ensuring the Work is completed in accordance with the Contract documents.

All communications involving this project will be addressed to: Alan Meronek, Project Manager, Property Management Department and to the Engineer of Record, Dan Bond, WilsonMiller Stantec. All invoicing will be addressed to the attention of: Alan Meronek (address noted below) with invoice copies sent to Dan Bond, (address noted below).

Manatee County Property Management Dept.
IFB# 13-1906CD
Attention: Alan Meronek
Project Manager
1112 Manatee Avenue West, Suite 862
Bradenton, Florida 34205
Phone (941) 745-4501 ext. 3097

WilsonMiller Stantec
IFB# 13-1906CD
Attn: Dan Bond
Project Engineer
6900 Professional Parkway East
Sarasota, Florida 34240
Phone (941) 907-6910

Where the terms ENGINEER and/or COUNTY are used in the Contract Documents, it shall mean the COUNTY'S project management team.

ARTICLE 5. CONTRACTOR'S REPRESENTATIONS

In order to induce COUNTY to enter into this Agreement, CONTRACTOR makes the following representations:

5.1 CONTRACTOR has familiarized itself with the nature and extent of the Bid documents, Work, site, locality and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

5.2 CONTRACTOR has studied carefully all drawings of the physical conditions upon which CONTRACTOR is entitled to rely.

5.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies which pertain to the physical conditions at or contiguous to the site or which otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract price, within the Contract time and in accordance with the other terms and conditions of the Bid documents; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

5.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Bid documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities. Any additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground facilities conducted by the CONTRACTOR will be done at the CONTRACTOR'S expense.

5.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Bid.

5.6 CONTRACTOR has given COUNTY written notice of all conflicts, errors or discrepancies that have been discovered in the Bid documents and the written resolution thereof by OWNER is acceptable to CONTRACTOR.

5.7 CONTRACTOR shall schedule and perform the Work subject to COUNTY'S approval and shall hold COUNTY harmless from all liabilities incurred due to CONTRACTOR'S failure to coordinate with the COUNTY.

ARTICLE 6. CONTRACT DOCUMENTS

The Contract documents which comprise the entire Agreement between COUNTY and CONTRACTOR concerning the Work consist of the following:

6.1 This Agreement and Bid document **IFB #13-1906CD**

6.2 Public Construction Bond Form and Insurance Certificate(s)

6.3 Drawings/Plans (not attached)

6.4 Addendum number ?? to ?? inclusive

6.5 CONTRACTOR'S Bid Form

6.6 Reports

6.7 The following, which may be delivered or issued after the effective date of the Agreement and are not attached hereto: all written change orders and other documents amending, modifying, or supplementing the Contract documents.

6.8 The documents listed in paragraphs above are attached to this Agreement (except as noted otherwise above). There are no Contract documents other than those listed above in this Article 6.

ARTICLE 7. MISCELLANEOUS

7.1 Terms used in this Agreement are defined in Article 1 of the General Conditions.

7.2 No assignment by a party hereto of any rights under or interest in the Contract documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law); and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignee from any duty or responsibility under the Contract documents.

7.3 COUNTY and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements, and obligations contained in the Contract documents.

AGREEMENT

IFB #13-1906CD

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed by their authorized representatives.

CONTRACTOR

By: _____

_____
Print Name & Title of Signer

Date: _____

COUNTY OF MANATEE, FLORIDA

By: _____
Melissa M. Wendel, CPPO
Purchasing Official

Date: _____

MANATEE COUNTY GOVERNMENT
PUBLIC CONSTRUCTION BOND

Bond No. _____
(Enter bond number)

BY THIS BOND, We_____, located at _____, as
(Name of Contractor) (Address)

Principal and _____, a corporation, whose address is
(Name of Surety)

_____

are bound to Manatee County, a political subdivision of the State of Florida, herein called County, in the sum of $ _____, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

WHEREAS, the Contractor has entered into Contract No. IFB #13-1906CD with the County for the project titled Blackstone Park Expansion Electrical Work, with conditions and provisions as are further described in the aforementioned Contract, which Contract is by reference made a part hereof for the purposes of explaining this bond.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs Contract No. IFB #13-1906CD, between Principal and County for construction of

Blackstone Park Expansion Electrical Work, the Contract being made a part of this bond by reference, at
(Title of Project)

the times and in the manner prescribed in the Contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Contract; and

3. Pays County all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that County sustains because of a default by Principal under the Contract; and

4. Performs the guarantee of all Work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

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

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

DATED ON _____.

CONTRACTOR AS PRINCIPAL	**SURETY**
Company Name	Company Name
Signature	Signature
Print Name & Title	Print Name & Title
(Corporate Seal)	*(Corporate Seal)*

AGENT or **BROKER**

Company Name

Address

Telephone

Licensed Florida Insurance Agent? ☐ **Yes** ☐ **No**

License #: _____

State of: _____

County of: _____

City of: _____

SECTION 00700
GENERAL CONDITIONS

ARTICLE 1. DEFINITIONS

Whenever used in the Bid documents, the following terms have the meaning indicated which are applicable to both the singular and plural thereof:

Addendum - Written or graphic instruments issued prior to the opening of Bids which clarify or change the Bidding documents or the Contract documents.

Agreement - The written Agreement between Owner and Contractor covering the Work to be performed; other Contract documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form accepted by the Project Representative which is to be used by Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract documents.

Award - Acceptance of the Bid from the person, firm, or corporation which in the Owner's sole and absolute judgment will under all circumstances best serve the public interest. Award shall be made in accordance with Manatee County Code of Laws.

Bid - The offer of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder - One who submits a Bid directly to the Owner, as distinct from a Sub-bidder, who submits a Bid to a Bidder.

Bidding Documents - Consists of the Invitation for Bid, which includes but is not limited to the Bid Form, drawings, technical specifications, terms and conditions, and the proposed Contract documents (including all addenda issued prior to receipt of Bids); and becomes a part of the Agreement.

Bonds - Performance and payment bonds and other instruments of security.

Change Order - A document recommended by the Project Representative which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract price or the Contract time, issued on or after the effective date of the Agreement.

Compensable Delay - Any delay beyond the control and without the fault or negligence of the Contractor resulting from Owner-caused changes in the Work, differing site conditions, suspensions of the Work, or termination for convenience by Owner.

Contract Documents - The Agreement, addenda (which pertain to the Contract documents), Contractor's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award), the bonds, the specifications, special provisions and the drawings, together with all amendments, modifications and supplements issued on or after the effective date of the Agreement.

Contract Price - The monies payable by Owner to Contractor under the Contract documents as stated in the Agreement.

Contract Time - The number of days or the date stated in the Notice to Proceed for the completion of the Work.

Contractor - The person, firm or corporation with whom Owner has entered into an Agreement.

Days - All references to days are to be considered calendar days except as specified differently.

Defective - An adjective which when modifying the Work refers to work that is unsatisfactory, faulty or deficient, or does not conform to the Contract documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract documents, or has been damaged prior to Project Representative's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner).

Discretionary – Payment for all Work that shall be made only at the Owner’s discretion in order to satisfactorily complete the project in accordance with the plans and specifications.

Drawings - The drawings which show the character and Scope of Work to be performed and which have been prepared or approved by Engineer and are referred to in the Bidding and Contract documents.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective (date of execution).

Excusable Delay - Any delay beyond the control and without the negligence of the Contractor, the Owner, or any other Contractor caused by events or circumstances such as, but not limited to, acts of God or of the public enemy, fires, floods, freight embargoes, acts of government other than Owner or epidemics. Labor disputes and above average rainfall shall give rise only to excusable delays.

Field Order - A written order issued by Project Representative which orders minor changes in the Work, but which does not involve a change in the Contract price or the Contract time.

Float or Slack Time - The time available in the progress schedule during which an unexpected activity can be completed without delaying substantial completion of the Work.

Inexcusable Delay - Any delay caused by events or circumstances within the control of the Contractor, such as inadequate crewing, slow submittals, etc., which might have been avoided by the exercise of care, prudence, foresight, or diligence on the part of the Contractor.

Non-prejudicial Delay - Any delay impacting a portion of the Work within the available total float or slack time and not necessarily preventing completion of the Work within the Contract time.

Notice of Award - The written notice to the successful Bidder stating Award has been approved by the Board of County Commissioners; or by the Purchasing Official in accordance with Manatee County Code of Laws, Chapter 2-26, Manatee County Purchasing Ordinance.

Notice of Intent to Award - The written notice to the apparent low Bidder stating Award has been recommended with final Award to be authorized by the Board of County Commissioners.

Notice to Proceed - Written notice by Owner (after execution of Contract) to Contractor fixing the date on which the Contract time will commence to run and on which Contractor shall start to perform (ten (10) days from date of such notice) Contractor's obligations under the Contract documents.

Owner - Manatee County, Florida, Board of County Commissioners.

Preconstruction Conference - Prior to starting the Work, a meeting scheduled by Owner with Contractor to review the Work schedules, to establish procedures for handling shop drawings and other submissions, for processing periodical pay estimates, and such other matters as may be pertinent to the project.

Prejudicial Delay - Any excusable or compensable delay impacting the Work and exceeding the total float available in the progress schedule, thus preventing completion of the Work within the Contract time unless the Work is accelerated.

Pre-operation Testing - All field inspections, installation checks, water tests, performance tests and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract documents for their intended purposes.

Project - The total construction of which the Work to be provided under the Contract documents may be the whole or a part as indicated elsewhere in the Contract documents.

Project Representative - The authorized representative of Owner who is assigned to the project or any part thereof.

Schedule of Values – Unit prices shall be established for this Contract by the submission of a schedule of values. The Contractor shall submit a schedule of values within ten (10) days of Notice to Proceed date. The schedule shall include quantities and prices of items equaling the Total Bid Price and will subdivide the Work into components in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work. Upon request of the County, the Contractor shall support the values with data which will substantiate their correctness.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

Special Provisions: As required to define work or procedures not covered in the standard specifications, and as necessary to supplement or modify items in the standard specifications.

Specifications - Those portions of the Contract documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual or corporation having a direct contact with Contractor or with any other Subcontractor for the performance of a part of the Work at the site. Such person or firm has contractual relations with the Contractor, not with the Owner.

Substantial Completion - The Work (or a specified part thereof) has progressed to the point when, in the opinion of the Engineer as evidenced by Engineer's definitive certificate of substantial completion, it is sufficiently complete in accordance with Contract documents so that the Work can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due.

Successful Bidder - The lowest, responsible and responsive Bidder to whom an Award is made.

Supplier - A manufacturer, fabricator, supplier, distributor, material man or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments and any encasement containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or

other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract documents.

Work Directive Change - A written directive to Contractor, issued on or after the effective date of the Agreement and signed by Owner and recommended by Project Representative ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or to emergencies. A work directive change may not change the Contract price or the Contract time; but is evidence that the parties expect that the change directed or documented by a work directive change will be incorporated in a subsequently issued change order following negotiations by the parties as to its effect, if any, on the Contract price or Contract time.

Written Amendment - A written amendment of the Contract documents, signed by Owner and Contractor on or after the effective date of the Agreement and normally dealing with the non-engineering or non-technical rather than strictly work related aspects of the Contract documents.

ARTICLE 2. PRELIMINARY MATTERS

Computation of Time: When time is referred to in the Contract documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or legal holiday, such day will be omitted from the computation.

2.1 The Contractor must submit a proposed schedule of the Work at the preconstruction conference. The purpose of this schedule is to enable the Owner to govern the Work, to protect the functions of the local government and its citizens and to aid in providing appropriate surveillance. The Owner shall have the right to reschedule Work provided such rescheduling is in accord with the remainder of terms of the Contract. The schedule shall show, as a minimum, the approximate dates on which each segment of the Work is expected to be started and finished, the proposed traffic flows during each month, the anticipated earnings by the Contractor for each month and the approximate number of crews and equipment to be used. The Owner, after necessary rescheduling and obtaining additional information for specific purposes, shall review and approve the schedule. The Contractor shall also forward to the Owner, as soon as practicable after the first day of each month, a summary report of the progress of the various parts of the Work under the Contract, in fabrication and in the field, stating the existing status, estimated time of completion and cause of delay, if

any. Together with the summary report, the Contractor shall submit any necessary revisions to the original schedule for the Owner's review and approval. In addition, more detailed schedules may be required by the Owner for daily traffic control.

2.2 A Notice to Proceed may be given at any time within thirty (30) days after the effective date of the Agreement. The Contract time will commence at the time specified in such notice. Contractor shall start to perform the Work on the date specified in the Notice to Proceed, but no Work shall be done at the site prior to the date on which the Contract time commences to run.

2.3 If at any time the materials and appliances to be used appear to the Owner as insufficient or improper for securing the quality of Work required or the required rate of progress, the Owner may order the Contractor to increase his efficiency or to improve the character of his Work and the Contractor shall conform to such an order. The failure of the Owner to demand any increase of such efficiency of any improvement shall not release the Owner from his obligation to secure the quality of Work or the rate of progress necessary to complete the Work within the limits imposed by the Contract. The Owner may require the Contractor to remove from the Work such employees as the Owner deems incompetent, careless, insubordinate or otherwise objectionable, or whose continued employment on the Work is deemed to be contrary to the Owner's interest.

2.4 The Owner reserves the right to let other Contracts in connection with this Work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and execution of their Work, and promptly connect and coordinate the Work with theirs.

ARTICLE 3. CONTRACT DOCUMENTS: INTENT, AMENDING, RE-USE

3.1 The Contract documents comprise the entire Agreement between Owner and Contractor concerning the Work. The Contract documents are complementary; what is called for by one is as binding as if called for by all. The Contract documents will be construed in accordance with the laws and ordinances of the State of Florida and Manatee County.

Should a conflict exist within the Contract documents, the precedence in ascending order of authority are as follows: 1) Standard Printed Contract Documents, 2) Special Conditions, 3) General Conditions, and 4) Drawings.
Note: Computed dimensions shall govern over scaled dimensions.

3.2 It is the intent of the Contract documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract documents. Any work, materials or equipment that may reasonably be inferred from the Contract documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe work, materials, or

equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract documents) shall be effective to change the duties and responsibilities of Owner, Contractor or Engineer, or any of their agents or employees from those set forth in the Contract documents.

3.3 The Contract documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.3.1 A Formal Written Amendment

3.3.2 A Change Order

3.3.3 Administrative Contract Adjustment (ACA)

3.3.4 A Work Directive Change

3.4 In addition, the requirements of the Contract documents may be supplemented and minor variations and deviations in the Work may be authorized in one or more of the following ways:

3.4.1 Discretionary Work – Field Directive

3.4.2 Engineer's approval of a Shop Drawing or sample

ARTICLE 4. CONTRACTOR'S RESPONSIBILITIES

4.1 Contractor shall keep on the Work at all times during its progress a competent resident superintendent; who shall be the Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.

4.2 Contractor shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract documents. Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto and except as otherwise indicated in the Contract documents, all Work at the site shall be performed during regular working hours and Contractor will not permit overtime work or the

performance of work on Saturday, Sunday or legal holiday without Owner's written consent given after prior notice to Engineer (at least seventy-two (72) hours in advance).

4.2.1 Contractor shall pay for all additional engineering charges to the Owner for any overtime work which may be authorized. Such additional engineering charges shall be a subsidiary obligation of Contractor and no extra payment shall be made by Owner on account of such overtime work. At Owner's option, overtime costs may be deducted from Contractor's monthly payment request or Contractor's retainage prior to release of final payment.

4.3 Unless otherwise specified, Contractor shall furnish and assume full responsibility for all bonds, insurance, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

4.4 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract documents. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instruction of the applicable supplier except as otherwise provided in the Contract documents.

4.5 Contractor shall be fully responsible to Owner for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect Contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract documents shall create any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of Owner to pay or to see to the payment of any monies due any such Subcontractor, Supplier or other person or organization.

4.6 Permits: Unless otherwise provided, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work.

4.7 During the progress of the Work, Contractor shall keep the premises free from accumulation of waste materials rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall remove all waste

materials, rubbish, and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to original conditions all property not designated for alteration by the Contract documents.

4.8 Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

4.9 Safety and Protection: Contractor shall comply with the Florida Department of Commerce Safety Regulations and any local safety regulations. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of and shall provide the necessary protection to prevent damage, injury or loss to:

4.9.1 all employees on the work and other persons and organizations who may be affected thereby;

4.9.2 all the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

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

4.9.4 Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall provide and maintain all passageways, guard fences, lights and other facilities for the protection required by public authority or local conditions. Contractor shall provide reasonable maintenance of traffic way for the public and preservation of the Owner’s business, taking into full consideration all local conditions. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed.

4.10 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Owner prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract documents have been caused thereby. If Owner

determines that a change in the Contract documents is required because of the action taken in response to an emergency, a work directive change or change order will be issued to document the consequences of the changes or variation.

4.11 For substitutes not included with the Bid, but submitted after the effective date of the Agreement, Contractor shall make written application to Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will also contain an itemized estimate of all costs and delays or schedule impacts that will result directly or indirectly from review, acceptance and provisions of such substitute, including costs of redesign and claims of other Contractors affected by the resulting change, all of which will be considered by the Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish at Contractor's expense, additional data about the proposed substitute. In rendering a decision, Owner/Engineer and Contractor shall have access to any available float time in the construction schedule. In the event that substitute materials or equipment not included as part of the Bid, but proposed after the effective date of the Agreement, are accepted and are less costly than the originally specified materials or equipment, then the net difference in cost shall be credited to the Owner and an appropriate change order executed.

4.11.1 If a specific means, method, technique, sequence of procedure of construction is indicated in or required by the Contract documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to Engineer if Contractor submits sufficient information to allow Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract documents.

4.11.2 Engineer will be allowed a reasonable time within which to evaluate each proposed substitute. Engineer will be the sole judge of acceptability and no substitute will be ordered, installed or utilized without Engineer's prior written acceptance which will be evidenced by either a change order or an approved shop drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

4.11.3 Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each proposed substitute submitted after the effective date of the Agreement and all costs resulting from any delays in the Work while the substitute was undergoing review.

4.12 The Contractor shall furnish, free of charge, all labor, stakes, surveys, batter boards for structures, grade lines and other materials and supplies and shall set construction stakes and batter boards for establishing lines, position of structures, slopes and other controlling points necessary for the proper prosecution of the construction work. Where rights-of-way, easements, property lines or any other conditions which make the lay-out of the project or parts of the project critical are involved, the Contractor will employ a competent surveyor who is registered in the State of Florida for lay-out and staking. These stakes and marks shall constitute the field control by and in accord with which the Contractor shall govern and execute the Work. The Contractor will be held responsible for the preservation of all stakes, marks and if for any reason any of the stakes or marks or batter boards become destroyed or disturbed, they will be immediately and accurately replaced by the Contractor.

4.13 The Contractor has, by careful examination, satisfied himself as to the nature and location of the Work and all other matters which can in any way affect the Work under this Contract, including, but not limited to details pertaining to boring, as shown on the drawings, are not guaranteed to be more than a general indication of the materials likely to be found adjacent to holes bored at the site of the Work, approximately at the locations indicated. The Contractor shall examine boring data, where available, and make his own interpretation of the subsoil investigations and other preliminary data, and shall base his Bid on his own opinion of the conditions likely to be encountered. In no event shall an extension of time be considered for any conditions that existed at the time of bidding, nor shall the Contractor receive extra compensation for completion of the project as intended by the drawings and in keeping with the Contact documents. No verbal agreement or conversation with any officer, agent or employee of the Owner, before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.

4.14 If the Contractor, in the course of the Work, finds that the drawings and/or Contract documents cannot be followed, he shall immediately inform the Owner in writing, and the Owner shall promptly check the accuracy of the information. Any work done after such discovery, until any necessary changes are authorized, will be done at the Contractor's risk.

ARTICLE 5. OWNER'S RESPONSIBILITIES

5.1 Owner shall furnish the data required of Owner under the Contract documents promptly and shall make payments to the Contractor within a reasonable time (no more than twenty (20) days) after the Work has been accepted by the Owner. The form of all submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract documents shall be determined by the Owner/Engineer. Standard County forms shall be utilized.

5.2 The Owner shall provide the lands upon which the Work under this Contract is to be done, except that the Contractor shall provide all necessary additional land required for the erection of temporary construction facilities and storage of his materials, together with right of access to same.

5.3 The Owner shall have the right to take possession of and use any completed portions of the Work, although the time for completing the entire Work or such portions may not have expired, but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract documents.

ARTICLE 6. CHANGES IN THE WORK

6.1 Without invalidating the Agreement and without notice to any Surety, Owner may, at any time, order additions, deletions or revisions in the Work. These will be authorized by a written amendment, a change order, or a work directive change. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract documents (except as otherwise specifically provided).

6.2 Contractor shall not be entitled to an increase in the Contract price or an extension of the Contract time with respect to any Work performed that is not required by the Contract documents as amended, modified and supplemented.

6.3 Owner and Contractor shall execute appropriate change orders (or written amendments) covering changes in the Work which are ordered by Owner, or which may be required because of acceptance of defective Work.

6.4 At any time Engineer may request a quotation from Contractor for a proposed change in the Work and within twenty-one (21) calendar days after receipt, Contractor shall submit a written and detailed proposal for an increase or decrease in the Contract price or Contract time for the proposed change. Engineer shall have twenty-one (21) calendar days after receipt of the detailed proposal to respond in writing. The proposal shall include an itemized estimate of all costs and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in sufficient detail to reasonably permit an analysis by Engineer of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed or impacted. Notwithstanding the request for quotation, Contractor shall carry on the Work and maintain the progress schedule. Delays in the submittal of the written and detailed proposal will be considered non-prejudicial.

ARTICLE 7. CHANGE OF CONTRACT PRICE

7.1 The Contract price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at his expense without change in the Contract price.

7.2 The Contract price may only be changed by change order or by a written amendment. Any claim for an increase or decrease in the Contract price shall be based on written notice delivered by the party making the claim to the other party. Notice of the amount of the claim with supporting data shall be delivered within ten (10) days from the beginning of such occurrence and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event.

7.3 The value of any Work covered by a change order or of any claim for an increase or decrease in the Contract price shall be determined in one of the following ways (at Owner's discretion):

7.3.1 Where the Work involved is covered by unit prices contained in the Contract documents, cost will be determined by application of such unit prices to the quantities of the items involved.

7.3.2 By mutual acceptance of lump sum.

7.3.3 On the basis of the cost of the Work, plus a 15% Contractor's fee for overhead and profit. (Contractor shall submit an itemized cost breakdown together with supporting data.)

7.4 Either Owner or Contractor may make a claim for an adjustment in the Contract price. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:

7.4.1 If the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract price and the variation in the quantity of the particular item of Unit Price Work performed by Contractor differs by more than 15% from the estimated quantity of such item indicated in the Agreement; and

7.4.2 If there is no corresponding adjustment with respect to any other item of Work; and

7.4.3 If a Contractor believes that it has incurred additional expense as a result thereof; or

7.4.4 If Owner believes that the quantity variation entitles it to an adjustment in the unit price; or

7.4.5 If the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 8. CHANGE OF CONTRACT TIME

8.1 Contract time may only be changed by a change order or a written amendment. Any claim for an extension or shortening of the Contract time shall be based on written notice delivered by the party making the claim to the other party. Notice of the extent of the claim with supporting data shall be delivered within fifteen (15) days from detection or beginning of such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event.

8.2 The Contract time will be extended in an amount equal to time lost due to delays beyond the control of Contractor. Such delays shall include, but not be limited to, acts or neglect by Owner or others performing additional Work; or to fires, floods, epidemics, abnormal weather conditions or acts of God.

8.3 All time limits stated in the Contract documents are of the essence.

ARTICLE 9. WARRANTY, TEST/INSPECTION, CORRECTION

9.1 Contractor warrants (for a minimum period of three (3) years or as otherwise stated herein) and guarantees to Owner that all Work will be in accordance with the Contract documents and will not be defective; that Owner, representatives of Owner, governmental agencies with jurisdictional interests will have access to the Work at reasonable time for their observation, inspecting and testing (Contractor shall give Engineer timely notice of readiness of the Work for all required approvals and shall assume full responsibility, including costs, in obtaining required tests, inspections, and approval certifications and/or acceptance, unless otherwise stated by Owner).

9.2 If any Work (including work of others) that is to be inspected, tested, or approved is covered without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice. Neither observations by Engineer nor inspections, tests, or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract documents.

9.3 If the Work is defective, or Contractor fails to supply sufficient skilled workers, or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract documents, Owner may order Contractor to stop the Work, or any portion thereof and terminate payments to the Contractor until the cause for such order has been eliminated. Contractor shall bear all direct, indirect and consequential costs for satisfactory reconstruction or removal and replacement with non-defective Work, including, but not limited to fees and charges of engineers, architects, attorneys and other professionals and any additional expenses experienced by Owner due to delays to other Contractors performing additional Work and an appropriate deductive change order shall be issued. Contractor shall further bear the responsibility for maintaining schedule and shall not be entitled to an extension of the Contract time and the recovery of delay damages due to correcting or removing defective Work.

9.3.1 If Contractor fails within seven (7) days after written notice to correct defective Work, or fails to perform the Work in accordance with the Contract documents, or fails to comply with any other provision of the Contract documents, Owner may correct and remedy any such deficiency to the extent necessary to complete corrective and remedial action. Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, Contractor's tools, construction equipment and machinery at the site or for which Owner has paid Contractor but which are stored elsewhere. All direct and indirect costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Engineer and a change order will be issued incorporating the necessary revisions.

9.3.2 If within three (3) years after the date of completion or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner’s written instructions, either correct such defective Work or if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not promptly comply with the terms of such instruction, Owner may have the defective Work corrected/removed and all direct, indirect and consequential costs of such removal and replacement will be paid by Contractor.

ARTICLE 10. SUSPENSION/TERMINATION OF WORK

10.1 Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by written notice to Contractor, which will fix the date on which Work will be resumed. Contractor shall be allowed an increase in the Contract price or an extension of the Contract

time, or both, directly attributable to any suspension if Contractor makes an approved claim therefore.

10.2 Owner may terminate the Contract if Contractor commences a voluntary case under any chapter of the Bankruptcy Code or any similar action by filing a petition under any other federal or state law relating to the bankruptcy or insolvency; if a petition is filed against the Contractor under any chapter of the Bankruptcy Code or similar relief under any other federal or state law; if Contractor persistently fails to perform the Work in accordance with the Contract documents; if Contractor disregards laws or regulations of any public body having jurisdiction or the Engineer; or otherwise violates in any substantial way any provisions of the Contract.

10.2.1 Owner may, after giving Contractor (and the Surety, if there is one) seven (7) days written notice and to the extent permitted by laws and regulations, terminate the services of Contractor; exclude Contractor from the site and take possession of the Work and of all Contractor's tools, construction equipment and machinery at the site and use the same to the full extent they could be used (without liability to Contractor for trespass or conversion); incorporate in the Work all materials and equipment stored at the site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment beyond an amount equal to the value of material and equipment not incorporated in the Work, but delivered and suitably stored, less the aggregate of payments previously made. If the direct and indirect costs of completing the Work exceed the unpaid balance of the Contract price, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Owner and incorporated in a change order; but in finishing the Work, Owner shall not be required to obtain the lowest figure for the Work performed. Contractor's obligations to pay the difference between such costs and such unpaid balance shall survive termination of the Agreement.

10.3 If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) days by Owner or under an order of court or other public authority, or Engineer fails to act on any application or fails to pay Contractor any sum finally determined to be due; then Contractor may, upon seven (7) days written notice to Owner terminate the Agreement and recover from Owner payment for all Work executed, any expense sustained plus reasonable termination expenses. In lieu of terminating the Agreement, if Engineer has failed to act on any application of payment or Owner has failed to make any payment as aforesaid, Contractor may upon seven (7) days written notice to Owner stop the Work until payment of all amounts then due.

ARTICLE 11. CONTRACT CLAIMS

11.1 The rendering of a decision by Engineer with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Owner or Contractor of such right or remedies as either may otherwise have under the Contract documents or by laws or regulations in respect of any such claim, dispute or other matter. No action, either at law or at equity, shall be brought in connection with any such claim, dispute or other matter later than thirty (30) days after the date on which Owner/Engineer has rendered such written decision in respect thereof. Failure to bring an action within said thirty (30) day period shall result in Engineer's decision being final and binding on the Contractor. In no event may any such action be brought after the time at which instituting such proceedings would be otherwise barred by the applicable statute of limitations.

11.2 Before bringing any action in court pertaining to any claim, dispute or other matter in question(s) arising out of or relating to the Contract documents or the breach thereof, or Engineer's final decision, except for claims which have been waived by the making and acceptance of final payment, the Contractor shall first submit written notice(s) of Contract claims to the Purchasing Official for a decision; within the earlier of sixty (60) days after the last date on which the Contractor provided any goods or services required by the Contract or after the date on which the Contractor knew or should have known such a claim existed. The Manatee County Code of Laws, Section 2-26-63, Contract Claims, details the requirements and process for such a claim.

ARTICLE 12. RESIDENT PROJECT REPRESENTATIVE - DUTIES, RESPONSIBILITIES

12.1 Resident Project Representative is Engineer/Owner's Agent, who will act as directed by and under the supervision of the Engineer, and who will confer with Owner/Engineer regarding his actions. Resident Project Representative's dealing in matters pertaining to the on-site Work shall, in general, be only with the Owner/Engineer and Contractor and dealings with Subcontractors shall only be through or with the full knowledge of Contractor.

12.2 Resident Project Representative will:

12.2.1 Review the progress schedule, schedule of shop drawing submissions and schedule of values prepared by Contractor and consult with Owner/Engineer concerning their acceptability.

12.2.2 Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with Owner/Engineer and notify those expected to attend in advance. Attend meetings and maintain and circulate copies of minutes thereof.

12.2.3 Serve as Owner/Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist him in understanding the intent of the Contract documents. As requested by Owner/Engineer, assist in obtaining additional details or information when required at the job site for proper execution of the Work.

12.2.4 Receive and record date of receipt of shop drawings and samples, receive samples which are furnished at the site by Contractor and notify Owner/Engineer of their availability for examination.

12.2.5 Advise Owner/Engineer and Contractor or his superintendent immediately of the commencement of any Work requiring a shop drawing or sample submission if the submission has not been approved by the Owner/Engineer.

12.2.6 Conduct on-site observations of the Work in progress to assist Owner/Engineer in determining if the Work is proceeding in accordance with the Contract documents and that completed Work will conform to the Contract documents.

12.2.7 Report to Owner/Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract documents, or does not meet the requirements of any inspections, tests or approvals required or if Work has been damaged prior to final payment; and advise Owner/Engineer when he believes Work should be corrected or rejected or should be uncovered of observation or requires special testing, inspection or approval.

12.2.8 Verify that tests, equipment and system start-ups and operating and maintenance instructions are conducted as required by the Contract documents and in the presence of the required personnel, and that Contractor maintains adequate records thereof; observe, record and report to Engineer appropriate details relative to the test procedures and start-ups.

12.2.9 Accompany visiting inspectors representing public or other agencies having jurisdiction over the project; record the outcome of these inspections and report to Owner/Engineer.

12.2.10 Transmit to Contractor, Owner/Engineer's clarifications and interpretations of the Contract documents.

12.2.11 Consider and evaluate Contractor's suggestions or modifications in drawings or Contract Documents and report them with recommendations to Owner/Engineer.

12.2.12 Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings and sample submissions, reproductions of original Contract documents including all addenda, change orders, field orders, additional drawings issued subsequent to the execution of the Contract, Owner/Engineer's clarifications and interpretations of the Contract documents, progress reports and other project related documents.

12.2.13 Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions; list of visiting officials and representatives or manufacturers, fabricators, suppliers and distributors; daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures. Send copies to Owner/Engineer.

12.2.14 Record names, addresses and telephone numbers of all Contractors, Subcontractors and major Suppliers of materials and equipment.

12.2.15 Furnish Owner/Engineer periodic reports as required of progress of the Work and Contractor's compliance with the approved progress schedule and schedule of shop drawing submissions.

12.2.16 Consult with Owner/Engineer in advance of scheduling major tests, inspections or start of important phases of the Work.

12.2.17 Report immediately the occurrence of any accident.

12.2.18 Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Owner/Engineer, noting particularly their relation to the Schedule of Values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.

12.2.19 During the course of the Work, verify that certificates, maintenance and operations manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed, and deliver this material to Owner/Engineer for his review prior to final acceptance of the Work.

12.2.20 Before Owner/Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.

12.2.21 Conduct final inspection in the company of Owner/Engineer and Contractor and prepare a final list of items to be completed or corrected.

12.2.22 Verify that all items on final list have been completed or corrected and make recommendations to Owner/Engineer concerning acceptance.

12.3 Except upon written instructions of Owner/Engineer, Resident Project Representative:

12.3.1 Shall not authorize any deviation from the Contract documents or approve any substitute materials or equipment;

12.3.2 Shall not exceed limitations on Owner/Engineer's authority as set forth in the Contract documents;

12.3.3 Shall not undertake any of the responsibilities of Contractor, Subcontractors or Contractor's superintendent, or expedite the Work;

12.3.4 Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract documents;

12.3.5 Shall not advise on or issue directions as to safety precautions and programs in connection with the Work;

12.3.6 Shall not authorize Owner to occupy the project in whole or in part; and

12.3.7 Shall not participate in specialized field or laboratory tests.

ARTICLE 13. APPRENTICES

13.1 If successful Contractor employs apprentices, he shall be governed and comply with the provisions of F.S. § 446.011.

NOTE: The form of all submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract shall be determined by the County. Standard County forms shall be utilized.

END OF SECTION

MAILING LABEL

Cut along the outside border and affix this label to your sealed Bid envelope to identify it as a “Sealed Bid”. Be sure to include the name of the company submitting the Bid and the Bid due date and time where requested.

MAILING LABEL TO AFFIX TO OUTSIDE OF SEALED BID PACKAGE:

SEALED BID - DO NOT OPEN

CONTRACTOR: _____

SEALED BID NO: 13-1906CD

BID TITLE: BLACKSTONE PARK EXPANSION ELECTRICAL WORK

DUE DATE/TIME: _____ @ _____

BLACKSTONE PARK EXPANSION – SITE ELECTRICAL AND BALL FIELD/SECURITY LIGHTING
Manatee County, Florida
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and other Specification Sections, apply to this Section.

1.2 SUMMARY

A. The scope of this section of the Contract Documents is to further define the items included in each Bid Item in the Bid Form section of the Contract Documents. Payment will be made based on the specified items included in the description in this section for each bid item.

B. All contract prices included in the Bid Form section will be full compensation for all shop drawings, working drawings, labor, materials, tools, testing, restoration, equipment and incidentals necessary to complete the construction as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Actual quantities of each item contracted on a unit price basis will be determined upon completion of the construction and payment will be based on actual quantities. Payment for all items listed in the Bid Form will constitute full compensation for all work shown and/or specified to be performed under this Contract.

C. The quantities shown are approximate in-place quantities and are given only as a basis of calculation upon which the award of the Contract is to be made. The Owner/Engineer does not assume any responsibility for the final quantities, nor shall the Contractor claim misunderstanding or discrepancies because of such estimate of quantities. Final payment will be made only for satisfactorily completed in-place quantity of each item that is bid on a unit price basis.

D. No payment will be made for work constructed outside the authorized limits of work.

E. Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally.

F. Where payment for items is shown to be paid for on a lump sum basis, no separate or additional payment will be made for any item of work required to complete the lump sum items. Lump sum items shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum items.

G. Access to the site is provided by the existing 23rd Street West.

H. Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the work associated with the bid item shall be considered to be included in the scope of the appropriate listed bid items

BLACKSTONE PARK EXPANSION – SITE ELECTRICAL AND BALL FIELD/SECURITY LIGHTING
Manatee County, Florida
MEASUREMENT AND PAYMENT

1.3 UNIT PRICE

A. Actual quantities of each item contracted on a unit price basis will be determined upon completion of the construction and payment will be based on actual quantities.

1.4 BID ITEM DESCRIPTIONS

A. A general description of the bid items contained in the various Bid Sections is described below. All items of work referenced in the contract documents, plans, and specifications shall be included in the various lump sum and unit prices in the bid form/contract if not specifically included as a pay item on the bid form.

Bid Items 100 - 110 (SITE ELECTRICAL AND LIGHTING): The various pay items for SITE ELECTRICAL AND LIGHTING shall include all poles/bases, fixtures, shielding, wiring, conduits, switches, receptacles, panels, surge protection devices, dimming control system (including manufacturer start-up/commissioning/training), circuits, grounding systems, equipment/fixture support structures, structural design of pole bases (including signed and sealed structural drawings), connection to Concession building panelboard (conduit up to 5'-0" outside building, complete wiring from utility service to panelboard, coordination with Concession Building Contractor), connection to Owner-furnished/Owner-installed lift station, and all appurtenances needed to construct the complete site electrical and lighting system per the contract documents, plans, and specifications. Additionally, include new utility service coordination and installation of primary conduit (furnished by utility company) and utility meters including an ALLOWANCE for upfront utility costs to Owner for extension of the existing three-phase utility service on-site. The Contractor may request payment from the ALLOWANCE for the actual costs incurred from the Utility company (i.e. FPL). Along with the Contractor's request for payment from the ALLOWANCE, the Contractor shall provide the Owner with a copy of the **paid** invoice from the Utility company as documentation of the actual costs incurred. This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.

Bid Items 200 – 201 (BALL FIELD/SECURITY LIGHTING): The various pay items for BALL FIELD/SECURITY LIGHTING shall include the installation of an Owner furnished ball field/security lighting system in accordance with the ball field/security lighting manufacturer requirements and specifications. This pay items also includes the unloading and on-site storage of ball field/security lighting system materials delivered to the site by the OWNER. The ball field/security lighting system includes, but not limited to, poles (including pole base design, sizes, and specifications provided by manufacturer), fixtures, fixture mounting hardware, control cabinets, wiring harness from top of the poles to the ballast enclosures using modular electrical connection, ballast enclosures to be mounted at approximately 15 feet above grade, Control Link to be prewired and integrated into the contactor cabinet, and surge protection devices. Installation of the ball field/security lighting systems includes all conduit, wiring, pole/base installation, fixture installation, control panel installation, grounding, field adjustment and aiming of light fixtures per manufacturer direction (including

manufacturer start-up/commissioning/training). This section also includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents and the ball field/security lighting manufacturer's specifications.

Bid Items 300 - 301 (MISCELLANEOUS): The various pay items for MISCELLANEOUS shall include construction survey/stakeout/record drawings, mobilization, miscellaneous permits/permit fees as may be required for the installation of the site electrical and ball field/security lighting system, and bonding as required per the contract documents. Measurement and payment for the Mobilization Bid Item shall include full compensation for the required 100 percent (100%) Performance Bond, 100 Percent (100%) Payment Bond, all required insurance for the project, and any permits not already obtained by the County. The contractor shall also coordinate with and confirm all survey/stakeout requirements with the ball field/security lighting manufacturer and include all required survey work related to the aiming of the ball field/security lighting system fixtures in their bid price. The work included under the Mobilization pay item consists of the preparatory work and operations in mobilizing to begin work on the project. This may include those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, safety equipment and first aid supplies, and sanitary and other facilities/utilities. The mobilization pay item also includes demobilization of all equipment, personnel, supplies and incidentals from the project site upon final completion. Payment for mobilization shall not exceed 10 percent (10%) of the total Contract cost unless the Contractor can prove to the County that his actual mobilization cost exceeds 10 percent (10%). The basis of payment for all work associated with Mobilization shall be paid for under the Lump Sum Pay Item and in accordance with the following schedule:

Percent of Total Contract Amount Earned	Allowable Percent of the Lump Sum Price for Mobilization
5	25
10	50
25	75
100	100

This section also includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.

DIVISION 26—ELECTRICAL

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Basic electrical requirements specifically applicable to Division 26 Electrical.

1.2 SECTION INCLUDES

A. Basic Electrical Requirements specifically applicable to Division 26 Sections, in addition to Division 01 General Requirements.

1.3 INTENT

A. It is the intention of these specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."

B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.4 SURVEYS AND MEASUREMENTS

A. Base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work. All material take-offs for the site shall be field measured prior to bids.

1.5 DRAWINGS

A. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The architectural drawings and details shall be examined for exact location of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the Architect.

B. If directed by the Architect or Engineer, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

C. At the time of each shop drawing submission, the Contractor shall call the Engineer's attention (in writing) to, and plainly mark on shop drawings, any deviations from the Contract Documents.

D. Samples, drawings, specifications, catalogs, submitted for approval, shall be properly labeled indicating specific service for which material or equipment is to be used, location, section and article number of specifications governing, Contractor's name, and name of job. All equipment shall be labeled to match labeling on contract documents.

E. Catalogs, pamphlets, or other documents submitted to describe items on which approval is being requested, shall be specific and identification in catalog, pamphlet, etc. of item submitted shall be clearly made in ink. Data of a general nature will not be accepted.

F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

G. All shop drawings shall be submitted to the A/E by Contractor no later than 30 days from the day of contract award.

H. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of contract time, and no claim for extension by reason of such default will be allowed.

I. Submit all Division 16 submittals at one (1) time in one (1) integral group. Piece-by-piece submission of individual items will not be acceptable. Engineer may check contents of each submittal set upon initial delivery; if not complete as set forth herein, submittal sets may be returned to Contractor without review and approval and will not be accepted until made complete.

J. At the close of the job, prior to final review, five (5) bound copies of the following shall be submitted by transmittal letter to the Engineer for review and acceptance.

1. Equipment warranties

2. Contractor's warranty

3. Parts list and manuals for all equipment

4. Operating Instructions (in writing)

5. Written instructions on maintenance and care of the system

1.6 REFERENCES

A. ANSI/NFPA 70—National Electrical Code.

B. NFPA 101—Life Safety Code.

1.7 SUBMITTALS

A. Submit under provisions of Division 1.

B. Proposed Products List: Include Products specified in the following Sections, but not limited to:

1. Section 26 05 19 .....Low-Voltage Electrical Power Conductors and Cables.

2. Section 26 05 26 .....Grounding and Bonding for Electrical Systems.

3. Section 26 05 29 .....Hangers and Supports for Electrical Systems.

4. Section 26 05 33 .....Raceway and Boxes for Electrical Systems.

5. Section 26 05 53 .....Identification for Electrical Systems.

6. Section 26 24 16 .....Panelboards.

7. Section 26 43 13 .....Surge Protective Devices

8. Section 26 56 00 .....Exterior Lighting.

C. It shall be understood that review of shop drawings by the Engineer does not supersede the requirement to provide a complete and functioning system in compliance with the Contract Documents.

1.8 SUBSTITUTIONS

A. Materials and equipment are specified herein by a single or by multiple Manufacturers to indicate quality and performance required. The drawings are based upon equipment scheduled on drawings and specified. If another Manufacturer is considered for substitution during the bidding process, the Electrical Contractor shall be responsible for coordinating all electrical, mechanical, structural, or architectural changes. Comparable equipment Manufacturers which are listed as equals shall be considered as substitutes. Manufacturers other than the basis of design shall submit a catalog information and 1/4" scale plan and section drawings showing proper fit and all clearances for maintenance items.

B. Substitutions of other Manufacturer's will be considered for use if, in the Engineers opinion, the item requested for substitution is equal to that specified. The Contractor shall provide to the Engineer a typed comparative list of the basis of design and the proposed substitute.

Request for approval of substitutions or equals prior to bid must be made in writing. The approval of any substitutions or equals prior to bid shall not be construed as a shop drawing approval. The substitute or equal must be submitted as described in the specifications and meet all the requirements of the specifications and drawings.

C. All requests for substitutions shall be submitted as described in paragraph 1.07, B., and specifically indicate any and all differences or omissions between the product specified as basis of design and the product proposed for substitution.

D. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawing, which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical or electrical, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Subcontractor at his own expense and submitted to the Architect/Engineer for approval.

E. Where such approved deviation requires quantity and arrangement of equipment from that specified or indicated on the drawings, any other additional equipment required by the system, at no additional cost to the Owner.

1.9 COOPERATION WITH OTHER TRADES

A. Give full cooperation to other trades and furnish in writing to the General Contractor, with copies to the Architect, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.

B. When work installed under this Division will be in close proximity to, or will interfere with work of other trades, assist in working out space conditions to make a satisfactory adjustment. If so directed by the Engineer/Architect, prepare composite working drawings and sections at a suitable scale not less than 1/4" = 1'0", clearly showing how work is to be installed in relation to the work of other trades. If the work is installed before coordinating with other trades, or so as to cause any interference with work of other trades, make all the necessary changes in work to correct the condition without extra charge.

C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.10 ELECTRICAL UTILITY COORDINATION

A. The contractor shall arrange with Utility Company for permanent electric service including payment of Utility Company charges for service.

B. Service shall be underground Service Entrance. System Voltage: 277/480 volts, three phase, four-wire, 60 Hertz.

C. Utility Company: Florida Power and Light Corp.

D. Install service entrance in accordance with Utility Company's rules and regulations.

E. The utility company shall provide the primary utility conduits and the Electrical Contractor shall install the conduits as directed by the utility company. The utility company shall provide and install the primary conductors.

1.11 PROTECTION

A. Protect all work and material provided under this Division from damage. All damaged equipment work or material provided under this Division shall be replaced with new. Rebuilts are not acceptable.

B. Protect all work and equipment until inspected, tested, and accepted. Protect work against theft, injury, or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.12 SCAFFOLDING, RIGGING, AND HOISTING

A. Provide all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

1.13 REMOVAL OF RUBBISH

A. This Contractor shall at all times keep premises free from accumulations of waste materials or rubbish caused by his employees or work. At completion of work he shall remove all his tools, scaffolding, materials, and rubbish from the building and site. He shall leave the premises and his work in a clean, orderly, and acceptable condition.

1.14 SAFETY

A. This Contractor shall comply with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.333), Title 29—Labor, Chapter XIII, Bureau of Standards, Department of Labor, Part 1518—Safety and Health Regulations for Construction; and that his housekeeping and equipment be maintained in such a manner that they comply with the Florida Industrial Commission Safety Code and Regulations of the Federal Williams—Steiger Occupational Safety and Health Act of 1970 (OSHA), wherein it states that the Contractor shall not require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety.

1.15 SUPERVISION

A. This Contractor shall provide a competent, experienced, full time superintendent who is acceptable to the Architect/Engineer and Owner, and who is authorized to make decisions on behalf of the Contractor.

1.16 MATERIAL AND WORKMANSHIP

A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Engineer shall be furnished. Refer to substitutions in this Section.

B. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed with the approval of the Architect and Engineer in accordance with the recommendations of the Manufacturer. This includes the performance of such tests as the Manufacturer recommends.

1.17 QUIET OPERATION AND VIBRATION

A. All work shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Engineer and the Owner. In case of moving machinery, sound, or vibration noticeable outside of room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Engineer and the Owner shall be corrected in an approved manner at no additional expense to the Owner.

1.18 FOUNDATIONS, SUPPORTS, PIERS, ATTACHMENTS

A. This Contractor shall furnish and install all necessary foundations, supports, pads, bases and piers required for all equipment furnished under this Division, and shall submit drawings to the Architect and Engineer for approval before purchase, fabrication or construction of same.

B. For all floor mounted equipment, provide concrete pads which extend six inches (6") beyond equipment base in all directions with top edge chamfered. Inset six inches (6") steel dowel rods into floors to anchor pads. Shop drawings of all foundations and pads shall be submitted to the Architect and Engineer for approval before same are constructed.

C. Construction of foundations, supports, pads, bases, and piers where mounted on the floor, shall be the same materials and same quality of finish as the adjacent and surrounding flooring material.

D. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Architect and the Engineer, not strong enough shall be replaced as directed.

1.19 ACCESS DOORS FOR WALLS AND CEILINGS

A. Provide flush panel access doors with a 16 gauge steel frame and a 14 gauge steel door panel.

B. Finish is to be primed painted steel.

C. Provide concealed hinges which allow the door to open 175 degrees and have a removable pin.

D. Provide access doors with a locked flush mounted vandal proof spanner head operated steel cams.

E. Provide 1-1/2 hour "B" label door for rated chase walls.

F. Furnish masonry anchors for installation in masonry walls and metal lath wings with casing bead for plaster installation.

G. Provide a minimum 2'-0" by 2'-0" access doors unless shown or noted otherwise on the drawings.

H. Access doors for chase walls shall be mounted 16" off the finish floor.

I. Access doors for electrical equipment shall be a minimum of 12" larger than equipment all around.

1.20 REGULATORY REQUIREMENTS

A. Conform to applicable Codes and Standards as follows:

1. Standard:

a. Certain standard materials and installation requirements are described by reference to standard specifications. These standards are as follows:

NEMA..... National Electrical Manufacturers Association.

UL ..... Underwriters Laboratories.

ANSI..... American National Standards Institute.

For additional standards and requirements see other sections of the specifications.

Whenever a reference is made to a standard, installation and materials shall comply with the latest published edition at the time project is bid unless otherwise specified herein.

2. Codes and Rules:

   a. All material furnished and all work installed shall comply with the following codes as they apply to this project:

      - NFPA 70 and NFPA 101.
      - Regulations of the Florida Industrial Commission Concerning Safety.
      - Applicable County, State, and Local Building Codes.
      - Local and State Fire Marshal Rules and Regulations.
      - Chapter 4A-47, Florida Administrative Code - Uniform Fire Safety Standards for Elevators.
      - Occupational Safety and Health Agency Standards (OSHA).
      - Florida State Board of Health Rules and Regulations.
      - Florida Building Code.
      - Manatee County Land Development Code

      Applicable codes shall be those adopted by the authority having jurisdiction at the time project is bid.

3. Permits, Fees and Inspections

   a. The Contractor shall give all necessary notices, obtain all permits and pay all government fees, sales taxes and other costs, including utility connections or extensions, in connection with this work; file all necessary approvals of all governmental departments having jurisdiction.

   b. Obtain all required certificates of inspection for his work and deliver to the Owner/Engineer the same certificates before request for acceptance and final payment for the work.

   c. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus and drawings required to comply with all applicable laws, ordinances, rules and regulations.

   d. The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

1.21 PROJECT/SITE CONDITIONS

A. Install Work in locations shown on Drawings, unless prevented by Project conditions.

B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.

C. The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

D. The scope of the work included under this Division of the Specifications shall include complete electrical systems as shown on the plans and as specified herein. The General Conditions and Special Conditions of these specifications shall form a part and be included under this Section of the Specifications. Provide all supervision, labor, material, equipment, machinery, factory trained personnel, and any and all other items necessary to complete the electrical systems. All items of equipment are specified in the singular; however, provide and install the number of items of equipment as indicated on the drawings, and as required for complete systems.

1.22 SEQUENCING AND SCHEDULING

A. Construct Work in sequence under provisions of Division 1.

1.23 LICENSE

A. The Subcontracting Firm for the electrical and systems installation shall be licensed by the State of Florida and the local authorities, regularly engaged in the installation of electrical systems and other related equipment. The Subcontracting Firm shall be familiar with all local conditions including interpretations, codes and shall have at least 5 years of successful installation experience on similar projects of the same magnitude and scope.

The Subcontracting Firm shall list at least three projects it has successfully completed over the last five years for proof of experience of this caliber. This list shall be included with submittals for review by Architect/Engineer. The Subcontracting Firm shall hold a Florida State Certified Electrical Contractor license for this project. The Subcontracting firm for the fire alarm system shall be a certified "EF" installer.

1.24 AS-BUILT DRAWINGS

A. This Contractor shall provide AutoCad as-built drawings and copies of each AutoCad file on CD before final payment will be issued.

*** END OF SECTION 26 05 00 ***

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.

2. Connectors, splices, and terminations rated 600 V and less.

3. Sleeves and sleeve seals for cables.

4. Conductor sizes are based on copper.

B. Related Sections include the following:

1. Section 26 05 33 .....Raceway And Boxes For Electrical Systems.

2. Section 26 05 53 .....Identification For Electrical Systems.

1.3 REFERENCES

A. ANSI/NFPA 70—National Electrical Code.

B. NEMA WC5—Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

1.4 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Qualification Data: For testing agency.

C. Field quality-control test reports.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70 where wire and cable is not shown.

1.7 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

B. Determine required separation between cable and other work.

PART 2 PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Alcan Products Corporation; Alcan Cable Division.

2. American Insulated Wire Corp.; a Leviton Company.

3. General Cable Corporation.

4. Senator Wire & Cable Company.

5. Southwire Company.

C. Copper Conductors: Comply with NEMA WC 70.

D. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN and XHHW.

E. Multiconductor Cable: Comply with NEMA WC 70 for Type SO with ground wire.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.

2. Hubbell Power Systems, Inc.

3. O-Z/Gedney; EGS Electrical Group LLC.

4. 3M; Electrical Products Division.

5. Tyco Electronics Corp.

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.4 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.

2. Calpico, Inc.

3. Metraflex Co.

4. Pipeline Seal and Insulator, Inc.

C. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

2. Pressure Plates: Carbon steel. Include two for each sealing element.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN-XHHW, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-THWN, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.

G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

H. Class 1 Control Circuits: Type THHN-THWN, in raceway.

I. Class 2 Control Circuits: Type THHN-THWN-TFFN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Concealed Dry Interior Locations: Use only building wire and cable (all types) in raceway.

E. Exposed Dry Interior Locations: For feeders, branch circuits, and class 1 remote control circuits, use only building wire in raceway. For class 2 or 3 control cable and power limited fire protective signaling cables run in raceway.

F. Above Accessible Ceilings: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cables run exposed. For power limited fire protective signaling cables run in raceway.

G. Wet or Damp Interior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cable and power limited fire protective signaling cables run in raceway.

H. Exterior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and fire protective signaling cables run in raceway.

I. Underground Installations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and for power limited fire protective signaling cables run in raceway.

J. Use wiring methods indicated on Drawings.

K. Each computer/clean power receptacle and lighting circuits shall have a dedicated neutral conductor.

L. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.

M. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

N. All conductors size #6 and smaller shall be color coded insulation. Equipment grounding conductors #6 and smaller to have green or bare exterior finish per NEC 250-119(A). Grounded conductors (neutral) #6 and smaller to have a white or grey exterior finish per NEC 200-6. Conductors size #4 and larger shall be color code by use of colored plastic tape applied within 6" of each conductor end. All color coding shall be with the same color being used with its respective phase or bus through the entire job as follows:

240/120 VOLTS
Phase A.....Black
Phase B.....Orange
Phase C.....Blue
Neutral.....White
Ground .....Green

O. Grounding conductors shall be identified with a continuous outer finish that is either green, or green with one or more yellow stripe.

P. Protect exposed cable from damage.

Q. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.

R. Neatly train and lace wiring inside boxes, equipment, and panelboards.

S. Clean conductor surfaces before installing lugs and connectors.

T. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

U. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.

V. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

W. Terminate spare conductors with electrical tape.

X. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

Y. Splice only in accessible junction boxes.

Z. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both wall surfaces.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Seal space outside of sleeves with grout for penetrations of concrete and masonry.

H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."

J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.

B. Perform tests and inspections and prepare test reports.

C. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding the following critical equipment and services for compliance with requirements.

    a. Subpanels.

    b. Mechanical equipment with service of 200 amps and greater.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.

3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan on equipment and connections identified by the Engineer. Remove box and equipment covers so splices are accessible to portable scanner.

    a. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

D. Test Reports: Prepare a written report to record the following:

1. Test procedures used.

2. Test results that comply with requirements.

3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

E. Remove and replace malfunctioning units and retest as specified above.

*** END OF SECTION 26 05 19 ***

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment.

1. Underground distribution grounding.

1.3 SYSTEM DESCRIPTION

A. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.

PART 2 PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.

2. Stranded Conductors: ASTM B 8.

3. Tinned Conductors: ASTM B 33.

4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.

5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 4 inches in cross section, unless otherwise indicated; with insulators, length as required for number of terminations plus 25 percent future capacity.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad; sectional type, 3/4 inch by 10 feet in diameter, two (2) rods coupled together for overall length of 20 feet.

PART 3 EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 8 AWG and larger, unless otherwise indicated.

B. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.

2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.

3. Connections to Ground Rods at Test Wells: Bolted connectors.

4. Connections to Structural Steel: Clamp connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.

2. Lighting circuits.

3. Flexible raceway runs.

4. Armored and metal-clad cable runs.

C. Metal and Concrete Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors. Provide ground rod at each location.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.

2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.

3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect/Engineer promptly and include recommendations to reduce ground resistance.

F. Supplement by adding additional ground rods to achieve 10 ohms.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

B. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.

    b. Perform tests by fall-of-potential method according to IEEE 81.

3. Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

C. Report measured ground resistances that exceed the following values:

1. Main service equipment and distribution gear.

2. Separately derived system (i.e., transformers, uninterruptible power supply, engine generators).

3. Grounding system resistance shall not exceed 10 ohms.

D. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect/Engineer promptly and include recommendations to reduce ground resistance.

E. Supplement by adding additional ground rods to achieve 10 ohms.

*** END OF SECTION 26 05 26 ***

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.

2. Construction requirements for concrete bases.

3. Supports/safety wire and chains for light fixtures and equipment.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.

2. Nonmetallic slotted support systems.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.

2. Steel slotted channel systems. Include Product Data for components.

3. Nonmetallic slotted channel systems. Include Product Data for components.

4. Equipment supports.

C. Welding certificates.

1.6 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

1.7 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

PART 2 PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Allied Tube & Conduit.

b. Cooper B-Line, Inc.; a division of Cooper Industries.

c. ERICO International Corporation.

d. GS Metals Corp.

e. Thomas & Betts Corporation.

f. Unistrut; Tyco International, Ltd.

g. Wesanco, Inc.

2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.

3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.

5. Channel Dimensions: Selected for applicable load criteria.

B. Located In or Around Cooling Tower Yards: Pipe hangers, equipment supports, miscellaneous structure components, hardware, bolts, washers, nuts, screws, etc., shall be non-metallic polyester resin, vinyl ester resin, fiberglass, glass reinforced polyurethane, or 316 stainless steel.

C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

D. Conduit and Cable Support Devices: Malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Shall not be used.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Cooper B-Line, Inc.; a division of Cooper Industries.

2) Empire Tool and Manufacturing Co., Inc.

3) Hilti Inc.

4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.

5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.

4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.

5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.

6. Toggle Bolts: All-steel springhead type.

7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment. After fabrication shall be coated with hot-dipped galvanized with a minimum of 1.50 oz/ft on all sides.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

C. Field cuts shall be zinc coated.

PART 3 EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with conduit clamps.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.

2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

3. To Existing Concrete: Expansion anchor fasteners.

4. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.

5. To Light Steel: Sheet metal screws.

6. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate[by means that meet seismic-restraint strength and anchorage requirements].

7. Do not drill structural steel members.

D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

2. Install anchor bolts to elevations required for proper attachment to supported equipment.

3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touchup: Comply with requirements in Division 09 Painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

*** END OF SECTION 26 05 29 ***

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Related Sections include the following:

1. Section 26 05 26 .....Grounding and Bonding for Electrical Systems.

2. Section 26 05 29 .....Hangers and Supports for Electrical Systems.

3. Section 26 05 53 .....Identification for Electrical Systems.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. EPDM: Ethylene-propylene-diene terpolymer rubber.

D. FMC: Flexible metal conduit.

E. IMC: Intermediate metal conduit.

F. LFMC: Liquidtight flexible metal conduit.

G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: All raceway types, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.

1. Custom enclosures and cabinets.

2. For handholes and boxes for underground wiring, including the following:

a. Duct entry provisions, including locations and duct sizes.

b. Frame and cover design.

c. Grounding details.

d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.

e. Joint details.

C. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Structural members in the paths of conduit groups with common supports.

2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.

2. Alflex Inc.

3. Allied Tube & Conduit; a Tyco International Ltd. Co.

4. Anamet Electrical, Inc.; Anaconda Metal Hose.

5. Electri-Flex Co.

6. Manhattan/CDT/Cole-Flex.

7. Maverick Tube Corporation.

8. O-Z Gedney; a unit of General Signal.

9. Wheatland Tube Company.

B. Rigid Steel Conduit: ANSI C80.1. Zinc coated ¾" minimum.

C. Aluminum Rigid Conduit: ANSI C80.5.

D. IMC: ANSI C80.6.

E. EMT: ANSI C80.3. ¾" minimum.

F. LFMC: Flexible steel conduit with PVC jacket.

G. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Steel set screw or steel compression. One inch (1") and smaller shall be insulated throughout.

2. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.

3. Fittings for EMT: Steel, set-screw or compression type.

4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.

H. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.

2. Anamet Electrical, Inc.; Anaconda Metal Hose.

3. Arnco Corporation.

4. CANTEX Inc.

5. CertainTeed Corp.; Pipe & Plastics Group.

6. Condux International, Inc.

7. ElecSYS, Inc.

8. Electri-Flex Co.

9. Lamson & Sessions; Carlon Electrical Products.

10. Manhattan/CDT/Cole-Flex.

11. RACO; a Hubbell Company.

12. Thomas & Betts Corporation.

B. ENT: NEMA TC 13.

C. RNC: NEMA TC 2, Type EPC-40-PVC and EPC-80-PVC. ¾" minimum.

D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

2.3 METAL WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper B-Line, Inc.

2. Hoffman.

3. Square D; Schneider Electric.

B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.

C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

D. Wireway Covers: Hinged type or screw-cover type, as indicated.

E. Finish: Manufacturer's standard enamel finish.

2.4 NONMETALLIC WIREWAYS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Hoffman.

2. Lamson & Sessions; Carlon Electrical Products.

B. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.

C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.

D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.5 SURFACE RACEWAYS

A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by Architect/Engineer.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Thomas & Betts Corporation.

b. Walker Systems, Inc.; Wiremold Company (The).

c. Wiremold Company (The); Electrical Sales Division.

B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC with texture and color selected by Architect from manufacturer's standard colors.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

a. Butler Manufacturing Company; Walker Division.

b. Enduro Systems, Inc.; Composite Products Division.

c. Hubbell Incorporated; Wiring Device-Kellems Division.

d. Lamson & Sessions; Carlon Electrical Products.

e. Panduit Corp.

f. Walker Systems, Inc.; Wiremold Company (The).

g. Wiremold Company (The); Electrical Sales Division.

2.6 BOXES, ENCLOSURES, AND CABINETS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.

2. EGS/Appleton Electric.

3. Erickson Electrical Equipment Company.

4. Hoffman.

5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.

6. O-Z/Gedney; a unit of General Signal.

7. RACO; a Hubbell Company.

8. Robroy Industries, Inc.; Enclosure Division.

9. Scott Fetzer Co.; Adalet Division.

10. Spring City Electrical Manufacturing Company.

11. Thomas & Betts Corporation.

12. Walker Systems, Inc.; Wiremold Company (The).

13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.

B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

D. Metal Floor Boxes: Cast metal, fully adjustable, rectangular. Hubbell B-4236 Series, Walker 880CS Series.

E. Floor Box Covers: Polished solid brass.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.

H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

I. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.

2. Hinged door in front cover with flush latch and concealed hinge.

3. Key latch to match panelboards.

4. Metal barriers to separate wiring of different systems and voltage.

5. Accessory feet where required for freestanding equipment.

6. Plywood backboard, marine-grade, ¾" thick.

7. Copper Ground Bar with #6 Copper Grounding: Electrode conductor to building steel.

8. Terminal Blocks: ANSI/NEMA ICS 4: UL listed. Channel mounted tubular pressure screw connectors, rated 300 volts.

2.7 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

A. Description: Comply with SCTE 77.

1. Color of Frame and Cover: Gray.

2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.

3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.

4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.

5. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATION."

6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.

7. Handholes 12 inches wide by 24 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.

8. All in-ground boxes shall be traffic bearing type.

B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide Quazite PG Series or a comparable product by one of the following:

a. Armorcast Products Company.

b. Carson Industries LLC.

c. CDR Systems Corporation.

d. NewBasis.

2.8 SLEEVES FOR RACEWAYS

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.9 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Advance Products & Systems, Inc.

2. Calpico, Inc.

3. Metraflex Co.

4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.

2. Pressure Plates: Carbon steel. Include two for each sealing element.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit.

2. Concealed Conduit, Aboveground: Rigid steel conduit or EMT.

3. Underground Conduit: RNC, Type EPC-40 PVC, direct buried.

4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

6. Application of Handholes and Boxes for Underground Wiring:

a. Handholes and Pull Boxes in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Polymer concrete. SCTE 77, Tier 15 structural load rating.

b. Handholes and Pull Boxes in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Polymer-concrete units, SCTE 77, Tier 8 structural load rating.

c. Handholes and Pull Boxes Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.

2. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:

a. Loading dock.

b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.

c. Mechanical rooms.

3. Concealed in Ceilings and Interior Walls and Partitions: EMT.

4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.

5. Damp or Wet Locations: Rigid steel conduit.

6. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical fiber/communications cable in raceway or EMT.

7. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: EMT.

8. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: General-use, optical fiber/communications cable in raceway; Riser-type, optical fiber/communications cable in raceway. Outside Plant, Plenum-type, optical fiber/communications cable in RGC or IMC.

9. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.

F. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of four 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs: Metallic raceways shall be coated with Bitumastic.

1. Run conduit parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.

2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

3. Change from Type EPC-40-PVC to rigid steel conduit or IMC before rising above the floor.

I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

K. Install pull wires in empty raceways. Use #12 insulated conductor or polypropylene line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

L. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.

2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.

3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.

2. Where otherwise required by NFPA 70.

N. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.

1. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.

2. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

O. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.

P. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

Q. Set metal floor boxes level and flush with finished floor surface.

R. Install insulated bushing on all conduits. Install grounded metal bushing with lug on all mains, sub-feeders, switchboards, panelboards, transformers, chillers, disconnects, starters, and equipment rated at 100 amps and above.

S. Do not install flush mounting boxes back to back in walls. Provide minimum 12 inch separation. Provide 24 inch minimum separation in acoustic rated walls.

T. Install boxes to preserve fire resistance rating of partitions and other elements using materials and methods that are UL listed and tested.

U. Use stamped steel bridges to fasten flush mounted outlet box between studs.

V. Existing Walls, Public Areas, Classrooms, Offices, Restrooms, Hallways, etc.: Conduit and boxes shall be concealed. Saw cut walls and floor slab. Make arrangements with General Contractor to patch all areas.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches in nominal diameter.

2. Install backfill as specified in Division 31 Section "Earth Moving."

3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."

4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.

5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.

b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.

7. Transition from PVC (EPC-40 and EPC-80) to rigid galvanized conduit 5'-0" out from building foundation walls.

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.

B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.

C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.

E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

A. Install to seal underground, exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.8 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

*** END OF SECTION 26 05 33 ***

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways, Junction Boxes, and Pullboxes Carrying Circuits at 600 V or Less:

1. 240 Volt, Single and Three Phase System: Black.

2. Motor and Other Control Systems: Purple.

C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

2.3 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.4 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.

2. Printing on tape shall be permanent and shall not be damaged by burial operations.

3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.

2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.

2.5 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.

2. 1/4-inch grommets in corners for mounting.

3. Nominal size, 7 by 10 inches.

D. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.6 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.

2. Punched or drilled for mechanical fasteners.

3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

2.7 EQUIPMENT IDENTIFICATION LABELS

A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

B. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.8 CABLE TIES

A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.

3. Temperature Range: Minus 40 to plus 185 deg F.

4. Color: Black except where used for color-coding.

B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.

3. Temperature Range: Minus 40 to plus 185 deg F.

4. Color: Black.

C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.

1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.

3. UL 94 Flame Rating: 94V-0.

4. Temperature Range: Minus 50 to plus 284 deg F.

5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.1 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 10-foot maximum intervals in straight runs, and at 5-foot maximum intervals in congested areas.

G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.

H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:

1. Outdoors: UV-stabilized nylon.

2. In Spaces Handling Environmental Air: Plenum rated.

I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.

J. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways, 600 V or Less, for Service, Feeder, and Branch Circuits: Identify with self-adhesive vinyl label, self-adhesive vinyl tape applied in bands, or painted bands. Install labels at 10-foot maximum intervals.

B. Power-Circuit Conductor Identification, 600 V or Less: For all conductors.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.

a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.

b. Colors for 240/120-V Circuits:

1) Phase A: Black.

2) Phase B: Orange.

3) Phase C: Blue.

c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

C. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

D. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.

3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Install underground-line warning tape for both direct-buried cables and cables in raceway.

G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

   a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.

   b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.

   c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.

   d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

   a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.

   b. Enclosures and electrical cabinets.

   c. Contactors.

   d. Monitoring and control equipment.

*** END OF SECTION 26 05 53 ***

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Distribution panelboards.

2. Lighting and appliance branch-circuit panelboards.

3. Load centers.

4. Electronic-grade panelboards.

1.3 DEFINITIONS

A. SVR: Suppressed voltage rating.

B. TVSS: Transient voltage surge suppressor.

1.4 SUBMITTALS

A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.

2. Detail enclosure types and details for types other than NEMA 250, Type 1.

3. Detail bus configuration, current, and voltage ratings.

4. Short-circuit current rating of panelboards and overcurrent protective devices.

5. Include evidence of NRTL listing for series rating of installed devices.

6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.

7. Include wiring diagrams for power, signal, and control wiring.

8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards. Submit on translucent log-log graft paper; include selectable ranges for each type of overcurrent protective device.

C. Panelboard Schedules: For installation in panelboards. Submit final versions after load Falancing.

D. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

3. Provide a coordination study for the Level 1 Emergency System (if applicable). If there are any changes to the distribution system required for proper coordination, those costs shall be included in the Original Bid.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

D. Comply with NEMA PB 1.

E. Comply with NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.

B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.7 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

a. Ambient Temperature: Not exceeding minus 22 deg F to plus 104 deg F.

b. Altitude: Not exceeding 6600 feet.

B. Service Conditions: NEMA PB 1, usual service conditions, as follows:

1. Ambient temperatures within limits specified.

2. Altitude not exceeding 6600 feet.

C. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of electric service.

2. Do not proceed with interruption of electric service without Owner's written permission.

3. Comply with NFPA 70E.

1.8 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

1.10 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Keys: Two spares for each type of panelboard cabinet lock.

2. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Two spares for each panelboard.

3. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

4. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Enclosures: Flush- and surface-mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.

b. Outdoor Locations: NEMA 250, Type 3R.

c. Kitchen Wash-Down Areas: NEMA 250, Type 4X, stainless steel.

d. Other Wet or Damp Indoor Locations: NEMA 250, Type 4.

e. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 5.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.

3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.

4. Skirt for Surface-Mounted Panelboards: Same gage and finish as panelboard front with flanges for attachment to panelboard, wall, and ceiling or floor.

5. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.

6. Finishes:

a. Panels and Trim: Steel and galvanized steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.

b. Back Boxes: Galvanized steel.

c. Fungus Proofing: Permanent fungicidal treatment for overcurrent protective devices and other components.

7. Directory Card: Inside panelboard door, mounted in metal frame with transparent protective cover.

C. Incoming Mains Location: Top and bottom.

D. Phase, Neutral, and Ground Buses:

1. Material: Hard drawn copper, 98 percent conductivity.

2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.

3. Isolated Ground Bus: Adequate for branch-circuit isolated ground conductors; insulated from box.

4. Extra-Capacity Neutral Bus: Neutral bus rated 200 percent of phase bus and UL listed as suitable for nonlinear loads.

5. Split Bus: Vertical buses divided into individual vertical sections.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard drawn copper, 98 percent conductivity.

2. Main and Neutral Lugs: Compression type.

3. Ground Lugs and Bus-Configured Terminators: Compression type.

4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.

5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

6. Gutter-Tap Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

7. Extra-Capacity Neutral Lugs: Rated 200 percent of phase lugs mounted on extra-capacity neutral bus.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices, listed and labeled for series-connected short-circuit rating by an NRTL.

I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

D. For doors more than 36 inches high, provide two latches, keyed alike.

E. Mains: Circuit breaker or Lugs only.

F. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

G. Branch Overcurrent Protective Devices for Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

H. Branch Overcurrent Protective Devices: Fused switches.

I. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.

2. External Control-Power Source: 120-V branch circuit.

J. Provide circuit breakers UL listed as Type HACR for air conditioning equipment branch circuits.

K. Current Limiting Molded Case Circuit Breakers: NEMA AB 1 FS W-C-375; provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: Circuit breaker or lugs only.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Contactors in Main Bus: NEMA ICS 2, Class A, mechanically held, general-purpose controller, with same short-circuit interrupting rating as panelboard.

1. Internal Control-Power Source: Control-power transformer, with fused primary and secondary terminals, connected to main bus ahead of contactor connection.

2. External Control-Power Source: 120-V branch circuit.

F. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

G. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

H. Minimum Integrated Short Circuit Rating: 10,000 amperes rms symmetrical for 240 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards, or as shown on Drawings. These ratings may be lowered by short circuit calculations performed by manufacturer stating actual A.I.C. ratings throughout entire system.

I. Molded Case Circuit Breakers: FS W-C-375; bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

J. Current Limiting Molded Case Circuit Breakers: FS W-C-375; provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole, coordinated with automatically resetting current limiting elements in each pole. Interrupting rating 100,000 symmetrical amperes, let-through current and energy level less than permitted for same size Class RK-5 fuse.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

3. Siemens Energy & Automation, Inc.

4. Square D; a brand of Schneider Electric.

B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.

3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

a. Instantaneous trip.

b. Long- and short-time pickup levels.

c. Long- and short-time time adjustments.

d. Ground-fault pickup level, time delay, and I2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.

5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).

7. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.

8. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.

b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor materials.

c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.

d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.

e. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."

f. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 55 percent of rated voltage.

g. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage with field-adjustable 0.1- to 0.6-second time delay.

h. Auxiliary Contacts: One SPDT switch with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts and "b" contacts operate in reverse of circuit-breaker contacts.

i. Alarm Switch: Single-pole, normally open contact that actuates only when circuit breaker trips.

j. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.

k. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function with other upstream or downstream devices.

l. Multipole units enclosed in a single housing or factory assembled to operate as a single unit.

m. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.

n. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

C. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."

2. Fused Switch Features and Accessories: Standard ampere ratings and number of poles.

3. Auxiliary Contacts: One normally open and normally closed contact(s) that operate with switch handle operation.

2.5 ACCESSORY COMPONENTS AND FEATURES

A. Accessory Set: Include tools and miscellaneous items required for overcurrent protective device test, inspection, maintenance, and operation.

B. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

2.6 EXISTING BRANCH CIRCUIT PANELBOARDS

A. Distribution, Lighting, and Appliance Branch Circuit Panelboards: NEMA PB1; bolted circuit breaker type or plug-in circuit breaker type to match existing.

B. Minimum Integrated Short Circuit Rating: Match existing rms symmetrical amperes in existing panels.

C. Molded Case Circuit Breakers: FS W-C-375; bolt-on or plug-in type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.

B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install panelboards and accessories according to NEMA PB 1.1.

B. Equipment Mounting: Install panelboards on concrete bases, 4-inch nominal thickness. Comply with requirements for concrete base specified in Division 03 Section "Cast-in-Place Concrete."

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around full perimeter of base.

2. For panelboards, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.

3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

4. Install anchor bolts to elevations required for proper attachment to panelboards.

5. Attach panelboard to the vertical finished or structural surface behind the panelboard.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.

D. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

E. Mount top of trim 90 inches above finished floor unless otherwise indicated.

F. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

G. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

H. Install filler plates in unused spaces.

I. Stub four 1-inch (27-GRC) empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch (27-GRC) empty conduits into raised floor space or below slab not on grade.

J. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.

K. Comply with NECA 1.

L. Install panelboards plumb [and flush with wall finishes], in conformance with NEMA PB 1.1.

M. Height: 6 feet 6 inches.

N. Provide filler plates for unused spaces in panelboards.

O. Provide typed circuit directory for each branch circuit panelboard, new or existing. Revise directory to reflect circuiting changes required to balance phase loads. Trace out all circuits in existing panelboards to indicate an accurate directory per new space changes and room numbers.

P. Stub 5 empty one inch conduits to accessible location above ceiling out of each recessed panelboard.

Q. At a minimum, Contractor shall meggar test all feeder conductors larger than 300 kcm. Meggar testing shall be completed prior to terminating either end of the conductors, to certify that the conductor insulation integrity has not been damaged from handling and/or installation. Contractor shall meggar test the insulation resistance of each phase to phase, phase to neutral and phase to ground conductor for one minute each. Test voltage shall be 1000 volts, and minimum acceptable value for insulation resistance is 2 megohms. Provide written report of certification testing to Engineer, replace any damaged conductors as necessary prior to terminations.

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.4 ADJUSTING

A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.

B. Set field-adjustable circuit-breaker trip ranges as indicated.

C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.

1. Measure as directed during period of normal system loading.

2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.

3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.

4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.5 PROTECTION

A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

*** END OF SECTION 26 24 16 ***

SECTION 26 43 13

SURGE PROTECTIVE DEVICES (SPDs)

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes field-mounted SPD for low-voltage (120 to 600 V) power distribution and control equipment.

B. Related Sections:

1. Division 26 Section "Panelboards" for factory-installed TVSS.

1.3 DEFINITIONS

A. ATS: Acceptance Testing Specifications.

B. VPR: Voltage protection rating.

C. SPD: Surge protective device(s), both singular and plural.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating weights, electrical characteristics, furnished specialties, and accessories.

B. Qualification Data: For qualified testing agency.

C. Product Certificates: For TVSS devices, from manufacturer.

D. Field quality-control reports.

E. Operation and Maintenance Data: For TVSS devices to include in emergency, operation, and maintenance manuals.

F. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Member company of NETA or an NRTL.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a testing agency, and marked for intended location and application.

C. Comply with IEEE C62.41.2 and test devices according to IEEE C62.45.

D. Comply with NEMA LS 1.

E. Comply with UL 1449, latest edition.

F. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Owner no fewer than seven (7) days in advance of proposed electrical service interruptions.

2. Do not proceed with interruption of electrical service without Owner's written permission.

B. Service Conditions: Rate SPD devices for continuous operation under the following conditions unless otherwise indicated:

1. Maximum Continuous Operating Voltage: Not less than 125 percent of nominal system operating voltage.

2. Operating Temperature: 30 to 120 deg F.

3. Humidity: 0 to 85 percent, noncondensing.

4. Altitude: Less than 1,000 feet above sea level.

1.7 COORDINATION

A. Coordinate location of field-mounted TVSS devices to allow adequate clearances for maintenance.

B. Coordinate TVSS devices with Division 26 Section "Electrical Power Monitoring and Control."

C. Coordinate the overcurrent protection amperage requirements before the circuit breakers are ordered for correct sizing.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of surge suppressors that fail in materials or workmanship within specified warranty period.

Warranty Period: Ten (10) years from date of Substantial Completion.

B. Special Warranty for Cord-Connected, Plug-in Surge Suppressors: Manufacturer's standard form in which manufacturer agrees to repair or replace electronic equipment connected to circuits protected by surge suppressors.

PART 2 PRODUCTS

2.1 SERVICE ENTRANCE SUPPRESSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advanced Protection Technologies Inc. (APT).
2. PQ Protection.
3. Liebert Corporation; a division of Emerson Network Power.
4. Square D; a brand of Schneider Electric.
5. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
6. Siemens Energy & Automation, Inc.
7. Eaton (Cutler Hammer)

B. Surge Protection Devices:

1. Modular.
2. LED indicator lights for power and protection status.
3. Audible alarm to indicate when protection has failed.
4. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
5. Surge Counter

C. Peak Single-Impulse Surge Current Rating: 300 kA per phase/150 kA per mode(unless otherwise noted on plans).

D. Fault Current Rating 200 kAIC.

E. Protection modes and UL 1449 VPR for hi-leg delta circuits with 240D/120 V, 3-phase, 4-wire circuits shall not exceed the folllowing:

1. Line to Neutral: 600 V for 240D/120 V.
2. Line to Ground: 600 V for 240D/120 V.
3. Neutral to Ground: 600 V for 240D/120 V.

4. Line to Line: 1000 V for 240D/120 V.

2.2 PANELBOARD SUPPRESSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advanced Protection Technologies Inc. (APT).

2. PQ Protection.

3. Liebert Corporation; a division of Emerson Network Power.

4. Square D; a brand of Schneider Electric.

5. General Electric Company; GE Consumer & Industrial - Electrical Distribution.

6. Siemens Energy & Automation, Inc.

7. Eaton (Cutler Hammer)

B. Surge Protection Devices:

1. Non-modular.

2. LED indicator lights for power and protection status.

3. Audible alarm to indicate when protection has failed.

4. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.

C. Peak Single-Impulse Surge Current Rating: 100 kA per phase/50 kA per mode (unless otherwise noted on plans).

D. Fault Current Rating 100 kAIC.

E. Protection modes and UL 1449 VPR for hi-leg delta circuits with 240D/120 V, 3-phase, 4-wire circuits shall not exceed the folllowing:

1. Line to Neutral: 600 V for 240D/120 V.

2. Line to Ground: 600 V for 240D/120 V.

3. Neutral to Ground: 600 V for 240D/120 V.

4. Line to Line: 1000 V for 240D/120 V.

2.3 ENCLOSURES

A. Indoor Enclosures: NEMA 250 Type 1.

B. Outdoor Enclosures: NEMA 250 Type 3R.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install TVSS devices at service entrance on load side, with ground lead bonded to service entrance ground.

B. Install TVSS devices for panelboards and auxiliary panels with conductors or buses between suppressor and points of attachment as short and straight as possible. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

1. Provide multiple, 30 or 60-A circuit breakers as scheduled on panel directory as a dedicated disconnecting means for TVSS unless otherwise indicated.

C. Review all installation information in owners manual. Verify all voltage before connections to avoid injury and damage to equipment. The specified unit shall be installed external to switchboard, distribution and panelboard as stand alone. Internal products will not be accepted.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

1. Verify that electrical wiring installation complies with manufacturer's written installation requirements.

B. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS, "Surge Arresters, Low-Voltage Surge Protection Devices" Section. Certify compliance with test parameters.

2. After installing TVSS devices but before electrical circuitry has been energized, test for compliance with requirements.

3. Complete startup checks according to manufacturer's written instructions.

D. TVSS device will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

3.3 STARTUP SERVICE

A. Do not energize or connect service entrance equipment, panelboards, control terminals, or data terminals to their sources until TVSS devices are installed and connected.

B. Do not perform insulation resistance tests of the distribution wiring equipment with the TVSS installed. Disconnect before conducting insulation resistance tests, and reconnect immediately after the testing is over.

3.4 DEMONSTRATION

A. Train Owner's maintenance personnel to maintain TVSS devices.

*** END OF SECTION 26 43 13 ***

SECTION 26 56 00 – R1

EXTERIOR LIGHTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Exterior luminaires with lamps and ballasts.

2. Luminaire-mounted photoelectric relays.

3. Poles and accessories.

4. Luminaire lowering devices.

1.3 DEFINITIONS

A. CRI: Color-rendering index.

B. HID: High-intensity discharge.

C. Luminaire: Complete lighting fixture, including ballast housing if provided.

D. Pole: Luminaire support structure, including tower used for large area illumination.

E. Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4.

B. Live Load: Single load of 500 lbf, distributed as stated in AASHTO LTS-4.

C. Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.

1. Wind speed for calculating wind load for poles exceeding 50 feet in height is 130 mph AASHTO LTS-4.

2. Wind speed for calculating wind load for poles 50 feet or less in height is 130 mph AASHTO LTS-4 for this Project.

1.5 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:

1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.

2. Details of attaching luminaires and accessories.

3. Details of installation and construction.

4. Luminaire materials.

5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.

a. For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

b. Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

6. Photoelectric relays.

7. Ballasts, including energy-efficiency data.

8. Lamps, including life, output, and energy-efficiency data.

9. Materials, dimensions, and finishes of poles.

10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.

11. Anchor bolts for poles.

12. Manufactured pole foundations.

B. Shop Drawings:

1. Anchor-bolt templates keyed to specific poles and certified by manufacturer.

2. Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.

3. Wiring Diagrams: Power and control wiring.

C. Samples for Verification: For products designated for sample submission in Exterior Lighting Device Schedule. Each sample shall include lamps and ballasts.

D. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4 and that load imposed by luminaire has been included in design.

E. Qualification Data: For agencies providing photometric data for lighting fixtures.

F. Field quality-control test reports.

G. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.

H. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.

B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Comply with IEEE C2, "National Electrical Safety Code."

E. Comply with NFPA 70.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Package aluminum poles for shipping according to ASTM B 660.

B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

C. Handle wood poles so they will not be damaged. Do not use pointed tools that can indent pole surface more than 1/4 inch deep. Do not apply tools to section of pole to be installed below ground line.

D. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.

E. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.

1. Warranty Period for Luminaires: Five years from date of Substantial Completion.

2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.

3. Warranty Period for Color Retention: Five years from date of Substantial Completion.

4. Warranty Period for Lamps: Replace lamps and fuses that fail within 12 months from date of Substantial Completion; furnish replacement lamps and fuses that fail within the second 12 months from date of Substantial Completion.

5. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

2. Glass and Plastic Lenses, Covers, and Other Optical Parts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

3. Ballasts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.

4. Globes and Guards: 10 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Furnish products as specified on the drawings.

B. Substitutions: Submit a written substitution request, prior to bid, to the Architect/Engineer in accordance with specifications. Accepted substitutes will be notified via Addendum.

2.2 LUMINAIRES, GENERAL REQUIREMENTS

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.

B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

C. Metal Parts: Free of burrs and sharp corners and edges.

D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.

E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

G. Exposed Hardware Material: Stainless steel.

H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

J. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:

1. White Surfaces: 85 percent.

2. Specular Surfaces: 83 percent.

3. Diffusing Specular Surfaces: 75 percent.

K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."

2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color: As selected from manufacturer's standard catalog of colors.

b. Color: Match Architect's sample of manufacturer's standard color.

c. Color: As selected by Architect from manufacturer's full range.

N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.

3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

a. Color: Light bronze, Medium bronze, Dark bronze, or Black.

2.3 LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

A. Comply with UL 773 or UL 773A.

B. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc and off at 4.5 to 10 fc with 15-second minimum time delay. Relay shall have directional lens in front of photocell to prevent artificial light sources from causing false turnoff.

1. Relay with locking-type receptacle shall comply with NEMA C136.10.

2. Adjustable window slide for adjusting on-off set points.

2.4 BALLASTS FOR HID LAMPS

A. Comply with ANSI C82.4 and UL 1029 and capable of open-circuit operation without reduction of average lamp life. Include the following features, unless otherwise indicated:

1. Ballast Circuit: Constant-wattage autotransformer or regulating high-power-factor type.

2. Minimum Starting Temperature: Minus 22 deg F.

3. Normal Ambient Operating Temperature: 104 deg F.

4. Ballast Fuses: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast manufacturer.

B. Auxiliary, Instant-On, Quartz System: Factory-installed feature automatically switches quartz lamp on when fixture is initially energized and when momentary power outages occur. System automatically turns quartz lamp off when HID lamp reaches approximately 60 percent of light output.

C. High-Pressure Sodium Ballasts: Electromagnetic type with solid-state igniter/starter and capable of open-circuit operation without reduction of average lamp life. Igniter/starter shall have an average life in pulsing mode of 10,000 hours at an igniter/starter-case temperature of 90 deg C.

1. Instant-Restrike Device: Integral with ballast, or solid-state potted module, factory installed within fixture and compatible with lamps, ballasts, and mogul sockets up to 150 W.

a. Restrike Range: 105- to 130-V ac.

b. Maximum Voltage: 250-V peak or 150-V ac RMS.

2. Minimum Starting Temperature: Minus 40 deg F.

2.5 HID LAMPS

A. High-Pressure Sodium Lamps: ANSI C78.42, CRI 21 (minimum), color temperature 1900 K, and average rated life of 24,000 hours, minimum.

1. Dual-Arc Tube Lamp: Arranged so only one of two arc tubes is lighted at one time and, when power is restored after an outage, the cooler arc tube, with lower internal pressure, lights instantly, providing an immediate 8 to 15 percent of normal light output.

B. Metal-Halide Lamps: ANSI C78.1372, with a minimum CRI 65, and color temperature 4000 K.

C. Pulse-Start, Metal-Halide Lamps: Minimum CRI 65, and color temperature 4000 K.

D. Ceramic, Pulse-Start, Metal-Halide Lamps: Minimum CRI 80, and color temperature 4000 K.

2.6 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

A. Structural Characteristics: Comply with AASHTO LTS-4.

1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part 1 "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.

2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.

B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.

C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.

1. Materials: Shall not cause galvanic action at contact points.

2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.

3. Anchor-Bolt Template: Plywood or steel.

D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."

E. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, luminaire, and accessories.

F. Breakaway Supports: Frangible breakaway supports, tested by an independent testing agency acceptable to authorities having jurisdiction, according to AASHTO LTS-4.

2.7 ALUMINUM POLES

A. Poles: Seamless, extruded structural tube complying with ASTM B 429, Alloy 6063-T6 with access handhole in pole wall.

B. Poles: ASTM B 209, 5052-H34 marine sheet alloy with access handhole in pole wall.

1. Shape: Round, tapered or Round, straight.

2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.

C. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.

D. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.

E. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.

1. Tapered oval cross section, with straight tubular end section to accommodate luminaire.

2. Finish: Same as pole luminaire.

F. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.

G. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

2. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

    a. Color: As selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

B. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.

3.2 POLE INSTALLATION

A. Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.

B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features, unless otherwise indicated on Drawings:

1. Fire Hydrants and Storm Drainage Piping: 60 inches.

2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet.

3. Trees: 15 feet.

C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "Cast-in-Place Concrete."

D. Poles and Pole Foundations Set in Concrete Paved Areas: Install poles with minimum of 6-inch-wide, unpaved gap between the pole or pole foundation and the edge of adjacent concrete slab. Fill unpaved ring with pea gravel to a level 1 inch below top of concrete slab.

E. Raise and set poles using web fabric slings (not chain or cable).

3.3 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4 GROUNDING

A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole, unless otherwise indicated.

2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole.

2. Install grounding conductor and conductor protector.

3. Ground metallic components of pole accessories and foundations.

3.5 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.

1. Verify operation of photoelectric controls.

C. Illumination Tests:

1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):

a. IESNA LM-5, "Photometric Measurements of Area and Sports Lighting."

b. IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."

c. IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."

d. IESNA LM-64, "Photometric Measurements of Parking Areas."

e. IESNA LM-72, "Directional Positioning of Photometric Data."

D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

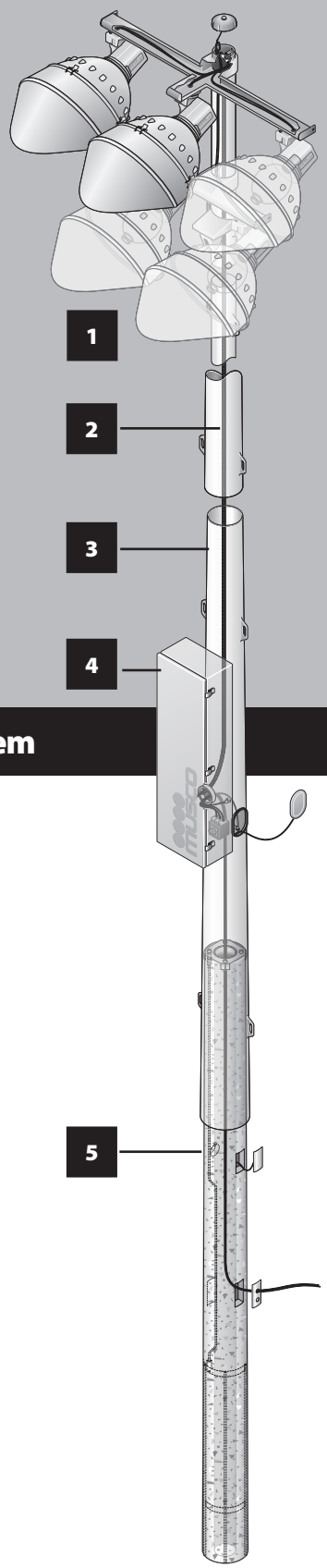
3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain luminaire lowering devices. Refer to Division 01 Section "Demonstration and Training."

*** END OF SECTION 26 56 00 ***

THIS PAGE INTENTIONALLY LEFT BLANK

Installation Instructions: **Light-Structure Green™ Lighting System**



Fast, trouble-free installation with 5 Easy Pieces™ approach to system design

1. **Poletop Luminaire Assembly**
2. **Wire Harness**
3. **Galvanized Steel Pole**
4. **Electrical Components Enclosure**
5. **Precast Concrete Base**

We Make It Happen®

Table of Contents

Before You Begin

Safety Information

Electrical Safety Guidelines

Use extreme caution near overhead power lines or underground utilities. Observe all safety precautions for high-voltage equipment. Only qualified personnel may perform wiring. Follow all applicable building and electrical codes.

General Safety Guidelines

Follow proper safety procedures during installation. Installers must wear the appropriate personal protective equipment including:

- Hard hat
- Steel-toed shoes
- Leather work gloves
- Eye protection

Locate all underground utilities prior to digging.

All tools and equipment supplied by Musco are designed for specific use as described in these instructions. Do not use them in any other manner. Do not alter structural members in any way, such as bending, welding, or drilling, without prior authorization from Musco.

About These Instructions

These instructions give basic assembly procedures for the Light-Structure Green lighting system. They are not a comprehensive guide to all possible situations. Direct any questions to Musco at +1-800-825-6020 or call your local representative.

Throughout this manual note these important symbols:


The safety alert symbol alerts you of situations that require care and caution to avoid serious personal injury.


The stop and check symbol signals you to stop and verify conditions before proceeding.


The contact Musco symbol appears in special situations where you may need to contact Musco for further information.


The go-to arrow indicates a branch in a procedure for special situations. In the case of optional equipment, the instructions may be in another document.


The tip symbol points out advice that makes installation easier.


This symbol identifies recyclable materials.

Before You Begin

Standard Tools/Supplies Checklist

Refer to any supplemental instructions provided for additional tools required.

Contractor/installer supplied tools	Function	Page
Hammer, pry-bar, banding cutters	Unloading equipment	7
Water pump	Removing water from base holes (as needed)	9
Two 1½ ton chain-type come-alongs	Jacking pole sections together	11, 21
Large Phillips-head screwdriver	Tightening captive screws to seal enclosure to pole hub	14
Standard screwdriver	Tightening distribution lugs, 45 A disconnect switch	22, 23
Electrical fish tape, electrician's tape	Feeding wire harness through pole	15
Spray paint, chalk, or flags	Marking points to sight in aiming	17
Chalk or pencil	Making alignment marks	21
10 ft (3m) stepladder or small line truck	Connecting supply wires to electrical enclosure	22, 23
Musco supplied tools	**Function**	**Page**
Wooden base wedges	Setting base	9
Level with shim for base taper	Plumbing base	9
Steel bar	Setting base, seating pole on base	9, 21
5/32 inch hex key	Attaching handhole covers on base and steel pole	8, 15, 23
9/16 inch wrench	Tightening poletop set screw, pole cap fastener, and electrical components enclosure hanger bolt	12, 14, 15
Dishwashing liquid (original Dawn® brand)	Lubricating pole slip-fit connections	11, 17
Wooden shipping blocks	Elevating pole sections off ground during assembly	11
7/16 inch ratcheting combination wrench	Tightening captive bolts to secure luminaire assembly	16
Pole rotator kit	Guiding pole onto base, pole alignment	17, 19, 20
Steel chain	Setting pole on base	21
5 mm hex key	Landing primary feed wires on 125 A disconnect switch	23
3/16 inch hex key	Attaching grounding conductors inside electrical enclosure	22, 23
5/16 inch hex key	Attaching grounding conductors inside pole at handhole	23
Machinery needed	**Function**	**Page**
Crane or forklift with nylon strapping and 8 ft (2.5 m) sling (sized to weight of base)	Unloading materials, setting bases	7, 9
Auger	Boring holes for bases	8
Load-rated crane, nylon slings, and shackles	Setting poles	18, 19, 20

Documents You Need

- ❑ Musco *Foundation and Pole Assembly Drawing*
- ❑ *Field Aiming Diagram*
- ❑ Alternate foundation design (optional, as needed)
- ❑ *Control System Summary*

If you do not have all of these documents, contact Musco at +1-800-825-6020 or call your local representative.

Before You Begin

Electrical System Requirements

While the majority of the Light-Structure Green lighting system can be assembled by non-professionals, a qualified electrician must handle the electrical supply installation and hook-up in accordance with national, state, and local codes. Your electrician should review this information before installation begins.

The electrician is generally required to provide these items:

- Service entrance
- Main power disconnect and distribution panel(s)
- Supply wiring and equipment grounding conductors

Ensure supply wiring is rated for 90 °C. Review the label inside the electrical components enclosure door and *Control System Summary* for voltage and phase requirements.

Always dispose of lamps and other electronic waste in accordance with all applicable laws and regulations.

Other features that may affect the wiring supply requirements for this project include:

- Lighting contactor cabinets — refer to the supplemental installation instructions and the Musco *Control System Summary*.
- Control-Link® system — refer to the supplemental installation instructions and Musco *Control System Summary*.
- Auxiliary bracket option — customer supplies all wiring for auxiliary components.
- Momentary Power Interruption (MPI) luminaire — refer to the supplemental installation instructions

Volunteer Installation

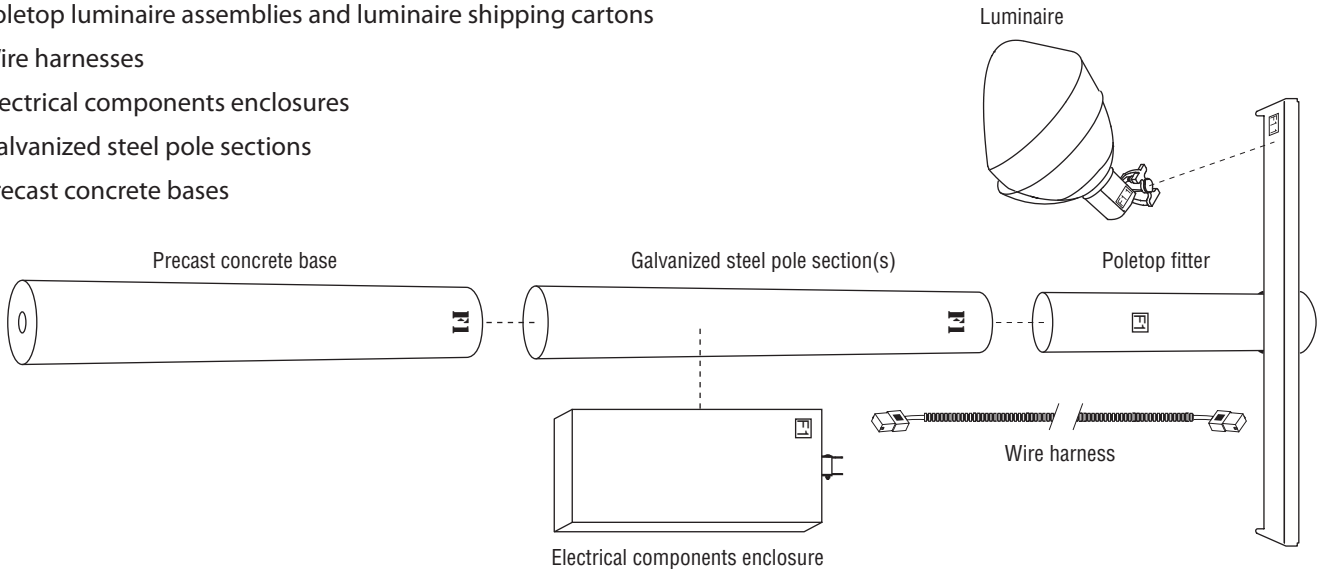
Have a qualified electrician review and complete the following:

- Create electrical system design — prior to installation.
- Provide and install trenching, supply wiring, and conduit.
- Complete all steps from *Connecting to Supply Wiring* section.
- Test complete lighting system.

Components Matching and Labeling

Pole locations are identified by a pole ID (A1, A2, B1, B2, etc.) on the *Field Aiming Diagram*. These IDs are also marked on the individual components:

- Poletop luminaire assemblies and luminaire shipping cartons
- Wire harnesses
- Electrical components enclosures
- Galvanized steel pole sections
- Precast concrete bases



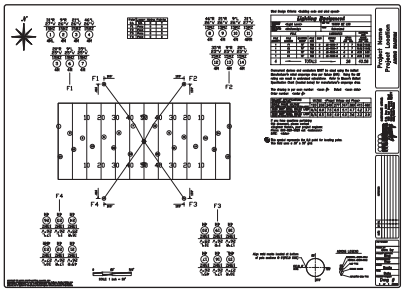
Before You Begin

Documents We Provide

Field Aiming Diagram

The field aiming diagram is your map for locating all poles on your project. It gives this information:

- Pole locations on the field
- Pole ID for each pole
- Luminaire ID for each luminaire
- Field origin for coordinate measuring
- Common aiming point for all poles, or individual aiming points for each pole
- Pole height



Control System Summary

Projects with a control system include a control system summary. It gives this information:

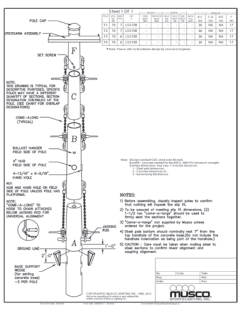
- Control system diagram and details
- Contactors and cabinets
- Lighting circuits
- Voltage, phase, and frequency information
- Full load current for each circuit

Musco Foundation and Pole Assembly Drawing

This drawing provides information related to the installation of the foundation and the galvanized steel pole.

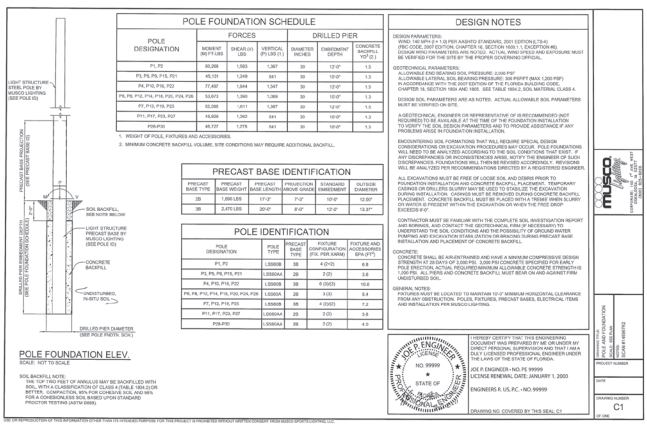
- Pole weight
- Precast concrete base weight
- Hole depth and diameter
- Concrete backfill quantities
- Pole section minimum overlaps

Note: Foundation details are omitted on projects with alternate foundation designs.



Alternate Foundation Design

Some poles on a project may require an alternative foundation design. This stamped drawing provides construction details of the alternative design. This document supersedes all other foundation information.



Before You Begin

Unloading Instructions

A typical shipment includes precast concrete bases, galvanized steel poles, electrical components enclosures, wire harnesses, and poletop luminaire assemblies with luminaires.

For ease of installation, set all matched components by the proper pole location as noted on the *Field Aiming Diagram*.

Tools/Materials Needed

- ❑ Crane with nylon web sling or forklift (load rated)
- ❑ Hammer
- ❑ Pry bar
- ❑ Banding cutters

Warning
Crushing hazard. Product is heavy and may roll.
Do not cut shipping bands or remove blocking from concrete bases or poles until they are supported by unloading equipment.

Use proper pick-up procedures as defined within the following regulations when lifting concrete bases and poles: OSHA 1926.251; OSHA 1910.178; OSHA 1910.180; and ANSI A10.42-200. Balance point may not be at midpoint of base or pole.

- Check bill of lading to verify you have all materials.
- Inspect all materials for shipping damage.
- Store electrical components enclosures in a dry location or cover with tarp until ready to install.

Painted poles require special handling, see *Instructions: Painted Pole Special Requirements*.

If additional information is needed, contact Musco's shipping department at +1-800-756-1205 or call your local Musco representative.

Save wooden shipping blocks to use during pole assembly.

Please recycle.
Luminaires, wire harnesses, and other components are shipped in recyclable cardboard packaging.

Precast Concrete Base

Overview

The precast concrete base is set directly into the ground, backfilled with concrete, and allowed to cure for 12 to 24 hours. The base is designed for easy slip-fit connection to the galvanized steel pole. The remaining components — steel pole, poletop luminaire assembly, electrical components enclosure, and wire harness —are assembled as a unit and set onto the base. The base includes an integrated lightning ground system.

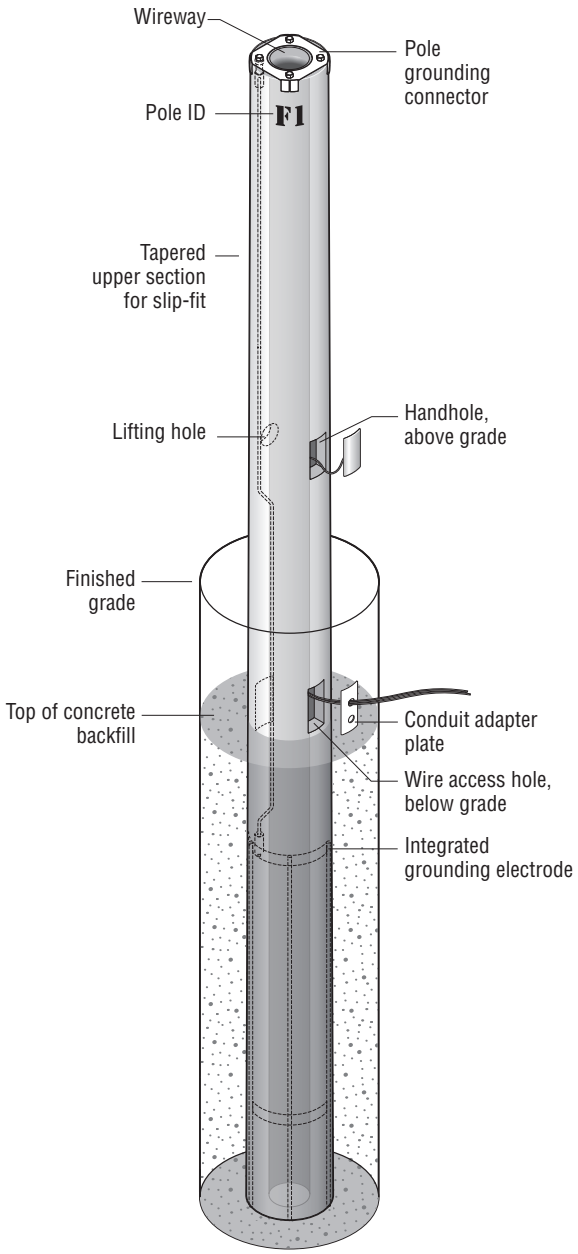
Tools/Materials Needed

Musco Supplied

- ❑ *Field Aiming Diagram*
- ❑ Musco *Foundation and Pole Assembly Drawing* or alternate foundation design
- ❑ Steel bar
- ❑ Wooden base wedges
- ❑ Level with shim for tapered base
- ❑ 5⁄32 inch hex key

Contractor Supplied

- ❑ Conduit for underground wiring
- ❑ Concrete backfill
- ❑ Water pump (as needed)



Installation Procedure

Verify pole ID on concrete base matches pole location on *Field Aiming Diagram*.

For options on poor soil conditions, alternative installation methods, or if there are any issues with pole locations given, contact Musco at +1-800-825-6020 or call your local representative. Your project engineer's name and extension appear on *Field Aiming Diagram*.

Note: Use only project-specific foundation designs as detailed on Musco Foundation and Pole Assembly Drawing or alternate foundation design plan.

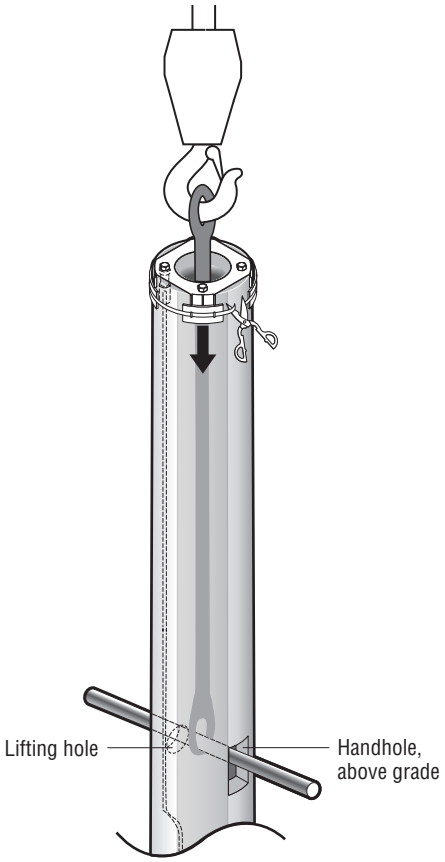
1 Mark pole locations per *Field Aiming Diagram*.

2 Excavate holes to size and depth given on Musco *Foundation and Pole Assembly Drawing* or alternate foundation design.

Warning
Fall hazard
Cover holes or install fencing for fall safety.

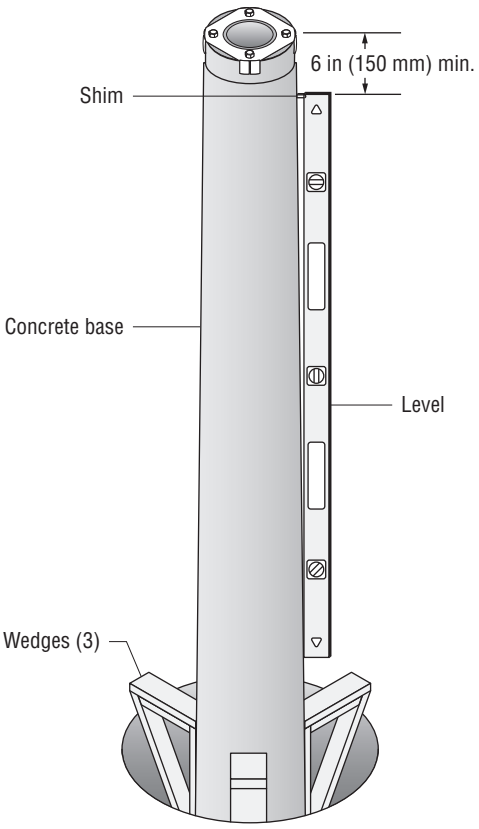
Precast Concrete Base

3 Sling and lower base into hole. Orient wire access hole to accommodate incoming supply wiring. Snip banding and remove tab protectors.



4 Plumb base and wedge into position. Use supplied level with shim on upper end against base. Shim accommodates taper of base. Top of base is beveled: keep level at least 6 inches (150 mm) from top when plumbing.

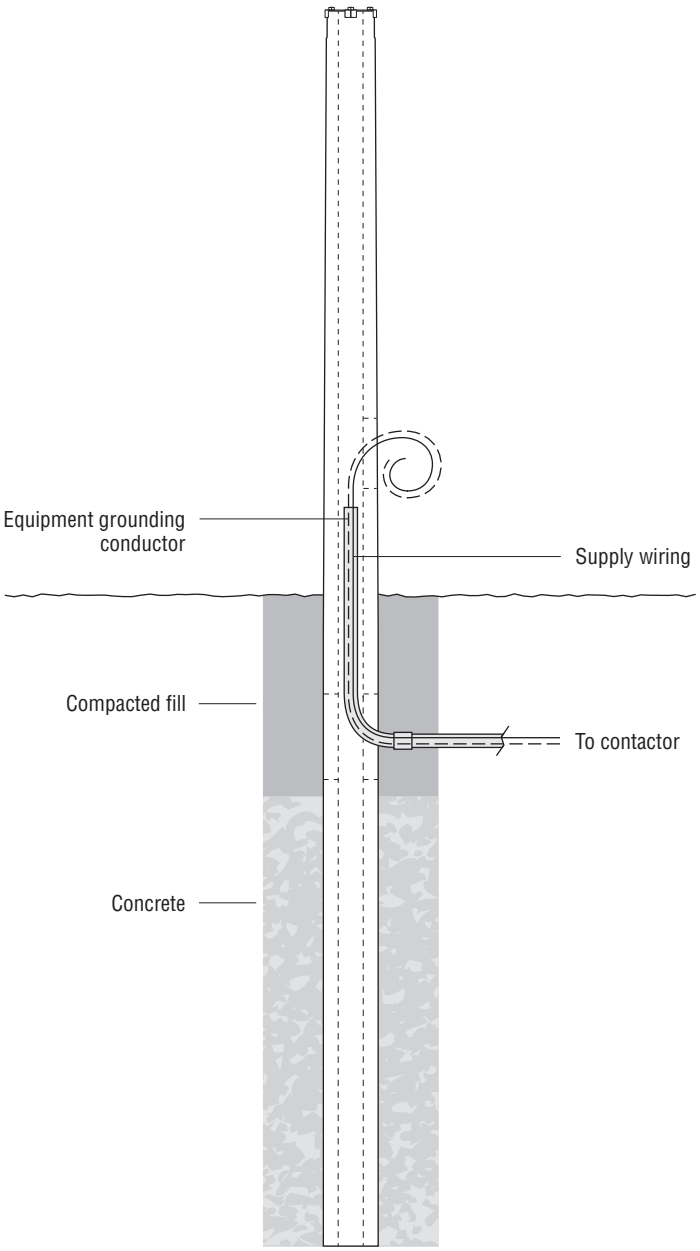
5 Remove any water from hole to avoid weakening foundation. Water in hole during concrete pour can cause hollow center of base to fill with concrete. Backfill with concrete per Musco *Foundation and Pole Assembly Drawing* or alternate foundation design. If backfilling with concrete to finished grade, be sure to maintain wire access.



Precast Concrete Base

6 Have your electrician install all underground conduit and wiring, including equipment grounding conductor. Route wires up through base to handhole. Conduit adapter plates with knockouts are provided. You may also install wiring after standing pole.

7 Backfill and compact to finished grade as necessary.



Galvanized Steel Pole and Poletop Luminaire Assembly

Overview

The galvanized steel pole and poletop luminaire assembly are designed to slip-fit together. Jacking ears on each pole section provide attachment points to pull pole sections together. The Musco *Foundation and Pole Assembly Drawing* gives minimum overlap specifications for each pole section.

Tools/Materials Needed

Musco Supplied
- ❑ Wooden shipping blocks
- ❑ Musco *Foundation and Pole Assembly Drawing*
- ❑ 9/16 inch wrench
- ❑ Dishwashing liquid (original Dawn® brand)

Contractor Supplied
- ❑ Two 1½ ton chain-type come-alongs

Assembly Procedure

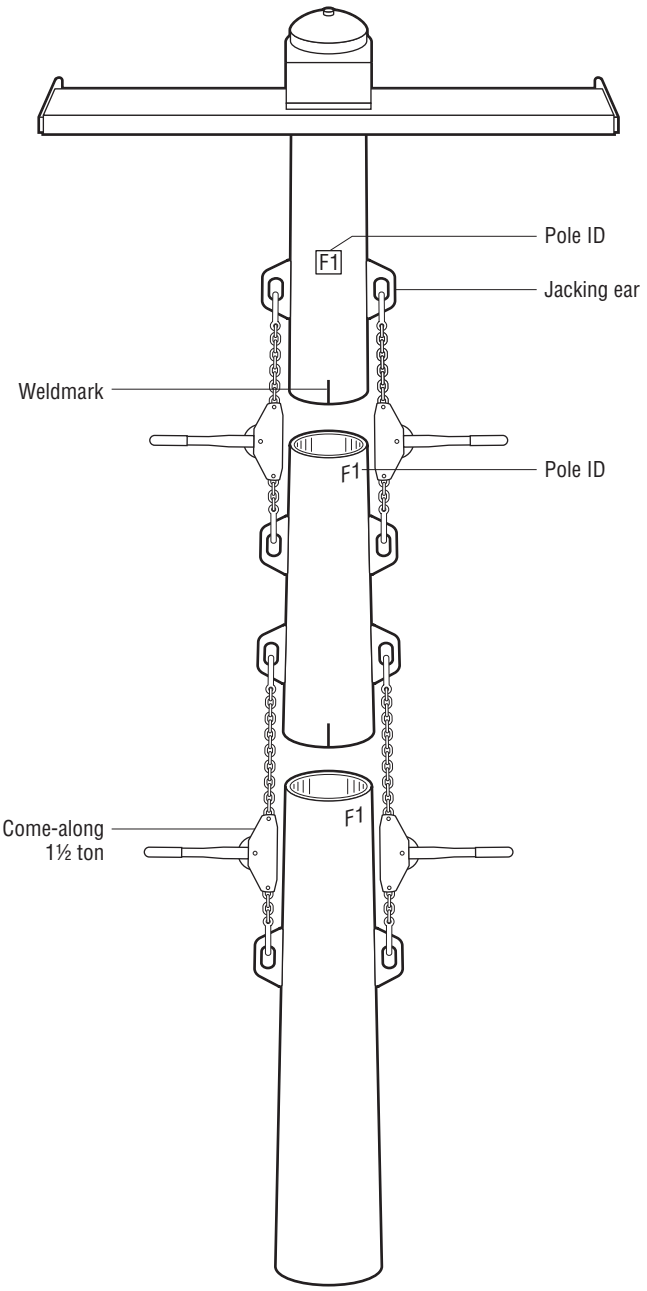
Verify pole ID on each steel pole section matches pole location on *Field Aiming Diagram*. Pole ID is stenciled on inside bottom end and outside top end of each section.

1 Lay out all pole sections and poletop luminaire assembly in sequence. Ensure all weldmarks face same direction. Weldmarks represent field side of pole. Orient electrical components enclosure hub up.

Use shipping blocks as necessary to support pole sections during assembly.

2 Lubricate top of each steel pole section with supplied dishwashing liquid.

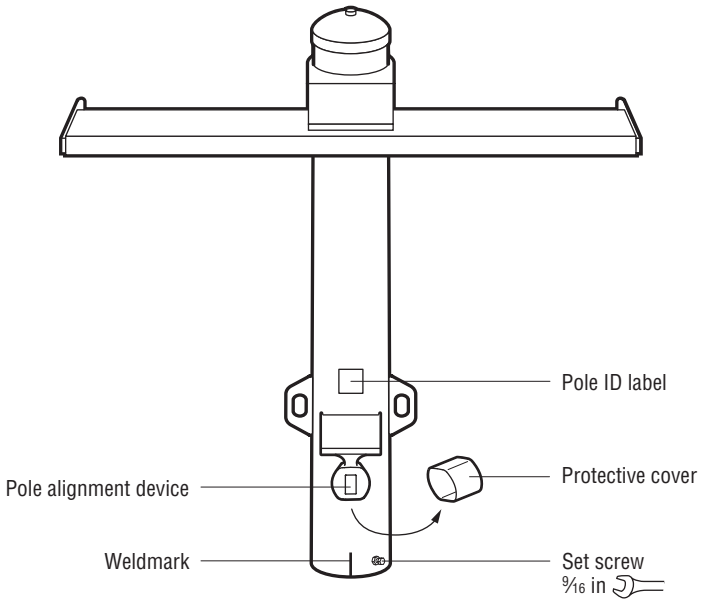
3 Align jacking ears. Using two 1½ ton come-alongs, pull sections together evenly until tight. Ensure minimum overlap per Musco *Foundation and Pole Assembly Drawing*. Repeat for all sections.



Galvanized Steel Pole and Poletop Luminaire Assembly

4 Tighten set screw using 9⁄16 inch wrench.

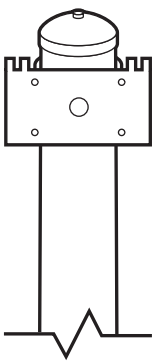
5 Remove protective cover from pole alignment device.



Welded crossarm configuration

If pole has bolt-on crossarms, proceed with *Installation Instructions: Bolt-on Crossarm*.

If pole has auxiliary equipment, proceed with *Installation Instructions: Auxiliary Bracket*.



Bolt-on crossarm configuration

(reference)

Electrical Components Enclosure

Overview

The electrical components enclosure is factory-wired and tested. Built-in hardware allows for easy attachment to the galvanized steel pole. Quick-connect plug-ins assure trouble-free connection to the poletop luminaire assembly via the wire harness.

Tools/Materials Needed

Musco Supplied

- ❑ 9⁄16 inch wrench
- ❑ 3⁄16 inch hex key

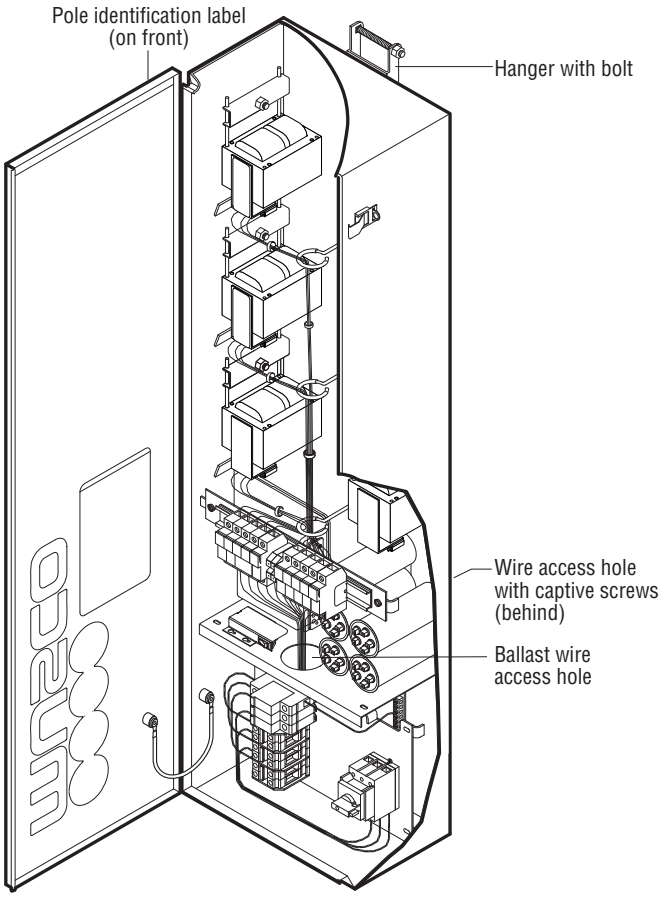
Contractor Supplied

- ❑ Phillips-head screwdriver
- ❑ Standard screwdriver

Assembly Procedure

Verify pole ID on electrical components enclosure matches pole location on *Field Aiming Diagram*.

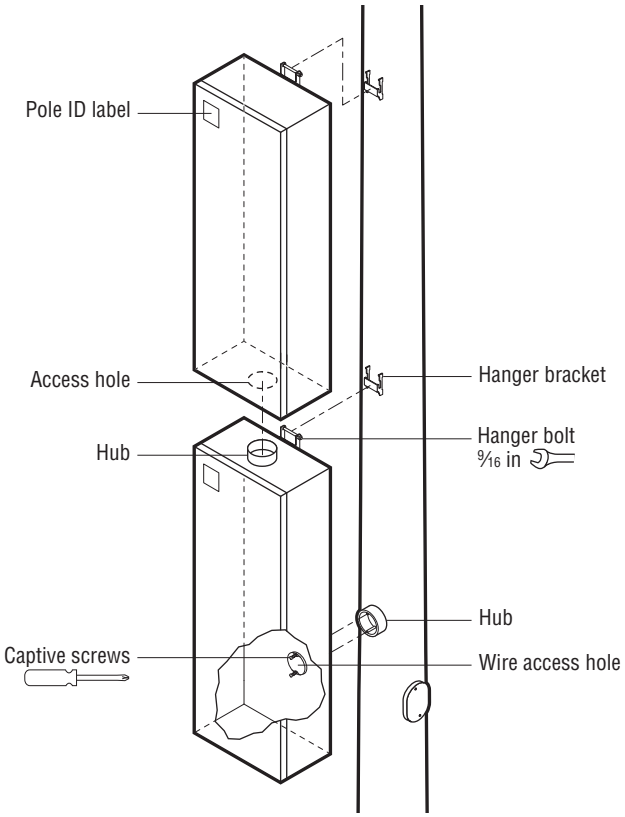
Caution
Electrical components enclosures are heavy.
Electrical components enclosure may weigh up to 225 lb (102 kg). Lift carefully with two people to avoid injury.



Electrical Components Enclosure

1 Mount bottom enclosure on pole. Align wire access hole with hub. Tighten captive screws using Phillips-head screwdriver. Tighten hanger bolt with 9⁄16 inch wrench.

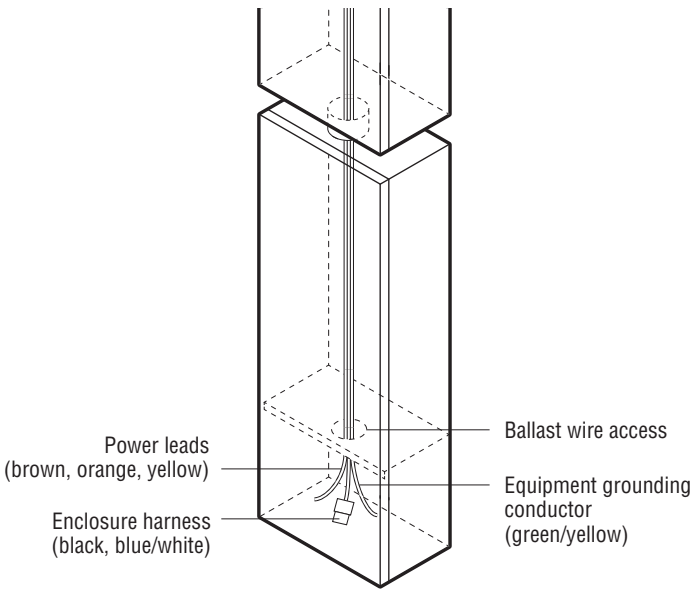
2 Mount middle and/or top enclosures. Align access hole with hub and slide box onto hanger bracket. Tighten hanger bolt with 9⁄16 inch wrench.



Only qualified personnel may perform wiring. Route wires as shown in step 3, but leave the final connections for your electrician. See section *Connecting to Underground Wiring*.

3 Route all power leads, equipment grounding conductor, and enclosure harnesses to bottom enclosure.

4 Repeat steps 1 – 3 for each stack.



Wire Harness

Overview

The factory-built wire harness connects the electrical components enclosure to the poletop luminaire assembly.

Tools/Materials Needed

Musco Supplied

- ❑ 5⁄32 inch hex key
- ❑ 9⁄16 inch wrench

Contractor Supplied

- ❑ Fish tape
- ❑ Electrician's tape

Assembly Procedure

Verify pole ID on wire harness matches pole location on *Field Aiming Diagram*.

1 Remove handhole covers using 5⁄32 inch hex key. Remove polecap using 9⁄16 inch wrench.

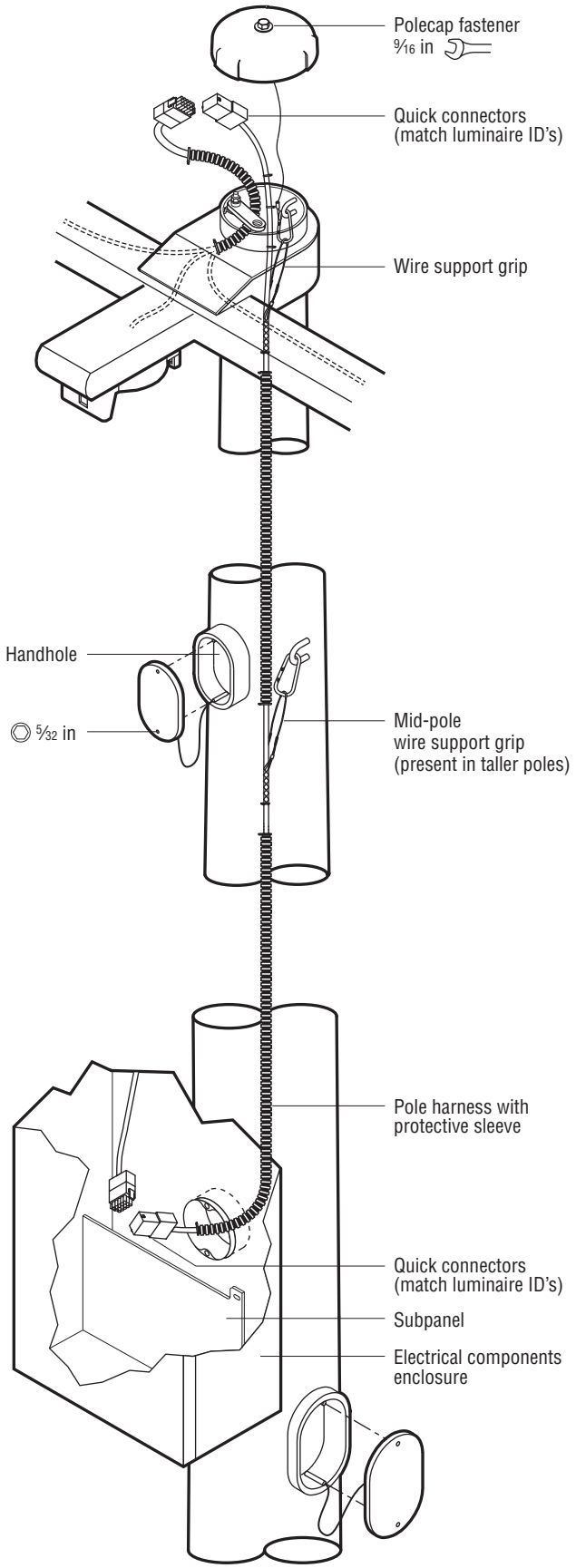
2 Fish all pole wire harnesses between poletop and appropriate electrical components enclosure(s). Use lower handhole to access enclosure hubs. Ensure protective sleeve extends through access hub and tuck harnesses behind subpanel.

3 Attach support grips at poletop and midpole (if present).

4 Mate quick-connectors at poletop and inside electrical components enclosure(s). Match luminaire IDs.

Note: When installing bolt-on crossarms, each crossarm has a separate harness. There is one additional spade connector for pole alignment beam.

5 Replace handhole covers and polecap.



Luminaire Attachment

Overview

Luminaires are factory built complete and shipped in individual cartons. They are aimed in the factory and ready for installation: Do not disassemble knuckle or lamp cone.

Tools/Materials Needed

Musco Supplied

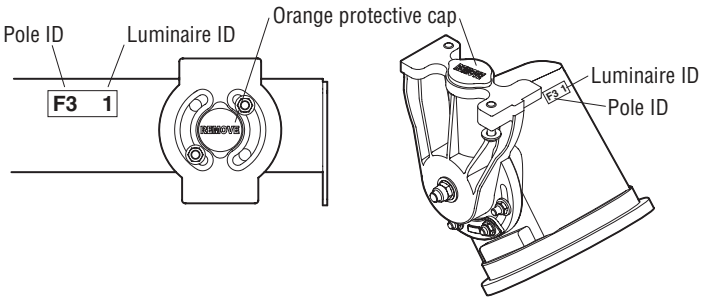
- ❑ 7⁄16 inch ratcheting combination wrench

Assembly Procedure

Verify pole ID on luminaire cartons matches pole and location on *Field Aiming Diagram*.

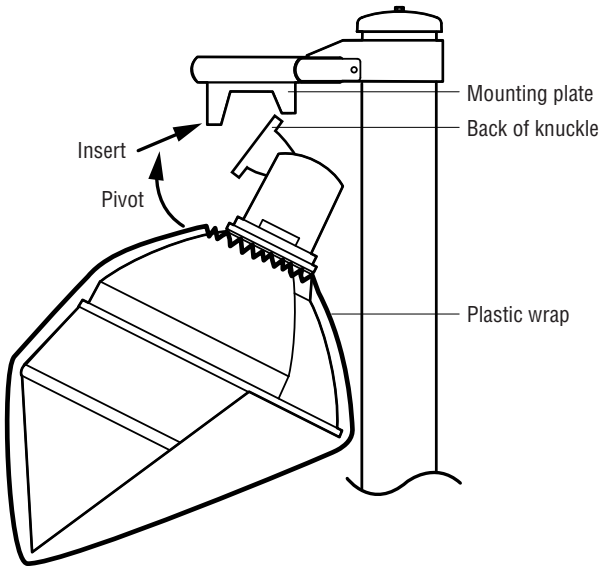
1 Remove orange protective caps from luminaire knuckle and mounting plate; discard.

Note: Do not remove bags and cutters until after assembly.



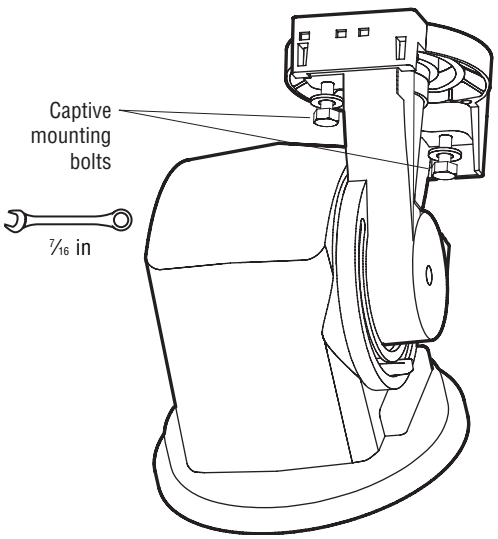
2 Match luminaire ID to crossarm and install luminaire onto mounting plate. Insert back of knuckle into mounting plate and pivot into position.

Some luminaires require special assembly when placement interferes with adjacent luminaire or pole alignment beam. See Special Assembly Instructions attached to luminaire.



3 Tighten captive mounting bolts. Torque must not exceed 20 ft•lb (27 N•m). To avoid overtightening, use provided 7⁄16 inch combination wrench.

See *Installation Instructions: Platform, Climbing Steps, and Safety Cable* or *Installation Instructions: Climbing Steps and Safety Cable,* if your project includes these items.



Pole Setting and Alignment

Overview

All luminaires are factory aimed to their exact position on the field. To ensure the proper pole orientation, a simple-to-use pole alignment beam completes the precision field aiming. The pole alignment beam is attached in the factory to each pole or to one luminaire on each pole.

Tools/Materials Needed

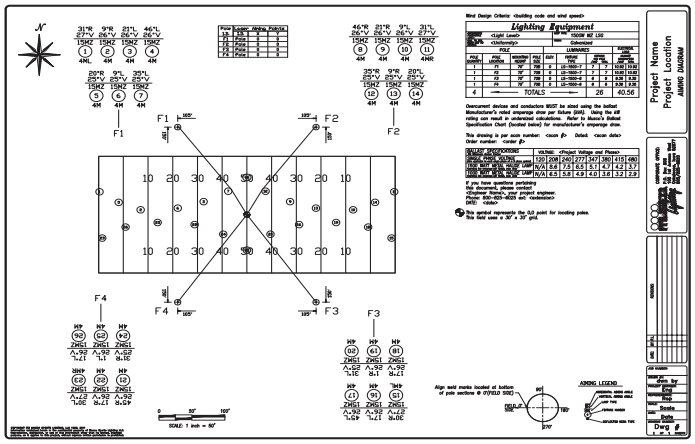
Musco Supplied

- ❑ *Field Aiming Diagram*
- ❑ Steel chain
- ❑ Steel bar
- ❑ Pole rotator kit
- ❑ Safety cutter (for removal of luminaire bag)
- ❑ Dishwashing liquid (original Dawn® brand)

Contractor Supplied

- ❑ Chalk or pencil
- ❑ Load-rated shackles as required
- ❑ Load-rated nylon slings as required
- ❑ Spray paint, chalk, or flags (to mark aiming points on field)
- ❑ Two 1½ ton chain-type come-alongs

Installation Procedure

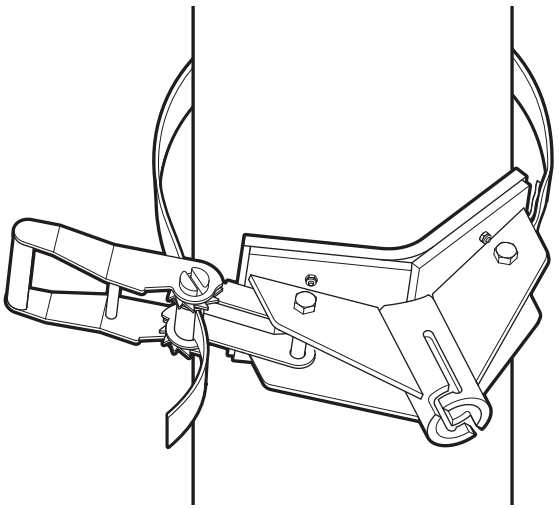


✓ Verify pole ID matches precast concrete base and pole location on *Field Aiming Diagram*.

1 Mark aiming point(s) on field using *Field Aiming Diagram*. Poles may have individual aiming points or may all be aimed to a common point.

2 Lubricate concrete base with provided dishwashing liquid.

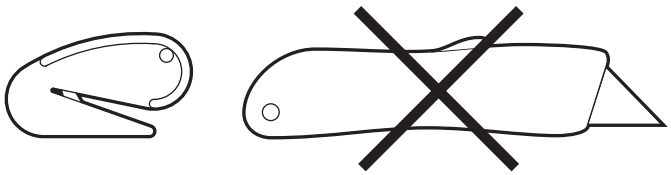
3 Attach pole rotator clamp approximately 12 inches (300 mm) above bottom of pole. Wrap strap around pole and cinch tightly.



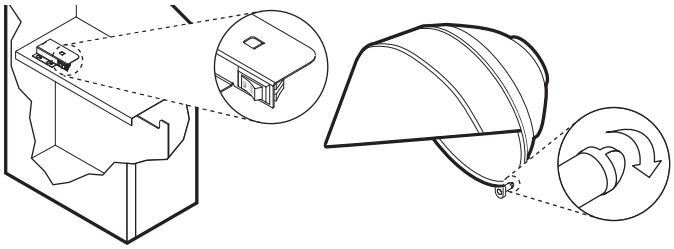
⚠ **Caution**
Risk of injury or property damage.
Rotator bar can swing with force as pole is lifted. Do not install until you are ready to lower pole onto base (step 8).

Pole Setting and Alignment

4 Remove plastic wrap from luminaires using provided safety cutter. Do not use knife. Cutter is attached to one luminaire for each pole. Ensure visor latches remain secure when removing plastic.

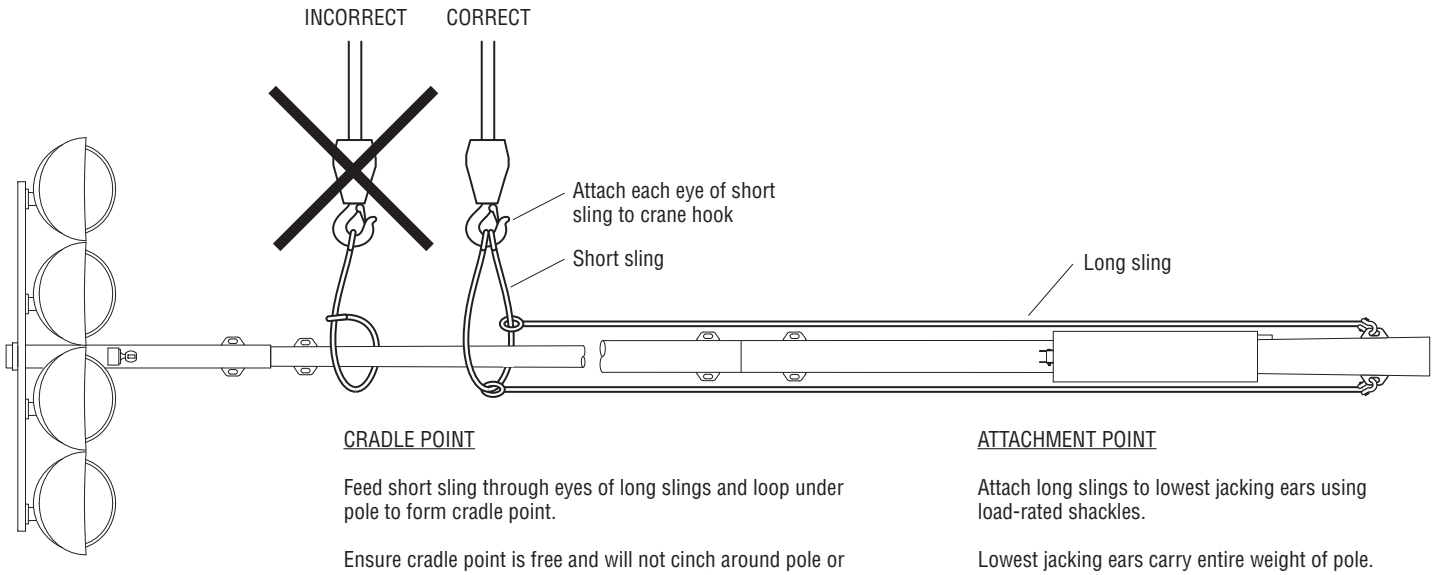


5 Turn on alignment beam and check. Pole-mounted device has toggle switch inside electrical components enclosure. Luminaire-mounted device has rotary switch on device.



Warning
Improper rigging can cause pole sections to separate and fall.
Follow these instructions carefully. Do not choke pole or lift from crossarms.

6 Sling pole using this recommended method (see illustration). You must lift pole from lowest section. Friction between assembled sections will not hold pole together when lifting. To keep pole upright when lifting, ensure cradle point is above pole center of gravity. Ensure cradle point is free and will not cinch around pole or snag on hardware or components during lifting.



CRADLE POINT

Feed short sling through eyes of long slings and loop under pole to form cradle point.

Ensure cradle point is free and will not cinch around pole or snag on hardware or components during lifting.

Cradle point must be above pole assembly center of gravity.

ATTACHMENT POINT

Attach long slings to lowest jacking ears using load-rated shackles.

Lowest jacking ears carry entire weight of pole.

All slings must be rated for complete pole weight. Refer to Musco *Foundation Design and Pole Assembly Drawing*.

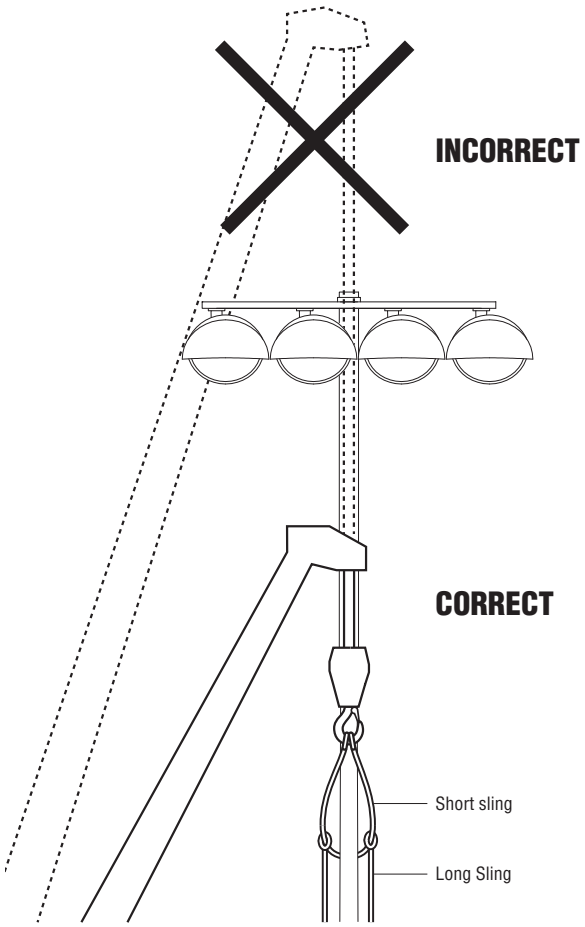
Warning
Crushing hazard. Pole can rotate with force, causing injury.
Do not stand under pole when lifting. Steady pole with two people holding crossarms. Allow pole to safely rotate around when it is high enough for crossarms and electrical components enclosures to clear the ground.

Pole Setting and Alignment

7 Lift pole. Use care to avoid dragging bottom of pole. Keep crane head below crossarms.

Watch for these signs to ensure you are lifting pole properly:

- Short sling slides freely up the pole and long slings tighten.
- Top of pole rises first.
- Short sling does not choke or snag on pole. Lowest jacking ears carry entire weight of pole.



8 When pole is suspended, insert rotator bar to clamp and turn to lock in place. Guide pole into position over base using rotator bar and lower onto base. Do not allow pole to seat on base until it is properly aimed (step 9). Pole should rotate with reasonable force applied to bar, but not freely.

Warning
Pinching hazard
Keep hands clear when setting pole on concrete base.

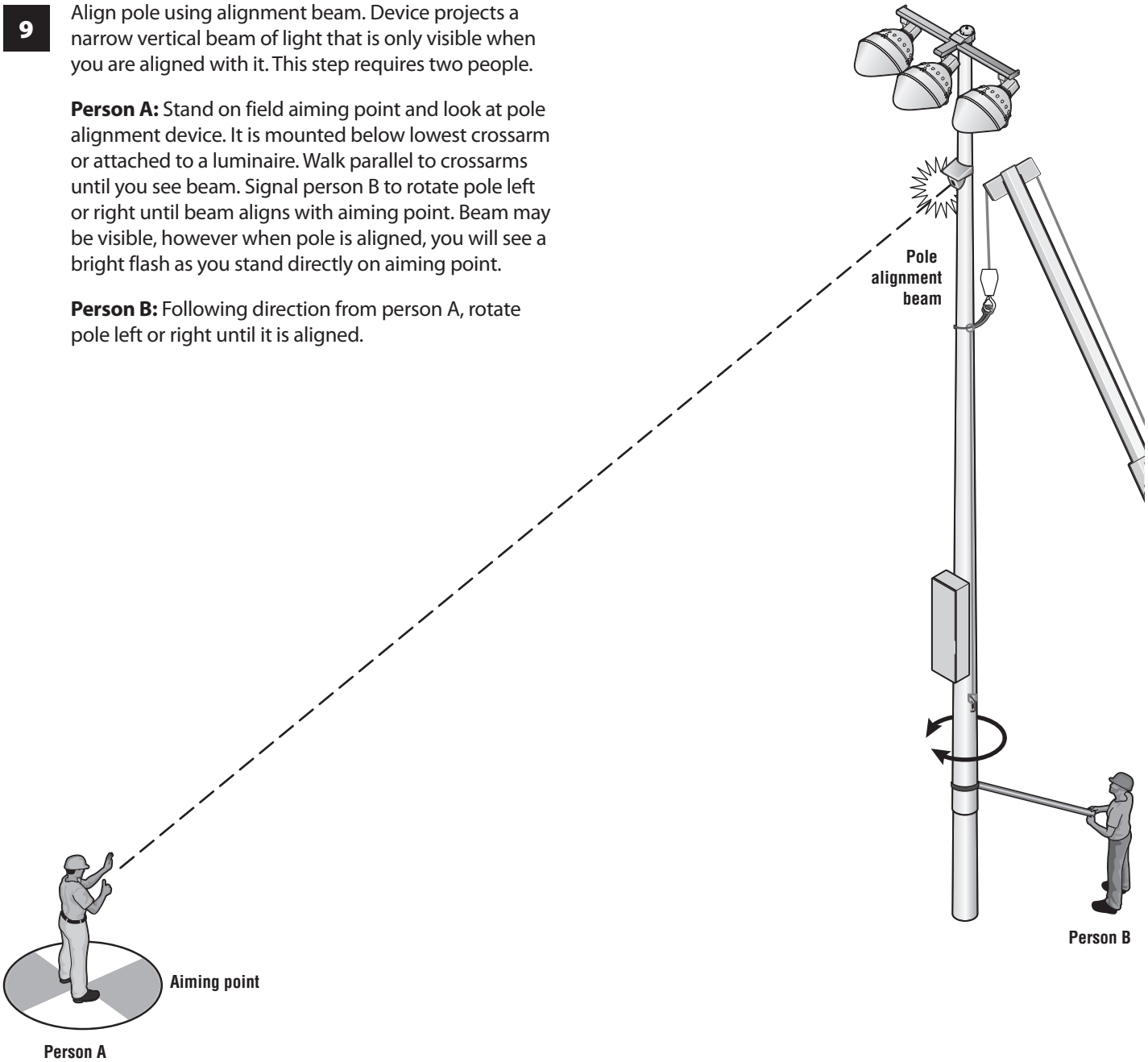
Pole Setting and Alignment

9

Align pole using alignment beam. Device projects a narrow vertical beam of light that is only visible when you are aligned with it. This step requires two people.

Person A: Stand on field aiming point and look at pole alignment device. It is mounted below lowest crossarm or attached to a luminaire. Walk parallel to crossarms until you see beam. Signal person B to rotate pole left or right until beam aligns with aiming point. Beam may be visible, however when pole is aligned, you will see a bright flash as you stand directly on aiming point.

Person B: Following direction from person A, rotate pole left or right until it is aligned.



Warning
Laser radiation hazard
Pole alignment beam is safe for viewing at a distance of three feet (one meter) or more. Do not look into beam from closer than three feet (one meter). Do not use binoculars, camera, or telescope to view beam from any distance. Locator beam is a class 2M laser device. Wavelength: 635-660 nm, Laser power for classification: <1 mW continuous, divergence: <1.5 mrad x 1 rad. Using alignment beam in a manner other than as described here may result in hazardous exposure. Do not modify, dismantle, or attempt to repair.

Pole Setting and Alignment

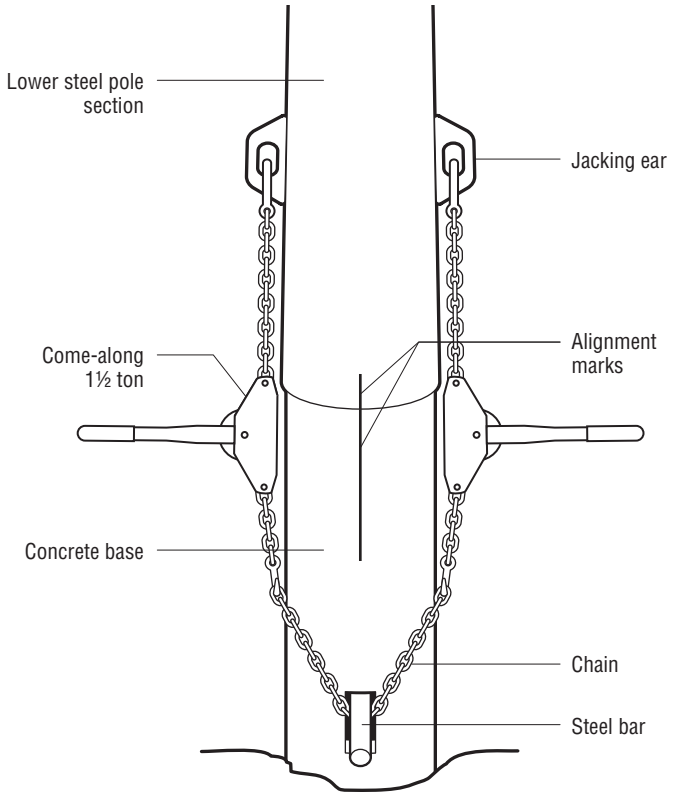
10 Once pole is aligned, mark thin vertical plumb-line on pole and concrete base. Use mark to verify alignment is maintained while lowering pole (step 11) and jacking onto base (step 12).

11 Lower pole into position. Hold pole rotator bar to maintain alignment until pole seats on base. Remove rotator bar and clamp.

12 Insert provided steel bar through base. Wrap provided chain around base below steel bar. Attach two 1½ ton come-alongs to jacking ears. To avoid twisting, attach come-alongs to provided chain directly below jacking ears. If ears align parallel with steel bar, do not use chain. Pull pole down onto base, keeping marks aligned. Ensure minimum overlap per Musco *Foundation and Pole Assembly Drawing*.

If pole seats out of alignment, contact Musco to request separating tools. See *Installation Instructions: Separating Steel Pole from Concrete Base*.

If pole has climbing steps and safety cable, see *Installation Instructions: Platform, Climbing Steps, and Safety Cable* or *Installation Instructions: Climbing Steps and Safety Cable* for cable tensioning instructions.



Connecting to Supply Wiring

Overview

The final step of installation is connecting the supply wiring at the subpanel. Terminals for phase wires and neutral (if used), disconnect switch with lockout, and equipment ground bar are provided on the subpanel in the electrical components enclosure. If there are multiple circuits on the pole, a disconnect is provided for each circuit. This may be on a separate subpanel in another enclosure. The lighting system uses an integrated lightning ground embedded in the precast concrete base. Depending on foundation design and/or soil conditions, a supplemental grounding electrode may be required.

Tools/Materials Needed

Musco Supplied

- ❑ 3⁄16 inch hex key (ground bar)
- ❑ 5⁄16 inch hex key (bonding terminal inside handhole)
- ❑ 5⁄32 inch hex key (handhole covers)
- ❑ 5 mm hex key (125 A disconnect terminals)
- ❑ Equipment bonding jumper

Contractor Supplied

- ❑ Underground wiring and conduit
- ❑ Main power disconnect and distribution panel(s)
- ❑ Standard screwdriver
- ❑ 10 ft (3 m) stepladder or small line truck

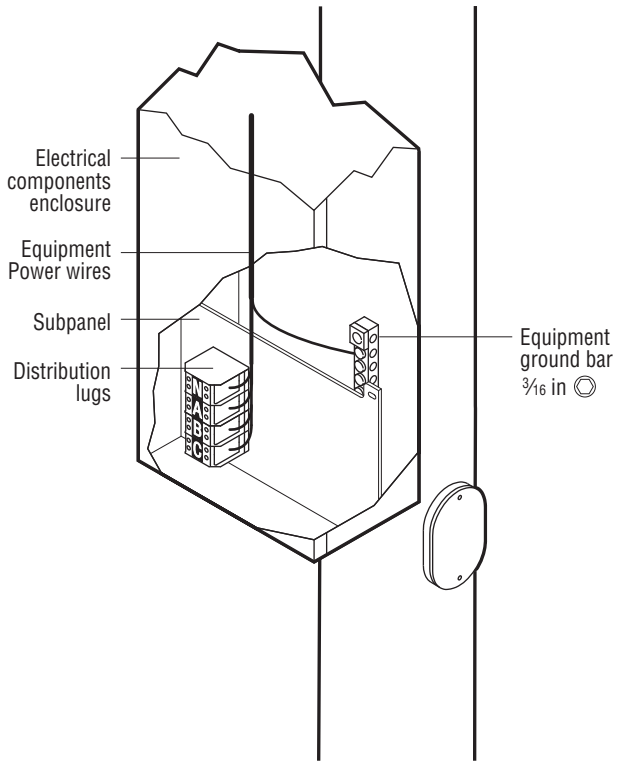
Installation Procedure

Musco *Control System Summary* provides electrical loading information needed to size wire and switchgear. Musco provides instructions for installing Control-Link® control system or lighting contactor cabinet when these items are part of your project.

1 Route all power leads for lighting equipment to appropriate subpanel locations. Poles with multiple circuits have multiple disconnect switches, sometimes in separate enclosures. Route power leads through pole if necessary. Match luminaire IDs on wiring to subpanel.

2 Connect power leads to distribution lugs on each subpanel. Match phases by wire color as shown in table.

3 Connect equipment grounding conductors (green/yellow) from each electrical components enclosure to equipment ground bar in bottom enclosure. If pole has multiple stacks, connect bonding jumper from stack one. Tighten lugs using 3⁄16 inch hex key.



Wire Identification

Wire Color	Purpose	Gauge (AWG)
Brown	Phase A	14
Orange	Phase B	14
Yellow	Phase C	14
Blue/white	Neutral (when required)	14
Green/yellow	Equipment bonding jumpers	6, 10

Connecting to Supply Wiring

4 Remove handhole cover using 5⁄32 inch hex key. Route supply wiring through access hub into electrical components enclosure.

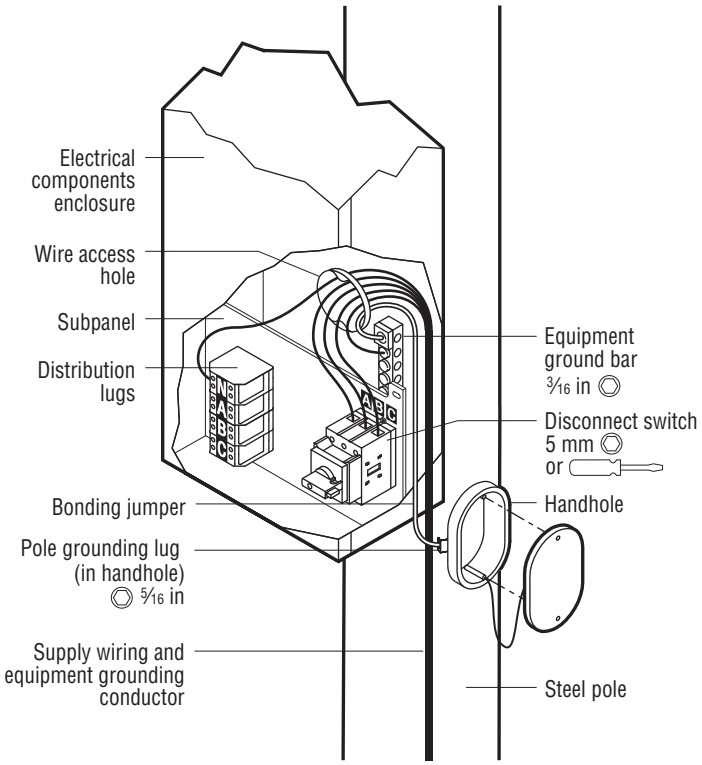
5 Connect equipment grounding conductor (supply) to ground bar. Tighten lug using 3⁄16 inch hex key.

6 Connect phase wires (supply) to disconnect switch. Tighten lugs using standard screwdriver (45 A disconnect) or 5 mm hex key (125 A disconnect). Connect neutral wire (if used) to distribution lug. Tighten lug using standard screwdriver.

7 Route provided equipment bonding jumper (green/yellow) through access hub to pole grounding lug inside handhole. Tighten lug using 5⁄16 inch hex key.

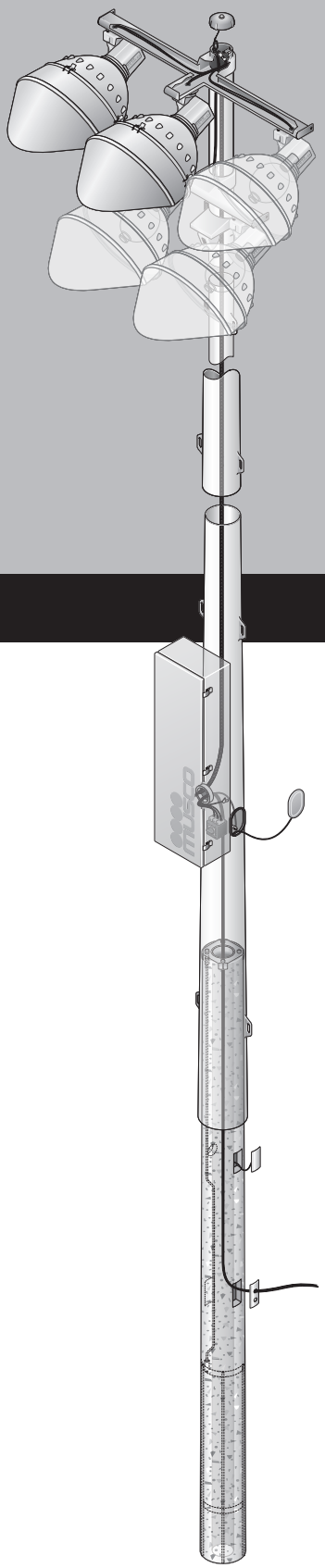
8 Ensure all handhole covers are installed and electrical components enclosure is closed and latched.

If your project includes a supplemental grounding electrode kit, follow instructions in kit for installing electrode.

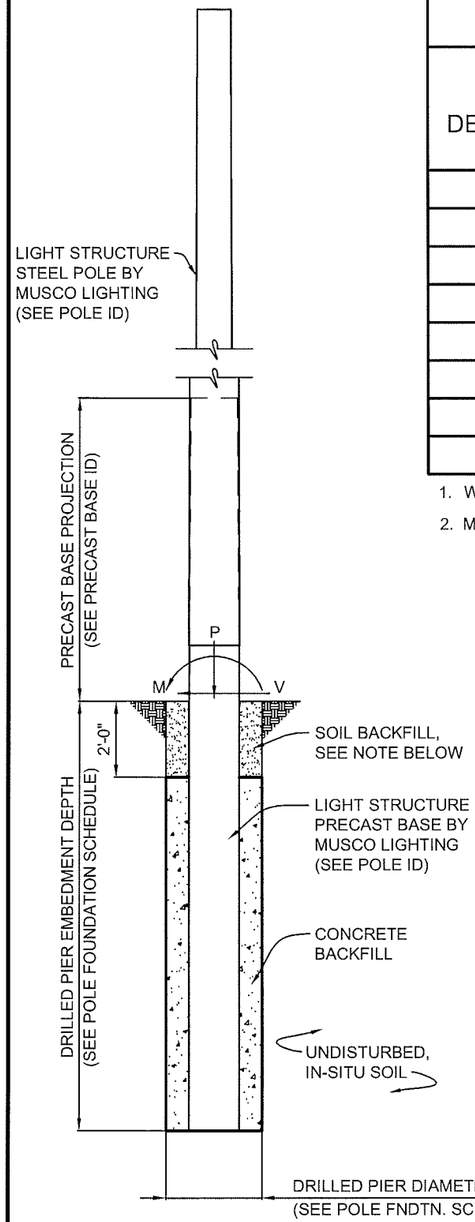


Warning
Risk of electric shock.
Terminate equipment grounding conductor at equipment ground bar in electrical components enclosure.

Warning
Lightning hazard.
For poles located near metal fences, metal bleachers, or other metal structures, bond structures to pole ground to maintain equal electrical potential per NFPA 780.



www.musco.com



POLE FOUNDATION ELEV.

SCALE: NOT TO SCALE

SOIL BACKFILL NOTE:
THE TOP TWO FEET OF ANNULUS MAY BE BACKFILLED WITH SOIL, WITH A CLASSIFICATION OF CLASS 4 (TABLE 1806.2) OR BETTER. COMPACTION, 95% FOR COHESIVE SOIL AND 98% FOR A COHESIONLESS SOIL BASED UPON STANDARD PROCTOR TESTING (ASTM D698).

POLE FOUNDATION SCHEDULE

POLE DESIGNATION	FORCES			DRILLED PIER		
	MOMENT (M) FT-LBS	SHEAR (V) LBS	VERTICAL (P) LBS (1.)	DIAMETER INCHES	EMBEDMENT DEPTH	CONCRETE BACKFILL YD^3 (2.)
A1, A2	49,765	1,231	1,119	36	10'-0"	1.9
A3	70,681	1,628	1,607	30	12'-0"	1.5
A4	50,239	1,248	1,149	36	10'-0"	1.9
A5	51,197	1,264	1,149	36	10'-0"	1.9
B1, B5	101,902	2,085	2,127	30	14'-0"	1.6
B2	137,164	2,707	3,254	30	16'-0"	1.6
B3	190,203	3,204	3,595	30	16'-0"	1.6
B4	99,643	2,054	2,127	30	14'-0"	1.6

1. WEIGHT OF POLE, FIXTURES AND ACCESSORIES.
2. MINIMUM CONCRETE BACKFILL VOLUME, SITE CONDITIONS MAY REQUIRE ADDITIONAL BACKFILL.

PRECAST BASE IDENTIFICATION

PRECAST BASE TYPE	PRECAST BASE WEIGHT	PRECAST BASE LENGTH	PROJECTION ABOVE GRADE	STANDARD EMBEDMENT	OUTSIDE DIAMETER
2B	1,690 LBS	17'-3"	7'-3"	10'-0"	12.00"
3B	2,470 LBS	20'-0"	8'-0"	12'-0"	13.37"
4B	3,490 LBS	22'-0"	8'-0"	14'-0"	15.75"
5B	4,580 LBS	23'-11"	7'-11"	16'-0"	18.36"

POLE IDENTIFICATION

POLE DESIGNATION	POLE TYPE	PRECAST BASE TYPE	FIXTURE CONFIGURATION (FIX. PER XARM)	FIXTURE AND ACCESSORIES EPA (FT^2)
A1, A2	LSS60A	2B	3 (3)	7.3
A3	LSS60B	3B	6 (3) / (3)	14.0
A4	LSS60A	2B	3 (3)	7.7
A5	LSS60A	2B	3 (3)	8.0
B1, B5	LSS70C	4B	6 (3+3)	15.7
B2	LSS70D	5B	10 (3+3+2+2)	21.0
B3	LSS80B	5B	12 (3+3+3+3)	26.4
B4	LSS70C	4B	6 (3+3)	15.1

- POLES A1, A2, B1, B4, & B5 HAVE 1 - 24 LED FIXTURES AT 40'-0" AGL, INCLUDED IN EPA ABOVE.
- POLES A3 - A5 HAVE 2 - 24 LED FIXTURES AT 40'-0" AGL, INCLUDED IN EPA ABOVE.

DESIGN NOTES

DESIGN PARAMETERS:
WIND: Vult = 160 MPH, Vasd = 124 MPH (I = 1.0) PER AASHTO STANDARD, 2001 EDITION (LTS-4); PER FBC, 2010 EDITION; CHAPTER 16, SECTION 1609.1.1, EXCEPTION #7 DESIGN WIND PARAMETERS ARE NOTED. ACTUAL WIND SPEED MUST BE VERIFIED FOR THE SITE BY THE PROPER GOVERNING OFFICIAL.

GEOTECHNICAL PARAMETERS:
ALLOWABLE END BEARING SOIL PRESSURE: 2,000 PSF
ALLOWABLE LATERAL SOIL BEARING PRESSURE: 0 PSF/FT (GRADE TO -2'-0"); 200 PSF/FT (-2'-0" TO -5'-0"); 300 PSF/FT (-5'-0" TO -7'-0"); 400 PSF/FT (BELOW -7'-0") IN ACCORDANCE WITH THE 2010 EDITION OF THE FLORIDA BUILDING CODE, CHAPTER 18.

DESIGN SOIL PARAMETERS ARE AS NOTED. ACTUAL ALLOWABLE SOIL PARAMETERS MUST BE VERIFIED ON SITE. REFERENCE SOILS AND FOUNDATION REPORT, NO. 0775-1607 REV 2, PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC.; TAMPA, FL.

A GEOTECHNICAL ENGINEER OR REPRESENTATIVE OF IS RECOMMENDED (NOT REQUIRED) TO BE AVAILABLE AT THE TIME OF THE FOUNDATION INSTALLATION TO VERIFY THE SOIL DESIGN PARAMETERS AND TO PROVIDE ASSISTANCE IF ANY PROBLEMS ARISE IN FOUNDATION INSTALLATION.

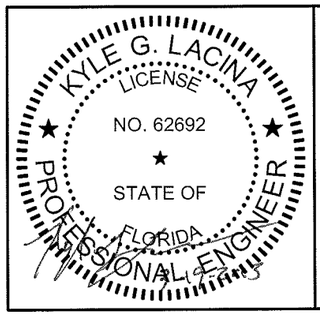
ENCOUNTERING SOIL FORMATIONS THAT WILL REQUIRE SPECIAL DESIGN CONSIDERATIONS OR EXCAVATION PROCEDURES MAY OCCUR. POLE FOUNDATIONS WILL NEED TO BE ANALYZED ACCORDING TO THE SOIL CONDITIONS THAT EXIST. IF ANY DISCREPANCIES OR INCONSISTENCIES ARISE, NOTIFY THE ENGINEER OF SUCH DISCREPANCIES. FOUNDATIONS WILL THEN BE REVISED ACCORDINGLY. REVISIONS WILL BE ANALYZED PER RECOMMENDATIONS DIRECTED BY A REGISTERED ENGINEER.

ALL EXCAVATIONS MUST BE FREE OF LOOSE SOIL AND DEBRIS PRIOR TO FOUNDATION INSTALLATION AND CONCRETE BACKFILL PLACEMENT. TEMPORARY CASINGS OR DRILLERS SLURRY MAY BE USED TO STABILIZE THE EXCAVATION DURING INSTALLATION. CASINGS MUST BE REMOVED DURING CONCRETE BACKFILL PLACEMENT. CONCRETE BACKFILL MUST BE PLACED WITH A TREMIE WHEN SLURRY OR WATER IS PRESENT WITHIN THE EXCAVATION OR WHEN THE FREE DROP EXCEEDS 6'-0".

CONTRACTOR MUST BE FAMILIAR WITH THE COMPLETE SOIL INVESTIGATION REPORT AND BORINGS, AND CONTACT THE GEOTECHNICAL FIRM (IF NECESSARY) TO UNDERSTAND THE SOIL CONDITIONS AND THE POSSIBILITY OF GROUND WATER PUMPING AND EXCAVATION STABILIZATION OR BRACING DURING PRECAST BASE INSTALLATION AND PLACEMENT OF CONCRETE BACKFILL.

CONCRETE:
CONCRETE SHALL BE AIR-ENTRAINED AND HAVE A MINIMUM COMPRESSIVE DESIGN STRENGTH AT 28 DAYS OF 3,000 PSI. 3,000 PSI CONCRETE SPECIFIED FOR EARLY POLE ERECTION, ACTUAL REQUIRED MINIMUM ALLOWABLE CONCRETE STRENGTH IS 1,000 PSI. ALL PIERS AND CONCRETE BACKFILL MUST BEAR ON AND AGAINST FIRM UNDISTURBED SOIL.

GENERAL NOTES:
FIXTURES MUST BE LOCATED TO MAINTAIN 10'-0" MINIMUM HORIZONTAL CLEARANCE FROM ANY OBSTRUCTION. POLES, FIXTURES, PRECAST BASES, ELECTRICAL ITEMS AND INSTALLATION PER MUSCO LIGHTING.



I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.

KYLE G. LACINA - NO. PE 62692
LICENSE RENEWAL DATE: FEBRUARY 28, 2015

STRUCTURAL ENGINEERS, P.C. - NO. 26361

DRAWING NO. COVERED BY THIS SEAL: C1

BLACKSTONE PARK
BASEBALL
FIELD LIGHTING
PALMETTO, FLORIDA

musco Lighting
CORPORATE: 100 1ST AVE WEST
OSKALOOSA, IA 52577
(800) 825-6020

STRUCTURAL ENGINEERS, P.C.
114 NICHOLAS DRIVE
MARSHALLTOWN, IOWA 50158
PHONE NUMBER: 641-752-6334
EMAIL: MSL.INFO@SEPC.BIZ

DRAWING TITLE: POLE AND FOUNDATION
SCALE: SEE PLAN
NOTES: SCAN #148133R5

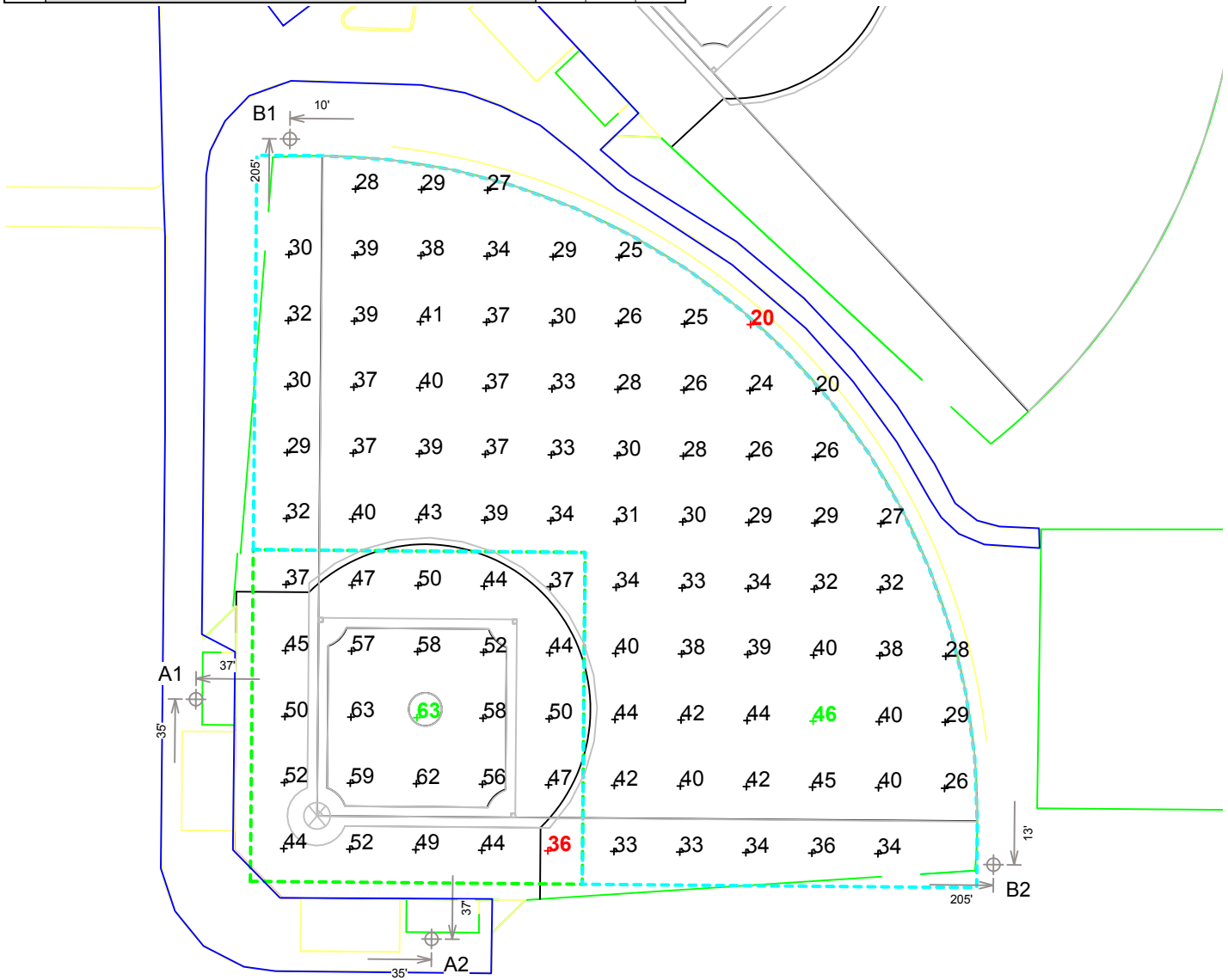
PROJECT NUMBER 148133

DATE 19 MARCH 2013

DRAWING NUMBER C1
OF ONE

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	60'	-	40'	24 LED	1	0	1
				60'	1500W MZ	3	3	0
1	B1	70'	-	40'	24 LED	1	0	1
				70'	1500W MZ	6	6	0
1	B2	70'	-	70'	1500W MZ	10	6	4
4	TOTALS					25	18	7



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name:	**Blackstone Park Baseball**
Location:	Palmetto,FL

GRID SUMMARY

Name:	**Baseball-1**
Size:	200'/200'/200' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES	
	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.20	33.72
Maximum:	63	46
Minimum:	36	20
Avg / Min:	1.38	1.69
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.73	2.31
UG (adjacent pts):	1.28	1.54
CV:	0.16	0.18
No. of Points:	25	73

LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	18
Avg KW:	28.15 (30.6 max)

Guaranteed Performance: The Guaranteed Average CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

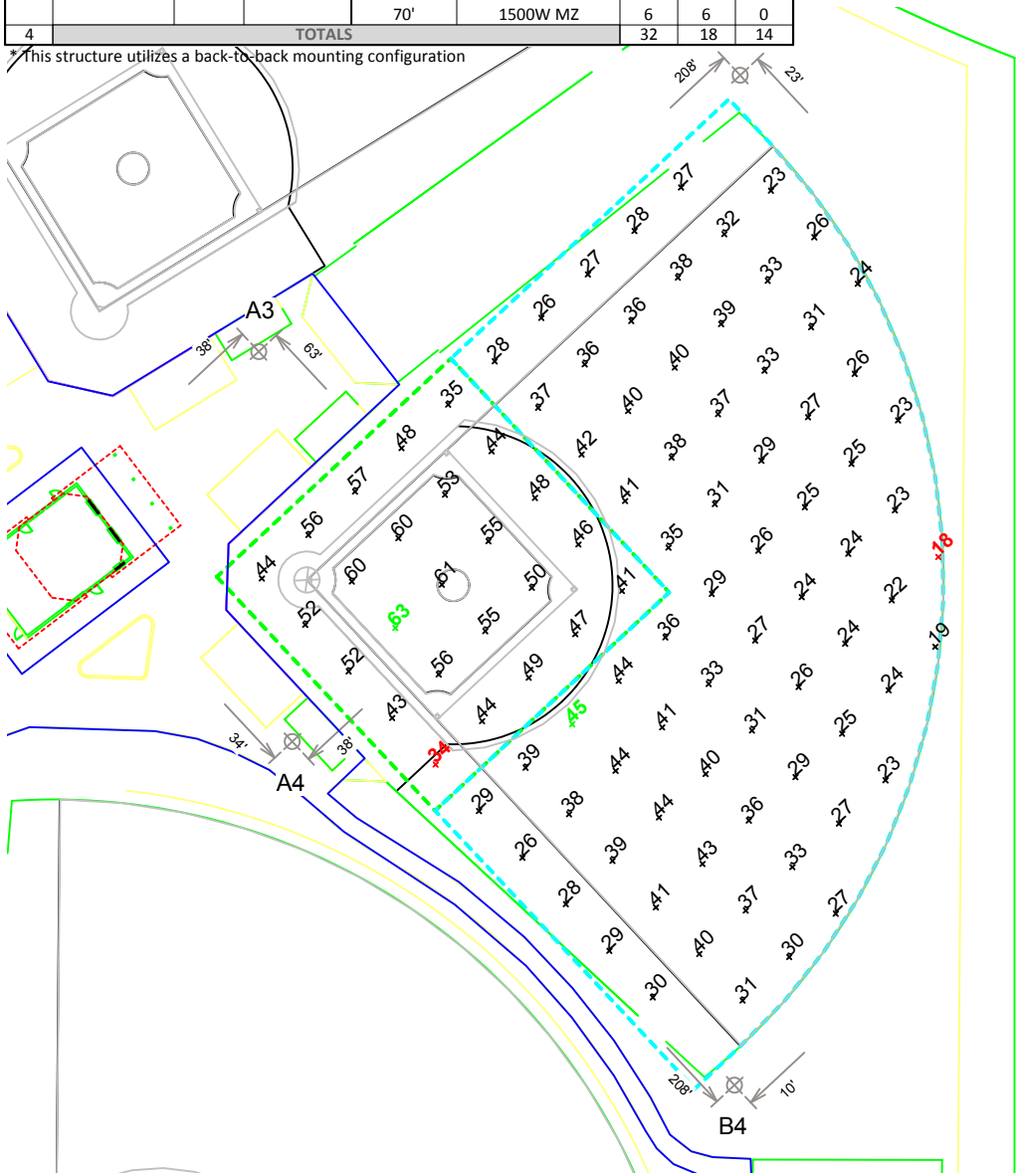
By:	**Jake Van Polen**	
File # / Date:	148133R5	14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A3	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3/3*	3	3
1	A4	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3	3	0
1	B3	80'	-	80'	1500W MZ	12	6	6
1	B4	70'	-	40'	24 LED	1	0	1
				70'	1500W MZ	6	6	0
4	TOTALS					32	18	14

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name:	**Blackstone Park Baseball**
Location:	Palmetto,FL

GRID SUMMARY

Name:	**Baseball-2**
Size:	200'/200'/200' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES	
	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.08	31.63
Maximum:	63	45
Minimum:	34	18
Avg / Min:	1.48	1.71
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.87	2.42
UG (adjacent pts):	1.36	1.45
CV:	0.15	0.22
No. of Points:	25	73

LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	18
Avg KW:	28.15 (30.6 max)

Guaranteed Performance: The Guaranteed Average CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

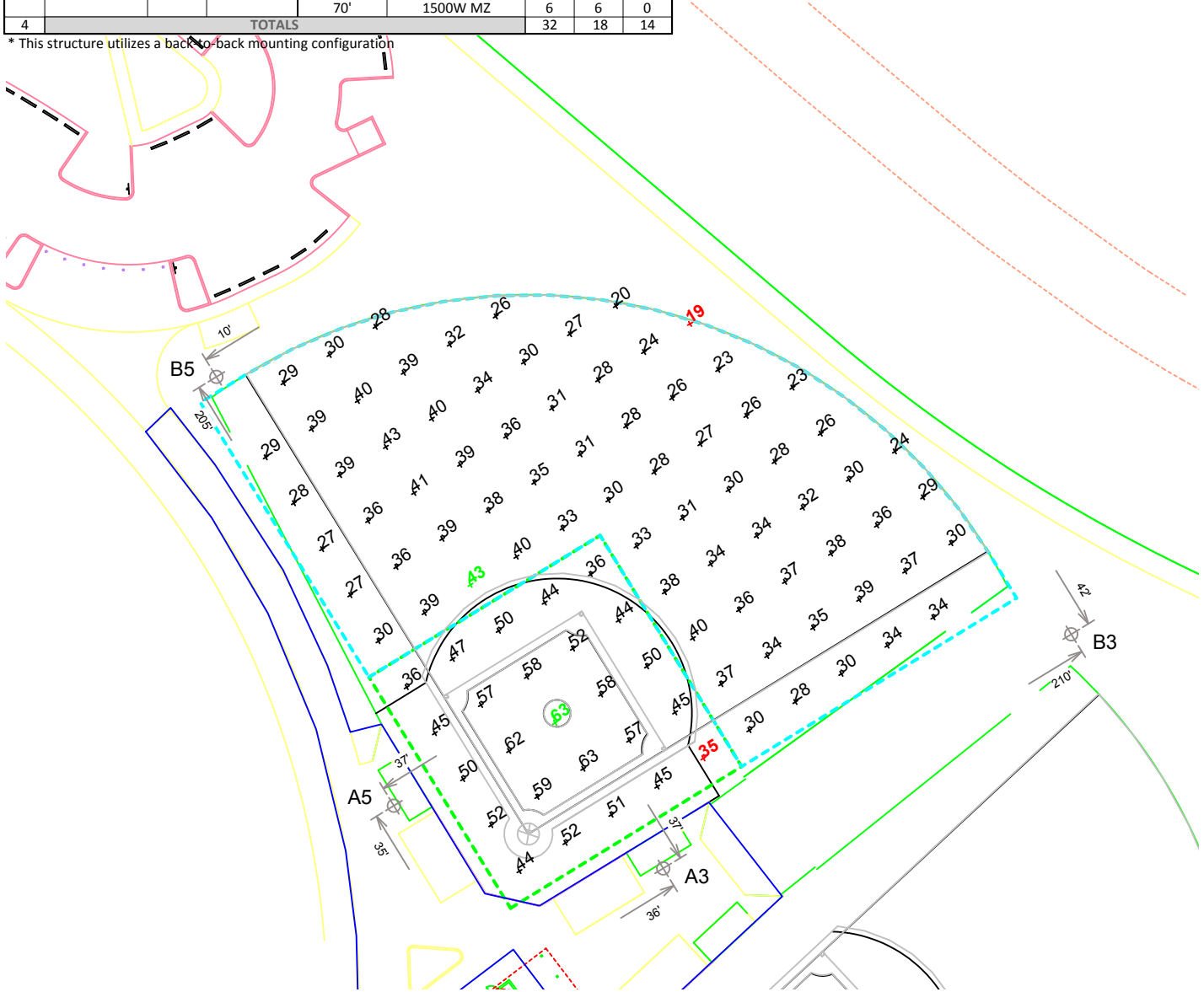
By:	**Jake Van Polen**	
File # / Date:	148133R5	14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	A3	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3/3*	3	3
1	A5	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3	3	0
1	B3	80'	-	80'	1500W MZ	12	6	6
1	B5	70'	-	40'	24 LED	1	0	1
				70'	1500W MZ	6	6	0
4	TOTALS					32	18	14

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 60

0' 60' 120'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name:	**Blackstone Park Baseball**
Location:	Palmetto,FL

GRID SUMMARY

Name:	**Baseball-3**
Size:	200'/200'/200' - basepath 60'
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES	
	Infield	Outfield
Guaranteed Average:	**50**	**30**
Scan Average:	50.15	32.34
Maximum:	63	43
Minimum:	35	19
Avg / Min:	1.42	1.74
Guaranteed Max / Min:	**2**	**2.5**
Max / Min:	1.78	2.33
UG (adjacent pts):	1.29	1.37
CV:	0.16	0.17
No. of Points:	25	73

LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	18
Avg KW:	28.15 (30.6 max)

Guaranteed Performance: The Guaranteed Average CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

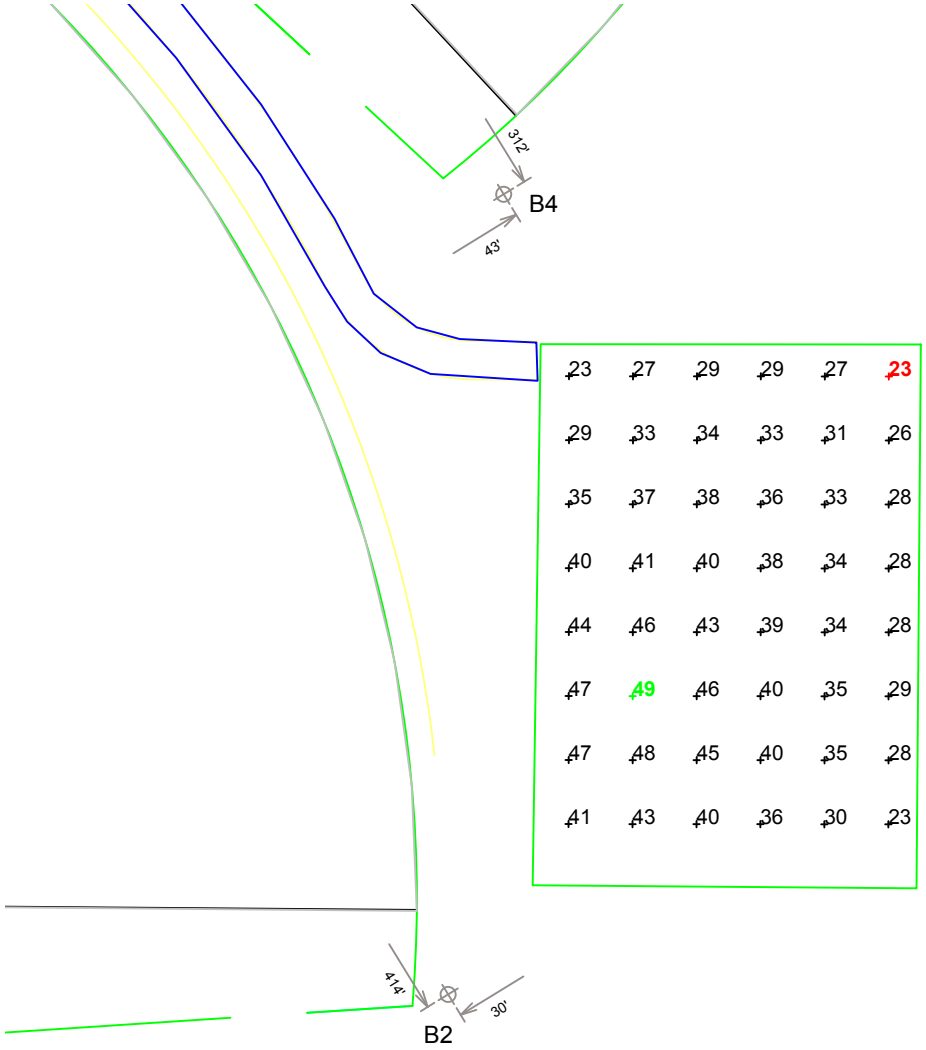
ENGINEERED DESIGN

By:	**Jake Van Polen**	
File # / Date:	148133R5	14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	B2	70'	-	70'	1500W MZ	10	4	6
1	TOTALS					10	4	6



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name:	**Blackstone Park Baseball**
Location:	Palmetto,FL

GRID SUMMARY

Name:	**Batting Cage**
Size:	200'/200'/200' - basepath 60'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average:	**35.60**
Maximum:	49
Minimum:	23
Avg / Min:	1.57
Max / Min:	**2.15**
UG (adjacent pts):	1.29
CV:	0.20
No. of Points:	48

LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	4
Avg KW:	6.26 (6.8 max)

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

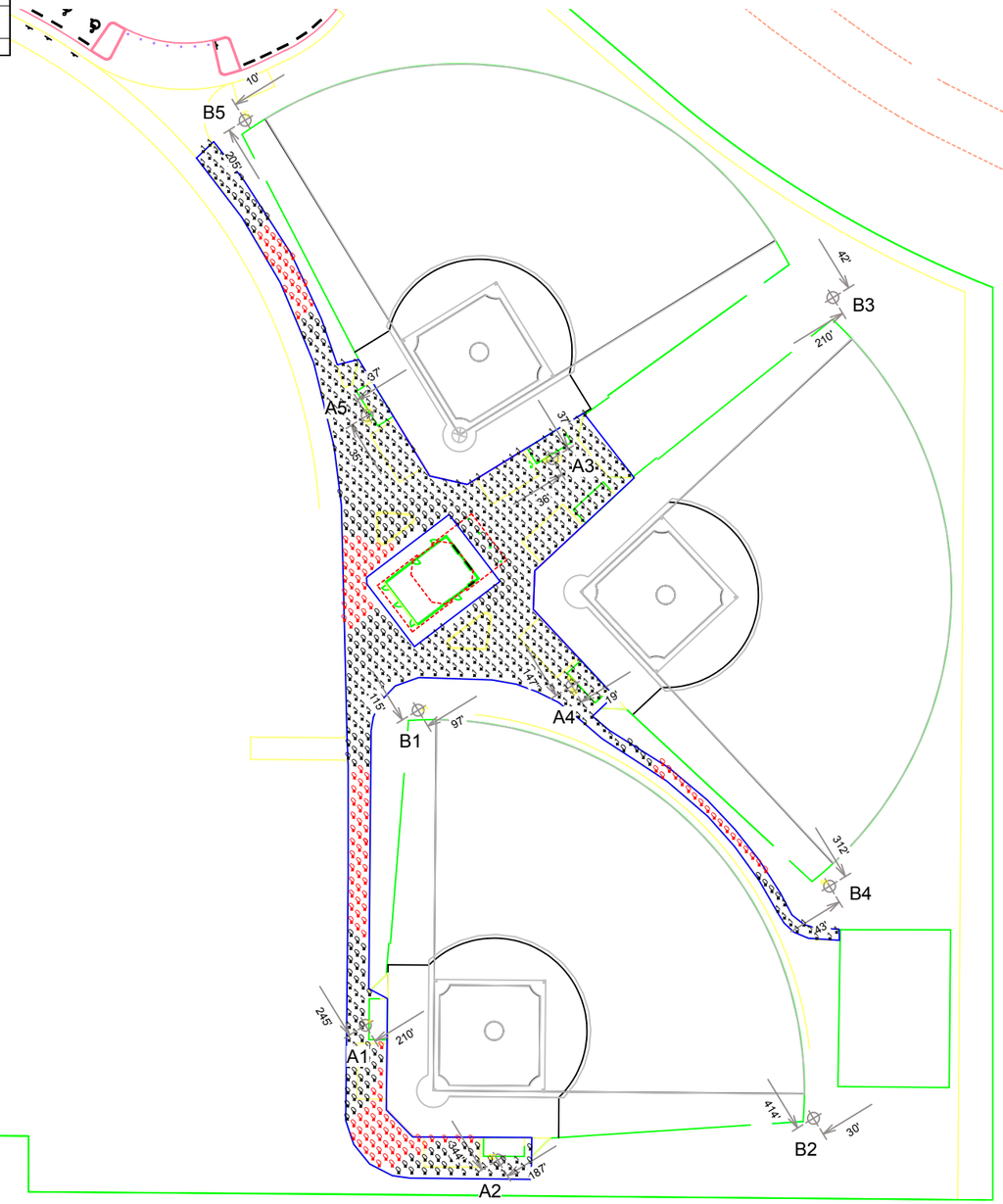
By:	**Jake Van Polen**	
File # / Date:	148133R5	14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	60'	-	40'	24 LED	1	1	0
				60'	1500W MZ	3	0	3
1	A3	60'	-	40'	24 LED	1/1*	2	0
				60'	1500W MZ	3/3*	0	6
2	A4-A5	60'	-	40'	24 LED	1/1*	2	0
				60'	1500W MZ	3	0	3
3	B1, B4-B5	70'	-	40'	24 LED	1	1	0
				70'	1500W MZ	6	0	6
8	TOTALS					47	11	36

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name: **Blackstone Park Baseball**
Location: Palmetto,FL

GRID SUMMARY

Name: **Walkway**
Size: 200'/200'/200' - basepath 60'
Spacing: 5.0' x 5.0'
Height: 3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average:	**0.52**
Maximum:	1
Minimum:	0
Avg / Min:	15.59
Max / Min:	**29.98**
UG (adjacent pts):	1.88
CV:	0.45
No. of Points:	909
LUMINAIRE INFORMATION	
Luminaire Type:	LED / SSL
Rated Lamp Life:	100,000 hours
Avg Lumens / Lamp:	3,950
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	11
Avg KW:	0.97 (1.33 max)

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

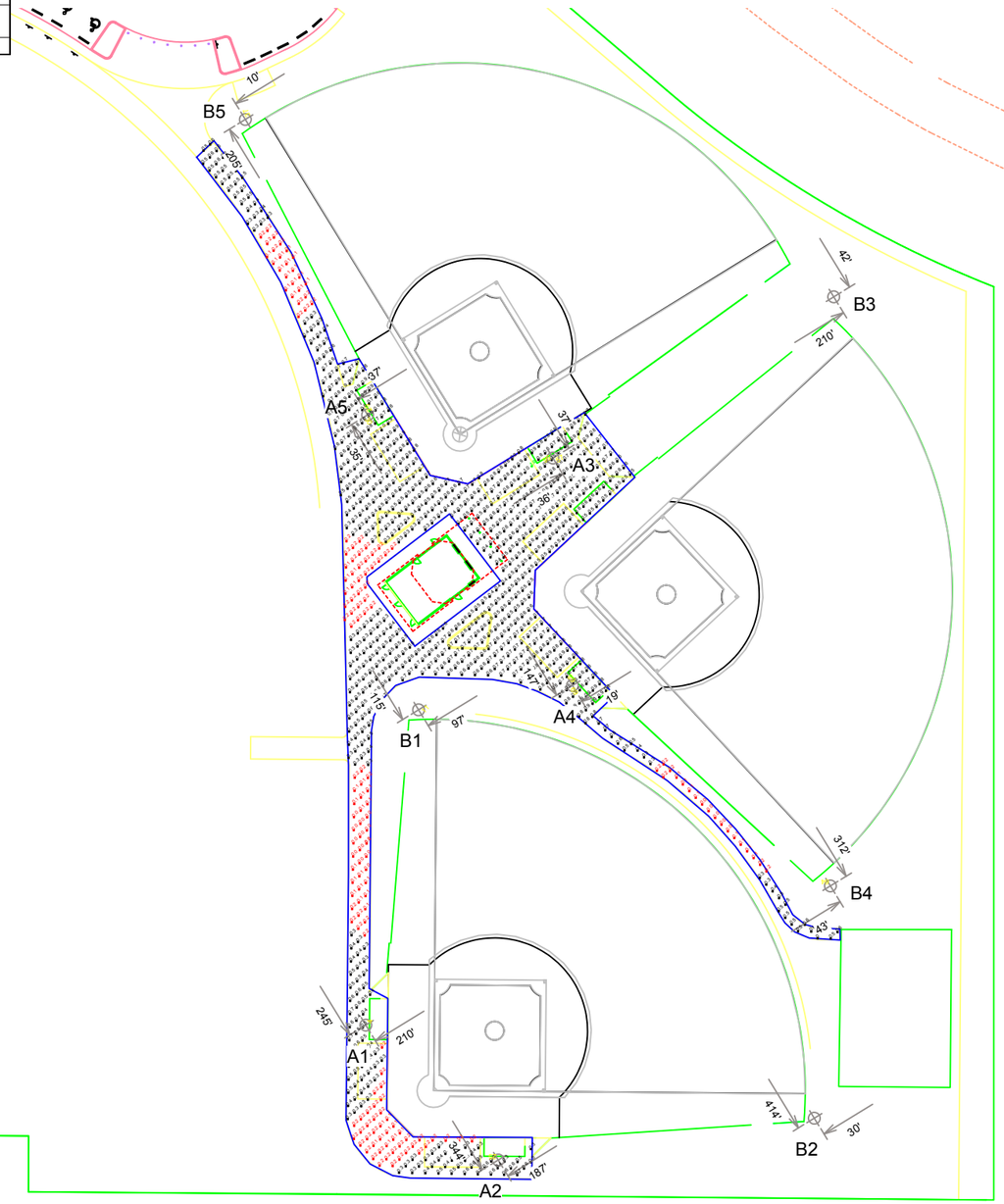
By: **Jake Van Polen**
File # / Date: 148133R5 14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	60'	-	40'	24 LED	1	1	0
				60'	1500W MZ	3	0	3
1	A3	60'	-	40'	24 LED	1/1*	2	0
				60'	1500W MZ	3/3*	0	6
2	A4-A5	60'	-	40'	24 LED	1/1*	2	0
				60'	1500W MZ	3	0	3
3	B1, B4-B5	70'	-	40'	24 LED	1	1	0
				70'	1500W MZ	6	0	6
8	TOTALS					47	11	36

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name: **Blackstone Park Baseball**
Location: Palmetto,FL

GRID SUMMARY

Name: **Walkway**
Size: 200'/200'/200' - basepath 60'
Spacing: 5.0' x 5.0'
Height: 3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average:	**0.52**
Maximum:	1
Minimum:	0
Avg / Min:	15.59
Max / Min:	**29.98**
UG (adjacent pts):	1.88
CV:	0.45
No. of Points:	909
LUMINAIRE INFORMATION	
Luminaire Type:	LED / SSL
Rated Lamp Life:	100,000 hours
Avg Lumens / Lamp:	3,950
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	11
Avg KW:	0.97 (1.33 max)

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

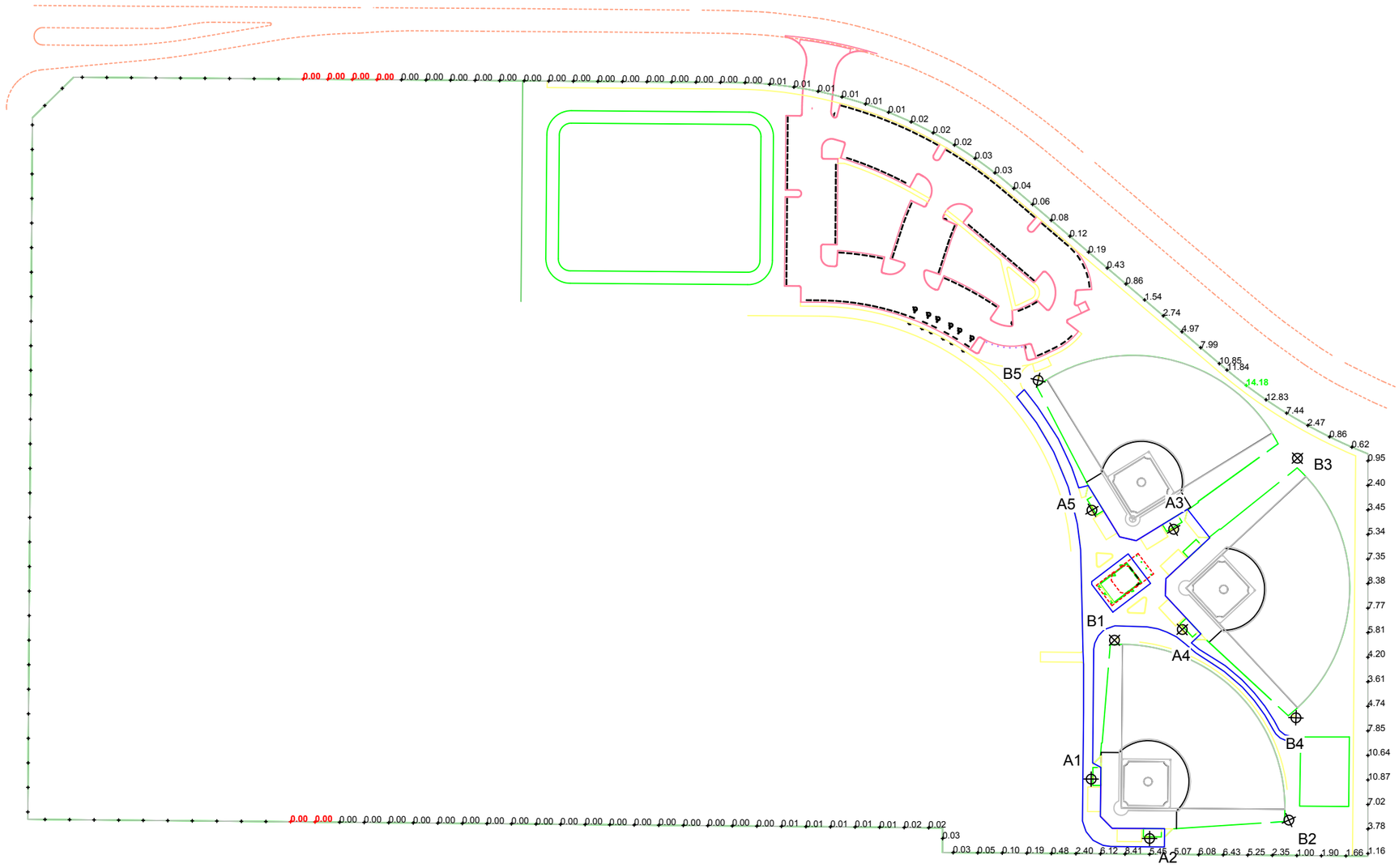
By: **Jake Van Polen**
File # / Date: 148133R5 14-Mar-13

ILLUMINATION SUMMARY

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	60'	-	40'	24 LED	1	0	1
				60'	1500W MZ	3	3	0
1	A3	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3/3*	6	0
2	A4-A5	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3	3	0
3	B1, B4-B5	70'	-	40'	24 LED	1	0	1
				70'	1500W MZ	6	6	0
1	B2	70'	-	70'	1500W MZ	10	10	0
1	B3	80'	-	80'	1500W MZ	12	12	0
10	TOTALS					69	58	11

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name: **Blackstone Park Baseball**
Location: Palmetto,FL

GRID SUMMARY

Name: **Property Spill**
Spacing: 30.0'
Height: 3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average:	**2.0606**
Maximum:	14.18
Minimum:	0.00
No. of Points:	161
LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	58
Avg KW:	90.71 (98.6 max)

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

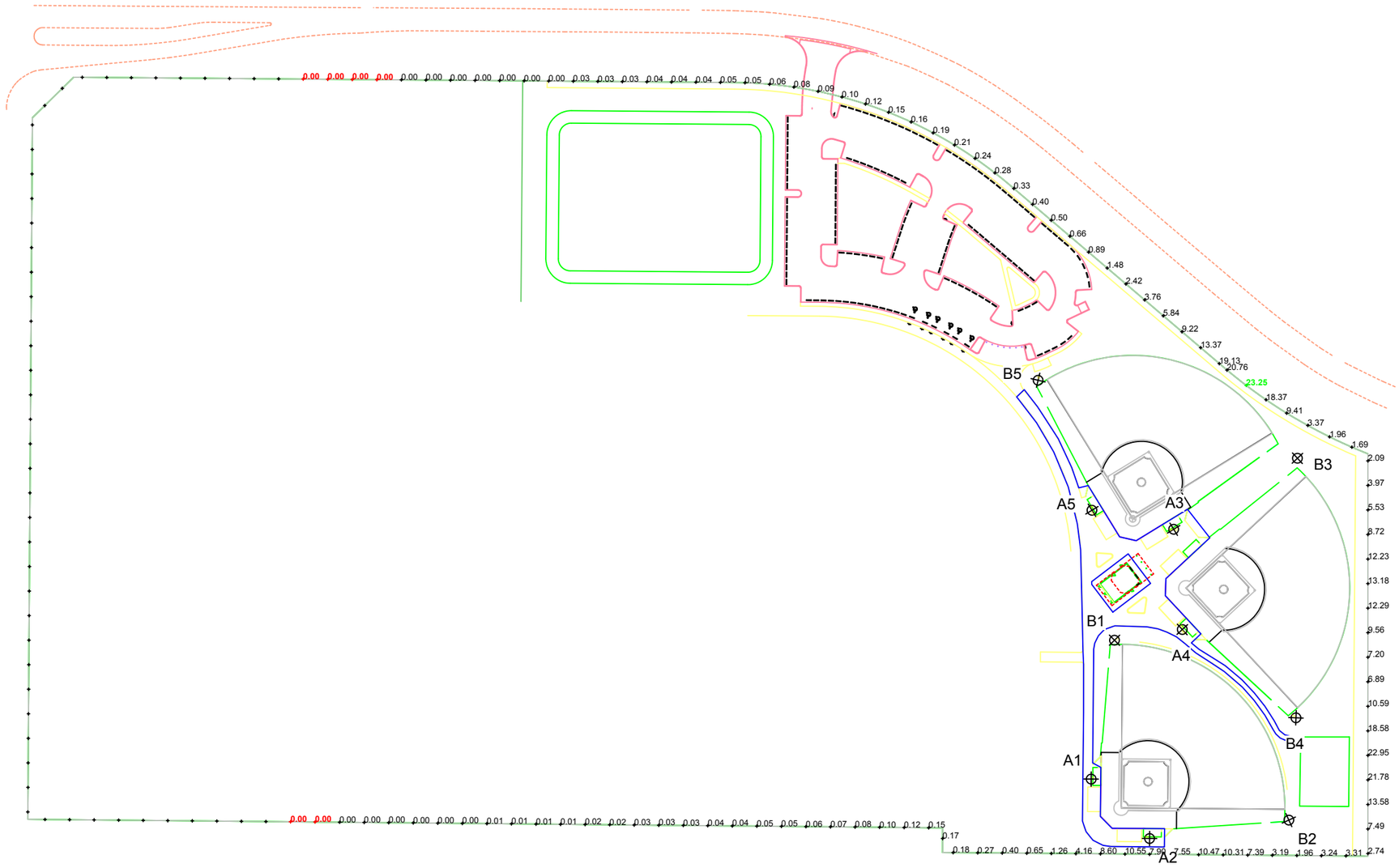
ENGINEERED DESIGN

By: **Jake Van Polen**
File # / Date: 148133R5 14-Mar-13

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	A1-A2	60'	-	40'	24 LED	1	0	1
				60'	1500W MZ	3	3	0
1	A3	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3/3*	6	0
2	A4-A5	60'	-	40'	24 LED	1/1*	0	2
				60'	1500W MZ	3	3	0
3	B1, B4-B5	70'	-	40'	24 LED	1	0	1
				70'	1500W MZ	6	6	0
1	B2	70'	-	70'	1500W MZ	10	10	0
1	B3	80'	-	80'	1500W MZ	12	12	0
10	TOTALS					69	58	11

* This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

MY PROJECT

Name: **Blackstone Park Baseball**
Location: Palmetto,FL

GRID SUMMARY

Name: **Property Spill**
Spacing: 30.0'
Height: 3.0' above grade

CONSTANT ILLUMINATION

SUMMARY	MAX VERTICAL FOOTCANDLES
	Entire Grid
Scan Average:	**3.6099**
Maximum:	23.25
Minimum:	0.00
No. of Points:	161
LUMINAIRE INFORMATION	
Luminaire Type:	Green Generation
Rated Lamp Life:	5,000 hours
Avg Lumens / Lamp:	134,000
Avg Lamp Tilt Factor:	1.000
No. of Luminaires:	58
Avg KW:	90.71 (98.6 max)

Guaranteed Performance: The CONSTANT ILLUMINATION described above is guaranteed for the rated life of the lamp.

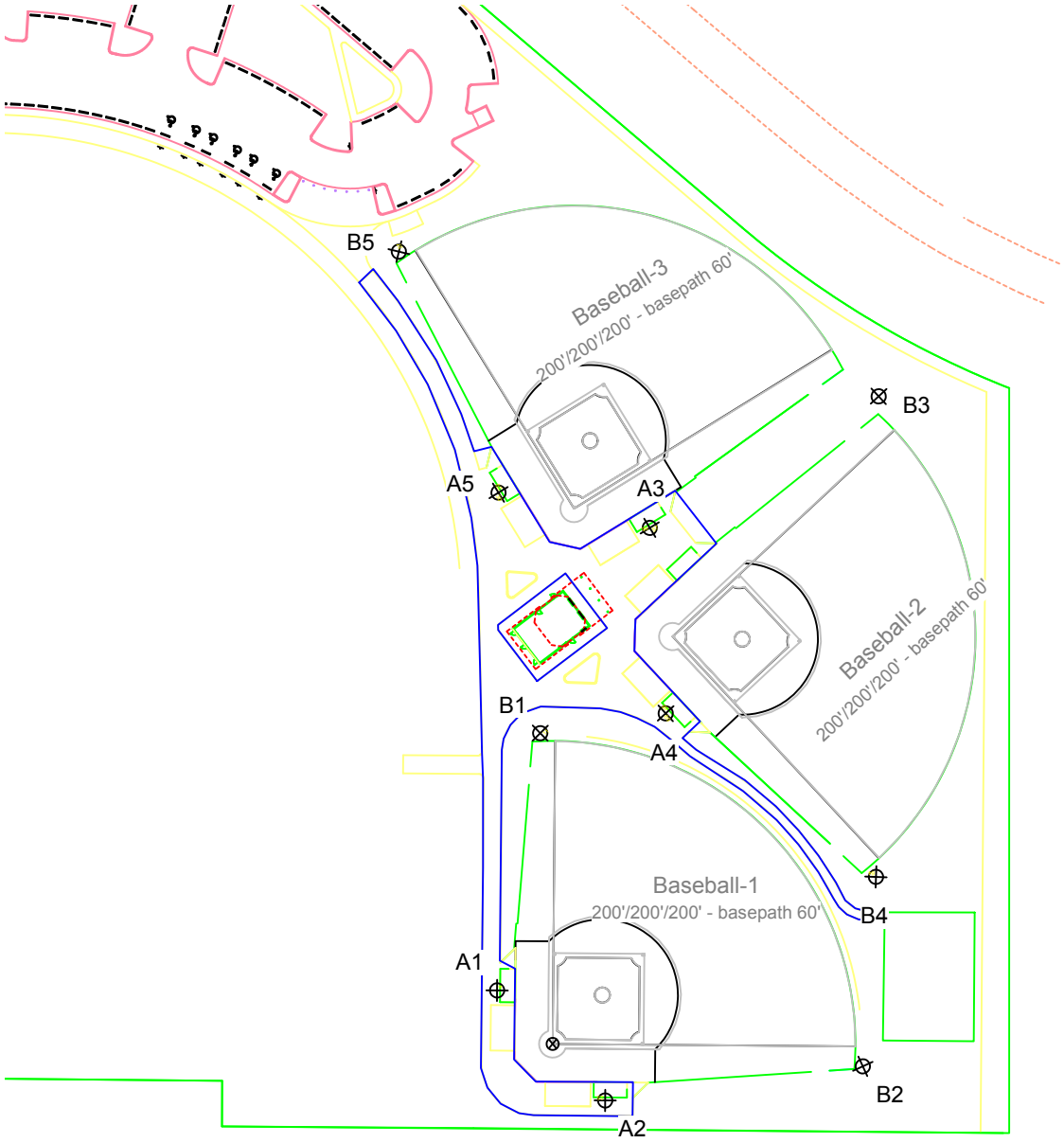
Field Measurements: Illumination measured in accordance with IESNA LM-5-04 and CIBSE LG4. Individual values may vary. See the Warranty document for details.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

ENGINEERED DESIGN

By: **Jake Van Polen**
File # / Date: 148133R5 14-Mar-13



MY PROJECT

Name: Blackstone Park Baseball
Location: Palmetto,FL

EQUIPMENT LAYOUT

INCLUDES:
· Baseball-1
· Baseball-2
· Baseball-3

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 3% nominal voltage at line side of the ballast and structures located within 3 feet (1m) of design locations.

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LAMP TYPE	QTY / POLE
2	A1-A2	60'	-	40' 60'	24 LED 1500W MZ	1 3
1	A3	60'	-	40' 60'	24 LED 1500W MZ	1/1* 3/3*
2	A4-A5	60'	-	40' 60'	24 LED 1500W MZ	1/1* 3
3	B1, B4-B5	70'	-	40' 70'	24 LED 1500W MZ	1 6
1	B2	70'	-	70'	1500W MZ	10
1	B3	80'	-	80'	1500W MZ	12
10	TOTALS					69

* This structure utilizes a back-to-back mounting configuration

SINGLE LUMINAIRE AMPERAGE DRAW CHART

Ballast Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
1500 watt MZ	8.6	8.3	7.5	6.5	5.1	4.7	3.7
Other	-	-	-	-	-	-	-

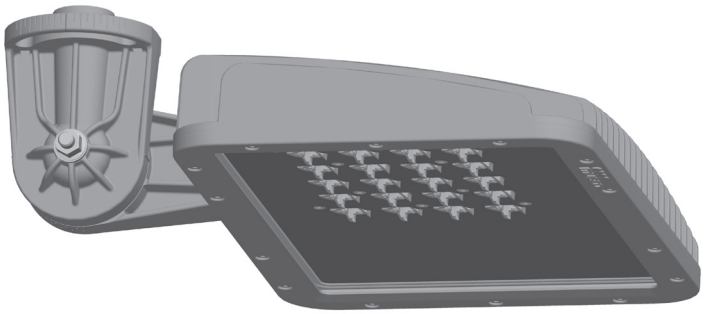
ENGINEERED DESIGN

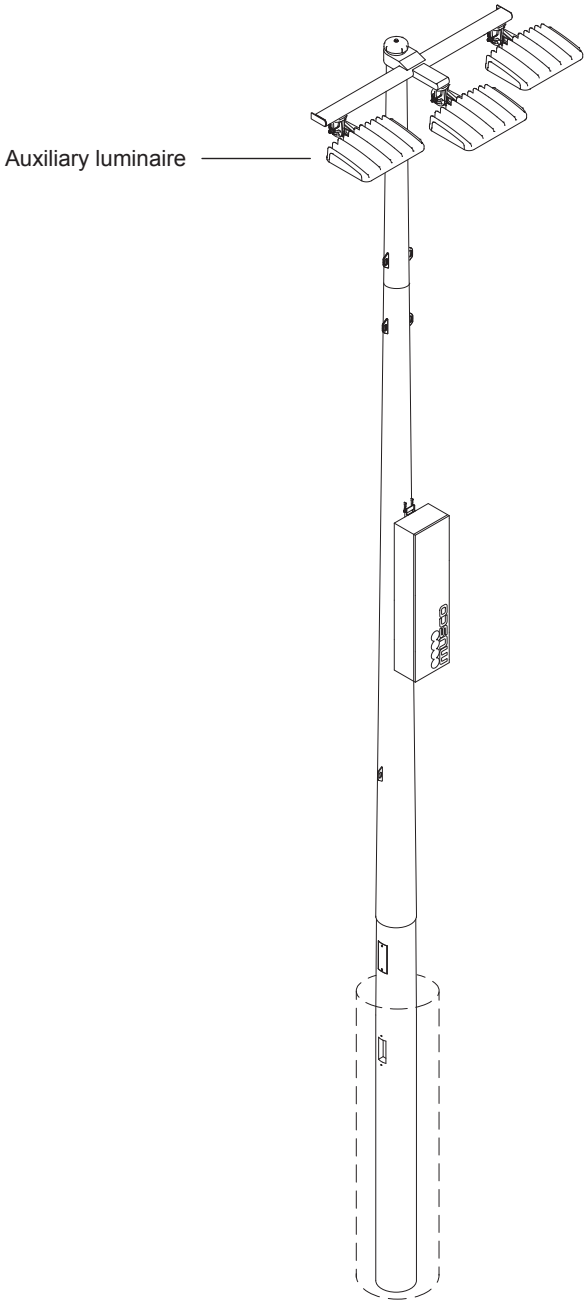
By: Jake Van Polen
File # / Date: 148133R5 14-Mar-13

SCALE IN FEET 1 : 120

0' 120' 240'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗





Luminaire Data

Weight (luminaire) . . . . . 15 lb (6.8 kg)

Weight (electrical components enclosure) . . . . . 40 lb (18.1 kg)

Projected life* . . . . . 100 000 h

UL listing number E338094

Windload Characteristics

Luminaire plus mounting knuckle (EPA) . . . . . 0.7 ft^2 (0.065 m^2)

(when mounted no more than +/- 10° from horizontal)

Windspeed rating (aiming only) . . . . . 150 mi/h (67 m/s)

Finish

Die-cast aluminum, anodized, CASTGUARD™ coated, and powder-coated

Photometric Characteristics

Design lumens . . . . . 3950 lm

CIE correlated color temperature . . . . . 4000 – 4500 K

Color Rendering Index (CRI) 70

*Projected life is based on dusk-to-dawn operation with adjustable amperage output driver.

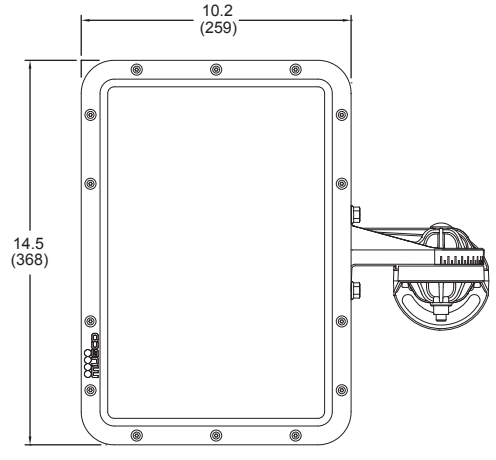
Electrical Data

Input current	
Operating (maximum)	0.8 A
Starting (inrush)	70 A (at 25˚C)
Input voltage	208 – 277 Vac, 50/60 Hz
Input power	
Nominal	88 W
Maximum steady state	121 W
Driver specifications	
Typical efficiency	90%
Minimum efficiency	86%
Operating temperature range	-35˚C to 55˚C
Storage temperature range	-40˚C to 85˚C
Luminaire fuse rating	10 A
Controls fuse rating	5 A
Startup time (maximum)	2 s
Safety ratings	USA / Canada: UL8750, UL1012, CSA-C22.2 No. 107.1 Europe: EN 61347-1, EN 61347-2-13
Catalog number	NEMA Type 7 medium beam: L024A_7MXX_ACAAX_90 NEMA Type 7 narrow beam: L024A_7NXX_ACAAX_90

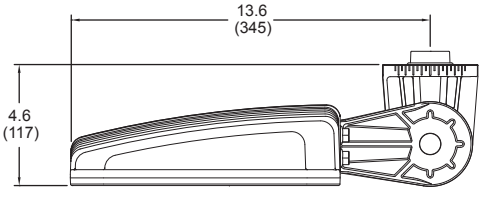
Dimensions

All dimensions in inches (millimeters) unless otherwise specified.

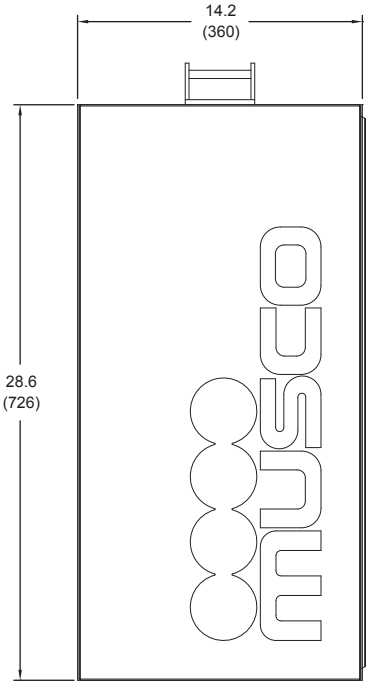
Bottom



Side



Electrical components enclosure



Control System Summary

Project Specific Notes:

LED lights to be powered by 277V.

Project Information

Project #:	148133
Project Name:	Blackstone Park Baseball
Date:	02/08/13
Project Engineer:	Jake Van Polen
Sales Representative:	Bob DeCouto
Control System Type:	Control and Monitoring
Communication Type:	Digital Cellular
Scan:	148133R4RPA
Distribution Panel Location or ID:	WW
Total # of Distribution Panel Locations for Project:	1
Design Voltage/Hertz/Phase:	240/60/3
Control Voltage:	120

Equipment Listing

DESCRIPTION	APPROXIMATE SIZE
1.Control and Monitoring Cabinet	24 X 72
2.Control and Monitoring Cabinet	24 X 48
3.Surge Protection Device	6 X 10

	QTY	SIZE
Total Contactors	16	30 AMP
Total Off/On/Auto Switches:	6	

Materials Checklist

Contractor/Customer Supplied:

- ❑ A single control circuit must be supplied per distribution panel location.
  - — If the control voltage is NOT available, a control transformer is required.
- ❑ Electrical distribution panel to provide overcurrent protection for circuits
  - — Thermal/Magnetic circuit breaker sized per full load amps on Circuit Summary by Zone Chart
- ❑ Wiring:
  - — Dedicated control power circuit
  - — Power circuit to and from lighting contactors
  - — Monitoring circuit from surge protection device to Control and Monitoring cabinet 1
  - — Harnesses for cabinets at remote locations
  - — Means of grounding, including lightning ground protection
- ❑ Electrical conduit wireway system
  - — Entrance hubs rated NEMA 4: must be die-cast zinc, PVC, or copper-free die-cast aluminum
- ❑ Mounting hardware for cabinets
- ❑ Control circuit lock-on device to prevent unauthorized power interruption to control power
- ❑ Anti-corrosion compound to apply to ends of wire, if necessary

Call Control-Link Central(TM) operations center at 877/347-3319 to schedule activation of the control system upon completion of the installation. Note: Activation may take up to 1 1/2 hours

IMPORTANT NOTES

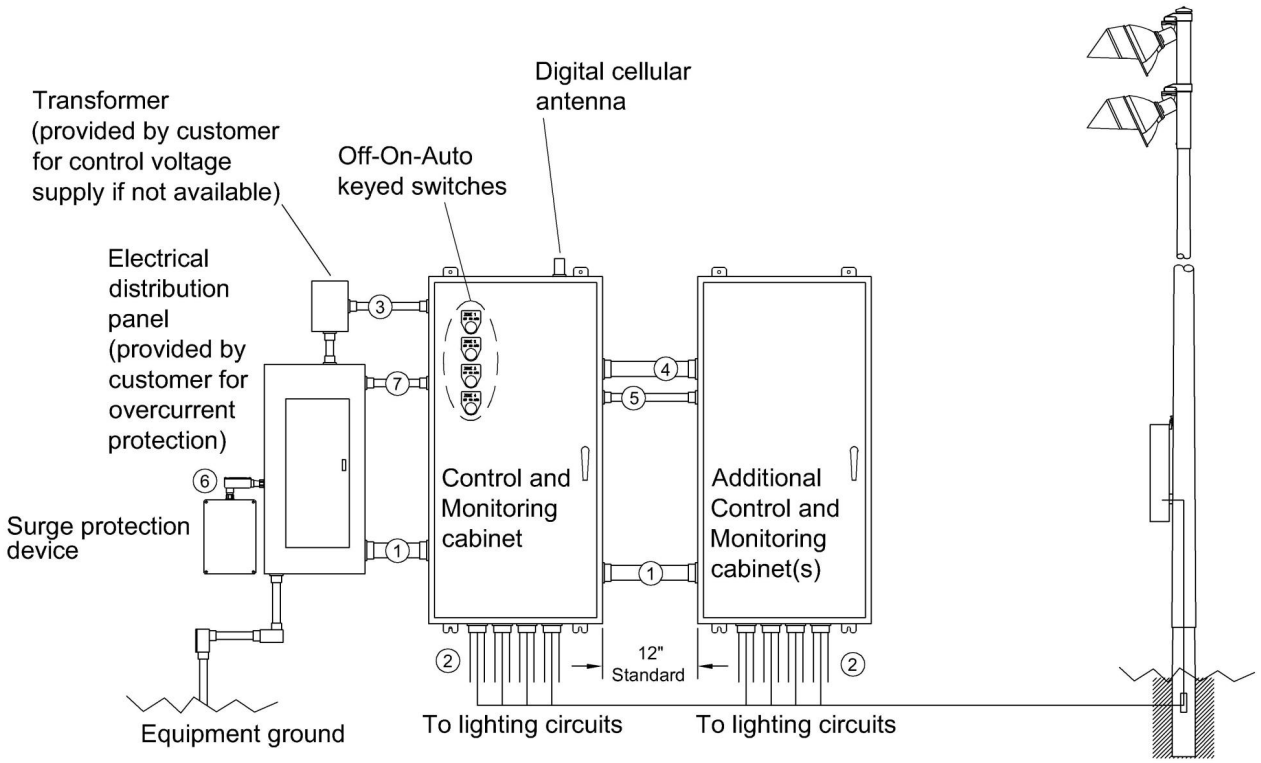
1. Please confirm that the design voltage listed above is accurate for this facility. Design voltage/phase is defined as the voltage/phase being connected and utilized at each lighting pole's ballast enclosure disconnect. Inaccurate design voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole. When a 3 phase design is used Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each pole. When a pole has multiple circuits, one contactor is required for each circuit. All contactors are UL 100% rated for the published continuous load. All contactors are 3 pole.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. A single control circuit must be supplied per control system.
6. Size overcurrent devices using the full load amps column of the Circuit Summary By Zone chart- Minimum power factor is 0.9.

NOTE: Refer to Installation Instructions for more details on equipment information and the installation requirements

Form: T-5030-1

Control•Link.
Control and Monitoring System - Digital Cellular

(Quantity of equipment may differ from what is shown below)



WIRE	DESCRIPTION	# OF WIRES	TYP. WIRE SIZE (AWG)	MAX. WIRE LENGTH (FT)	WIRE FROM MUSCO	NOTES
1	LINE POWER & GROUND TO CONTACTORS	NOTE A	NOTE B	27	NO	A–E
2	LOAD POWER TO LIGHTING CIRCUITS	NOTE A	NOTE B	N/A	NO	A–D
3	CONTROL POWER (DEDICATED, 20A)	3	12	N/A	NO	C, D
4	CONTROL HARNESSES	--	--	8*	YES*	C, D
5	COMMUNICATION CABLE (RS–485)	1	--	8*	YES*	C, D
6	SURGE PROTECTION DEVICE TO DISTRIBUTION PANEL	--	--	N/A	YES	D
7	SURGE PROTECTION DEVICE MONITORING	2	14	N/A	NO	C, D

R60–11–00_F

Notes:
A. Voltage and phasing per the notes on cover page
B. Calculate per load and voltage drop
C. Minimum conduit diameter
   a. Wire 4 requires 2" (for connector ends to pass though)
   b. Wire 5 requires 1" (for connector ends to pass though)
   c. All other conduit diameters should be per code
D. Refer to Control and Monitoring System Installation Instructions for more details on equipment information and the installation requirements.
E. Contact Musco if maximum wire length from circuit breaker to contactor exceeds value in the chart.

IMPORTANT: Communication wire (5) must be in separate conduit from any AC power wiring (1,2,3,4,6,7). Control (3,4) and monitoring (7) wire must be in separate conduit from line and load power wiring (1,2).

*Musco supplied wire harnesses are supplied in standard 8-foot lengths.

Form: T-5030-1

Control System Summary

SWITCHING SCHEDULE

Field Type	Zones	Zone Description
Baseball-Softball	1	Baseball-1
Baseball-Softball	2	Baseball-2
Baseball-Softball	3	Baseball-3
Other	4	Batting Cage
Security	5	Walkway
Parking	6	Parking

CONTROL POWER CONSUMPTION	
120V Single Phase	
VA loading of Musco Supplied Equipment	INRUSH: 5560.0
	SEALED: 679.5

BALLAST SPECIFICATIONS .90 Minimum Power Factor	VOLTAGE: 240v		THREE PHASE				
BALLAST OPERATING VOLTAGE	208	220	240	277	347	380	480
1500 Watt Metal Halide Lamp Operating line amperage per fixture- maximum	8.6	8.3	7.5	6.5	5.1	4.7	3.7
1000 Watt Metal Halide Lamp Operating line amperage per fixture- maximum	6.5	6.4	5.8	4.9	4.0	3.6	2.9

CIRCUIT SUMMARY BY ZONE

POLE	CIRCUIT DESCRIPTION	# OF FIXTURES	FULL LOAD AMPS	CONTACTOR SIZE (AMPS)	CONTACTOR ID	ZONE
A1	Baseball-1	3	15	30	C1	1
A2	Baseball-1	3	15	30	C2	1
B1	Baseball-1	6	30	30	C3	1
B2	Baseball-1	6	30	30	C4	1
A3	Baseball-2	3	15	30	C5	2
A4	Baseball-2	3	15	30	C6	2
B3	Baseball-2	6	30	30	C7	2
B4	Baseball-2	6	30	30	C8	2
A3	Baseball-3	3	15	30	C9	3
A5	Baseball-3	3	15	30	C10	3
B3	Baseball-3	6	30	30	C11	3
B5	Baseball-3	6	30	30	C12	3
B2	Batting Cage	4	22.5	30	C13	4
A1,A2,A3,A4,A5	Walkway	11	5.61	30	C14	5
B1,B4,B5						
P1	Parking	0	0	30	C15	6
P2	Parking	0	0	30	C16	6

Form: T-5030-1

Control System Summary

PANEL SUMMARY

CABINET #	CONTROL MODULE LOCATION	CONTACTOR ID	CIRCUIT DESCRIPTION	FULL LOAD AMPS	DISTRIBUTION PANEL ID (BY OTHERS)	CIRCUIT BREAKER POSITION (BY OTHERS)
1	1	C1	Pole A1	15.00		
1	1	C2	Pole A2	15.00		
1	1	C3	Pole B1	30.00		
1	1	C4	Pole B2	30.00		
1	1	C5	Pole A3	15.00		
1	1	C6	Pole A4	15.00		
1	1	C7	Pole B3	30.00		
1	1	C8	Pole B4	30.00		
1	1	C9	Pole A3	15.00		
1	1	C10	Pole A5	15.00		
1	1	C11	Pole B3	30.00		
1	1	C12	Pole B5	30.00		
2	1	C13	Pole B2	22.50		
2	1	C14	Pole A1,A2,A3,A4,A5,B1,B4,B5	5.61		
2	1	C15	Pole P1	0.00		
2	1	C16	Pole P2	0.00		

ZONE SCHEDULE

			CIRCUIT DESCRIPTION	
ZONE	SELECTOR SWITCH	ZONE DESCRIPTION	POLE ID	CONTACTOR ID
Zone 1	1	Baseball-1	A1 A2 B1 B2	C1 C2 C3 C4
Zone 2	2	Baseball-2	A3 A4 B3 B4	C5 C6 C7 C8
Zone 3	3	Baseball-3	A3 A5 B3 B5	C9 C10 C11 C12
Zone 4	4	Batting Cage	B2	C13
Zone 5	5	Walkway	A1 A2 A3 A4 A5 B1 B4 B5	C14 C14 C14 C14 C14 C14 C14 C14
Zone 6	6	Parking	P1 P2	C15 C16

Information To Build On
Engineering • Consulting • Testing

GEOTECHNICAL ENGINEERING SERVICES REPORT

For the

BLACKSTONE PARK – ADDITIONAL LITTLE LEAGUE FIELDS AND PARKING
23RD STREET SITE
PAMETTO, FLORIDA

Prepared for

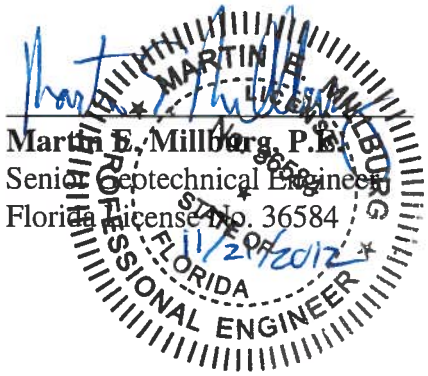
Manatee County Property Management Dept.
1112 Manatee Ave., Suite 803
Bradenton, FL 34205

Prepared by

Professional Service Industries, Inc.
5801 Benjamin Center Drive
Suite 112
Tampa, Florida 33634
Telephone (813) 886-1075
Fax (813) 888-6514

PSI Project No. 0775-1607 rev 2

September 20, 2012 (Reissued November 21, 2012)



Martin E. Millburg, P.E.
Senior Geotechnical Engineer
Florida License No. 36584

David S. Harris, P.E.
Project Engineer
Florida License No. 68377

Information To Build On
Engineering • Consulting • Testing

September 20, 2012 (Reissued November 21, 2012)

Manatee County Property Management Dept.
1112 Manatee Ave., Suite 803
Bradenton, FL 34205

Attention: Tom Yarger, PMP
Construction Services Manager

Re: Geotechnical Engineering Services Report
Blackstone Park – Additional Little League Fields and Parking
23rd Street Site
Palmetto, Florida
PSI Project No. 0775-1607 rev 1

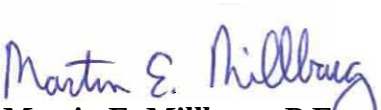
Dear Mr. Yarger:

Professional Service Industries, Inc. (PSI) is pleased to present our geotechnical engineering services report for the referenced project. The results of the study are discussed in the accompanying report, three (3) copies of which are enclosed. We have updated this report with information regarding the regulatory status of the allowable pond depth.

Should there be any questions, please do not hesitate to contact our office at (813) 886-1075. PSI would be pleased to continue providing construction materials testing (CMT) services throughout the implementation of the project. We look forward to working with you and your organization on this and future projects.

Respectfully submitted,

Professional Service Industries, Inc.



Martin E. Millburg, P.E.
Senior Geotechnical Engineer
Florida License No. 36584

David S. Harris, P.E.
Project Engineer
Florida License No. 68377

Enclosures

TABLE OF CONTENTS

APPENDIX

1.0 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a geotechnical exploration for the proposed Additional Little League Fields and Parking for the Blackstone Park complex located at 2112 14th Ave. W., in Palmetto, Florida. Our services were authorized by Manatee County and conducted per PSI proposal No. 775-77690, issued August 30, 2012.

1.2 PROJECT DESCRIPTION

Based on the information provided, baseball fields, parking areas, and stormwater ponds are planned for the above referenced site. A 1- to 2-story concession stand/storage building is planned in conjunction with this development. A stormwater pond is planned for the west end of this site.

We anticipate building loads will not exceed wall and column loads of 4 kips per foot and 50 kips, respectively. We anticipate the maximum fill or cut depth at this site will not exceed 3 feet.

The geotechnical recommendations presented in this report are based on the available project information, building location, and the subsurface materials described in this report. If any of this project description information is incorrect or has changed, please inform PSI so that we may amend, if appropriate, the recommendations presented in this report.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this study is to explore the subsurface conditions at the site to provide foundation, stormwater management and pavement recommendations for the proposed construction. The subsurface materials encountered were then evaluated with respect to the available project characteristics. In this regard, engineering assessments of the following items have been formulated:

1. Feasibility of utilizing a shallow foundation system for support of the proposed structure, with a slab-on-grade floor member.

2. Design parameters required for the foundation system, including allowable bearing pressures, foundation sizes, foundation levels and soil subgrade treatments.

3. General pavement section recommendations and construction considerations.

4. Soil subgrade preparation, including stripping, grubbing and compaction. Engineering criteria for placement and compaction of approved structural fill materials.

5. Suitability and availability of materials on-site that may be moved during site grading for use as structural fill in the building area and as general backfill.

6. General location and description of potentially deleterious materials encountered in the borings which may interfere with construction progress or structure performance, including existing fills or surficial organics.

7. Stormwater design criteria such as depth to confining layer, infiltration rate and porosity.

8. Identification of groundwater levels and an estimation of seasonal high groundwater levels.

The following services have been provided in order to achieve the preceding objectives:

1. Executed a requested program of subsurface exploration consisting of subsurface sampling and field testing. We performed two (2) Standard Penetration Test (SPT) borings to depths of 20 feet below the existing ground surface within the proposed building footprint. In the borings, samples were collected and Standard Penetration Test resistances were measured virtually continuously for the top 10 feet and on intervals of 5 feet thereafter. Hand augers were used in the upper 4 feet to reduce the potential for damaging any unknown utilities.

2. We performed four (4) hand auger borings in proposed pavement areas.

3. One (1) Double Ring Infiltrometer (DRI) test was performed in the proposed stormwater retention area at a depth of 2 feet below the existing ground surface.

4. We performed two (2) hand auger borings in proposed stormwater retention area.

5. An environmental study being performed at this site included the installation of a monitoring well in the proposed pond area and groundwater elevations. That data was reviewed and used to help establish an estimated Seasonal High Water Level.

6. Visually classified representative soil samples in the laboratory using the Unified Soil Classification System (USCS). Identified soil conditions and formed an opinion of the soil stratigraphy at each boring location.

7. The results of the exploration have been used in the engineering analysis and the formulation of recommendations. The results of the subsurface exploration, including the recommendations and the data on which they are based, are presented in this written report supervised by a professional engineer.

2.0 SITE AND SUBSURFACE CONDITIONS

2.1 SITE LOCATION AND DESCRIPTION

Blackstone Park is a sports complex with baseball and soccer fields located the Northeast Corner of 21st Street West and 14th Avenue West in Palmetto, Florida. The property address is 2112 14th Ave W, Palmetto, FL 34221
The project site is located within Section 11, of Township 34 South, Range 17 East, according to the "Palmetto, Florida," Quadrangle map. Site elevation is approximately +10 feet.

2.2 MANATEE COUNTY SOIL SURVEY

The "Soil Survey of Manatee County, Florida," published by the USDA SCS, was reviewed for general near-surface soil information within the project vicinity. The SCS indicates that *Bradenton fine sand, limestone substratum,* is the predominant mapping unit. A brief description of the mapped soil group is provided below.

Soil Series	Depth (inches)	Unified Classification	USDA Seasonal High Groundwater Table Depth (feet)
(5) Bradenton fine sand, limestone substratum	40 to 80	SP, SC, SP-SM, SP-SC, Limestone	0 to 1

Bradenton soils are composed of sandy and loamy marine deposits over limestone. This soil type is poorly drained with a low available water capacity and moderately high to high permeability. The seasonal high water table is normally at a depth of 0 to 1 foot.

It should be noted that information contained in the USDA Soil Survey is very general and may be outdated. It may not therefore be reflective of actual soil and groundwater conditions, particularly if recent development in the project vicinity has modified soil conditions or surface/subsurface drainage.

2.3 FIELD INVESTIGATION

Subsurface conditions at the site were explored by drilling a total of eight (8) soil borings at the approximate locations shown on the Boring Location Plan included on **Sheet 2** of the **Appendix**.

Two (2) Standard Penetration Test (SPT) borings were performed to depths of 20 feet within the areas of the proposed building. In each boring, samples were collected and SPT resistances were measured virtually continuously for the top 10 feet and on intervals of 5 feet thereafter.

Four (4) hand auger borings were performed to depths of 5 feet in the proposed pavement areas, and two (2) hand auger borings were performed to depths of 5 feet in the proposed stormwater pond. Soil samples were taken at each soil change.

One (1) Double Ring Infiltrometer (DRI) test was performed in the proposed stormwater management area at a depth of 2 feet below the existing ground surface.

The number of borings, boring locations and boring depths were selected by Stantec and PSI. The borings were located in the field by PSI personnel by measuring distances from known site reference points based on the site plan provided to PSI.

Elevations of the ground surface at the boring locations were not provided to PSI and should be determined by others prior to construction. Therefore, all references to depth of the various materials encountered are from the existing grade at the time of drilling (September 13, 2012). The SPT borings were advanced utilizing rotary mud drilling methods and soil samples were routinely obtained at selected intervals during the drilling process. Drilling and sampling techniques were accomplished in general accordance with ASTM standards. Select soil samples were returned to our laboratory for visual classification. Classifications were performed in general accordance with the Unified Soil Classification System (USCS).

2.4 SUBSURFACE CONDITIONS

The subsurface conditions at the site consist primarily of sandy soils from the ground surface to about three to five feet. This layer was underlain by limestone and other calcareous and/or clayey soils to the boring termination depths. The soil profiles presented on **Sheet 3** of the **Appendix** include soil descriptions, stratifications and penetration resistances. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. Water level information obtained during field operations is also shown on these boring logs.

2.5 GROUNDWATER INFORMATION

Groundwater was not encountered in any of the borings. However, we think the clayey soils at this site prevented accurate water levels from being obtained in the limited time during which the field work was completed. We expect the shallow clayey soils will act to inhibit downward percolation of groundwater, resulting in a perched water table in the upper 5 feet of soils during rainy periods.

A monitoring well was installed about 50 to 75 feet northeast of SW-2. The ground surface elevation at that location was about 10.9' NGVD 29 elevation. The groundwater elevation on 9/20/2012 was reported to be about 5.5' NGVD 29 elevation. Since this water level was obtained during after an exceptionally rainy summer and during a rainy period, we think this water level represents the Seasonal High Water Level in the pond.

2.6 DOUBLE RING INFILTRATION TEST RESULTS

PSI performed one (1) Double Ring Infiltration Test in the proposed underground stormwater retention area. The test was performed at a depth of 2 feet below the ground surface on September 12, 2012. The soil at this depth is slightly silty, slightly clayey to clayey sand (USCS Classification SP-SC/SP-SM, SP-SM/SC). The results of the test yielded a stabilized

infiltration rate of 1.2 inches per hour or 2.4 feet per day. A graph of the test results is included on **Sheet 4** in the **Appendix** of this report.

3.0 EVALUATION AND RECOMMENDATIONS

3.1 GENERAL

Based on our observations, it is our opinion that subsurface soil conditions at the project site are generally favorable for the planned development from a geotechnical engineering perspective provided that the recommendations presented herein are followed. It should be noted that hard limestone and/or very stiff clay was encountered within about 3 to 5 feet from the ground surface at several boring locations. If excavations into this material are required during construction, specialized rock excavating equipment may be required to remove these hard shallow soils.

The following design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in these project criteria, including project location on the site, a review must be made by PSI to determine if any modifications in the recommendations will be required. The findings of such a review should be presented in a supplemental report.

Once final design plans and specifications are available, a general review by PSI is strongly recommended as a means to check that the evaluations made in preparation of this report are correct and that earthwork and foundation recommendations are properly interpreted and implemented.

3.2 SITE PREPARATION

The following are our recommendations for overall site preparation. These recommendations should be used as a guideline for the project general specifications prepared by the design engineer.

1. Organics, vegetation or any other deleterious materials present within proposed building and pavement areas should be removed. All encountered deleterious materials should be removed and disposed of properly. At a minimum, it is recommended that the clearing operations extend at least 5 feet beyond the development perimeters.

2. The proposed footprint area should be compacted to a minimum depth of 1 foot below stripped grade to a dry density of at least 95% of the modified Proctor maximum dry density within the proposed structure areas. Any area where the recommended density has not been achieved should be undercut to firm soils and backfilled with structural fill.

3. Following satisfactory completion of the initial compaction, the structure areas may be brought up to finished subgrade levels, if needed, using structural fill. The on-site clayey soils are well suited for use as fill. Off-site fill soils should be tested and approved by PSI prior to hauling to the site. Imported fill should consist of fine sand with less than 12% passing the No. 200 sieve, free of rubble, organics, clay, debris and other unsuitable material. Fill should be tested and approved prior to acquisition. Approved sand fill should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to a minimum density of 95% of the modified Proctor maximum dry density. Density tests to confirm compaction should be performed in each fill lift before the next lift is placed.

4. Prior to beginning compaction, soil moisture contents may need to be controlled in order to facilitate proper compaction. If additional moisture is necessary to achieve compaction objectives, then water should be applied in such a way that it will not cause erosion or removal of the subgrade soils. A moisture content within the percentage range needed to achieve compaction (typically +/- 3%) is recommended prior to compaction of the natural ground and fill.

5. After compaction, building foundation excavations can begin. All foundation excavations should be observed by the geotechnical engineer or their representative to evaluate the extent of any loose, soft, or otherwise undesirable materials, if present. If the foundation excavations appear suitable as load bearing materials, the bottom of the foundation excavations should be compacted to a minimum density of 95% of the modified Proctor maximum dry density for a minimum depth of one foot below the bottom of the footing depth, as determined by field density/ compaction tests. Backfill soils placed adjacent to footings or walls should be carefully compacted with a light rubber-tired roller or vibratory plate compactor to avoid damaging the footings or walls. Approved sand fills to provide foundation embedment constraint should be placed in loose lifts not exceeding 12 inches and should be compacted to a minimum density of 95% of the modified Proctor maximum dry density.

6. If soft pockets or debris are encountered in the footing excavations, the unsuitable materials should be removed and the proposed footing elevation may be re-established by backfilling after the undesirable material has been removed. This backfilling may be done with a very lean concrete or with a well-compacted, suitable fill such as clean sand, gravel, or crushed FDOT No. 57 or FDOT No. 67 stone. Backfill should be compacted to a minimum density of 95% of the modified Proctor maximum dry density.

7. Immediately prior to reinforcing steel placement, it is suggested that the bearing surfaces of all footing and floor slab areas be compacted using hand operated mechanical tampers. In this manner, any localized areas which have been loosened by excavation operations should be adequately recompacted.

8. A representative from our firm should be retained to provide on-site observation of earthwork and ground modification activities. Density tests should be performed in the top 1 foot of compacted existing ground, each fill lift, and the bottom of foundation excavations. It is important that PSI be retained to observe that the subsurface conditions are as we have discussed herein, and that foundation construction, ground modification and fill placement is in accordance with our recommendations.

3.3 SHALLOW FOUNDATION RECOMMENDATIONS

With proper subgrade preparation, column footings and continuous wall foundations can be designed for a net allowable soil bearing pressure of 2,500 pounds per square foot, based on dead load plus design live load. Minimum dimensions of 24 inches for column footings and 18 inches for continuous footings should be used in foundation design to account for variable subsurface conditions, regardless of whether the maximum allowable foundation bearing pressures have been fully developed.

Exterior footings should be at a depth of at least 12 to 18 inches below the final exterior grade. The greater depth reduces the potential that adjacent excavations or erosion may undermine the exterior footings. Interior footings may bear on properly compacted soils at a minimum depth of 12 inches, if desired.

The foundation excavations should be observed by a representative of PSI prior to steel or concrete placement to confirm that the compacted fill foundation materials are capable of supporting the design loads and are consistent with the materials discussed in this report. If the foundation excavations appear suitable as load bearing materials, the bottom of the foundation excavations should be compacted to a minimum density of 95% of the modified Proctor maximum dry density for a minimum depth of one foot below the bottom of the footing depth, as determined by field density compaction tests. Soft or loose soil zones encountered at the bottom of the footing excavations should be removed and replaced with fill soils (as directed above), lean concrete or dense graded compacted crushed stone (FDOT No. 57). Some of the foundations may bear in clayey soils, which can be difficult to compact as specified. If compaction of clayey soils is not able to be achieved, clayey soils can be excavated and replaced as specified in Section 3.2, Item 6. Another option is to have the geotechnical engineer inspect the foundation excavation to verify the clayey soils are suitable as foundation bearing soils.

After opening, footing excavations should be observed and concrete placed as quickly as possible to avoid exposure of the footing bottoms to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. The foundation concrete should be placed promptly after the excavation is made.

3.4 SETTLEMENT

The settlement of shallow foundations supported on compacted sand fill should occur rapidly after loading. Thus, the expected settlement should occur during construction as structural loads are imposed. Provided the recommended site preparation operations are properly performed,

any organic materials have been removed and the recommendations previously stated are utilized, the total settlement of wall and isolated column footings should not exceed approximately 1 inch. Differential settlement is estimated to be on the order of 50 percent of the total settlement. Settlement of this magnitude is usually considered tolerable for the anticipated construction; however, the tolerance of the proposed structure to the predicted total and differential settlement should be confirmed by the structural engineer.

3.5 FLOOR SLAB RECOMMENDATIONS

Slab-on-grade construction should be supported on soils compacted to a minimum dry density of at least 95% of their modified Proctor value. We have assumed no extraordinary floor slab performance requirements such as very low allowable deflections or smoothness requirements are necessary. Any cuts that are made in the building pad for utility installation should be backfilled with clean granular materials that are compacted to at least 95 percent of their ASTM D-1557 maximum dry density. Material to be placed within 12 inches of the bottom of the slab should have no single particle greater than 3 inches in size, and should meet the requirements of approved structural fill (Item 3, Section 3.2).

The floor slab should be reinforced to reduce the risk of cracking due to settlement. An impervious membrane should be installed between the soil subgrade and bottom of floor slabs to be overlain with moisture sensitive coverings to avoid slab moisture problems. Floor slab design should conform to American Concrete Institute (ACI) design standards and practices.

3.6 PAVEMENT RECOMMENDATIONS

The recommended fill materials or compacted in-place soils should be acceptable for construction and support of a flexible (limerock, crushed concrete or shell base) or rigid (Portland cement) type pavement section after subgrade preparation. Any fill utilized to elevate the cleared pavement areas to subgrade elevation should consist of clean to slightly silty fine sands (SP/SP-SM) uniformly compacted to a minimum density of 95 percent of the modified Proctor maximum dry density (ASTM D-1557) up to the bottom of the pavement subgrade.

The upper 12 inches of subgrade immediately beneath the pavement base should be compacted to a density of no less than 98 percent of the modified Proctor value.

3.6.1 BASE

The choice of pavement base type basically will depend on final pavement grades. If there is a minimum separation of 18-inches between the bottom of the base and the normal seasonal high groundwater level at this site like the borings and USDA system suggests, a limerock, or bank-run shell base can be utilized.

Limerock, bank-run shell base and crushed concrete base materials should meet FDOT requirements including compaction to 98 percent of its maximum dry density as determined by the modified Proctor test (ASTM D-

1557) and a minimum LBR of 100. Crushed concrete should be graded in accordance with FDOT Standard Specification Section 204.

Based on the expected traffic conditions, we recommend that the base course be a minimum of 6 inches thick in light duty areas and 8 inches thick in medium duty areas. If heavy duty traffic areas are expected, such as in a loading area, thicker flexible pavement sections or a rigid concrete pavement section should be used. Traffic should not be allowed on the subgrade as the base is placed to avoid rutting.

3.6.2 ASPHALTIC CONCRETE PAVEMENT

Based on the results of our evaluation, it is recommended that the total asphaltic concrete thickness consist of Type S-1 (or SP-12.5) asphaltic concrete material with a minimum of 1½ inches for parking and 2 inches for driveway areas. The asphaltic concrete should meet standard FDOT material requirements and placement procedures as outlined in the current FDOT Standard Specifications for Road and Bridge Construction. The asphaltic concrete should be compacted to a minimum of 98% of the Marshall maximum laboratory unit weight (or 93% of the maximum theoretical specific gravity (Gmm) if using type SP-12.5). Flexible pavement design recommendations are summarized in the following table.

FLEXIBLE PAVEMENT RECOMMENDATIONS		
Material	**Minimum Thickness (inches)**	
	Light Traffic	**Medium Traffic**
Type S-1 Asphaltic Concrete	1.5	2.0
Base Minimum LBR = 100	6.0	8.0
Stabilized Subgrade Minimum LBR = 40	12.0	12.0

3.6.3 RIGID CONCRETE PAVEMENT

Rigid (concrete) pavements could also be used. The concrete should have a minimum compressive strength of 4,000 psi at 28 days when tested in accordance with ASTM C-39. Based on our experience, a minimum thickness of 5 inches should be utilized for standard duty applications and a minimal thickness of 7 inches should be utilized for medium duty applications. The rigid pavement should be dowelled in accordance with FDOT Standard Index 305, as designed by the civil engineer.

The upper 12 inches of subgrade immediately beneath the pavement surface should be compacted to a density of no less than 98 percent of the modified Proctor value. Rigid pavement design recommendations are summarized in the following table.

RIGID PAVEMENT RECOMMENDATIONS		
Material	**Minimum Thickness (inches)**	
	Light Traffic	**Medium Traffic**
Portland Cement (Concrete 4,000 psi minimum)	5	7
Compacted Subgrade	12	12

All pavement materials and construction procedures should conform to the more stringent of Florida DOT or appropriate county/city requirements.

3.7 POND DESIGN RECOMMENDATIONS

DRIT-1 was performed in the proposed stormwater retention area. Low infiltration rates may preclude the design of a dry retention pond on this site, and a "wet" pond may be a preferred alternative. Also, the shallow limestone encountered on the site may cause difficulty in excavating a pond. Our understanding is that SWFWMD requires at least 2 feet of cover be left in place over rock. This consideration may also impact pond design at this site.

3.7.1 BASE OF AQUIFER

For the design of the stormwater retention area, the base of the aquifer can be determined by the depth to the confining layer. A confining layer is generally regarded as a soil stratum that will significantly impede the infiltration of water. Based on the soil borings performed on the site, the layer of weathered limestone beginning at approximately three feet is the top of the confining layer.

The Southwest Florida Water Management District (SWFWMD) Part B Basis of Review Section 6.4.1 b. reads:

"Depth - The detention or retention area shall not be excavated to a depth that breaches an aquitard such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer."

Since limestone is typically considered to be the drinking water aquifer, excavating any closer than 2 feet above the rock (found at a depth of 3 feet) may not be permitted by SWFWMD. SWFWMD would regard that limestone to be part of the aquifer. If it can be demonstrated that the limestone was not part of a drinking water aquifer, possibly by researching local wells and their construction and water source, it may be possible to avoid the 2 foot buffer.

Communication with SWFWMD regarding this issue is included in the Appendix of this report. SWFWMD data indicates water supply wells in the area obtain their water from a

depth of about 35 feet or deeper. Accordingly, SWFWMD may not regard the upper limestone formation encountered by PSI in the pond area to be part of a drinking water aquifer. Excavation near or into this upper limestone formation may be permitted. We suggest this issue be verified with SWFWMD in a pre-application meeting prior to submitting a permit application for this stormwater pond.

3.7.2 FILLABLE POROSITY

The porosity of a soil is the percentage of the total volume of the material that is occupied by pores or interstices. These pores may be filled with water or air and are referred to as void space. Generally, it is assumed 90 percent of the unsaturated void space is available for filling. From St. Johns Water Management District, special publication SJ93-SP10 (1993), the value for fillable porosity for fine sands can be expected to vary from 20 to 30 percent. Based on the soil profile encountered, we believe a value on the order of 20% should be assumed for the fillable porosity.

3.7.3 SUMMARY OF STORMWATER POND DESIGN RECOMMENDATIONS

Approximate Depth to Confining Layer	3 feet deep
Estimated Seasonal High Groundwater Depth	Elevation 5.5' NGVD 29
Stabilized Infiltration Rate	2.4 ft/day
Fillable Porosity	20 percent

3.8 FILL AVAILABILITY

Only a few feet of fine sand and slightly silty fine sand (SP, SP-SM) that was encountered in the upper 3 feet of the borings performed in the building and parking areas can be considered for use as fill material. The material encountered in the majority of the borings should not be used as structural fill material for this project due to the elevated clay content.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 GENERAL

It is recommended that PSI be retained to provide observation and testing of construction activities involved in the foundation, earthwork and related activities of this project. This will promote project continuity and will reduce the potential for misinterpretation of our recommendations

4.2 DRAINAGE AND GROUNDWATER CONCERNS

Water should not be allowed to collect in the foundation excavations, on the floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected

rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

4.3 EXCAVATIONS

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P". This document was issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with current OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractors "responsible person", as defined in 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in all local, state, and federal safety regulations.

We are providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other party's compliance with local, state, and federal safety or other regulations. It is the policy of PSI not to provide recommendations regarding temporary slopes during construction which is the sole responsibility of the contractor as indicated above.

5.0 REPORT LIMITATIONS

The Geotechnical Engineer warrants that the findings, recommendations, specifications or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed. The services provided were conventional in nature and did not include any special services that may lessen the risk of conditions that can contribute to moisture, mold or other microbial contaminant growth in buildings. You may be aware that mold is abundant throughout nature and is comprised of a wide variety of microscopic fungi. Due to its nature, the potential for mold infestations cannot be completely eliminated.

The scope of services also does not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface

water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

Florida is underlain by a soluble limestone formation, which can dissolve and result in surface subsidence and the formation of sinkholes. A more comprehensive assessment of the site for the potential for sinkhole development typically includes Ground Penetrating Radar (GPR) studies and the extension of deeper soil borings into the underlying limestone formation. Such an assessment is beyond the scope of this proposed study, but can be performed at significant additional cost, if desired.

The recommendations submitted are based on the available subsurface information obtained by PSI and design details furnished by Stantec for the proposed project. If there are any revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required.

After the plans and specifications are more complete, the Geotechnical Engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Manatee County and its consultants for the specific application to the proposed Additional Little League Fields and Parking at Blackstone Park located at 2112 14th Ave. West in Palmetto, Florida.

APPENDIX

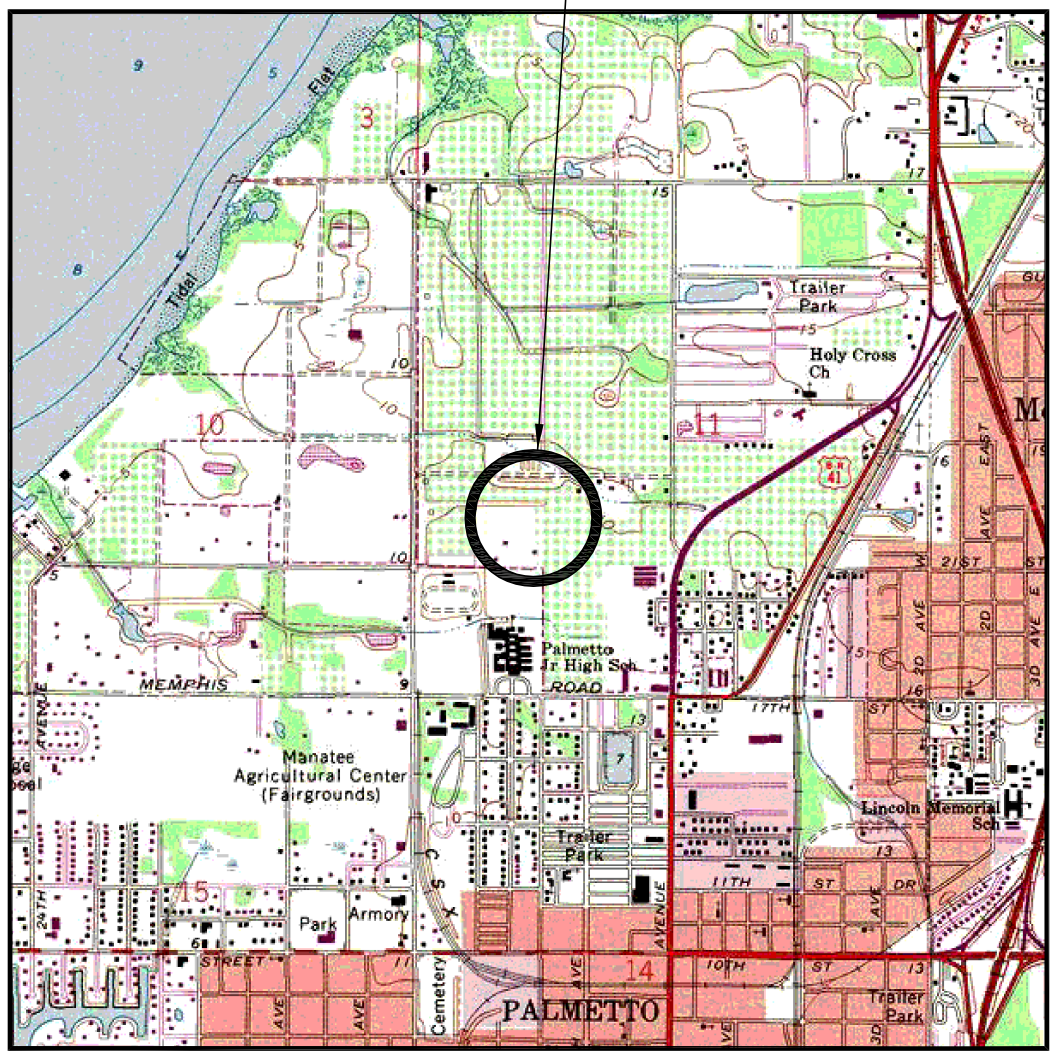
APPROXIMATE SITE LOCATION

REFERENCE: USDA SCS, "SOIL SURVEY OF MANATEE COUNTY, FLORIDA"

TOWNSHIP:	34 SOUTH	ISSUED:	1983
RANGE:	17 EAST	PHOTO:	1979
SECTION:	11	SCALE:	1" = 2000'

USDA VICINITY MAP

APPROXIMATE SITE LOCATION



REFERENCE: USGS "PALMETTO, FLORIDA" QUADRANGLE MAP

TOWNSHIP:	34 SOUTH	MAP VERSION:	1984
RANGE:	17 EAST	PHOTOREVISED:	–
SECTION:	11	SCALE:	1" = 2000'

USGS VICINITY MAP

DRAWN	DJG
CHECKED	DH
APPROVED	MEM
SCALE	NOTED

USDA & USGS VICINITY MAPS

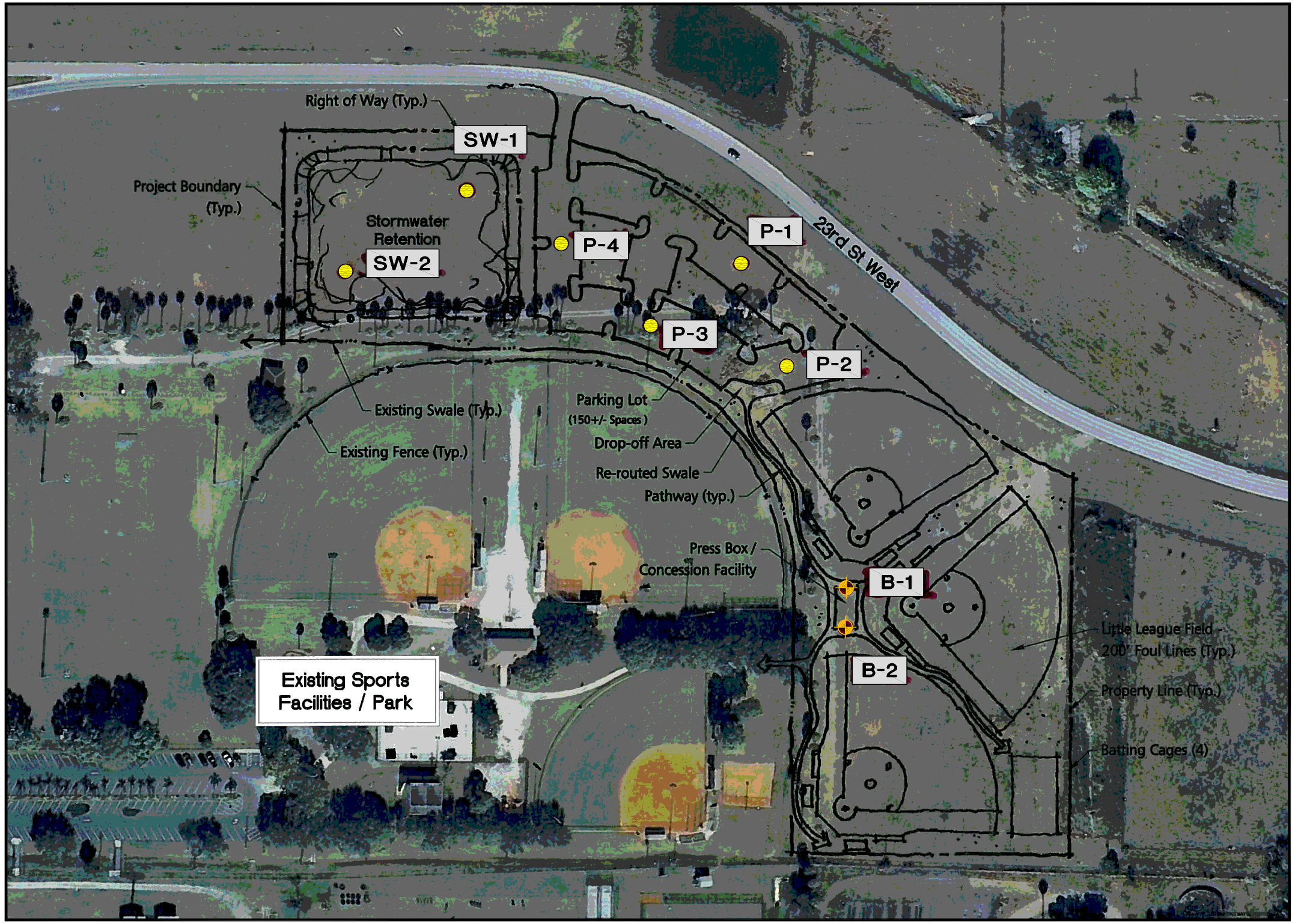
BLACKSTONE PARK

MANATEE COUNTY, FLORIDA

psi Information To Build On
Engineering • Consulting • Testing

DATE	PROJ. NO.	SHEET
SEPT 12	07751607	SHEET 1

P:\775-Geo\07751607 Manatee County Blackstone Park\cad\07751607



LEGEND

- Approximate SPT boring location
- Approximate Hand Auger boring location

NOTE: Based upon site plan provided to PSI by WilsonMiller Stantec

BORING LOCATION PLAN

0 150'

PLAN SCALE

DRAWN	DJG
CHECKED	DH
APPROVED	MEM
SCALE	NOTED

GEOTECHNICAL SERVICES

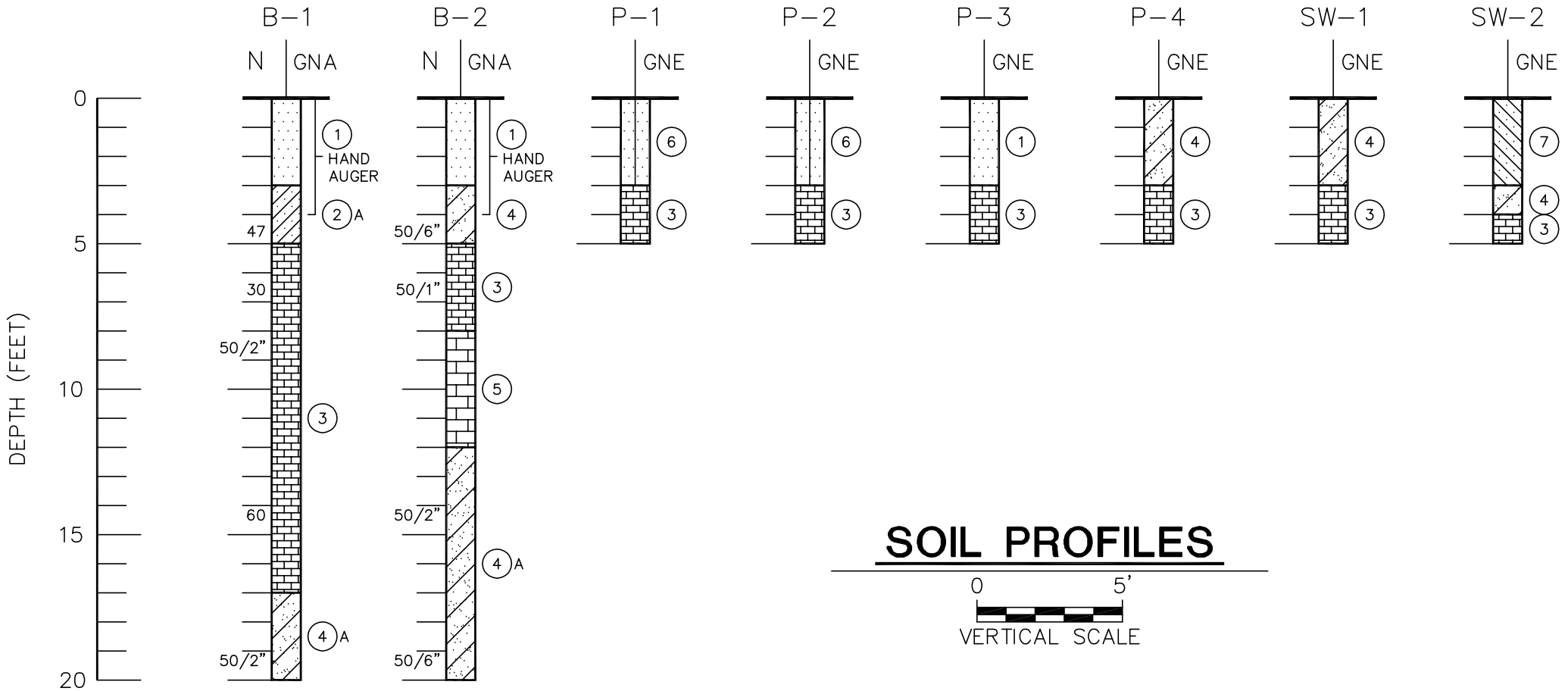
BLACKSTONE PARK

MANATEE COUNTY, FLORIDA

psi Information To Build On
Engineering • Consulting • Testing

DATE	PROJ. NO.	SHEET
SEPT 12	07751607	SHEET 2

P:\775-Geo\07751607 Manatee County Blackstone Park\cad\07751607



SOIL PROFILES

0 5'

VERTICAL SCALE

LEGEND

1. Brown to gray fine SAND (SP)
2. Gray clayey SAND (SC)
3. Weathered LIMESTONE
4. Gray or green slightly clayey to slightly silty fine SAND (SP–SC/SP–SM)
5. LIMESTONE
6. Dark gray slightly silty fine SAND (SP–SM)
7. Gray slightly silty to clayey fine SAND (SP–SM/SC)

SP Unified Soil Classification System (ASTM D 2487) group symbol as determined by visual review

GNA Groundwater level not apparent

GNE Groundwater level not encountered

N SPT N–value in blows/foot

50/6" Fifty blows for six inches

A Calcareous

DRAWN	DJG
CHECKED	DH
APPROVED	MEM
SCALE	NOTED

GEOTECHNICAL SERVICES

BLACKSTONE PARK

MANATEE COUNTY, FLORIDA

psi Information To Build On
Engineering • Consulting • Testing

DATE	PROJ. NO.	SHEET
SEPT 12	07751607	3

P:\775-Geo\07751607 Manatee County Blackstone Park\cad\07751607

From: rob.brown@mymanatee.org [mailto:rob.brown@mymanatee.org]
Sent: Wednesday, November 14, 2012 12:22 PM
To: Michael Bair
Subject: Fw: Blackstone Park

Mike:

According to Hank Barker (SWFWMD), this stipulation that Marty is referencing is used primarily in the northern part of the District and not applicable here. A review of well construction data in the area shows that the beginning of the Intermediate Aquifer System (IAS) where potable wells could be constructed, would be at -25 msl.

Rob Brown
Natural Resources Department
Manager, Environmental Protection Division
(941)742-5980 ext. 1870
cell: (941) 737-5218
202 6th Avenue East
Bradenton, FL 34208
www.MyManatee.org/naturalresources

----- Forwarded by Robert Brown/MCG on 11/14/2012 12:16 PM -----

From: Wes Ripperger/MCG
To: Robert Brown/MCG@MCG
Date: 11/14/2012 11:14 AM
Subject: Fw: Blackstone Park

Hey Rob,

Hank Barker (SWFWMD Hydrologist) looked into the formation surrounding Blackstone Park. Attached below is the well data from ROMP TR 8-1 and surrounding wells.

Wes Ripperger
Natural Resources Department
Environmental Specialist
(941)742-5980 ext. 1878
cell: (352) 281-9182
202 6th Avenue East
Bradenton, FL 34208
www.MyManatee.org/naturalresources

----- Forwarded by Wes Ripperger/MCG on 11/14/2012 11:06 AM -----

From: Hank Barker <Henry.Barker@swfwmd.state.fl.us>
To: "wes.ripperger@mymanatee.org" <wes.ripperger@mymanatee.org>
Date: 11/14/2012 10:34 AM

Subject: RE: Blackstone Park

Hey Wes, ROMP TR 8-1 shows the IAS starts at about -25 ft. msl. Attached is the well construction for this area.

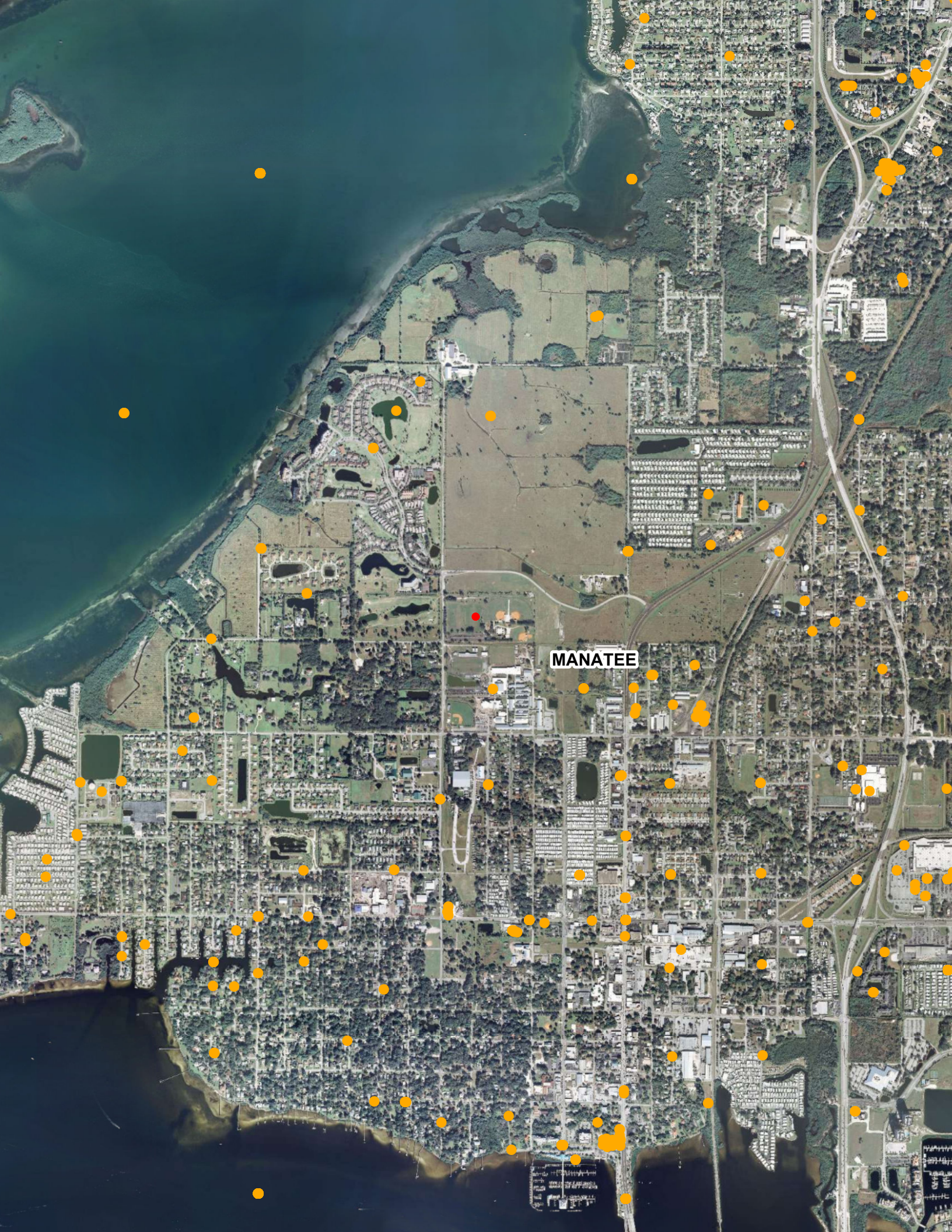
From: wes.ripperger@mymanatee.org [mailto:wes.ripperger@mymanatee.org]
Sent: Wednesday, November 14, 2012 9:36 AM
To: Hank Barker
Subject: Blackstone Park

Hank,

The location of the park is 2112 14th Ave W, Palmetto. The lat/long is 27 31 59.79, 82 34 46.72. Any data that would assist us in resolving this ERP issue would be very helpful.

Thanks again,

Wes Ripperger
Natural Resources Department
Environmental Specialist
(941)742-5980 ext. 1878
cell: (352) 281-9182
202 6th Avenue East
Bradenton, FL 34208
www.MyManatee.org/naturalresources


MANATEE

HEALTH AND SAFETY PLAN

For the

BLACKSTONE PARK EXPANSION PROJECT
PALMETTO, MANATEE COUNTY, FLORIDA

Prepared for

MANATEE COUNTY GOVERNMENT
PROPERTY MANAGEMENT DEPARTMENT
1112 MANATEE AVENUE WEST, SUITE 803
BRADENTON, FLORIDA 34205

Prepared by

PROFESSIONAL SERVICE INDUSTRIES, INC.
5801 BENJAMIN CENTER DRIVE, SUITE 112
TAMPA, FLORIDA 33634
TELEPHONE (813) 886-1075

PSI PROJECT NO: 0552863

MARCH 20, 2013

March 20, 2013

Manatee County Property Management Department
1112 Manatee Avenue West, Suite 803
Bradenton, Florida 34205

Re: Health and Safety Plan
Blackstone Park Expansion
Palmetto, Manatee County
PSI Project No. 0552863

Professional Service Industries, Inc. (PSI) is pleased to provide this Health and Safety Plan (HASP) related to an upcoming construction project at the subject site. Site tasks include source removal activities, earth work, and other general construction activities. This document should be used as general guidelines for site workers. PSI recommends that each trade review this document as a starting point in developing their own HASP tailored to their scope of work. PSI assumes no liability for subcontractors hired by others.

Thank you for choosing PSI as your consultant for this important project. If you have any questions or comments, or if we can be of additional service, please contact the undersigned at (813) 886-1075.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Christopher Forestt
Project Scientist

Michael Bair, ASP
Principal Consultant

P:\552-Env\0552863 - vacant parcel Palmetto Manatee Co\Blackstone HASP.docx

TABLE OF CONTENTS

LIST OF APPENDICES

1 EMERGENCY RESPONSE INFORMATION

Follow procedures implemented as required by 29 CFR (1)(1)(ii).

First Aid Kit(s), Fire Extinguisher(s), and Eye-Wash Bottle(s) are available at the PSI vehicle or other designated area: _____.

Emergency Muster Point: _____.

1.1 EMERGENCY CONTACTS

Project Manager: Mike Bair	(813) 927-0068 (mobile)
Health & Safety Officer: Chris Forestt	(813) 299-3130 (mobile)
Fire Department	911
Police Department	911
State Police	911
Ambulance	911
Poison Control Center	911
USEPA Environmental Response Team	(201) 321-6460
US Coast Guard Environmental Response Team	(800) 424-8802
Association of American Railroads Response Team	(202) 293-4048

1.2 EMERGENCY HOSPITAL INFORMATION

Hospital Name: Manatee Memorial Hospital

Hospital Phone Number: (941) 746-5111

Hospital Address: 206 Second Street East, Bradenton, Florida 34208

Approximate Distance and Time to Hospital: ~4 Miles; 9 Minutes

A hospital map and directions are included as an attachment and the copy is usually placed in the front cover of this Health and Safety Plan for quick reference.

1.3 ADDITIONAL PROJECT CONTACT INFORMATION

Client: Manatee County Government

Site Owner: Manatee County Government

Contact: Mr. Tom Yarger or Mr. Charlie Bishop

Other: _____.

2 SITE INFORMATION

A site map (**Appendix A**) and recent summary of contaminant concentrations are included as attachments.

2.1 SITE DESCRIPTION

2.1.1 SITE TYPE

[X]	**Active**	[ ]	Landfill	[ ]	Residential	[X]	**Recreational**
[ ]	Inactive	[ ]	Industrial	[ ]	Agriculture	[ ]	Nature Area
[ ]	Secure	[ ]	Commercial	[ ]	Military	[ ]	Unknown
[X]	**Unsecured**	[X]	**Other (Specify): vacant land**				

The subject property is located at the southeast corner of the intersection of 23rd Street West and 14th Avenue in Palmetto, Manatee County, Florida. Blackstone Park consists of approximately 12.13 acres. The vacant parcel, which is the location of the Park Expansion project, is located to the north and east of Blackstone Park and consists of approximately 19.55 acres.

Properties adjacent to the subject site consist of 23rd Street West and former agricultural property to the north; former agricultural property and pasture land to the east; Palmetto High School to the south; and 14th Avenue West and residential property to the west. Baseball fields, a parking lot, and a stormwater pond are under consideration for development on the vacant property to the north and east of Blackstone Park. A conceptual site layout is provided in **Appendix A**.

2.1.2 SURROUNDING POPULATION

[X]	**Residential**	[ ]	Industrial	[ ]	Urban
[ ]	Rural	[X]	**Other (Specify): Golf Course & School**		

2.2 SITE HISTORY

The subject site was historically utilized for agricultural purposes. PSI conducted environmental sampling at the subject site to evaluate current conditions of the soil and groundwater. The intent of this effort was to develop information with respect to future expansion of the site with additional recreational facilities in terms of impact to human health and the environment.

2.3 SITE CONTAMINATION

VACANT PARCEL

In particular, Dieldrin and Arsenic were detected most often at the Vacant Parcel. Detections of Dieldrin appear to be more consistent within the top 6 inches and decrease in total number of detections and concentration with depth. This trend is suggestive of a surface application which is consistent with historical uses of Dieldrin. Dieldrin is a common pesticide used generally from 1948 through 1974 in agricultural settings.

The detections of Arsenic appear to be the “opposite” to that of the Dieldrin at the Vacant Parcel. Higher concentrations of Arsenic were detected in the 2 to 4 foot range and decreased

in total number of detections and concentration toward the surface. This trend is suggestive of a natural occurrence of the Arsenic. In fact, scientific evidence has documented that Arsenic concentrations are elevated in the soil type found on-site and in this area of the State.

Five groundwater samples were collected throughout the Vacant Parcel. As noted, concentrations of Arsenic were not detected in any of the groundwater samples. It does not appear that Arsenic is leaching out of the soil to any degree that would result in groundwater contamination. Dieldrin was noted in two groundwater samples collected to the north of the Park.

Summary tables of site contaminant concentrations are provided in **Appendix B**.

3 HAZARD ANALYSIS

All personnel at the site removing the top 6 inches shall have completed OSHA HAZWOPER 40-Hour training and annual 8-Hour refresher courses. After the top 6 inches has been removed, all on-site workers shall be informed of the contents of this HASP. Documentation of their understanding and commitment to abide by the HASP shall be provided by signing this plan on the attached sign-in sheets.

Material Safety Data Sheets (MDSDs) are attached (from internet) within **Appendix C**.

Please also reference **PSI's SHM-11: Excavation, Shoring, and Trenching Program** for additional information (included in **Appendix F**).

3.1 SITE ACTIVITIES

[ ]	Preliminary Assessment (PA)	[ ]	Pre-Design
[ ]	Site Investigation (SI)	[ ]	Remedial Design
[ ]	Remedial Investigation	[**X**]	**Remedial Action**
[ ]	Feasibility Study (FS)	[ ]	Other

Remediation activities by PSI to include source removal using heavy equipment to remove contaminated soils. The depth of the excavation will be 6 inches.

3.2 HAZARD EVALUATION

[**X**]	**Heat Stress**	[ ]	Cold Stress	[**X**]	**Noise**
[ ]	Oxygen Deficiency	[ ]	Radiological	[**X**]	**Biological**
[**X**]	**Organic Chemicals**	[ ]	Inorganic Chemicals	[**X**]	**Excavation**
[**X**]	**Explosion/Flammable**	[**X**]	**Dangerous Wildlife**	[**X**]	**Falling Objects**
[ ]	Confined Spaces	[**X**]	**Electrical**	[ ]	Other

Physical hazards associated with this site include potential injury from heavy machinery operations including crushing or other bodily damage. In addition, overhead drops, subsurface utilities, sharps, loud noise, flying debris, and thermal dangers are associated with large equipment usage and activities proximal to these machines.

Other environmental hazards associated with onsite activities include: uneven ground surfaces (trips, falls), weather (heat stresses, inclement conditions), biological threats (insects, biting animals, others), and sampling activity exposures (chemical contaminants, laboratory preservative acids, sharps, etc.).

3.3 OVERALL HAZARD EVALUATION

[ ]	High	**[X]**	**Medium**	[ ]	Low

Justification: Medium overall hazard classification due to the on-site traffic and use of heavy equipment/machinery performing excavations and land development.

3.4 ACTIVITIES OF GREATEST CONCERN

- Heavy equipment operations and movement.

3.5 SITE CONTROL MEASURES

- High visibility vests will be worn at all times.
- Hard hats will be worn while on-site for head protection.
- No smoking except in designated areas (if allowed).
- All personnel to review HASP and attend “Tailgate” Meeting as initial training.

3.6 ACCIDENT PREVENTION PLANNING

- Keep non-involved personnel at least 5’ from work spaces where possible. Lines of communication should be predetermined in case of an emergency.
- Hard hats, long pants, steel-toe boots, gloves (leather or protective), ear plugs (or similar), and eye protection (safety glasses) will be worn on-site.
- High visibility clothing (vest, shirt, or similar) will be worn at all times.
- Hand signals, eye contact, and/or other communications between equipment operators and ground crew members will be addressed during task-planning.
- Prior to task initiation, equipment operators will discuss (with proximal ground crew members) potential hazards associated with each machine (swing radius, pinch points, emergency stop buttons, etc.) prior to operation.
- Equipment and foot traffic patterns regarding scopes of work will be discussed with all personnel to avoid pedestrians and heavy equipment working near one another.
- Surgical PVC-type, Latex, or Nitrile gloves will be worn by any personnel in contact with soil or groundwater for chemical exposure protection.
- Sunscreen will be used for skin protection. PSI intends to provide shaded areas for rest through the use of temporary canopies.
- All staff members are responsible to call for STOP-WORK (activities to be ceased) when a safety issue is identified until it is addressed.

4 PERSONAL PROTECTIVE EQUIPMENT BY TASK

4.1 TASK #1: SOURCE REMOVAL ACTIVITIES/EARTHWORK WITH HEAVY EQUIPMENT

SCHEDULE: To Be Determined

TYPE: **[X] Intrusive** [ ] Non-intrusive

LEVEL OF PROTECTION:

PRIMARY:	[ ]	A	[ ]	B	[ ]	C	[X]	**D**	[X]	**MODIFIED**
CONTINGENCY:	[ ]	A	[ ]	B	[ ]	C	[X]	**D**	[X]	**MODIFIED**

NOTES: **High visibility vest/clothing, hard hats, long pants, steel-toe boots, gloves (leather), under-gloves (nitrile), ear plugs (or similar), and eye protection (safety glasses)**

HEAD AND EYE PROTECTION: [ ] Not Needed

[X] **Safety Glasses** [ ] Face Shield [ ] Goggles
[X] ***Hard Hat** [ ] Other:
* If overhead activities apply or working under equipment

FOOT PROTECTION: [ ] Not Needed

[X] **Safety Shoes/Steel-Toed Boots**
[ ] Chemical-Resistant Boots: _____

HAND PROTECTION: [ ] Not Needed

[X] **Under-gloves: Surgical type PVC or Latex or Nitrile**
[X] **Gloves:** Leather or Protective [ ] Over-gloves:

RESPIRATORY PROTECTION: **[X] Not Needed**

[ ] SCBA, Airline _____
[ ] APR _____
[ ] Escape Mask
[ ] Cartridge _____

PROTECTIVE CLOTHING: **[X] Not Needed**

[ ] Encapsulating Suite _____
[ ] Splash Suite If repairing or removing connections to system
[ ] Apron _____
[ ] Tyvek-type coveralls
[ ] Saranex-type coveralls
[ ] Other: _____

OTHER (Specify):

Any soil/dust on skin should be avoided along with breathing dust into lungs. If soil/dust comes into contact with skin, wash immediately with store-bought soap and rinse with clean tap water. Dust should be avoided by staying upwind of machinery or equipment causing dust.

5 ADDITIONAL MONITORING

5.1 HEAT STRESS MONITORING

METHOD: [**X**] **Pulse Rate** [ ] Body Temp [ ] WBGT

ACTION GUIDELINES: Specify initial work/rest schedules based upon ambient temperatures (beginning at 70 F), humidity and % sunshine. Then specify physiological monitoring methods and results to modify initial work/rest schedules.

[**X**] **Pulse Rate:** Determine normal resting pulse rate. Monitor pulse rate as soon as possible at beginning of rest period. If rate is > 40 beats per minute above normal, shorten the next work period by one-third (1/3) without changing the rest period. If pulse rate if > 40 BPM above normal at the beginning of the next rest period, shorten following work cycle again by 1/3. Repeat.

[X] Body Temp: Determine body temperature at the end of the work cycle and before drinking. If the temp >99.6 F (37.6 C), shorten the next work cycle by 1/3 without changing the rest cycle. Repeat. Do NOT permit a worker to wear semipermeable or impermeable clothing when his/her body temperature exceeds 100.6 C (38.1 C).

[ ] WBGT: Use ACGIH TLVs.

[ ] Cold Stress: Use ACGIH TLVs.

5.2 DUST MONITORING:

SCHEDULE: To Be Determined

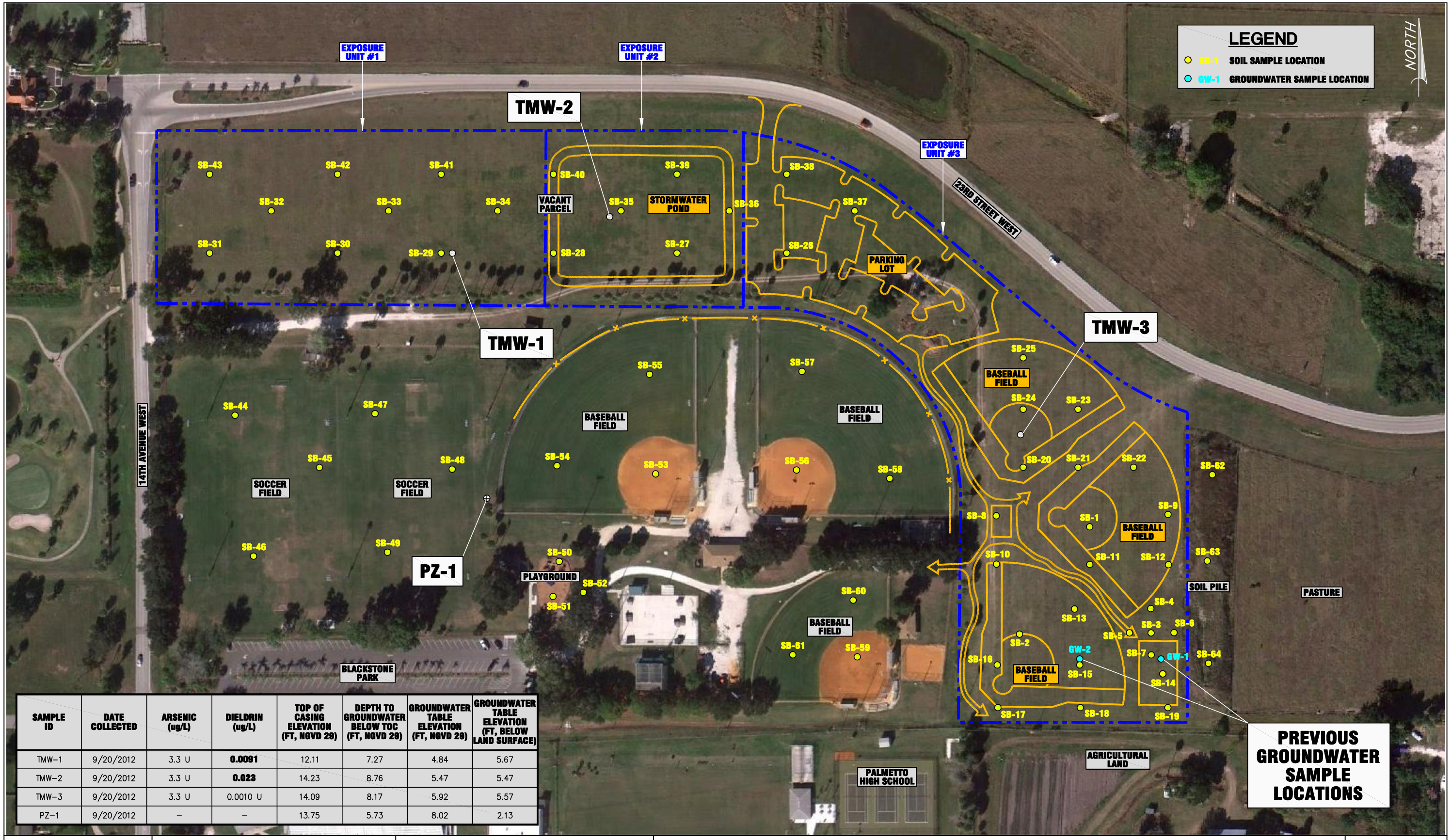
TYPE OF DUST: [ ] Not Required **[X] Respirable** [ ] Total

ACTION GUIDELINES:

0 - _____ =	Level _____ Ensemble
_____ - _____ =	Upgrade to Level _____
_____ - _____ =	Upgrade to Level _____
_____ - _____ =	Upgrade to Level _____

COMMENTS: Dust levels should be kept to a minimum by misting working surface and drive areas with potable water. Dust shall not be allowed to leave the job site. Excess water should not be used such that puddles are formed within the job site.

APPENDIX A - FIGURE(S)



SAMPLE ID	DATE COLLECTED	ARSENIC (ug/L)	DIELDRIN (ug/L)	TOP OF CASING ELEVATION (FT, NGVD 29)	DEPTH TO GROUNDWATER BELOW TOC (FT, NGVD 29)	GROUNDWATER TABLE ELEVATION (FT, NGVD 29)	GROUNDWATER TABLE ELEVATION (FT, BELOW LAND SURFACE)
TMW-1	9/20/2012	3.3 U	**0.0091**	12.11	7.27	4.84	5.67
TMW-2	9/20/2012	3.3 U	**0.023**	14.23	8.76	5.47	5.47
TMW-3	9/20/2012	3.3 U	0.0010 U	14.09	8.17	5.92	5.57
PZ-1	9/20/2012	–	–	13.75	5.73	8.02	2.13

PROJ. NO. 0552863

DRAWN BY DJG

DATE CREATED 6/4/12

SCALE: 1" = 150'

psi Information To Build On
Engineering • Consulting • Testing
5801 Benjamin Center Drive, Suite 112
Tampa, Florida 33634
(813) 886-1075
(813) 249-0301 fax

0 150 300

APPROXIMATE SCALE IN FEET

CONCEPTUAL SITE LAYOUT

PALMETTO, MANATEE COUNTY, FLORIDA

FIGURE No. 1

P:\552-Env\0552863 - vacant parcel Palmetto Manatee Co\cad\figure 1

APPENDIX B - TABLE(S)

Groundwater Analytical Results

Blackstone Park

Sample ID	Date Collected	Arsenic (ug/L)	Dieldrin (ug/L)
_GCTL		10	0.002
_NADSC		100	0.2
GW-1	10/28/2010	4.8 U	0.0014 U
GW-2	10/28/2010	4.8 U	0.0014 U
TMW-1	9/20/2012	3.3 U	**0.0091**
TMW-2	9/20/2012	3.3 U	**0.023**
TMW-3	9/20/2012	3.3 U	0.0010 U

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-1 (0-2')	28-Oct-2010	0.0019 U	0.0018 U	0.00067 U	0.0023 U	0.0019 U	0.021	0.0017 U	0.0014 U	0.0018 U	0.0067 U	0.97	-	-
SB-2 (0-2')	28-Oct-2010	0.0019 U	0.0018 U	0.00068 U	0.0023 U	0.0019 U	0.056	0.0017 U	0.0014 U	0.0018 U	0.0068 U	2.1	-	-
SB-3 (0-2')	28-Oct-2010	0.0019 U	0.0018 U	0.00066 U	0.0023 U	0.0019 U	0.17	0.0016 U	0.0013 U	0.0018 U	0.0066 U	0.95	-	-
SB-4(0-6")	26-Nov-2010	0.00042 U	0.029	0.0084	0.00062 I	0.00012 U	0.190	0.00018 U	-	0.00012 U	-	-	-	-
SB-4(6"-2')	26-Nov-2010	0.0004 U	0.0012	0.0003 U	0.00012 U	0.00012 U	0.0085	0.00017 U	-	0.00012 U	-	-	-	-
SB-4(2'-4')	26-Nov-2010	0.00047 U	0.0019	0.00035 U	0.00014 U	0.00014 U	0.00015 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-5(0-6")	26-Nov-2010	0.00042 U	0.0074	0.0013	0.00012 U	0.00012 U	0.130	0.00018 U	-	0.00012 U	-	-	-	-
SB-5(6"-2')	26-Nov-2010	0.00042 U	0.00022 U	0.00032 U	0.00012 U	0.00012 U	0.018	0.00018 U	-	0.00012 U	-	-	-	-
SB-5(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00014 U	0.00014 U	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-6(0-6")	26-Nov-2010	0.00041 U	0.015	0.0076	0.00082 I	0.00012 U	0.180	0.00018 U	-	0.00012 U	-	-	-	-
SB-6(6"-2')	26-Nov-2010	0.00042 U	0.00061 I	0.00031 U	0.00012 U	0.00012 U	0.0056	0.00018 U	-	0.00012 U	-	-	-	-
SB-6(2'-4')	26-Nov-2010	0.00046 U	0.00058 I	0.00034 U	0.00014 U	0.00014 U	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-7(0-6")	26-Nov-2010	0.00042 U	0.00062 I	0.00031 U	0.00012 U	0.00012 U	0.017	0.00018 U	-	0.0019	-	-	-	-
SB-7(6"-2')	26-Nov-2010	0.00042 U	0.00022 U	0.00031 U	0.00012 U	0.00029 I	0.0016	0.00018 U	-	0.00012 U	-	-	-	-
SB-7(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00013 U	0.00013 U	0.00014 U	0.0002 U	-	0.00013 U	-	-	-	-
SB-8(0-6")	26-Nov-2010	0.00042 U	0.0022	0.0027	0.0015	0.00012 U	0.120	0.00018 U	-	0.00012 U	-	-	-	-
SB-8(6"-2')	26-Nov-2010	0.00042 U	0.0006 I	0.00031 U	0.00012 U	0.00012 U	0.0027	0.00018 U	-	0.00087 I	-	-	-	-
SB-8(2'-4')	26-Nov-2010	0.00048 U	0.00037 I	0.00035 U	0.00014 U	0.00014 U	0.00015 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-9(0-6")	26-Nov-2010	0.00041 U	0.0024	0.001 I	0.00012 U	0.00012 U	0.0066	0.00018 U	-	0.00012 U	-	-	-	-
SB-9(6"-2')	26-Nov-2010	0.00045 U	0.0014	0.00034 U	0.00013 U	0.00013 U	0.00014 U	0.00019 U	-	0.00013 U	-	-	-	-
SB-9(2'-4')	26-Nov-2010	0.00036 U	0.00075 I	0.00027 U	0.00011 U	0.00011 U	0.00011 U	0.00016 U	-	0.00011 U	-	-	-	-
SB-10(0-6")	26-Nov-2010	0.00042 U	0.00022 U	0.00031 U	0.00012 U	0.00012 U	0.088	0.00018 U	-	0.00012 U	-	-	-	-
SB-10(6"-2')	26-Nov-2010	0.00041 U	0.00022 U	0.00031 U	0.00018 I	0.00012 U	0.014	0.00018 U	-	0.00012 U	-	-	-	-
SB-10(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00014 U	0.00014 U	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-11(0-6")	26-Nov-2010	0.00043 U	0.0021	0.0054	0.00019 I	0.00013 U	0.090	0.00018 U	-	0.00013 U	-	-	-	-
SB-11(6"-2')	26-Nov-2010	0.00043 U	0.0004 I	0.00032 U	0.00013 U	0.00081 I	0.025	0.00019 U	-	0.00013 U	-	-	-	-
SB-11(2'-4')	26-Nov-2010	0.00045 U	0.00024 U	0.00033 U	0.00013 U	0.00013 U	0.00014 U	0.00019 U	-	0.00013 U	-	-	-	-
SB-12(0-6")	26-Nov-2010	0.00041 U	0.0047	0.0017	0.00082 I	0.0012	0.021	0.00018 U	-	0.00012 U	-	-	-	-
SB-12(6"-2')	26-Nov-2010	0.00044 U	0.00061 I	0.00033 U	0.00013 U	0.00013 U	0.0026	0.00019 U	-	0.00013 U	-	-	-	-
SB-12(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00014 U	0.00076 I	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-13(0-6")	26-Nov-2010	0.00041 U	0.0012	0.0027	0.00012 U	0.00012 U	0.015	0.00018 U	-	0.00012 U	-	-	-	-
SB-13(6"-2')	26-Nov-2010	0.00043 U	0.00062 I	0.00032 U	0.00013 U	0.00096 I	0.012	0.00018 U	-	0.00013 U	-	-	-	-
SB-13(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00013 U	0.00013 U	0.00024 I	0.0002 U	-	0.00013 U	-	-	-	-
SB-14(0-6")	26-Nov-2010	0.00043 U	0.003	0.0039	0.00013 U	0.00023 I	0.034	0.00019 U	-	0.00076 I	-	-	-	-
SB-14(6"-2')	26-Nov-2010	0.00042 U	0.00032 I	0.00031 U	0.00012 U	0.00012 U	0.0039	0.00018 U	-	0.0006 I	-	-	-	-
SB-14(2'-4')	26-Nov-2010	0.00046 U	0.00024 U	0.00034 U	0.00014 U	0.00014 U	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-15(0-6")	26-Nov-2010	0.00042 U	0.0023	0.00031 U	0.0014	0.0044	0.037	0.00018 U	-	0.00012 U	-	-	-	-
SB-15(6"-2')	26-Nov-2010	0.00042 U	0.00022 U	0.00031 U	0.00012 U	0.0006 I	0.035	0.00018 U	-	0.00012 U	-	-	-	-
SB-15(2'-4')	26-Nov-2010	0.00045 U	0.00024 U	0.00034 U	0.00013 U	0.00013 U	0.00014 U	0.0002 U	-	0.00013 U	-	-	-	-
SB-16(0-6")	26-Nov-2010	0.00041 U	0.0031	0.004	0.0019	0.00012 U	0.038	0.00018 U	-	0.00012 U	-	-	-	-
SB-16(6"-2')	26-Nov-2010	0.00042 U	0.00058 I	0.00032 U	0.00012 U	0.0012	0.0017	0.00018 U	-	0.00012 U	-	-	-	-
SB-16(2'-4')	26-Nov-2010	0.00048 U	0.00079 I	0.00036 U	0.00014 U	0.00014 U	0.0003 I	0.00021 U	-	0.00014 U	-	-	-	-
SB-17(0-6")	26-Nov-2010	0.00041 U	0.018	0.00031 U	0.0015	0.00012 U	0.190	0.00018 U	-	0.00045 I	-	-	-	-
SB-17(6"-2')	26-Nov-2010	0.00042 U	0.00083 I	0.00031 U	0.00023 I	0.00012 U	0.053	0.00018 U	-	0.00012 U	-	-	-	-
SB-17(2'-4')	26-Nov-2010	0.00046 U	0.00039 I	0.00034 U	0.00014 U	0.00014 U	0.00014 U	0.0002 U	-	0.00014 U	-	-	-	-
SB-18(0-6")	26-Nov-2010	0.00042 U	0.0027	0.0021	0.00012 U	0.00012 U	0.034	0.00018 U	-	0.00019 I	-	-	-	-
SB-18(6"-2')	26-Nov-2010	0.00043 U	0.0033	0.0013	0.00013 U	0.00013 U	0.062	0.00019 U	-	0.00013 U	-	-	-	-
SB-18(2'-4')	26-Nov-2010	0.00046 U	0.00076 I	0.00035 U	0.00014 U	0.00014 U	0.0003 I	0.0002 U	-	0.00014 U	-	-	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-19(0-6")	26-Nov-2010	0.00042 U	0.002	0.00082 I	0.00012 U	0.00012 U	0.010	0.00018 U	-	0.00012 U	-	-	-	-
SB-19(6"-2')	26-Nov-2010	0.00043 U	0.00023 U	0.00032 U	0.00012 U	0.00012 U	0.018	0.00018 U	-	0.00012 U	-	-	-	-
SB-19(2'-4')	26-Nov-2010	0.00045 U	0.00024 U	0.00033 U	0.00013 U	0.00013 U	0.00014 U	0.00019 U	-	0.00013 U	-	-	-	-
SB-20(0-6")	27-Feb-2012	0.00026 U	0.019	0.00032 U	0.0019	0.00038 U	0.59	0.00096 U	0.00075 U	0.00034 U	0.0063	0.88 I	-	-
SB-20(6"-2')	27-Feb-2012	0.00026 U	0.00047 U	0.00032 U	0.000052 U	0.00038 U	0.027	0.00096 U	0.00075 U	0.00034 U	0.00051 U	2.6	-	-
SB-20(2'-4')	27-Feb-2012	0.00032 U	0.00058 U	0.00040 U	0.000065 U	0.00047 U	0.0012 U	0.0012 U	0.00094 U	0.00043 U	0.00064 U	4.6	-	-
SB-21(0-6")	27-Feb-2012	0.00026 U	0.0094	0.00032 U	0.000052 U	0.00038 U	0.085	0.00096 U	0.00075 U	0.00034 U	0.00051 U	0.49 I	-	-
SB-21(6"-2')	27-Feb-2012	0.00026 U	0.00047 U	0.00033 U	0.000053 U	0.00038 U	0.00096 U	0.00097 U	0.00076 U	0.00035 U	0.00052 U	0.97 I	-	-
SB-21(2'-4')	27-Feb-2012	0.00030 U	0.00054 U	0.00037 U	0.000060 U	0.00043 U	0.0011 U	0.0011 U	0.00087 U	0.00040 U	0.00059 U	5.6	-	-
SB-22(0-6")	27-Feb-2012	0.00028 U	0.0079	0.00034 U	0.000056 U	0.00040 U	0.1	0.0010 U	0.00080 U	0.00037 U	0.00054 U	0.35 U	-	-
SB-22(6"-2')	27-Feb-2012	0.00032 U	0.00057 U	0.00039 U	0.000063 U	0.00046 U	0.0012 U	0.0012 U	0.00091 U	0.00042 U	0.00062 U	1.1 I	-	-
SB-22(2'-4')	27-Feb-2012	0.00029 U	0.00052 U	0.00036 U	0.000057 U	0.00041 U	0.0010 U	0.0011 U	0.00083 U	0.00038 U	0.00056 U	3.4	-	-
SB-23(0-6")	27-Feb-2012	0.00030 U	0.0063	0.00038 U	0.000061 U	0.00044 U	0.066	0.0011 U	0.00088 U	0.00040 U	0.00060 U	0.39 U	7.8	0.017 I
SB-23(6"-2')	27-Feb-2012	0.00029 U	0.00052 U	0.00036 U	0.000058 U	0.00042 U	0.0011 U	0.0011 U	0.00084 U	0.00038 U	0.00057 U	0.37 U	-	-
SB-23(2'-4')	27-Feb-2012	0.00028 U	0.00051 U	0.00035 U	0.000057 U	0.00041 U	0.0010 U	0.0010 U	0.00082 U	0.00038 U	0.00056 U	9.9	-	-
SB-24(0-6")	27-Feb-2012	0.00026 U	0.0066	0.00032 U	0.00047 I	0.00038 U	0.2	0.00096 U	0.0011 I	0.00034 U	0.00086 I	0.32 U	-	-
SB-24(6"-2')	27-Feb-2012	0.00027 U	0.00049 U	0.00034 U	0.000054 U	0.00039 U	0.017	0.0010 U	0.00078 U	0.00036 U	0.00053 U	0.34 U	-	-
SB-24(2'-4')	27-Feb-2012	0.00030 U	0.00054 U	0.00037 U	0.000060 U	0.00043 U	0.0011 U	0.0011 U	0.00086 U	0.00039 U	0.00058 U	3.6	-	-
SB-25(0-6")	27-Feb-2012	0.00026 U	0.0018 I	0.00032 U	0.00049 I	0.00038 U	0.031	0.00096 U	0.00075 U	0.00034 U	0.0032	0.31 U	-	-
SB-25(6"-2')	27-Feb-2012	0.00030 U	0.00054 U	0.00037 U	0.000060 U	0.00043 U	0.0069	0.0011 U	0.00087 U	0.00040 U	0.00059 U	4.3	-	-
SB-25(2'-4')	27-Feb-2012	0.00029 U	0.00053 U	0.00036 U	0.000059 U	0.00042 U	0.0011 U	0.0011 U	0.00085 U	0.00039 U	0.00058 U	1.6	-	-
SB-26(0-6")	27-Feb-2012	0.00027 U	0.0069	0.00033 U	0.00068 I	0.00038 U	0.033	0.00098 U	0.00077 U	0.00035 U	0.00052 U	3	-	-
SB-26(6"-2')	27-Feb-2012	0.00028 U	0.0017 I	0.00035 U	0.000056 U	0.00040 U	0.0010 U	0.0010 U	0.00081 U	0.00037 U	0.00055 U	4.3	-	-
SB-26(2'-4')	27-Feb-2012	0.000058 U	0.00010 U	0.000072 U	0.000012 U	0.000084 U	0.00022 U	0.00022 U	0.00017 U	0.000076 U	0.00011 U	0.38 U	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-27(0-6")	27-Feb-2012	0.000052 U	0.00081	0.000064 U	0.000059 I	0.000076 U	0.0027	0.00019 U	0.00015 U	0.000068 U	0.00010 U	0.32 U	14	0.063
SB-27(6"-2')	27-Feb-2012	0.000056 U	0.00010 U	0.000070 U	0.000011 U	0.000080 U	0.00020 U	0.00020 U	0.00016 U	0.000074 U	0.00011 U	3.8	-	-
SB-27(2'-4')	27-Feb-2012	0.000054 U	0.000098 U	0.000068 U	0.000011 U	0.000078 U	0.00020 U	0.00020 U	0.00016 U	0.000072 U	0.00011 U	0.33 U	-	-
SB-28(0-6")	27-Feb-2012	0.000052 U	0.005	0.000066 U	0.000011 U	0.000076 U	0.0053	0.00019 U	0.00015 U	0.000070 U	0.00010 U	0.34 U	-	-
SB-28(6"-2')	27-Feb-2012	0.000052 U	0.000092 U	0.000064 U	0.000010 U	0.000074 U	0.0012	0.00019 U	0.00015 U	0.000068 U	0.00010 U	5	-	-
SB-28(2'-4')	27-Feb-2012	0.000056 U	0.00010 U	0.000070 U	0.000011 U	0.000080 U	0.00020 U	0.00020 U	0.00016 U	0.000074 U	0.00011 U	0.35 U	-	-
SB-29(0-6")	27-Feb-2012	0.000052 U	0.00045	0.000064 U	0.000010 U	0.000074 U	0.0016	0.00019 U	0.00015 U	0.000068 U	0.00010 U	2.7	-	-
SB-29(6"-2')	27-Feb-2012	0.000054 U	0.0005	0.000066 U	0.000011 U	0.000076 U	0.001	0.00020 U	0.00015 U	0.000070 U	0.00010 U	5.2	-	-
SB-29(2'-4')	27-Feb-2012	0.000058 U	0.00011 U	0.000072 U	0.000012 U	0.000084 U	0.00022 U	0.00022 U	0.00017 U	0.000078 U	0.00012 U	0.87 I	-	-
SB-30(0-6")	27-Feb-2012	0.000054 U	0.00013	0.000068 U	0.000011 U	0.000078 U	0.00043 I	0.00020 U	0.00016 U	0.000072 U	0.00011 U	0.73 I	-	-
SB-30(6"-2')	27-Feb-2012	0.000053 U	0.0026	0.000065 U	0.000011 U	0.000076 U	0.021	0.00019 U	0.00015 U	0.000069 U	0.00010 U	2.7	-	-
SB-30(2'-4')	27-Feb-2012	0.000058 U	0.00010 U	0.000072 U	0.000011 U	0.000082 U	0.00020 U	0.00022 U	0.00017 U	0.000076 U	0.00011 U	0.91 I	-	-
SB-31(0-6")	27-Feb-2012	0.000054 U	0.00055	0.000066 U	0.000011 U	0.000076 U	0.0024	0.00020 U	0.00015 U	0.000070 U	0.00077	0.34 U	-	-
SB-31(6"-2')	27-Feb-2012	0.000052 U	0.000094 U	0.000064 U	0.000010 U	0.000076 U	0.0014	0.00019 U	0.00015 U	0.000068 U	0.00010 U	1.5	-	-
SB-31(2'-4')	27-Feb-2012	0.000060 U	0.00011 U	0.000074 U	0.000012 U	0.000086 U	0.00022 U	0.00022 U	0.00017 U	0.000080 U	0.00012 U	2.1	-	-
SB-32(0-6")	27-Feb-2012	0.000054 U	0.0015	0.000066 U	0.000011 U	0.000078 U	0.005	0.00020 U	0.00015 U	0.000070 U	0.00011 U	0.89 I	-	-
SB-32(6"-2')	27-Feb-2012	0.000056 U	0.00010 U	0.000068 U	0.000011 U	0.000080 U	0.00020 U	0.00020 U	0.00016 U	0.000074 U	0.00011 U	0.86 I	-	-
SB-32(2'-4')	27-Feb-2012	0.00028 U	0.00051 U	0.00035 U	0.000057 U	0.00041 U	0.0010 U	0.0010 U	0.00082 U	0.00038 U	0.00056 U	3.3		
SB-33(0-6")	27-Feb-2012	0.00026 U	0.00047 U	0.00033 U	0.000053 U	0.00038 U	0.019	0.00097 U	0.00076 U	0.00035 U	0.00052 U	0.34 U	5.3	0.0062 U
SB-33(6"-2')	27-Feb-2012	0.00026 U	0.00047 U	0.00033 U	0.000053 U	0.00038 U	0.018	0.00097 U	0.00076 U	0.00035 U	0.00052 U	0.86 I	-	-
SB-33(2'-4')	27-Feb-2012	0.00029 U	0.00052 U	0.00036 U	0.000058 U	0.00042 U	0.0011 U	0.0011 U	0.00084 U	0.00038 U	0.00057 U	11	-	-
SB-34(0-6")	27-Feb-2012	0.00026 U	0.00047 U	0.00032 U	0.000052 U	0.00038 U	0.0066	0.00096 U	0.00075 U	0.00034 U	0.00051 U	0.74 I	-	-
SB-34(6"-2')	27-Feb-2012	0.00025 U	0.00045 U	0.00031 U	0.000051 U	0.00036 U	0.0048	0.00093 U	0.00073 U	0.00033 U	0.00049 U	0.98 I	-	-
SB-34(2'-4')	27-Feb-2012	0.00031 U	0.00056 U	0.00039 U	0.000062 U	0.00045 U	0.0011 U	0.0012 U	0.00090 U	0.00041 U	0.00061 U	12	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-35(0-6")	27-Feb-2012	0.00027 U	0.01	0.0054	0.00067 I	0.00038 U	0.042	0.00098 U	0.00077 U	0.00035 U	0.00052 U	0.61 I	-	-
SB-35(6"-2')	27-Feb-2012	0.00026 U	0.00046 U	0.00032 U	0.000052 U	0.00037 U	0.00094 U	0.00095 U	0.00074 U	0.00034 U	0.00051 U	1.3	-	-
SB-35(2'-4')	27-Feb-2012	0.00028 U	0.00050 U	0.00034 U	0.000056 U	0.00040 U	0.0010 U	0.0010 U	0.00080 U	0.00037 U	0.00054 U	9.6	-	-
SB-36(0-6")	27-Feb-2012	0.00027 U	0.00049 U	0.00034 U	0.00049 I	0.00040 U	0.0072	0.0010 U	0.00079 U	0.00036 U	0.005	3.8	-	-
SB-36(6"-2')	27-Feb-2012	0.00030 U	0.00055 U	0.00038 U	0.000061 U	0.00044 U	0.0011 U	0.0011 U	0.00088 U	0.00040 U	0.00060 U	9.4	-	-
SB-36(2'-4')	27-Feb-2012	0.00029 U	0.00052 U	0.00036 U	0.000057 U	0.00041 U	0.0010 U	0.0011 U	0.00083 U	0.00038 U	0.00056 U	1.5	-	-
SB-37(0-6")	27-Feb-2012	0.00027 U	0.00048 U	0.00033 U	0.000054 U	0.00039 U	0.0017 I	0.00099 U	0.00077 U	0.00035 U	0.00053 U	5.6	-	-
SB-37(6"-2')	27-Feb-2012	0.00029 U	0.00052 U	0.00036 U	0.000058 U	0.00042 U	0.0011 U	0.0011 U	0.00084 U	0.00038 U	0.00057 U	4.9	-	-
SB-37(2'-4')	27-Feb-2012	0.00034 U	0.00061 U	0.00042 U	0.000068 U	0.00049 U	0.0012 U	0.0012 U	0.00097 U	0.00045 U	0.00066 U	1.3 I	-	-
SB-38(0-6")	27-Feb-2012	0.00028 U	0.00051 U	0.00035 U	0.000056 U	0.00040 U	0.0010 U	0.0010 U	0.00081 U	0.00037 U	0.00055 U	8.9	-	-
SB-38(6"-2')	27-Feb-2012	0.00030 U	0.00054 U	0.00037 U	0.000060 U	0.00043 U	0.0011 U	0.0011 U	0.00086 U	0.00039 U	0.00058 U	8.4	-	-
SB-38(2'-4')	27-Feb-2012	0.00030 U	0.00055 U	0.00038 U	0.000061 U	0.00044 U	0.0011 U	0.0011 U	0.00088 U	0.00040 U	0.00060 U	2.6	-	-
SB-39(0-6")	27-Feb-2012	0.00027 U	0.0025	0.00034 U	0.000054 U	0.00039 U	0.00099 U	0.0010 U	0.00078 U	0.00036 U	0.00053 U	6.8	-	-
SB-39(6"-2')	27-Feb-2012	0.00029 U	0.00053 U	0.00036 U	0.000059 U	0.00042 U	0.0011 U	0.0011 U	0.00085 U	0.00039 U	0.00058 U	7.7	-	-
SB-39(2'-4')	27-Feb-2012	0.00035 U	0.00063 U	0.00044 U	0.000070 U	0.00051 U	0.0013 U	0.0013 U	0.0010 U	0.00046 U	0.00069 U	4.7	-	-
SB-40(0-6")	27-Feb-2012	0.00026 U	0.013	0.0019	0.000053 U	0.00038 U	0.00096 U	0.068	0.00076 U	0.00035 U	0.00052 U	0.62 I	-	-
SB-40(6"-2')	27-Feb-2012	0.00028 U	0.00051 U	0.00035 U	0.000057 U	0.00041 U	0.0021 I	0.0010 U	0.00082 U	0.00038 U	0.00056 U	2.8	-	-
SB-40(2'-4')	27-Feb-2012	0.00028 U	0.00051 U	0.00035 U	0.000057 U	0.00041 U	0.0010 U	0.0010 U	0.00082 U	0.00038 U	0.00056 U	5.5	-	-
SB-41(0-6")	27-Feb-2012	0.00026 U	0.0044	0.0014	0.000052 U	0.00038 U	0.00095 U	0.018	0.00075 U	0.00034 U	0.00051 U	0.63 I	-	-
SB-41(6"-2')	27-Feb-2012	0.00027 U	0.00049 U	0.00034 U	0.000055 U	0.00040 U	0.0042	0.0010 U	0.00079 U	0.00036 U	0.00054 U	1.2 I	-	-
SB-41(2'-4')	27-Feb-2012	0.00030 U	0.00054 U	0.00037 U	0.000060 U	0.00043 U	0.0011 U	0.0011 U	0.00086 U	0.00039 U	0.00058 U	29	-	-
SB-42(0-6")	27-Feb-2012	0.00026 U	0.00046 U	0.00032 U	0.000051 U	0.00037 U	0.0059	0.00094 U	0.00073 U	0.00034 U	0.00050 U	0.30 U	-	-
SB-42(6"-2')	27-Feb-2012	0.00027 U	0.00049 U	0.00034 U	0.000055 U	0.00040 U	0.0010 U	0.0010 U	0.00079 U	0.00036 U	0.00054 U	2.1	-	-
SB-42(2'-4')	27-Feb-2012	0.00029 U	0.00053 U	0.00036 U	0.000059 U	0.00042 U	0.0011 U	0.0011 U	0.00085 U	0.00039 U	0.00058 U	5.4	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-43(0-6")	27-Feb-2012	0.00026 U	0.00046 U	0.00032 U	0.000052 U	0.00037 U	0.0085	0.00095 U	0.00074 U	0.00034 U	0.00051 U	1.3	-	-
SB-43(6"-2)	27-Feb-2012	0.00026 U	0.00087 I	0.00032 U	0.000051 U	0.00037 U	0.0030 I	0.00094 U	0.00073 U	0.00034 U	0.00050 U	0.51 I	-	-
SB-43(2'-4')	27-Feb-2012	0.00029 U	0.00053 U	0.00036 U	0.000059 U	0.00042 U	0.0011 U	0.0011 U	0.00085 U	0.00039 U	0.00058 U	1.8	-	-
SB-44 (0-6")	20-Mar-2012	0.00027 U	0.00048 U	0.00033 U	0.000054 U	0.00039 U	0.00098 U	0.00099 U	0.00077 U	0.00035 U	0.00053 U	1.5	-	-
SB-45 (0-6")	20-Mar-2012	0.00026 U	0.00047 U	0.00033 U	0.000053 U	0.00038 U	0.00096 U	0.00097 U	0.00076 U	0.00035 U	0.00052 U	0.64 I	-	-
SB-46 (0-6")	20-Mar-2012	0.00027 U	0.00048 U	0.00033 U	0.000053 U	0.00038 U	0.00097 U	0.00098 U	0.00077 U	0.00035 U	0.00052 U	0.52 I	-	-
SB-47 (0-6")	20-Mar-2012	0.00027 U	0.00048 U	0.00033 U	0.000053 U	0.00038 U	0.00097 U	0.00098 U	0.00077 U	0.00035 U	0.00052 U	0.33 U	-	-
SB-48 (0-6")	20-Mar-2012	0.00026 U	0.00073 I	0.00033 U	0.000053 U	0.00038 U	0.00096 U	0.00097 U	0.00076 U	0.00035 U	0.00052 U	0.59 I	-	-
SB-49 (0-6")	20-Mar-2012	0.00026 U	0.00047 U	0.00033 U	0.000053 U	0.00038 U	0.00096 U	0.00097 U	0.00076 U	0.00035 U	0.0021	0.75 I	-	-
SB-50 (0-6")	20-Mar-2012	0.00025 U	0.00045 U	0.00031 U	0.000051 U	0.00036 U	0.00092 U	0.00093 U	0.00073 U	0.00033 U	0.00049 U	0.43 I	-	-
SB-51 (0-6")	20-Mar-2012	0.00026 U	0.00046 U	0.00032 U	0.000051 U	0.00037 U	0.00093 U	0.00094 U	0.00073 U	0.00034 U	0.00050 U	0.55 I	-	-
SB-52 (0-6")	20-Mar-2012	0.00025 U	0.00045 U	0.00031 U	0.000050 U	0.00036 U	0.00091 U	0.00092 U	0.00072 U	0.00033 U	0.00049 U	0.29 U	-	-
SB-53 (0-6")	20-Mar-2012	0.00026 U	0.0029	0.0012	0.000052 U	0.00037 U	0.00094 U	0.00095 U	0.00074 U	0.00034 U	0.00051 U	1.5	-	-
SB-54 (0-6")	20-Mar-2012	0.00026 U	0.00047 U	0.00032 U	0.000052 U	0.00038 U	0.00095 U	0.00096 U	0.00075 U	0.00034 U	0.00051 U	7.4	-	-
SB-55 (0-6")	20-Mar-2012	0.00027 U	0.00049 U	0.00034 U	0.000054 U	0.00039 U	0.00099 U	0.0010 U	0.00078 U	0.00036 U	0.00053 U	1.1 I	-	-
SB-56 (0-6")	20-Mar-2012	0.00032 I	0.0054	0.0014	0.000052 U	0.00037 U	0.00094 U	0.00095 U	0.00074 U	0.00034 U	0.00051 U	2.6	-	-
SB-57 (0-6")	20-Mar-2012	0.00028 U	0.00072 I	0.00035 U	0.000057 U	0.00041 U	0.0010 U	0.0010 U	0.00082 U	0.00038 U	0.0028	1.2 I	-	-
SB-58 (0-6")	20-Mar-2012	0.00027 U	0.00048 U	0.00033 U	0.000054 U	0.00039 U	0.00098 U	0.00099 U	0.00077 U	0.00035 U	0.00053 U	1.3	-	-
SB-59 (0-6")	20-Mar-2012	0.00027 U	0.00048 U	0.00033 U	0.000053 U	0.00038 U	0.00097 U	0.00098 U	0.00077 U	0.00035 U	0.00052 U	2.7	-	-
SB-60 (0-6")	20-Mar-2012	0.00027 U	0.00049 U	0.00034 U	0.000055 U	0.00040 U	0.0010 U	0.0010 U	0.00079 U	0.00036 U	0.00054 U	1.1 I	-	-
SB-61 (0-6")	20-Mar-2012	0.00029 U	0.00052 U	0.00036 U	0.000058 U	0.00042 U	0.0011 U	0.0011 U	0.00084 U	0.00038 U	0.00057 U	3.3	-	-
SB-62 (1-2')	20-Mar-2012	0.00026 U	0.0036	0.0047	0.000051 U	0.00037 U	0.031	0.00094 U	0.00073 U	0.00034 U	0.00065 I	0.31 U	-	-
SB-62 (5-6')	20-Mar-2012	0.00026 U	0.00046 U	0.0012	0.000052 U	0.00037 U	0.0034 I	0.00095 U	0.00074 U	0.00034 U	0.00051 U	0.99 I	-	-
SB-62 (9-10')	20-Mar-2012	0.00027 U	0.00092 I	0.004	0.000054 U	0.00039 U	0.0017 I	0.00099 U	0.00077 U	0.00035 U	0.00053 U	1.1 I	-	-

TABLE 1: SOIL ANALYTICAL SUMMARY

(detected analytes only)

BLACKSTONE PARK AND ADJACENT VACANT PARCEL

23rd STREET WEST AND 14th AVENUE

PALMETTO, MANATEE COUNTY

PSI PROJECT NO. 0552863

Sample ID	Date Collected	DDD, 4,4'-	DDE, 4,4'-	DDT, 4,4'-	Aldrin	BHC, b-	Dieldrin	Endosulfan I	Endrin ketone	Heptachlor epoxide	Mirex	Arsenic	Lead	Mercury
SB-63 (1-2')	20-Mar-2012	0.00026 U	0.00046 U	0.00032 U	0.000051 U	0.00037 U	0.00093 U	0.00094 U	0.00073 U	0.00034 U	0.00050 U	0.45 I	-	-
SB-63 (5-6')	20-Mar-2012	0.00026 U	0.00046 U	0.0024	0.000051 U	0.00037 U	0.02	0.00094 U	0.00073 U	0.00034 U	0.00050 U	0.88 I	-	-
SB-63 (9-10')	20-Mar-2012	0.00026 U	0.015	0.0063	0.000053 U	0.00038 U	0.11	0.00097 U	0.00076 U	0.0011 I	0.0017 I	0.63 I	-	-
SB-64 (1-2')	20-Mar-2012	0.00026 U	0.00046 U	0.00032 U	0.000052 U	0.00037 U	0.00094 U	0.00095 U	0.00074 U	0.00034 U	0.00051 U	1.4	-	-
SB-64 (5-6')	20-Mar-2012	0.00027 U	0.00049 U	0.00034 U	0.000055 U	0.00040 U	0.0010 U	0.0010 U	0.00079 U	0.00036 U	0.00054 U	1.1 I	-	-
SB-64 (9-10')	20-Mar-2012	0.00027 U	0.00049 U	0.00034 U	0.000054 U	0.00039 U	0.00099 U	0.0010 U	0.00078 U	0.00036 U	0.00053 U	1.3 I	-	-

NOTES

all concentrations reported in mg/kg

U = analyte not detected above noted concentration

I = analyte detected between MDL and PQL; see lab report for additional details

APPENDIX C - MSDS(S)

Right to Know
Hazardous Substance Fact Sheet

Common Name: **DIELDRIN**

Synonyms: HEOD; Octalox®; Quintox®

Chemical Name: 2,7:3,6-Dimethanonaphth[2,3-b]Oxirene, 3,4,5,6,9,9-Hexachloro-1a,2,2a,3,6,6a,7,7a-Octahydro-, (1aR,2R,2aS,3S,6R,6aR,7S,7aS)-rel-

Date: November 1998 Revision: January 2009

CAS Number: 60-57-1

RTK Substance Number: 0683

DOT Number: UN 2761

Description and Use

Dieldrin is a white (when pure) to light-tan, crystalline (sand-like) or flaked powder with a chemical-like odor. It was used as an insecticide. Manufacturing and use of **Dieldrin** has been discontinued in the United States.

- **ODOR THRESHOLD = 0.041 ppm**
- Odor thresholds vary greatly. Do not rely on odor alone to determine potentially hazardous exposures.

Reasons for Citation

- **Dieldrin** is on the Right to Know Hazardous Substance List because it is cited by OSHA, ACGIH, DOT, NIOSH, DEP, IARC, IRIS and EPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Immediately flush with large amounts of water for at least 30 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. Seek medical attention.

Skin Contact

- Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

EMERGENCY RESPONDERS >>>> SEE LAST PAGE

Hazard Summary

Hazard Rating	NJDHSS	NFPA
HEALTH	2	-
FLAMMABILITY	0	-
REACTIVITY	0	-
CARCINOGEN POISONOUS GASES ARE PRODUCED IN FIRE DOES NOT BURN		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Dieldrin** can affect you when inhaled and by passing through the skin.
- **Dieldrin** should be handled as a CARCINOGEN--WITH EXTREME CAUTION.
- Contact can irritate and burn the eyes with possible eye damage.
- **Dieldrin** can cause nausea, vomiting, loss of appetite and weight, and weakness.
- Exposure can cause headache, dizziness, lightheadedness, and passing out.
- High or repeated exposure can cause tremors, muscle twitching and seizures (convulsions), and may lead to coma and death.
- Repeated exposure may cause personality changes.
- **Dieldrin** may damage the liver.
- **Dieldrin** does not burn, however, it is often dissolved in a liquid carrier which may be flammable or combustible.

Workplace Exposure Limits

OSHA: The legal airborne permissible exposure limit (PEL) is **0.25 mg/m^3** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit (REL) is **0.25 mg/m^3** averaged over a 10-hour workshift.

ACGIH: The threshold limit value (TLV) is **0.25 mg/m^3** averaged over an 8-hour workshift.

- **Dieldrin** may be a CARCINOGEN in humans. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.
- The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

Determining Your Exposure

- Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- For each individual hazardous ingredient, read the New Jersey Department of Health and Senior Services Hazardous Substance Fact Sheet, available on the RTK Program website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects
The following acute (short-term) health effects may occur immediately or shortly after exposure to **Dieldrin**:

- Contact can irritate and burn the eyes with possible eye damage.
- **Dieldrin** can cause nausea, vomiting, loss of appetite and weight, and weakness.
- Exposure can cause headache, dizziness, lightheadedness, and passing out.

Chronic Health Effects
The following chronic (long-term) health effects can occur at some time after exposure to **Dieldrin** and can last for months or years:

Cancer Hazard
- **Dieldrin** may be a CARCINOGEN in humans since it has been shown to cause liver cancer in animals.
- Many scientists believe there is no safe level of exposure to a carcinogen.

Reproductive Hazard
- **Dieldrin** may damage the developing fetus and may decrease fertility in males and females.
- **Dieldrin** concentrates in breast milk and, therefore, may be transferred to breastfeeding infants.

Other Effects
- High or repeated exposure can cause tremors, muscle twitching and seizures (convulsions), and may lead to coma and death.
- Repeated exposure may cause personality changes such as depression, anxiety or irritability.
- **Dieldrin** may damage the liver.

Medical

Medical Testing
Before beginning employment and at regular times thereafter, (at least annually), the following are recommended:

- Blood **Dieldrin** level (Norm = less than **1 mg/100 ml**; level should not exceed **15 mg/100 ml**).
- Exam of the nervous system

If symptoms develop or overexposure is suspected, the following are recommended:

- Liver function tests

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures
- More than light alcohol consumption can cause liver damage. Drinking alcohol can increase the liver damage caused by **Dieldrin**.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- Label process containers.
- Provide employees with hazard information and training.
- Monitor airborne chemical concentrations.
- Use engineering controls if concentrations exceed recommended exposure levels.
- Provide eye wash fountains and emergency showers.
- Wash or shower if skin comes in contact with a hazardous material.
- Always wash at the end of the workshift.
- Change into clean clothing if clothing becomes contaminated.
- Do not take contaminated clothing home.
- Get special training to wash contaminated clothing.
- Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.
- Use a high efficiency particulate air (HEPA) filter when vacuuming. Do not use a standard shop vacuum.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- Avoid skin contact with **Dieldrin**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- Safety equipment manufacturers recommend Nitrile and Natural Rubber for gloves, and Tyvek® as a protective clothing material.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- Wear eye protection with side shields or goggles.
- If additional protection is needed for the entire face, use in combination with a face shield. A face shield should not be used without another type of eye protection.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- Where the potential exists for exposure over **0.25 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- Exposure to **50 mg/m^3** is immediately dangerous to life and health. If the possibility of exposure above **50 mg/m^3** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- **Dieldrin** does not burn, however, it is often dissolved in a liquid carrier which may be flammable or combustible.
- POISONOUS GASES ARE PRODUCED IN FIRE, including *Hydrogen Chloride* and *Chlorine*.
- Use water spray to keep fire-exposed containers cool.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Dieldrin** is spilled, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
- Ventilate and wash area after clean-up is complete.
- DO NOT wash into sewer.
- It may be necessary to contain and dispose of **Dieldrin** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Dieldrin** you should be trained on its proper handling and storage.

- **Dieldrin** may react violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).
- **Dieldrin** is not compatible with MINERAL ACIDS; ACID CATALYSTS; PHENOLS; METALS (such as COPPER, ZINC, and IRON and their SALTS); and ALKALI METALS (such as MAGNESIUM, SODIUM and POTASSIUM).
- Store in tightly closed containers in a cool, well-ventilated area away from HIGH TEMPERATURES.
- **Dieldrin** is slightly corrosive to METALS.

Occupational Health Information Resources

The New Jersey Department of Health and Senior Services, Occupational Health Service, offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health & Senior Services
Right to Know Program
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: http://www.nj.gov/health/eoh/rtkweb

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGLs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database on human health effects that may result from exposure to various chemicals, maintained by federal EPA.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

Protective Action Criteria (PAC) are values established by the Department of Energy and are based on AEGLs and ERPGs. They are used for emergency planning of chemical release events.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a force exerted by the vapor in equilibrium with the solid or liquid phase of the same substance. The higher the vapor pressure the higher concentration of the substance in air.

Right to Know Hazardous Substance Fact Sheet

Emergency Responders Quick Reference

Common Name: **DIELDRIN**

Synonyms: HEOD; Octalox®; Quintox®
CAS No: 60-57-1
Molecular Formula: $C_{12}H_8Cl_6O$
RTK Substance No: 0683
Description: White (when pure) to light-tan, crystalline or flaked powder with a chemical-like odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
2 - Health **0 - Fire** **0 - Reactivity** **DOT#:** UN 2761 **ERG Guide #:** 151 **Hazard Class:** 6.1 (Poison)	**Dieldrin** does not burn, however, it is often dissolved in a liquid carrier which may be flammable or combustible. POISONOUS GASES ARE PRODUCED IN FIRE, including *Hydrogen Chloride* and *Chlorine*. Use water spray to keep fire-exposed containers cool.	**Dieldrin** may react violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC). **Dieldrin** is not compatible with MINERAL ACIDS; ACID CATALYSTS; PHENOLS; METALS (such as COPPER, ZINC, and IRON and their SALTS); and ALKALI METALS (such as MAGNESIUM, SODIUM and POTASSIUM).

SPILL/LEAKS

Isolation Distance:
Spill: 25 meters (75 feet)
Fire: 800 meters (1/2 mile)
Moisten spilled material first or use a HEPA-filter vacuum for clean-up and place into sealed containers for disposal.
Ventilate and wash area after clean-up is complete.
DO NOT wash into sewer.
Dieldrin is very toxic to aquatic life and bees. It is also persistent in the environment.

PHYSICAL PROPERTIES

Odor Threshold:	0.041 ppm
Flash Point:	Noncombustible
Vapor Density:	13.2 (air = 1)
Vapor Pressure:	8×10^{-7} mm Hg at 68°F (20°C)
Specific Gravity:	1.75 (water = 1)
Water Solubility:	Insoluble
Boiling Point:	Decomposes
Melting Point:	347° to 349°F (175° to 176°C)
Molecular Weight:	380.9

EXPOSURE LIMITS

OSHA: 0.25 mg/m^3, 8-hr TWA
NIOSH: 0.25 mg/m^3, 10-hr TWA
ACGIH: 0.25 mg/m^3, 8-hr TWA
IDLH: 50 mg/m^3
The Protective Action Criteria values are:
PAC-1 = 0.75 mg/m^3
PAC-2 = 2.5 mg/m^3
PAC-3 = 50 mg/m^3

PROTECTIVE EQUIPMENT

Gloves: Nitrile and Natural Rubber
Coveralls: Tyvek®
Respirator: >0.25 mg/m^3 - Supplied air
>0.75 mg/m^3 - SCBA

HEALTH EFFECTS

Eyes: Irritation and burns
Skin: No information available
Inhalation: Headache, nausea, vomiting, dizziness, lightheadedness, and passing out
Chronic: Cancer (liver) in animals

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Flush eyes with large amounts of water for at least 30 minutes. Remove contact lenses if worn. Seek medical attention.
Quickly remove contaminated clothing and immediately wash contaminated skin with large amounts of soap and water.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer promptly to a medical facility.

ScienceLab.com
Chemicals & Laboratory Equipment

Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

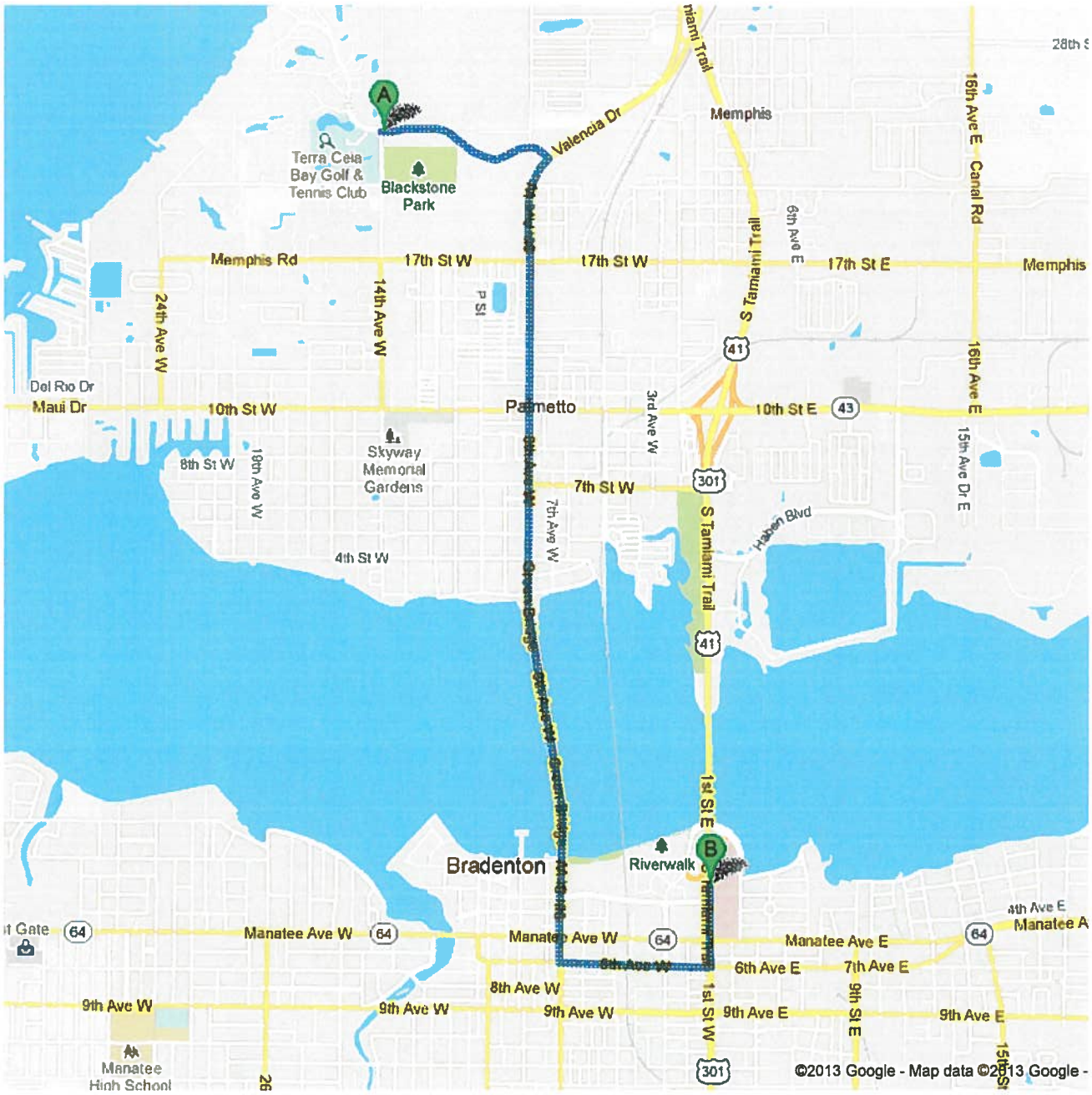
Created: 10/09/2005 04:16 PM

Last Updated: 06/09/2012 12:00 PM

APPENDIX D - HOSPITAL ROUTE & MAP

Google

Directions to Manatee Memorial Hospital
206 Second Street East, Bradenton, FL 34208
4.2 mi – about **9 mins**



A 14th Ave W & 23rd St W, Palmetto, FL 34221

1.	Head **east** on **23rd St W** toward **8th Ave W** About 1 min	go 0.6 mi total 0.6 mi
2.	Turn right onto **Valencia Dr**	go 0.1 mi total 0.7 mi
3.	Continue onto **US-41 BUS S/8th Ave W** Continue to follow US-41 BUS S About 5 mins	go 2.7 mi total 3.4 mi
4.	Turn left onto **6th Ave W** About 1 min	go 0.5 mi total 3.9 mi
5.	Turn left onto **S Tamiami Trail** Destination will be on the right About 2 mins	go 0.3 mi total 4.2 mi

B **Manatee Memorial Hospital**
206 Second Street East, Bradenton, FL 34208

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

APPENDIX E - DAILY SIGN IN SHEET(S)

SITE HEALTH & SAFETY MEETING SIGN-IN SHEET

SITE & PSI PROJECT #:_____ DATE:_____

TASKS/SCOPE:_____

HAZARDS & TOPICS:_____

_____

_____

NAME (Print Please)	SIGNATURE	COMPANY

SITE HEALTH & SAFETY MEETING SIGN-IN SHEET

SITE & PSI PROJECT #:_____ DATE:_____

TASKS/SCOPE:_____

HAZARDS & TOPICS:_____

_____

_____

NAME (Print Please)	SIGNATURE	COMPANY

SITE HEALTH & SAFETY MEETING SIGN-IN SHEET

SITE & PSI PROJECT #:_____DATE:_____

TASKS/SCOPE:_____

HAZARDS & TOPICS:_____

_____

_____

NAME (Print Please)	SIGNATURE	COMPANY

JSA(S)

EXCAVATION, SHORING AND TRENCHING PROGRAM

"While PSI normally does not create excavations employees should never enter an excavation that does not meet the requirements set out in this program."

1.0 PURPOSE

The purpose of this policy is to provide guidelines that are necessary to meet the requirements of the OSHA excavation standard 29 CFR1926 Subpart P. Excavations have a very high potential of becoming hazardous if safety requirements are not strictly followed. Professional Service Industries, Inc. (PSI) employees involved in the process of performing excavation or working near or in an excavation are to use the guidelines in this procedure to determine if it is safe to work in these areas.

2.0 POLICY

While PSI does not typically perform excavation or trenching, PSI employees are occasionally exposed to these types of hazards. This program provides guidelines for PSI managers to ensure safe work practices apply to all operations where PSI employees may be exposed to excavation, shoring and trenching hazards under normal working conditions and non-routine tasks, whether PSI controls the site or not.

As a minimum, PSI work sites will comply with federal, state, and local regulations pertaining to the protection of workers who may be exposed to these hazards.

3.0 RESPONSIBILITES

3.1 Employees – Are responsible for adhering to the guidelines of this procedure. Employees shall read and understand this procedure, use good work practices, and follow applicable safety rules and regulations.

3.2 Supervisors – Are responsible for ensuring that employees adhere to the guidelines of this procedure. The supervisor or designee, prior to working at an excavation, shall conduct a site survey to ensure proper shoring techniques.

3.3 Branch/Department Managers (Site Safety Officer) – Are responsible for program implementation training and compliance with federal, state and local regulations. The local Branch/Department Manager or designee will be the Excavation, Shoring and Trenching Administrator of this program.

3.4 Corporate Safety Department – Will maintain the Excavation, Shoring and Trenching Program and revise the program as needed. The Corporate Safety Department will provide assistance when requested by local PSI offices.

4.0 KEY POINTS

4.1 It shall be the responsibility of the job site supervisor (competent person), typically not a PSI employee, to verify through daily inspections, that the job is complying with this procedure, for work being performed in the excavation.

4.2 Conditions in and around an excavation may vary daily due to changes in weather conditions, the type of work being performed and the equipment being used in the area. An audit form will be filled out daily by the PSI job site designee. (See Attachment III.)

4.3 OSHA 1926 Subpart P -Excavation, Trenching and Shoring covers the entire excavation standard. This standard should be followed in any situation not covered in this procedure.

4.4 COMPETENT PERSON

There shall be a competent person on each job site where excavation is being performed. The competent person, who is typically not a PSI employee, will be responsible for the following:

- Perform inspections as dictated by the work being performed in the trench.
- Perform inspections after every rainstorm or other events such as snowstorm, windstorm, thaw, earthquake or any dramatic changes in the weather.
- Perform inspections whenever fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom or other similar conditions exist.
- Perform inspections whenever there is a change in size, location or placement of the soil pile.
- Perform inspections whenever there is an indication of a change or movement in adjacent structures.
- Perform soil analysis using visual test, a pocket penetrometer, thumb penetration tests, shearvane or torvane tests, dry strength test, plasticity or wet thread test or any combination of these tests.

5.0 DEFINITIONS:

5.1 ACCEPTED ENGINEERING PRACTICES - are procedures compatible with the standards of practice required of a registered professional engineer.

5.2 ADJACENT STRUCTURE STABILITY - refers to the stability of the foundation(s) of adjacent structures whose location may create surcharges, changes in soil conditions, or other disruptions that have the potential to extend into the failure zone of the excavation or trench.

5.3 BRACE (TRENCH) – is a horizontal member of the shoring system whose ends bear against the uprights or stringers.

5.4 COMPETENT PERSON - means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them

5.5 CONFINED SPACE - is a space that, by design and/or configuration, has limited openings for entry and exit, unfavorable natural ventilation, may contain or produce hazardous substances, and/or is not intended for continuous employee occupancy.

5.6 EXCAVATION - An **Excavation** is any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal. A **Trench** is narrow excavation (in relation to its length) made below the surface of the ground. In general, the width of a trench is not greater than 15 ft. (4.6 m). If a form or other structure installed or constructed in an excavation reduces the distance between the form and the side of the excavation to 15 ft. (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

5.7 HAZARDOUS ATMOSPHERE - is an atmosphere that by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen-deficient, toxic, or otherwise harmful may cause death, illness, or injury to persons exposed to it.

5.8 INGRESS AND EGRESS - mean "entry" and "exit," respectively. In trenching and excavation operations, they refer to the provision of safe means for employees to enter or exit an excavation or trench.

5.9 KICKOUTS – are accidental releases or failures of a shore or brace.

5.10 PROTECTIVE SYSTEMS - refers to a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, and from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

5.11 REGISTERED PROFESSIONAL ENGINEER - is a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer who is registered in any state is deemed to be a "registered professional engineer" within the meaning of Subpart P when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

5.12 SIDES, WALLS, OR FACES - are the vertical or inclined earth surfaces formed as a result of excavation work.

5.13 SLOPE – is the angle with the horizontal at which a particular earth material will stand indefinitely without movement.

5.14 STRINGERS – are the horizontal members of a shoring system whose sides bear against the uprights or earth.

5.15 SUPPORT SYSTEM - refers to structures such as underpinning, bracing, and shoring that provide support to an adjacent structure or underground installation or to the sides of an excavation or trench.

5.16 SUBSURFACE ENCUMBRANCES - include underground utilities, foundations, streams, water tables, transformer vaults, and geological anomalies.

5.17 SURCHARGE - means an excessive vertical load or weight caused by spoil, overburden, vehicles, equipment, or activities that may affect trench stability.

5.18 TABULATED DATA - are tables and charts approved by a registered professional engineer and used to design and construct a protective system.

5.19 TRENCH – is a narrow excavation made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench is not greater than 15 ft.

5.20 TRENCH JACK – is a screw or hydraulic type jack used as cross bracing in a trench shoring system.

5.21 TRENCH SHIELD – is a shoring system composed of steel plates and bracing

welded or bolted together, which support the walls of a trench from the ground level to the trench bottom and which can be moved along as work progresses.

5.22 UNDERGROUND INSTALLATIONS - include, but are not limited to, utilities (sewer, telephone, fuel, electric, water, and other product lines), tunnels, shafts, vaults, foundations, and other underground fixtures or equipment that may be encountered during excavation or trenching work.

5.23 UNCONFINED COMPRESSIVE STRENGTH - is the load per unit area at which soil will fail in compression. This measure can be determined by laboratory testing or it can be estimated in the field using a pocket penetrometer, by thumb penetration tests, or by other methods.

5.24 UNSTABLE SOIL – are earth materials that, because of their nature or the influence of related conditions, cannot be depended upon to remain in place without extra support, such as would be furnished by a system of shoring.

5.25 UPRIGHTS – are the vertical members of a shoring system.

5.26 DEFINITIONS THAT ARE NO LONGER APPLICABLE. For a variety of reasons, several terms commonly used in the past are no longer used in revised Subpart P. These include the following:

- **Angle of Repose -** Conflicting and inconsistent definitions have led to confusion as to the meaning of this phrase. This term has been replaced by **Maximum Allowable Slope.**

- **Bank, Sheet Pile, and Walls -** Previous definitions were unclear or were used inconsistently in the former standard.

- **Hard Compact Soil** and **Unstable Soil -** The new soil classification system in revised Subpart P uses different terms for these soil types.

6.0 SPECIAL HEALTH AND SAFETY CONSIDERATIONS

6.1 COMPETENT PERSON - The designated competent person should have and be able to demonstrate the following:

- Training, experience, and knowledge of:
  - soil analysis
  - use of protective systems; and
  - requirements of 29 CFR Part 1926 Subpart P.

- Ability to detect
  - conditions that could result in cave-ins;
  - failures in protective systems;
  - hazardous atmospheres; and
  - other hazards including those associated with confined spaces.

- Authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required.

6.2 SURFACE CROSSING OF TRENCHES - Surface crossing of trenches should be discouraged; however, if trenches must be crossed, such crossings are permitted only under the following conditions:

- Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.
- Walkways or bridges must be provided for foot traffic. These structures shall:
  - have a minimum safety factor of 4; the **safety factor**, is a multiplier applied to the calculated maximum load (force, torque, bending moment or a combination) to which a component or assembly will be subjected.
  - have minimum clear width of 20 in. (0.51m);
  - be fitted with standard side rails; and
  - extend a minimum of 24 in. (.61 m) past the surface edge of the trench.

6.3 INGRESS AND EGRESS - Access to and exit from the trench require the following conditions:

- Trenches 4 ft. or more in depth should be provided with a fixed means of egress.
- Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 ft. laterally to the nearest means of egress.
- Ladders must be secured and extended a minimum of 36 in. (0.9 m) above the landing.
- Metal ladders should be used with caution, particularly when electric utilities are present.

6.4 EXPOSURE TO VEHICLES - Precautions to protect employees from being injured or killed by vehicle traffic include:

- Providing employees with and requiring them to wear warning vests or other suitable garments marked with or made of reflectorized or high-visibility materials.
- Requiring a designated, trained flag person along with signs, signals, and barricades when necessary.

6.5 EXPOSURE TO FALLING LOADS - Employees must be protected from loads or objects falling from lifting or digging equipment. Precautions designed to ensure their protection include:

- Employees are not permitted to work under raised loads.
- Employees are required to stand away from equipment that is being loaded or unloaded.
- Equipment operators or truck drivers may stay in their equipment during loading and unloading only if the equipment is properly equipped with a cab shield or adequate canopy.

6.6 WARNING SYSTEMS FOR MOBILE EQUIPMENT - The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- Barricades must be installed where necessary.
- Hand or mechanical signals must be used as required.
- Stop logs must be installed if there is a danger of vehicles falling into the trench.
- Soil should be graded away from the excavation; this will assist in vehicle control and channeling of run-off water away from the trench.

6.7 HAZARDOUS ATMOSPHERES AND CONFINED SPACES - Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- Less than 19.5% or more than 23.5% oxygen,
- A combustible gas concentration greater than 10% of the lower flammable limit, or
- Concentrations of hazardous substances that exceed those specified in the Threshold Limit Values for Airborne Contaminants established by the ACGIH (American Conference of Governmental Industrial Hygienists).

All operations involving such atmosphere must be conducted in accordance with OSHA requirements for occupational health and environmental controls (see Subpart D of 29 CFR 1926) for personal protective equipment and for lifesaving equipment (see Subpart E, 29 CFR 1926). Engineering controls (e.g., ventilation) and respiratory protection may be required. (See SHM 8, Respiratory Protection Program and SHM 12, Confined Space Entry Program for further information)

When testing for atmospheric contaminants, the following should be considered:

- Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe.
- The frequency of testing should be increased if equipment is operating in the trench.
- Testing frequency should also be increased if welding, cutting, or burning is done in the trench.

Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program. Some trenches qualify as confined spaces. When this occurs, compliance with the Confined Space Standard is also required.

Trenches or excavations 4 feet or deeper will be considered a confined space. For trenches and excavations with no other hazards, a confined space permit will not be required. For any trench or excavation with any known hazard (oxygen deficient/enriched, seeping water, contaminated soil, under ground utility concerns, etc.) will be classified as a permit-required confined space and subject to the OSHA standard 1910.146 Permit-Required Confined Space, and PSI policy SOP SF-12 Confined Space Entry Program.

6.8 EMERGENCY RESCUE EQUIPMENT - Emergency rescue equipment is required when a hazardous atmosphere exists or can reasonably be expected to exist. Requirements are as follows:

- Respirators must be of the type suitable for the exposure. Employees must be trained in their use and a respirator program must be instituted.
- Attended (at all times) lifelines must be provided when employees enter bell-bottom pier holes, deep confined spaces, or other similar hazards.

7.0 EXCAVATION OPERATIONS

These steps must be followed for all excavations that PSI is the controlling contractor.

7.1 A survey shall be made of the site to be excavated prior to digging to locate all underground pipelines, electrical conduits, sewer lines, and any other underground utilities. When excavation approaches the estimated location of these installations, the exact location shall be determined and secured. Utility companies shall be contacted at least 48 hours prior to beginning excavation operations and the utility excavations must be protected when opened.

7.2 Any other recognizable hazard to the excavation work should be identified at this time and precautionary measures taken.

7.3 The approximate size (length, depth and width) of the excavation shall be established before the excavation begins.

7.4 Excavations that are 4 ft. or deeper will require a confined space entry permit. Any excavation can be classified as a confined space, and if so classified, all confined space requirements are in effect.

7.5 When possible, before machine excavation begins, pipelines should be depressurized and hand digging should be completed around pipelines, utilities, and cathodic protection system components. (Use caution when excavating around lines that may be severely corroded).

8.0 SEQUENCE OF EXCAVATION PROCEDURE

8.1 The soil type shall be identified as the excavation is being opened.

8.2 Evaluate the possible influence by:

- Changes in materials from exposure to air, sun, water or temperatures.
- Loading imposed by structures, equipment, or stored material.
- Vibration from equipment, traffic, or other sources.

8.3 Determine the method of protection from cave-ins to be used: sloping or shoring.

8.4 Develop an action plan to prevent movement of the side, walls or faces of the excavation, and communicate the plan to all affected personnel.

8.5 The field supervisor for the job shall have the responsibility for carrying out the action plan.

9.0 REQUIREMENTS

9.1 The walls and faces of all excavations in which employees are exposed to danger from moving soil shall be guarded by a shoring system, sloping of the ground, or some other accepted equivalent means.

9.2 All materials, whether excavated or otherwise, shall be effectively stored and retained at least 2 ft. from the edge of all excavations that personnel may enter.

9.3 Excavations exceeding 5 ft. in depth shall be shored or laid back to a stable slope. Refer to Attachment I as a guide in sloping of banks. These diagrams are for soil types A and B. Soil type A means cohesive soils with an unconfined compressive strength of 1.5 tons per square foot or greater. Examples of cohesive soils are: clay, silty clay, sandy clay and clay loam. Cemented soils such as caliche and hard pan are also considered Type A soil. Type B soil means cohesive soils with an unconfined compressive strength greater than 0.5 tons per square foot. Examples of Type B soil are: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.

In most cases Type B soil should be used as a guideline for shoring or sloping, unless testing shows it to be a Type A soil. Attachment I identifies the minimum requirements for trench timbering and shoring.

9.4 All slopes shall be excavated to no more than the maximum allowable slope, except for areas where solid rock allows for line drilling or presplitting.

9.5 When employees are required to be in excavations 4 ft. or more in depth, an adequate means of access and egress, such as a ladder, stairs and etc. shall be provided, so that no more than 25 ft. of lateral travel for employees is required.

9.6 Personal protective equipment shall be listed on the excavation permit. This equipment could include items such as goggles, chemical suit, rubber boots, chemical gloves, SCBA, and/or other respiratory protection systems.

9.7 When employees are exposed to public vehicular traffic, they will be furnished warning vests or other suitable garments marked with or made of reflectorized or high-visibility materials. The PSI supervisor or his/her designee is responsible for issuing these. The PSI supervisor or his/her designee is also responsible for ensuring that all affected employees wear the required safety equipment.

9.8 No employee shall be permitted underneath loads handled by lifting or digging

equipment. Employees will stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped in accordance with OSHA 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

9.9 Employees shall not work in excavations in which there is accumulated water or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and life line.

If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations will be monitored by the job site supervisor. The job site supervisor will inspect the job site prior to any work. This inspection will cover all equipment and any other conditions that could affect the safety of the employees.

9.10 A competent person shall be stationed at the top of the excavation to serve as “hole watch” for employees working down in the excavation. The hole watch should have a means of contacting help if an emergency occurs. A hole watch will be required if the excavation is 5 ft. or greater in depth.

9.11 All excavations shall be barricaded in a manner that provides adequate physical protection.

9.12 Excavations that have a potential for the presence of hydrocarbon vapor or any oxygen deficiency shall be tested before employees are permitted to enter.

9.13 When it is necessary to have employees cross the excavation, a crossing and walkway must be in place, and there must be barricades (railings) to prevent anyone from falling into the excavation.

9.14 Employees are prohibited in the excavation when heavy equipment is digging.

9.15 Excavations or trenches 20 ft. or deeper shall have a protective system designed by a registered professional engineer.

9.16 Excavations under the base of a footing or other foundation will require a support system designed by a registered professional engineer.

9.17 Sidewalks and pavement shall not be undermined unless a support system is in

place.

10.0 TRAINING

10.1 The Department Manager will train all employees who might be exposed to excavation and trenching hazards on the requirements of this procedure. This training will enable the employee to recognize the hazards of excavation and trenching and will familiarize the employee with the procedures to follow to minimize these hazards.

10.2 Training will be documented with the employee's name, employee number, job title, signature, signature of the trainer, and test score. The Department Manager will determine when the employee has received and understood the training. This will be based on the written test given at the training session and observation by the supervisor or manager.

10.3 Training will include the following:

- Instruction, experience, and knowledge of:
  - soil analysis
  - use of protective systems; and
  - requirements of 29 CFR Part 1926 Subpart P.
- Ability to detect
  - conditions that could result in cave-ins;
  - failures in protective systems;
  - hazardous atmospheres; and
  - other hazards including those associated with confined spaces

10.4 The Department Manager will re-train any time the following changes occur:

- Deficiencies in training (employee has not retained knowledge of excavation, shoring and trenching safety protection).
- Work place changes

APPENDIX I

OVERVIEW: SOIL MECHANICS

A number of stresses and deformations can occur in an open excavation or trench. For example, increases or decreases in moisture content can adversely affect the stability of a trench or excavation. The following show some of the more frequently identified causes of trench failure.

A. TENSION CRACKS - Tension cracks usually form parallel to the top edge of the trench at a horizontal distance of 0.5 to 0.75 times the depth of the trench, measured from the top of the vertical face of the trench.

B. SLIDING or sloughing of the trench walls may occur as a result of tension cracks.

C. TOPPLING - In addition to sliding, tension cracks can cause toppling. Toppling occurs when the trench's vertical face shears along the tension crack line and topples into the excavation.

D. SUBSIDENCE AND BULGING – an unsupported excavation can create an unbalanced stress in the soil, which in turn, causes subsidence at the surface and bulging of the vertical face of the trench. If uncorrected, this condition can cause face failure and entrapment of workers in the trench.

E. HEAVING OR SQUEEZING - Bottom heaving or squeezing is caused by the downward pressure created by the weight of adjoining soil. This pressure causes a bulge in the bottom of the cut. Heaving and squeezing can occur even when shoring or shielding has been properly installed.

F. BOILING – Boiling is evidenced by an upward water flow into the bottom of the cut. A high water table is one of the causes of boiling. Boiling produces a "quick" condition in the bottom of the cut, and can occur even when shoring or trench boxes are used.

G. UNIT WEIGHT OF SOILS - Refers to the weight of one unit of a particular soil. The weight of soil varies with the type and moisture content. One cubic foot of soil can weigh from 110 pounds to 140 pounds or more, and one cubic meter (35.3 cubic feet) of soil can weigh more than 3,000 pounds.

DETERMINATION OF SOIL TYPE

OSHA categorizes soil and rock deposits into four types, A through D, as follows:

A. STABLE ROCK is natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed. It is usually identified by a rock name such as granite or

sandstone. Determining whether a deposit is of this type may be difficult unless it is known whether cracks exist and whether or not the cracks run into or away from the excavation.

B. TYPE A SOILS are cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (tsf) (144 kpa) or greater. Examples of Type A cohesive soils are often: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. (No soil is Type A if it is fissured, is subject to vibration of any type, has previously been disturbed, is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical [4H: 1V] or greater, or has seeping water.

C. TYPE B SOILS are cohesive soils with an unconfined compressive strength greater than 0.5 tsf (48 kpa) but less than 1.5 tsf (144 kpa). Examples of Type B soils are: angular gravel; silt; silt loam; previously disturbed soils, unless otherwise classified as Type C; soils that meet the unconfined compressive strength or cementation requirement of Type A soils, but are fissured or subject to vibration; dry unstable rock; and layered systems sloping into the trench at a slope less than 4H:1V (only if the material would be classified as a Type B soil).

D. TYPE C SOILS are cohesive soils with an unconfined compressive strength of 0.5 tsf (48 kpa) or less. Other Type C soils include granular soils such as gravel, sand and loamy sand, submerged soil, soil from which water is freely seeping, and submerged rock that is not stable. Also included in this classification is material in a sloped, layered system where the layers dip into the excavation or have a slope of four horizontal to one vertical (4H:1V) or greater.

E. LAYERED GEOLOGICAL STRATA Where soils are configured in layers, (i.e., where a layered geologic structure exists), the soil must be classified on the basis of the soil classification of the weakest soil layer. Each layer may be classified individually if a more stable layer lies below a less stable layer, i.e., where a Type C soil rests on top of stable rock.

TEST EQUIPMENT AND METHODS FOR EVALUATING SOIL TYPE

Many kinds of equipment and methods are used to determine the type of soil prevailing in an area, as described below:

A. POCKET PENETROMETER - Penetrometers are direct-reading, spring-operated instruments used to determine the unconfined compressive strength of saturated cohesive soils. Once pushed into the soil, an indicator sleeve displays the reading. The instrument is calibrated in either tons per square foot (tsf) or kilograms per square centimeter (ksc). However, penetrometers can have error rates in the range of $\pm$ 20 to 40%.

B. SHEARVANE (TORVANE) - To determine the unconfined compressive strength of soil with a shearvane, the blades of the vane are pressed into a level section of undisturbed soil, and the torsional knob is slowly turned until soil failure occurs. The direct instrument

reading must be multiplied by 2 to provide results in tons per square foot (tsf) or kilograms per square centimeter (kpa).

C. THUMB PENETRATION TEST - The thumb penetration procedure involves an attempt to press the thumb firmly into the soil in question. If the thumb makes an indentation in the soil only with great difficulty, the soil is probably Type A. If the thumb penetrates no further than the length of the thumb nail, it is probably Type B soil, and if the thumb penetrates the full length of the thumb, it is Type C soil. The thumb test is subjective and is therefore the least accurate of the three methods.

D. DRY STRENGTH TEST - Dry soil that crumbles freely or with moderate pressure into individual grains are granular. Dry soil that falls into clumps that subsequently break into smaller clumps (and the smaller clumps can be broken only with difficulty) is probably clay in combination with gravel, sand, or silt. If the soil breaks into clumps that do not break into small clumps (and the soil can be broken only with difficulty), the soil is considered unfissured unless there is visual indication of fissuring.

E. PLASTICITY OR WET THREAD TEST - This test is conducted by molding a moist sample of the soil into a ball and attempting to roll it into a thin thread approximately 1/8 inch (3mm) in diameter (thick) by 2 inches (50mm) in length. The soil sample is held by one end. If the sample does not break or tear, the soil is considered cohesive.

F. VISUAL TEST - A visual test is a qualitative evaluation of conditions around the site. In a visual test, the entire excavation site is observed, including the soil adjacent to the site and the soil be excavated. If the soil remains in clumps, it is cohesive, if it appears to be course-grained sand or gravel, it is considered granular. The evaluator also checks for signs of vibration.

During the visual test, the evaluator should check for crack-line openings along the failure zone that would indicate tension cracks, look for existing utilities that indicate that the soil has previously been disturbed, and observe the open side of the excavation for indications of layered geologic structuring.

The evaluator should also look for signs of bulging, boiling, or sloughing, as well as signs of surface water seeping from the sides of the excavation or from the water table. If there is standing water in the cut, the evaluator should check for "quick" conditions. In addition, the area adjacent to the excavation should be checked for signs of foundations or other intrusions into the failure zone, and the evaluator should check for surcharging and the spoil distance from the edge of the excavation.

SHORING TYPES

Shoring is the provision of a support system for trench faces used to prevent the movement of soil, underground utilities, roadways, and foundations. Shoring or shielding is used when the location or

depth of the cut makes sloping back the sides of the excavation to the maximum allowable slope impractical. Shoring systems consist of posts, walls, struts, and sheeting. There are two basic types of shoring:

1. Timber
2. Aluminum Hydraulic.

A. HYDRAULIC SHORING - A hydraulic shoring system is a prefabricated strut and/or wall system manufactured of aluminum or steel. Hydraulic shoring provides a critical safety advantage over timber shoring because workers do not have to enter the trench to install or remove hydraulic shoring. Other advantages of most hydraulic systems are that they:

* Are light enough to be installed by one worker;
* Are gauge-regulated to ensure even distribution of pressure along the trench line;
* Can have their trench faces "preloaded" to use the soil's natural cohesion to prevent movement; and
* Can be adapted easily to various trench depths and widths.

All shoring should be installed from the top down and removed from the bottom up. Hydraulic shoring should be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts.

B. PNEUMATIC SHORING - works in a manner similar to hydraulic shoring. The primary difference is that pneumatic shoring uses air pressure in place of hydraulic pressure. A disadvantage to the use of pneumatic shoring is that an air compressor must be on site.

1. **Screw Jacks -** Screw jack systems differ from hydraulic and pneumatic systems in that the struts of a screw jack system must be adjusted manually. This creates a hazard because the worker is required to be in the trench in order to adjust the strut. In addition, uniform “preloading" cannot be achieved with screw jacks and their weight creates handling difficulties.

2. **Single-Cylinder Hydraulic Shores** are generally used in water system, as an assist to timber shoring systems, and in shallow trenches where face stability is required.

3. **Underpinning -** This process involves stabilizing adjacent structures, foundations, and other intrusions that may have an impact on the excavation. As the term indicates, underpinning is a procedure in which the foundation is physically reinforced. Underpinning should be conducted only under the direction and with the approval of a registered professional engineer.

Stable Rock	Vertical	90 deg
Type A	3/4:1	53 deg
Type B	1:1	45 deg

Type C	1 1/2:1	34 deg
Type A (short-term)	1/2:1	63 deg

(For a maximum excavation depth of 12 ft.)

B. BENCHING There are two basic types of benching: simple and multiple. The type of soil determines the horizontal to vertical ratio of the benched side.

As a general rule, the bottom vertical height of the trench must not exceed 4 ft. (1.2 m) for the first bench. Subsequent benches may be up to a maximum of 5 ft. (1.5m) vertical in Type A soil and 4 ft. (1.2m) in Type B soil to a total trench depth of 20 ft. (6.0m). All subsequent benches must be below the maximum allowable slope for that soil type. For Type B soil, the trench excavation is permitted in cohesive soil only.

SPOIL

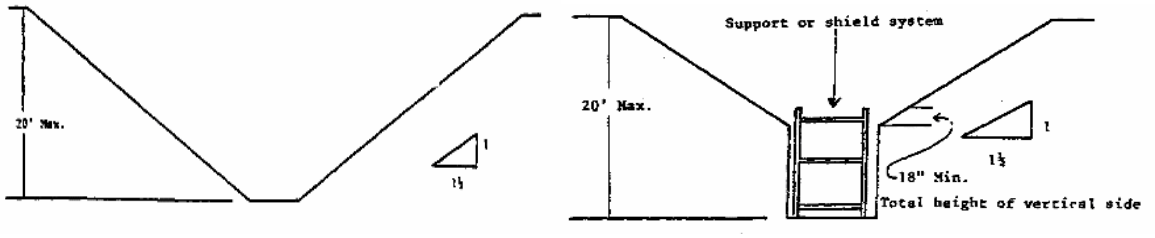
A. TEMPORARY SPOIL - Temporary spoil must be placed no closer than 2 ft. (0.61m) from the surface edge of the excavation, as measured from the nearest base of the spoil to the cut. This distance should not be measured from the crown of the spoil deposit. This distance requirement ensures that loose rock or soil from the temporary spoil will not fall on employees in the trench.

Spoil should be placed so that it channels rainwater and other run-off water away from the excavation. Spoil should be placed so that it cannot accidentally run, slide, or fall back into the excavation.

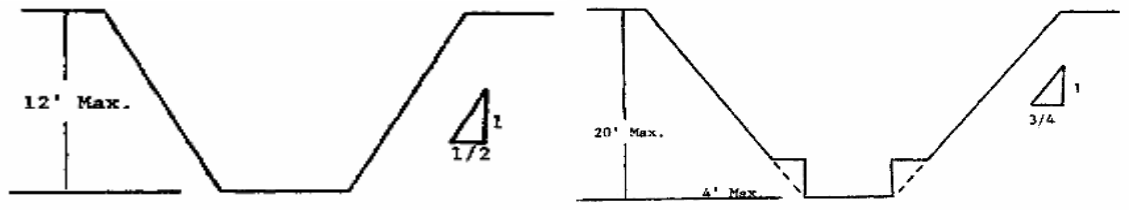
B. PERMANENT SPOIL - Permanent spoil should be placed as far as practical from the excavation. Permanent spoil is often created where underpasses are built or utilities are buried. The improper placement of permanent spoil, i.e. insufficient distance from the working excavation, can cause an excavation to be out of compliance with the horizontal-to-vertical ratio requirement for a particular excavation. This can usually be determined through visual observation. Permanent spoil can change undisturbed soil to disturbed soil and dramatically alter slope requirements.

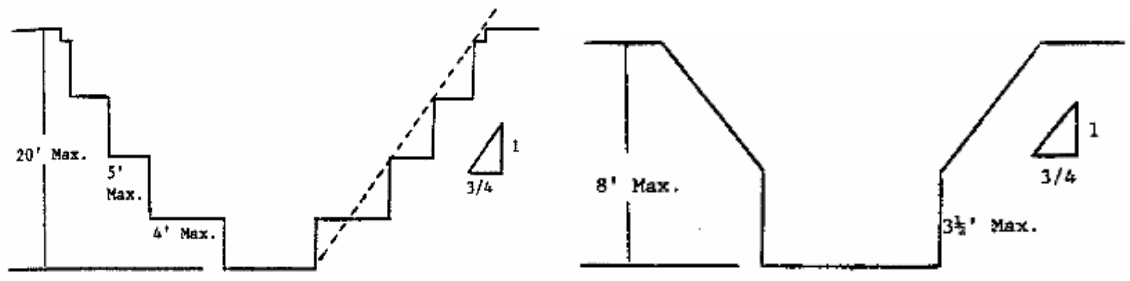
Attachment I

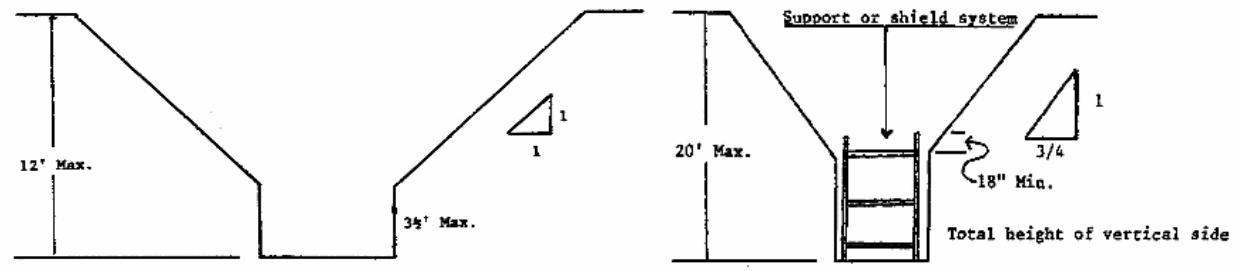
Approved Protection for “Type C” Soils (Preferred)



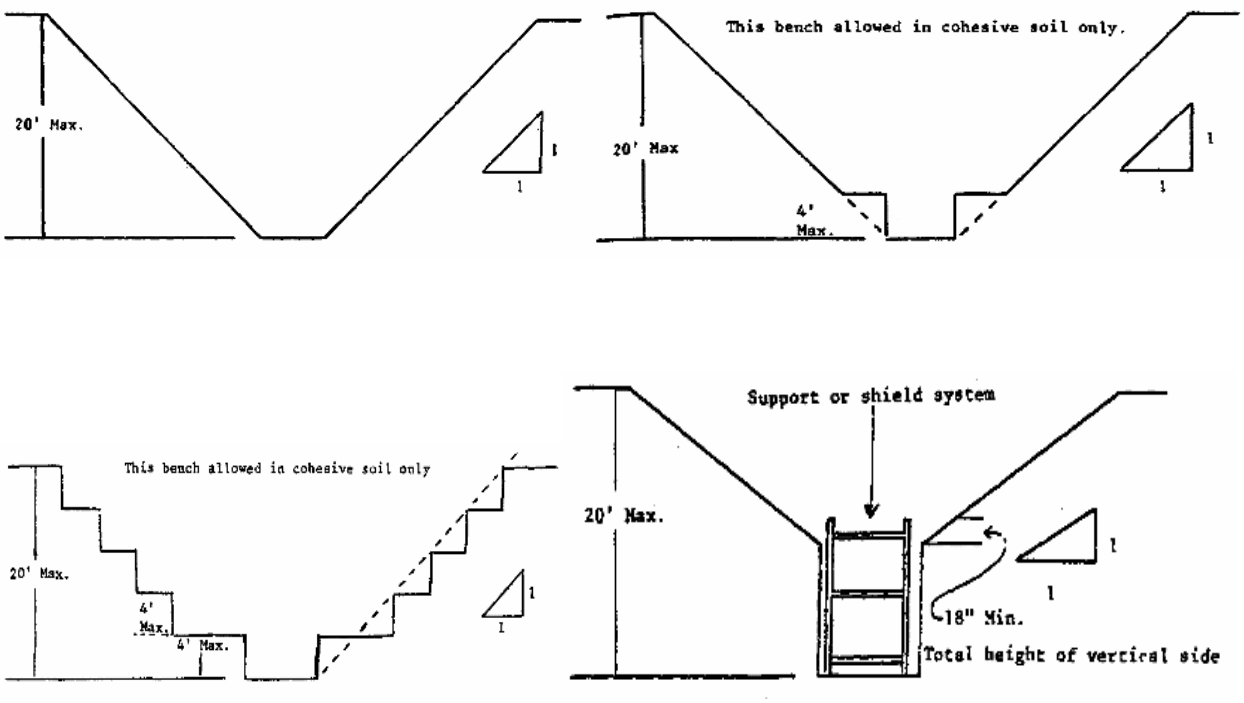
Approved Protection for “Type A” Soils (if encountered)







Approved Protection for “Type B” Soils (if encountered)



Attachment II

SITE ASSESSMENT QUESTIONS

1. Is the cut, cavity or depression a trench or an excavation?..... ☐ Yes ☐ No
2. Is the cut, cavity or depression more than 4 ft (1.2m) in depth?..... ☐ Yes ☐ No
3. Is there water in the cut, cavity, or depression?.....☐ Yes ☐ No
4. Are there adequate means of ingress and egress? ☐ Yes ☐ No
5. Are there surface encumbrances? ☐ Yes ☐ No
6. Is there exposure to vehicular traffic? ☐ Yes ☐ No
7. Are adjacent structures stabilized? ☐ Yes ☐ No
8. Does mobile equipment have a warning system?☐ Yes ☐ No
9. Is a Competent Person in charge of the operation? ☐ Yes ☐ No
10. Is equipment operating in or around the cut, cavity, or depression? ☐ Yes ☐ No
11. Are procedures required to monitor, test, and control hazardous atmosphere? ☐ Yes ☐ No
12. Did a Competent Person determine soil type? ☐ Yes ☐ No
13. Was a soil testing device used to determine soil type? ☐ Yes ☐ No
14. Is the spoil placed 2 ft (0.6 m) or more from the edge of the cut, cavity, or depression? ☐ Yes ☐ No
15. Is the cut, cavity, or depression depth 20 ft (6.1 m) or more? ☐ Yes ☐ No
16. Has a registered professional engineer approved the procedure if the depth is more than 20 ft (6.1 m)? ☐ Yes ☐ No
17. Does the procedure require benching or multiple benching? Shoring? Shielding?☐ Yes ☐ No
18. If provided, do shields extend at least 18 in (0.5 m) above the surrounding area if it is sloped toward the excavation? ☐ Yes ☐ No
19. If shields are used, is the depth of the cut more than 2 ft (0.6 m) below the bottom of the shield? ☐ Yes ☐ No

20. Are any required surface crossings of the cut, cavity, or depression the proper width and fitted with hand rails? ☐ Yes ☐ No

21. Are means of egress from the cut, cavity, or depression no more than 25 ft (7.6 m) from the work? ☐ Yes ☐ No

22. Is emergency rescue equipment required? ☐ Yes ☐ No

23. Is there documentation of the minimum daily excavation inspection? ☐ Yes ☐ No

Attachment III

PRE-SITE ASSESSMENT CHECKLIST - (DAILY CHECKLIST)

Initial if the condition is true:

_____ 1. Is the cut, cavity or depression a trench or an excavation?
_____ 2. Is the cut, cavity or depression more than 4 ft. (1.2m) in depth?
_____ 3. Is there water in the cut, cavity, or depression?
_____ 4. Are there adequate means of ingress and egress?
_____ 5. Are there surface encumbrances?
_____ 6. Is there exposure to vehicular traffic?
_____ 7. Are adjacent structures stabilized?
_____ 8. Does mobile equipment have a warning system?
_____ 9. Is a Competent Person in charge of the operation?
_____10. Is equipment operating in or around the cut, cavity, or depression?
_____11. Are procedures required to monitor, test, and control hazardous atmosphere?
_____12. Did a Competent Person determine soil type?
_____13. Was a soil testing device used to determine soil type?
_____14. Is the spoil placed 2 ft (0.6 m) or more from the edge of the cut, cavity, or depression?
_____15. Is the cut, cavity, or depression depth 20 ft (6.1 m) or more?
_____16. Has a registered professional engineer approved the procedure if the depth is?
more than 20 ft (6.1 m)?
_____17. Does the procedure require benching or multiple benching? Shoring? Shielding?
_____18. If provided, do shields extend at least 18 in (0.5 m) above the surrounding area if it is s
toward the excavation?
_____19. If shields are used, is the depth of the cut more than 2 ft (0.6 m) below the bottom of th
shield?
_____20. Are any required surface crossings of the cut, cavity, or depression the proper width an
fitted with hand rails?
_____21. Are means of egress from the cut, cavity, or depression no more than 25 ft (7.6 m) from
work?
_____22. Is emergency rescue equipment required?
_____23. Is there documentation of the minimum daily excavation inspection?

The Pre-Check (DAILY CHECKLIST) list will be completed prior to start and will be completed daily by a Competent Person and filed with the Excavation Permit.

Department of Public Works
600 17th Street West
Palmetto, Florida 34221
Phone (941) 723-4580 • FAX: (941) 723-4539
Suncom 599-4580

March 5, 2013

Dan Bond
Wilson Miller Stantec
6900 Professional Pkwy East Suite 100
Sarasota, FL 34240-8414

Re: **Blackstone Park Expansion**
Project# 09-600
Palmetto, Florida 34221

Dear Mr. Bond,

This letter will confirm that the City of Palmetto approved the construction plans for the above referenced project. Approval is contingent upon the following stipulations:

None

This approval is valid for one (1) year. A building permit application must be submitted within the one year timeframe.

Feel free to contact me if you have any questions.

Sincerely,

Lorraine Lyn
City Planner

cc: Alan Tusing, Director of Public Works
Neal Mazzei, Building Official

NO.	DATE	DESCRIPTION	BY
G			
F			
E			
D			
C			
B			
A			

DANIEL J. BOND LICENSE No 57969 STATE OF FLORIDA PROFESSIONAL ENGINEER

STATUS : REVISIONS 2-19-13

PROJECT MANAGER	ENGINEER TECHNICIAN	PROJECT ENGINEER
J. MICHAEL BELL, P.E. FLORIDA LICENSE NO. 40874	CARLOS L. LUGO	DANIEL J. BOND, P.E. FLORIDA LICENSE NO. 579

DRC Member	OK	Signature	Date
Deputy Director of Operations	✓		2/28/13
City Planner	✓		2/28/13
Fire Marshall	✓		3-5-13
City Engineer	✓		3/4/2013
DRC Coordinator			

Stipulations		Yes	
		No	

PROJECT FILE # 09-600

Director of Public Works	Signature	Date
		2-28-13

RECEIVED
FEB 19 2013
City of Palmetto
Planning Departm

PROJECT NUMBER
215611237 210

PRINTED
FEB 19 2013
Stantec

DATE
DECEMBER 2012

INDEX NUMBER
D-215611237-001

Feb 15, 2013 - 11:45:22 CLUGO V:\2156\active\215611237\civil\drawing\01_swfwmd\sheet_files\215611237-01C-

Southwest Florida Water Management District
2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

February 13, 2013

Manatee County Property Management
Attn: Charlie Bishop
1112 Manatee Avenue West, Suite 803
Bradenton, FL 34205

Subject: **Notice of Intended Agency Action**
ERP General Construction

Project Name:	Blackstone Park Expansion
App ID/Permit No:	676759 / 44041165.000
County:	MANATEE
Sec/Twp/Rge:	S11/T34S/R17E

Dear Permittee(s):

Your Environmental Resource Permit has been approved contingent upon no objection to the District's action being received by the District within the time frames described in the enclosed Notice of Rights.

Approved construction plans are part of the permit, and construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of intended agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of intended agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of intended agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of intended agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of intended agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the District's Tampa Service Office, for retention in the File of Record for this agency action.

If you have questions, please contact Robin McGill, at the Tampa Service Office, extension 2072. For assistance with environmental concerns, please contact Blake Meinecke, extension 2141.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Approved Permit w/Conditions Attached
Statement of Completion
Notice of Authorization to Commence Construction
Notice of Rights
cc: Daniel J. Bond, P.E., Stantec Consulting Services, Inc.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
GENERAL CONSTRUCTION
PERMIT NO. 44041165.000

EXPIRATION DATE: **February 13, 2018** **PERMIT ISSUE DATE:** **February 13, 2013**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40D-40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME:	Blackstone Park Expansion
GRANTED TO:	Manatee County Property Management Attn: Charlie Bishop 1112 Manatee Avenue West, Suite 803 Bradenton, FL 34205
OTHER PERMITTEES:	N/A

ABSTRACT: This permit authorization is for the construction of a new surface water management system serving three new regulation Little League fields, a parking lot, a concession building, bleachers, sidewalks and associated drainage and utility infrastructure on the north and east sides of the park. The proposed pond will provide water quality treatment and attenuation of the 25-year, 24-hour storm event. The project discharges to a water body that is verified as impaired for nutrients (Terra Ceia Bay - WBID 1797A); therefore, water quality certification is waived as a condition of this permit. The post-development curve number calculations include 1.10 acres of future impervious area. A formal permit modification will be required for this construction.

OP. & MAIN. ENTITY:	Manatee County Property Management
OTHER OP. & MAIN. ENTITY:	N/A
COUNTY:	MANATEE
SEC/TWP/RGE:	S11/T34S/R17E
TOTAL ACRES OWNED OR UNDER CONTROL:	31.00
PROJECT SIZE:	9.92 Acres
LAND USE:	Government
DATE APPLICATION FILED:	January 30, 2013
AMENDED DATE:	N/A

I. Water Quantity/Quality

POND No.	Area Acres @ Top of Ban	Treatment Type
Pond	1.37	EFFLUENT FILTRATION
	Total: **1.37**	

Water Quantity/ Quality Comments:

The project discharges to an impaired water body. Nutrient loading calculations were provided that demonstrate that the retention depth required to meet net improvement is less than a half an inch. Therefore, presumptive criteria was used. The water quality treatment method will be effluent filtration. The existing park facilities will be routed around the perimeter of the proposed project to avoid commingling with the new surface water management system. The peak discharge rate for the post-development conditions is less than the pre-development peak discharge rate for the 25-year, 24-hour storm event. The post-development weighted curve number calculation includes 2.72 acres of proposed impervious area plus 1.10 acres of future impervious area (i.e. 3.82 acres total).

A mixing zone is not required.

A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

*****Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

No wetlands or other surface waters exist within the project area.

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to the Regulation Department at the District Service Office that services this permit. The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.

3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.

4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Regulation Department at the District Service Office that services this permit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.

5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

6. The operation and maintenance entity shall submit inspection reports in the form required by the District, in accordance with the following schedule.

   For systems utilizing effluent filtration or exfiltration **or** systems utilizing effluent filtration or exfiltration **and** retention or wet detention, the inspections shall be performed 18 months after operation is authorized and every 18 months thereafter.

7. Prior to installation of the filter media, the Permittee's contractor shall submit a certified test of the media to the Permittee's Professional Engineer and the District. The test shall address the following parameters: uniformity coefficient, effective grain size, sieve analysis, percent silts, clays and organic matter, and permeability testing (constant head). If testing indicates the actual permeability rate is less than the value specified in the permitted design, a permit modification will be required to lengthen the effluent filtration system. The Permittee shall also notify the District Service Office that services this permit, at least 48 hours prior to commencement of construction of the effluent filtration system, so that District staff may observe this construction activity.

8. For dry bottom detention systems, the detention area(s) shall become dry within 36 hours after a rainfall event. If a detention area is regularly wet, this situation shall be deemed to be a violation

of this permit.

9. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.

10. If limestone bedrock is encountered during construction of the surface water management system, the District must be notified and construction in the affected area shall cease.

11. The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

12. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.

13. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

Michelle K. Hopkins, P.E.

Authorized Signature

EXHIBIT A

GENERAL CONDITIONS:

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. For general permits authorizing incidental site activities, the following limiting general conditions shall also apply:

   a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.

   b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.

4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume dis-charged from the property or into surface waters of the state.

6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

    a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.

    b. Any existing septic tanks on site shall be abandoned at the beginning of construction.

    c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.

13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the District until the

operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.

18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.

19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.

20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.

21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.

23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.

24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.

25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

NOTICE OF
AUTHORIZATION
TO COMMENCE CONSTRUCTION

Blackstone Park Expansion
PROJECT NAME

Government
PROJECT TYPE

MANATEE
COUNTY

S11/T34S/R17E
SEC(S)/TWP(S)/RGE(S)

Manatee County Property Management
PERMITTEE

APPLICATION ID/PERMIT NO: 676759 / 44041165.000

DATE ISSUED: February 13, 2013

Michelle K. Hopkins, P.E.
Issuing Authority

THIS NOTICE SHOULD BE CONSPICUOUSLY DISPLAYED AT THE SITE OF THE WORK

Notice of Rights

ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.

2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.

3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.

4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.

5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.

6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.

7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 Highway 301 North,Tampa,FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

JUDICIAL REVIEW

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.

2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.