INVITATION FOR BID
IFB #12-1881-DS

9TH STREET EAST /53RD AVENUE EAST /57TH AVENUE EAST
Project No. 6040460

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 **November 27, 2012 @ 2:00 PM at the Manatee County Public Works Department, Project Management Division, (Conference Room A) located at 1022 26th Avenue East, Bradenton, FL 34208.**
Attendance is not mandatory, but is highly encouraged.

Article B. 05, page 00020-2; Inspection of Site – All potential Contractors, it is mandatory that a site visit be performed at each location to familiarize yourselves with the full scope of the construction site. All potential contractors are to acknowledge in Section 00300, Bid Form page 00300-1.

A site inspection is a requirement to submit a Bid.

DEADLINE FOR CLARIFICATION REQUESTS: December 11, 2012 at 3:00 PM
(Reference Bid Article A.06)

TIME AND DATE DUE: December 21, 2012 at 2:00 pm
Manatee County Purchasing Division, 1112 Manatee Avenue West, Bradenton, FL 34205

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

FOR INFORMATION CONTACT:

Donna M. Stevens (941) 749-3045
donna.stevens@mymanatee.org

AUTHORIZED FOR RELEASE:

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SECTION 00010
INFORMATION TO BIDDERS

A.01 OPENING LOCATION

These 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 #12-1881-DS, 9th Street East 53rd Avenue East /57th Avenue East** 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 Public Works Department located at: 1022 26th Avenue East, Bradenton, FL 34208; or by calling the phone number **941-708-7450 extension 7327 or 7334**. Documents may be obtained between the hours of 8:00 AM to 4:00 PM Monday through Friday with 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 County'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 website 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 VENDOR, 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 County in evaluating the request to modify the specifications. The County 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

December 11, 2012 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 issuance of a written addendum is the only official method whereby interpretation, clarification or additional information can be given.

A.07 CLARIFICATION & ADDENDA (continued)

If any addenda are issued to this Invitation for Bid, the County will broadcast the addenda on the Demand Star 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 begins with the issuance of any 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.

The County reserves the right to amend or to add to the names listed as persons to contact. All amendments or additions to the names listed as persons to contact shall be issued by the Purchasing Division, in writing.

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.

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 that 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

Vendors 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 vendor. b) After the responses to a solicitation are opened or a selection has been determined, but before a Contract is signed, a vendor alleging a material mistake of fact may be permitted to withdraw their offer if the mistake is clearly evident on the solicitation document or 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 Code of Law 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 Law.

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 any 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 Code 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 Request for Bid, and may also be disqualified from furnishing future goods or services to, and from submitting any future bids or 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 Request 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 vendor 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 § 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 Florida Statute § 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 prohibits the award of any Contract to any person or entity who/which has, within the past 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 are 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 vendor is prohibited from delineating a separate line item in his bid for any sales or service taxes. Nothing herein shall affect the vendor'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 30 days after the Opening or if a notice of intended award decision is made earlier than this time as provided by Florida Statute 119.071(1) (b). No announcement or review of the offer shall be conducted at the public opening. If the County rejects all offers and concurrently notices its intent to reissue the solicitation, initial offers are exempt until the County provides notice of its intended decision, or 30 days after the opening of the new offers.

Based on the above, Manatee 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. Upon the expiration of the statutory term for exemption the actual documents may be inspected or copied. When County staff have completed a mathematic validation and inspected the completeness of the offers, tabulation shall be posted on www.mymanatee.org.

A.29 E-VERIFICATION

Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system, in accordance with the terms governing use of the system, to confirm the employment eligibility of;

1. All persons employed by the Contractor during the term of the Contract to perform employment duties within Florida: and
2. All persons, including subcontractors, assigned by the Contractor to perform work pursuant to the contract with the State Agency.

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 responsive, responsible bidder meeting specifications and having the lowest Total Bid Price for **Bid "A",** or the lowest Total Bid Price for **Bid "B",** 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.

Two schedules for Completion of the Work shall be considered. Each bid for completion by the specified stated time shall be offered as a separate "Total Bid Price". The County has the sole authority to select the bid based on the Completion Time which is in the best interest of the County. Only one award shall be made.

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 equal low, responsible, responsive bids are received, award goes to the bid of the local bidder.

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 vendor is considered a violation of Section 274 (e) of the Immigration and Employment Act. If the vendor 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 General Contractor, Underground Utility Contractor or hold an FDOT Certificate of Qualification pursuant to the terms of 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 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 Florida Statutes 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

B.03 QUALIFICATIONS OF BIDDERS (continued)

submitted, and for at least three 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 Florida Statutes s. 489.119, and that Qualifying Agent has been the same Qualifying Agent of the bidder for a period of at least three consecutive years immediately prior to the day the bid is submitted. In addition to these requirements, the bidder, in the three years immediately prior to the date the bid is submitted, must have a minimum three years experience performing this type of work

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, Manatee County Purchasing Ordinance and the Standard and Procedures approved by the County Administrator).

B.05 INSPECTION OF SITE

Inspection of the site is a requirement to be considered for award of this Contract. Prior to submitting a Bid Form, 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 thereunder 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. Two bids shall be considered based on **Bid "A" 340 calendar days** and **Bid "B"** based on **280 calendar days**. The County has the sole authority to select the bid based on the Completion Time which is in the best interest of the County. 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 **One Thousand nine hundred and fourteen dollars ($1,914.00)** 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 approval is required after the pay estimate has been approved by the agent for the County.

C.05 PAYMENT (continued)

In accordance with the Prompt Payment Act, Section 218.735 (7), Florida Statutes, 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 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 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.

C.05 PAYMENT (continued)

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 10% of the total work in place shall be withheld until 50% complete. After 50% completion, the retainage shall be reduced to 5% 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 Florida Statute Section 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. Vendor 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 the Purchasing Division 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):

C.14 INSURANCE (continued)

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:

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

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

c. Business Auto Policy

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

d. County's Protective Liability Coverage

The minimum 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.

C.14 INSURANCE (continued)

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 in the six above paragraphs a., b., c., d., e., and f., 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, project title and location of project. Insurance shall remain in force at least one (1) year after completion and acceptance of the project by the County, in the amounts and types as stated herein, with coverage for all products and services completed under this Contract.

ADDITIONAL INSURED:

Manatee County, a political subdivision of the State of Florida, shall be specifically named as additional insured on all policies.

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, materialmen or employees in relation to this Contract.

C.14 INSURANCE (continued)

h. 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, a political 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, 8th Floor
   Suite 803
   Bradenton, FL 34205
   Attn: Donna M. Stevens

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) days after being notified of the awarding of the Contract**. The Bidder further agrees that failure to execute and deliver said form of Contract **within ten (10) 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 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 fourteen (14) 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 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 Vendors/Bidders/Quoters/Proposers (*as applicable)* 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 services of a General Contractor, an Underground Utility Contractor or an FDOT Certificate of Qualification contractor are required to provide all required materials, tools, permits, equipment, traffic control, labor and supervision for the 2-lane to 4-lane widening of 9th Street East between 57th Avenue East and 53rd Avenue East (SR 70). In general, these improvements consist of asphalt paving, concrete curb, stormwater drainage, and mast arm traffic signal at 53rd Avenue East, installation of video detection on the north leg of the intersection of 9th Street East at 57th Avenue East, signing, pavement marking, sidewalk, water main construction, and sanitary sewer force main construction.

The 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 current Manatee County Public Works Utility Standards, and as shown on the Contract Drawings.

The 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 County.

The 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 indicted in the Contract 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 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.

SECTION 00100
BID SUMMARY

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 CONTRACT 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.

The accuracy of the existing utility locations shown on the plans is approximate and without express or implied warranty. 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 Contract Documents.

SECTION 00100
BID SUMMARY

D.04 EXAMINATION OF CONTRACT DOCUMENTS AND SITE (continued)
County will provide each Bidder access to the site to conduct such explorations and tests.

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 Contract 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 Contract Documents.

D.05 MATERIALS AND WORKMANSHIP
All materials and apparatus required for this Work, except as specifically 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.

SECTION 00100
BID SUMMARY

D.07 PROJECT CLOSE-OUT (Continued)
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
Bidders shall coordinate the progress requirements with the Project Manager.

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 Administration Center, 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 (2) 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 office 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 (1) full-time employees 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 a request for bids, 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.

(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 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 Law, 2-26-6.

Signature of Affiant_____

STATE OF FLORIDA
COUNTY OF_____

Sworn to (or affirmed) and subscribed before me this _____ day of _____, 2012, 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 - Suite 803 - 1112 Manatee Avenue West - Bradenton, FL 34205

BID FORM
SECTION 00300
(SUBMIT IN TRIPLICATE)
For: 9th Street East / 53rd Avenue East /57th Avenue East

TOTAL BID PRICE: _____
BID "A" Based on a Completion Time of 340 calendar days
TOTAL BID PRICE: _____
BID "B" Based on a Completion Time of 280 calendar days

Two schedules for Completion of the Work shall be considered. Each bid for completion by the specified stated time shall be offered as a separate "Total Bid Price". The County has the sole authority to select the bid based on the Completion Time which is in the best interest of the County. 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.

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.

Contractors are to complete all fields.

Communications concerning this Bid shall be addressed as follows:

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 _____ attest that I have visited the 9th Street East 53rd Avenue East /57th Avenue East 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: _____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
		ROADWAY				
1	101- 1-	MOBILIZATION	LS	1	$	$
2	102- 1-	MAINTENANCE OF TRAFFIC	LS	1	$	$
3	102- 3-	COMMERCIAL MATERIALS FOR DRIVEWAY MAINT	CY	250	$	$
4	104- 10- 3	SEDIMENT BARRIER	LF	6,366	$	$
5	104- 11-	FLOATING TURBIDITY BARRIER	LF	80	$	$
6	104- 15	SOIL TRACKING PREVENTION DEVICE	EA	2	$	$
7	104- 18	INLET PROTECTION SYSTEM	EA	34	$	$
8	110- 1- 1	CLEARING AND GRUBBING	LS	1	$	$
9	110- 4-	REMOVAL OF EXISTING PAVEMENT (CONCRETE)	SY	1,238	$	$
10	110- 7- 1	MAIL BOX (FURNISH AND INSTALL)	EA	8	$	$
11	120- 1-	REGULAR EXCAVATION	CY	17,519	$	$
12	120- 4-	SUBSOIL EXCAVATION	CY	3,486	$	$
13	120- 6-	EMBANKMENT	CY	6,182	$	$
14	160- 4-	TYPE B STABILIZATION	SY	22,486	$	$
15	285-706-	OPTIONAL BASE GROUP 6 (8" CEMENT TREATED SHELL) (LBR 100)	SY	20,902	$	$
16	327- 70- 04	MILLING EXISTING ASPHALT PAVEMENT (3" AVERAGE DEPTH)	SY	2,100	$	$
17	331- 2-	TYPE S ASPHALTIC CONCRETE	TN	3,499	$	$
18	334- 1- 13	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC C	TN	174	$	$
19	337- 7- 3	ASPHALTIC CONCRETE FRICTION COURSE (INC BIT) (FC-3)	TN	1,171	$	$
20	337- 7- 33	ASPHALTIC CONCRETE FRICTION COURSE (TRAFFIC C) (INC PG 67-22) (FC-12.5)	TN	174	$	$
21	400- 0- 11	CLASS NS CONCRETE (GRAVITY WALL)	CY	178	$	$
22	400- 1- 2	CLASS I CONCRETE (ENDWALLS)	CY	28.33	$	$

Bidder:_____

Authorized Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
23	425- 1-311	INLETS (CURB TYPE P-1) (<10)	EA	1	$	$
24	425- 1-351	INLETS (CURB TYPE P-5) (<10)	EA	8	$	$
25	425- 1-359	INLETS (CURB TYPE P-5) (MODIFIED) (<10)	EA	3	$	$
26	425- 1-361	INLETS (CURB TYPE P-6) (<10')	EA	5	$	$
27	425- 1-369	INLETS (CURB TYPE P-6) (MODIFIED) (<10)	EA	1	$	$
28	425- 1-451	INLETS (CURB TYPE J-5) (<10)	EA	2	$	$
29	425- 1-521	INLETS (DITCH BOTTOM TYPE "C") (<10')	EA	1	$	$
30	425- 1-549	INLETS (DITCH BOTTOM TYPE "D") (<10') (MODIFIED)	EA	2	$	$
31	425- 2- 61	MANHOLE (P-8) (<10')	EA	2	$	$
32	425- 2- 91	MANHOLE (J-8) (<10')	EA	4	$	$
33	425- 2- 93	MANHOLE (J-8) (<10') (PARTIAL)	EA	2	$	$
34	425- 5-	MANHOLES (ADJUST)	EA	6	$	$
35	430-175-118	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (18") (RCP)	LF	1,298	$	$
36	430-175-124	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (24") (RCP)	LF	847	$	$
37	430-175-130	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (30") (RCP)	LF	329	$	$
38	430-175-215	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (12"x18") (ERCP)	LF	9	$	$
39	430-175-218	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (14"x23") (ERCP)	LF	84	$	$
40	430-175-236	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (29"x45") (ERCP)	LF	308	$	$
41	430-175-266	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (53"x83") (ERCP)	LF	95	$	$
42	430-984-125	MITERED END SECTION (18" RCP SD) (INCLUDES RIP RAP)	EA	1	$	$
43	430-984-133	MITERED END SECTION (30" RCP SD) (INCLUDES RIP RAP)	EA	1	$	$
44	430-984-638	MITERED END SECTION (OPT / ELLIP / ARCH) (29" X 45" ERCP) (INCLUDES RIP RAP)	EA	1	$	$

Bidder:_____

Authorized Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
45	455-142	CROSSHOLE SONIC LOGGING	EA	2	$	$
46	515- 2- 301	PEDESTRIAN / BICYCLE RAILING (ALUMINUM, 42" PICKET RAILING)	LF	1,269	$	$
47	520- 1- 10	CONCRETE CURB AND GUTTER (TYPE F)	LF	5,647	$	$
48	520- 2- 4	CONCRETE CURB (TYPE D)	LF	312	$	$
49	520- 5- 41	CONCRETE TRAFFIC SEPARATOR (TYPE IV, 4' WIDE)	LF	796	$	$
50	522- 1-	CONCRETE SIDEWALK, 4" THICK	SY	3,040	$	$
51	522- 2-	CONCRETE SIDEWALK, 6" THICK (DRIVEWAYS)	SY	704	$	$
52	550- 10- 220	FENCE (TYPE B) (5.1'- 6' HEIGHT)	LF	1,057	$	$
53	550- 60- 224	FENCE GATES (TYPE B) (DOUBLE) (20' OPENING)	EA	2	$	$
54	555- 1- 1	DIRECTIONAL BORE (< 6")	LF	96	$	$
55	555- 1- 2	DIRECTIONAL BORE (6" to <12")	LF	325	$	$
56	570- 1- 2	PERFORMANCE TURF, SOD	SY	10,470	$	$
57	604- 3- 2	TIMING IMPLEMENTATION, CONTROLLER & COORDINATION UNIT	PI	1	$	$
58	630- 1- 11	CONDUIT, SIGNAL (F&I) (ABOVE GROUND)	LF	36	$	$
59	630- 1- 12	CONDUIT, SIGNAL (F&I) (UNDERGROUND)	LF	3,793	$	$
60	632- 7- 1	CABLE, SIGNAL (F&I)	PI	1	$	$
61	634- 5- 1	FIBERGLASS INSULATOR (F&I)	LF	100	$	$
62	635- 1- 11	PULL AND JUNCTION BOXES (F&I) (PULL BOX)	EA	27	$	$
63	639- 1- 22	SIGNALS, ELEC POWER SERV (UNDERGROUND)(PURCHASED BY CONTRACTOR)	AS	1	$	$
64	639- 2- 1	SIGNALS, ELECTRICAL SERVICE WIRE (3 WIRE) (F&I)	LF	69	$	$
65	649- 31-202	MAST ARM ASSEM (F&I) (WS 130) (STEEL) (SINGLE ARM) (46') (BLACK) (W/O LUM)	EA	1	$	$
66	649- 31-204	MAST ARM ASSEM (F&I) (WS 130) (STEEL) (SINGLE ARM) (70.5') (BLACK) (W/O LUM)	EA	1	$	$

Bidder:_____

Authorized Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
67	649- 31-208	MAST ARM ASSEM (F&I) (WS 130) (STEEL) (SINGLE ARM) (60') (BLACK) (W/ LUM)	EA	2	$	$
68	650- 51-311	TRAFFIC SIGNAL (F&I) (3 SECT.,1-WAY,STANDARD) (LED)	AS	12	$	$
69	653-191-	PEDESTRIAN SIGNALS (F&I) (COUNTDOWN, 1-WAY)	AS	8	$	$
70	659-107-	SIGNAL HEAD AUXILIARIES (F&I) (ALUMINUM PEDESTAL)	EA	8	$	$
71	663- 74- 15	VEHICLE DETECTOR ASSEMBLES (F&I) (VIDEO)	EA	5	$	$
72	665- 11-	PED DETECTOR (F&I) (POLE OR CABINET MOUNTED DETECTOR STATION & SIGN)	EA	1	$	$
73	665- 13-	PED DETECTOR (F&I) (DETECTOR WITH SIGN ONLY)	EA	7	$	$
74	670- 5-310	ACTUATED SOLID ST. CONTROLLER AS (NEMA)	AS	1	$	$
75	690- 10-	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA	10	$	$
76	690- 20-	REMOVE PEDESTRIAN SIGNAL ASSEMBLY	EA	4	$	$
77	690- 31-	SIGNAL PEDESTAL REMOVE	EA	2	$	$
78	690- 34- 2	POLE REMOVAL (DEEP) (BOLT ON ATTACHMENT)	EA	4	$	$
79	690- 50-	REMOVE CONTROLLER ASSEMBLY	EA	1	$	$
80	690- 80-	REMOVE SPAN WIRE ASSEMBLY	EA	4	$	$
81	690- 90-	REMOVE CABLING AND CONDUIT	PI	1	$	$
82	690-100-	REMOVAL MISCELLANEOUS SIGNAL EQUIPMENT	PI	1	$	$
83	699- 1- 1	SIGN, INTERNALLY ILLUMINATED (F&I) (STREET NAME)	EA	4	$	$
84	700- 20- 11	SIGN SINGLE POST (<12 SF)	AS	20	$	$
85	700- 20- 40	SIGN EXISTING (RELOCATE, SINGLE POST)	AS	5	$	$
86	700- 20- 60	SIGN EXISTING (REMOVE, SINGLE POST)	AS	8	$	$
87	700- 48- 18	SIGN PANEL (F&I) (15 OR LESS SF)	EA	10	$	$
88	706- 3-	RETRO-REFLECTIVE PAVEMENT MARKERS	EA	425	$	$
89	710- 11- 290	REFLECTIVE PAINT (ISLAND NOSE) (YELLOW)	SF	38	$	$

Bidder:_____

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Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
90	711- 11- 111	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6")	NM	1.205	$	$
91	711- 11-123	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (12")	LF	1,352	$	$
92	711- 11-125	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (24")	LF	293	$	$
93	711- 11-131	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (10'-30' SKIP)	GM	0.924	$	$
94	711- 11-151	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (2'-4' SKIP)	LF	553	$	$
95	711- 11-160	PAVEMENT MESSAGES, THERMOPLASTIC (WHITE)	EA	16	$	$
96	711- 11-170	DIRECTIONAL ARROWS, THERMOPLASTIC (WHITE)	EA	44	$	$
97	711- 11-211	SOLID TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (6")	NM	1.012	$	$
98	711- 11-224	SOLID TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (18")	LF	42	$	$
99	711- 11-231	SKIP TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (6") (10'-30' SKIP)	GM	0.441	$	$
100	715- 5- 11	LUMINAIRE & BRACKET ARM	EA	2	$	$
101	780- 1- 12	ITS ELECTRICAL POWER, F&I, SERVICE WIRE	LF	36	$	$
102	783- 4-112	ITS CONDUIT, F&I, UNDERGROUND	LF	12	$	$
103	783- 7- 1	ITS PULL & JUNCTION BOX, F&I	EA	1	$	$
104	SPECIAL - 01	ALUMINUM SHEET PILE	LF	206	$	$
		DISCRETIONARY WORK	LS	1		**$100,000.00**
		ROADWAY SUBTOTAL				$
		FORCEMAIN				
105	1050- 11-222	UTILITY PIPE (F & I) (Sewer) (4" PVC)	LF	1,280	$	$
106	1080-11-204	VALVE ASSEMBLY (F&I) (CAST IRON) (GATE) (150PSI) (4") (FM)	EA	1	$	$
107	SPECIAL -06	CONNECTION TO EXISTING SYSTEM	EA	2	$	$
		DISCRETIONARY WORK	LS	1		**$6,000.00**

Bidder:_____

Authorized
Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid A

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "A" - Based on Completion Time of 340 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
		FORCEMAIN SUBTOTAL				$
		WATERMAIN				
108	1050- 11-223	UTILITY PIPE (F & I) (Water) (6" PVC)	LF	1,342	$	$
109	1050- 11-423	UTILITY PIPE (F & I) (Water) (6" DI)	LF	170	$	$
110	1080-11-304	VALVE ASSEMBLY (F&I) (CAST IRON) (GATE) (150PSI) (6") (WM)	EA	3	$	$
111	1080-14	UTILITY FIXTURES (RELOCATE) (WATER METERS)	EA	2	$	$
112	1080-15	UTILITY FIXTURES (ADJUST)	EA	5	$	$
113	1644-116- 08	FIRE HYDRANT, (F&I) (TRAFFIC) (TWO HOSE, ONE PUMPER) (6")	EA	3	$	$
114	SPECIAL-02	6" BACKFLOW PREVENTER (RELOCATE)	EA	1	$	$
115	SPECIAL-03	2" WATER METER/BACKFLOW PREVENTER (RELOCATE)	EA	2	$	$
116	SPECIAL-04	CONNECTION TO EXISTING SYSTEM	EA	2	$	$
117	SPECIAL-05	CUT & CAP EXISTING WATER MAIN	EA	1	$	$
		DISCRETIONARY WORK	LS	1		**$15,000.00**
		WATERMAIN SUBTOTAL				$
		BID TOTAL - BID "A" Based on a Completion Time of 340 calendar days				**$**

Bidders Note: (GM = Gross Mile 1/1000 of a mile), (NM = Net Mile 1/1000 of a mile) Reference 2012 Edition Basis of Estimates

Bidder:_____

Authorized Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid "B"

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "B" - Based on Completion Time of **280** calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
		ROADWAY				
1	101- 1-	MOBILIZATION	LS	1	$	$
2	102- 1-	MAINTENANCE OF TRAFFIC	LS	1	$	$
3	102- 3-	COMMERCIAL MATERIALS FOR DRIVEWAY MAINT	CY	250	$	$
4	104- 10- 3	SEDIMENT BARRIER	LF	6,366	$	$
5	104- 11-	FLOATING TURBIDITY BARRIER	LF	80	$	$
6	104- 15	SOIL TRACKING PREVENTION DEVICE	EA	2	$	$
7	104- 18	INLET PROTECTION SYSTEM	EA	34	$	$
8	110- 1- 1	CLEARING AND GRUBBING	LS	1	$	$
9	110- 4-	REMOVAL OF EXISTING PAVEMENT (CONCRETE)	SY	1,238	$	$
10	110- 7- 1	MAIL BOX (FURNISH AND INSTALL)	EA	8	$	$
11	120- 1-	REGULAR EXCAVATION	CY	17,519	$	$
12	120- 4-	SUBSOIL EXCAVATION	CY	3,486	$	$
13	120- 6-	EMBANKMENT	CY	6,182	$	$
14	160- 4-	TYPE B STABILIZATION	SY	22,486	$	$
15	285-706-	OPTIONAL BASE GROUP 6(8" CEMENT TREATED SHELL)(LBR 100)	SY	20,902	$	$
16	327- 70- 04	MILLING EXISTING ASPHALT PAVEMENT (3" AVERAGE DEPTH)	SY	2,100	$	$
17	331- 2-	TYPE S ASPHALTIC CONCRETE	TN	3,499	$	$
18	334- 1- 13	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC C	TN	174	$	$
19	337- 7- 3	ASPHALTIC CONCRETE FRICTION COURSE (INC BIT)(FC-3)	TN	1,171	$	$
20	337- 7- 33	ASPHALTIC CONCRETE FRICTION COURSE (TRAFFIC C) (INC PG 67-22) (FC-12.5)	TN	174	$	$
21	400- 0- 11	CLASS NS CONCRETE (GRAVITY WALL)	CY	178	$	$
22	400- 1- 2	CLASS I CONCRETE (ENDWALLS)	CY	28.33	$	$

Bidder:_____

Authorized
Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid "B"

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "B" - Based on Completion Time of **280** calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
23	425- 1-311	INLETS (CURB TYPE P-1) (<10)	EA	1	$	$
24	425- 1-351	INLETS (CURB TYPE P-5) (<10)	EA	8	$	$
25	425- 1-359	INLETS (CURB TYPE P-5) (MODIFIED)(<10)	EA	3	$	$
26	425- 1-361	INLETS (CURB TYPE P-6) (<10')	EA	5	$	$
27	425- 1-369	INLETS (CURB TYPE P-6) (MODIFIED)(<10)	EA	1	$	$
28	425- 1-451	INLETS (CURB TYPE J-5) (<10)	EA	2	$	$
29	425- 1-521	INLETS (DITCH BOTTOM TYPE "C") (<10')	EA	1	$	$
30	425- 1-549	INLETS (DITCH BOTTOM TYPE "D") (<10') (MODIFIED)	EA	2	$	$
31	425- 2- 61	MANHOLE (P-8) (<10')	EA	2	$	$
32	425- 2- 91	MANHOLE (J-8) (<10')	EA	4	$	$
33	425- 2- 93	MANHOLE (J-8) (<10') (PARTIAL)	EA	2	$	$
34	425- 5-	MANHOLES (ADJUST)	EA	6	$	$
35	430-175-118	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (18") (RCP)	LF	1,298	$	$
36	430-175-124	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (24") (RCP)	LF	847	$	$
37	430-175-130	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ROUND) (30") (RCP)	LF	329	$	$
38	430-175-215	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (12"x18") (ERCP)	LF	9	$	$
39	430-175-218	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (14"x23") (ERCP)	LF	84	$	$
40	430-175-236	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (29"x45") (ERCP)	LF	308	$	$
41	430-175-266	PIPE CULVERT OPTIONAL MATERIAL (S/CD) (ELLIP) (53"x83") (ERCP)	LF	95	$	$
42	430-984-125	MITERED END SECTION (18" RCP SD) (INCLUDES RIP RAP)	EA	1	$	$
43	430-984-133	MITERED END SECTION (30" RCP SD) (INCLUDES RIP RAP)	EA	1	$	$
44	430-984-638	MITERED END SECTION (OPT / ELLIP / ARCH) (29" X 45" ERCP) (INCLUDES RIP RAP)	EA	1	$	$
45	455-142	CROSSHOLE SONIC LOGGING	EA	2	$	$

Bidder:_____

Authorized
Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)
Bid "B"
9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST
(Bid "B" - Based on Completion Time of 280 calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
46	515- 2- 301	PEDESTRIAN / BICYCLE RAILING (ALUMINUM, 42" PICKET RAILING)	LF	1,269	$	$
47	520- 1- 10	CONCRETE CURB AND GUTTER (TYPE F)	LF	5,647	$	$
48	520- 2- 4	CONCRETE CURB (TYPE D)	LF	312	$	$
49	520- 5- 41	CONCRETE TRAFFIC SEPARATOR (TYPE IV, 4' WIDE)	LF	796	$	$
50	522- 1-	CONCRETE SIDEWALK, 4" THICK	SY	3,040	$	$
51	522- 2-	CONCRETE SIDEWALK, 6" THICK (DRIVEWAYS)	SY	704	$	$
52	550- 10- 220	FENCE (TYPE B) (5.1'- 6' HEIGHT)	LF	1,057	$	$
53	550- 60- 224	FENCE GATES (TYPE B) (DOUBLE) (20' OPENING)	EA	2	$	$
54	555- 1- 1	DIRECTIONAL BORE (< 6")	LF	96	$	$
55	555- 1- 2	DIRECTIONAL BORE (6" to <12")	LF	325	$	$
56	570- 1- 2	PERFORMANCE TURF, SOD	SY	10,470	$	$
57	604- 3- 2	TIMING IMPLEMENTATION, CONTROLLER & COORDINATION UNIT	PI	1	$	$
58	630- 1- 11	CONDUIT, SIGNAL (F&I) (ABOVE GROUND)	LF	36	$	$
59	630- 1- 12	CONDUIT, SIGNAL (F&I) (UNDERGROUND)	LF	3,793	$	$
60	632- 7- 1	CABLE, SIGNAL (F&I)	PI	1	$	$
61	634- 5- 1	FIBERGLASS INSULATOR (F&I)	LF	100	$	$
62	635- 1- 11	PULL AND JUNCTION BOXES (F&I) (PULL BOX)	EA	27	$	$
63	639- 1- 22	SIGNALS, ELEC POWER SERV (UNDERGROUND) (PURCHASED BY CONTRACTOR)	AS	1	$	$
64	639- 2- 1	SIGNALS, ELECTRICAL SERVICE WIRE (3 WIRE) (F&I)	LF	69	$	$
65	649- 31-202	MAST ARM ASSEM (F&I)(WS 130) (STEEL) (SINGLE ARM) (46') (BLACK) (W/O LUM)	EA	1	$	$
66	649- 31-204	MAST ARM ASSEM (F&I) (WS 130) (STEEL) (SINGLE ARM) (70.5') (BLACK) (W/O LUM)	EA	1	$	$
67	649- 31-208	MAST ARM ASSEM (F&I) (WS 130) (STEEL) (SINGLE ARM) (60') (BLACK) (W/ LUM)	EA	2	$	$

Bidder:_____

Authorized
Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid "B"

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "B" - Based on Completion Time of **280** calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
68	650- 51-311	TRAFFIC SIGNAL (F&I) (3 SECT.,1-WAY,STANDARD) (LED)	AS	12	$	$
69	653-191-	PEDESTRIAN SIGNALS (F&I) (COUNTDOWN, 1-WAY)	AS	8	$	$
70	659-107-	SIGNAL HEAD AUXILIARIES (F&I) (ALUMINUM PEDESTAL)	EA	8	$	$
71	663- 74- 15	VEHICLE DETECTOR ASSEMBLES (F&I) (VIDEO)	EA	5	$	$
72	665- 11-	PED DETECTOR (F&I) (POLE OR CABINET MOUNTED DETECTOR STATION & SIGN)	EA	1	$	$
73	665- 13-	PED DETECTOR (F&I)(DETECTOR WITH SIGN ONLY)	EA	7	$	$
74	670- 5-310	ACTUATED SOLID ST. CONTROLLER AS (NEMA)	AS	1	$	$
75	690- 10-	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA	10	$	$
76	690- 20-	REMOVE PEDESTRIAN SIGNAL ASSEMBLY	EA	4	$	$
77	690- 31-	SIGNAL PEDESTAL REMOVE	EA	2	$	$
78	690- 34- 2	POLE REMOVAL (DEEP) (BOLT ON ATTACHMENT)	EA	4	$	$
79	690- 50-	REMOVE CONTROLLER ASSEMBLY	EA	1	$	$
80	690- 80-	REMOVE SPAN WIRE ASSEMBLY	EA	4	$	$
81	690- 90-	REMOVE CABLING AND CONDUIT	PI	1	$	$
82	690-100-	REMOVAL MISCELLANEOUS SIGNAL EQUIPMENT	PI	1	$	$
83	699- 1- 1	SIGN, INTERNALLY ILLUMINATED (F&I) (STREET NAME)	EA	4	$	$
84	700- 20- 11	SIGN SINGLE POST (<12 SF)	AS	20	$	$
85	700- 20- 40	SIGN EXISTING (RELOCATE, SINGLE POST)	AS	5	$	$
86	700- 20- 60	SIGN EXISTING (REMOVE, SINGLE POST)	AS	8	$	$
87	700- 48- 18	SIGN PANEL (F&I) (15 OR LESS SF)	EA	10	$	$
88	706- 3-	RETRO-REFLECTIVE PAVEMENT MARKERS	EA	425	$	$
89	710- 11- 290	REFLECTIVE PAINT (ISLAND NOSE) (YELLOW)	SF	38	$	$
90	711- 11- 111	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE)(6")	NM	1.205	$	$

Bidder:_____

Authorized Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)
Bid "B"
9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST
(Bid "B" - Based on Completion Time of **280** calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
91	711- 11-123	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE)(12")	LF	1,352	$	$
92	711- 11-125	SOLID TRAFFIC STRIPE, THERMOPLASTIC (WHITE)(24")	LF	293	$	$
93	711- 11-131	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (10'-30' SKIP)	GM	0.924	$	$
94	711- 11-151	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (2'-4' SKIP)	LF	553	$	$
95	711- 11-160	PAVEMENT MESSAGES, THERMOPLASTIC (WHITE)	EA	16	$	$
96	711- 11-170	DIRECTIONAL ARROWS, THERMOPLASTIC (WHITE)	EA	44	$	$
97	711- 11-211	SOLID TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (6")	NM	1.012	$	$
98	711- 11-224	SOLID TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (18")	LF	42	$	$
99	711- 11-231	SKIP TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (6") (10'-30' SKIP)	GM	0.441	$	$
100	715- 5- 11	LUMINAIRE & BRACKET ARM	EA	2	$	$
101	780- 1- 12	ITS ELECTRICAL POWER, F&I, SERVICE WIRE	LF	36	$	$
102	783- 4-112	ITS CONDUIT, F&I, UNDERGROUND	LF	12	$	$
103	783- 7- 1	ITS PULL & JUNCTION BOX, F&I	EA	1	$	$
104	SPECIAL - 01	ALUMINUM SHEET PILE	LF	206	$	$
		DISCRETIONARY WORK	LS	1		**$100,000.00**
		ROADWAY SUBTOTAL				$
		FORCEMAIN				
105	1050- 11-222	UTILITY PIPE (F& I) (Sewer) (4" PVC)	LF	1,280	$	$
106	1080-11-204	VALVE ASSEMBLY (F&I) (CAST IRON) (GATE) (150PSI) (4") (FM)	EA	1	$	$
107	SPECIAL -06	CONNECTION TO EXISTING SYSTEM	EA	2	$	$
		DISCRETIONARY WORK	LS	1		**$6,000.00**
		FORCEMAIN SUBTOTAL				$

Bidder:_____

Authorized
Signature:_____

SECTION 00300 - BID FORM

(Submit in Triplicate)

Bid "B"

9TH STREET EAST / 53RD AVENUE EAST TO 57TH AVENUE EAST

(Bid "B" - Based on Completion Time of **280** calendar days)

ITEM #	FDOT ITEM	DESCRIPTION	U/M	QTY.	BID PRICE PER UNIT ($)	TOTAL BID PRICE ($)
		WATERMAIN				
108	1050- 11-223	UTILITY PIPE (F & I) (Water) (6" PVC)	LF	1,342	$	$
109	1050- 11-423	UTILITY PIPE (F & I) (Water) (6" DI)	LF	170	$	$
110	1080-11-304	VALVE ASSEMBLY (F&I) (CAST IRON) (GATE) (150PSI) (6") (WM)	EA	3	$	$
111	1080-14	UTILITY FIXTURES RELOCATE (WATER METERS)	EA	2	$	$
112	1080-15	UTILITY FIXTURES (ADJUST)	EA	5	$	$
113	1644-116- 08	FIRE HYDRANT, (F&I) (TRAFFIC) (TWO HOSE, ONE PUMPER) (6")	EA	3	$	$
114	SPECIAL-02	6" BACKFLOW PREVENTER (RELOCATE)	EA	1	$	$
115	SPECIAL-03	2" WATER METER/BACKFLOW PREVENTER (RELOCATE)	EA	2	$	$
116	SPECIAL-04	CONNECTION TO EXISTING SYSTEM	EA	2	$	$
117	SPECIAL-05	CUT & CAP EXISTING WATER MAIN	EA	1	$	$
		DISCRETIONARY WORK	LS	1		**$15,000.00**
		WATERMAIN SUBTOTAL				$
		BID TOTAL - BID "B" Based on a Completion Time of 280 calendar days				**$**

Bidders Note: (GM = Gross Mile 1/1000 of a mile), (NM = Net Mile 1/1000 of a mile) Reference 2012 Edition Basis of Estimates

Bidder:_____

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. #12-1881-DS**

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 1881.650 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 _____, 2012.
(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. (Include additional sheets if necessary.)

THIS QUESTIONNAIRE MUST BE COMPLETED AND SUBMITTED WITH YOUR BID/QUOTE.

1. LICENSE #: _____

   License Issued to _____

   DATE LICENSE RECEIVED: MM/DD/YR_____

   COMPANY'S NAME: _____

   _____

   CO. PHYSICAL ADDRESS

   _____

   CITY

   _____STATE of INCORPORATION, (IF APPLICABLE) _____ (ZIP CODE)

   (_____) _____TELEPHONE NUMBER: (____) _____FAX

   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 Certified General Contractors License**

   _____ **Years holding an Underground Utility Contractors License**

   _____ **Years holding an FDOT Certificate of Qualification.**

   _____ **Years experience performing this type of project.**
   (Attach a list of projects where this specific type of work was performed)

   BIDDER: _____

SECTION 00430

CONTRACTOR'S QUESTIONNAIRE

(Submit in Triplicate)

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: _____

SECTION 00430

CONTRACTOR'S QUESTIONNAIRE

(Submit in Triplicate)

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)

_____

_____

_____

BIDDER: _____

SECTION 00430
CONTRACTOR'S QUESTIONNAIRE
(Submit in Triplicate)

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

_____

_____

_____

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

_____

_____

_____

16. 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 CODE

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 Director, 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 Director. 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 _____

2012 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 **(insert Contractor name)**, hereinafter referred to as the "CONTRACTOR," duly authorized to transact business in the state of Florida, with offices located at **(insert Contractor address)**.

Article 1. WORK

CONTRACTOR shall furnish all labor, materials, supplies, and other items required to complete the Work for IFB No. **12-1881-DS 9th Street East / 53rd Avenue East /57th Avenue East** 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 **(IFB#12-1881-DS 9th Street East / 53rd Avenue East /57th Avenue East),** subject to additions and deductions as provided therein, the sum of (**Insert award amount, including discretionary $000000.00**) for Bid "**A or B**" based on a Completion Time of (**insert days**) 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 ____ 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 $_____ per calendar day for each day beyond ____ 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; Public Works Department, is responsible as the COUNTY and **Mr. John Howle P.E., Vice President of Engineering for CivilSurv Design Group, Inc**. hereinafter referred to 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: Ms. Eyra Cash, Project Engineer II, Public Works Department and to the Engineer of Record, CivilSurv Design Group Inc.. All invoicing will be addressed to the attention of Ms. Eyra Cash, Project Engineer II, (address noted below) with invoice copies sent to Mr. John E. Howle, P.E.

County of Manatee
Public Works Department
Project Management Division
Ms. Eyra Cash, P.E.
Project Engineer II
IFB#12-1881-DS
1022 26th Avenue East
Bradenton, FL 34208
Phone (941) 708-7450, Ext. 7344

CivilSurv Design Group Inc.

Mr. John E. Howle, P.E.
Engineer of Record
IFB#12-1881-DS
2525 Drane Field Road, Suite 7
Lakeland, Florida 33811
Phone (863) 646-4771

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 #12-1881-DS**)

6.2 Performance and/or other Bonds 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 #12-1881-DS

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: _____

SECTION 00700
GENERAL CONDITIONS

ARTICLE I - 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 the 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 Purchasing Code of Law, 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 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 qualified, responsible and responsive bidder to whom an award is made.

Supplier - A manufacturer, fabricator, supplier, distributor, materialman 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 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.

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 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 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, indirect and 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 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 Law 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.

END OF SECTION

LABEL TO AFFIX TO OUTSIDE OF SEALED BID PACKAGE

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 where requested.

LABEL TO AFFIX TO OUTSIDE OF SEALED BID PACKAGE

SEALED BID - DO NOT OPEN

CONTRACTOR: _____
SEALED BID NO: 12-1881-DS
BID TITLE: 9TH STREET EAST /53RD AVENUE EAST /57TH AVENUE EAST
DUE DATE/TIME: December 21, 2012 @ 2:00 PM

MANATEE COUNTY GOVERMENT
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. 12-1881-DS with the County for the project titled _____, 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. 12-1881-DS, between Principal and County for construction of

_____, 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: _____

SPECIAL PROVISIONS

9TH STREET EAST
57TH AVENUE EAST TO 53RD AVENUE EAST

MANATEE COUNTY PROJECT NO. 6040460

JULY 23, 2012

Signature and Seal: _____
John E. Howle, P.E.

Date: 9/19/12

Page(s): 1-23

SPECIAL PROVISIONS

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SPECIAL PROVISIONS

GENERAL

This Section amends, enhances or otherwise revises the General Conditions and other provisions of the Contract Documents.

STANDARD SPECIFICATIONS

The standard Specifications to be used for this work shall be the below sections of Division I and Division II and III the Florida Department of Transportation (FDOT) *Standard Specifications for Road and Bridge Construction*, 2010 Edition and all Supplemental Specifications thereto, hereinafter referred to as the *Standard Specifications*, for roadway construction, except as amended under this Contract:

Applicable Division I Sections
Section 1 – Department is either the Florida Department of Transportation or Manatee County as applicable
Section 4 – Paragraphs 4-1 through 4.3.3
Paragraphs 4-3.6 through 4-3.8
Paragraphs 4-4 through 4-6
Section 5
Section 6
Section 7 – Paragraphs 7-1 through 7-1.7
Paragraphs 7-2 through 7-7
Paragraphs 7-9 through 7-24
Section 8
Section 9 – Paragraphs 9-1 through 9-2.1
Paragraphs 9-2.11 through 9-2.1.2 (bituminous & fuel adjustment are not a included in this contract)
Paragraphs 9-3 through 9-8

The Contractor's work for utility systems shall follow the Manatee County Public Works Utility Standards and Specifications (dated May 2011) for the water main and sanitary sewer work.

These specifications cover the usual construction requirements for work specified by the County Public Works Department; however, in the event it is determined that the specific work to be done is of such a nature that the method of construction, type and/or kind of material is not defined by the *Standard Specifications*, such work shall be performed in accordance with the Special Provisions.

The apparent silence of the Specifications as to any detail or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used. Interpretation of these specifications shall be made upon that basis.

NO SEPARATE PAYMENT FOR SPECIAL PROVISIONS

No separate payment will be made for the Contractor to execute Special Provisions. All expenses borne by the Contractor shall be included in the individual unit prices for the particular pay item.

MATERIALS

a. **Delivery Tickets**: It will be necessary to submit a copy of all delivery tickets for materials used on the project, regardless of the basis of payment.

b. **Job Mix Formula for Asphaltic Concrete**: Attention is directed to the requirement that job mix formulas for asphaltic concrete, of the type specified, be submitted at least 14 days before plant operations begin. The submitted formula should be derived, or approved, by the laboratory approved by the Owner to make test on the Project. Costs for such job mix formulation will be paid by the Contractor directly to the assigned laboratory.

c. **Job Mix Formula for Portland Cement Concrete**: Attention is directed to the requirement that job mix design formulas for all Portland Cement Concrete, of the type specified, be submitted at least 14 days prior to use on the project. The submitted formulas shall be derived or approved by the Owner and/or its agents. All concrete mix designs shall meet FDOT Concrete Class mix guidelines, except as follows: when approved, in writing by the Engineer, an Alternate Class I Concrete mix design formula, for concrete curb and gutter to be placed by automated curb machines, may show, as a substitution for #57 aggregate, an amount of #89 aggregate not to exceed 33 percent, by weight, of the #57 aggregate.

LABORATORY TESTING

Manatee County will contract with a geotechnical firm to perform density testing and asphalt testing for the project. Testing for the Work shall be performed at no expense to the Contractor. However, any test that fails or is not performed in proper sequence of construction, as a result of the Contractor's action will, in turn, be back-charged to the Contractor, including the cost of all re-testing due to defective materials or construction.

The samples and tests used for determining the quality and acceptability of the materials and workmanship, which have been or are to be incorporated in the Work, shall conform to the requirements of the State of Florida Department of Transportation Materials Sampling, Testing and Reporting Guide, latest edition. Testing shall also be in accordance with the applicable portions of Section 6 of the *Standard Specifications* and these specifications.

MEASUREMENT AND PAYMENT

a. All work completed under the terms of this contract shall be measured according to United States Standard Measures.

b. All measurements shall be taken horizontally or vertically unless specifically provided otherwise.

c. No payment will be made for construction over a greater area than authorized, nor for material moved from outside of stakes and data shown on the plans, except when such work is performed upon instructions of the Owner.

d. The Contractor shall accept compensation provided under the terms of this contract as full payment for furnishing all materials and for performing all work contemplated and embraced under this contract. Such compensation shall also be for any and all loss or damage arising out of the nature of the work or from the action of the elements, or from any unforeseen difficulties or obstructions encountered during the contract period until final acceptance by the Owner.

e. Whenever any change, or combination of changes, on the plans results in an increase or decrease in the original contract quantities, and the work added or decreased/eliminated is of the same general character as that called for on the plans, the Contractor shall accept payment in full at the original contract unit prices for the actual quantity of work performed, with no allowance for any loss of anticipated profits.

f. It is the Contractor's responsibility to perform a detailed quantity take-off from the plans to determine actual quantities for ordering and delivery purposes. The Owner will not be responsible for quantities ordered in excess of those installed and constructed. The Contractor should be aware that some of the pay items may have contingency quantities. Payment shall be made only for final in-place quantities. No payment shall be made for contingency quantities or additional work unless otherwise directed and approved in writing by the Engineer.

g. Bid Schedule Completion - the blank spaces in the bid schedule shall be filled in correctly where indicated for each and every item for which a description is given, as the bidder must state the unit prices for which he proposes to do each part of the work contemplated, and the total price for all the parts included in any or all of the combinations of the work. In case of a discrepancy, the written words for "unit price", where stated, shall be considered as being the unit price. If the bid schedule does not use the written words for the unit price, then the numerically correct "total price", shall be considered as being the total price.

h. 6-inch Water Main – Payment for all work included in this Bid Item shall be made at the applicable Contract unit price bid per linear foot from plan point of beginning to plan point of ending at plan depth. Payment shall include full compensation for all labor, materials (including pipe, fittings, tracer wire and incidentals), equipment, excavation (including rock), thrust blocks and/or restrained joints, bedding, backfill, compaction, testing and disinfection, sampling points, connections to existing systems and complete restoration of site required to install pipe. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item.

i. 6-inch Water Main Removal and Disposal – Payment for the removal and disposal of 6-inch Water Main shall be included in Bid Item 110-1-1 Clearing and Grubbing. Payment shall include full compensation for all labor, materials, equipment, excavation (including rock), backfill, transportation, and disposal fees (if applicable) necessary to

remove and properly dispose of existing pipe. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item.

j. 4-inch Force Main – Payment for all work included in this Bid Item shall be made at the applicable Contract unit price bid per linear foot from plan point of beginning to plan point of ending at plan depth. Payment shall include full compensation for all labor, materials (including pipe, fittings, tracer wire and incidentals), equipment, excavation (including rock), thrust blocks and/or restrained joints, bedding, backfill, compaction, testing, connections to existing systems and complete restoration of site required to install pipe. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item.

k. 4-inch Force Main Removal and Disposal – Payment for the removal and disposal of 4-inch Force Main shall be included in Bid Item 110-1-1 Clearing and Grubbing. Payment shall include full compensation for all labor, materials, equipment, excavation (including rock), backfill, transportation and disposal fees (if applicable) necessary to remove and properly dispose of existing pipe. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item.

l. Valve Assembly 6" WM – Payment for all work included in this Bid Item shall be made at the applicable Contract unit price bid per unit completed and accepted. Payment shall include full compensation for all labor, materials, equipment, excavation (including rock), thrust blocks and/or restrained joints, bedding, backfill, compaction, testing and disinfection, connections to existing systems and complete restoration of site necessary to install valves and appurtenances. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item.

m. Valve Assembly 4" FM – Payment for all work included in this Bid Item shall be made at the applicable Contract unit price bid per unit completed and accepted. Payment shall include full compensation for all labor, materials, equipment, excavation (including rock), thrust blocks and/or restrained joints, bedding, backfill, compaction, testing, connections to existing systems and complete restoration of site necessary to install valves and appurtenances. Any related work not specifically listed, but required for satisfactory completion of work shall be considered to be included under this pay item

RESTORATION

Payment for restoration shall be covered under the applicable restoration Pay Items as specified in the bid documents. If a specific restoration Pay Item is not listed in the bid documents, the cost of such work shall be included in the applicable Pay Item unless otherwise provided under separate restoration section or pay quantity of these Specifications.

COOPERATION WITH OTHERS

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations, in order that these operations may progress in a

reasonable manner and that service rendered by these parties will not be interrupted. The Owner shall not be responsible for costs associated with delays, disruptions and remobilizations attributed to utility agency scheduling.

The relocation of the gas main by TECO/Peoples Gas may require special coordination with TECO/Peoples Gas with the possibility of the relocation of said gas main delaying some of the construction. Any cost associated with this delay is included in Pay Item 101-1 Mobilization.

PRIORITY

In any instance where there is an apparent conflict between these technical specifications special provisions and the corresponding terms of the "Standard Specifications", these special provisions followed by these technical specifications shall be controlling.

SITE INVESTIGATION

The Contractor acknowledges that he has satisfied himself as to the nature and location of the work; the general and local conditions, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric power, roads; and uncertainties of weather, water stages, tides or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during prosecution of the work.

The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered, insofar as this information presented by the drawings and Specifications made a part of this contract.

The Contractor shall carefully review and adhere to conditions and recommendations made in the project geotechnical report. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner. The Owner also assumes no responsibility for any understanding or representations made by its officers or agents during or prior to the execution of this Contract, unless (1) such understanding or interpretations are made in writing by the Engineer or are expressly stated in the Contract and (2) the Contract expressly provides that the responsibility therefore is assumed by the Owner.

PROJECT IDENTIFICATION SIGNS

The Contractor shall be responsible for furnishing, installing and maintaining four (4) County project identification signs and removal of same upon completion of the construction. Project identification sign shall be constructed and maintained at the project site as directed by the Owner. The Contractor shall erect, maintain and relocate the sign as directed for the duration of the Project.

The Contractor shall mount the sign using 4-inch pressure treated lumber or as approved by the Engineer, and other supports as required, at a location mutually agreed by the Engineer and the

Contractor. The identification signs shall not be less than 32 square feet in area. The Contractor shall coordinate with the Owner for the sign verbiage before fabrication. The signs shall be painted with graphic content to include:

- Title of Project
- Name of Owner
- Names and Titles of authorities, as directed by Owner
- Prime Contractor
- Construction Cost

The signs shall be erected prior to commencement of work at a lighted location of high public visibility, adjacent to the main entrance at each end of the project, as approved by the Engineer and Owner. The signs shall be a minimum of 8 feet wide and 4 feet high. The signs shall be constructed of high density ¾-inch exterior plywood without waves or buckles, mounted and braced with pressure treated lumber as necessary and maintained in a presentable condition for the duration of the project. Hardware shall be galvanized. The surface of the sign shall be of exterior softwood plywood with medium density overlay. Painting shall be constructed with materials to resist weathering and fading during the construction period. Experienced professionals shall perform painting. Graphic design and style shall be in accordance with the following:

- The signs will be placed in accordance with Manatee County Development Code, Ordinance 90-01, Section 724, Signs and Section 713, Visibility Triangles.

Payment for installing and maintaining the project identification signs shall be included as part of the lump sum quantity under Pay Item Number 1 (101-1) for Mobilization. The sign will remain the property of the Owner upon completion of the Project unless otherwise directed.

SPECIAL TERMS AND CONDITIONS

Soil Erosion and Siltation

The Contractor shall plan and control the Work to minimize all soil erosion and the siltation of drains and canals resulting from such erosion. At the pre-construction meeting, the Contractor shall present his proposed plan and schedule, which shall specifically indicate the proposed used of temporary erosion control features. The plan shall include:

- **Synthetic Bales** designed, furnished and installed by the Contractor in accordance with the plans, FDOT Section 104-6.4, and FDOT Erosion, Sediment Control Manual and Design Standard Index No. 102.

- **Floating Turbidity Barriers and Staked Turbidity Barriers** furnished and installed by the Contractor as shown on the plans and/or required by conditions of the permits and as outlined in FDOT Section 104-6.4.9.

Shop Drawings
The Contractor shall submit to the Engineer for approval, all working drawings and shop drawings with descriptive specifications and engineering calculations necessary for the successful completion of the Work. The working and shop drawings shall be certified by a Florida licensed Professional Engineer and state that the design is sufficient for the successful completion of the Work. The working drawings and shop drawings shall include, but not be limited to:

- Traffic Control Plan
- Erosion Control Plan
- Retaining Wall Systems
- Signalization and signage structures and components
- Drainage structures, attenuators, and other nonstructural items
- Design and structural details furnished by the Contractor in compliance with the Contract
- Temporary Works affecting public safety

Temporary Pavement
Temporary pavement shall consist of a minimum of Optional Base Group 04 and one (1) inch of Type S structural course over a firm, unyielding, well-compacted subgrade. The Contractor shall immediately repair all potholes that develop within the project limits and shall maintain a supply of cold mix on the project site to expedite these repairs. Payment for the temporary pavement and maintenance of this pavement shall be included under 102-1 Maintenance of Traffic.

DEWATERING, SHEETING AND BRACING

Payment for dewatering, sheeting and bracing shall be included in the applicable pay items.

Approval of Dewatering Plan:
At least 10 days prior to the commencement of any dewatering activity, the Contractor shall submit to the Project Manager for record purposes only, a detailed description of the proposed dewatering system. This plan shall include design computations, layout, type, and spacing of dewatering devices, number and size of pumps and other equipment, with a description of the installation and operating procedures.

The Contractor will be responsible for preparing a dewatering plan and obtaining a dewatering permit, as applicable, from the Southwest Florida Water Management District.

MAINTENANCE OF TRAFFIC

The Contractor shall provide access to businesses and local residents at all times. Business Entrance signs per FDOT Index 17355 (MOT-11-06) shall be placed at all business entrance points and maintained during all phases of construction. Payment for these items shall be included under the pay item for Maintenance of Traffic.

TRAFFIC CONTROL PLAN

A Traffic Control Plan is included in the construction drawings. If the Contractor elects to deviate from this plan, the Contractor shall prepare a Traffic Control Plan and submit it to the Engineer and the Project Manager for review prior to implementation. It must comply with all FDOT safety criteria, FDOT Design Standards 600 Series Indexes, FHWA and MUTCD

standards, and allow for traffic to operate in daytime or nighttime. All existing Manatee County signs that conflict with construction operation shall be removed, stockpiled and relocated by the Contractor. Sign removal shall be only as directed by the Engineer. The Traffic Control Plan will require the seal of a licensed professional engineer with a current FDOT Advanced Work Zone certification.

No road closures will be allowed without approval from the Engineer. Prior to any roadway closure a minimum of two weeks' notice must be given to all affected agencies (Fire, Emergency Medical, Sheriff's Department, FHP, etc.), local residents and Manatee County.

MAINTENANCE OF STORM DRAINAGE SYSTEM

The Contractor shall be responsible at all times to maintain the operation of existing stormwater facilities, or, when existing stormwater facilities are removed, to provide equivalent capacity alternate forms of stormwater removal adequate to prevent upstream flooding in excess of existing conditions. This responsibility shall include the installation of temporary connections, bypass pumping, or other temporary means necessary until the new drainage system is fully operational. Payment for these items shall be included under the applicable pay item.

SIDEWALKS TO REMAIN OPEN

Existing sidewalks and proposed sidewalks completed during construction shall remain open at all times unless approved otherwise by the Engineer. Temporary sidewalk shall be constructed as shown in the plans or required to maintain pedestrian movement. Payment for these items shall be included under the pay item for Maintenance of Traffic.

DUST CONTROL

The Contractor shall control dust resulting from construction operations at all times. The locations and frequencies of applications shall be as directed by the Engineer. Payment for Dust Control shall be made under the pay item for Mobilization.

UNDERGROUND UTILITY LOCATIONS

The Contractor shall field verify by means of subsurface locating or other approved method all existing utilities to remain and conditions as may be required for the work area. This shall include all areas of potential conflicts with proposed storm, sanitary, force main and water main. The Contractor shall locate all existing utilities to remain at potential conflict locations prior to construction activities and before ordering any proposed structures. The Contractor shall contact and coordinate with "Sunshine" as well the individual utilities prior to and during construction for utility locations, relocation and assistance while installing in potential conflict areas. All utility coordination and relocations shall be factored into the Contractor's construction schedule at no additional cost to the Owner. The cost of all labor, materials and incidentals required for the performance of any survey and utility location work shall be included under the pay item for Mobilization. A Florida registered land surveyor shall perform all survey work.

UTILITY COORDINATION

The Contractor shall clear and grub and stake the right-of-way clearly and give the utility owners two weeks' notice prior to completion of this work.

The Contractor shall be responsible for coordination of the work with all affected utility owners. The Contractor must take into consideration the required utility adjustments and relocations in development of his schedule for completing the work including construction of temporary work to allow phased construction of the permanent facilities.

The Contractor shall coordinate and schedule utility relocations and/or adjustments with the utility owners along the project in order to avoid delays. The work includes remobilization if required after utility relocation is complete. The intent is to coordinate utility construction activities so the project construction continues and is not stopped or delayed at any time due to utility work being done. Once Notice to Proceed is issued, the Contractor shall contact the affected utilities to discuss the Contractor's anticipated means and methods so temporary and permanent relocation plans can be implemented as needed to meet OSHA safety requirements.

The Contractor shall hold a utility owners meeting every two weeks at 1022 26th Avenue East, Bradenton, Florida until utilities are cleared. The meeting shall review current and upcoming activities for the project. Written meeting minutes will be prepared by the Contractor and distributed to the meeting participants within 7 calendar days of the meeting.

Payment for Utility Coordination shall be included under Mobilization.

UTILITY CONFLICTS

It shall be the Contractor's responsibility to avoid conflicts with other utilities. The Owner will not be responsible for additional costs incurred by the Contractor for incorrect installations, relocations and breaks due to service conflicts.

DAILY CLEAN-UP REQUIREMENTS

The Contractor shall clean up the job site at the end of each workday. Clean up will include the elimination of rubble and waste material on public and private property. Driveways shall remain accessible by residents. Each Friday, the Contractor shall prepare the road surface and barricades in an acceptable manner for weekend traffic use.

MAINTENANCE AND RESTORATION OF JOB SITE

The Contractor shall conduct his operations in such a manner as will result in a minimum of inconvenience to occupants of adjacent homes and business establishments and shall provide temporary access as directed or as may be required by the Project Manager. All final restoration must be performed to an equal or better condition than that which existed prior to construction.

Good housekeeping on this project is extremely important and the Contractor will be responsible for keeping the construction site neat and clean, with debris being removed daily as the work progresses or as otherwise directed by the Project Manager. Good housekeeping at the job site shall include: Removing all tools and temporary structures, dirt, rubbish, etc.; hauling all excess dirt, rock, etc., from excavations to a dump provided by the Contractor; and all clean up shall be accomplished to the satisfaction of the Project Manager. Dust will be controlled daily as may be required. Immediately after construction completion in an area or part thereof (including restoration), barricades, construction equipment and surplus and discarded materials shall be removed by the Contractor.

In the event that the timely clean up and restoration of the job site is not accomplished to the satisfaction of the Project Manager, the Project Manager shall make arrangements to affect the necessary clean up by others. The Contractor shall be charged for these costs through deductions in payment due the contractor. If such action becomes necessary on the part of and in the opinion of the Project Manager, the Owner shall not be responsible for the inadvertent removal from the work site of materials which the Contractor would not normally have disposed of had he affected the required clean up.

NOTICE AND SERVICE THEREOF

All notices, which shall include demands, instructions, requests, approvals, and claims shall be in writing. Any notice to or demand upon the Contractor shall be sufficiently given if delivered to the office of the Contractor specified in the bid (or to such other office as the Contractor may, from time to time, designate to the Owner in writing), or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered, with charges prepaid, sent via fax transmission, or to any telegraph company for transmission, in each case addressed to such office. Requests or clarifications may be submitted via email however any document requiring a manager's or above signature shall be on official stationary or documents and shall be submitted via United States mail or hand delivered.

All notices required to be hand delivered to the Owner, unless otherwise specified in writing to the Contractor, shall be delivered to the Project Manager, and any notice to or demand upon the Owner shall be sufficiently given as delivered to the office of the Project Manager, or if deposited in the United States mail in a sealed, postage prepaid envelope, sent via fax transmission, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to said Project Manager or to such other representative of the Owner or to such other address as the Owner may subsequently specify in writing to the Contractor for such purposes.

Any such notice or demand shall be deemed to have been given or made as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post or in the case of a fax transmission or telegram at the time of actual receipt, as the case may be.

REQUIREMENTS FOR CONTROL OF THE WORK

Prior to the start of the Work described in this contract, a pre-construction conference may be held by the Project Manager to be attended by the Contractor and representatives of the various utilities and others as required, for the purpose of establishing a schedule of operations which will coordinate the work to be done under this contract with all related work to be done by others within the limits of the project.

All items of work in this contract shall be coordinated so that progress of each related item will be continuous from week to week. The progress of the work will be reviewed by the Project Manager at the end of each week, and if the progress of any item of work during that week is found to be unsatisfactory, the Contractor shall be required to adjust the rate of progress on that item or other items as directed by the Project Manager without additional compensation. The Contractor will continuously control the work until completed.

PROJECT SCHEDULE

The Contractor shall submit a detailed construction bar chart schedule within 15 days of the notification of award or its intent for the County to review. The submittal shall meet the following requirements:

- Schedule will be submitted on 11-inch by 17-inch paper.
- The time scale (horizontal) shall be in weeks. The activities shall be listed on the left hand side (vertical).
- Activities shall show most Work activities. The listing from top to bottom shall be in a logical sequence of how the Work will be accomplished. Space shall be provided between activities or within bars to allow for marking of actual progress.

A copy of the schedule, clearly showing progress made, shall be submitted on a monthly basis during the progress of the work. Review or acceptance will neither impose on the County responsibility for the progress or scheduling of the Work, nor relieve the Contractor from full responsibility therefore.

The Contractor shall provide a revised Work schedule if, at any time, the County considers the completion date to be in jeopardy because of "activities behind schedule". An activity that cannot be completed by its original or latest completion date shall be deemed to be behind schedule. The revised Work schedule is designed to show how the Contractor intends to accomplish the Work to meet the contractual completion date. The form and method employed by the Contractor shall be the same as for the original Work schedule. The cost to prepare and revise the schedule is considered incidental to the Work.

USE OF PRIVATE PROPERTY

All construction activities required to complete this project in accordance with the Contract Documents shall be confined to public right-of-way, easements of record or temporary construction easements, unless the Contractor makes specific arrangements with private property owners for his use of their property. Written authorization from the granting property owner shall be placed on file with the Project Manager prior to utilization of said private properties. The Owner assumes no responsibility for damage to private property in such instances. The Contractor is responsible for protection of private property abutting all work areas on this project. Adequate equipment storage and material storage shall also be accomplished outside the Owner's right-of-way. Pipe and other materials shall not be strung out along the right-of-way, but will be delivered in quantities adequate for one day's installation. The Owner will coordinate with the Contractor to identify possible storage sites.

Areas utilized as a staging/stockpiling area for construction materials and equipment shall be restored by the Contractor to a condition acceptable to the County prior to final payment. An acceptable condition shall include removal of all construction materials and equipment, removal of any soil contaminants caused by the Contractor, mulching, seeding or other acceptable methods required to ensure reasonable soil stability and resistance to erosion. This rehabilitative work shall also be included in the pay item for Clearing and Grubbing.

CONSTRUCTION PHOTOGRAPHY

General

The Contractor shall employ a competent photographer to take construction record photographs and perform videotaping, including providing all labor, materials, equipment and incidentals necessary to obtain photographs and/or videotapes of all areas specified in the Contract specifications. The word "Photograph" includes standard photographic methods involving negatives, prints and slides and it also includes digital photographic methods involving computer technology items such as diskettes and CD-ROMs and DVDs.

Qualifications
A competent camera operator who is fully experienced and qualified with the specified equipment shall do all photography. For the videotape recording, the audio portion should be done by a person qualified and knowledgeable in the specifics of the Contract, who shall speak with clarify and diction so as to be easily understood.

Project Photographs
Provide photographs of the entire work area prior to any construction for the purpose of records of conditions prior to construction. Photographs should be spaced at approximately 100-foot intervals. In addition, all special features shall be photographed prior to construction.

Provide three prints of each standard photograph to the Owner. In addition to the CD-ROM media, provide one print of each digital/digitized photograph to the Owner.

The Contractor shall pay all costs associated with the required photography and prints. Any parties requiring additional photography or prints will pay the photographer directly.

All project photographs shall be a single weight, color image. All finishes shall be smooth surface and glossy, and all prints shall be 8 inches by 10 inches.

Each print shall have clearly marked on the back the name of the project, the orientation of view, the date and time of exposure, name and address of photographer and the photographers numbered identification of exposure.

All project photographs shall be taken from locations to adequately illustrate conditions prior to construction, or conditions of construction and state of progress. The Contractor shall consult with the Owner at each period of photography for instructions concerning views required. The Contractor shall deliver prints in conformance with the above requirements to the Owner. No construction shall begin until pre-construction photographs are completed and submitted to the Owner.

Negatives
The Contractor shall require that photographer maintain negatives for a period of two years from date of Substantial Completion of the Project. Negatives shall be conveyed to Owner at the end of the two-year period. Photographer shall agree to furnish additional prints to Owner at commercial rates applicable at the time of purchase. Photographer shall also agree to participate as required in any litigation requiring the photographer as expert witness.

Videotape Recording
Videotaping may be used in lieu of construction photographs.
Videotaping shall be accomplished along all routes that are scheduled for construction. The taping shall, when viewed, depict an image with ¼ of the image being the roadway fronting of property and

¾ of the image being of the property. The taping shall be done so as to show the roadway and property in an oblique view (30 degrees). A complete view, in sufficient detail, of all driveways, with audio description of the exact location shall be provided.

The Engineering plans shall be used as a reference for stationing in the audio portion of the tapes for easy location identifications. If visible, house numbers shall be mentioned on the audio.

Two complete sets of videotapes shall be delivered to the Owner for the permanent and exclusive use of the Owner prior to the start of any construction on the project. All videotapes shall contain the name of the project, the date and time of the videotaping, the name and address of the photographer and any other identifying information required.

Payment for this item shall be included under the pay item for Mobilization.

POST-CONSTRUCTION STORM PIPE TESTING

The Contractor shall inspect and laser profile all newly constructed storm pipes on the project. The purpose is to assure the pipes are properly constructed and do not leak at the joints. Payment for this item shall be included under the pay item for Mobilization.

CONTRACTOR TO EXECUTE NPDES "NOTICE OF INTENT"

Prior to proceeding with construction, the Contractor shall prepare and submit a "Notice of Intent to Use Generic Permit for Stormwater Discharge from Construction Activities that Disturb One or More Acres of Land" to the Florida Department of Environmental Protection (FDEP). The Contractor shall monitor the site at all times and take appropriate action to prevent erosion including the use of BMPs. No pumping of ground or surface water shall be performed without approval from the Water Management District. Following completion of construction, Contractor shall prepare and submit a "Notice of Termination of Generic Permit Coverage" to FDEP. Payment for this item shall be included under the pay item for Mobilization.

WORKSITE TRAFFIC SUPERVISOR

a. The Contractor shall have a Worksite Traffic Supervisor who will be responsible for initiating, installing and maintaining all traffic control devices as described in Section 102 of the FDOT *Standard Specifications for Road and Bridge Construction* and in the Plans. The Worksite Traffic Supervisor shall have at least one year of experience directly related to work site traffic control in a supervisory or responsible capacity and shall be certified by the American Traffic Safety Services Association Worksite Traffic Supervisor Certification Program or an equal approved by FDOT. Approved alternate Worksite Traffic Supervisors may be used when necessary.

b. The Worksite Traffic Supervisor shall be available on a 24-hour per day basis and shall review the project on a day-to-day basis as well as being involved in all changes to traffic control. The Worksite Traffic Supervisor shall have access to all equipment and materials needed to maintain traffic control and handle traffic related situations. The Worksite Traffic Supervisor shall ensure that routine deficiencies are corrected within a 24-hour period.

c. The Worksite Traffic Supervisor shall be available on the site within 45 minutes after notification of an emergency situation, prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

d. Failure of the Worksite Traffic Supervisor to comply with the provisions of the Sub-article may be grounds for decertification or removal from the project or both. Failure to maintain a designated Worksite Traffic Supervisor or failure to comply with these provisions will result in temporary suspension of all activities except traffic and erosion control and such other activities deemed to be necessary for project maintenance.

e. Payment for Worksite Traffic Supervisor shall be included under the pay item for Maintenance of Traffic.

CONTRACTOR'S SUPERVISION

a. Prosecution of Work: The Contractor shall give the work the constant attention necessary to maintain the project schedule. He shall cooperate fully with the Owner and with other Contractors at work in the vicinity.

b. Contractor's Superintendent: The Contractor shall at all times have on the work site as his agent, a competent superintendent capable of thoroughly interpreting the plans and specifications and thoroughly experienced in the type of work being performed, who shall receive the instructions from the Owner or his authorized representatives. The superintendent shall have full authority to execute the orders or directions of the Owner and to supply promptly any materials, tools, equipment, labor and incidentals that may be required. Such superintendence shall be furnished regardless of the amount of work sublet. The Superintendent's sole responsibility shall be overseeing and scheduling the work and shall not operate equipment or have other duties which could distract him from overseeing the work.

c. The Contractor's superintendent shall speak and understand English, and at least one responsible person who speaks and understands English shall be on the project during all working hours.

d. Supervision for Emergencies: The Contractor shall have a responsible person available at or reasonably near the work site on a 24-hour basis, 7 days a week, in order that he may be contacted for emergencies and in cases where immediate action must be taken to maintain traffic or to handle any other problem that may arise. The Contractor's responsible person for supervision for emergencies shall speak and understand English. The Contractor shall submit, by certified mail, phone numbers and names of personnel designated to be contacted in cases of emergencies along with a description of the project location to the Florida Highway Patrol and all other local law enforcement agencies.

LIST OF EMERGENCY CONTACT NUMBERS & UTILITY SERVICE MAINTENANCE

The Contractor shall obtain and maintain a list of emergency contact phone numbers for all utilities during the course of the project. The Contractor shall maintain utility service during the project except for interruptions authorized by the utility owner. If interruptions are required, the Contractor shall notify the Owner 48 hours in advance.

EXISTING SIDEWALK

If the Contractor, in the process of performing his contract operations, breaks any of the existing sidewalk that is to remain in place, replacement of this sidewalk will be at the Contractor's expense.

PEDESTRIAN ACCESS

The Contractor shall provide access and make provisions to maintain school zones during construction. The Contractor is to facilitate pedestrian traffic whether for school or public transportation.

RECORD DRAWINGS AND PROJECT CERTIFICATION

The Owner and/or Engineer will furnish the Contractor copies of the bid plans to be used for the record drawings. A Florida Registered Surveyor shall perform a field survey and any differences between the plan elevations or dimensions shall be marked through and the as-built elevation or dimension legibly entered. All elevations and dimensions that are correct shall have a check mark placed beside it.

The Contractor shall keep a complete set of surveyed "As-built" records. These records shall show all items of Work and existing features of utilities revealed by excavation work. The records shall be kept in a professional manner, in a form that shall be approved by the County prior to the Work. These results shall be available at all times during construction for reference by the Engineer and shall be delivered to the Engineer upon completion of the Work. All completed "As-builts" must be certified by a Florida Licensed Surveyor or Engineer per Chapter 61 G 17-6, Florida Administrative Code, pursuant to Sec. 47207, Florida Statutes. At a minimum all Utility Record Drawings shall be in accordance with Manatee County Standards. The following information is required on the "Record Drawings":

A. Roadway centerline profile [100-foot maximum interval].
B. Roadway cross sections [100-foot maximum interval].
C. All underground piping with elevations and dimensions, changes to piping locations, horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements. Actual installed pipe material, class, etc. Dimensions at these locations shall indicate distance from the centerline of construction.
D. Elevations on all drainage control structures, verifying all plan dimensions.
E. Stormwater ponds with cross sections [25-foot maximum interval] (sufficient to calculate volumes).
F. Flow line elevations on all ditch breaks (vertical and horizontal).
G. Field changes of dimensions and details.
H. Details not on original contract drawings.
I. Equipment and piping relocations.
J. The locations of all headwalls, pipes and any other structures shall be located by station and offset.
K. Benchmarks and elevation datum shall be indicated.
L. Additional elevations or dimensions as required by the Engineer

Following completion of construction and prior to final payment, the Contractor shall submit a Certification by the Contractor and Manufacturer including test data that the materials (filter fabric, filter media, etc.) installed meet plan specifications and regulatory requirements.

Upon completion of the work, four (4) sets of draft "Record Drawings" shall be submitted to the Owner for review. Such drawings shall accurately show all approved field changes to the original Construction Drawings, including actual locations, dimensions and elevations and shall be subject to a field review in the presence of the Engineer or his designated representative. The drawings are to be prepared by competent personnel, neatly drafted and certified, signed and sealed by a Florida Registered Surveyor.

The Contractor shall incorporate any comments from the Owner and/or Engineer and shall submit two write-only CD-ROMs, one set of 24-inch by 36-inch record drawings, four sets of 24-inch by 36-inch certified prints, and four sets of 11-inch by 17-inch certified prints, all with the Surveyor's certification.

All Digital Drawings shall be identical to those submitted as hard copy. The Digital Drawing files shall be AutoCAD format (Release 2004 or later) and shall include all external reference drawings, text fonts, shape files and all other files necessary to make use of the drawings.

Three separate as-built drawing submittals will be required. (1) The Utility as-built is required immediately upon completion of the water main and sanitary sewer force main work on the project. These as-built drawings will be submitted to the Engineer to forward to the Florida Department of Environmental Protection as required for approval after they have been reviewed and accepted by the Project Manager as required for the contractor to put these lines into service. (2) The Stormwater as-built is required immediately upon completion of the storm sewer systems and storm water ponds on the project. These as-built drawings will be submitted to the Engineer to forward to the Southwest Florida Water Management District for approval after they have been reviewed and accepted by the Engineer. (3) The Roadway as-built is required upon completion of the entire project.

In addition, $25,000 or five percent (whichever is smaller) of the Contract price shall be retained until the Owner has approved the "Record Drawings". The Owner and/or Engineer will review and approve the "Record Drawings within 30 days unless additional information is required. No final payment shall be made until such time as the "Record Drawings" have been approved and accepted.

COMPLIANCE WITH PERMIT REQUIREMENTS

A Southwest Florida Water Management District, Department of Environmental Protection, and Florida Department of Transportation Permits required for this project have been obtained by the Owner. The Contractor shall comply with the stipulations of the Permits as stated therein.

The Contractor shall allow periodic inspection of the work by authorized representatives of the Department of Environmental Protection, the Southwest Florida Water Management District, and Florida Department of Transportation, as well as other duly authorized law enforcement officers of the State.

MATERIAL TESTING TABLE

ITEM	TEST	TEST IDENTIFICATION	TEST REQUIREMENTS VERTICAL	TEST FREQUENCY HORIZONTAL
UTILITY TRENCH BACKFILL	MAXIMUM DENSITY OPTIMUM MOISTURE	AASHTO T-180	N/A	PER SOIL CLASSIFICATION/ PER LABORATORY
	FIELD DENSITY	AASHTO T-180	PER PLANS	ONE PER 200 LF
SUBGRADE UNCLEAR NEW CURB	MAXIMUM DENSITY OPTIMUM MOISTURE	AASHTO T-180	N/A	PER SOIL CLASSIFICATION/ PER LABORATORY
	FIELD DENSITY	AASHTO T-180	PER PLANS	ONE PER 200 LF
LIMEROCK/ SHELL BASE	MAXIMUM DENSITY OPTIMUM MOISTURE	AASHTO T-180	N/A	PER SOIL CLASSIFICATION/ PER LABORATORY
	FIELD DENSITY	AASHTO T-180	PER PLANS	ONE PER 200 LF
SOIL CEMENT BASE	SOIL CEMENT PLACEMENT/ MONITORING DENSITIES THICKNESS DETERMINATIONS	AASHTO T-134 AND AASHTO T-135	PER PLANS	ONE PER 200 LF
CONCRETE	COMPRESSIVE STRENGTH (THREE CYLINDERS/TEST)	AASHTO T-23 AND AASHTO T-119	PER SPECS	Per Specs/Min. of One Set/Day FOR POURS BETWEEN 10 & 50 CY
	SLUMP, AIR CONTENT	AASHTO T-22 AND AASHTO T-180	PER SPECS	ADDITIONAL SET FOR EACH 50 CY DAILY OR 1 PER 50 CY MAX
ASPHALT	MATERIAL QUALITY GRADATION, STABILITY BITUMEN CONTENT	FLORIDA D.O.T.	PER SPECS	PER SPECS DAILY OR 1 PER 50 CY MAX
RECYCLED CONCRETE BASE	GRADATION DENSITIES THICKNESS DETERMINATIONS	AASHTO T-180	PER SPECS	PER SOIL CLASSIFICATION/ PER LABORATORY ONE PER 200 LF

DISCRETIONARY WORK

The Discretionary Work pay item shall cover the cost for various contingencies and contract amendments authorized by the Owner. Any amount of extra work and/or alterations to the proposed Work charged to the allowance shall be fully documented and authorized by the Owner before the start of the work. No payment shall be made for work completed without written authorization from the Owner.

WATER AND SEWER UTILITIES PAY ITEM DESCRIPTIONS

All water utilities work and materials shall conform to the latest edition of the Manatee County Utility Standards.

Pay Item No. 110-1-1
Clearing and Grubbing

The unit price for clearing and grubbing shall include the cost for utility pipe removal and disposal including all materials, transportation, labor, equipment, trenching, pipe removal and disposal, backfilling, backfill materials, disposal of unsuitable backfill material, tamping, testing, densities, dewatering, trench stabilization, clean-up, by-pass pumping (as required), restoration, and all work necessary to locate, remove and dispose of the pipe, fittings, thrust blocks, services and associated appurtenances.

Pay Item No. 1050-11-222
Utility Pipe (F & I) (PVC) (Sewer) (4")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of 4-inch pipe, all fittings, backfilling, backfill material, disposal of unsuitable backfill material, tamping, testing, densities, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work necessary to place the pipe into service, including locating of and connection to the existing force main.

Method of Measurement and Basis of Payment

Payment for furnishing and installing pipe shall be on a linear foot basis, measured through valves and fittings on the actual number of feet of pipe installed.

Pay Item No. 1050-11-223
Utility Pipe (F & I) (PVC) (Water) (6")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of 6-inch pipe, all fittings, restraint devices, anchoring, backfilling, backfill material, disposal of unsuitable backfill material, tamping, testing, chlorine for disinfection, disinfection, sampling points, densities, utility crossings, dewatering, trench stabilization, clean-up, by-pass pumping (as required), restoration and all work necessary to place the pipe into service, including locating of and connection to the existing water mains.

Method of Measurement and Basis of Payment

Payment for furnishing and installing pipe shall be on a linear foot basis, measured through valves and fittings on the actual number of feet of pipe installed.

Pay Item No. 1050-11-423
Utility Pipe (F & I) (DI) (Water) (6")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of 6-inch pipe, all fittings, restraint devices, anchoring, backfilling, backfill material,

disposal of unsuitable backfill material, tamping, testing, chlorine for disinfection, disinfection, sampling points, densities, utility crossings, dewatering, trench stabilization, clean-up, by-pass pumping (as required), restoration and all work necessary to place the pipe into service, including locating of and connection to the existing water mains.

Method of Measurement and Basis of Payment

Payment for furnishing and installing pipe shall be on a linear foot basis, measured through valves and fittings on the actual number of feet of pipe installed.

Pay Item No. 1080-11-204
Valve Assembly (4")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of valve assembly, including valve box, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, dewatering, trench stabilization, clean-up, restoration and all work and necessary hardware to install the valve assembly, valve box, and place it in service. The valve assembly and valve box shall be adjusted to match final grade.

Pay Item No. 1080-11-304
Valve Assembly (6")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of valve assembly, including valve box, fittings, restraints, chlorine for disinfection, disinfection, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, dewatering, trench stabilization, clean-up, restoration and all work and necessary hardware to install the valve assembly, valve box, and place it in service. The valve assembly and valve box shall be adjusted to match final grade.

Method of Measurement and Basis of Payment

Payment for furnishing and installing valve assembly shall be on per each basis, for the actual number of valve assemblies installed.

Pay Item No. 1080-14
Utility Fixture (Relocate) (Water Meters)

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work necessary to relocate meter boxes, including connecting the meter to the service line.

Method of Measurement and Basis of Payment

Payment for relocating meter boxes shall be on per each basis, on the actual number of meter boxes relocated.

Pay Item No. 1080-15
Utility Fixtures (Adjust)

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work necessary to adjust water meters and boxes, valve boxes, and manhole lids.

Method of Measurement and Basis of Payment

Payment for adjusting water meters and boxes, valve boxes, and manhole lids shall be on per each basis, on the actual number of water meters and boxes adjusted.

Pay Item No. 1644-116-08
Fire Hydrant, (F & I) (Traffic) (Two Hose, One Pumper) (6")

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, installation of the fire hydrant assemblies (all configurations), including valves, fittings, restraints, chlorine for disinfection, disinfection, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to install the fire hydrant assembly and place it in service, including the hydrant tee, valve, valve box, and all required restraining devices. Valve box shall be adjusted to match final grade.

Method of Measurement and Basis of Payment

Payment for furnishing and installing fire hydrants shall be on per each basis, on the actual number of fire hydrants installed.

Pay Item No. Special-02
6" Backflow Preventer (Relocate)

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, chlorine for disinfection, disinfection, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to relocate the 6 inch backflow preventer, valves, and all required restraining devices.

Method of Measurement and Basis of Payment

Payment for relocating 6" backflow preventer shall be on per each basis, on the actual number of backflow preventers relocated.

Pay Item No. Special-03
2" Water Meter/Backflow preventer (Relocate)

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, chlorine for disinfection, disinfection, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to relocate the 2" water meter assembly, backflow preventer, valve, and all required restraining devices.

Method of Measurement and Basis of Payment

Payment for relocating 2" water meter shall be on per each basis, on the actual number of 2" water meters relocated.

Pay Item No. Special-04
Connection to Existing System

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, chlorine for disinfection, disinfection, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to connect the proposed water to the existing water main or to connect the proposed sewer main to the existing sewer main or manhole including all required restraining devices.

Method of Measurement and Basis of Payment

Payment for connecting to existing system shall be on per each basis, on the actual number of connections.

Pay Item No. Special-05
Cut & Cap Existing Water Main

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, chlorine for disinfection, disinfection, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to disconnect an existing water main to be taken out of service from an existing water main to remain in service.

Method of Measurement and Basis of Payment

Payment for cut and cap existing water main shall be on per each basis, on the actual number of disconnections as noted in the plans.

Pay Item No. Special-06
Connection to Existing System

The unit price shall cover the cost for all materials, transportation, labor, equipment, trenching, fittings, restraints, backfilling, backfill material, disposal of unsuitable backfill materials, tamping, testing, densities, utility crossings, dewatering, trench stabilization, clean-up, restoration and all work and materials necessary to connect the proposed sewer force main to the existing sewer main or manhole including all required restraining devices.

Method of Measurement and Basis of Payment

Payment for connecting to existing system shall be on per each basis, on the actual number of connections.

RULE 14-86.004, F.A.C.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DRAINAGE CONNECTION PERMIT

850-040-06
ROADWAY DESIGN
10/08

Permittee Copy

To be completed by DOT

Drainage Connection Permit No. 2011-D-194-6 Date _____

Received By Valerie Everts Maintenance Unit 194

State Road No. 70 Work Program Project No. n/a

Section No. 13162 Construction Project No. _____

Milepost 1.260 Station _____

Instructions for Drainage Connection Permit

Pursuant to 14-86.004(6), F.A.C. "The Drainage Connection Permit form serves as the application. Once approved by the Department, the form and supporting documents become the Drainage Connection Permit."

The applicant shall submit four completed permit packages with original signatures. Each package shall include all required attachments. All required signed and sealed plans and supporting documentation shall be submitted on no larger than (11" X 17") multipurpose paper, unless larger plan sheets are requested by the reviewer. The package will include the following items. If an item does not apply to your project, indicate "Not Applicable" or "N/A."

Included	Part	Title	Completed by:	Special Instructions
✓	1	Permit Information Sheet	Applicant	
✓	2	Certification by a Licensed Professional	Licensed Professional	Signed and Sealed
✓	3	Certification	Applicant	Signature
N/A	4	Owner's Authorization of a Representative	Owner	Signature
✓	5	Affidavit of Ownership or Control and Statement of Contiguous Interest	Owner	Signature
	6	Permit General Conditions	FDOT	
	7	Permit Special Conditions	FDOT	
	8	As-Built Certification	Licensed Professional	Signed and Sealed – Submit within 15 working days of completion of construction
	Attachment	Legal Description		
✓	Attachment	Photographs of Existing Conditions		
✓	Attachment	Location Map		
✓	Attachment	Grading Plan	Licensed Professional	Signed and Sealed
✓	Attachment	Soil Borings		
✓	Attachment	Water Table / Percolation		
✓	Attachment	Calculations		
✓	Attachment	CD with Electronic Files of all Submittal Items		Scanned Images in pdf format

Note: Different Licensed Professionals may complete parts of the permit package. For example the Licensed Professional signing and sealing the as-built certification may be different from the Licensed Professional who signed and sealed the calculations for the permit package.

EXCEPTIONS: Activities that qualify for an Exception are listed in Rule 14-86, F.A.C. A permit application to the Department is NOT required. However, if you desire verification whether the work qualifies for an exception, send a completed copy of this permit package with its requested information to the applicable FDOT District Office.

PERMIT VOID UNLESS DOT OPERATIONS CENTER IS NOTIFIED 48 HRS IN ADVANCE OF STARTING WORK
PHONE 941-359-7300
VERIFICATION NO _____

CALL BEFORE YOU DIG
1-800-432-4770
IT'S THE LAW IN FLORIDA

Sod All Portions of Disturbed Right-Of-Way.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH PERMITTED MOT PLAN.

PART 1 – Permit Information Sheet

Select one: ☒ **Permit** ☐ **Exception**

Pursuant to 14-86.002(2), F.A.C. "Applicant means the owner of the adjacent property or the owner's authorized representative."

Applicant

Select one: ☒ Property Owner ☐ Owner's Representative (Complete Part 4)

Name: Sia Mollanazar, P.E.

Title and Company: Project Management Division Manager Manatee County Public Works

Address: 1022 26th Avenue East

City: Bradenton State: FL Zip: 34208

Telephone: (941) 708-7450 FAX: (941) 708-7549 Email: sia.mollanazar@mymanatee.org

Property Owner (If not applicant)

Name:

Title and Company:

Address:

City: State: Zip:

Telephone: FAX: Email:

Applicant's Licensed Professional

Name: Ivan U Zapata, P.E. Florida License Number: 72333

Title and Company: Project Manager, CivilSurv Design Group, Inc.

Address: 2525 Drane Field Road, Suite 7

City: Lakeland State: FL Zip: 33811

Telephone: (863) 646-4771 FAX: (863) 646-3378 Email: izapata@civilsurv.com

Project Information:

Project Name: 9th Street East - 4 Lane Between 57th Avenue East and 53rd Avenue East

Location: 53rd Avenue East (STREET) 70 (SR. NO.) (US HWY NO.) Bradenton (CITY)

Manatee (COUNTY) 13 (SECTION(S)) 35 (TOWNSHIP(S)) 17 (RANGE(S))

*Geographic Coordinates: Latitude (DMS.SSS): 27d26' 51.52" N Longitude (DMS.SSS): 82d33' 17.60" W

Horizontal Datum: (NAD 83 / 2007 Adj.)

* State Plane Coordinates: Northing 1132296.2970 Easting: 476201.9699

Projection Zone: ☐ Florida North ☐ Florida East ☒ Florida West

Coordinate shall be the center of the driveway intersection with FDOT R/W, or, if there is no driveway connection, near the center of the property line nearest the state highway.

**Check with the FDOT Office for requirement.*

Brief description of facility and proposed connection: 0.5 miles of 9th Street East is proposed to be widened from a two lane to a four lane.

Briefly describe why this activity requires a Drainage Connection Permit (Include where the stormwater will discharge to FDOT right of way):
The SE corner of 53rd Avenue E there is a curb inlet, which is proposed to be replaced with a manhole with 24-ft extension of 18-inch RCP to a proposed curb inlet located along the expanded radius. Construction Plans provided.

PART 2 – Certification by a Licensed Professional

In accordance with Rule 14-86, Florida Administrative Code (F.A.C.), I hereby certify that the following requirements are and/or will be met.

This project has been designed in compliance with all applicable water quality design standards as required by state governmental agencies.

14-86.004(3)(f) (F.A.C.): Certification by a Licensed Professional that the complete set of plans and computations complies with one of the following Rules Sections:

☒ 14-86.003(2)(a) (F.A.C.), or ☐ 14-86.003(2)(b) (F.A.C). (check one)

I further certify that a National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges associated with industrial activity from construction sites

☐ is required ☒ is not required. (check one)

I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment.

This certification shall remain valid for any subsequent revision or submittal of plans, computation or other project documents by me.

Name of Licensed Professional: Ivan U. Zapata

Florida License Number: 72333

Company Name (if applicable): CivilSurv Design group, Inc.

Certificate of Authorization Number (if applicable): 28988

Address: 2525 Drane Field Rd. Suite #7

City: Lakeland State: Fl Zip: 33811

Telephone: 863-646-4771 Fax: 863-646-3378 Email: izapata@civilsurv.com

Signature of Licensed Professional

5/25/11
Date

(Affix Seal)

PART 3 – Certification by Applicant

I hereby certify that the information in this submittal is complete and accurate to the best of my knowledge.

Applicant's Signature: _____ Date: _____

Name (Printed): Sia Mollanazar,P.E.

Title and Company: Project Management Division Manager, Manatee County Public Works

Address: 1022 26th Avenue East Bradenton, Florida 34208

Phone Number: (941) 708-7450 E-mail address: bruce.simington@mymanatee.org

PART 4 – Owner's Authorization of a Representative

I (we), the owner, _____, do hereby authorize the following person, or entity, as my representative:

Name (Printed): _____

Title and Company: _____

Address: _____

Phone Number: _____ E-mail address: _____

Part 5 – Affidavit of Property Ownership or Control and Statement of Contiguous Interest

I, Sia Mollanazar, P.E., certify that I own or lawfully control the following described property: 9th Street East

Does the property owner own or have any interests in any adjacent property?
☒ No ☐ Yes If yes, please describe. _____

Owner's Signature required for Parts 4 and/or 5

We will not begin on the drainage connection until I receive the Permit and I understand all the conditions of the Permit. When work begins on the connection, I am accepting all conditions listed in the Permit.

Name (Printed): Sia Mollanazar, P.E.

Address: 1022 26th Avenue East Bradenton, Florida 34208

Phone Number: (941) 708-7450

Signature: _____ Date: 5-27-14

PART 6 – Permit General Conditions

1. This permit is a license for permissive use only and does not convey any property rights either in real estate or material, or any exclusive privilege and it does not authorize any injury to private property or invasion of private rights, or any infringement of Federal, State or local laws, rules or regulations; nor does it obviate the necessity of obtaining any required state or local approvals.

2. The drainage connection as authorized herein shall be constructed and thereafter maintained in accordance with the documents attached hereto and incorporated by reference herein. All work performed in the Department's right of way shall be done in accordance with the most current Department standards, specifications and the permit provisions. Such construction shall be subject to the inspection and approval of the Department, and the Department may at any time make such inspections as it deems necessary to assure that the drainage connection is in compliance with this permit.

3. The entire expense of construction within the Department right of way, including replacement of existing pavement or other existing features, shall be borne by the permittee.

4. The permittee shall maintain that portion of the drainage connection authorized herein located on permittee's property in good condition. The Department shall maintain that portion of the drainage connection authorized herein located within its right of way.

5. If the drainage connection is not constructed, operated or maintained in accordance with this permit, the permit may be suspended or revoked. In this event modification or removal of any portion of the drainage connection from the Department's right of way shall be at the permittee's expense.

6. The Department reserves the right to modify or remove the drainage connection to prevent damage or in conjunction with road improvements.

7. It is understood and agreed that the rights and privileges herein set out are granted only to the extent of the Department's right, title, and interest in the land to be entered upon and used by the permittee, and the permittee will, at all times, assume all risk of and indemnify, defend and save harmless the Department from and against any and all loss, damage, cost or expense arising in any manner on account of the exercise or attempted exercises by said permittee of these rights and privileges, regardless of the respective degrees of fault of the parties.

8. Utilities, including gas lines, may exist within the right of way. Prior to beginning work the permittee shall contact Sunshine State One Call of Florida, Inc at 811 or 800-432-4770, who will notify all utility owners near the scheduled project. The utility owners have two (2) full business days to provide locations of their respective facilities. The permittee shall be solely responsible for any damage to or conflicts with gas lines, utilities and/or third persons.

9. The permittee shall notify the Department of Transportation Maintenance Office located at Sarasota Ops. Phone 941-359-2300 48 hours in advance of starting any work on the drainage connection authorized by this permit and also 24 hours prior to any work within the Department's right of way. Construction of any work on the right of way shall be completed within 365 days after such notification. If such construction is not completed within 365 days after such notification, the permittee shall notify the Department of the anticipated completion date.

10. This permit shall expire if construction on the drainage connection is not begun within one year from the date of approval and if construction on the drainage connection is not completed by (Date) 5-9-2013

11. A permittee may request an extension of the Drainage Connection Permit expiration date by filing a written request for a permit time extension. All requests for time extensions must be received by the Department 15 working days prior to the expiration date.

12. All the provisions of this permit shall be binding on any assignee or successor in interest of the permittee.

PART 7 – Permit Special Conditions – To be completed by FDOT

The above request has been reviewed and has been found to meet the regulations as prescribed in Rule 14-86, F.A.C., and is hereby approved, subject to the following special conditions:

Future design changes may nullify this recommendation and necessitate further reviews of your application.

Future design changes may nullify this recommendation and necessitate further reviews of your application.

Department of Transportation:

Signature Albert Rosenstein

Title ENGINEERING MANAGER Date 5-9-12

PART 8 – As-Built Certification

Within 15 working days of completion of construction, you must send this certification to the Department office in which you filed your DOT Drainage Permit.

1. STORM WATER FACILITY INFORMATION

Permit No.: _____

Source (Project) Name: _____

Source Location: Street _____

City: _____ County: _____

Source Owner: _____

Owner Address: _____

2. AS-BUILT CERTIFICATION

I hereby certify that this storm water facility has been built substantially in accordance with the certified design plans, and that any substantial deviations (noted below) will not prevent the facility from functioning in compliance with the requirements of Chapter 14-86 F.A.C. when properly maintained and operated. These determinations have been based upon on-site observation of construction, scheduled and conducted by me or by a project representative under my direct supervision.

Name of Licensed Professional: _____

Florida License Number: _____

Company Name (if applicable): _____

Certificate of Authorization Number (if applicable): _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____ Email: _____

_____
Signature of Licensed Professional

Signature page included in previous submittal w/ original signature

Substantial deviations from the approved plans and specifications (attac

_____

_____

_____

PERMIT VOID UNLESS DOT OPERATIONS OFFICE IS NOTIFIED 48 HRS IN ADVANCE OF STARTING WORK
PHONE 941-359-7300
VERIFICATION NO _____

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

DRIVEWAY CONNECTION PERMIT FOR ALL CATEGORIES

ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH PERMITTED M O T PLAN.

PART 1: PERMIT INFORMATION

APPLICATION NUMBER: 2011-A-194-12

Sod All Portions of Disturbed Right-Of-Way.

Permittee Copy

Permit Category: J - Government Access Classification: 6

Project: Intersection of SR 70 and 9th street east

Permittee: Manatee County

Section/Mile Post: 13162/ 1.260 State Road: 70

Section/Mile Post: _____ State Road: _____

PART 2: PERMITTEE INFORMATION

Permittee Name: Manatee County

Permittee Mailing Address: 1022 26 Avenue East

City, State, Zip: Bradenton, FL 34208

Telephone: 941-708-7400

CALL BEFORE YOU DIG 1-800-432-4770 IT'S THE LAW IN FLORIDA

Engineer/Consultant/or Project Manager: CivilSurv Design Group, Inc.

Engineer responsible for construction inspection: Ivan Zapata, P.E. (NAME) 72333 (P.E. #)

Mailing Address: 2525 Drane Field Road, Suite 7

City, State, Zip: Lakeland, FL 33811

Telephone: 863-646-4771 FAX, Mobile Phone, etc. 863-646-3378

PART 3: PERMIT APPROVAL

The above application has been reviewed and is hereby approved subject to all Provisions as attached.

Permit Number: 2011-A-194-12
Department of Transportation

Signature: Albert Rosenstein Title: ENGINEERING MANAGER

Department Representative's Printed Name: ALBERT ROSENSTEIN

Temporary Permit ○ YES ⊘ NO (If temporary, this permit is only valid for 6 months)

Special provisions attached ⊘ YES ○ NO

Date of Issuance: 5-9-12

If this is a normal (non-temporary) permit it authorizes construction for one year from the date of issuance. This can only be extended by the Department as specified in 14-96.007(6).

See following pages for General and Special Provisions

IF A LANE CLOSURE IS WITHIN THE PROJECT LIMITS, THE PERMITTEE MUST NOTIFY THE DEPARTMENT 7 DAYS PRIOR TO A LANE CLOSURE TO ALLOW THE DEPARTMENT TO INFORM THE MOTORING PUBLIC. IF NO LANE CLOSURE REQUIRED PLEASE CALL 48 HOURS IN ADVANCED. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

Lane closures and other work may be restricted by the FDOT due to heavy traffic and potential backups caused by this construction. Night work may be required.

PART 4: GENERAL PROVISIONS

1. Notify the Department of Transportation Maintenance Office at least 48 hours in advance of starting proposed work.

   Phone: 941-359-7300 , Attention: Valerie Everts

2. A copy of the approved permit must be displayed in a prominent location in the immediate vicinity of the connection construction.

3. Comply with Rule 14-96.008(1), F.A.C., Disruption of Traffic.

4. Comply with Rule 14-96.008(7), F.A.C., on Utility Notification Requirements.

5. All work performed in the Department's right of way shall be done in accordance with the most current Department standards, specifications and the permit provisions.

6. The permittee shall not commence use of the connection prior to a final inspection and acceptance by the Department.

7. Comply with Rule 14-96.003(3)(a), F.A.C., Cost of Construction.

8. If a Significant Change of the permittee's land use, as defined in Section 335.182, Florida Statutes, occurs, the Permittee must contact the Department.

9. Medians may be added and median openings may be changed by the Department as part of a Construction Project or Safety Project. The provision for a median might change the operation of the connection to be for right turns only.

10. All conditions in NOTICE OF INTENT WILL APPLY unless specifically changed by the Department.

11. All approved connection(s) and turning movements are subject to the Department's continuing authority to modify such connection(s) or turning movements in order to protect safety and traffic operations on the state highway or State Highway System.

12. **Transportation Control Features and Devices in the State Right of Way.** Transportation control features and devices in the Department's right of way, including, but not limited to, traffic signals, medians, median openings, or any other transportation control features or devices in the state right of way, are operational and safety characteristics of the State Highway and are not means of access. The Department may install, remove or modify any present or future transportation control feature or device in the state right of way to make changes to promote safety in the right of way or efficient traffic operations on the highway.

13. The Permittee for him/herself, his/her heirs, his/her assigns and successors in interest, binds and is bound and obligated to save and hold the State of Florida, and the Department, its agents and employees harmless from any and all damages, claims, expense, or injuries arising out of any act, neglect, or omission by the applicant, his/her heirs, assigns and successors in interest that may occur by reason of this facility design, construction, maintenance, or continuing existence of the connection facility,except that the applicant shall not be liable under this provision for damages arising from the sole negligence of the Department.

14. The Permittee shall be responsible for determining and notify all other users of the right of way.

15. Starting work on the State Right of Way means that I am accepting all conditions on the Permit.

PART 5: SPECIAL PROVISIONS

NON-CONFORMING CONNECTIONS: O YES O NO

If this is a non-conforming connection permit, as defined in Rule Chapters 14-96 and 14-97, then the following shall be a part of this permit.

1. The non-conforming connection(s) described in this permit is (are) not permitted for traffic volumes exceeding the Permit Category on page 1 of this permit, or as specified in "Other Special Provisions" below.

2. All non-conforming connections will be subject to closure or relocation when reasonable access becomes available in the future.

OTHER SPECIAL PROVISIONS:

IF A LANE CLOSURE IS WITHIN THE PROJECT LIMITS, THE PERMITTEE MUST NOTIFY THE DEPARTMENT 7 DAYS PRIOR TO A LANE CLOSURE TO ALLOW THE DEPARTMENT TO INFORM THE MOTORING PUBLIC. IF NO LANE CLOSURE REQUIRED PLEASE CALL 48 HOURS IN ADVANCED. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

Lane closures and other work may be restricted by the FDOT due to heavy traffic and potential backups caused by this construction. Night work may be required.

PART 6: APPEAL PROCEDURES

You may petition for an administrative hearing pursuant to sections 120.569 and 120.57, Florida Statutes. If you dispute the facts stated in the foregoing Notice of Intended Department Action (hereinafter Notice), you may petition for a formal administrative hearing pursuant to section 120.57(1), Florida Statutes. If you agree with the facts stated in the Notice, you may petition for an informal administrative hearing pursuant to section 120.57(2), Florida Statutes. You must file the petition with:

Clerk of Agency Proceedings
Department of Transportation
Haydon Burns Building
605 Suwannee Street, M.S. 58
Tallahassee, Florida 32399-0458

The petition for an administrative hearing must conform to the requirements of Rule 28-106.201(2) or Rule 28-106.301(2), Florida Administrative Code, and be filed with the Clerk of Agency Proceedings by 5:00 p.m. no later than 21 days after you received the Notice. The petition must include a copy of the Notice, be legible, on 8 1/2 by 11 inch white paper, and contain:

1. Your name, address, telephone number, any Department of Transportation identifying number on the Notice, if known, the name and identification number of each agency affected, if known, and the name, address, and telephone number of your representative, if any, which shall be the address for service purposes during the course of the proceeding.
2. An explanation of how your substantial interests will be affected by the action described in the Notice;
3. A statement of when and how you received the Notice;
4. A statement of all disputed issues of material fact. If there are none, you must so indicate;
5. A concise statement of the ultimate facts alleged, including the specific facts you contend warrant reversal or modification of the agency's proposed action, as well as an explanation of how the alleged facts relate to the specific rules and statutes you contend require reversal or modification of the agency's proposed action;
6. A statement of the relief sought, stating precisely the desired action you wish the agency to take in respect to the agency's proposed action.

If there are disputed issues of material fact a formal hearing will be held, where you may present evidence and argument on all issues involved and conduct cross-examination. If there are no disputed issues of material fact an informal hearing will be held, where you may present evidence or a written statement for consideration by the Department.

Mediation, pursuant to section 120.573, Florida Statutes, may be available if agreed to by all parties, and on such terms as may be agreed upon by all parties. The right to an adminstrative hearing is not affected when mediation does not result in a settlement.

Your petition for an administrative hearing shall be dismissed if it is not in substantial compliance with the above requirements of Rule 28-106.201(2) or Rule 28-106.301(2), Florida Administrative Code. If you fail to timely file your petition in accordance with the above requirements, you will have waived your right to have the intended action reviewed pursuant to chapter 120, Florida Statutes, and the action set forth in the Notice shall be conclusive and final.

OFFICE USE ONLY

Application Number: 2011-A-194-12
Category: J - Govt.
Section/Mile Post: 13162 / 1.260
Section/Mile Post: _____

Received By: Valerie Everts
FDOT STAFF (TYPE OR PRINT)
Date: _____
State Road: _____
State Road: _____

Instructions – To Applicant

- Contact the Department of Transportation to determine what plans and other documents you are required to submit with your application.
- Complete this form (some questions may not apply to you) and attach all necessary documents and submit it to the Department of Transportation.
- For help with this form contact your local Maintenance or District Office.
  - Or visit our website at www.dot.state.fl.us/onestoppermitting for the contact person and phone number in your area.
  - You may also email – driveways@dot.state.fl.us
  - Or call your District or local Florida Department of Transportation Office and ask for Driveway Permits.

Please print or type

APPLICANT:

Check one:
☒ Owner ☐ Lessee ☐ Contract to Purchase

Name: Manatee County

Responsible Officer or Person: Sia Mollanazar, P.E.

If the Applicant is a Company or Organization, Name: Manatee County Public Works

Address: 1022 26th Avenue East

City, State: Bradenton, FL

Zip: 34208 Phone: (941) 708-7450 Fax: (941) 708-7549

Email: siamollanazar@mymanatee.org

LAND OWNER: (If not applicant)

Name: _____

If the Applicant is a Company or Organization, Name: _____

Address: _____

City, State: _____

Zip: _____ Phone: _____ Fax: _____

Email: _____

AUTHORIZED REPRESENTATIVE: If specified by Applicant to handle, represent, sign, and file the application – NOTE: A notarized letter of authorization must be provided with the Application.

Name: _____

Company Name: _____

Address: _____

City, State: _____

Zip: _____ Phone: _____ Fax: _____

Email: _____

Address of property to be served by permit (if known):
Intersection of SR70 and 9th Street East

If address is not known, provide distance from nearest intersecting public street (such as, 500 feet south of Main St.)

Check here if you are requesting a

☐ new driveway ☐ temporary driveway ☐ modification to existing driveway ☐ safety upgrade

Does the property owner own or have any interests in any adjacent property?

☐ No ☐ Yes, if yes – please describe:

Are there other existing or dedicated public streets, roads, highways or access easements bordering or within the property?

☐ No ☐ Yes, if yes – list them on our plans and indicate the proposed and existing access points.

Local Government Development Review or Approval Information:

Local Government Contact: County Roadway Project (no development review)

Name: _____

Government Agency: _____

Phone #: _____

If you are requesting commercial or industrial access, please indicate the types and number of businesses and provide the floor area square footage of each. Use additional sheets if necessary.

Business (Name and Type)	Square Footage	Business (Name and Type)	Square Footage
1.		3.	
2.		4.	

If you are requesting a residential development access, what is the type (single family, apartment, townhouse) and number of units?

Type	Number of Units

Provide an estimate of the daily traffic volume anticipated for the entire property at build out. (An individual single family home, duplex, or quad-plex is not required to complete this section).

Daily Traffic Estimate = _____ (Use the latest Institute of Transportation Engineers (ITE) Trip Generation Report)

If you used the ITE Trip Generation Report, provide the land use code, independent variable, and reference page number.

ITE Land Use Code	Independent Variable	ITE Report page number reference

Check with the Florida DOT Office where you will return this form to determine which of the following documents are required to complete the review of your application.

Plans should be 11" x 17" (scale 1" x 50')
Note: No plans larger than 24" x 36" will be accepted

a) Highway and driveway plan profile
b) Drainage plan showing impact to the highway right-of-way
c) Map and letters detailing utility locations before and after Development in and along the right of way
d) Subdivision, zoning, or development plans
e) Property map indicating other access, bordering roads and streets
f) Proposed access design
g) Parcel and ownership maps including easements (Boundary Survey)
h) Signing and striping plans
i) Traffic Control/Maintenance of Traffic plan
j) Proof of liability insurance
k) Traffic Impact Study
l) Cross section of roadway every 100' if exclusive turn lanes are required

Important Notices to Applicant Before Signing Application

The Department Reserves The Right To Change Traffic Features And Devices In Right Of Way At Any Time
Proposed traffic control features and devices in the right of way, such as median openings and other traffic control devices, are not part of the connection(s) to be authorized by a connection permit. The Department reserves the right to change these features and devices in the future in order to promote safety in the right of way or efficient traffic operations on the highway. Expenditure by the applicant of monies for installation or maintenance of such features or devices shall not create any interest in the maintenance of such features or devices.

Significant Changes In Property Use Must Undergo Further Review
If an access permit is issued to you it will state the terms and conditions for its use. Significant changes in the use as defined in Section 335.182(3), Florida Statutes, of the permitted access not consistent with the terms and conditions listed on the permit may be considered a violation of the permit.

All Information I Give Is Accurate
I certify that I am familiar with the information contained in this application and that to the best of my knowledge and belief, such information is true, complete and accurate.

Starting Work On The Driveway Connection After I Get My Permit Means I Accept All the Conditions In My Permit
I will not begin work on the connection until I receive my Permit and I understand all the conditions of the Permit. When I begin work on the connection, I am accepting all conditions listed in my Permit.

Applicant Name (Printed): Sia Mollanazar, P. E.

Applicant's signature: _____ Date 5-27-11

FLORIDA DEPARTMENT OF TRANSPORTATION

Stormwater Pollution Control Reminder

- *Stormwater Management*

  Contact your local municipality and/or the Southwest Florida Management District.

Bartow	(863) 534-1448
Venice (Sarasota)	(941) 278-7396
Fort Myers (Sarasota)	(941) 278-7396

- Fort Myers is also part of South Florida Water Management District (800) 432-2045.

- *Used Oil recycling*

  Contact the Florida Department of Environmental Protection at (813) 744-6100 or your local automotive parts store.

- *Hazardous Waste Disposal*

  Contact the Florida Department of Environmental Protection at (813) 744-6100.

- *Spill Reporting*

State Warning Point	(800) 320-0519
Federal Response Center	(800) 424-8802

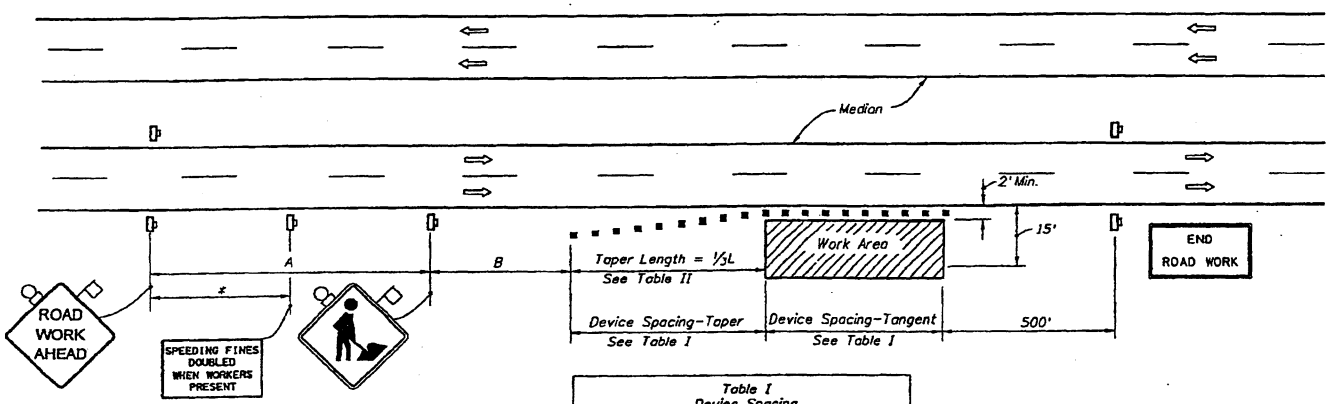
- *Pesticides & Fertilizers*

  Contact your Local County Agricultural Extension Service.

Charlotte	(941) 764-4340
Collier	(239) 353-4244
Desoto	(863) 993-4846
Glades	(863) 946-0244
Hardee	(863) 773-2164
Hendry	(863) 674-4094
Highlands	(863) 402-6540
Lee	(239) 461-7500
Manatee	(941) 722-4524
Okeechobee	(863) 763-6469
Polk	(863) 519-8677
Sarasota	(941) 316-1000

LET'S WORK TOGETHER TO KEEP OUR ENVIRONMENT CLEAN...

AND INVEST IN FLORIDA'S FUTURE



DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft.)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

x 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II Taper Length - Shoulder				
Speed (mph)	1/3L (ft.)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	
30	40	50	60	$L=\frac{WS^2}{60}$
35	55	68	82	
40	72	90	107	
45	120	150	180	
50	133	167	200	
55	147	183	220	
60	160	200	240	L=WS
65	173	217	260	
70	187	233	280	

8' minimum shoulder width.

1/3L= Length of shoulder taper in feet

W= Width of total shoulder in feet (combined paved and unpaved width)

S= Posted speed limit (mph)

SYMBOLS

- Work Area
- Sign With 18"x18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. If the work operation encroaches on the through traffic lanes or when four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area), a flagger shall be provided and a FLAGGER sign shall be substituted for the WORKERS sign. The flagger shall be positioned at the point of vehicle entry or departure from the work area.
2. This TCZ plan also applies to work performed in the median more than 2' but less than 15' from the edge of travelway.
3. When work is being performed on a multilane undivided roadway the signs normally mounted in the median (as shown) shall be omitted.
4. WORKERS signs to be removed or fully covered when no work is being performed.
5. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign.
6. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
7. For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

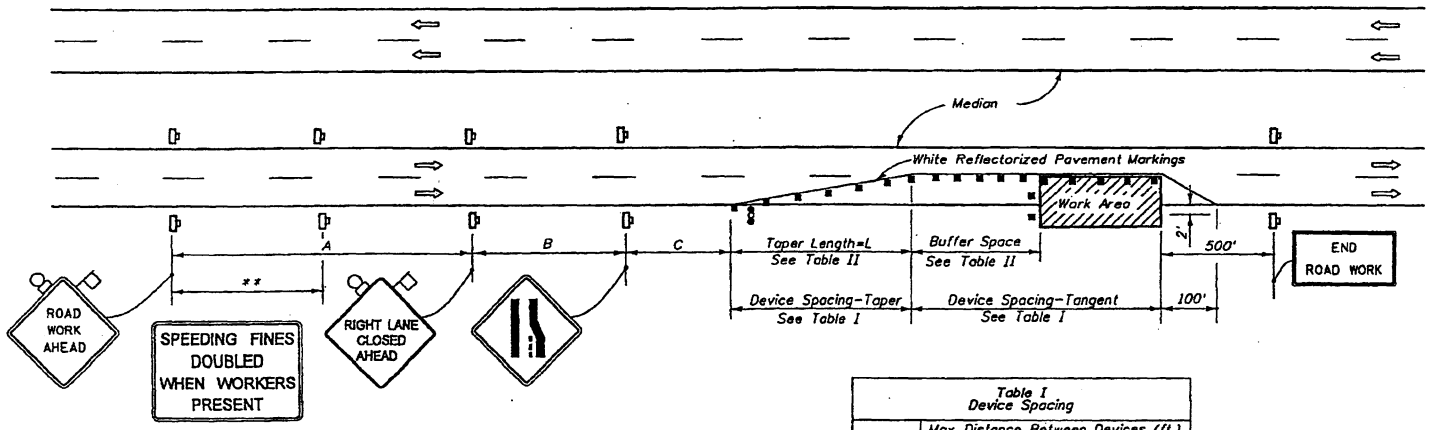


Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II Buffer Space and Taper Length			
Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft.)	L (ft.)	Notes (Merge)
25	155	125	$L=\frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	L=WS
50	425	600	
55	495	660	
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L= Length of taper in feet
W= Width of lateral transition in feet
S= Posted speed limit (mph)

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft.)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350
50 mph	500	500	500
*55 mph or greater	2640	1640	1000

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign and the RIGHT LANE CLOSED ½ MILE sign may be used as an alternate to the RIGHT LANE CLOSED AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

SYMBOLS

- Work Area
- Sign With 18"x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Advance Warning Arrow Panel
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the adjacent lane open to traffic.
2. On undivided highways the median signs as shown are to be omitted.
3. When work is performed in the median lane on divided highways, the channelizing device plan is inverted and left lane closed and lane ends signs substituted for the right lane closed and lane end signs.

   The same applies to undivided highways with the following exceptions:
   (a) Work shall be confined within one median lane.
   (b) Additional barricades, cones, or drums shall be placed along the centerline abutting the work area and across the trailing end of the work area.

   When work on undivided highways occurs across the centerline so as to encroach on both median lanes, the inverted plan is applied to the approach of both roadways.
4. Signs and traffic control devices are to be modified in accordance with INTERMITTENT WORK STOPPAGE details (sheet 2 of 2) when no work is being performed and the highway is open to traffic.
5. The two channelizing devices directly in front of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
6. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index No. 612 for shoulder taper formulas.
7. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
8. This TCZ plan does not apply when work is being performed in the middle lane(s) of a six or more lane highway. See Index No. 614.
9. For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

1. Temporary white edgeline may be omitted for work operations less than 3 days.
2. Signs, arrow panel and buffer space may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE LANE ADJACENT TO EITHER SHOULDER AND THE AREA 2' OUTSIDE THE EDGE OF TRAVEL WAY.

PERMIT VOID UNLESS DOT SARASOTA OPERATIONS OFFICE NOTIFIED 48 HOURS IN ADVANCE OF STARTING WORK.
PHONE: (941) 359-7300

IF A LANE CLOSURE IS WITHIN THE PROJECT LIMITS, THE PERMITTEE MUST NOTIFY THE DEPARTMENT 7 DAYS PRIOR TO A LANE CLOSURE TO ALLOW THE DEPARTMENT TO INFORM THE MOTORING PUBLIC. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

IF NO CLOSURES ARE REQUIRED THE SARASOTA OPERATIONS OFFICE MUST BE NOTIFIED 48 HOURS IN ADVANCE OF STARTING WORK. FAILURE TO CALL MAY RESULT IN A DELAY TO BEGIN WORK.

LANE CLOSURES AND OTHER WORK MAY BE RESTRICTED BY THE FDOT DUE TO HEAVY TRAFFIC AND POTENTIAL BACKUPS CAUSED BY THIS CONSTRUCTION. NIGHT WORK MAY BE REQUIRED.

DISTRICT ONE LANE CLOSURE POLICY MAY REQUIRE WORK TO BE PERFORMED DURING NIGHT TIME HOURS DUE TO LANE ANALYSIS AND/OR LANE RESTRICTIONS.

APPLICANT IS RESPONSIBLE FOR NOTIFYING OWNERS OF ALL EXISTING AERIAL AND BURIED UTILITIES OF PROPOSED DRIVEWAY AND RESOLVING ANY CONFLICTS BEFORE CONSTRUCTION BEGINS.

IN ACCORDANCE WITH FLORIDA STATUS 335.18 PERMITTEE SHALL BE REQUIRED TO BEAR THE COST OF FUTURE ACCESS MODIFICATIONS, TRAFFIC CONTROL DEVICES OR OTHER IMPROVEMENTS, WHEN DETERMINED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION TO BE IN CONJUNCTION WITH ACCEPTED ENGINEERING PRACTICES.

ALL CONSTRUCTION AND/OR MAINTENANCE ON THE DEPARTMENT'S RIGHT-OF-WAY SHALL CONFORM TO THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) THE DEPARTMENT'S ROADWAY AND TRAFFIC DESIGN STANDARDS AND BRIDGE CONSTRUCTION.

PERMITTEE/CONTRACTOR MUST WAIT 30 DAYS TO ALLOW ASPHALT FRICTION COURSE TO CURE BEFORE PLACING THERMOPLASTIC STRIPING.

OUR REVIEW COMMENTS ARE NOT INCLUDED TO BE INCLUSIVE OF ALL ERRORS AND OMISSIONS. OUR COMMENTS ARE ALSO NOT INTENDED TO AFFECT THE SCOPE OF WORK OR TO BE CONTRARY TO FHWA POLICY, FDOT DESIGN CRITERIA OR SOUND ENGINEERING PRACTICE. THE CONSULTANT/ENGINEER IS SOLELY RESPONSIBLE FOR THE TECHNICAL ACCURACY, ENGINEERING JUDGEMENT, AND QUALITY OF HIS WORK.

ALL CONTRACTORS AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH PERMITTED M.O.T. PLAN.

SOD ALL PORTIONS OF DISTURED RIGHT-OF-WAY.

NOTE: ALL ABOVE GROUND APPURTENANCES TO BE LOCATED AT RIGHT-OF-WAY LINE.

DENSITY REPORTS ARE TO BE SUBMITTED PRIOR TO PLACEMENT OF PAVEMENT.

"PRIOR TO EXCAVATING CONTACT THE CLERK OF THE CIRCUIT COURT FOR POSSIBLE GASOLINE CONFLICT."

THE APPLICANT SHALL NOT, DURING AND AFTER COMPLETION OF PERMITTED CONSTRUCTION, INTRODUCE ANY FORM OR METHOD OF SITE DRAINAGE DISCHARGE INTO THE DRAINAGE FACILITIES ON THE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY OR EASEMENT. ANY DISCHARGE SHALL BE IN VOILATION OF THIS PERMIT.

"PERMITTEE IS CAUTIONED THAT UTILITIES MAY BE LOCATED WITHIN THE CONSTRUCTION AREA."

IT IS THE RESPONSIBILITY OF THE PERMITTEE TO DETERMINE AND COMPLY WITH ALL COUNTY AND MUNICIPAL ORDINANCES THAT ARE RELATIVE TO THE CONSTRUCTION OR OTHER ACTIVITY DESCRIBED ON THIS PERMIT AND ARE MORE STRINGENT THAN DEPARTMENT OF TRANSPORTATION REQUIREMENTS.

N.P.D.E.S. REQUIRES THAT STORM WATER CONTROL MEASURES BE IMPLEMENTED ON ANY PROJECT ON PUBLIC TRANSPORTATION FACILITY RIGHTS-OF-WAY INCLUDING, BUT NOT LIMITED TO MEASURES DESCRIBED IN F.D.O.T. STANDARD DESIGN INDEX DRAWING NUMBERS 102, 103 AND 104.

"IF CONSTRUCTION, RECONSTRUCTION, REPAIR OR MAINTENANCE ACTIVITY NECESSITATES THE CLOSING OF ONE OR MORE TRAVEL LANES OF ANY ROAD ON THE STATE PRIMARY, COUNTY ROAD OR CITY STREET SYSTEM, FOR A PERIOD OF TIME EXCEEDING TWO HOURS, THE PARTY PERFORMING SUCH WORK WILL BE RESPONSIBLE TO GIVE NOTICE TO THE APPROPRIATE LOCAL LAW ENFORCEMENT AGENCY WHICH HAS JURISDICTION WHERE SUCH ROAD IS LOCATED PRIOR TO COMMENCING WORK ON THIS PROJECT"
335.15 F.S.91, 336.048 F.S.91

Florida Department of
Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

May 7, 2012

Sia Mollanazar, P.E.
Deputy Director - Engineering Services
Manatee County
1022 - 26th Avenue East
Bradenton, FL 34208
sia.mollanazar@mymanatee.org

Re: General Permit for Construction of Water Main Extensions for Public Water Systems
Project: 9th Street East 4 Lane, Between 57th Avenue East and 53rd Avenue East
FDEP Permit No.: 0133068-989-DSGP/02
PWS ID No.: 641-1132
County: Manatee

Dear Mr. Mollanazar:

The Department has received your Notice of Intent to Use the General Permit to construct a public water supply distribution system extension to serve existing development. This project consists of a new six-inch diameter water main extension. No new flow demand will be provided by the Manatee County Public Water System. The Department received this Notice on April 23, 2012.

The Department has no objection to your use of a General Permit for the construction of a public water supply distribution system designed in accordance with the standards and criteria set forth in Rule 62-555.405, Florida Administrative Code (FAC). In accordance with Rules 62-4.530(1) and 62-555.405(1)(a), FAC, construction on this project shall not begin until at least 30 days after the receipt date (referenced above) of Application Form 62-555.900(7). All General Permits are subject to the general conditions of Rule 62-4.540, FAC, (enclosed) and Rules 62-555.405 and 62-555.345, FAC. The construction activity must conform to the description contained in your Notice of Intent to Use the General Permit. Any deviation will subject the permittee to enforcement action and possible penalties.

If you have any questions or comments, please contact Bryant Facey at (813) 632-7600, extension 316, or via email at bryant.facey@dep.state.fl.us.

Sincerely,

Gwen Shofner

Gwen Shofner, P.E.
Manager
Potable Water Program

GS/bjf

Enclosures: General Conditions
Instructions for Clearance

cc: John E. Howle, P.E., CivilSurv Design Group, Inc., jhowle@civilsurv.com

General Permit Conditions.

(1) The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

(2) This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

(3) As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.

(4) This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

(5) This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

(6) The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

(7) The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

(a) Have access to and copy any records that must be kept under conditions of the permit;

(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

(8) If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of noncompliance; and

(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

(9) In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the

Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

(10) The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

(11) This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

(12) This permit or a copy thereof shall be kept at the work site of the permitted activity.

(13) This permit also constitutes:
(a) Determination of Best Available Control Technology (BACT)
(b) Determination of Prevention of Significant Deterioration (PSD)
(c) Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
(d) Compliance with New Source Performance Standards

(14) The permittee shall comply with the following:
(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:
1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

(15) When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

GENERAL PERMIT

INSTRUCTIONS FOR CLEARANCE

Requirements for clearance upon completion of projects are as follows:

1. Submission of a fully completed Department of Environmental Protection (DEP) Form 62-555.900(9) "Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components into Operation".

2. The portion of record drawings showing deviations from the DEP construction permit, including preliminary design report or drawings and specifications, if there are any deviations from said permit. (Note that it is necessary to submit a copy of only the portion of record drawings showing deviations and not a complete set of record drawings.)

3. Copies of satisfactory bacteriological analysis, taken within sixty (60) days of completion of construction, from locations within the distribution system or water main extension to be cleared, and in accordance with American Water Works Association (AWWA) Standard C 651-92 and with any additional requirements stipulated by the permitting engineer, as may be needed under special circumstances. The following sampling locations will be required for all General Permit clearances:

   - Connection point to an existing system and at the end point of the proposed addition; and

   - Every 1,200 feet on straight run of pipes.

   Each location shall be sampled on two consecutive days, with sample points and chlorine residual readings clearly indicated on the report. A sketch or description of all bacteriological sampling locations must also be provided.

4. Copy of satisfactory pressure test results demonstrating compliance with AWWA Standard requirements.

For further clarification contact:

Gwen Shofner, P.E., Manager
DEP – Southwest District
Drinking Water Program
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926

Phone: (813) 632-7600, extension 306
FAX: (813) 632-7671

Florida Department of
Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

May 7, 2012

Sia Mollanazar, P.E.
Deputy Director - Engineering Services
Manatee County
1022 - 26th Avenue East
Bradenton, FL 34208
sia.mollanazar@mymanatee.org

Re: General Permit for Construction of Water Main Extensions for Public Water Systems
Project: 9th Street East 4 Lane, Between 57th Avenue East and 53rd Avenue East
FDEP Permit No.: 0133068-989-DSGP/02
PWS ID No.: 641-1132
County: Manatee

Dear Mr. Mollanazar:

The Department has received your Notice of Intent to Use the General Permit to construct a public water supply distribution system extension to serve existing development. This project consists of a new six-inch diameter water main extension. No new flow demand will be provided by the Manatee County Public Water System. The Department received this Notice on April 23, 2012.

The Department has no objection to your use of a General Permit for the construction of a public water supply distribution system designed in accordance with the standards and criteria set forth in Rule 62-555.405, Florida Administrative Code (FAC). In accordance with Rules 62-4.530(1) and 62-555.405(1)(a), FAC, construction on this project shall not begin until at least 30 days after the receipt date (referenced above) of Application Form 62-555.900(7). All General Permits are subject to the general conditions of Rule 62-4.540, FAC, (enclosed) and Rules 62-555.405 and 62-555.345, FAC. The construction activity must conform to the description contained in your Notice of Intent to Use the General Permit. Any deviation will subject the permittee to enforcement action and possible penalties.

If you have any questions or comments, please contact Bryant Facey at (813) 632-7600, extension 316, or via email at bryant.facey@dep.state.fl.us.

Sincerely,

Gwen Shofner

Gwen Shofner, P.E.
Manager
Potable Water Program

GS/bjf

Enclosures: General Conditions
Instructions for Clearance

cc: John E. Howle, P.E., CivilSurv Design Group, Inc., jhowle@civilsurv.com

General Permit Conditions.

(1) The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

(2) This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

(3) As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.

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(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

(8) If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of noncompliance; and

(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

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Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

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1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

(15) When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

GENERAL PERMIT

INSTRUCTIONS FOR CLEARANCE

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3. Copies of satisfactory bacteriological analysis, taken within sixty (60) days of completion of construction, from locations within the distribution system or water main extension to be cleared, and in accordance with American Water Works Association (AWWA) Standard C 651-92 and with any additional requirements stipulated by the permitting engineer, as may be needed under special circumstances. The following sampling locations will be required for all General Permit clearances:

   - Connection point to an existing system and at the end point of the proposed addition; and

   - Every 1,200 feet on straight run of pipes.

   Each location shall be sampled on two consecutive days, with sample points and chlorine residual readings clearly indicated on the report. A sketch or description of all bacteriological sampling locations must also be provided.

4. Copy of satisfactory pressure test results demonstrating compliance with AWWA Standard requirements.

For further clarification contact:

Gwen Shofner, P.E., Manager
DEP – Southwest District
Drinking Water Program
13051 N. Telecom Parkway
Temple Terrace, FL 33637-0926

Phone: (813) 632-7600, extension 306
FAX: (813) 632-7671

Florida Department of
Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

August 20, 2012

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

In the Matter of an
Application for Permit by:

Sia Mollanazar, P.E.
Deputy Director-Engineering Services
Manatee County
1022 - 26th Avenue East
Bradenton, FL 34208
sia.mollanazar@mymanatee.org

Project: 9th Street East 4-Lane, between 57th Avenue East and 53rd Avenue East
Permit No. 0133068-998-DS/C
Manatee County WTP,
PWS No. 641-1132
Manatee County

NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number 0133068-998-DS/C to construct a public water main, issued pursuant to Section(s) 403.087(l), Florida Statutes (F.S.).

A person whose substantial interests are affected by this permit may petition for an administrative proceeding (hearing) in accordance with Section l20.57, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, within l4 days of receipt of this Permit. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section l20.57, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the position taken by it in this permit. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within l4 days of receipt of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section l20.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

This permit is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition and conforms to Rule 62-l03.070, F.A.C. Upon timely filing of a petition or a request for an extension of time this permit will not be effective until further Order of the Department.

When the Order (Permit) is final, any party to the Order has the right to seek judicial review of the Order pursuant to Section l20.68, F.S., by the filing of a Notice of Appeal pursuant to Rule 9.ll0, Florida Rules of Appellate procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date the Final Order is filed with the Clerk of the Department.

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION
DRINKING WATER PROGRAM

Jeffry S. Greenwell, P.E.
Water Facilities Administrator
Southwest District

JSG/ttm

PERMITTEE: Manatee County PERMIT No.: 0333068-998-DS/C
PROJECT: 9th Street East 4-Lane, between 57th Avenue East and 53rd Avenue East

CERTIFICATE OF SERVICE

This is to certify that this NOTICE OF PERMIT ISSUANCE and all copies were mailed before the close of business on August 20, 2012 to the listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Linda Butler 8/20/12
(Clerk) (Date)

Enclosure

cc: John E. Howle, P.E., CivilSurv Design Group, Inc., jhowle@civilsurv.com

Florida Department of
Environmental Protection
Southwest District Office
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

PERMITTEE
Manatee County
1022 - 26th Avenue East
Bradenton, FL 34208

Attn: Sia Mollanazar, P.E.
Deputy Director-Engineering Services
sia.mollanazar@mymanatee.org

PERMIT/CERTIFICATION
PWS ID Number: 641-1132
Permit Number: 0133068-998-DS/C
Date of Issue: August 20, 2012
Expiration Date: August 19, 2017
County: Manatee
Lat/Long: NA
Sect/Town/Range: 13/35S/17E
Project: 9th Street East 4-Lane, between 57th Avenue East and 53rd Avenue East
DRY LINE PERMIT

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.) and Florida Administrative Code (F.A.C.) Rules 62-555 and 62-4. The above-named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the department and made a part hereof and specifically described as follows:

Extension of a six-inch PVC water main located at 9th Street East. The water distribution system shall be constructed in accordance with the plans and specifications prepared by John E. Howle, P.E., [CivilSurv Design Group, Inc.].

This is a dry line approval and requires separate approval prior to being placed in service. The Department's acknowledgement of document(s) required by Specific Conditions No. 5 and No. 6 shall constitute such approval for service.

Location: 9th Street East, between 57th Avenue East and 53rd Avenue East, in Manatee County, Florida.

Specific Conditions:

1. The permittee has acknowledged he understands the construction of the water lines covered by this permit prior to the clearance of an approved source, is at the permittee's own risk.

2. All construction must be in accordance with this permit. Before commencing work on project changes for which a construction permit modification is required per 62-555.536(1), the permittee shall submit to the Department a written request for a permit modification. Each such request shall be accompanied by one copy of a revised construction permit application, the proper processing fee and one copy of either a revised preliminary design report or revised drawings, specifications and design data. [F.A.C. Rule 62-555.536]

3. Permitted construction or alteration of a public water system may not be placed into service until a letter of clearance has been issued by this Department. [F.A.C. Rule 62-555.345]

4. Permitted construction or alteration of public water supply systems must be supervised during construction by a professional engineer registered in the State of Florida if the project was designed under the responsible charge of a professional engineer licensed in the State of Florida. The permittee must retain the service of a professional engineer registered in the State of Florida to observe that construction of the project is in accordance with the engineering plans and specifications as submitted in support of the application for this permit. [F.A.C. Rule 62-555.520(3)]

5. Approval to place the system into service shall not be granted until the public water system components permitted under 9th Street East 4-Lane, between 57th Avenue East and 53rd Avenue East [0133068-989-DSGP/02], have been constructed and the Department has cleared said components for placement into service.

6. A letter of clearance may be issued by the Department following the construction and clearance of the permit for the approved source components and the following items have been submitted:

    a. Complete and fully executed form "Certification of Construction Completion and Request for Clearance to Place Permitted PWS Components into Operation", DEP Form 62-555.900(9) effective August 28, 2003 [F.A.C. Rule 62-555.345(1)];

    b. The portion of record drawings showing deviations from DEP construction permit, including the approved preliminary design report or drawings and specifications, if there are any deviations from said permit. (Note that it is necessary to submit a copy of only the portion of record drawings showing deviations and not a complete set of record drawings) [F.A.C. Rule 62-555.345(1)(a)];

    c. Copies of satisfactory bacteriological analyses verifying that proper disinfection of the water mains was conducted in accordance with 62-555.340(2)(a) through (c) and the American Water Works Association (AWWA) Standard C651-99 as follows:

        i. After reducing the total chlorine residual in the water mains to no more than four milligrams per liter, a total of at least two samples – each taken on a separate day and taken at least six hours apart from the other sample - shall be collected at each of the locations indicated in the applicable AWWA standard, and the samples shall be analyzed for total residual chlorine and for the presence of total coliform;

        ii. Samples shall be taken from the following locations: connection points to the existing system, every 1,200 feet of main and all dead end lines in the system;

        iii. If any sample contains more than four milligrams per liter of total chlorine, the sample shall be considered invalid. If any sample shows the presence of total coliform, the water mains shall be redisinfected and resampled until two

consecutive samples at each sampling location show the absence of total coliform;

[F.A.C. Rule 62-555.340]

d. Copy of a satisfactory pressure test of the distribution system performed in accordance with AWWA Standards. [F.A.C. Rule 62-555.320(21)(b)(1)]

7. The permittee must instruct the engineer of record to request system clearance from the Department within sixty (60) days of completion of construction, testing and disinfecting the system. Bacteriological test results shall be considered unacceptable if the test were completed more than 60 days before the Department received the results. [F.A.C. Rule 62-555.340(2)(c)]

8. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoe remains, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources and the permitting agency. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes.*

9. The supplier of water must operate and maintain this facility in accordance with the requirements of F.A.C. Rule 62-555.350 and the applicable standards in 62-550.

10. The permittee shall be aware of and operate under the attached "Applicable Conditions." Applicable conditions are binding upon the permittee and enforceable pursuant to Chapter 403, F.S. [F.A.C. Rule 62-555.533(1)]

11. If unanticipated delays will cause project completion to extend beyond the expiration date of this permit, the permittee shall submit to the Department a request to extend the expiration date of this permit including the appropriate processing fee. This request shall specify the reasons for the delay and shall be submitted to the Department for approval prior to the expiration date of this permit. Note that no specific construction permit shall be extended so as to remain in effect longer than five years. [F.A.C. Rule 62-555.536(4)]

12. All finished water main pipe, including fittings, shall be color coded or marked using blue as a predominant color to differentiate finished drinking water from reclaimed or other water in accordance with F.A.C. Rule 62-555.320(21)(b) 3.

13. Persons proposing to transfer this permit prior to the project being approved or cleared by the Department for placement into permanent operation shall complete DEP Form 62-555.900(8) effective August 28, 2003 and submit to the Department along with the proper processing fee. [F.A.C. Rule 62-555.536]

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION
DRINKING WATER PROGRAM

Jeffry S. Greenwell, P.E.
Water Facilities Administrator
Southwest District

JSG/ttm

Applicable Permit Conditions

(1) The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to Sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

(2) This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

(3) As provided in Subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other department permit that may be required for other aspects of the total project which are not addressed in this permit.

(4) This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

(5) This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

(6) The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

(7) The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

(a) Have access to and copy any records that must be kept under conditions of the permit;

(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

(8) If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of noncompliance; and

(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may

result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

(9) In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

(10) The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in Rule 62-302.500, shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

(11) This permit is transferable only upon Department approval in accordance with Rule 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

(12) This permit or a copy thereof shall be kept at the work site of the permitted activity.

(13) This permit also constitutes:
(a) Determination of Best Available Control Technology (BACT)
(b) Determination of Prevention of Significant Deterioration (PSD)
(c) Certification of compliance with State Water Quality Standards (Section 401, PL 92-500)
(d) Compliance with New Source Performance Standards

(14) The permittee shall comply with the following:
(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:
1. the date, exact place, and time of sampling or measurements;
2. the person responsible for performing the sampling or measurements;
3. the dates analyses were performed;
4. the person responsible for performing the analyses;
5. the analytical techniques or methods used;
6. the results of such analyses.

(15) When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SUBSURFACE SOIL EXPLORATION, ANALYSIS AND RECOMMENDATIONS FOR 9TH STREET EAST ROAD IMPROVEMENTS BETWEEN 53RD AND 57TH AVENUE EAST, BRADENTON, FLORIDA

Ardaman & Associates, Inc.

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MEMBERS:
A.S.F.E.
American Concrete Institute
American Society for Testing and Materials
Florida Institute of Consulting Engineers

Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

August 16, 2005
File No. 05-7083

TO: Keith and Schnars, P.A.
2525 Drane Field Road, Suite 7
Lakeland, Florida 33811

Attention: John Howle

SUBJECT: Subsurface Soil Exploration, Analysis and Recommendations for 9th Street East Road Improvements Between 53rd and 57th Avenue East, Bradenton, Florida

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Ladies and Gentlemen:

As requested, our firm has completed a subsurface soil exploration program at the above-referenced site. The purpose of this program was to determine the suitability of the existing soils for the proposed construction and to make soil preparation recommendations.

This report documents our findings and conclusions. It has been prepared for the exclusive use of Keith and Schnars, P.A. and their client and consultants for specific application to the subject project, in accordance with generally-accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

Project Description

The project involves a 0.5 mile long section of 9th Street East between the intersections of 53rd Avenue East and 57th Avenue East in Bradenton, Florida. The existing road is two lanes with additional turn lanes at the intersections. Site drainage is closed (storm sewers) on the east side with open shallow swales on the west side in the southern portion of the project with closed drainage on the west side and swales on the east side in the northern portion of the project area.

The existing roadway is asphalt paved with the pavement in good condition. There were no curbs or gutters on the road other than for a short distance near the intersections.

SCOPE

The scope of our services has included the following items:

1. Performing a site reconnaissance and a review of the NRCS Soil Survey .
2. Conducting twelve (12) shallow auger test borings and one (1) standard penetration test boring to determine the nature and condition of the subsurface soils.
3. Performing two (2) pavement cores through the existing pavement to determine the existing pavement section.
4. Reviewing each soil sample obtained in our field testing program by a geotechnical engineer in the laboratory for further investigation, classification and assignment of laboratory tests, if required.
5. Performing laboratory tests on selected soil samples.
6. Analyzing the existing soil conditions with respect to the proposed construction.
7. Analyzing the existing subsurface conditions to estimate seasonal high water table levels in the area of the proposed stormwater detention ponds and analyze the quality of the subsurface soils for potential use as fill material.
8. Performing two (2) double-ring infiltrometer tests in the proposed stormwater detention areas.
9. Preparing this report to document the results of our field testing program, engineering analysis and recommendations.

Site Reconnaissance

A visual reconnaissance was conducted along the length of the project in July, 2005. Two cross drains were observed. There was a relatively small concrete pipe crossing from the open swale on the west side of the road to a junction box on the other side of the road just south of the

driveway south of the location of DRI-1. There was a large corrugated pipe cross drain leading to a deep drainage ditch that flowed to the east just south of the location of DRI-2. There was a second large corrugated pipe draining into the ditch from the south along the east side of the road. There was severe erosion behind the headwall at the south pipe. Soil conditions at the head walls of several of the cross drain structures were found to be in a loosely compacted state.

USDA-NRCS Soil Survey Review

The USDA-NRCS "Soil Survey of Manatee County, Florida" (1983) was reviewed for soil types along the length of the project. A total of five (5) mapping units were encountered along the project length. Some characteristics of the soil types, as presented in the Soil Survey, are presented in Table A below. Additional soil properties from the Soil Survey are presented in Table 1 of Appendix II of this report.

Table A. Manatee County Soil Survey Information.

Map Symbol	Soil Series	Risk of Corrosion		Seasonal High Water Table		Presence of Mucky Soils
		Uncoated Steel	Concrete	Depth (ft)	Months	
7	Canova, Anclote and Okeelanta soils	Moderate to High	Low to Moderate	+2.0 to 1.0	Jan - Dec	top 8 t 20 inches is usually mucky
16	Delray complex	Moderate	Low	0 to 1.0	Jun - Mar	not typically
17	Delray-EauGallie complex	Moderate	Low	0 to 1.0	Jun - Mar	not typically
20	EauGallie fine sand	High	Moderate	0 to 1.0	Jun - Oct	not typically
38	Palmetto sand	High	High	0 to 1.0	Jun - Nov	not typically

By scaling off the soils map, progressing from 53rd Avenue East to the south, the soils along the project area are approximately delineated as follows:

Distance S. of 53rd Ave.	Soil Series
0 - 800 ft	EauGallie fine sand
800 - 900 ft	Delray-EauGallie complex
900 - 1,400 ft	Canova, Anclote and Okeelanta soils
1,400 - 1,600 ft	Palmetto sand
1,600 - 2,000 ft	Delray complex
2,000 - 2,200 ft	Palmetto sand
2,200 - 2,600 ft	EauGallie fine sand

As indicated in Table A, Canova, Anclote and Okeelanta soils typically have a surficial muck layer and are ponded for several months out of the year. Based on the visual reconnaissance, the area of these soils has been filled in the vicinity of the roadway. Subsurface mucky soils were encountered in a number of the soil borings and are discussed in the Soils Analysis section of this report.

The majority of the project length is comprised of fine sands that are underlain by loamy (silty or clayey) sands.

Care should be taken in the suspect areas during earthwork operations. If organic material is encountered, it should be removed in accordance with recommendations outlined in this report. It should be noted that these soils may have been filled over during original construction of 9th Street East. In this scenario, muck will likely be encountered at natural grade elevations beneath several feet of sandy fill material.

FIELD EXPLORATION PROGRAM

Our field exploration program consisted of conducting twelve (12) shallow auger test borings and one (1) standard penetration test boring, performing two (2) double-ring infiltrometer tests, and performing two (2) pavement cores at the locations shown on the attached Figure 1. These borings were performed to determine the nature and condition of the subsurface soils to a maximum depth of 6 to 20 feet below the existing ground surface. Test boring depths, location and number were determined by Keith and Schnars, P.A. Test borings were located in the field utilizing available landmarks and a 100-foot tape. Test boring locations should be considered accurate only to the degree implied by the method used. Should more accurate locations be required, a registered land surveyor should be retained. The equipment and procedures used in the borings are described in greater detail in Appendix I of this report.

GENERAL SUBSURFACE CONDITIONS

The general subsurface conditions encountered during the field exploration program are shown on the soil boring logs, included in Appendix I of this report. Soil stratification is based on examination of recovered soil samples and interpretation of field boring logs. The stratification lines represent the approximate boundaries between the soil types, while the actual transitions may be gradual.

On the dates of our field exploration program, the water table was encountered at depths ranging between the ground surface and 6 feet below existing grade. The water table level is anticipated to fluctuate due to seasonal rainfall variations and other factors.

LABORATORY TESTING PROGRAM

Representative soil samples obtained during our field sampling operation were packaged and transferred to our office and, thereafter, examined by a geotechnical engineer to obtain more accurate descriptions of the existing soil strata. Laboratory testing was performed on selected samples as deemed necessary to aid in soil classification and to further define the engineering properties of the soils. The laboratory tests included the percent passing the No. 200 sieve (percent silt and clay), organic content, natural moisture content and grain size distributions. The test results are presented on the attached soil boring logs at the depths from which the samples were recovered. The grain size distribution results and curves are included at the end of Appendix I. The soil descriptions shown on the soil boring logs are based on a visual classification procedure in general accordance with the Unified Soil Classification System (ASTM D-2488-84) and standard practice. The soil borings performed along the road alignment have also been classified according to the AASHTO Soil Classification System.

Pavement Coring

The cores were performed using a 6-inch diameter diamond core drill. The coring was performed through the depths of the asphalt and the base. A hand auger was then performed in the core hole to a depth of 18 inches below the bottom of the base. The pavement sections encountered at our two (2) core locations are described below

Component	Core A	Core B
Wearing Surface	2-1/4" asphalt, 2 lifts	6-5/8" asphalt, 3 lifts
Road Base	7" soil cement	4" limerock
Sub-base	18"+ brown fine sand (fill)	18"+ brown fine sand (fill)

Based on the soils observed in the hand auger borings, the sub-base/shallow subgrade soil will likely meet an LBR of 40 percent although this test was not performed as part of this investigation.

Pavement Design

The pavement should be designed in accordance with Manatee County Land Development Regulations. There should be a minimum of 12 inches of stabilized sub-base with a minimum LBR of 40 percent. The sub-base should be compacted to at least 98% of the Modified Proctor maximum density (AASHTO T-180 Method). The sub-base should be placed in 6-inch lifts and each lift should be compacted and tested.

As far as base alternatives, shell base is locally available but is water sensitive and is subject to base failure if it becomes saturated. A graded aggregate (crushed concrete) base is less water sensitive than shell and would be more acceptable, but the local product is a manufactured material recycled from scrap concrete and may not be available in sufficient quantities for this project. Limerock base is not available locally and transportation costs would be very high. In addition, this material, similar to shell, is water sensitive. A cement treated shell or an asphalt base would likely be the most desirable and cost effective road base option.

If cement treated base material is used, the shell or other material used should have a minimum LBR value of 100 percent prior to the application of cement. A sample cement stabilized base specification is included as Appendix III.

Mast Arm Borings

Two (2) new mast arms are proposed for the intersection of 9th Street and 53rd Avenue East, at the northeast and southwest corner of the intersection. The area that the borings could be performed was constrained by overhead high tension power lines at both corners. At the time the boring locations were staked, the buried utilities had previously been marked at the southwest corner and a stake was placed in a "clear" area that was at a sufficient distance from the overhead lines. A utility locate request was then submitted and the utilities were re-marked.

In order to prevent damage to underground utilities, the upper 3 feet of the borings were performed with a hand auger. At the southwest corner, un-marked buried utilities were encountered at four (4) separate hand auger locations in the available area to drill. At least one of the buried lines appeared to be a fiber optic cable. Due to the high potential for damage to underground utilities, boring No. SPT-1, at the southwest corner of the intersection, was not performed. Boring No. SPT-2, at the northeast corner, was performed. This location is approximately 140 feet from the location of proposed boring No. SPT-1. It is likely that the soils will be generally similar in this area, although the depth to, and thickness of, the hard cemented silt strata may vary.

After it was discovered that we were not able to drill the area of the southwest corner of the intersection, we researched our files. Fortunately, we had previously performed soil borings at this intersection related to the current mast arm poles. The report was dated June 19, 1996 (File No. 96-7382). Boring No. 4 from that report is in the vicinity of the proposed SPT-1. A copy of that report is included as Appendix IV.

From the laboratory data and N values from the Standard Penetration Test borings the friction angle (ϕ'), cohesion (c) in tons per square foot and the total saturated unit weight (γ_t) in pounds per cubic foot were determined. These values are summarized on the boring logs. The buoyant density can be calculated by subtracting 62.4 from the saturated unit weight. The dry density and moist density will only be applicable for the upper 2 to 4 feet of sand. The dry density for sand will generally be on the order of 80 to 90 percent of the saturated unit weight with the moist density being an intermediate value between the dry density and the saturated density.

It should be noted that a hard strata, hard cemented silt, commonly called limerock, was encountered at a depth beginning at 8 feet below grade at SPT-2. This hard material continued to a depth of 20 feet with intermittent strata of softer clay. Depending on the hardness of this material, rock boring techniques may be necessary to penetrate this strata. It is likely that these strata will also be encountered in the area of SPT-1, although the depth, thickness and hardness of the strata will likely vary somewhat. Based on the previous report, the hard strata was encountered beginning at a depth of 9 feet below grade in the area of SPT-1.

Although no corrosion parameters were determinated for these soil samples, the corrosion potential of the soil encountered in this area has generally been found to be moderately aggressive, as indicated by analytical reports of the corrosivity parameters from other sites. Generally the following criteria indicates the aggressiveness of a soil:

	pH	R	Cl^-	SO_4^{2-}
Slightly Aggressive	>6.6	>3000	<500	<150
Moderately Aggressive	6.0 - 6.6	500 - 3000	500- 2000	150 - 1500
Extremely Aggressive*	<6.0	<500	>2000	>1500

*Only one of the four criteria needs to be met for a soil to be considered extremely aggressive.

ANALYSIS AND RECOMMENDATIONS

Soils Analysis

As indicated by our review of the Manatee County Soil Survey, most soils encountered during our field exploration along the project length can be described as fine sands. These sands contained varying amounts of clay and silt. The majority of sands encountered can be classified as fine sands or fine sands with silt (SP, SP-SM or A-3). These sandy layers were generally underlain by sand containing higher percentages of clay and silt. The more clayey or silty materials can be described as clayey sands or silty sands (SC/SM or A-2-4/A-2-6). Among the soils encountered, were pockets of mucky soils (A-8), these materials are unsuitable for construction and should be removed as described below.

Unsuitable Materials

Organic or mucky material was encountered in borings HA-2 (0.5 - 1.0'), HA-3 (3.5 - 4.0'), HA-4 (3.75 - 5.5') and DRI-1 (4.0 - 5.5') and DRI-2 (4.0 - 5.5'). Organic contents by percentage weight for these soils ranged between 4.0% and 18.0%. These organic soils can be expected to compress and settle under the weight of any fill and of the roadbed. The Florida Department of

Transportation (FDOT) Index 500, Removal of Organic and Plastic Material, recommends the removal of soils within the 1:2 Control Line if the organic content exceeds an average of 5 percent or if any individual test exceeds 7 percent. Organic soils should be removed from beneath sidewalks whether they fall within or beyond the control line. In addition, underground utility pipes should not be bedded in or above organic soil strata. The pipe trench should be undercut to remove these soils and the undercut area should be backfilled and compacted as described in the soil preparation recommendations presented elsewhere in this report. The organic soils should be separated out, taking care so as not to contaminate the other soils in the excavation, and should not be used as backfill.

The DRI-1 and DRI-2 borings were performed in proposed stormwater retention ponds. The mucky soils do not necessarily need to be removed from the pond areas, but they are typically low permeability soils. Assuming that these soils are excavated, they should be separated from the soils above and below this strata so as not to contaminate the other soils. The organic soils should not be used as structural fill or backfill, but could be placed in "green" areas or used as topsoil.

Potential Fill Quality

The clean fine sands and fine sands with silt (SP, SP-SM or A-3) are suitable for use as structural fill material. The silty and clayey fine sands (SM, SC, A-24 - A-2-7, which by definition contain between 12% and 35% fines) typically contain high natural moisture contents (in the range of 25% to 40%) and are generally moisture sensitive and difficult to compact when water contents are above optimum. Of these materials, those with less than 20% fines could possibly be mixed with materials of lesser fines content to create a compactable material suitable for use as structural fill.

However, the materials with greater than 20% fines would be difficult to mix and would also require aeration, drying, disking and extra handling to reduce water contents prior to use as fill material. As the percentage of silt and clay increases, the difficulty of handling, placing and compacting these materials becomes greater. Therefore, we do not recommend the materials with greater than 20% fines be used as structural fill in any case, but may be used in areas where compaction is not crucial. Of particular concern are cross drain extensions or pipe installations, where excavation into the clayey and silty materials may be anticipated. In these circumstances, it may be necessary to replace the excavated clayey or silty materials with clean fine sand (SP or A-3 material), especially during wet conditions or if construction proceeds beneath the water table.

As discussed above, the mucky soils encountered in the stormwater retention areas should not be used as structural fill or backfill.

Ditch and Swale Filling

Portions of ditches and swales may be filled as part of the project. During our field investigation, organic material was encountered in the bottom and along the sides of some of the ditches and swales. Wherever the ditches or swales will be filled, we recommend that they be excavated to the original, undisturbed soil prior to filling. Should a natural muck layer be present, this material should be excavated also, particularly if it is within the 1:2 control line. This is to ensure that there are no buried layers of organic material in former ditch sections.

Cross Drain Replacement/Extension

There are several cross drains along the project length that will need to be extended or replaced as part of the proposed scope. As previously discussed, loose soil conditions were encountered at the ends of most cross drains. These loose soil conditions are likely the cause of soil erosion noted in at least one of the culvert headwalls. When extension or replacement of these drains is undertaken, care should be taken to properly compact around pipes and culverts to avoid similar problems in the future.

Several options exist to either extend the existing culvert or construct a longer culvert. At the present time no bias is given as to what option is preferred. Accordingly, discussion herein is limited to generalities.

Culvert or cross drain construction activities require that a stable soil contact elevation be available to support the culvert. Surface and groundwater control procedures will need to be utilized to provide the aforementioned stable soil contact elevation. Typical methods for water control include damming of the channels and diverting the water through a temporary channel or pumping the water around construction activities. We anticipate that even if the stream is diverted, water will seep into the channel from the stream bed and sides of the ditch creating a loosening of foundation contact soils. If this is the case, well points or a sump pump will need to be provided in the construction area to maintain water levels at least 18 to 24 inches below the working area to allow for proper material placement and adequate compaction.

If contact soils are unstable, they should be undercut and backfilled with gravel to a depth of one foot. The area should then be compacted with gasoline powered jumping jack equipment. A density of at least 95% of modified Proctor maximum dry density is recommended for all fill materials as well as contact soils. The contact soils should be firm and stable prior to placement of the culvert pipes or foundations.

All backfill material used should be clean fine sand with less than 10% passing the No. 200 sieve placed in compacted lifts not to exceed 12 inches. A continuous gravel bed system should be avoided in wet areas so as to avoid flow underneath the culvert.

A representative from Ardaman and Associates, Inc., Sarasota office should be present to monitor all earthwork activities as well as monitor and test compaction efforts.

Slope Stability

It is anticipated that the existing slopes along the project will be relocated with the widening of the roadway. All slopes and ditches should be designed in accordance with FDOT guidelines. No slope should be designed to be steeper than 2:1 (horizontal to vertical) unless soil reinforcement is provided (i.e. geogrid or similar). Slopes of 2:1 are considered to be stable and will become unstable upon saturation. Saturated slope stability is approximately 4.5:1.

It is essential that proper grading and drainage are provided to avoid slumping and failure of slopes. Water should not be allowed to pool behind the top of slopes creating a saturated soil condition. Drainage should be provided to avoid such conditions. Erosion of soil due to runoff

should also be controlled by maintaining the vegetation on the slopes. Erosion control blankets or turf reinforcement mats on steeper slopes should be utilized to stabilize steeper slopes until the sod becomes established.

Underdrains

We typically recommend underdrains if the seasonal high water table is within 1 to 2 feet of the bottom of the road base, depending on the type of base and how water sensitive it is. Shell and limerock base are the most water sensitive with cement treated and asphalt base being the least water sensitive. The road profile, drainage and pavement section have not yet been determined. Once this information is available, the data could be reviewed and recommendations made.

Where recommended, underdrains should be installed with an invert elevation at least thirty inches below the adjacent road crown elevation. We recommend an underdrain design consisting of slotted, corrugated polyethylene drainage tubing, factory-wrapped with a spun-bonded (non-woven) filter fabric. The tubing should be installed within an eighteen inch wide by twenty-one inch high filter media jacket, similar to a Florida Department of Transportation (FDOT) Type I underdrain design. At least three inches of filter media should underlie the pipe invert. To eliminate the need for filter fabric between the filter media and the surrounding natural soils, the filter media should consist of sand meeting the following gradation.

Sieve Size	Percent Passing
3/8-inch	100
No. 4	85 to 100
No. 10	65 to 100
No. 20	40 to 95
No. 40	10 to 50
No. 60	0 to 20
No. 100	0 to 5
No. 200	0 to 2

Locally available materials which typically meet the above gradation include sand meeting the requirements of Section 902-4 of the FDOT "Standard Specifications for Road and Bridge Construction", or the stormwater filter sand requirements of the Southwest Florida Water Management District (SWFWMD).

Soil Preparation Recommendations

The following soil preparation recommendations are made as a guide to the design professionals, parts of which should be incorporated into the project's general specifications:

1. Any area to be filled or within the roadway section should be cleared and grubbed of all surface vegetation and organic debris. Any ditches to be filled in should be excavated to their original cross section prior to the addition of fill. Any organic soils should excavated for their full horizontal and vertical limits within the roadway 1:2 control line area including sidewalks and privacy wall foundations.

2. The cleared and grubbed elevation should be compacted with a heavy vibratory roller having a static weight of at least 8,000 pounds. Each pass should overlap the preceding pass by at least 30%. Sufficient passes should be made over the area to produce a density of at least 95% of Modified Proctor maximum density to a depth of 1.0 feet below the compacted surface except that the upper 3 feet of subgrade soils should be compacted to produce a density of at least 98% of Modified Proctor maximum density. Any backfill should be compacted to similar compaction specifications. De-watering should be provided as necessary to

achieve proper compaction. Extreme care should be used when vibratory compaction is used next to existing structures. A representative of Ardaman & Associates should be present during initial compaction efforts.

3. After compaction and testing to verify that the desired compaction has been achieved at this elevation, fill consisting of clean fine sands not containing more than 10% passing the #200 sieve can be placed in level lifts not exceeding 12 inches loose and compacted with the above-described equipment. Each layer should be compacted to a minimum of 95% of Modified Proctor maximum density except that the upper 3 feet of subgrade soils should be compacted to produce a density of at least 98% of Modified Proctor maximum density.

4. A soils engineer or his representative from Ardaman & Associates, Inc., Sarasota Office, should inspect and test the compacted excavated elevation and each layer of fill to verify compliance with the above-suggested recommendations. In addition, a representative should inspect and test any foundation contact soils immediately prior to concrete placement.

5. The sub-base and base courses should be placed, compacted and tested in accordance with the specifications provided by the Engineer.

HYDROLOGIC CONDITIONS

For a typical year in Manatee County, over 60% of the annual rainfall occurs during the months of June through September. During this period, water table levels gradually rise to their annually highest levels, which typically occur in August to September. During the relatively dry portion of the year (from October to May), the water table recedes to lower levels, typically reaching the lowest level in May.

The seasonal high water table is the highest level that is achieved during the year. Of course, the seasonal high water table varies from year to year, primarily due to rainfall variations from year to year.

The U.S. Department of Agriculture, Natural Resources Conservation Service, (USDA-NRCS) defines the seasonal high water table as the highest level of a saturated zone in the soil in most years. In the USDA-NRCS soil surveys, a range of seasonal high water tables is listed for each of the defined surficial soil types. The water table is estimated to be at or above this level for at least one month during most years. These estimates are based mainly on evidence of a saturated zone (grayish colors or mottles) and are generally applicable to an undrained soil condition (i.e. no artificial drainage).

The Southwest Florida Water Management District (SWFWMD) defines the seasonal high water table as the elevation to which the water can be expected to rise during a normal wet season. This definition differs somewhat from the USDA-NRCS definition. The most significant difference is that the USDA-NRCS refers to the highest level of a saturated zone. Due to capillary rise, the saturated zone may extend a few to several inches above the water table. This is because the capillary zone is a saturated zone above the water table where the fluid (pore water) pressure is less than atmospheric pressure. Therefore, water from the capillary zone will not flow into a borehole which penetrates the aquifer. Only in the area below the water table, where the pore water pressure is greater than atmospheric pressure, will the water flow into an open borehole.

The height of capillary rise is generally less than 6-inches above the water table in most of the surficial sandy soils typical of the area, but may be greater if the surficial soils are more silty or clayey. The seasonal high water table, as defined in geotechnical engineering practice (and as accepted by SWFWMD) may, therefore, be somewhat lower than that reported in the USDA-NRCS soil surveys.

For the purpose of designing stormwater management systems, it is our objective to estimate the seasonal high water table as the elevation the water table is expected to be at or above for no more than a few (approximately 2 to 4) weeks during a year of average climatic conditions.

The USDA-NRCS "Soil Survey of Manatee County, Florida" (1983) indicates the predominant surficial soil types in the area of the proposed stormwater ponds to be Delray complex in the area of DRI-1 and Canova, Anclote and Okeelanta soils in the area of DRI-2. Selected properties of these soil types are included in Table 1 of Appendix II of this report.

The USDA-NRCS indicates the seasonal high water table level for the Delray complex soil type to be at a depth of 0.0 to 1.0 feet below the ground surface and the Canova, Anclote and Okeelanta soils to be 2.0 feet above to 1.0 feet below the ground surface. Seasonal high water table levels listed in the Soil Survey assume essentially natural drainage conditions, without engineered drainage or other improvements at the site.

Seasonal High Water Table

The existing ground surface elevation at our test boring location was estimated by Keith and Schnars, P.A. The existing and seasonal high water table levels were then referenced to the ground surface elevation.

The seasonal high water table was estimated at our test locations, based upon our review of the USDA-NRCS soil survey, our field explorations, and records of water table fluctuations maintained by our firm. The existing water table and estimated seasonal high water table elevations for the

test location are summarized in Table 2 of Appendix II. In general, the seasonal high water table elevation at the site is estimated to be 15.4 to 17.4 feet NGVD. Water table levels are expected to fluctuate due to seasonal variations in the amount of rainfall.

It should be noted that there was 2 to 4 feet of fill in the area of DRI-1/HA-DR-1. This area is significantly lower than the adjacent parking lot to the south. At the time HA-DR-1 was performed, there had been a recent heavy rain and the area was ponded. This was a temporary condition and did not represent the actual water table at the time.

There was 3 to 4 feet of fill at the location of DRI-2/HA-DR-2. In addition, there was a deep drainage canal adjacent to the south of this area. This drainage canal can be expected to lower the water table within its zone of influence which almost certainly extends into the area of the soil borings.

Vertical Infiltration Rate

The double-ring infiltrometer (DRI) tests were performed based upon the procedures of ASTM D-3385. The test results are summarized on the "double-ring infiltrometer" plates in Appendix II and indicate vertical infiltration rates of 0.6 inch/hour (1.2 feet/day) for DRI-1 and 2.3 inch/hour (4.6 feet/day) for DRI-2. The test depth (depth excavated) below the ground surface and the soil profile encountered are also listed on the respective plates. Also, the water head was 9 inches for DRI-1 and 6 inches for DRI-2.

The DRI tests were performed near the ground surface. It is not known to what depth the ponds will be excavated. Due to the very low infiltration rate at DRI-1, side drains will likely be necessary.

GENERAL COMMENTS

The analysis and recommendations submitted in this report are based upon the data obtained from twelve (12) shallow auger test borings and one (1) standard penetration test boring, performing two (2) double-ring infiltrometer tests, and performing two (2) pavement cores performed at the locations indicated on the attached Figure 1. This report does not reflect any variations which may occur between the borings. While the borings are representative of the subsurface conditions at their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered. The nature and extent of variations may not become evident until during the course of a ground improvement program, if such a program is undertaken. If variations then appear evident, it will be necessary for a reevaluation of the recommendations of this report to be made after performing on-site observations during the construction period and noting the characteristics of any variations. The boring logs and related information are based upon the driller's logs and visual examination of selected samples in the laboratory. The delineation between soil types shown on the logs is approximate, and the description represents our interpretation of the subsurface conditions at the designated boring location on the particular date drilled.

The groundwater elevations shown on the boring logs represent groundwater surfaces encountered on the dates shown. Fluctuations in water table levels should be anticipated throughout the year.

It has been a pleasure to be of assistance to you with this project. Please contact us when we may be of further service to you, or should you have any questions concerning this report.

Very truly yours,

ARDAMAN & ASSOCIATES, INC.

8/16/05

Craig G. Obrecht, P.E.
Project Engineer
Eng. Reg. No. 55451

Gary H. Schmidt, P.E.
Vice President
Eng. Reg. No. 12305

CGO/GHS:nh

APPENDIX I

SOIL BORING, SAMPLING AND TESTING METHODS

Standard Penetration Test

The Standard Penetration Test (SPT) is a widely accepted method of in situ testing of foundation soils (ASTM D-1586). A 2-foot long, 2-inch O.D. split-barrel sampler attached to the end of a string of drilling rods is driven 18 inches into the ground by successive blows of a 140-pound hammer freely dropping 30 inches. The number of blows needed for each 6 inches of penetration is recorded. The sum of the blows required for penetration of the second and third 6-inch increments of penetration constitutes the test result or N-value. After the test, the sampler is extracted from the ground and opened to allow visual examination and classification of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load. The following tables relate N-values to a qualitative description of soil density and, for cohesive soils, an approximate unconfined compressive strength (Qu):

Cohesionless Soils:	N-Value	Description
	0 to 4	Very loose
	4 to 10	Loose
	10 to 30	Medium dense
	30 to 50	Dense
	Above 50	Very dense

Cohesive Soils:	N-Value	Description	Qu (ton/ft^2)
	0 to 2	Very soft	Below 0.25
	2 to 4	Soft	0.25 to 0.50
	4 to 8	Medium stiff	0.50 to 1.0
	8 to 15	Stiff	1.0 to 2.0
	15 to 30	Very stiff	2.0 to 4.0
	Above 30	Hard	Above 4.0

The tests are usually performed at 5-foot intervals. However, more frequent or continuous testing is done by our firm through depths where a more accurate definition of the soils is required. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is

a bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, NX-size flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or prevent the loss of circulating fluid.

Representative split-spoon samples from each sampling interval and from every different stratum are brought to our laboratory in air-tight jars for further evaluation and testing, if necessary. Samples not used in testing are stored for at least six months prior to being discarded. After completion of a test boring, the hole is kept open until a steady state groundwater level is recorded. The hole is then sealed, if necessary, and backfilled.

Auger Borings

Auger borings are used when a relatively large, continuous sampling of soil strata close to ground surface is desired. A 4-inch diameter, continuous flight, helical auger with a cutting head at its end is screwed into the ground in 5-foot sections. It is powered by the rotating action of the Kelly bar of a rotary drill rig. The sample is recovered by withdrawing the auger out of the ground without rotating it. The soil sample so obtained is classified and representative samples put in bags or jars and brought back to the laboratory for further classification and testing.

Hand Auger Borings

Hand auger borings are used, if soil conditions are favorable, when the soil strata are to be determined within a shallow (approximately 5 to 9 feet) depth or when access is not available to power drilling equipment. A 3-inch diameter, hand bucket auger with a cutting head is simultaneously turned and pressed into the ground. The bucket auger is retrieved to the surface at approximately 6-inch intervals and its contents emptied for inspection. The soil sample so obtained is classified and representative samples put in bags or jars and transported to the laboratory for further classification and testing.

Laboratory Test Methods

Soil samples returned to our laboratory are examined by a geotechnical engineer or geotechnician to obtain more accurate descriptions of the soil strata. Laboratory testing is performed on selected samples as deemed necessary to aid in soil classification and to further define engineering properties of the soils. The test results are presented on the soil boring logs at the depths at which the respective sample was recovered, except that grain size distributions or selected other test results may be presented on separate tables, figures or plates as described in this report. The soil descriptions shown on the logs are based upon a visual classification procedure in general accordance with the Unified Soil Classification System (ASTM D-2488-84) and standard practice. Following is a list of abbreviations which may be used on the boring logs.

-200 - Percent Fines (percent passing the No. 200 sieve); ASTM D-1140
DD - Dry Density of Undisturbed Sample; ASTM D-2937
Gs - Specific Gravity of Soil; ASTM D-854
k - Hydraulic Conductivity (Coefficient of Permeability)
LL - Liquid Limit; ASTM D-423
OC - Organic Content; ASTM D-2977
pH - pH of Soil; ASTM D-2976
PI - Plasticity Index (LL-PL); ASTM D-424
PL - Plastic Limit; ASTM D-424
Qp - Unconfined Compressive Strength by Pocket Penetrometer;
Qu - Unconfined Compressive Strength; ASTM D-2166 (soil), D-2938 (rock)
SL - Shrinkage Limit; ASTM D-427
USCS - Unified Soil Classification System; ASTM D-2487
w - Water (Moisture) Content; ASTM D-2216

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION:
WATER TABLE DEPTH: 3.1' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger
DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray fine sand with silt and trace shell - fill					
		2									
		3		SP-SM	A-3	dark gray fine sand with silt					
				SP	A-3	gray fine sand					
		4									
3 ▼		5		SP-SM	A-3	dark brown fine sand with silt					
		6		SP	A-3	brown fine sand					
				SP	A-3	pale brown fine sand					
		7									
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-1

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 2.7' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray fine sand with silt and trace shell - fill					
		2		SM	A-8	black mucky fine sand	18		4.4		
		3		SM	A-2-4	brown and dark gray mixed silty fine sand					
				SP-SM	A-3	pale brown fine sand with silt					
3		4						10			
		5		SC	A-2-7	dark gray clayey fine sand					
		6									
		7		SP-SM	A-3	light gray fine sand with silt					
		8									
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-2

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION:
WATER TABLE DEPTH: 4.0' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger
DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray and brown fine sand with silt and trace shell - fill					
		2									
		3									
3		4		SP-SM	A-3	mixed dark gray fine sand with silt - fill					
		5		SM	A-8	black slightly mucky silty fine sand	20		4.0		
		6		SP-SM	A-3	dark brown fine sand with silt					
		7		SP-SM	A-3	gray-brown fine sand with silt					
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-3

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 4.0' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	gray-brown to yellow-brown mixed fine sand with silt and trace shell - fill					
		2									
		3									
3		4									
		5		SM	A-8	black mucky silty fine sand	9		5.6		
		6		SC	A-8	black mucky clayey fine sand	115		18		
		7		SM	A-2-4	dark gray silty fine sand					
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-4

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 3.0' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray fine sand with silt and trace shell - fill					
				SP-SM	A-3	dark gray and brown fine sand with silt, trace cemented silt - disturbed					
3		2									
6		3		SP-SM	A-3	gray-brown fine sand with silt, trace shell					
						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. FILE NO: 05-7083 BORING NO.: HA-5

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: >6.0' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray and brown fine sand with silt and trace shell - fill					
		2									
3		3									
				SP	A-3	gray-brown fine sand					
		4									
6				SP-SC	A-2-4	dark gray fine sand with clay, trace mucky					
		5					29	11	2.1		
						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-6

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 2.5' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray fine sand with silt and trace shell - fill					
		2		SP-SM	A-3	dark gray fine sand with silt					
		3		SP	A-3	gray fine sand					
3											
		4		SP-SM	A-3	dark brown fine sand with silt					
		5		SP-SM	A-3	brown fine sand with silt					
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-7

BORING LOCATION: See Figure 1

DATE DRILLED: 7/14/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 2.5' **TIME:** **DATE:** 7/14/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Mark & Antonio **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: Badger **BIT:** fishtail **DRILLING RODS:** 4" auger

DRILLING METHOD: mechanical auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray-brown fine sand with silt and trace shell - fill					
		2									
		3		SP	A-3	gray fine sand					
		4									
		5									
3		6		SP-SM	A-3	dark gray-brown fine sand with silt					
		7		SP-SM	A-3	brown fine sand with silt					
		8		SP	A-3	pale brown fine sand					
6						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. FILE NO: 05-7083 BORING NO.: HA-8

BORING LOCATION: See Figure 1

DATE DRILLED: 7/12/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION: 18.72'
WATER TABLE DEPTH: 2.5' **TIME:** **DATE:** 7/13/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Chuck W. **LOGGED BY:** Chuck W.

DRILL MAKE & MODEL: N/A **BIT:** 3.5" bucket **DRILLING RODS:** N/A
DRILLING METHOD: hand auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	dark gray fine sand with silt - fill					
		2		SP-SM	A-3	brown fine sand with silt, trace shell - fill					
		3		SP-SM	A-3	gray-brown fine sand with silt - fill					
		4									
3		5									
		6		SP-SM	A-3	pale brown fine sand with silt					
		7		SM	A-8	black mucky fine sand (silty)	33		8.6		
		8		SC	A-8	black mucky fine sand (clayey)					
		9		SC	A-2-7	dark gray-brown clayey fine sand					
6		10		SP-SM	A-3	brown fine sand with silt					
						End of boring					
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. FILE NO: 05-7083 BORING NO.: DRI-1

BORING LOCATION: See Figure 1

DATE DRILLED: 7/26/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION: 18.72'
WATER TABLE DEPTH: 0.0' **TIME:** **DATE:** 7/26/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Mark O. **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: N/A **BIT:** 3.5" bucket **DRILLING RODS:** N/A
DRILLING METHOD: hand auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	gray fine sand with silt - fill					
		2		SP-SM	A-3	dark gray-brown fine sand with silt - fill					
		3		SP-SM	A-3	dark gray fine sand with silt					
3		4		SP	A-3	dark gray fine sand					
		5		SC		dark brown clayey fine sand					
						End of boring - hole caving in					
6											
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-DR-

BORING LOCATION: See Figure 1

DATE DRILLED: 7/11/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION: 19.93'
WATER TABLE DEPTH: 4.8' **TIME:** **DATE:** 7/13/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Chuck W. **LOGGED BY:** Chuck W.

DRILL MAKE & MODEL: N/A **BIT:** 3.5" bucket **DRILLING RODS:** N/A
DRILLING METHOD: hand auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SP-SM	A-3	brown fine sand with silt, trace shell - fill					
		2		SP-SM	A-3	brown fine sand with silt - fill					
		3									
		4		SP-SM	A-3	gray-brown fine sand with silt, trace shell - fill					
		5									
3		6		SP-SM	A-3	dark gray fine sand with silt					
		7		SC	A-8	black mucky fine sand (clayey)	32		9.2		
		8									
		9		SC	A-2-7	dark brown clayey fine sand, trace mucky					
6		10				End of boring					
9											
12											
15											
18											
21											

Ardaman & Associates, Inc.
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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** DRI-2

BORING LOCATION: See Figure 1

DATE DRILLED: 7/26/05 **START:** **FINISH:**
GROUND SURFACE ELEVATION: 20.22'
WATER TABLE DEPTH: >3.5' **TIME:** **DATE:** 7/26/05

CLIENT: Keith and Schnars, P.A.
PROJECT: 9th St E Improvements
LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL
DRILL CREW: Mark O. **LOGGED BY:** Mark O.

DRILL MAKE & MODEL: N/A **BIT:** 3.5" bucket **DRILLING RODS:** N/A
DRILLING METHOD: hand auger **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	AASHTO Class.	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	ORGANIC CONTENT (%)	LIQUID LIMIT	PLAST. INDEX
0		1		SC	A-2-7	gray clayey fine sand - fill					
		2		SP-SC	A-3	gray fine sand with clay - fill					
		3		SP-SM	A-3	dark gray fine sand with silt, trace shell - fill					
3		4									
						End of boring - hit a rock					
6											
9											
12											
15											
18											
21											

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** HA-DR-2

BORING LOCATION: See Figure 1

DATE DRILLED: 7/29/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: **TIME:** **DATE:** 7/29/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Jim & Bill **LOGGED BY:** Jim B.

DRILL MAKE & MODEL: CME 55 **BIT:** tri-cone **DRILLING RODS:** AWJ

DRILLING METHOD: SPT/wash **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	GRAPHIC LOG	USCS	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	LIQUID LIMIT	PLAST. INDEX	FRICTION ANGLE (degrees)	COHESION (ksf)	TOTAL UNIT WEIGHT (pcf)
0					Boring not performed due to utility conflicts							
3												
6												
9												
12												
15												
18												
21												

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REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** SPT-1

BORING LOCATION: See Figure 1

DATE DRILLED: 7/29/05 **START:** **FINISH:**

GROUND SURFACE ELEVATION:

WATER TABLE DEPTH: 2.2' **TIME:** **DATE:** 7/29/05

CLIENT: Keith and Schnars, P.A.

PROJECT: 9th St E Improvements

LOCATION: 9th St E between 53rd & 57th Av E, Bradenton, FL

DRILL CREW: Jim & Bill **LOGGED BY:** Jim B.

DRILL MAKE & MODEL: CME 55 **BIT:** tri-cone **DRILLING RODS:** AWJ

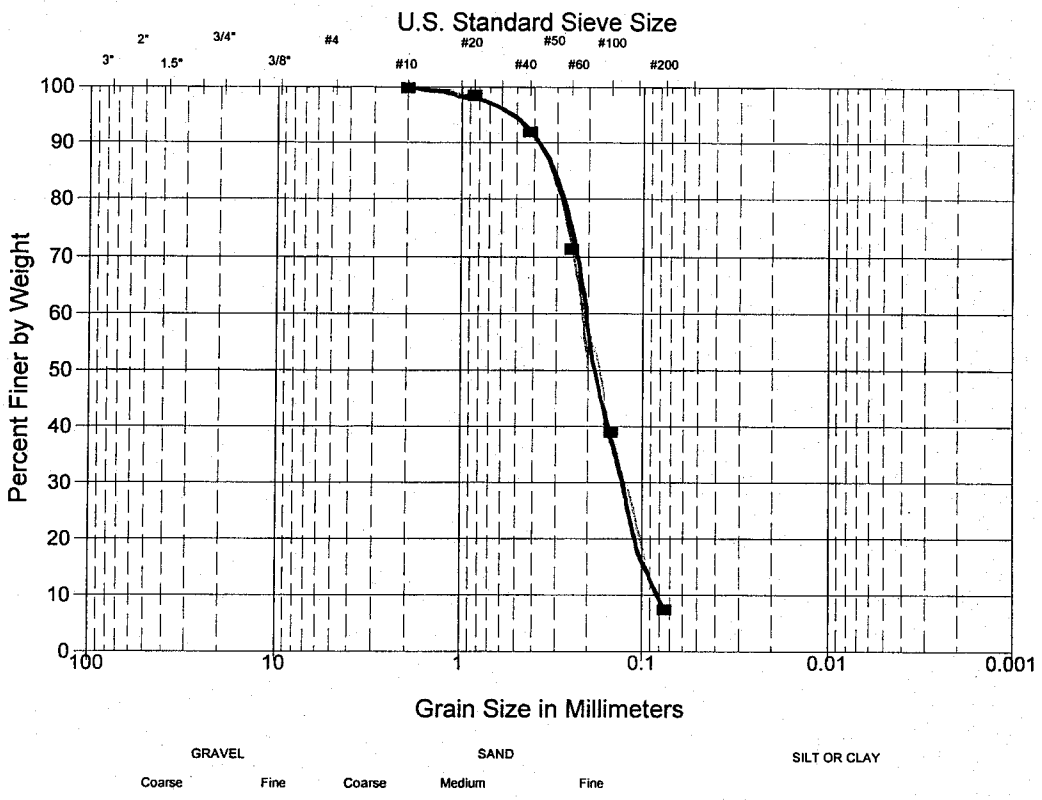
DRILLING METHOD: SPT/wash **WEATHER CONDITIONS:**

DEPTH, FT.	SPT N-VALUE	SAMPLE NO.	USCS	SOIL DESCRIPTION	WATER CONTENT (%)	PERCENT FINES	LIQUID LIMIT	PLAST. INDEX	FRICTION ANGLE (degrees)	COHESION (tsf)	TOTAL UNIT WEIGHT (pcf)
0		1	SP-SM	gray fine sand with silt					29		95
		2	SP	gray fine sand					29		95
			SP	light gray fine sand					29		95
		3									
3	7	4	SP	dark brown fine sand					29		100
	11	5	SP	brown fine sand		8			30		105
6	8	6	SP	pale brown fine sand					29		100
	64	7	ML	pale brown cemented silt - soft limestone		77			35		135
9	50/3"										
12				softer drilling							
			ML	light gray cemented silt					35		136
	50/4"	8									
15											
18			CL	gray silty clay						0.5	110
		9									
	50/3"	10	ML	light gray cemented silt					35		135
				End of boring							
21											

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

REVIEWED BY: Craig Obrecht, P.E. **FILE NO:** 05-7083 **BORING NO.:** SPT-2

GRAIN SIZE DISTRIBUTION CURVE



SIEVE ANALYSIS:

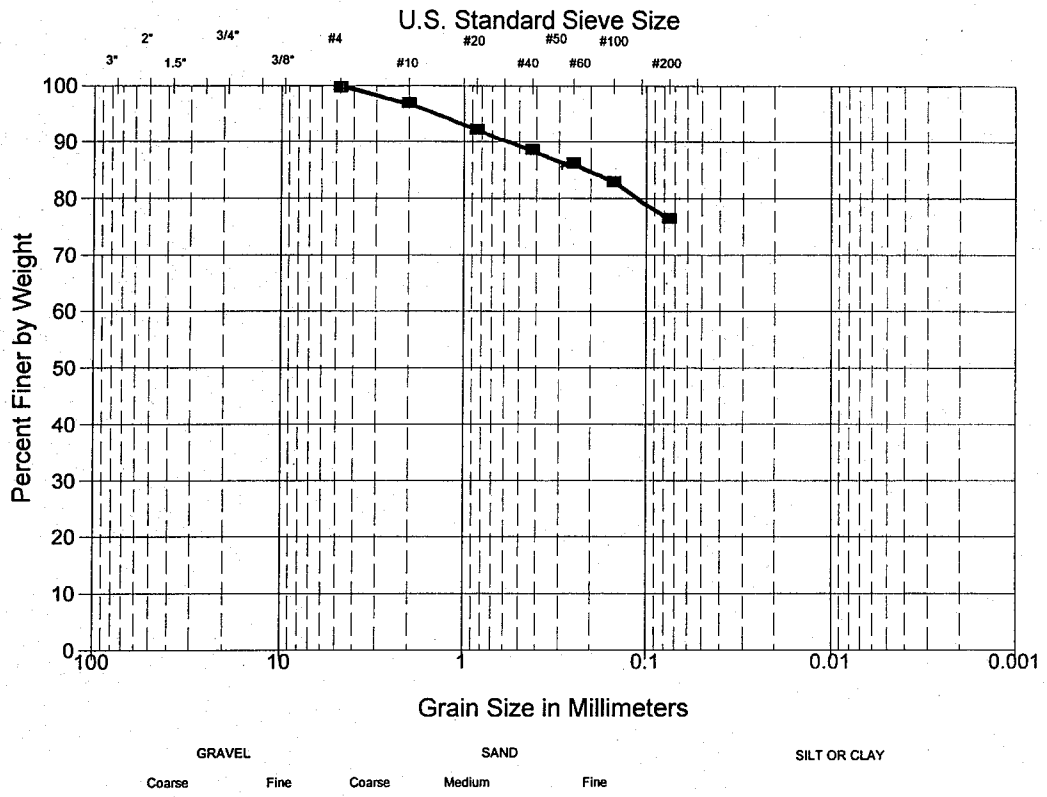
Sieve Size	Percent Passing
3 in.	
2 in.	
1-1/2 in.	
1 in.	
3/4 in.	
3/8 in.	
No. 4	
No. 10	99.9
No. 20	98.6
No. 40	92.1
No. 60	71.4
No. 100	39.0
No. 200	7.5

SAMPLE DATA:

Boring No.:	SPT-2
Sample No.:	5
Sample Depth (feet):	5
Soil Description:	brown fine sand w/silt
Unified Soil Classification:	SP-SM

9th St. E.
05-7078

GRAIN SIZE DISTRIBUTION CURVE



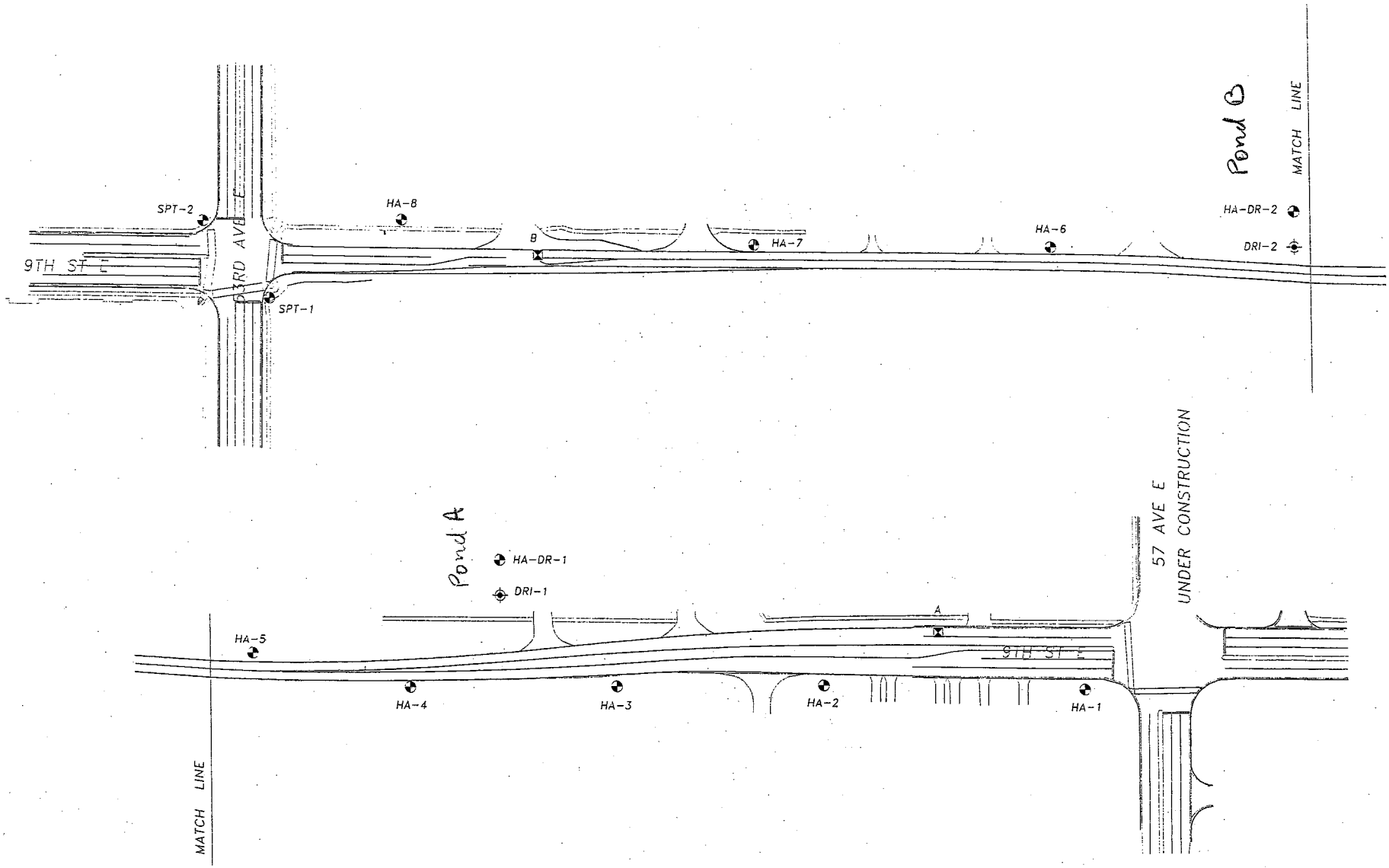
SIEVE ANALYSIS:

Sieve Size	Percent Passing
3 in.	
2 in.	
1-1/2 in.	
1 in.	
3/4 in.	
3/8 in.	
No. 4	99.8
No. 10	97.0
No. 20	92.3
No. 40	88.7
No. 60	86.3
No. 100	83.1
No. 200	76.6

SAMPLE DATA:

Boring No.:	SPT-2
Sample No.:	7
Sample Depth (feet):	8
Soil Description:	pale brown silt
Unified Soil Classification:	ML

9th St. E.
05-7083



Base Drawing By: Keith and Schnars, P.A.

Mar

DRAWN BY: K

FILE NO.
05-7083

APPENDIX II

Table 1
SELECTED PROPERTIES OF SURFICIAL SOILS

Map Symbol	Hydrologic Group	High Water Table (feet)	Depth (inch)	Unified Soil Classification	Percent Passing No. 200 Sieve	Percent Clay	Permeability (feet/day)	Available Water Capacity (feet/feet)
7 *	B/D	+2.0 - 0.0	0 - 8	PT	------	------	12 - 40	0.10 - 0.20
	(Canova)		8 - 24	SP, SP-SM	3 - 10	1 - 6	12 - 40	0.02 - 0.05
			24 - 68	SM, SM-SC, SC	15 - 35	15 - 25	1.2 - 12	0.10 - 0.15
	D	0.0 - 1.0	0 - 16	SP, SP-SM	2 - 12	2 - 8	12 - 40	0.10 - 0.15
	(Anclote)		16 - 80	SP, SP-SM, SM	2 - 20	2 - 13	12 - 40	0.03 - 0.10
	A/D	+1.0 - 0.0	0 - 20	PT	------	------	12 - 40	0.20 - 0.30
	(Okeelanta)		20 - 54	SP, SP-SM, SM	2 - 15	1 - 5	12 - 40	0.05 - 0.10
16	B/D	0.0 - 1.0	0 - 15	SP-SM, SM, SM-SC	5 - 20	3 - 13	12 - 40	0.10 - 0.15
			15 - 55	SP-SM	5 - 12	1 - 7	12 - 40	0.05 - 0.08
			55 - 80	SM, SM-SC, SC	20 - 35	13 - 30	1.2 - 12	0.10 - 0.15
17 *	B/D	0.0 - 1.0	0 - 15	SP-SM, SM, SM-SC	5 - 20	3 - 13	12 - 40	0.10 - 0.15
	(Delray)		15 - 55	SP-SM	5 - 12	1 - 7	12 - 40	0.05 - 0.08
			55 - 80	SM, SM-SC, SC	20 - 35	13 - 30	1.2 - 12	0.10 - 0.15
	B/D	0.0 - 1.0	0 - 23	SP, SP-SM	2 - 5	<5	12 - 40	0.02 - 0.05
	(EauGallie)		23 - 35	SP-SM, SM	5 - 20	1 - 8	1.2 - 12	0.05 - 0.10
			35 - 43	SP, SP-SM	2 - 12	1 - 5	12 - 40	0.02 - 0.05
			43 - 62	SM, SM-SC, SC	20 - 35	13 - 31	1.2 - 12	0.10 - 0.15
			62 - 80	SP-SM, SM	5 -25	1 - 13	4 - 12	0.05 - 0.10
20	B/D	0.0 - 1.0	0 - 28	SP, SP-SM	2 - 5	<5	12 - 40	0.02 - 0.05
			28 - 42	SP-SM, SM	5 - 20	1 - 8	1.2 - 12	0.05 - 0.10
			42 - 50	SM, SM-SC, SC	20 - 35	13 - 31	1.2 - 12	0.10 - 0.15
			50 - 65	SP-SM, SM	5 -25	1 - 13	4 - 12	0.05 - 0.10
38	B/D	0.0 - 1.0	0 - 25	SP, SP-SM	2 - 12	1 - 7	12 - 40	0.05 - 0.10
			25 - 45	SP-SM	5 - 12	3 - 8	12 - 40	0.05 - 0.10
			45 - 64	SM, SM-SC, SC	15 - 35	13 - 30	0.4 - 1.2	0.10 - 0.15
			64 - 68	SM, SP-SM	5 - 25	5 - 13	4 - 12	0.08 - 0.12

MAP SYMBOL LEGEND

7 - Canova, Anclote and Okeelanta soils
16 - Delray complex
17 - Delray-EauGallie complex
20 - EauGallie fine sand
38 - Palmetto sand

* More than one soil designated to this map symbol.
Source: Natural Resources Conservation Service (1983)

UNIFIED SOIL CLASSIFICATION LEGEND

SP	- Poorly graded sand
SP-SM	- Poorly graded sand with silt
SM	- Silty sand
SP-SC	- Poorly graded sand with clay
SC	- Clayey sand
SM-SC	- Clayey, silty sand
CL	- Lean clay
CH	- Fat clay

Table 2
WATER TABLE LEVELS

Boring Number	Existing Ground Surface Elevation (feet, NGVD)	Existing Water Table Elevation (feet, NGVD)	Existing Water Table Depth (feet)	Date (Day-Mo-Yr)	Seasonal High Water Table Elevation (feet, NGVD)	Seasonal High Water Table Depth (feet)	
DRI-1	19.4	16.9	2.5	13-Jul-05	17.4	2.0	Pond A
HA-DR-1	18.7	18.7	0.0	26-Jul-05	17.0	1.7	
DRI-2	19.9	15.1	4.8	13-Jul-05	15.4	4.5	Pond B
HA-DR-2	20.2	<16.7	>3.5'	26-Jul-05	15.4	4.8	

Double-Ring Infiltrometer Test

The double-ring infiltrometer test is used to determine the vertical infiltration rate of in situ soils above the water table. The test procedure is based upon ASTM D-3385.

The test uses two open-ended cylinders (rings), driven concentrically into the soil to a depth of a few inches. The radius of the outer ring is approximately twice that of the inner ring. Both the inner ring and the outer ring are partially filled with water (or other liquid, when appropriate) and the liquid is maintained at a constant level. The volume of liquid added to the inner ring, to maintain the liquid level constant during timed intervals, is used to calculate the incremental infiltration velocity. The maximum steady-state or average incremental infiltration velocity, depending upon the purpose/application of the test, for the inner ring is equivalent to the infiltration rate.

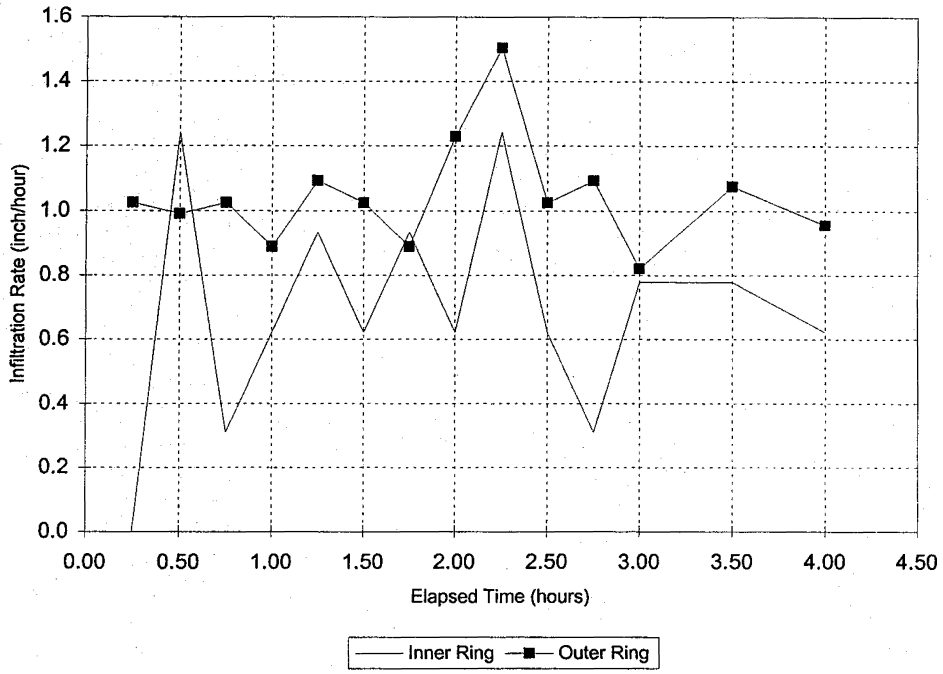
The purpose of the outer ring is to promote one-dimensional, vertical flow beneath the inner ring. The infiltration velocity for the outer ring may also be measured, as a check on the test integrity, but is not used to determine the infiltration rate.

Application of Double-Ring Infiltrometer Test Results

Although the units of the infiltration rate and hydraulic conductivity (k) of soils is similar, there is a distinct difference between these two quantities. They cannot be directly related unless the hydraulic boundary conditions (hydraulic gradient, extent of lateral flow of water, etc.) are known, or can be reliably estimated. In general, however, the infiltration rate near the end of the test is less than the saturated vertical hydraulic conductivity, since a fully saturated condition is generally not achieved by tests of this type and the hydraulic gradient near the end of the test is generally equal to or less than 1.0.

The test results represent a vertical infiltration rate for the conditions under which the test was performed and do not necessarily represent the infiltration rate for other conditions, such as the size of the infiltration basin and the depth of the water table. Some publications, such as EPA 65/1-81-013, recommend using a design infiltration rate that is a small percentage (typically 2% to 10%) of the infiltration rate measured by cylinder (ring) infiltrometers, to compensate for potential clogging of the infiltration surface and to correct for a larger proportion of horizontal flow (relative to vertical flow) that occurs from a small test area relative to a full-size infiltration basin area. This assumes, however, that the vertical infiltration rate (or vertical hydraulic conductivity) is the limiting factor in the basin's infiltration capacity. At sites where there is a shallow water table or shallow restrictive layer, the infiltration capacity of the full-size basin may be most limited by groundwater mounding, and not by the vertical hydraulic conductivity of the soil at or near the basin bottom. In this case, applying a percentage to a measured vertical infiltration rate or vertical hydraulic conductivity may over-estimate the actual infiltration capacity of the full-size basin, and groundwater mounding analyses should be performed by a professional engineer or geologist with expertise in groundwater hydrology.

Double-Ring Infiltrometer



GRAPH DATA:

Elapsed Time (hr:min)	Infiltration Rates Inner Ring (inch/hour)	Outer Ring (inch/hour)
0:15		1.0
0:30	1.2	1.0
0:45	0.3	1.0
1:00	0.6	0.9
1:15	0.9	1.1
1:30	0.6	1.0
1:45	0.9	0.9
2:00	0.6	1.2
2:15	1.2	1.5
2:30	0.6	1.0
2:45	0.3	1.1
3:00	0.8	0.8
3:30	0.8	1.1
4:00	0.6	1.0

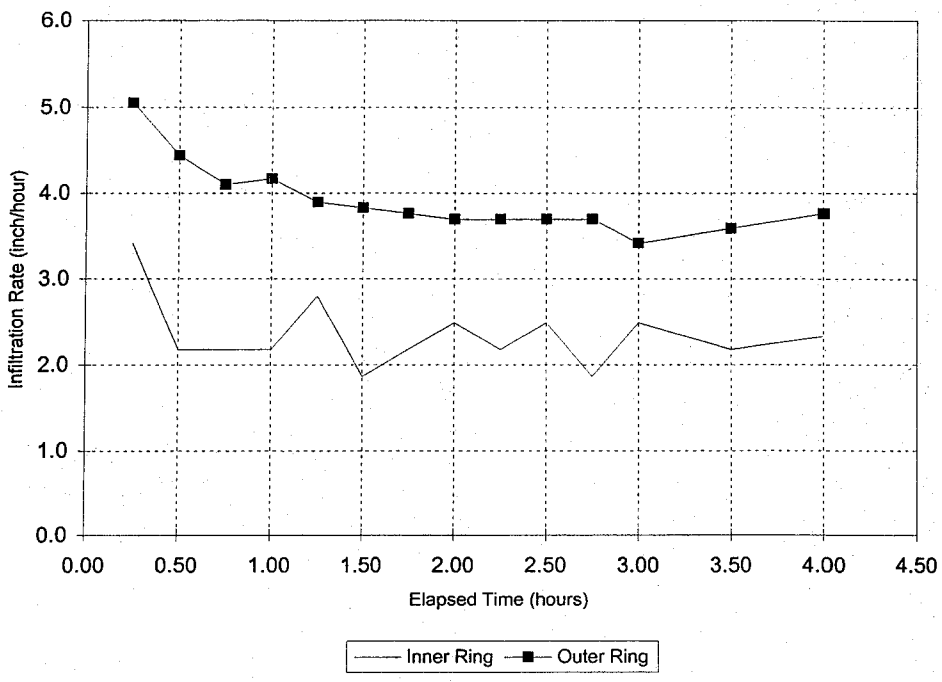
TEST NUMBER: **DRI-1**

Test Date:		12-Jul-05
Depth Excavated (inch):		3
Inner Ring	- Outside Dia. (inch):	11.00
	- Inside Dia. (inch):	10.00
	- Water Depth (inch):	6
Outer Ring	- Inside Dia. (inch):	24.00
	- Water Depth (inch):	6

SOIL PROFILE:

Depth (ft) From	To	Soil Description
0.0	1.0	gray fine sand with silt
1.0	4.0	gray-brown fine sand with silt
4.0	5.0	dark gray mucky sand
5.0	5.5	dark gray clayey sand, tr muck
5.5	6.0	gray-brown clayey sand
2.5	==>	Existing Water Table

Double-Ring Infiltrometer



GRAPH DATA:

Elapsed Time (hr:min)	Infiltration Rates Inner Ring (inch/hour)	Outer Ring (inch/hour)
0:15	3.4	5.1
0:30	2.2	4.4
0:45	2.2	4.1
1:00	2.2	4.2
1:15	2.8	3.9
1:30	1.9	3.8
1:45	2.2	3.8
2:00	2.5	3.7
2:15	2.2	3.7
2:30	2.5	3.7
2:45	1.9	3.7
3:00	2.5	3.4
3:30	2.2	3.6
4:00	2.3	3.8

TEST NUMBER: **DRI-2**

Test Date:		11-Jul-05
Depth Excavated (inch):		8
Inner Ring	- Outside Dia. (inch):	11.00
	- Inside Dia. (inch):	10.00
	- Water Depth (inch):	9
Outer Ring	- Inside Dia. (inch):	24.00
	- Water Depth (inch):	6

SOIL PROFILE:

Depth (ft) From	To	Soil Description
0.0	4.0	gray-brown fine sand with silt
4.0	5.5	black mucky sand
5.5	6.0	gray-brown clayey sand
4.8	==>	Existing Water Table

APPENDIX III

TECHNICAL SPECIFICATIONS

CEMENT-STABILIZED BASE

1. DESCRIPTION

1.1 The work specified in this section consists of the construction of a cement-stabilized base course composed of crushed concrete, shell, or other material having a minimum LBR of 90 and Portland cement uniformly mixed, compacted, finished and cured in accordance with these specifications, and shall conform to the lines, grades, thicknesses and typical cross-sections shown on the plans. The base shall be designed to have a minimum in situ compressive strength of 150 psi.

2. MATERIALS

2.1 Portland cement shall comply with the latest specifications for Portland cement, AASHTO M-85, or AASHTO M-134 or ASTM C-150, for the type specified. A one (1) cubic foot sack of Portland cement shall be considered to weight 94 pounds.

2.2 Water for use with cement shall be clean and free of substances deleterious to the hardening of the cement-stabilized base.

2.3 Material to be blended with Portland cement shall consist of crushed concrete, shell, or limerock having a minimum LBR of 90.

3. EQUIPMENT

3.1 For performing the work specified in this section, the Contractor shall use a portable or stationary stabilization plant capable of producing uniformly blended and proportioned mixture of cement base material and water.

4. CONSTRUCTION METHODS

4.1 Preparation

A. Before other construction operations are begun, the area to be paved shall be graded and shaped as required to construct the cement-stabilized base in conformance with the grades, lines, thicknesses and typical cross-sections shown on the plans. Any additional soil needed shall be placed as directed by the Engineer. The subbase shall be firm and able to support (without displacement) the construction equipment and compaction hereinafter specified. Any unsuitable soil or materials, including material retained on a three-inch sieve, shall be removed and replaced with acceptable material. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

B. The subbase in both cuts and fills shall be stabilized to an LBR of at least 40 and compacted to a density of 98% of the maximum density, as determined by AASHTO T-180 (Modified Proctor). The subbase shall be shaped, prior to making the density tests.

4.2 Placement and Compaction

The mixture shall be placed within ±2% of the design moisture content. The loose mixture shall be uniformly compacted to the specified density within two hours. During compaction operations, shaping may be required to obtain uniform compaction and required grade and cross-section.

4.3 Finishing

After the mixture has been compacted, the surface of the cement-treated base shall be shaped, if necessary, to the required lines, grades and cross-section. During shaping operations, the surface shall be lightly scarified to loosen any imprints left by the compacting or shaping equipment. The resulting surface shall then be compacted to the specified density with vibratory steel-wheel or pneumatic tire rollers, or both. Surface compaction and finishing shall be done in such a manner as to produce, in not longer than 5 hours, a smooth, dense surface, free of surface compaction planes, cracks, ridges or loose materials.

4.4 Uniformity

Any portion of the cement-treated base that has a density less than 98% of the design density shall be corrected by additional rolling. If the time limits set forth herein have been exceeded, the base shall be left undisturbed and shall be tested (after 7 days of curing) by the Engineer to determine its suitability. If it is found unsuitable, it shall be removed and replaced by the Contractor without additional compensation. The Contractor may, at his option, remove and replace the deficient base rather than wait for the results of the 7-day test.

5. CONSTRUCTION JOINTS

5.1 At the end of each day's construction, a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face. The construction joint thus formed shall be located so as to exclude all of that part of the base at the end of the run from being considered a part of the finished base if it does not have full depth, it is not thoroughly compacted, is not properly proportioned, or is not properly mixed.

6. CURING

6.1 After the cement-treated base has been finished as specified herein, it shall be protected against drying for 7 days, as specified herein. The finished base shall be maintained in a moist condition by application of water until the bituminous curing material is applied.

6.2 At the time the bituminous material is applied, the cement-treated base surface shall be dense, free of all loose and extraneous material, and shall contain sufficient moisture to permit penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids of the cement-treated base immediately before the bituminous curing material is applied.

7. OPENING TO TRAFFIC

7.1 After the 7-day curing period, the completed portion may be opened to all traffic, provided the base is either protected or has hardened sufficiently to prevent marring or distorting of the surface by the equipment or traffic, and provided the curing, as specified, is not impaired.

A. The curing material shall be adequately maintained during the 7-day protection period so that all of the cement-treated base will be covered effectively during this period.

B. Finished portions of the base that are used by equipment during the construction of an adjoining section shall be protected in such a manner as to prevent the equipment from marring or damaging the completed work.

8. MAINTENANCE

8.1 The Contractor shall maintain the base to a true and satisfactory surface until the wearing surface is constructed. Should any repairs or patching be necessary, they shall extend to the full depth of the base and shall be made in a manner that will assure restoration of a uniform base course conforming to the requirements of these applications. In no case shall repairs be made by adding a thin layer of base to the completed work. The Contractor may, at his option, make full-depth repairs with concrete or asphalt to small or minor areas such as manholes, inlets or the like.

9. TESTING

9.1 Tests are a necessary part of the cement-treated base construction. At least one each of the following will be made by the laboratory unless otherwise specified.

A. Mix Design - A mix design shall be submitted to the Engineer at least 14 days prior to initiating base construction. The mix design shall be conducted using representative samples of the material to be utilized, obtained from the same supplier that is to be used on the project. The mix design shall be performed using the procedures of AASHTO D-134, using moisture contents that are representative of the material being utilized. The mix design shall include a design Portland cement content, a design moisture content (i.e., the moisture content of the LBR=90 material at the time it is mixed with the Portland cement) and a design density (i.e., the density of the compacted specimen when compacted at the design moisture content and with the design cement content added).

B. The stockpile to be utilized should not be segregated. Moisture content and gradation shall be conducted for every 6,500 SY of cement-treated base. If moisture content or gradations vary, a mix design should be conducted on each variation.

C. Laboratory Density - Laboratory density (AASHTO D-134) at the field moisture content and with the design cement content corresponding to this moisture content shall be conducted prior to placement of base.

D. Field Density - One (1) density test shall be taken per each 500 SY maximum area. The field density shall be at least 98% of the laboratory density (AASHTO T-134) which corresponds to the area being tested.

E. Bag Samples - Bag samples shall be taken at least once daily and at least one per 1,500 SY. Test specimens from the bag samples shall be molded in the laboratory at the field moisture content by the Standard Proctor compaction method (AASHTO T-99). Each molded specimen shall be 4 inches in diameter and 4.5 inches in height. The specimens shall be cured for 7 days and tested for compressive strength. Prior to testing for compressive strength, the specimens shall be submerged in water for a minimum of 4 hours. The compressive strength of the specimens shall be no less than 200 psi and should be in the range of 200 to 300 psi.

F. Cores Samples - 6-inch diameter cores shall be taken and tested to verify compressive strength and thickness at a frequency of at least one per 1,500 SY, but no less than one per day. Core samples shall be obtained prior to placement of asphalt on the base, but no less than 14 days after base placement. The compressive strength will be acceptable if the cores indicate a compressive strength no less than 150 psi throughout the design base thickness.

G. Seven-Day Inspection - After receipt of the 7-day test report from the laboratory stating that there is a satisfactory cement-treated base, the Engineer may allow the wearing surface to be placed immediately.

9.2 All tests shall be performed by a testing laboratory, approved by the Engineer. The testing laboratory shall be under the direction of the Professional Engineer with at least five (5) years experience in materials testing.

10. GRADE STAKES

10.1 The Contractor shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the Contractor's expense.

11. METHOD OF MEASUREMENT

11.1 The quantity to be paid for under this section shall be the number of square yards of cement-treated base course actually completed and accepted. In determining the quantity of base course, the length to be used in the calculation shall be the actual length measured along the surface of the base and the width shall be the width of the base actually constructed, both within the near lines shown on the plans.

12. BASIS OF PAYMENT

12.1 This work shall be paid for at the contract unit price per square yard of completed and accepted base course. The contract unit price shall be full payment for furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work and for carrying out the maintenance provisions in this specification.

APPENDIX IV

SUBSURFACE SOIL EXPLORATION, ANALYSIS AND RECOMMENDATIONS FOR PROPOSED "TRAFFIC LIGHT POLES @ 9TH "STREET EAST AND 53RD AVENUE EAST, BRADENTON, MANATEE COUNTY, FLORIDA"

June 19, 1996
File No. 96-7382

TO: PDG Electric
4421 12th Street Court East
Bradenton, Florida 34203-3611

SUBJECT: Subsurface Soil Exploration, Analysis and Recommendations for Proposed "Traffic Light Poles @ 9th Street East and 53rd Avenue East, Bradenton, Manatee County, Florida"

Gentlemen:

As requested, our firm has completed an exploration of foundation soil conditions at the above-referenced site. This report will present the results of our exploration and foundation recommendations.

This report was prepared for the exclusive use of PDG Electric and their consultants for use in the design of foundation systems for the proposed traffic light poles, in accordance with generally-accepted geo-technical engineering practices. No other warranty, expressed or implied, is made.

SCOPE

The scope of our services has included the following items:

1. Conducting four (4) Standard Penetration Test borings to determine the nature and condition of the subsurface soils.

2. Reviewing each soil sample obtained in our field testing program by a geo-technical engineer in the laboratory for further investigation, classification and assignment of laboratory tests, if required.

3. Analyzing the existing soil conditions with respect to he proposed construction.

4. Preparing this report to document the results of our field testing program, laboratory analysis and engineering analysis.

FIELD EXPLORATION

Our field exploration program consisted of conducting four (4) Standard Penetration Test borings at the locations shown on the attached Figure 1. Test boring depth, location and number were determined by others. Test borings were located in the field by Ardaman & Associates, Inc. The borings were performed to determine the nature and condition of the subsurface soils to a maximum depth of 20.5 feet below the existing ground surface. The equipment and procedures utilized in the Standard Penetration Test are described in greater detail in the appendix of this report.

SOIL CONDITIONS

Soil boring logs representing the soil profiles encountered in our test boring program has been included in the appendix of this report. Soil descriptions listed are based upon visual examination by the drill crew in the field and by a geo-technical engineer in the laboratory.

LABORATORY INVESTIGATION

Samples obtained during our field sampling program were thoroughly examined in our laboratory to obtain an accurate definition of the soil profile. Additional testing was deemed necessary in order to further define soil properties. Basic laboratory tests, including moisture content analyses (M.C.) and fines content analyses (P200), were conducted on all samples collected. From this basic laboratory data, and N values from the Standard Penetration Test

borings, the friction angle (ϕ') and the total unit weight (γ_t) were determined. These values are summarized for each sample on the soil boring logs in the appendix of this report. Although no corrosion parameters were determined for these soil samples, the corrosion potential of the soil encountered in this area has generally been found to be moderately aggressive, as indicated by analytical reports of the corrosivity parameters from other sites. Generally the following criteria indicates the aggressiveness of a soil:

	pH	R	Cl^-	O_4^2
Slightly Aggressive	>6.6	>3000	<500	<150
Moderately Aggressive	6.0 - 6.6	500 - 3000	500- 2000	150 - 1500
Extremely Aggressive*	<6.0	<500	>2000	>1500

*Only one of the four criteria needs to be met for a soil to be considered extremely aggressive.

GENERAL COMMENTS

The analysis and recommendations submitted in this report are based upon the data obtained from four (4) soil borings performed at the locations indicated on the attached Figure 1. While the borings are representative of the subsurface conditions at their respective vertical reaches, local variations characteristic of the subsurface materials of the region are anticipated and may be encountered. The boring logs and related information are based upon the driller's logs and visual examination of selected samples in the laboratory. The delineation between soil types shown on the logs is approximate, and the description represents our interpretation of the subsurface conditions at the designated boring location on the particular date drilled.

The water table levels shown on the boring logs represent the water table surfaces encountered on the dates shown. Fluctuations in the water table levels should be anticipated throughout the year.

It has been a pleasure to be of assistance to you with this project. Please contact us when we may be of further service to you, or should you have any questions concerning this report.

Very truly yours,

ARDAMAN & ASSOCIATES, INC.

Scott B. Perkins, P.E.
Project Engineer
Eng. Reg. No. 46678

Gary H. Schmidt, P.E.
Vice President
Eng. Reg. No. 12305

SBP/GHS:rs

APPENDIX

Ardaman & Associates, Inc.
Soil Boring Log

Project: Light Poles at 53rd Ave E and 9th St E	File No. 96-7382

Boring No. 1	Date of Boring: 28 May 96
Water Table Level: 5.6' bls	Conducted by: Suares

DEPTH, ft	SPT "N" VALUE	SAMPLE NO.	SYMBOL	USCS	SOIL DESCRIPTION	M.C. (moisture content,	P200 (fines, %)	γ_t (total unit weight, pcf)	ϕ (friction angle, degrees)
2	9	1		SP	brown to grey fine sand	10	4	105	29
4	6								
6	2			SP	brown fine sand	12	6	100	26
8	2								
10	1	2							
12	0								
14	34	3		ML	grey cemented silt	17	63	135	35
16	50/3"	4							
18									
20	50/2"	5							

Borings were conducted at the approximate locations shown on Figure 1.

Ardaman & Associates, Inc.
Soil Boring Log

Project: Light Poles at 53rd Ave E and 9th St E	File No. 96-7382

Boring No. 2	Date of Boring: 28 May 96
Water Table Level: 5.4' bls	Conducted by: Suares

DEPTH, ft	SPT "N" VALUE	SAMPLE NO.	SYMBOL	USCS	SOIL DESCRIPTION	M.C. (moisture content,	P200 (fines, %)	γ_t (total unit weight, pcf)	ϕ (friction angle, degrees)
2	7	1		SP	brown to grey fine sand			105	29
4	8	2		SP	brown fine sand				
6	7			SP	grey fine sand				
8	7								
10	6	3							
12	17			ML	grey cemented silt			135	35
14	32	4							
16	79	5							
18									
20	50/3"	6							

Borings were conducted at the approximate locations shown on Figure 1.

Ardaman & Associates, Inc.
Soil Boring Log

Project: Light Poles at 53rd Ave E and 9th St E	File No. 96-7382

Boring No. 3	Date of Boring: 14 Jun 96
Water Table Level: 5.5' bls	Conducted by: Suares

DEPTH,ft	SPT "N" VALUE	SAMPLE NO.	SYMBOL	USCS	SOIL DESCRIPTION	M.C. (moisture content,	P200 (fines, %)	γ_t (total unit weight, pcf)	ϕ (friction angle, degrees)
	5	1		SP	brown to grey fine sand	11	2	105	29
2	8	2		SP	grey fine sand	13	6		
4	6	3		SP	brown fine sand	12	5		
6	5								
	5								
8	4								
10	40	4		ML	grey cemented silt	20	71	135	35
12									
14									
	50/5"	5							
16									
18									
20	50/3"	6							

Borings were conducted at the approximate locations shown on Figure 1.

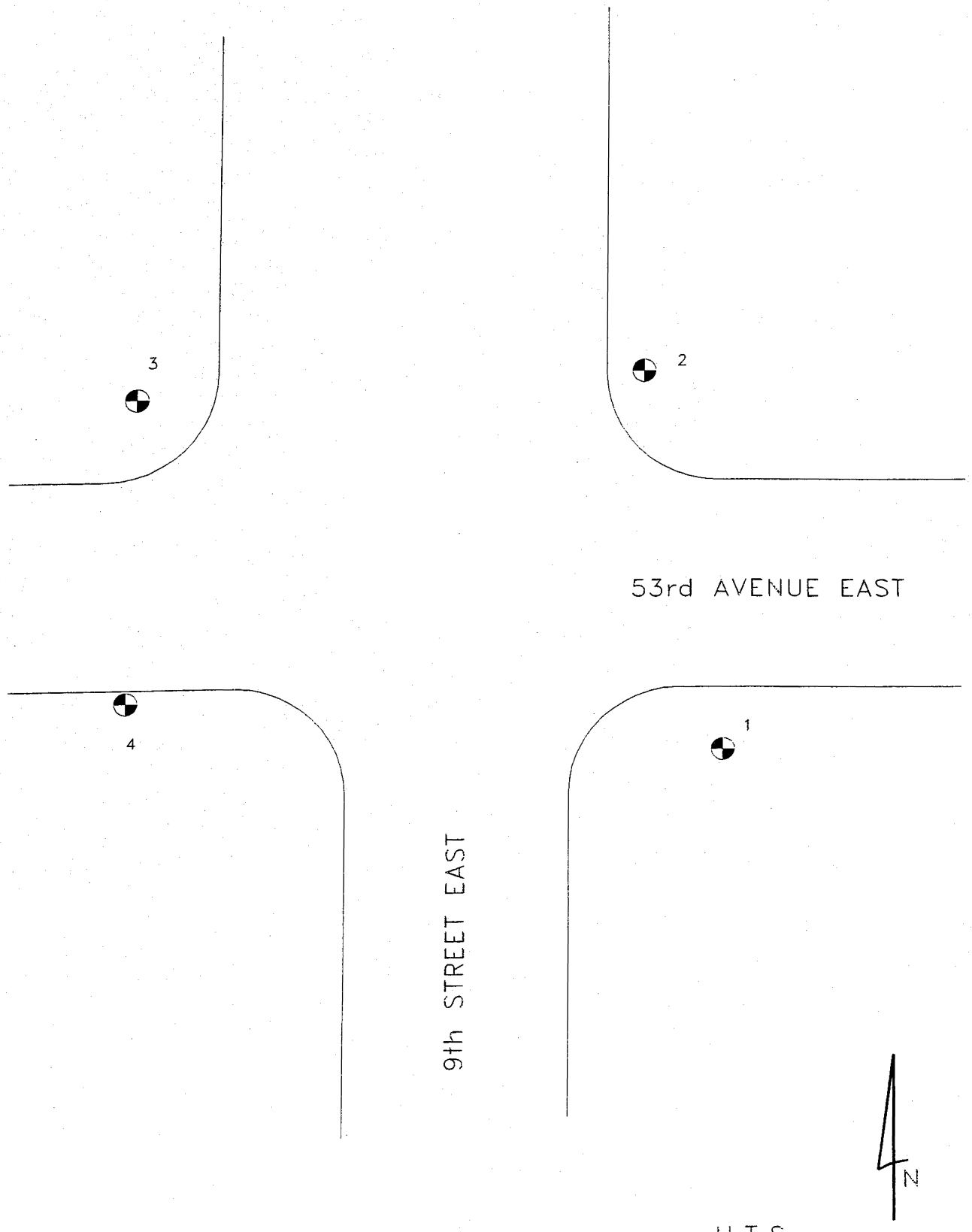
Ardaman & Associates, Inc.
Soil Boring Log

Project: Light Poles at 53rd Ave E and 9th St E	File No. 96-7382

Boring No. 4	Date of Boring: 14 Jun 96
Water Table Level: 5.6' bls	Conducted by: Suares

DEPTH,ft	SPT "N" VALUE	SAMPLE NO.	SYMBOL	USCS	SOIL DESCRIPTION	M.C. (moisture content,	P200 (fines, %)	γ_t (total unit weight, pcf)	ϕ (friction angle, degrees)
0	9	1		SP	brown to grey fine sand			105	29
2	10	2		SP	grey fine sand				
4	8	3		SP	brown fine sand				
6	8								
8	6								
10	8								
12	50/1"	4		ML	grey cemented silt			135	35
14									
16	50/2"	5							
18									
20	50/2"	6							

Borings were conducted at the approximate locations shown on Figure 1.



LOCATION OF STANDARD PENETRATION BORINGS

N.T.S.

Ardaman & Associates, Inc.
Geotechnical, Environmental and Materials Consultants

TEST LOCATIONS FOR
LIGHT POLES
9th ST. & 53rd AVE EAST
MANATEE COUNTY, FLORIDA

DRAWN BY: TV	CHECKED BY:	DATE: 6/18/96
FILE NO.: 96-7382	APPROVED BY:	FIGURE: 1

July 19, 2012
PREPARED BY: JEH/RB/HH

SPECIFICATIONS PACKAGE
FOR
9th Street East – 57th Avenue E to 53rd Avenue E

MANATEE COUNTY

The applicable Articles and Subarticles of the General Requirements & Covenants division (Division 1) of the 2010 Edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction are added, and all of the Construction Details and Materials divisions (Divisions II & III) are revised as follows:

I hereby certify that this specifications package has been properly prepared by me, or under my responsible charge, in accordance with procedures adopted by the Florida Department of Transportation.

Signature and Seal: _____
John E. Howle, P.E.
Date: 8/8/12
Page(s): 1-277

FPID(S): 000060---4--04

SPECIAL PROVISIONS

For purposes of this document, the Department refers to the Florida Department or Manatee County, as applicable.

SCOPE OF WORK – INTENT OF CONTRACT.
(REV 8-19-09) (FA 8-24-09) (1-10)

ARTICLE 4-1 (Page 19) is expanded by the following:

The Improvements under this Contract consist of 4-lane widening of 9th Street E from 57th Avenue East to 53rd Avenue E

The summary of pay items for this project is listed in the plans.

PERMITS PROCURED BY THE DEPARTMENT.
(REV 8-7-01) (FA 4-14-05) (1-10)

SUBARTICLE 7-2.1 (Page 62) is expanded by the following:

All Permits procured by the County are included in the bid documents. Take responsibility to review this information and comply with all requirements. Comply with the provisions contained in these permits.

DISCHARGE TO OR WORK OR STRUCTURES IN NAVIGABLE WATERS OF THE U.S., WATERS OF THE U.S. AND WATERS OF THE STATE.
(REV 7-16-09) (FA 7-30-09) (1-10)

SUBARTICLE 7-2.2 (Page 62) is expanded by the following:

The "State of Florida Department of Environmental Protection (DEP) Generic Permit for Stormwater Discharge from Large and Small Construction Activities" applies to this Contract. Obtain a copy of the permit through the Department's website and comply with the requirements of the permit. The URL for obtaining a copy of the permit is www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/DEPPermit.pdf .

In accordance with the requirements of the DEP generic permit, accept responsibility for the following:

(a) Preparation, execution and submission of DEP Generic Permit Notice of Intent (NOI) and payment of associated fee(s)

(b) Preparation and submission of Erosion Control Plan as outlined in Section 104

(c) Any Contractor initiated SWPPP modifications

(d) Performing inspections using a qualified inspector

(e) Completion of SWPPP construction inspection reports

(f) Executing associated certification forms provided by the Engineer

(g) Preparation, execution and submission of Notice of Termination (NOT) of the DEP Generic Permit coverage.

Use the SWPPP Construction Inspection Form provided by the Engineer to report all inspection findings and to document all corrective actions taken as a result of the inspection. Sign each inspection report and submit it weekly to the Engineer.

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – E-VERIFY.
(REV 6-13-11) (FA 6-16-11) (8-11)

SECTION 7 (Pages 56 – 80) is expanded by the following new Article:

7-28 E-Verify.

The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the term of the Contract and shall expressly require any subcontractors performing work or providing services pursuant to the Contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term.

THERMOPLASTIC TRAFFIC STRIPES AND MARKINGS - APPLICATION.
(REV 2-11-09) (4-11)

SUBARTICLE 711-4.1 (of the Supplemental Specifications) is expanded by the following:

Do not place thermoplastic traffic stripes and markings on newly constructed final surface courses prior to 30 calendar days after placement of the final surface course. The Engineer may require longer cure periods. Provide temporary pavement markings during the interim period if the road is open to traffic.

SUPPLEMENTAL SPECIFICATIONS

001 DEFINITIONS AND TERMS – DEFINITIONS.
(REV 5-16-11) (FA 8-16-11) (1-12)

ARTICLE 1-3 (Pages 1-9). The definition for Change Orders is deleted.

ARTICLE 1-3 (Pages 1-9). The definition for Contract Documents is deleted and the following substituted:

Contract Documents.

The term "Contract Documents" includes: Advertisement for Proposal, Proposal, Certification as to Publication and Notice of Advertisement for Proposal, Appointment of Agent by Nonresident Contractors, Noncollusion Affidavit, Warranty Concerning Solicitation of the Contract by Others, Resolution of Award of Contract, Executed Form of Contract, Performance Bond and Payment Bond, Specifications, plans (including revisions thereto issued during construction), Addenda, or other information mailed or otherwise transmitted to the prospective bidders prior to the receipt of bids, work orders and supplemental agreements, all of which are to be treated as one instrument whether or not set forth at length in the form of contract.

Note: As used in Sections 2 and 3 only, Contract Documents do not include work orders, and supplementary agreements. As used in Section 2 only, Contract Documents also do not include Resolution of Award of Contract, Executed Form of Contract, and Performance and Payment Bond.

ARTICLE 1-3 (Pages 1 – 9). The definition for Contractor's Engineer of Record is deleted and the following substituted:

Contractor's Engineer of Record.

A Professional Engineer registered in the State of Florida, other than the Engineer of Record or his subcontracted consultant, who undertakes the design and drawing of components of the permanent structure as part of a redesign or Cost Savings Initiative Proposal, or for repair designs and details of the permanent work. The Contractor's Engineer of Record may also serve as the Specialty Engineer.

The Contractor's Engineer of Record must be an employee of a pre-qualified firm. The firm shall be pre-qualified in accordance with the Rules of the Department of Transportation, Chapter 14-75. Any Corporation or Partnership offering engineering services must hold a Certificate of Authorization from the Florida Department of Business and Professional Regulation.

As an alternate to being an employee of a pre-qualified firm, the Contractor's Engineer of Record may be a pre-qualified Specialty Engineer. For items of the permanent work declared by the State Construction Office to be "major" or "structural", the work performed by a pre-qualified Specialty Engineer must be checked by another pre-qualified Specialty Engineer. An individual Engineer may become pre-qualified in the work groups listed in the Rules of the Department of Transportation, Chapter 14-75, if the requirements for the Professional Engineer are met for the individual work groups.

Pre-qualified Specialty Engineers are listed on the State Construction Website. Pre-qualified Specialty Engineers will not be authorized to perform redesigns or Cost Savings Initiative Proposal designs of items fully detailed in the plans.

ARTICLE 1-3 (Pages 1-9). The definition for Special Events is added.

Special Event.

Any event, including but not limited to, a festival, fair, run or race, motorcade, parade, civic activity, cultural activity, charity or fund drive, sporting event, or similar activity designated in the Contract Documents.

ARTICLE 1-3 (Pages 1 – 9). The definition for Unilateral Payment is deleted and the following substituted:

ARTICLE 1-3 (Pages 1-9). The definition for Work Order is added.

Work Order.

A written agreement between the Contractor and the Department modifying the Contract within the limitations set forth in these Specifications. Funds for this agreement are drawn against the Initial Contingency Pay Item or a Contingency Supplemental Agreement.

ARTICLE 4-6 (Pages 30 and 31) is deleted and the following substituted:

4-6 Final Cleaning Up of Right-of-Way.

Upon completion of the work, and before the Department accepts the work and makes final payment, remove from the right-of-way and adjacent property all falsework, equipment, surplus and discarded materials, rubbish and temporary structures; restore in an acceptable manner all property, both public and private, that has been damaged during the prosecution of the work; and leave the waterways unobstructed and the roadway in a neat and presentable condition throughout the entire length of the work under Contract. Do not dispose of materials of any character, rubbish or equipment, on abutting property, with or without the consent of the property owners. The Engineer will allow the Contractor to temporarily store equipment, surplus materials, usable forms, etc., on a well-kept site owned or leased by the Contractor, adjacent to the project. However, do not place or store discarded equipment, materials, or rubbish on such a site.

Shape and dress areas adjacent to the project right-of-way that were used as plant sites, materials storage areas or equipment yards when they are no longer needed for such purposes. Restore these areas in accordance with 7-11.1 and 7-11.2. Grass these areas when the Engineer directs.

006 CONTROL OF MATERIALS.
(REV6-23-10) (FA 7-29-10) (1-11)

ARTICLE 6-4 (Pages 54 and 55) is deleted and the following substituted:

6-4 Defective Materials.

Materials not meeting the requirements of these Specifications will be considered defective. The Engineer will reject all such materials, whether in place or not. Remove all rejected material immediately from the site of the work and from storage areas, at no expense to the Department.

Do not use material that has been rejected and the defects corrected, until the Engineer has approved the material's use. Upon failure to comply promptly with any order of the Engineer made under the provisions of this Article, the Engineer has the authority to have the defective material removed and replaced by other forces and deduct the cost of removal and replacement from any moneys due or to become due the Contractor.

As an exception to the above, within 30 calendar days of the termination of the LOT or rejection of the material, the Contractor may submit a proposed scope of work to the Engineer for an engineering or independent laboratory (as approved by the Engineer) analysis to determine the disposition of the material. A Specialty Engineer, who is an independent consultant, or the Contractor's Engineer of Record as stated within each individual Section shall perform any such analysis. Upon the Engineer's approval of the scope of work submitted by the Contractor, the engineering analysis must be completed and the report must be submitted to the Engineer within 45 calendar days, or other time frame as approved by the Engineer. The report must be signed and sealed by the Specialty Engineer. The Engineer will determine the final disposition of the material after review of the information submitted by the Contractor. No additional monetary compensation or time extension will be granted for the impact of any such analysis or review.

SUBARTICLE 6-5.3 (Page 56) is deleted and the following substituted:

6-5.3 Contaminated, Unfit, Hazardous, and Dangerous Materials: Do not use any material that, after approval and/or placement, has in any way become unfit for use. Do not use materials containing any substance that has been determined to be hazardous by the State of Florida Department of Environmental Protection or the U.S. Department of Environmental Protection. Provide workplaces free from serious recognized hazards and to comply with occupational safety and health standards, as determined by the U.S. Department of Labor Occupational Safety and Health Administration.

007 LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC. (REV 6-28-11) (FA 7-18-11) (1-12)

SUBARTICLE 7-1.4 (Page 59) is deleted and the following substituted:

7-1.4 Compliance with Federal Endangered Species Act and other Wildlife Regulations: The Federal Endangered Species Act requires that the Department investigate the potential impact to a threatened or endangered species prior to initiating an activity performed in conjunction with a highway construction project. If the Department's investigation determines that there is a potential impact to a protected, threatened or an endangered species, the Department will conduct an evaluation to determine what measures may be necessary to mitigate such impact. When mitigation measures and/or special conditions are necessary, these measures and conditions will be addressed on the plans or in permits as identified in 7-2.1.

In addition, in cases where certain protected, threatened or endangered species are found or appear within close proximity to the project boundaries, the Department has established guidelines that will apply when interaction with certain species occurs, absent of any special mitigation measures or permit conditions otherwise identified for the project.

These guidelines are posted at the following URL address: http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/endangeredwildlifeguidelines.pdf .

Take responsibility to obtain this information and take all actions and precautions necessary to comply with the conditions of these guidelines during all project activities.

Prior to establishing any off-project activity in conjunction with a project, notify the Engineer of the proposed activity. Covered activities include but are not necessarily limited to borrow pits, concrete or asphalt plant sites, disposal sites, field offices, and material or equipment storage sites. Include in the notification the Financial Project ID, a description of the activity, the location of the site by township, range, section, county, and city, a site location map including the access route, the name of the property owner, and a person to contact to arrange a site inspection. Provide this notification sufficiently in advance of planned commencement of the off-site activity, to allow a reasonable period of time for the Engineer to conduct an investigation without delaying job progress.

Do not perform any off-project activity without obtaining written clearance from the Engineer. In the event the Department's investigation determines a potential impact to a protected, threatened or endangered species and mitigation measures or permits are necessary, coordinate with the appropriate resource agencies for clearance, obtain permits and perform mitigation measures as necessary. Immediately notify the Engineer in writing of the results of this coordination with the appropriate resource agencies. Additional compensation or time will not be allowed for permitting or mitigation, associated with Contractor initiated off-project activities.

SUBARTICLE 7-11.4 (Page 67) is deleted as the following is substituted:

7-11.4 Traffic Signs, Signal Equipment, Highway Lighting and Guardrail: Protect all existing roadside signs, signal equipment, highway lighting and guardrail, for which permanent removal is not indicated, against damage or displacement. Whenever such signs, signal equipment, highway lighting or guardrail lie within the limits of construction, or wherever so directed by the Engineer due to urgency of construction operations, take up and properly store the existing roadside signs, signal equipment, highway lighting and guardrail and subsequently reset them at their original locations or, in the case of widened pavement or roadbed, at locations designated by the Engineer.

If the Department determines that damage to such existing traffic signs, signal equipment, highway lighting or guardrail is caused by a third party(ies), and is not otherwise due to any fault or activities of the Contractor, the Department will, with the exception of any damage resulting from vandalism, compensate the Contractor for the costs associated with the repairs. Repair damage caused by vandalism at no expense to the Department.

Payment for repairs will be in accordance with 4-3.4.

SUBARTICLE 7-11.6.1 (Pages 68 - 69) is deleted and the following substituted:

7-11.6.1 Arrangements for Protection or Adjustment: Do not commence work at points where the construction operations are adjacent to utility facilities until all necessary arrangements have been made for removal, temporary removal, relocation, de-energizing, deactivation or adjustment with the utility facilities owner to protect against damage that might result in expense, loss, disruption of service, or other undue inconvenience to the public or to the owners. The Contractor is solely and directly responsible to the owners and operators of such properties for all damages, injuries, expenses, losses, inconveniences, or delays caused by the Contractor's operations.

Do not request utility removal, temporary removal, relocation, de-energizing, deactivation, or adjustment when work can be accomplished within the utility work schedules. In the event that removal, temporary removal, relocation, de-energizing, deactivation, or adjustment of a utility or a particular sequence of timing in the relocation of a utility is necessary and has not been addressed in a utility work schedule, the Engineer will determine the necessity for any such utility work. Coordinate such work as to cause the least impediment to the overall construction operations and utility service. The Department is not responsible for utility removal, temporary removal, relocation, de-energizing, deactivation, or adjustment work where such work is determined not necessary by the Engineer or done solely for the benefit or convenience of the utility owner or its contractor, or the Contractor.

008 PROSECUTION AND PROGRESS.
(REV 5-9-11) (FA 8-16-11) (1-12)

SUBARTICLE 8-4.9 (Pages 84 – 85) is deleted and the following substituted:

8-4.9 Contaminated Materials: When the construction operations encounter or expose any abnormal condition that may indicate the presence of a contaminated material, discontinue such operations in the vicinity of the abnormal condition and notify the Engineer immediately. Be alert for the presence of tanks or barrels; discolored or stained earth, metal, wood, ground water; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal as possible indicators of the presence of contaminated materials. Treat these conditions with extraordinary caution.

Make every effort to minimize the spread of any contaminated materials into uncontaminated areas.

Do not resume the construction operations in the vicinity of the abnormal conditions until so directed by the Engineer.

Dispose of the contaminated material in accordance with the requirements and regulations of any Local, State, or Federal agency having jurisdiction. Where the Contractor performs work necessary to dispose of contaminated material, and the Contract does not include pay items for disposal, the Department will pay for this work as provided in 4-4.

The Department may agree to hold harmless and indemnify the Contractor for damages when the Contractor discovers or encounters contaminated materials or pollutants during the performance of services for the Department when the presence of such materials or pollutants were unknown or not reasonably discoverable. Such indemnification agreements are only effective if the Contractor immediately stops work and notifies the Department of the contaminated material or pollutant problem.

Such indemnification agreements are not valid for damages resulting from the Contractor's willful, wanton, or intentional conduct or the operations of Contaminated and Hazardous Material Contractors.

SUBARTICLE 8-6.4 (Page 86-87) is deleted and the following substituted:

8-6.4 Suspension of Contractor's Operations - Holidays and Special Events: Unless the Contractor submits a written request to work during one or more days of a Holiday or Special Event at least ten calendar days in advance of the beginning date of the Holiday or Special Event and receives written approval from the Engineer, the Contractor shall not work on the following days: Martin Luther King, Jr. Day; Memorial Day; the Saturday and Sunday immediately preceding Memorial Day; Independence Day; Independence Day (Observed); Labor Day; the Friday, Saturday, and Sunday immediately preceding Labor Day; Veterans Day; Veterans Day (Observed); the Wednesday immediately preceding Thanksgiving Day; Thanksgiving Day; the Friday, Saturday and Sunday immediately following Thanksgiving Day; December 24 through January 2, inclusive; and Special Events noted in the Plans. Contract Time will be charged during these Holiday and Special Event periods. Contract time will be adjusted in accordance with 8-7.3.2. The Contractor is not entitled to any additional compensation

beyond any allowed Contract Time adjustment for suspension of operations during such Holiday and Special Event periods.

During such suspensions, remove all equipment and materials from the clear zone, except those required for the safety of the traveling public and retain sufficient personnel at the job site to properly meet the requirements of Sections 102 and 104. The Contractor is not entitled to any additional compensation for removal of equipment from clear zones or for compliance with Section 102 and Section 104 during such Holiday and Special Event periods.

009 MEASUREMENT AND PAYMENT.
(REV 12-14-11) (FA 1-5-12) (7-12)

ARTICLE 9-2 (Pages 96 - 98) is deleted and the following substituted:

9-2 Scope of Payments.

9-2.1 Items Included in Payment: Accept the compensation as provided in the Contract as full payment for furnishing all materials and for performing all work contemplated and embraced under the Contract; also for all loss or damage arising out of the nature of the work or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its final acceptance; also for all other costs incurred under the provisions of Division I.

For any item of work contained in the proposal, except as might be specifically provided otherwise in the basis of payment clause for the item, include in the Contract unit price (or lump sum price) for the pay item or items the cost of all labor, equipment, materials, tools and incidentals required for the complete item of work, including all requirements of the Section specifying such item of work, except as specifically excluded from such payments.

ARTICLE 9-4 (Page 100) is deleted and the following substituted:

9-4 Deleted Work.

The Department will have the right to cancel the portions of the Contract relating to the construction of any acceptable item therein, by making an adjustment in payment to the Contractor of a fair and equitable amount covering the value of all cancelled work less all items of cost incurred prior to the date that the Engineer cancels the work.

SUBARTICLE 9-5.6 (Page 103) is deleted and the following substituted:

9-5.6 Certification of Payment to Subcontractors: The term “subcontractor,” as used herein, includes persons or firms furnishing materials or equipment incorporated

into the work or stockpiled for which the Department has made partial payment and firms working under equipment-rental agreements. The Contractor is required to pay all subcontractors for satisfactory performance of their Contracts before the Department will make a further progress (partial) payment. The Contractor shall also return all retainage withheld to the subcontractors within 30 days after the subcontractor's work is satisfactorily complete, as determined by the Department. Prior to receipt of any progress (partial) payment, the prime contractor shall certify that all subcontractors having an interest in the Contract were paid for satisfactory performance of their Contracts and that the retainage is returned to subcontractors within 30 days after satisfactory completion of the subcontractor's work. Provide this certification in the form designated by the Department.

Within 30 days of the Contractor's receipt of the final progress payment or any other payments thereafter, except the final payment, the Contractor shall pay all subcontractors and suppliers having an interest in the Contract for all work completed and materials furnished. The Department will honor an exception to the above when the Contractor demonstrates good cause for not making any required payment and furnishes written notification of any such good cause to both the Department and the affected subcontractors or suppliers within said 30 day period.

The Contractor shall indemnify and provide defense for the Department when called upon to do so for all claims or suits against the Department, by third parties, pertaining to Contractor payment or performance issues arising out of the Contract. It is expressly understood that the monetary limitation on the extent of the indemnification shall be the approved Contract amount, which shall be the original Contract amount as may be increased by subsequent Supplemental Agreements.

104 PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION.

(REV 11-18-10) (FA 1-21-11) (7-11)

SECTION 104 (Pages 127 – 135) is deleted and the following substituted:

SECTION 104
PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION

104-1 Description.

Provide erosion control measures on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project. Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the plans or as may be directed by the Engineer.

104-2 General.

Coordinate the installation of temporary erosion control features with the construction of the permanent erosion control features to the extent necessary to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

Due to unanticipated conditions, the Engineer may direct the use of control features or methods other than those included in the original Contract. In such event, the Department will pay for this additional work as unforeseeable work.

104-3 Control of Contractor's Operations Which May Result in Water Pollution.

Prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, conduct and schedule operations to avoid or otherwise minimize pollution or siltation of such water impoundments, and to avoid interference with movement of migratory fish. Do not dump any residue from dust collectors or washers into any live stream.

Restrict construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other water impoundments to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, promptly clear rivers, streams, and impoundments of all obstructions placed therein or caused by construction operations.

Do not frequently ford live streams with construction equipment. Wherever an appreciable number of stream crossings are necessary at any one location, use a temporary bridge or other structure.

Except as necessary for construction, do not deposit excavated material in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge into State waters: pumping into grassed swales or appropriate vegetated areas or sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not considered appropriate.

Do not disturb lands or waters outside the limits of construction as staked, except as authorized by the Engineer.

Obtain the Engineer's approval for the location of, and method of operation in, borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

104-4 Materials for Temporary Erosion Control.

The Engineer will not require testing of materials used in construction of temporary erosion control features other than as provided for geotextile fabric in 985-3 unless such material is to be incorporated into the completed project. When no testing is required, the Engineer will base acceptance on visual inspection.

The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the Engineer.

104-5 Preconstruction Requirements.

At the Preconstruction Conference, provide to the Department an Erosion Control Plan meeting the requirements or special conditions of all permits authorizing project construction. If no permits are required or the approved permits do not contain special conditions or specifically address erosion and water pollution, the project Erosion Control Plan will be governed by 7-1.1, 7-2.2, 7-8.1, 7-8.2, and Section 104.

When a DEP generic permit is issued, the Contractor's Erosion Control Plan shall be prepared to accompany the Department's Stormwater Pollution Prevention Plan (SWPPP). Ensure the Erosion Control Plan includes procedures to control off-site tracking of soil by vehicles and construction equipment and a procedure for cleanup and reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. Do not begin any soil disturbing activities until Department approval of the Contractor's Erosion Control Plan, including required signed certification statements.

Failure to sign any required documents or certification statements will be considered a default of the Contract. Any soil disturbing activities performed without the required signed documents or certification statements may be considered a violation of the DEP Generic Permit.

When the SWPPP is required, prepare the Erosion Control Plan in accordance with the planned sequence of operations and present in a format acceptable to the Department. The Erosion Control Plan shall describe, but not be limited to, the following items or activities:

(1) For each phase of construction operations or activities, supply the following information:

(a) Locations of all erosion control devices

(b) Types of all erosion control devices

(c) Estimated time erosion control devices will be in operation

(d) Monitoring schedules for maintenance of erosion control devices

(e) Methods of maintaining erosion control devices

(f) Containment or removal methods for pollutants or hazardous wastes

(2) The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.

(3) Submit for approval the Erosion Control Plans meeting paragraphs 3a, 3b, or 3c below:

(a) Projects permitted by the Southwest Florida Water Management District (SWFWMD), require the following:

Submit a copy of the Erosion Control Plan to the Engineer for review and to the appropriate SWFWMD Office for review and approval. Include the SWFWMD permit number on all submitted data or correspondence.

The Contractor may schedule a meeting with the appropriate SWFWMD Office to discuss his Erosion Control Plan in detail, to expedite

the review and approval process. Advise the Engineer of the time and place of any meetings scheduled with SWFWMD.

Do not begin construction activities until the Erosion Control Plan receives written approval from both SWFWMD and the Engineer.

(b) Projects permitted by the South Florida Water Management District or the St. Johns River Water Management District, require the following:

Obtain the Engineer's approval of the Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

(c) Projects authorized by permitting agencies other than the Water Management Districts or projects for which no permits are required require the following:

The Engineer will review and approve the Contractor's Erosion Control Plan.

Do not begin construction activities until the Erosion Control Plan receives written approval from the Engineer.

Comply with the approved Erosion Control Plan.

104-6 Construction Requirements.

104-6.1 Limitation of Exposure of Erodible Earth: The Engineer may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, turf, sod, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 750,000 square feet without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The Engineer may increase or decrease the amount of surface area the Contractor may expose at any one time.

104-6.2 Incorporation of Erosion and Sediment Control Features: Incorporate permanent erosion control features into the project at the earliest practical time. Use temporary erosion and sediment control features found in the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (E&SC Manual) to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion and sediment prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion and sediment that develops during normal construction operations, which are not associated with permanent erosion control features on the project. An electronic version of the E&SC Manual can be found at the following URL:

www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/FLErosionSedimentManual.pdf

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required.

At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork.

After installation of sediment control devices, repair portions of any devices damaged at no expense to the Department. The Engineer may authorize temporary erosion and sediment control features when finished soil layer is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

104-6.3 Scheduling of Successive Operations: Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

104-6.4 Details for Temporary Erosion and Sediment Control Features:

104-6.4.1 General: Use temporary erosion, sediment and water pollution control features found in the E&SC Manual. These features consist of, but are not limited to, temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers, and chemical treatment. For design details for some of these items, refer to the Design Standards and E&SC Manual.

104-6.4.2 Temporary Turf: The Engineer may designate certain areas of turf or sod constructed in accordance with Section 570 as temporary erosion control features. For areas not defined as sod, constructing temporary turf by seeding only is not an option for temporary erosion control under this Section. The Engineer may waive the turf establishment requirements of Section 570 for areas with temporary turf that will not be a part of the permanent construction.

104-6.4.3 Runoff Control Structures: Construct runoff control structures in accordance with the details shown in the plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function.

104-6.4.4 Sediment Containment Systems: Construct sediment containment systems in accordance with the details shown in the plans, the E&SC Manual, or as may be approved as suitable to adequately perform the intended function. Clean out sediment containment systems as necessary in accordance with the plans or as directed.

104-6.4.5 Sediment Barriers: Provide and install sediment barriers according to details shown in the plans, as directed by the Engineer, or as shown in the E&SC Manual to protect against downstream accumulation of sediment. Sediment Barriers include, but are not limited to synthetic bales, silt fence, fiber logs and

geosynthetic barriers. Reusable barriers that have had sediment deposits removed may be reinstalled on the project as approved by the Engineer.

104-6.4.6 Silt Fence:

104-6.4.6.1 General: Furnish, install, maintain, and remove silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown on the plans, the Design Standards, and the E&SC Manual.

104-6.4.6.2 Materials and Installation: Use a geotextile fabric made from woven or nonwoven fabric, meeting the physical requirements of Section 985 according to those applications for erosion control.

Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective silt fence that controls sediment comparable to the Design Standards and the E&SC Manual.

Erect silt fence at upland locations, across ditchlines and at temporary locations shown on the plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach silt fence to existing trees unless approved by the Engineer.

104-6.4.6.3 Inspection and Maintenance: Inspect all silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer.

Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570.

104-6.4.7 Floating Turbidity Barriers and Staked Turbidity Barriers: Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters and minimize damage to areas where floating barriers installed.

104-6.4.8 Inlet Protection System: Furnish and install inlet protection systems as shown in the plans, Design Standards and the E&SC Manual.

104-6.4.9 Rolled Erosion Control Products (RECPs):

104-6.4.9.1 General: Install RECPs in locations where temporary protection from erosion is needed. Two situations occur that require artificial coverings. The two situations have differing material requirements, which are described below.

(1) Use RECPs composed of natural or synthetic fiber mats, plastic sheeting, or netting as protection against erosion, when directed by the Engineer, during temporary pauses in construction caused by inclement weather or other circumstances. Remove the material when construction resumes.

(2) Use RECPs as erosion control blankets, at locations shown in the plans, to facilitate plant growth while permanent grassing is being established. For the purpose described, use non-toxic, biodegradable, natural or synthetic woven fiber mats. Install erosion control blankets capable of sustaining a maximum design velocity of 6.5 ft/sec as determined from tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the Department. Furnish to the Engineer, two certified copies of manufacturers test reports showing that the erosion control blankets meet the requirements of this Specification. Certification must be attested, by a person having legal authority to bind the manufacturing company. Also, furnish two 4 by 8 inch samples for product identification. The manufacturers test records shall be made available to the Department upon request. Leave the material in place, as installed, to biodegrade.

104-6.4.10 Chemical Treatment: Provide chemical treatment in accordance with the E&SC Manual. Chemical treatment may be used to clarify turbid or sediment laden water that does not yet meet state water quality standards or as an amendment to other erosion prevention and sediment control products to aid in their performance. The contractor must provide all of the required toxicity testing information in accordance with the E&SC Manual to the Engineer for review and acceptance prior to using any chemical treatment on the project site.

104-6.5 Removal of Temporary Erosion Control Features: In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

104-7 Maintenance of Erosion and Sediment Control Features.

104-7.1 General: Provide routine maintenance of permanent and temporary erosion and sediment control features, at no expense to the Department, until the project is complete and accepted. If reconstruction of such erosion and sediment control features is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion and sediment control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the Department. If reconstruction of permanent or temporary erosion and sediment control features is necessary due to factors beyond the control of the Contractor, the Department will pay for replacement under the appropriate Contract pay item or items.

Inspect all erosion and sediment control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.50 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan, Contractor's Erosion Control plan and as specified in the State of Florida

Department of Environmental Protection Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

104-8 Protection During Suspension of Contract Time.

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion and sediment control work deemed necessary.

104-9 Method of Measurement.

When separate items for temporary erosion control features are included in the Contract, the quantities to be paid for will be: (1) the area, in square yards, of Rolled Erosion Control Products; (2) the length, in feet, of Runoff Control Structures, measured along the surface of the work constructed; (3) the number of Sediment Containment Systems constructed and accepted; (4) the number of Sediment Containment System Cleanouts accomplished and accepted; (5) the length, in feet, of Sediment Barriers; (6) the length, in feet, of Floating Turbidity Barrier; (7) the length, in feet, of Staked Turbidity Barrier; (8) the number of inlet protection systems; (9) the area, in square yards, of chemical treatment.(10) the number of floc logs or drums of product for chemical treatment.

Upon acceptance by the Engineer, the quantity of floating turbidity barriers, sediment barriers, staked turbidity barriers, and inlet protection devices will be paid for regardless of whether materials are new, used, or relocated from a previous installation on the project.

104-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features.

Any additional costs resulting from compliance with the requirements of this Section, other than construction, routine maintenance, and removal of temporary erosion control features, will be included in the Contract unit prices for the item or items to which such costs are related. The work of Performance Turf designated as a temporary erosion control feature in accordance with 104-6.4.2 will be paid for under the appropriate pay items specified in Sections 570 and 580.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

Additional temporary erosion control features constructed as directed by the Engineer will be paid for as unforeseeable work.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Department's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

Payment will be made under:

Item No. 104- 1-	Artificial Coverings/ Rolled Erosion Control Products - per square yard.
Item No. 104- 6-	Slope Drains (Temporary)/ Runoff Control Structures - per foot.
Item No. 104- 7-	Sediment Basins/ Containment Systems - each.
Item No. 104- 9-	Sediment Basin/ Containment system Cleanouts - each.
Item No. 104- 10-	Sediment Barriers – per foot
Item No. 104- 11-	Floating Turbidity Barrier - per foot.
Item No. 104- 12-	Staked Turbidity Barrier - per foot.
Item No. 104- 18	Inlet Protection System – each.
Item No. 104- 19	Chemical Treatment – per square yard.
Item No. 104 – 20	Chemical Treatment (floc logs, drums of product) - each.

105 CONTRACTOR QUALITY CONTROL GENERAL REQUIREMENTS. (REV 1-18-12) (FA 2-6-12) (7-12)

SUBARTICLE 105-3.1 (Pages 137 – 138) is deleted and the following substituted:

105-3.1 General: Certain operations require personnel with specific qualifications. Certain materials require production under an approved Quality Control (QC) Plan to ensure that these materials meet the requirements of the Contract Documents. Applicable materials include hot mix asphalt, Portland cement concrete (Structural), earthwork, cementitious materials, timber, steel and miscellaneous metals, galvanized metal products, prestressed and/or precast concrete products and drainage products. For all applicable materials included in the Contract, submit a QC Plan prepared in accordance with the requirements of this Section to the Engineer. Do not incorporate any of these materials into the project prior to the Engineer's approval of the QC Plan.

Steel and Miscellaneous Metal products, including aluminum, are defined as the metal components of bridges**,** including pedestrian and moveable bridges, overhead and cantilevered sign supports, ladders and platforms, bearings, end wall grates, roadway gratings, drainage items, expansion joints, roadway decking, shear connectors, handrails, galvanized products, fencing, guardrail, light poles, high mast light poles, standard mast arm assemblies and Monotube assemblies, stay in-place forms, casing pipe, strain poles, fasteners, connectors and other hardware.

When accreditation or certification is required, make supporting

documents from the two previous inspections performed by the accrediting or certifying agency available to the Department upon request.

Obtain Department approval prior to beginning production. Meet and maintain the approved Quality Control Program requirements at all times. Production and construction of these products without the Department's prior approval of a Quality Control Program may result in rejection of the products. Continued approval will be subject to satisfactory results from Department evaluations, including the Independent Assurance program. In cases of non-compliance with the approved Quality Control Program, identify all affected material and do not incorporate or supply to the Department projects. The following conditions may result in suspension of a Quality Control Program:

a. Failure to timely supply information required.

b. Repeated failure of material to meet Standard Specification requirements.

c. Failure to take immediate corrective action relative to deficiencies in the performance of the Quality Control Program.

d. Certifying materials that are not produced under an approved Quality Control Program for use on Department projects.

e. Failure to correct any deficiencies related to any requirement of the Quality Control Program, having received notice from the Department, within the amount of time defined in the notice.

SUBARTICLE 105-3.2 (Pages 138 – 139) is deleted and the following substituted:

105-3.2 Compliance with the Materials Manual.

Producers of Flexible Pipe shall meet the requirements of Section 6.1, Volume II of the Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section61.pdf .

Producers of Precast Concrete Pipe shall meet the requirements of Section 6.2, Volume II of the Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section62.pdf .

Producers of Precast Concrete Drainage Structures shall meet the requirements of Section 6.3, Volume II of the Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section63.pdf .

Producers of Precast/Prestressed Concrete Products shall meet the requirements of Sections 8.1 and 8.3 of the Department's Materials Manual, which may be viewed at the following URLs:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section81.pdf .
http://www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section83.pdf.

Producers of Precast Prestressed Concrete Products using Self Consolidating Concrete shall meet the requirements of Section 8.4, Volume II of the

Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section84.pdf

Producers of Incidental Precast/Prestressed Concrete Products shall meet the requirements of Section 8.2, Volume II of the Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section82.pdf .

Producers of Portland Cement Concrete shall meet the requirements of Section 9.2, Volume II of the Department's Materials Manual, which may be viewed at the following URL:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section92.pdf .

Producers of Structural Steel and Miscellaneous Metal Components shall meet the requirements of Sections 11.1 and 11.2 of the Department's Materials Manual, which may be viewed at the following URLs:
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section111.pdf .
www.dot.state.fl.us/specificationsoffice/Implemented/URLinSpecs/Files/section112.pdf .

SUBARTICLE 105-5.2.1 (Page 140) is deleted and the following substituted:

105-5.2.1 Qualifications: Submit the Training Identification Numbers (TINs) or any other information which will be traceable to the certification agency's training location and dates for all technicians performing sampling, testing and inspection for both field and laboratory tests. Provide the names of the CTQP certifications and other pertinent certifications held and the expiration dates for each certification for each technician. Include employed and subcontracted technicians.

ARTICLE 105-6 (Page 142) is deleted and the following substituted:

105-6 Lab Qualification Program.

Testing Laboratories participating in the Department's Acceptance Program must have current Department qualification when testing materials that are used on Department projects. In addition, they must have one of the following:

a. Current AASHTO (AAP) accreditation.

b. Inspected on a regular basis per ASTM D 3740 for earthwork, ASTM D 3666 for asphalt and ASTM C 1077 for concrete for test methods used in the Acceptance Program, with all deficiencies corrected, and under the supervision of a Specialty Engineer.

c. Current Construction Materials Engineering Council (CMEC) program accreditation or other independent inspection program accreditation acceptable to the Engineer and equivalent to a. or b. above.

After meeting the criteria described above, submit a Laboratory Qualification Application to the Department. The application is available from the Department's website. Obtain the Department's qualification prior to beginning testing. The Department may inspect the laboratory for compliance with the accreditation requirements prior to issuing qualification.

Meet and maintain the qualification requirements at all times. Testing without Department's qualification may result in a rejection of the test results. Continued qualifications are subject to satisfactory results from Department evaluations, including Independent Assurance evaluations. In case of suspension or disqualification, prior to resumption of testing, resolve the issues to the Department's satisfaction and obtain reinstatement of qualification. The following conditions may result in suspension of a laboratory's qualified status:

a. Failure to timely supply required information.
b. Loss of accredited status.
c. Failure to correct deficiencies in a timely manner.
d. Unsatisfactory performance.
e. Changing the laboratory's physical location without notification to the accrediting agency and the Engineer.
f. Delays in reporting the test data in the Department's database.
g. Incomplete or inaccurate reporting.
h. Using unqualified technicians performing testing.

Should any qualified laboratory falsify records, the laboratory qualification will be subject to revocation by the Engineer. Falsification of project-related documentation will be subject to further investigation and penalty under state and federal laws.

It is prohibited for any contract laboratory or staff to perform Contractor Quality Control testing and any other Acceptance Program testing on the same contract.

SUBARTICLE 105-8.3 (Pages 143 and 144) is deleted and the following substituted:

105-8.3 Worksite Traffic Supervisor: Provide a Worksite Traffic Supervisor who is responsible for initiating, installing, and maintaining all traffic control devices as described in Section 102 and in the Contract Documents. Ensure that the Worksite Traffic Supervisor is certified in the advanced training category by a Department approved training Provider. Approved Providers will be posted on the Department's website at the following URL address: http://www.dot.state.fl.us/rddesign/MOT/MOT.shtm . Use approved alternate Worksite Traffic Supervisors when necessary.

SUBARTICLE 105-8.6.1 (Page 144) is deleted and the following substituted:

105-8.6.1 Plant Technicians: For asphalt plant operations, provide a QC technician, qualified as a CTQP Asphalt Plant Level II technician, available at the asphalt plant at all times when producing mix for the Department. Perform all asphalt plant related testing with a CTQP Asphalt Plant Level I technician. As an exception, measurements of temperature may be performed by someone under the supervision of a CTQP Plant Level II technician.

SUBARTICLE 105-8.6.2 (Page 144) is deleted and the following substituted:

105-8.6.2 Paving Technicians: For paving operations (with the exception of miscellaneous or temporary asphalt), keep a qualified CTQP Asphalt Paving Level II technician on the roadway at all times when placing asphalt mix for the Department, and perform all testing with a CTQP Asphalt Paving Level I technician. As an exception, measurements of cross-slope, temperature, and yield (spread rate) can be performed by someone under the supervision of a CTQP Paving Level II technician at the roadway.

SUBARTICLE 105-8.7 (Pages 144 - 145) is deleted and the following substituted:

105-8.7 Concrete QC Personnel:

105-8.7.1 Concrete Field Technician - Level I: Ensure technicians performing plastic property testing on concrete for materials acceptance are qualified CTQP Concrete Field Technicians Level I. Plastic property testing will include but not be limited to slump, temperature, air content, water-to-cementitious materials ratio calculation, and making and curing concrete cylinders. Duties will include initial sampling and testing to confirm specification compliance prior to beginning concrete placements, ensuring timely placement of initial cure and providing for the transport of compressive strength samples to the designated laboratories.

105-8.7.2 Concrete Field Inspector - Level II: Ensure field inspectors responsible for the quality of concrete being placed on major bridge projects are qualified CTQP Concrete Field Inspectors Level II. A Level II Inspector must be present on the jobsite during all concrete placements. Prior to the placement of concrete, the inspector will inspect the element to be cast to ensure compliance with Contract Documents. A Level II Inspector's duties may include ensuring that concrete testing, inspection, and curing in the field are performed in accordance with the Contract Documents. The QC Inspector will inform the Verification Inspector of anticipated concrete placements and LOT sizes.

105-8.7.3 Concrete Laboratory Technician:

105-8.7.3.1 Concrete Laboratory Technician - Level I: Ensure technicians testing cylinders and recording concrete strength for material acceptance are qualified CTQP Concrete Laboratory Technicians Level I. Duties include final curing, compressive strength testing, and the recording/reporting of all test data.

105-8.7.3.2 Concrete Laboratory Technician – Level II: Ensure that laboratories providing hardened property test results to the Department are under the supervision of a CTQP Concrete Laboratory Technician - Level II. This person is responsible to ensure that the tests are performed in accordance with Standard Test Methods, project specifications and other contract documents.

SUBARTICLE 105-8.10 (Pages 149 and 150) is deleted and the following substituted:

105-8.10 Signal Installation Inspector: Provide an inspector trained and certified by the International Municipal Signal Association (IMSA) as a Traffic Signal Inspector to perform all signal installation inspections. Use only Department approved signal inspection report forms during the signal inspection activities. Ensure all equipment, materials, and hardware is in compliance with Department Specifications and verify that all equipment requiring certification is listed on the Department's Approved Product List (APL). Provide the completed signal inspection report form(s), certified by the IMSA Traffic Signal Inspector to the Engineer.

The Department's approved inspection report forms are available at the following URL address: http://www.dot.state.fl.us/trafficoperations/ .

SUBARTICLE 105-8.11 (Pages 150 – 151) is deleted and the following substituted:

105-8.11 Pipe and Precast Concrete Products Manufacturing Facilities Quality Control Personnel:

105-8.11.1 General: Obtain personnel certifications from Department accredited training providers. The list of Department approved courses and their accredited providers is available on the State Materials Office website.

105-8.11.2 Precast Concrete Drainage Structures, Precast Concrete Box Culvert, Precast Concrete Pipe, Incidental Precast Concrete, and Flexible Pipe Manufacturing Facilities Quality Control Personnel:

105-8.11.2.1 Level I Quality Control Inspectors: Ensure that the Level I Inspectors have completed a minimum of a 12-hour, Department approved, Level I QC Inspector training course in the respective work area. As an exception to this, ensure Flexible Pipe Level I QC Inspectors have completed a minimum of an 8-hour, Department approved, Level I QC Flexible Pipe Inspector training course. For Incidental Precast Concrete, as an alternative to the completion of the 12-hour training course, the Department will accept QC personnel meeting the requirements of 105-8.11.2.4.1 and CTQP Concrete Field Technician level I certification or Precast/Prestressed Concrete Institute (PCI) Quality Control Technician/Inspector Level II certification.

105-8.11.2.2 Level II Quality Control Inspectors: Ensure that Level II Inspectors have completed Department approved Level I QC Inspector training and a minimum of a 5-hour, Department approved, Level II QC Inspector training course in the respective work areas. For Incidental Precast Concrete, as an alternative to the completion of the 5-hour training course, the Department will accept CTQP Concrete Field Technician Level II or PCI Quality Control Level III certifications.

105-8.11.2.3 Plant Quality Control Manager: Ensure that QC Manager has completed Department approved Level II QC Inspector training and has a minimum of 2 years construction related experience in the specific work area.

105-8.11.2.4 Additional Requirements for Quality Control Personnel of Precast Concrete Drainage, Precast Concrete Box Culvert, and Incidental Precast Concrete Manufacturing Facilities:

105-8.11.2.4.1 Testing Personnel: Ensure the personnel performing plastic property tests have ACI Concrete Field Testing Technician-Grade I certification. Ensure the personnel performing laboratory compressive strength testing have ACI Concrete Laboratory Testing Technician-Grade 1 certification or ACI Concrete Strength Testing Technician certification.

105-8.11. 2.4.2 Batch Plant Operator: Ensure the concrete batch plant operator is qualified as a CTQP Concrete Batch Plant Operator. As an alternative to CTQP qualification, the Department will accept the completion of a minimum of a 6-hour, Department approved, Batch Plant Operator training course.

110 CLEARING AND GRUBBING.
(REV 5-29-09) (FA 7-15-09) (1-10)

SUBARTICLE 110-6.2.1 (Page 154) is deleted and the following substituted:

110-6.2.1 General: Remove the structures in such a way so as to leave no obstructions to any proposed new structures or to any waterways. Pull, cut off, or break off pilings to the requirements of the permit or other Contract Documents, or if not specified, not less than 2 feet below the finish ground line. In the event that the plans indicate channel excavation to be done by others, consider the finish ground line as the limits of such excavation. For materials which are to remain the property of the Department or are to be salvaged for use in temporary structures, avoid damage to such materials, and entirely remove all bolts, nails, etc. from timbers to be so salvaged. Mark structural steel members for identification as directed.

120 EXCAVATION AND EMBANKMENT.
(REV 7-12-10) (FA 8-16-10) (1-11)

SUBARTICLE 120-1.2 (Pages 161 – 162) is deleted and the following substituted:

120-1.2 Unidentified Areas of Contamination: When encountering or exposing any abnormal condition indicating the presence of contaminated materials, cease operations immediately in the vicinity and notify the Engineer. The presence of tanks or barrels; discolored earth, metal, wood, ground water, etc.; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal may indicate the presence of contaminated materials and must be treated with extreme caution.

Make every effort to minimize the spread of contamination into uncontaminated areas. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Ensure provisions adhere to all applicable laws, rules or regulations covering potentially hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer will notify the District Contamination Impact Coordinator (DCIC) who will coordinate selecting and tasking the Department's Contamination Assessment/Remediation Contractor (CAR). Provide access to the potentially contaminated area. Preliminary investigation by the CAR Contractor will determine the course of action necessary for site security and the steps necessary under applicable laws, rules, and regulations for additional assessment and/or remediation work to resolve the contamination issue.

The CAR Contractor will delineate the contamination area(s), any staging or holding area required, and, in cooperation with the Prime Contractor and Engineer, develop a work plan that will provide the CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The CAR Contractor will be responsible for the health and safety of workers within the delineated areas. Provide continuous access to these areas for the CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The Engineer may grant the Contract Time extensions according to the provisions of 8-7.3.2.

Cooperate with the CAR Contractor to expedite integration of the CAR Contractor's operations into the construction project. The Prime Contractor is not expected to engage in routine construction activities, such as excavating, grading, or any type of soil manipulation, or any construction processes required if handling of contaminated soil, surface water or ground water is involved. All routine construction activities requiring the handling of contaminated soil, surfacewater or groundwater will be by the CAR Contractor. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor in accordance with 4-3.

The Engineer will direct the Prime Contractor when operations may resume in the affected area.

SUBARTICLE 120-2.2.2 (Page 162) is deleted and the following substituted:

120-2.2.2 Borrow Excavation: Borrow Excavation consists of the excavation and utilization of material from authorized borrow pits, including only material that is suitable for the construction of roadway embankments or of other embankments covered by the Contract.

A Cost Savings Initiative Proposal submittal based on using borrow material from within the project limits will not be considered.

SUBARTICLE 120-6.2 (Pages 164 - 165) is deleted and the following substituted:

120-6.2 Furnishing of Borrow Areas:

To obtain the Engineer's approval to use an off-site construction activity area that involves excavation such as a borrow pit or local aggregate pit, request in writing, a review for -cultural resources involvement. Send the request to the Division of Historical Resources (DHR), Department of State, State Historic Preservation Officer, Tallahassee,FL. As a minimum, include in the request the Project Identification Number, the County, a description of the property with Township, Range, Section, etc., the dimensions of the area to be affected, and a location map. Do not start any work at the off-site construction activity area prior to receiving clearance from the DHR that no additional research is warranted.

For certain locations, the DHR will require a Cultural Resources Assessment Survey before approval can be granted. When this is required, secure professional archaeological services to complete an historical and archaeological survey report. Submit the report to the DHR with a copy to the Department. The Engineer will determine final approval or rejection of off-site construction activity areas based on input from the DHR.

Before receiving approval or before use of borrow areas, obtain written clearance from the engineer concerning compliance with the Federal Endangered Species Act and other Wildlife Regulations as specified in 7-1.4 and Section 4(f) of the USDOT Act as specified in 7-1.8.

The Department will adjust Contract Time in accordance with 8-7 for any suspension of operations required to comply with this Article. The Department will not accept any monetary claims due to delays or loss of off-site construction activity areas.

Except where the plans specifically call for the use of a particular borrow or dredging area, the Contractor may substitute borrow or dredging areas of his own choosing provided: (1) the Engineer determines the materials from such areas meet the Department's standards and other requirements for stability for use in the particular sections of the work in which it is to be placed, and (2) the Contractor absorbs any increase in hauling or other costs. Stake the corners of the proposed borrow area and provide the necessary equipment along with an operator in order for the Engineer to investigate the borrow area. The Engineer will determine test locations, collect samples, and perform tests to investigate the proposed borrow area based on soil strata and required soil properties. The Engineer will approve use of materials from the proposed area based on test results and project requirements. Final acceptance of materials will be based on Point of Use Test as described in 6-1.2.4.

Before using any borrow material from any substitute areas, obtain the Engineer's approval, in writing, for the use of the particular areas, and, where applicable, ensure that the Engineer has cross-sectioned the surface. Upon such written approval by the Engineer, consider the substitute areas as designated borrow areas.

When furnishing the dredging or borrow areas, supply the Department with evidence that the necessary permits, rights, or waivers for the use of such areas have been secured.

Do not excavate any part of a Contractor furnished borrow area which is less than 300 feet from the right-of-way of the project or any State Road until the Engineer has approved a plan for landscaping and restoring the disturbed area. Perform this landscaping and land restoration at no expense to the Department, prior to final acceptance of the project. Do not provide a borrow area closer than 25 feet to the right-

of-way of any state road. In Department furnished borrow pits, do not excavate material within 5 feet of adjacent property lines.

Upon completion of excavation, neatly shape, dress, grass, vegetate, landscape, and drain all exposed areas including haul roads, as necessary so as not to present an objectionable appearance.

Meet the requirements of Section 104 when furnishing borrow areas, regardless of location.

SUBARTICLE 120-8.1 (Page 167) is deleted and the following substituted:

120-8.1 General: Construct embankments in sections of not less than 300 feet in length or for the full length of the embankment. Perform work in accordance with an approved Quality Control Plan meeting the requirements of 105-3.

For construction of mainline pavement lanes, turn lanes, ramps, parking lots, concrete box culverts and retaining wall systems, a LOT is defined as a single lift of finished embankment not to exceed 500 feet.

For construction of shoulder-only areas, bike/shared use paths, and sidewalks areas, a LOT is defined as 2,000 feet or one Day's Production, whichever is greater.

Isolated compaction operations will be considered as separate LOTS. For multiple phase construction, a LOT shall not extend beyond the limits of the phase.

SUBARTICLE 120-8.4 (Pages 169 – 170) is deleted and the following substituted:

120-8.4 Reclaimed Asphalt Pavement (RAP) Method:

120-8.4.1 General: Use only RAP material: 1) stored at facilities with an approved Florida Department of Environmental Protection Stormwater permit; or, 2) transferred directly from a milling project to the Department project. Certify the source if RAP material is from an identifiable Department project. Do not use RAP material in the following areas: 1) Construction areas that are below the seasonal high groundwater table elevation; 2) MSE Wall backfill; 3) underneath MSE Walls or 4) The top 6 inches of embankment.

Prior to placement, submit documentation to the Engineer for his approval, outlining the proposed location of the RAP material.

120-8.4.2 Soil and RAP Mixture: Place the RAP material at the location and spread uniformly**,** using approved methods to obtain a maximum layer thickness of 4 inches. Mix this 4 inches maximum layer of RAP with a loose soil layer of 8 to 10 inches thickness. After mixing, meet all Embankment Utilization requirements of Index 505 for the location used. Do not mix RAP in the uppermost 12 inches in order to comply with 120-8.2.1. The total RAP and other embankment material shall not exceed 12 inches per lift after mixing and compaction if the contractor can demonstrate that the density of the mixture can be achieved. Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Engineer will determine the order in which to spread the two materials. Mix both materials to the full depth. Ensure that the

finished layer will have the thickness and shape required by the typical section. Demonstrate the feasibility of this construction method by successfully completing a 500-foot-long test section. For embankment construction, meet the requirements of 120-8. For compaction requirements of the soil and RAP mixture, meet the requirements of 120-9.

120-8.4.3 Alternate Soil and RAP Layer Construction: Construct soil in 6 to 12 inch compacted lifts and RAP in alternate layers with 6 inch maximum compacted lifts. Use soil with a minimum LBR value of 40 to prevent failure during compaction of the overlying RAP layer. Demonstrate the feasibility of this construction method by successfully completing a 500-foot-long test section. For compaction requirements of both soil and RAP, meet the requirements of 120-9**.**

SUBARTICLE 120-10.1 (Pages 171-173) is expanded by the following new Subarticle:

120-10.1.7 Payment for Resolution Tests: If the Resolution laboratory results compare favorably with the Quality Control results, the Department will pay for Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution laboratory results do not compare favorably with the Quality Control results, the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

SUBRTICLE 120-10.3.1 (Page 173) is deleted and the following substituted:

120-10.3.1 Frequency: Conduct QC sampling and testing at a minimum frequency listed in the table below. The Engineer will perform Verification sampling and tests at a minimum frequency listed in the table below.

Test Name	Quality Control	Verification	Verification of Shoulder-Only Areas, Bike/Shared Use Paths, and Sidewalks
Standard Proctor Maximum Density	One per soil type	One per soil type	One per soil type
Density	One per LOT	One per four LOTS and for wet conditions, the first lift not affected by water	One per two LOTs
Soil Classification	One per Standard Proctor Maximum Density	One per Standard Proctor Maximum Density	One per Standard Proctor Maximum Density

121 FLOWABLE FILL.
(REV 3-12-10) (FA 5-24-10) (1-11)

SECTION 121 (Pages 179 – 181) is deleted and the following substituted:

121-1 Description.

Furnish and place flowable fill as an alternative to compacted soil as approved by the Engineer. Applications for conventional flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for trenches, embankments and walls. Applications for cellular concrete flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for embankments and walls.

121-2 Materials.

Meet the following requirements:

Fine Aggregate*.....Section 902
Portland Cement (Types I, II, or III).....Section 921
Water.....Section 923
Admixtures**.....Section 924
Fly Ash, Slag and other Pozzolanic Materials....Section 929
Preformed Foam.....ASTM C 869

*Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% passing a No. 200 sieve may be used.

**High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and shall be added at jobsite and mixed in accordance with the manufacturer's recommendation.

121-3 Mix Design.

Conventional flowable fill is a mixture of portland cement, fly ash, fine aggregate, admixture and water. Flowable fill contains a low cementitious content for reduced strength development. Cellular concrete flowable fill is a low density concrete made with cement, water and preformed foam to form a hardened closed cell foam material. Cellular concrete flowable fill may also contain fine aggregate, fly ash, slag and admixtures.

Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable, non-excavatable and cellular concrete flowable fill:

	Excavatable	Non-Excavatable	Cellular Concrete
Cement	75-100 lb/yd^3	75-150 lb/yd^3	Min 150 lb/yd^3
Pozzolans or Slag	None	150-600 lb/yd^3	Optional
Water	*	*	*
Air**	5-35%	5-15%	****
28 Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi	Minimum 80 psi
Unit Weight **	90-110 lb/ft^3	100-125 lb/ft^3	20-80 lb/ft^3
Fine Aggregate	***	***	Optional

	Excavatable	Non-Excavatable	Cellular Concrete
*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement. **The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements. ***Fine Aggregate shall be proportioned to yield 1 yd^3. ****In cellular concrete, preformed foam shall be proportioned at the job site to yield 1 yd^3 in accordance with the design requirements.			

121-4 Production and Placing.

Use flowable fill manufactured at a production facility that meets the requirements of 347-3. Deliver flowable fill using concrete construction equipment. Revolution counter are waived. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water. Cellular concrete flowable fill may not be placed within three feet of the bottom elevation for roadway base courses.

121-5 Construction Requirements.

Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

Protect flowable fill from freezing for a period of 36 hours after placement.

Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40ºF. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

121-6 Acceptance.

Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50ºF.

Furnish a delivery ticket to the Engineer for each load of flowable fill delivered to the worksite. Ensure that each ticket contains the following information:

(1) Project designation,
(2) Date,
(3) Time,
(4) Class and quantity of flowable fill,
(5) Actual batch proportions,
(6) Free moisture content of aggregates,
(7) Quantity of water withheld.

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer in accordance with ASTM C-403. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

121-7 Basis of Payment.

When the item of flowable fill is included in the Contract, payment will be made at the Contract unit price per cubic yard. Such price and payment will include all cost of

the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

Payment will be made under:

Item No. 121- 70- Flowable Fill - per cubic yard.

160 STABILIZING.

(REV 5-24-11) (FA 6-7-11) (1-12)

SUBARTICLE 160-3.2 (Pages 196 and 197) is deleted and the following substituted:

160-3.2 Application of Stabilizing Material: After substantially completing the roadbed grading operations, determine the type and quantity (if any) of stabilizing material necessary for compliance with the bearing value requirements. Notify the Engineer of the approximate quantity to be added before spreading. When additive stabilizing materials are required, spread the material uniformly over the area to be stabilized.

160-3.2.1 Sampling and Testing of Local Material: Randomly select locations for sampling using a random number generator approved by the Engineer in accordance with FM 1-T 267 and test at the minimum frequency listed in the table below before mixing. The Engineer will reject the material for failing QC test results. The Engineer will sample for Verification and Resolution testing at the minimum frequency listed in the table below. The Engineer will perform Verification tests at the minimum frequency listed in the table below.

Test Name	Quality Control	Verification	Resolution
Liquid Limit (LL), Plastic Index (PI), and Organic Content	One per two LOTs	One per eight LOTs	One per eight LOTs

160-3.2.1.1 Verification Comparison Criteria and Resolution Procedures: If the QC and the Department's Verification tests meet the requirements of Section 914 then the Engineer will accept the corresponding LOTs. Otherwise, the Engineer will submit the Resolution sample to the State Materials Office or an AASHTO accredited laboratory designated by the State Materials Office to perform Resolution testing.

If the Resolution Test results meet the requirements of Section 914 then the Engineer will accept the LOTs in question. Otherwise remove the material and apply new material meeting the requirements of Section 914 and retest in accordance with 160-3.2.

SUBARTICLE 160-4.3.2(Page 200) is deleted and the following substituted:

160-4.3.2 Department Verification Tests:

160-4.3.2.1 Bearing Value & Soil Classification: The Engineer will collect a sample at a location other than the location where the sample was collected in 160-4.3.1.3, and test the Stabilized Subgrade for determination of the LBR in accordance with FM 5-515. The Engineer will select test locations, including Stations and Offsets, using a Random Number generator, based on the LOTs under consideration.

If Local Material is used for stabilizing, the Engineer will determine compliance with embankment utilization requirements and 160-3.4 by testing and classifying the Stabilized Subgrade in accordance with AASHTO T88 and AASHTO M 145 at the frequency shown in 160-4.2.4.

160-4.3.2.1.1 Unsoaked LBR: The Engineer will sample and test the initial LOT for one soaked and one unsoaked LBR if consideration of the Unsoaked LBR has been approved.

160-4.3.2.2 Mixing Depth: The Engineer will witness the Contractor's mixing depth checks to ensure compliance with 160-4.2.2. The Engineer will select test locations, including Stations and Offsets, using a Random Number generator.

160-4.3.2.3 Modified Proctor Maximum Density: The Engineer will randomly select one of the retained split samples and test in accordance with FM 1-T 180, Method D.

200 ROCK BASE.

(REV 10-12-10) (FA 12-10-10) (7-11)

SUBARTICLE 200-7.2.1 (Page 208) is deleted and the following substituted:

200-7.2.1 Density: Within the entire limits of the width and depth of the base, obtain a minimum density in any LOT of 98% of modified Proctor maximum density as determined by FM 1-T 180, Method D. For shoulder only areas and bike/shared use paths, obtain a minimum density of 95% of the modified Proctor maximum density as determined by FM 1-T 180, Method D.

300 PRIME AND TACK COATS.

(REV 12-2-11) (FA 2-6-12) (7-12)

Section Title (Page 237) is deleted and the following substituted:

SECTION 300
PRIME AND TACK COATS

SUBARTICLE 300-8.4 (Page 240) is deleted and the following substituted:

300-8.4 Rate of Application: Use a rate of application as defined in Table 300-1. Control the rate of application to be within plus or minus 0.01 gallon per square yard of the target application rate. The target application rate may be adjusted by the Engineer to meet specific field conditions. Determine and record the rate of application a minimum of twice per day, once at the beginning of each day's production and again as needed to control the operation. When using RA-550, multiply the target rate of application by 0.6.

Table 300-1
Tack Coat Application Rates

Asphalt Mixture Type	Underlying Pavement Surface	Target Tack Rate (gal/yd^2)
Base Course, Structural Course, Dense Graded Friction Course	Newly Constructed Asphalt Layers	0.03 minimum
	Milled Surface or Oxidized and Cracked Pavement	0.06
	Concrete Pavement	0.08
Open Graded Friction Course	Newly Constructed Asphalt Layers	0.05
	Milled Surface	0.07

320 HOT MIX ASPHALT – PLANT METHODS AND EQUIPMENT. (REV 7-19-11) (FA 8-4-11) (1-12)

SECTION 320 (Pages 241 - 247) is deleted and the following substituted:

SECTION 320
HOT MIX ASPHALT -
PLANT METHODS AND EQUIPMENT

320-1 General.

This Section specifies the basic equipment and operational requirements for hot mix asphalt (including warm mix asphalt) production facilities used in the construction of asphalt pavements and bases. Establish and maintain a quality control system that provides assurance that all materials and products submitted for acceptance meet Contract requirements.

320-2 Quality Control (QC) Requirements.

320-2.1 Minimum Producer QC Requirements: Perform as a minimum the following activities:

1. Stockpiles:
    a. Assure materials are placed in the correct stockpile;
    b. Assure good stockpiling techniques;
    c. Inspect stockpiles for separation, contamination, segregation, and other similar items;

d. Properly identify and label each stockpile.

2. Incoming Aggregate:

a. Obtain gradations and bulk specific gravity (G_{sb}) values from aggregate supplier for reference;

b. Determine the gradation of all component materials and routinely compare gradations and G_{sb} values to mix design.

3. Cold Bins:

a. Calibrate the cold gate/feeder belt for each material;

b. Determine cold gate/feeder belt settings;

c. Observe operation of cold feeder for uniformity;

d. Verify accuracy of all settings;

e. Verify that the correct components are being used, and that all modifiers or additives or both are being incorporated into the mix.

4. Batch Plants:

a. Determine percent used and weight to be pulled from each bin to assure compliance with the mix design;

b. Check mixing time;

c. Check operations of weigh bucket and scales.

5. Drum Mixer Plants:

a. Determine aggregate moisture content;

b. Calibrate the weigh bridge on the charging conveyor.

6. Control Charts: Maintain QC data and charts (updated daily) for all QC Sampling and Testing and make available upon demand. Provide the following charts:

a. All components used to determine the composite pay factor (No. 8 sieve, No. 200 sieve, asphalt binder content, air voids, and density) by LOT;

b. Gradation of incoming aggregate;

c. Gradation, asphalt binder content and maximum specific gravity (G_{mm}) of RAP;

d. Any other test result or material characteristic (as determined by the Contractor) necessary for process control.

The above listed minimum activities are to be considered normal activities necessary to control the production of hot mix asphalt at an acceptable quality level. Depending on the type of process or materials, some of the activities listed may not be necessary and in other cases, additional activities may be required. The frequency of these activities will also vary with the process and the materials. When the process varies from the defined process average and variability targets, the frequency of these activities will be increased until the proper conditions have been restored.

320-2.2 Minimum Process Control Testing Requirements: Perform, as a minimum, the following activities at the testing frequencies provided in Table 320-1. QC tests used in the acceptance decision may be used to fulfill these requirements.

Table 320-1		
Asphalt Plant - Materials Testing Frequencies		
Material	Property	Minimum Testing Frequency
Aggregate	Gradation	Once per 1,000 tons of incoming aggregate

Aggregate	Moisture Content (stockpiled aggregate or combined cold feed bin)	Once per day
Asphalt Mix	Asphalt Binder Content	If daily production > 100 tons, once per day; If daily production > 1,000 tons, twice per day. *
Asphalt Mix	Bulk Specific Gravity (G_{mb})	If daily production > 100 tons, once per day; If daily production > 1,000 tons, twice per day. *
Asphalt Mix	Gradation	If daily production > 100 tons, once per day; If daily production > 1,000 tons, twice per day. *
Asphalt Mix	Maximum Specific Gravity (G_{mm})	If daily production > 100 tons, once per day; If daily production > 1,000 tons, twice per day. *
Asphalt Mix	Temperature	Each of first 5 loads, then once every 5 loads thereafter, per day per mix design.
RAP	Asphalt Binder Content	Once per 1,000 tons RAP
RAP	Gradation	Once per 1,000 tons RAP
RAP	Maximum Specific Gravity (G_{mm})	Once per 5,000 tons RAP
RAP	Recovered Viscosity	Once per 5,000 tons RAP
*If less than 100 tons of mix is produced on each of successive days of production, resulting in a cumulative quantity of greater than 100 tons, then perform the indicated test.		

320-2.3 Personnel Qualifications: Provide QC Technicians in accordance with Section 105.

320-2.4 Hot Mix Asphalt Testing Laboratory Requirements: Furnish a fully equipped asphalt laboratory at the production site. The laboratory must be qualified under the Department's Laboratory Qualification Program, as described in Section 105. In addition, the laboratory shall meet the following requirements:

1. Area - The effective working area of the laboratory shall be a minimum of 180 square feet, with a layout of which will facilitate multiple tests being run simultaneously by two technicians. This area does not include the space for desks, chairs and file cabinets. Any variations shall be approved by the Engineer.

2. Lighting - The lighting in the lab must be adequate to illuminate all areas of the work.

3. Temperature Control - Equip the lab with heating and air conditioning units that provide a satisfactory working environment.

4. Ventilation - Equip the lab with exhaust fans that will remove all hazardous fumes from within the laboratory in accordance with OSHA requirements.

5. Equipment and Supplies - Furnish the lab with the necessary sampling and testing equipment and supplies for performing contractor QC and Department Verification Sampling and Testing. A detailed list of equipment and supplies required for each test is included in the appropriate FDOT, AASHTO, or ASTM Test Method.

6. Calibration of the Superpave Gyratory Compactor - Calibrate the Superpave Gyratory Compactor in accordance with the manufacturer's recommendations.

The calibration frequency shall be the more frequent interval of the manufacturer's recommendation or once per year as stated in AASHTO R 18. Identify in the Quality Control Plan (QCP) the established frequencies and document all calibrations.

7. Personal Computer - Provide a personal computer capable of running a Microsoft Excel™ spreadsheet program, along with a printer.

8. Communication - Provide a telephone and fax machine (with a private line) for the use of the testing facility's QC personnel. In addition, provide an internet connection capable of uploading data to the Department's database and for e-mail communications.

320-3 Requirements for All Plants.

320-3.1 General: Design, manufacture, coordinate, and operate the asphalt plant in a manner that will consistently produce a mixture within the required tolerances and temperatures specified.

320-3.2 Electronic Weigh Systems: Equip the asphalt plant with an electronic weigh system that: 1) has an automatic printout, 2) is certified every six months by an approved certified scale technician, and 3) meets monthly comparison checks with certified truck scales as specified in 320-3.2.4. Weigh all plant produced hot mix asphalt on the electronic weigh system, regardless of the method of measurement for payment.

Include, as a minimum, the following information on the printed delivery ticket:

(a) Sequential load number
(b) Project number
(c) Date
(d) Name and location of plant
(e) Mix design number
(f) Place for hand-recording mix temperature
(g) Truck number
(h) Gross, tare, and net tonnage per truck (as applicable)
(i) Daily total tonnage of mix for the mix design

Print the delivery ticket with an original and at least one copy. Furnish the original to the Engineer at the plant and one copy to the Engineer at the paving site.

Utilize any one of the following three electronic weigh systems.

320-3.2.1 Electronic Weigh System on the Truck Scales: Provide an electronic weigh system on all truck scales, which is equipped with an automatic recordation system that is approved by the Engineer. Use scales of the type that directly indicate the total weight of the loaded truck. Use scales meeting the requirements for accuracy, condition, etc., of the Bureau of Weights and Measures of the Florida Department of Agriculture, and re-certify such fact every six months, either by the Bureau of Weights and Measures or by a registered scale technician.

320-3.2.2 Electronic Weigh System on Hoppers Beneath a Surge or Storage Bin: Provide an electronic weigh system on the hopper (hopper scales or load cells) beneath the surge or storage bin, which is equipped with an automatic recordation system approved by the Engineer.

320-3.2.3 Automatic Batch Plants with Printout: For batch plants, provide an approved automatic printer system which will print the individual or cumulative weights of aggregate and liquid asphalt delivered to the pugmill and the total

net weight of the asphalt mix measured by hopper scales or load cell type scales. Use the automatic printer system only in conjunction with automatic batching and mixing control systems that have been approved by the Engineer.

320-3.2.4 Monthly Electronic Weigh System Comparison Checks: Check the accuracy of the electronic weighing system at the commencement of production and thereafter at least every 30 days during production by one of the following two methods and maintain a record of the weights in the Scale Check Worksheet.

320-3.2.4.1. Electronic Weigh System on Truck Scales:

(a) The Engineer will randomly select a loaded truck of asphalt mix and record the truck number and gross weight from the Contractor's delivery ticket.

(b) Weigh the selected truck on a certified truck scale, which is not owned by the Contractor and record the gross weight for the comparison check. If another certified truck scale is not available, the Engineer may permit another set of certified truck scales owned by the Contractor to be used. The Engineer may elect to witness the scale check.

(c) The gross weight of the loaded truck as shown on the Contractor's delivery ticket will be compared to the gross weight of the loaded truck from the other certified truck scale. The maximum permissible deviation is 8 pounds per ton of load, based on the certified truck scale weight.

(d) If the distance from the asphalt plant to the nearest certified truck scale is enough for fuel consumption to affect the accuracy of the comparison checks, a fuel adjustment may be calculated by using the truck odometer readings for the distance measurement, and 6.1 miles per gallon for the fuel consumption rate, and 115 ounces per gallon for fuel weight.

(e) During production, when an additional certified truck scale is not available for comparison checks, the Engineer may permit the Contractor to weigh the truck on his certified scales used during production and then weigh it on another certified truck scale, as soon the other scale is available for the comparison checks.

In addition to the periodic checks as specified above, check the scales at any time the accuracy of the scales becomes questionable. When such inaccuracy does not appear to be sufficient to seriously affect the weighing operations, the Engineer will allow a period of two calendar days for the Contractor to conduct the required scale check. However, in the event the indicated inaccuracy is sufficient to seriously affect the mixture, the Engineer may require immediate shut-down until the accuracy of the scales has been checked and necessary corrections have been made. Include the cost of all scale checks in the bid price for asphalt concrete, at no additional cost to the Department.

320-3.2.4.2. Electronic Weigh System on Hoppers Beneath a Surge or Storage Bin and Automatic Batch Plants with Printout:

(a) The Engineer will randomly select a loaded truck of asphalt mix and record the truck number, and the net weight of the asphalt mix from the Contractor's delivery ticket.

(b) Weigh the selected truck on a certified truck scale, which is not owned by the Contractor and record the gross weight for the comparison check. If another certified truck scale is not available, the Engineer may permit another set of certified truck scales owned by the Contractor to be used. The Engineer may elect to witness the scale check.

(c) Deliver the asphalt mix to the project, then weigh the selected empty truck on the same certified truck scales. Record the tare weight of the truck.

(d) Compare the net weight of the asphalt mix from the delivery ticket to the calculated net weight of the asphalt mix as determined by the certified truck scale weights. The maximum permissible deviation is 8 pounds per ton of load, based on the certified truck scale weight.

(e) Use the fuel adjustment as specified in 320-3.2.4.1(d), when the distance from the asphalt plant to the nearest certified truck scale is enough for fuel consumption to affect the accuracy of the comparison checks.

(f) During production, when an additional certified truck scale is not available for comparison checks, the Engineer may permit the Contractor to load a truck with aggregate from the pugmill, surge or storage bin, and follow the above procedures to conduct the comparison checks as soon as certified truck scale is available.

If the check shows a greater difference than the tolerance specified above, then recheck on a second set of certified scales. If the check and recheck indicate that the printed weight is out of tolerance, have a certified scale technician check the electronic weigh system and certify the accuracy of the printer. While the system is out of tolerance and before its adjustment, the Engineer may allow the Contractor to continue production only if provisions are made to use a set of certified truck scales to determine the truck weights.

320-3.3 Asphalt Binder: Meet the following requirements:

320-3.3.1 Transportation: Deliver the asphalt binder to the asphalt plant at a temperature not to exceed 370°F, and equip the transport tanks with sampling and temperature sensing devices meeting the requirements of 300-3.2.

320-3.3.2 Storage: Equip asphalt binder storage tanks to heat the liquid asphalt binder to the temperatures required for the various mixtures. Heat the material in such a manner that no flame comes in contact with the binder. Heat or insulate all pipe lines and fittings. Use a circulating system of adequate size to ensure proper and continuous circulation during the entire operating period. Locate a thermometer, reading from 200 to 400°F, either in the storage tank or in the asphalt binder feed line. Maintain the asphalt binder in storage within a range of 230 to 370°F in advance of mixing operations. Locate a sampling device on the discharge piping exiting the storage tank or at a location as approved by the Engineer.

320-3.4 Aggregate: Meet the following requirements:

320-3.4.1 Stockpiles: Place each aggregate component in an individual stockpile, and separate each from the adjacent stockpiles, either by space or by a system of bulkheads. Prevent the intermingling of different materials in stockpiles at all times. Identify each stockpile, including RAP, as shown on the mix design.

Form and maintain stockpiles in a manner that will prevent segregation. If a stockpile is determined to be segregated, discontinue the use of the

material on the project until the appropriate actions have been taken to correct the problem.

320-3.4.2 Blending of Aggregates: Stockpile all aggregates prior to blending or placing in the cold feed bins. If mineral filler or hydrated lime is required in the mix, feed or weigh it in separately from the other aggregates.

320-3.4.2.1 Cold Feed Bin: Provide a separate cold feed bin for each component of the fine and coarse aggregate required by the mix design. Equip the cold feed bins with accurate mechanical means for feeding the aggregate uniformly into the dryer in the proportions required for the finished mix to maintain uniform production and temperature. When using RAP as a component material, prevent any oversized RAP from being incorporated into the completed mixture by the use of: a grizzly or grid over the RAP bin; in-line roller or impact crusher; screen; or other suitable means. If oversized RAP material appears in the completed recycled mix, take the appropriate corrective action immediately. If the appropriate corrective actions are not immediately taken, stop plant operations.

Use separate bin compartments in the cold aggregate feeder that are constructed to prevent any spilling or leakage of aggregate from one cold feed bin to another. Ensure that each cold feed bin compartment has the capacity and design to permit a uniform flow of aggregates. Mount all cold feed bin compartments over a feeder of uniform speed, which will deliver the specified proportions of the separate aggregates to the drier at all times. If necessary, equip the cold feed bins with vibrators to ensure a uniform flow of the aggregates at all times.

320-3.4.2.2 Gates and Feeder Belts: Provide each cold feed bin compartment with a gate and feeder belt, both of which are adjustable to assure the aggregate is proportioned to meet the requirements of the mix design.

320-3.4.3 Screening Unit: Remove any oversized pieces of aggregate by the use of a scalping screen. Do not return this oversized material to the stockpile for reuse unless it has been crushed and reprocessed into sizes that will pass the scalping screen. Ensure that the quantity of aggregates being discharged onto the screens does not exceed the capacity of the screens to actually separate the aggregates into the required sizes.

320-3.5 Dryer: Provide a dryer of satisfactory design for heating and drying the aggregate. Use a dryer capable of heating the aggregate to within the specified temperature range for any mix, and equip the dryer with an electric pyrometer placed at the discharge chute to automatically register the temperature of the heated aggregates.

320-3.6 Asphalt Binder Control Unit: Provide a satisfactory means, either by weighing, metering, or volumetric measuring, to obtain the proper amount of asphalt binder material in the mix, within the tolerance specified for the mix design.

320-3.7 Contractor's Responsibilities: Acceptance of any automatic delivery ticket printout, electronic weight delivery ticket, other evidence of weight of the materials or approval of any particular type of material or production method will not constitute agreement by the Department that such matters are in accordance with the Contract Documents and it shall be the Contractor's responsibility to ensure that the materials delivered to the project are in accordance with the Contract Documents.

320-4 Additional Requirements for Batch Plants.

320-4.1 Heating and Drying: Heat and dry the aggregate before screening. Control the temperature of the aggregate so the temperature of the completed mixture at the plant falls within the permissible range allowed by this Section.

320-4.2 Gradation Unit: Provide plant screens capable of separating the fine and coarse aggregates and of further separating the coarse aggregate into specific sizes. In addition, equip the gradation unit with a scalping screen to restrict the maximum size of the aggregates. In the event that the plant is equipped with cold feed bins that are capable of adequately controlling the gradation of the mixture, the use of plant screens is optional.

320-4.3 Hot Bins: Provide storage bins of sufficient capacity to supply the mixer when it is operating at full capacity. Provide hot bins with divided compartments to ensure separate and adequate storage of the appropriate fractions of the aggregate. Equip each compartment with an overflow chute of suitable size and location to prevent any backing up of material into other bins.

320-4.4 Weigh Box or Hopper: Equip the batch plant with a means for accurately weighing each bin size of aggregate and the mineral filler into the weigh box or hopper.

320-4.5 Pugmills: Utilize a pugmill capable of mixing the aggregate and the asphalt binder.

320-5 Additional Requirements for Drum Mixer Plants.

320-5.1 Weight Measurements of Aggregate: Equip the plant with a weigh-in-motion scale capable of measuring the quantity of aggregate (and RAP) entering the dryer.

320-5.2 Synchronization of Aggregate Feed and Asphalt Binder Feed: Couple the asphalt binder feed control with the total aggregate weight device, including the RAP feed, in such a manner as to automatically vary the asphalt binder feed rate as necessary to maintain the required proportions.

320-5.3 Hot Storage or Surge Bins: Equip the plant with either a surge bin or storage silo that is capable of storing an adequate amount of material to assure a uniform and consistent product.

320-6 Preparation of the Mixture.

320-6.1 Mixing: After the aggregate is dried and properly proportioned, mix the aggregate, along with any other components, with the asphalt binder to produce a thoroughly and uniformly coated mixture.

320-6.2 Storage: If necessary, store the asphalt mixture in a surge bin or hot storage silo for a maximum of 72 hours. For FC-5 mixtures, store the asphalt mixture in a surge bin or hot storage silo for a maximum of one hour.

320-6.3 Mix Temperature: Produce the mixture with a temperature within the master range as defined in Table 320-2.

320-6.3.1 Test Requirements: Determine the temperature of the completed mixture using a quick-reading thermometer through a hole in the side of the loaded truck immediately after loading. Locate a 1/4 inch hole on both sides of the truck body within the middle third of the length of the body, and at a distance from 6 to 10 inches above the surface supporting the mixture. If a truck body already has a hole located in the general vicinity of the specified location, use this hole. At the Engineer's

discretion, the Contractor may take the temperature of the load over the top of the truck in lieu of using the hole in the side of the truck.

320-6.3.2 Test Frequency: The normal frequency for taking asphalt mix temperatures will be for each day, for each design mix on the first five loads and one out of every five loads thereafter. Take the temperature of the asphalt mix at the plant and at the roadway before the mix is placed at the normal frequency. Record the temperature on the front of the respective delivery ticket. The Engineer shall review the plant and roadway temperature readings and may take additional temperature measurements at any time.

If any single load at the plant or at the roadway is within the master range shown in Table 320-2 but does not meet the criteria shown in Table 320-3 (for single measurements or the average of five consecutive measurements), the temperature of every load will be monitored until the temperature falls within the specified tolerance range in Table 320-3; at this time the normal frequency may be resumed.

320-6.3.3 Rejection Criteria: Reject any load or portion of a load of asphalt mix at the plant or at the roadway with a temperature outside of its respective master range shown in Table 320-2. Notify the Engineer of the rejection immediately.

Table 320-2	
Mix Temperature Master Range Tolerance	
Location	Acceptable Temperature Tolerance
Plant	Mixing Temperature ±30 F
Roadway	Compaction Temperature ±30F

Table 320-3	
Mix Temperature Tolerance From Verified Mix Design	
Any Single Measurement	±25°F
Average of Any Five Consecutive Measurements	±15°F

320-7 Transportation of the Mixture.

Transport the mix in trucks of tight construction, which prevents the loss of material and the excessive loss of heat and previously cleaned of all foreign material. After cleaning, thinly coat the inside surface of the truck bodies with soapy water or an asphalt release agent as needed to prevent the mixture from adhering to the beds. Do not allow excess liquid to pond in the truck body. Do not use diesel fuel or any other hazardous or environmentally detrimental material as a coating for the inside surface of the truck body. Provide each truck with a tarpaulin or other waterproof cover mounted in such a manner that it can cover the entire load when required. When in place, overlap the waterproof cover on all sides so that it can be tied down. Cover each load during cool and cloudy weather and at any time it appears rain is likely during transit with a tarpaulin or waterproof cover.

327 MILLING OF EXISTING ASPHALT PAVEMENT – CONSTRUCTION. (REV 6-7-11) (FA 8-4-11) (1-12)

ARTICLE 327-3 (Pages 248–249) is deleted and the following substituted:

327-3 Construction.

327-3.1 General: Remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.

When milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The Engineer may require the use of a stringline to ensure maintaining the proper alignment.

Establish the longitudinal profile of the milled surface in accordance with the milling plans. Ensure that the final cross slope of the milled surface parallels the surface cross slope shown on the plans or as directed by the Engineer. Establish the cross slope of the milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

Operate the milling machine to minimize the amount of dust being emitted. The Engineer may require prewetting of the pavement.

Provide positive drainage of the milled surface and the adjacent pavement. Perform this operation on the same day as milling. Repave all milled surfaces no later than the day after the surface was milled unless otherwise stated in the plans.

If traffic is to be maintained on the milled surface prior to the placement of the new asphalt concrete, provide suitable transitions between areas of varying thickness to create a smooth longitudinal riding surface. Produce a pattern of striations that will provide an acceptable riding surface. The Engineer will control the traveling speed of the milling machine to produce a texture that will provide an acceptable riding surface.

Prior to opening an area which has been milled to traffic, sweep the pavement with a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner that will minimize the potential for creation of a traffic hazard and to minimize air pollution.

Sweep the milled surface with a power broom prior to placing asphalt concrete.

In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess milled materials and controlling dust. Obtain the Engineer's approval of such equipment, contingent upon its demonstrated ability to do the work.

Perform the sweeping operation immediately after the milling operations or as directed by the Engineer.

327-3.2 Quality Control Requirements: Furnish an electronic level with a length of 4 feet and an accuracy of plus or minus 0.1 degree approved by the Engineer for the control of cross slope. Make this electronic level available at the jobsite at all times during milling operations. Calibrate and compare electronic levels in accordance with 330-9.3.1 at a minimum frequency of once per day before any milling operation.

Multiple cuts may be made to achieve the required pavement configuration or depth of cut. Measure the cross slope of the milled surface by placing the level at the center location of a lane and perpendicular to the roadway centerline. Record all the measurements to the nearest 0.1% on an approved form and submit to the Engineer for documentation.

1. Tangent Sections: Measure the cross slope per lane at a minimum frequency of one measurement every 100 feet. Calculate the absolute deviation of cross slope at each measurement and then average the absolute deviation of ten consecutive cross slope measurements. The absolute deviation is the positive value of a deviation. When the average absolute deviation cross slope is consistently within the acceptance tolerance as shown in Table 327-1 and upon approval by the Engineer, the frequency of the cross slope measurements can be reduced to one measurement every 200 feet during milling operations.

2. Superelevated Sections: Measure the cross slope every 100 feet per lane within the length of full superelevation. Calculate the absolute deviation of each measurement and then average the absolute deviation of ten consecutive cross slope measurements. For every transition section, measure the cross slope at control points identified in the plans or, if not shown in the plans, at a control point at a location of 0.0% cross slope. For curves where the length of the fully superelevated section is less than 250 feet, measure the cross slope at the beginning point, midpoint and ending point of the fully superelevated section, calculate the absolute deviation and average. When the number of measurements is less than ten and the length of full superelevation is greater than 250 feet, average the absolute deviation of all measurements.

If the average absolute deviation of the cross slope measurements falls outside the acceptance tolerance shown in Table 327-1, stop the milling operations and make adjustments until the problem is resolved to the satisfaction of the Engineer. If an individual cross slope deviation falls outside the acceptance tolerance as shown in Table 327-1, make corrections only in the deficient area to the satisfaction of the Engineer at no cost to the Department. For pavement with multiple cuts, the deficient areas not caused by the final cut may be left in place upon approval of the Engineer. All milling corrections shall be completed before placement of the asphalt course unless stated otherwise in the plans or as determined by the Engineer.

The limits of deficient areas requiring correction may be verified and adjusted with more accurate measurement methods, including survey instruments, upon approval by the Engineer at no cost to the Department. Should the Contractor wish to have any corrections waived, submit a request to the Engineer for approval. The Engineer may waive the corrections at no reduction in payment if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the final cross slope or project grade.

For intersections, tapers, crossovers, transitions at the beginning and end of the project, bridge approaches and similar areas, adjust the cross slope to match the actual site conditions, or as directed by the Engineer.

TABLE 327-1 Cross Slope Milling Acceptance Tolerance

Roadway Feature	Individual Absolute Deviation	Average Absolute Deviation
Tangent section (including turn lanes)	0.4%	0.2%
Superelevated curve	0.4%	0.2%
Shoulder	0.5%	0.5%

In the event that the distance between tow edges of deficient areas is less than 100 feet, the correction work shall include the area between the deficient sections.

327-3.3 Verification: The Engineer will verify the Contractor's cross slope measurements by randomly taking a minimum of ten cross slope measurements per lane per mile in tangent sections, control points in transition sections, and a minimum of three cross slope measurements on fully superelevated sections. The Engineer will measure the cross slope of the milled surface by placing the level at the center location of a lane and perpendicular to the roadway centerline. If the average absolute deviation or an individual cross slope deviation falls outside the acceptance tolerance as shown in Table 327-1, immediately make a comparison check at the QC test locations to verify the QC measurements in the questionable section. If the comparisons are beyond the acceptable comparison tolerance in accordance with 327-3.2, stop the milling operation until the problem is resolved to the satisfaction of the Engineer. Correct any cross slope not meeting the individual deviation acceptance tolerance at no cost to the Department. The Engineer reserves the right to check the cross slope of the milled surface at any time by taking cross slope measurements at any location.

330 HOT MIX ASPHALT – GENERAL CONSTRUCTION REQUIREMENTS. (REV 1-18-12) (FA 2-6-12) (7-12)

SECTION 330 (Pages 250 – 265) is deleted and the following substituted:

SECTION 330
HOT MIX ASPHALT -
GENERAL CONSTRUCTION REQUIREMENTS

330-1 Description.

This Section specifies the basic equipment and construction requirements for hot mix asphalt (including warm mix asphalt) pavements and bases. Establish and maintain a quality control system that provides assurance that all materials, products and completed construction submitted for acceptance meet Contract requirements.

330-2 Quality Control (QC) Requirements.

330-2.1 Minimum QC Requirements: In addition to the requirements set forth in Section 105, describe in the Quality Control Plan (QCP) how the following attributes will be monitored: pavement density, mix temperature, pavement smoothness, pavement cross-slope, mix spread rate, and pavement texture, including methods for monitoring pavement segregation and the corrective actions that will be taken to resolve any

identified problems. Perform as a minimum, the following activities necessary to maintain process control and meet Specification requirements:

1. Pavement Density: Monitor the pavement temperature with an infrared temperature device so that compaction is completed before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement. Monitor the roadway density with either 6 inch diameter roadway cores, a nuclear density gauge, or other density measuring device, at a minimum frequency of once per 1,500 feet of pavement.

2. Mix Temperature: Determine the mix temperature at the roadway for the first five loads and one out of every five loads thereafter.

3. Mix Spread Rate: Monitor the mix spread rate at the beginning of each day's production, and as needed to control the operations, at a minimum of once per 200 tons placed. When determining the spread rate, use, at a minimum, an average of five truckloads of mix.

4. Pavement Texture: Monitor the pavement texture to minimize pavement segregation. Use density gauges, infrared temperature measurement devices, or roadway cores at the beginning of each day's production, and as necessary, both at truck exchanges and during normal paving operations.

5. Reporting: Ensure the accuracy of the Quality Control Roadway Reports on the Department's approved form to reflect the actual surface area of the finished work and be in compliance with the requirements of the Contract Documents.

330-2.2 Personnel Qualifications: Provide QC Technicians in accordance with Section 105.

330-3 Limitations of Operations.

330-3.1 Weather Limitations: Do not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the paving operations.

330-3.2 Limitations of Paving Operations:

330-3.2.1 General: Place the mixture only when the surface upon which it is to be placed has been previously prepared, is intact, firm, dry, clean, and the tack or prime coat, with acceptable spread rate, is properly broken or cured. Do not place friction course until the adjacent shoulder area has been dressed and grassed.

330-3.2.2 Ambient Air Temperature: Place the mixture only when the air temperature in the shade and away from artificial heat meets requirements of Table 330-1. The minimum ambient temperature requirement may be reduced by 5ºF when using warm mix technology, if mutually agreed to by both the Engineer and the Contractor. For friction course mixtures, meet the requirements of 337-7.

Table 330-1

Ambient Air Temperature Requirements for Paving

Layer Thickness or Asphalt Binder Type	Minimum Temperature (°F)
≤ 1/2 inch	50
≤ 1 inch or any mixture containing a PG asphalt binder having a high temperature designation greater than PG 67	45
> 1 inch	40

330-3.2.3 Rain and Surface Conditions: Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is water on the surface to be covered. Once the rain has stopped and standing water has been removed from the tacked surface to the satisfaction of the Engineer and the temperature of the mixture caught in transit still meets the requirements as specified in 320-6.3, the Contractor may then place the mixture caught in transit.

330-3.2.4 Wind: Do not place the mixture when the wind is blowing to such an extent that proper and adequate compaction cannot be maintained or when sand, dust, etc., are being deposited on the surface being paved to the extent that the bond between layers will be diminished.

330-4 Surface Preparation.

330-4.1 Cleaning: Prior to placing the mixture, clean the surface of the base or underlying pavement of all loose and deleterious material by the use of power brooms or blowers, supplemented by hand brooming where necessary.

330-4.1.1 Application over Asphalt Rubber Membrane Interlayer (ARMI): Where an asphalt mix is to be placed over a newly constructed ARMI, do not sweep or otherwise disturb the cover material prior to placing the asphalt mix, unless directed by the Engineer.

330-4.2 Tacking: Apply a tack coat on all existing pavement surfaces that are to be overlaid with an asphalt mix as specified in Section 300 and between successive layers of all asphalt mixes. Apply a tack coat on freshly primed bases only when so directed by the Engineer.

330-5 Paving Equipment.

330-5.1 General Requirements: Use equipment that is mechanically sound and capable of consistently meeting the requirements of these Specifications.

330-5.2 Asphalt Paver:

330-5.2.1 General: Provide an asphalt paver that is self-propelled, can be steered, and is equipped with a receiving and distribution hopper and a mechanical screed. Use a mechanical screed capable of adjustment to regulate the depth of material spread and to produce the desired cross-section.

330-5.2.2 Automatic Screed Control: For all asphalt courses placed with an asphalt paver, equip the paver with automatic longitudinal screed controls of either the skid type, traveling stringline type, or non-contact averaging ski type with a minimum length of 25 feet. On the final layer of asphalt base, overbuild, and structural courses, and for friction courses, use the joint matcher in lieu of the skid, traveling stringline, or non-contact averaging ski on all passes after the initial pass. Equip the asphalt paver with electronic cross slope controls.

330-5.2.3 Screed Width: Provide an asphalt paver having a screed width greater than 8 feet when required to pave full width lanes. Do not use extendable screed strike-off devices that do not provide preliminary compaction of the mat in place of fixed screed extensions. Use a strike-off device only on irregular areas that would normally be done by hand and on shoulders 5 feet or less in width. When using the strike-off device

on shoulders in lieu of an adjustable screed extension, demonstrate the ability to obtain an acceptable texture, density, and thickness.

When using an extendable screed device to extend the screed's width on the full width lane or shoulder by 24 inches or greater, the Engineer will require an auger extension, paddle, or kicker device unless written documentation from the manufacturer is provided that these are not necessary.

330-5.3 Rollers:

330-5.3.1 Steel-Wheeled Rollers: Provide compaction equipment capable of meeting the density requirements described in these Specifications. In the event that density testing is not required, and the standard rolling pattern is used, provide a tandem steel-wheeled roller weighing 5 to 15 tons for breakdown rolling. For finish rolling, use a separate roller with a weight of 5 to 15 tons. Variations from these requirements shall be approved by the Engineer.

330-5.3.2 Traffic Rollers: Provide compaction equipment capable of meeting the density requirements described in the Specifications. In the event that density testing is not required, and the standard rolling pattern is used, provide a self-propelled, pneumatic-tired traffic roller equipped with at least seven smooth-tread, low pressure tires, equipped with pads or scrapers on each tire. Maintain the tire pressure between 50 and 55 psi or as specified by the manufacturer. Use rollers with a minimum weight of 6 tons. Do not use wobble-wheeled rollers. Variations from these requirements shall be approved by the Engineer.

330-5.3.3 Prevention of Adhesion: Do not allow the mixture to adhere to the wheels of any rollers. Do not use fuel oil or other petroleum distillates to prevent adhesion. Do not use any method which results in water being sprinkled directly onto the mixture.

330-5.4 Coring Equipment: Furnish a suitable saw or drill for obtaining the required density cores.

330-5.5 Hand Tools: Provide the necessary hand tools such as rakes, shovels, and other similar tools, and a suitable means for keeping them clean.

330-6 Placing Mixture.

330-6.1 Requirements Applicable to All Pavement Types:

330-6.1.1 Alignment of Edges: Place all asphalt mixtures by the stringline method to obtain an accurate, uniform alignment of the pavement edge. As an exception, pavement edges adjacent to curb and gutter or other true edges do not require a stringline. Control the unsupported pavement edge to ensure that it will not deviate more than plus or minus1.5 inches from the stringline.

330-6.1.2 Paving Width: If necessary due to the traffic requirements, place the mixture in strips in such a manner as to provide for the passage of traffic. As an option, where the road is closed to traffic, place the mixture to the full width with machines traveling in echelon.

330-6.1.3 Mix Temperature: Maintain the temperature of the mix at the time of paving within the master range as defined in 320-6.3. The minimum frequency for taking mix temperatures on the roadway will be as indicated in 320-6.3. Any load or portion of a load of asphalt mix on the roadway with a temperature outside of the master range shall be rejected for use on the project. Immediately notify the Engineer of the rejection.

330-6.1.4 Speed of Paver: Establish the forward speed of the asphalt paver based on the rate of delivery of the mix to the roadway but not faster than the optimum speed needed to adequately compact the pavement.

330-6.1.5 Thickness and Spread Rate of Layers: Construct each layer as defined in the following table:

Table 330-2	
Thickness and Target Spread Rate Requirements	
Mix Type	Specification Section and Article
Type SP	334-1
Type FC	337-8
Type B	234-8
ATPB	287-8

330-6.1.5.1 Thickness Control: Ensure the spread rate is within 5% of the target spread rate. When determining the spread rate, use, at a minimum, an average of five truckloads of mix. When the average spread rate is beyond plus or minus 5% of the target spread rate, monitor the thickness of the pavement layer closely and adjust the construction operations.

If the Contractor fails to maintain an average spread rate within plus or minus 5% of the target spread rate for two consecutive days, the Engineer may elect to stop the construction operation at any time until the issue is resolved.

330-6.1.5.2 Maximum Spread Rate Tolerances: When the average spread rate for the total structural or friction course pavement thickness measured in accordance with 330-6.1.5.1 exceeds the maximum spread rate tolerances shown in Table 330-3, address the unacceptable pavement in accordance with 330-9.5.

Table 330-3		
Maximum Spread Rate Tolerances		
Course	Design Thickness	Spread Rate Tolerance
Structural	≥ 2.5 inches	± 50 lbs per sy
Structural	< 2.5 inches	± 25 lbs per sy
Friction (dense)	-	± 25 lbs per sy
Friction (open)	-	± 15 lbs per sy

As an exception, the Engineer may allow the Contractor to leave areas in place if it is determined by the Engineer that the deficiency is not a significant detriment to the pavement quality. A reduction to the pay item quantity will be made in accordance with 330-9.5.2.

330-6.1.6 Correcting Defects: Before starting any rolling, check the surface; correct any irregularities; remove all drippings, sand accumulations from the screed, and fat spots from any source; and replace them with satisfactory material. Do not skin patch. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

330-6.1.7 Hand Work: In limited areas where the use of the paver is impossible or impracticable, the Contractor may place and finish the mixture by hand.

330-7 Compacting Mixture.

330-7.1 General Requirements: When density testing for acceptance is required, select equipment, sequence, and coverage (number of times the roller passes over a given area of pavement) of rolling to meet the specified density requirement. Regardless of the rolling procedure used, complete the final rolling before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

330-7.2 Standard Rolling Procedure: When density testing for acceptance is not required, propose an alternative rolling pattern to be approved by the Engineer or use the following standard rolling procedure:

1. Breakdown rolling: Provide two static coverages with a tandem steel-wheeled roller, following as close behind the paver as possible without pick-up, undue displacement, or blistering of the material.

2. Intermediate rolling: Provide five static coverages with a pneumatic-tired roller, following as close behind the breakdown rolling operation as the mix will permit.

3. Finish rolling: Provide one static coverage with a tandem steel-wheeled roller, after completing the breakdown rolling and intermediate rolling, but before the surface pavement temperature drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

330-7.3 Rolling Procedures: Utilize procedures that will uniformly compact the pavement layer to the desired density level, while meeting the appropriate smoothness requirements, without damaging the pavement surface, crushing aggregate or leaving excessive roller marks, roller heads, or ripples. While rolling is in progress, monitor the surface continuously, and adjust the compaction operations to comply with the surface requirements.

330-7.4 Compaction of Areas Inaccessible to Rollers: Use hand tamps or other satisfactory means to compact areas which are inaccessible to a roller, such as areas adjacent to curbs, gutters, bridges, manholes, etc.

330-7.5 Correcting Defects: Do not allow the compaction equipment to deposit contaminants onto the pavement surface. Remove and replace any areas damaged by such deposits as directed by the Engineer. Correct any depressions that develop before completing the rolling by loosening the mixture and adding new mixture to bring the depressions to a true surface. Should any depression remain after obtaining the final compaction, remove the full depth of the mixture, and replace it with sufficient new mixture to form a true and even surface. Correct all defects prior to laying the subsequent course.

330-7.6 Use of Traffic Roller: Use a traffic roller on the first overbuild course. Use a traffic roller or vibratory roller (unless restricted by the Contract Documents) on the first structural layer placed on an ARMI.

330-7.7 Compaction at Bridge Structures: Compact asphalt mixtures placed over bridge decks and approach slabs using static compaction only. Utilize the standard rolling procedure described in 330-7.2 or an alternative procedure approved by the Engineer.

330-8 Joints.

330-8.1 General: When laying fresh mixture against the exposed edges of joints, place it in close contact with the exposed edge to produce an even, well-compacted joint after rolling.

330-8.2 Transverse Joints: Place the mixture as continuously as possible to minimize transverse joints. When constructing permanent transverse joints, meet the surface requirements as defined in 330-9. Construct temporary transverse joints in such a manner to allow traffic to pass over it. When resuming the paving operation, construct a transverse joint by cutting back on the previously placed pavement at a location where the straightedge requirements are met. At the project limits, tie into the adjoining pavement layers as shown in the Plans.

330-8.3 Longitudinal Joints: Place each layer of pavement so that all longitudinal construction joints are offset 6 to 12 inches laterally between successive layers. Plan offsets in advance so that longitudinal joints of the friction course are not in wheel path areas. The longitudinal joints for friction course layers should be within 6 inches of the lane edge or at the center of the lane. The Engineer may waive this requirement where offsetting is not feasible due to the sequence of construction.

330-8.4 Placing Asphalt Next to Concrete Pavement: When placing asphalt next to concrete pavement, construct the joint as shown in the Plans.

330-9 Surface Requirements.

330-9.1 General: Construct a smooth pavement with good surface texture and the proper cross-slope.

330-9.2 Texture of the Finished Surface of Paving Layers: Produce a finished surface of uniform texture and compaction with no pulled, torn, raveled, crushed or loosened portions and free of segregation, bleeding, flushing, sand streaks, sand spots, or ripples. Address any pavement not meeting the requirements of this specification in accordance with 330-9.5.

For dense graded structural and friction course mixtures, in areas not defined to be a density testing exception per 334-5.1.2, obtain for the Engineer three 6 inch diameter roadway cores at locations visually identified by the Engineer to be segregated. The Engineer will determine the density of each core in accordance with FM 1-T 166 and calculate the percent G_{mm} of the segregated area using the average G_{mb} of the roadway cores and the QC sublot G_{mm} for the questionable material. If the average percent G_{mm} is less than 90.0, address the segregated area in accordance with 330-9.5.

Do not use asphalt concrete mixtures containing aggregates that cause a different color appearance in the final wearing surface unless the section is greater than or equal to one mile in length and across the full width of the pavement, including shoulders and turn lanes. Exceptions to these requirements will be permitted if approved by the Engineer.

330-9.3 Cross Slope: Construct a pavement surface with cross slopes in compliance with the requirements of the Contract Documents. Furnish an electronic level with a length of 4 feet and an accuracy of 0.1 degree, approved by the Engineer for the control of cross slope. Make this electronic level available at the jobsite at all times during paving operations.

330-9.3.1 QC Requirements: Calibrate the electronic levels a minimum of once per day before paving operations begin, in accordance with manufacturer's instructions.

Compare the QC level with the Verification level before paving operations begin, and at any time as directed by the Engineer. If the comparison between the QC and Verification levels is within the comparison tolerance of plus or minus 0.2%, the QC level is considered to compare favorably and can be used for measurement and acceptance of cross slopes. If the levels do not compare favorably, perform a second comparison using another calibrated electronic level (FDOT or Contractor) for resolution. If this resolution level compares favorably with the QC level, the QC level is considered to be verified. If the second level does not compare favorably with the QC level, discontinue the use of the QC electronic level and obtain another approved electronic level that meets the requirements of this specification. Regardless of the comparison analysis outcome, the Contractor assumes all risk associated with placing the pavement at the correct cross slope.

Measure the cross slope of the compacted pavement surface by placing the level at the center location of a lane and perpendicular to the roadway centerline. Record all measurements to the nearest 0.1% on the Cross Slope Measurement Data Form and submit to the Engineer for documentation.

1. Tangent Sections: Measure the cross slope at a minimum frequency of one measurement every 100 feet per lane. Calculate the absolute deviation of each cross slope measurement and then average the absolute deviations of ten consecutive cross slope measurements. (The absolute deviation is the positive value of a deviation) When the average absolute deviation cross slope is consistently within the acceptance tolerance as shown in Table 330-4 and upon the approval of the Engineer, the frequency of cross slope measurements can be reduced to one measurement every 200 feet during paving operations.

2. Superelevated Sections: Measure the cross slope every 100 feet per lane within the length of the full superelevation. Calculate the absolute deviation of each measurement and then average the absolute deviations of ten consecutive cross slope measurements. For the transition sections, measure the cross slope at control points identified in the Plans, or if not shown in the Plans, at a control point at the location of 0.0% cross slope and calculate the absolute deviation. For curves where the length of full superelevation is less than 250 feet, measure the cross slope at the beginning point, midpoint and ending point of the fully superelevated sections, calculate the absolute deviation, and average. When the number of measurements is less than ten and the length of full superelevation is greater than 250 feet, average the absolute deviation of all measurements.

If the average absolute deviation of the cross slope measurements falls outside the acceptance tolerance, as shown in Table 330-4, stop the paving operation and make adjustments until the problem is resolved to the satisfaction of the Engineer. If an individual cross slope deviation falls outside the acceptance tolerance as shown in Table 330-4, make corrections at no cost to the Department in accordance with 330-9.5 to address the deficient area of the structural course. Complete all corrections before placement of the final pavement surface layer, unless stated otherwise in the Plans, or as determined by the Engineer. For pavement with multiple layers, the deficient areas for

the structural course may be left in place, upon the approval of the Engineer. For friction course layers, make corrections in accordance with 330-9.5.

The limits of deficient areas requiring correction may be verified and adjusted with more accurate measurement methods, including survey instruments, upon approval by the Engineer at no cost to the Department.

Should the Contractor wish to have any corrections waived, submit a request to the Engineer for approval. The Engineer may waive the corrections at no reduction in payment if the deficiencies are sufficiently separated so as not to affect the overall traffic safety, surface drainage and ride quality characteristics of the pavement and the corrective action would unnecessarily mar the appearance of the finished pavement.

For intersections, tapers, crossovers, transitions at the beginning and end of the project, bridge approaches and similar areas, adjust the cross slope to match the actual site conditions, or as directed by the Engineer.

Table 330-4
Cross Slope Acceptance Tolerance

Roadway Feature	Individual Absolute Deviation	Average Absolute Deviation
Tangent section (including turn lanes)	0.4%	0.2%
Superelevated curve	0.4%	0.2%
Shoulder	0.5%	0.5%

In the event that the distance between two edges of deficient areas is less than 100 feet, the correction work shall include the area between the deficient sections.

330-9.3.2 Verification: The Engineer will verify the Contractor's cross slope measurements by randomly taking a minimum of ten cross slope measurements per lane per mile in tangent sections, control points in transition sections, and a minimum of three cross slope measurements on fully superelevated sections over a day's production. The Engineer will measure the cross slope of the compacted pavement surface by placing the level at the center location of a lane and perpendicular to the roadway centerline. If the average absolute deviation or an individual cross slope deviation falls outside of the acceptance tolerance as shown in Table 330-4, immediately make a comparison check at the QC test locations to verify the QC measurements in the section. If the comparisons are beyond the acceptable comparison tolerance in accordance with 330-9.3.1, stop the paving operations until the issue is resolved to the satisfaction of the Engineer. Correct any cross slope not meeting the individual deviation acceptance tolerance in accordance with 330-9.5 at no cost to the Department. The Engineer reserves the right to check the pavement cross slope at any time by taking cross slope measurements at any location.

330-9.4 Pavement Smoothness: Construct a smooth pavement meeting the requirements of this Specification.

330-9.4.1 General: Furnish a 15 foot manual and a 15 foot rolling straightedge meeting the requirements of FM 5-509. Obtain a smooth surface on all

pavement courses placed, and then straightedge all layers as required by this Specification.

330-9.4.2 Test Method: Perform all straightedge testing in accordance with FM 5-509 in the outside wheel path of each lane. The Engineer, may require additional testing at other locations within the lane.

330-9.4.3 Traffic Control: Provide traffic control in accordance with Section 102 and the Design Standards Index Nos. 607 or 619 during all testing. When traffic control cannot be provided in accordance with Index Nos. 607 or 619, submit an alternative Traffic Control Plan as specified in 102-4. Include the cost of this traffic control in the Contract bid prices for the asphalt items.

330-9.4.4 Process Control Testing: Assume full responsibility for controlling all paving operations and processes such that the requirements of these Specifications are met at all times.

330-9.4.5 QC Testing:

330-9.4.5.1 General: Straightedge the final Type SP structural layer and friction course layer in accordance with 330-9.4.2, regardless of whether the method of acceptance is by straightedge or laser profiler. Test all pavement lanes and ramps where the width is constant and document all deficiencies in excess of 3/16 inch on a form approved by the Engineer.

330-9.4.5.2 Straightedge Exceptions: Straightedge testing will not be required in the following areas: shoulders, intersections, tapers, crossovers, sidewalks, bicycle/shared use paths, parking lots and similar areas, or in the following areas when they are less than 250 feet in length: turn lanes, acceleration/deceleration lanes and side streets. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets.

As an exception, in the event the Engineer identifies a surface irregularity in the above areas that is determined to be objectionable, straightedge and address all deficiencies in excess of 3/8 inch in accordance with 330-9.5.

The Engineer may waive straightedge requirements for transverse joints at the beginning and end of the project, at the beginning and end of bridge structures, at manholes, and at utility structures if the deficiencies are caused by factors beyond the control of the Contractor, as determined by the Engineer. In addition, the Engineer may also waive the straightedging requirements on ramps and superelevated sections where the geometrical orientation of the pavement results in an inaccurate measurement with the rolling straightedge.

330-9.4.5.3 Intermediate Layers and Temporary Pavement: When the design speed is 55 mph or greater and the intermediate Type SP layer or temporary pavement is to be opened to traffic, if the Engineer identifies a surface irregularity that is determined to be objectionable, straightedge and address all deficiencies in excess of 3/8 inch within 72 hours of placement in accordance with 330-9.5.

330-9.4.5.4 Final Type SP Structural Layer: Straightedge the final Type SP structural layer in accordance with 330-9.4.2, either behind the final roller of the paving train or as a separate operation. Notify the Engineer of the location and time of straightedge testing a minimum of 48 hours before beginning testing. The Engineer

will verify the straightedge testing by observing the QC straight edging operations. Address all deficiencies in excess of 3/16 inch in accordance with 330-9.5.

When the final structural course is to be opened to traffic and the design speed is 55 mph or greater, if any defect is 3/8 inch or greater, the Engineer may require deficiencies to be corrected within 72 hours after opening to traffic.

330-9.4.5.5 Friction Course Layer: Straightedge the friction course layer in accordance with 330-9.4.2, either behind the final roller of the paving train or as a separate operation upon completion of all paving operations. Notify the Engineer of the location and time of straightedge testing a minimum of 48 hours before beginning testing. The Engineer will verify the straightedge testing by observing the QC straightedging operations. Address all deficiencies in excess of 3/16 inch in accordance with 330-9.5. For laser acceptance, corrections may be made either before or after laser acceptance testing.

330-9.4.6 Acceptance:

330-9.4.6.1 Straightedge Acceptance: For areas of roadways where the design speed is less than 55 miles per hour, acceptance for pavement smoothness of the friction course will be based on verified QC measurements using the straightedge as required by 330-9.4.5. The Engineer will verify the straightedge testing by observing the QC straightedging operations.

330-9.4.6.2 Laser Acceptance: For areas of high speed roadways where the design speed is equal to or greater than 55 miles per hour, acceptance testing for pavement smoothness of the friction course (for mainline traffic lanes only) will be based on the Laser Profiler. Ramps, acceleration and deceleration lanes, and other areas not suitable for testing with the Laser Profiler will be tested and accepted with the straightedge in accordance with 330-9.4.5.5 and 330-9.4.6.1.

The pavement smoothness of each lane will be determined by a Laser Profiler furnished and operated by the Department in accordance with FM 5-549 and a report issued with the Ride Number (RN) reported to one decimal place. If corrections are made, as required following Laser Acceptance, the pavement will not be retested for smoothness using the Laser Profiler.

For this testing, the pavement will be divided into 0.1 mile segments. Partial segments equal to or greater than 0.01 mile will be considered as a 0.1 mile segment. The pavement will be accepted as follows:

1) For segments with a RN greater than or equal to 4.0, the pavement will be accepted at full pay.

2) For segments with a RN less than 4.0, the Engineer will further evaluate the data in 0.01 mile intervals for both wheel paths.

If the RN is 3.5 or above for all 0.01 mile intervals in both wheel paths, the segment will be accepted at full payment.

If the RN is less than 3.5 for one or more 0.01 mile intervals, the segment will be tested with the rolling straightedge in both wheel paths in accordance with FM 5-509. If approved by the Engineer, this straightedging may be completed (in both wheel paths) as part of the QC straightedging operations described in 330-9.4.5.5, prior to testing with the laser profiler. Notify the Engineer of the location and time of straightedge testing a minimum of 48 hours before beginning testing. The Engineer will verify the straightedge testing by observing the QC straightedging

operations. Address all deficiencies in excess of 3/16 inch in accordance with 330-9.5.

Test and accept areas at the beginning and ending of the project, bridge approaches and departures, and areas where the segment is less than 0.01 mile, with the straightedge in accordance with 330-9.4.5.5 and 330-9.4.6.1.

330-9.5 Unacceptable Pavement:

330-9.5.1 Corrections: Address all areas of unacceptable pavement at no cost to the Department. Retest all corrected areas and assure the requirements of these Specifications are met.

330-9.5.1.1 Structural Layers: Correct all deficiencies, as defined in these Specifications, in the Type SP structural layers by removing and replacing the full depth of the layer, extending a minimum of 50 feet on both sides (where possible) of the defective area for the full width of the paving lane.

As an option, for straightedge deficiencies only, mill the pavement surface to a depth and width that is adequate to remove the deficiency. This option only applies if the structural layer is not the final surface layer.

330-9.5.1.2 Friction Course: Correct deficiencies in the friction course or final surface layer by removing and replacing the full depth of the layer, extending a minimum of 50 feet on both sides (where possible) of the defective area for the full width of the paving lane. As an exception, the Engineer may allow the Contractor to leave these areas in place if it is determined by the Engineer that the deficiency is not a significant detriment to the pavement quality. A reduction to the pay item quantity will be made in accordance with 330-9.5.2.

330-9.5.2 Reduction in Pay Item Quantity: When the Engineer elects to waive corrections, the Department will reduce the pay quantity for the pay item in question by the amount of material that the Contractor would have removed and replaced had the correction been made. When the pay quantity is in tons, the Department will base the reduction on the volume of material that the Contractor would have removed (the length by the lane width by layer thickness) multiplied by the maximum specific gravity of the mix as determined through the following equation:

$$\text{Quantity (tons)} = L \times W \times t \times G_{mm} \times 0.0024$$

Where: L = Lane length (ft.)
W = Lane width (ft.)
t = Layer thickness (in.)
G_{mm} = Maximum specific gravity from verified mix design

For FC-5 open-graded friction course, the Department will base the reduction on the area that the Contractor would have removed (the length by lane width) multiplied by a spread rate of 80 lb/yd^2 as determined through the following equation:

$$\text{Quantity (tons)} = L \times W \times 0.0044$$

Where: L = Lane length (ft.)
W = Lane width (ft.)

330-10 Protection of Finished Surface.

Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid.

Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement.

Equip blade graders operating adjacent to the pavement during shoulder construction with a 2 inch by 8 inch or larger board, or other attachment providing essentially the same results, attached to their blades in such manner that it extends below the blade edge in order to protect the pavement surface from damage by the grader blade.

To prevent rutting or other distortion, protect sections of newly finished dense-graded friction course and the last structural layer prior to the friction course from traffic until the surface temperature has cooled below 160ºF.

The Contractor may use artificial methods to cool the pavement to expedite paving operations. The Department may direct the Contractor to use artificial cooling methods when maintenance of traffic requires opening the pavement to traffic at the earliest possible time.

SECTION 331

TYPE S ASPHALT CONCRETE, QUALITY ASSURANCE AND ACCEPTANCE PROCEDURES

331-1 Description.

331-1.1 General: Construct a Type S Asphalt Concrete course (using the Quality Assurance acceptance system) using the type of mixture specified in the Contract, or when offered as alternates, as selected. If offered as alternates, meet the layer thickness criteria specified in 331-1.2. Type S mixes are identified as Type S-I, Type S-II, or Type S-III. The composition and physical test properties for all mixes including Type S Asphalt Concrete are shown in Tables 331-1 and 331-2. This Section establishes Acceptance Procedures for materials and work performed under Sections 280, 290, 331, 332, 333, 335, and 337.

Where Type S Asphalt Concrete is specified in the Contract, if approved by the Engineer, the equivalent fine Type SP Asphalt Concrete mixture (Traffic Level C) meeting the requirements of Section 334 may be selected as an alternate at no additional cost to the Department. The equivalent mixes are as follows:

Type S-I .....Type SP-12.5
Type S-II .....Type SP-19.0
Type S-III.....Type SP-9.5

Meet the requirements for plant and equipment specified in Section 320. Meet the general construction requirements specified in Section 330.

Table 331-1 Bituminous Concrete Mixtures (Gradation Design Range)

Type	Total Aggregate Passing Sieves[1]							
	3/4 inch [19.0 mm]	1/2 inch [12.5 mm]	3/8 inch [9.5 mm]	No. 4 [4.75 mm]	No. 10 [2.0 mm]	No. 40 [425 µm]	No. 80 [180 µm]	No. 200 [75 µm]
S-I[5]	100	88-98	75-93	47-75	31-53	19-35	7-21	2-6
S-II[2]	83-98	71-87	62-78	47-63	33-49	19-35	9-18	2-6
S-III[5]		100	88-98	60-90	40-70	20-45	10-30	2-6
Type II		100	90-100	80-100	55-90			2-12
Type III		100	80-100	65-100	40-75	20-45	10-30	2-10
SAHM		100						0-12
ABC-1		100						0-12
ABC-2		100			55-90			0-12
ABC-3[3]	70-100			30-70	20-60	10-40		2-10
FC-2[4]		100	85-100	10-40	4-12			2-5
FC-3[5]		100	88-98	60-90	40-70	20-45	10-30	2-6

[1] In inches [mm] or sieves [µm].
[2] 100% passing 1 1/4 inch [31.5 mm] sieve and 94 to 100% passing 1 inch [25.0 mm] sieve.
[3] 100% passing 1 1/2 inch [37.5 mm] sieve.
[4] The Engineer may increase the design range for the No. 10 [2.00 mm] sieve for lightweight aggregates.
[5] The Engineer may retain up to 1% on the maximum sieve size.

Table 331-2 Non SI Units
Marshall Design Properties For Bituminous Concrete Mixes

Mix Type	Minimum Marshall Stability (lbs.)	Flow** (0.01 in.)	Minimum VMA (%)	Air Voids (%)	Minimum Effective Asphalt Content (%)	VFA Voids Filled with Asphalt (%)
S-I	1,500*	8-13	14.5	4-5	***	65-75
S-II	1,500*	8-13	13.5	4-5	***	65-75
S-III	1,500*	8-13	15.5	4-6	***	65-75
Type II	500-750	7-15	18	5-16	6.0	-
Type III	750-1,000	7-15	15	5-12	5.5	-
SAHM	300-500	7-15	15	5-16	6.0	-
ABC-1	500	7-15	15	5-16	6.0	-
ABC-2	750	7-15	15	5-14	5.5	-
ABC-3	1,000	8-13	14	4-7	***	65-78
FC-2	-	-	-	-	-	-
FC-3	1,500	8-13	15.5	4-6	***	65-75

*The minimum Marshall Stability for Type S mixes used on limited access facilities (Interstate, Turnpike, and Expressways) shall be 1,800 lbs.
**The maximum Flow value during production shall not exceed one point more than shown in the Table.
***The ratio of the percentage by weight of total aggregate passing the No. 200 sieve to the effective asphalt content expressed as a percentage by weight of total mix shall be in the range of 0.6 to 1.2.

Table 331-2 SI Units Marshall Design Properties For Bituminous Concrete Mixes						
Mix Type	Minimum Marshall Stability (kN)	Flow** (mm)	Minimum VMA (%)	Air Voids (%)	Minimum Effective Asphalt Content (%)	VFA Voids Filled with Asphalt (%)
S-I	6.7*	2.0-3.3	14.5	4-5	***	65-75
S-II	6.7*	2.0-3.3	13.5	4-5	***	65-75
S-III	6.7*	2.0-3.3	15.5	4-6	***	65-75
Type II	2.2-3.3	1.8-3.8	18	5-16	6.0	-
Type III	3.3-4.4	1.8-3.8	15	5-12	5.5	-
SAHM	1.3-2.2	1.8-3.8	15	5-16	6.0	-
ABC-1	2.2	1.8-3.8	15	5-16	6.0	-
ABC-2	3.3	1.8-3.8	15	5-14	5.5	-
ABC-3	4.4	2.0-3.3	14	4-7	***	65-78
FC-2	-	-	-	-	-	-
FC-3	6.7	2.0-3.3	15.5	4-6	***	65-75

*The minimum Marshall Stability for Type S mixes used on limited access facilities (Interstate, Turnpike, and Expressways) shall be 8.0 kN.
**The maximum Flow value during production shall not exceed 0.25 mm more than shown in the Table.
***The ratio of the percentage by weight of total aggregate passing the 75µm sieve to the effective asphalt content expressed as a percentage by weight of total mix shall be in the range of 0.6 to 1.2.

The Engineer will accept the work on a LOT to LOT basis in accordance with the applicable requirements of Sections 5, 6, and 9. The size of the LOT will be as specified in 331-6 for the bituminous mixture produced at the plant and as stipulated in 331-7 for the material placed on the roadway.

331-1.2 Layer Thicknesses:

331-1.2.1 Structural Layers: The allowable layer thicknesses for Type S Asphalt Concrete mixtures used in structural and overbuild applications is as follows:

Type S-III... 3/4 – 1 1/4 inches [20 – 30 mm]
Type S-I .. 1 1/4 – 2 1/2 inches [30 – 60 mm]
Type S-II ..... 2 – 2 3/4 inches [50 – 70 mm]

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on Type S mixtures when used as a structural course:

Type S-III – Limited to the final (top) structural layer, one layer only.

Type S-I – May not be used in the first layer of courses over 3 1/2 inches [90 mm] thick, nor in the first layer of courses over 2 3/4 inches [70 mm] thick on limited access facilities.

Type S-II – May not be used in the final (top) structural layer.

331-1.2.2 Additional Requirements: The following requirements also apply to Type S Asphalt Concrete mixtures:

1. A minimum 1 1/2 inch [40 mm] initial lift is required over an Asphalt Rubber Membrane Interlayer (ARMI).

2. When construction includes the paving of adjacent shoulders (#5 feet [#1.5 m] wide), the layer thickness for the upper pavement layer and shoulder shall be the same and paved in a single pass, unless shown differently in the plans.

3. All overbuild layers shall be Type S asphalt concrete. Use the minimum and maximum layer thicknesses as specified in 331-1.2.1 unless shown differently in the plans. On variable thickness overbuild layers, the minimum allowable thickness may be reduced by 1/2 inch [13 mm], and the maximum allowable thickness may be increased 1/2 inch [13 mm], unless shown differently in the plans. Other variations from these thicknesses must be approved by the Engineer.

331-2 Materials.

331-2.1 General Requirements: Meet the material requirements specified in Division III. Specific references are as follows:

Superpave PG Asphalt Binder or Recycling Agent	916-1, 916-2
Mineral Filler	917-1, 917-2
Coarse Aggregate, Stone, Slag or Crushed Gravel	Section 901
Fine Aggegate	Section 902

Asphalt concrete mixes containing crushed gravel as coarse aggregate component must show no potential for stripping during laboratory testing for mix design verification.

Crushed Reclaimed Portland Cement Concrete Pavement may be used as a coarse aggregate or screenings component subject to meeting all applicable specifications.

331-2.2 Specific Requirements:

331-2.2.1 Condition of Aggregate: Use clean aggregate containing no deleterious substances. Do not use coarse or fine aggregate which contains more than 0.5% of phosphate.

331-2.2.2 Fine Aggregate and Mineral Filler: In laboratory tests, and for the purpose of proportioning the paving mixture, consider all material passing the No. 10 [2.00 mm] sieve and retained on the No. 200 [75 μm] sieve as fine aggregate, and the material passing the No. 200 [75 μm] sieve as mineral filler.

331-2.2.3 Screenings: Do not use any screenings in the combination of aggregates containing more than 15% of material passing the No. 200 [75 μm] sieve. When two screenings are blended to produce the screening component of the aggregate, one of such screenings may contain up to 18% of material passing the No. 200 [75 μm] sieve, as long as the combination of the two does not contain over 15% material passing the No. 200 [75 μm] sieve. Screenings may be washed to meet these requirements.

331-2.2.4 Use of Reclaimed Asphalt Pavement (RAP): Subject to certain requirements, Reclaimed Asphalt Pavement (RAP) may be used as a component material of the asphalt mixture. Where the material is recovered from a FDOT project, the Composition of Existing pavement may be available on the Department's web site. The URL for obtaining this information, if available, is:

www11.myflorida.com/statematerialsoffice/Bituminous/CentralBitLab/AsphaltCompositions/Compositions.htm

RAP may be used as a component material of the bituminous mixture subject to the following:

1. Assume responsibility for the design of asphalt mixes which incorporate RAP as a component part.

2. Do not allow RAP to exceed 60% by weight of total aggregates for Asphalt Base Courses nor more than 50% by weight of total aggregates for Structural and Leveling Courses. Do not use RAP in Friction Courses.

3. Mount a grizzly or grid with openings of a sufficient size to prevent clogging of the cold feed over the RAP cold bin.

Use a grizzly or grid over the RAP cold bin, in-line roller crusher, screen, or other suitable means to prevent oversized RAP material from showing up in the completed recycled mixture.

If oversized RAP material appears in the completed recycled mix, cease plant operations and take appropriate corrective action.

4. Ensure that the RAP material as stockpiled is reasonably uniform in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

5. Ensure that the RAP has a minimum average asphalt content of 4% by weight of total mix. The Department reserves the right to sample the stockpile in order that this requirement is met.

When material milled from the project is used as a component of the asphalt mixture and a Composition of Existing Pavement is known, use the following procedures for obtaining representative samples for the mix design:

1. Cut ten 6-inch [150 mm] cores in area(s) approved by the Engineer. Fill the core holes immediately prior to opening to traffic.

2. Representative samples may also be obtained by milling the existing pavement to the full depth shown on the plans for pavement removal for a length of approximately 200 feet [60 m]. Immediately replace the pavement removed with the specified mix in the Contract.

3. Submit a request in writing to the Engineer for any variance from the above outlined methods of obtaining samples for mix designs.

When the RAP to be used as a component in a mix design is stockpiled from a previous DOT project and the Composition of Existing Pavement is known, design the mix and submit to the Department for verification.

When the composition of stockpiled RAP to be used as a component in a mix design is not known, design the mix as follows:

1. Submit a bag of RAP, composed of samples from several locations in the stockpile(s), to the Department at least four weeks prior to the planned start of mix design. The Engineer will run viscosities on the reclaimed asphalt pavement and furnish the information to the Contractor.

2. Run a minimum of six extraction gradation analyses of the RAP. Take the samples at random locations around the stockpile(s).

3. Request the Engineer to make a visual inspection of the stockpile(s) of RAP. Based on visual inspection, the Engineer will determine the suitability of the stockpiled materials.

4. When the proposed mix design is submitted to the Department for verification, submit the data from the extraction gradation analyses required above.

331-2.2.5 Binder for Mixes with RAP: Use a PG 67-22 where RAP is less than 20% by weight of total aggregate; use a PG 64-22 where RAP is 20% or greater but less than 30% by weight of total aggregate; use appropriate recycle agent where RAP is 30% or greater.

The Engineer reserves the right to change binder type and grade at design based on the characteristics of the RAP binder, and reserves the right to request reasonable changes during the production based on the requirements of 331-4.4.4.

331-2.2.6 Use of Recycled Crushed Glass: Recycled crushed glass may be used as a component of the bituminous mixture subject to the following:

1. Consider the recycled crushed glass a local material and meet all requirements specified in 902-6.

2. The percentage of recycled crushed glass in any bituminous mixture does not exceed 15% of the total aggregate weight.

3. The asphalt binder used with mixtures containing recycled crushed glass contains 0.5% anti-stripping agent from an approved source. The addition of the specified amount of anti-stripping agent must be certified by the supplier.

4. Test bituminous mixtures containing recycled crushed glass in accordance with AASHTO T 283 as part of the mix design approval. The minimum tensile strength ratio must not be less than 80%. An increase in the amount of anti-stripping agent may be necessary in order to meet this requirement.

5. Recycled crushed glass must not be used in friction course mixtures nor in structural course mixtures which are to be used as the final wearing course.

331-3 Permissible Variation for the Coarse Aggregate.

Size and uniformly grade or combine the aggregate or aggregates shipped to the job in such proportions that the resulting mixture meets the grading requirements of the mix design.

331-4 General Composition of Mixture.

331-4.1 General: Use a bituminous mixture composed of a combination of aggregate (coarse, fine or mixtures thereof), mineral filler, if required, and bituminous material. Ensure that not more than 20% by weight of the total aggregate used is silica sand or local materials as defined in Section 902. Consider the silica sand and local materials contained in any RAP material, if used in the mix, in this limitation. Size, grade and combine the several aggregate fractions in such proportions that the resulting mixture meets the grading and physical properties of the verified mix design.

RAP meeting the requirements of 331-2.2.4 may be approved as a substitution for a portion of the combination of aggregates, subject to all applicable specification requirements being met.

331-4.2 Grading Requirements: In all cases, use a mix design within the design ranges specified in Table 331-1.

331-4.3 Mix Design:

331-4.3.1 General: Prior to the production of any asphalt paving mixture, submit a mix design and representative samples of all component materials to the Department at least two weeks before the scheduled start of production. The Engineer will verify the mix design before use. Send a copy of the proposed mix design to the Engineer at the same time. (Open-graded mixes will be designed by the Engineer.) Furnish the following information:

1. The specific project on which the mixture will be used.
2. The source and description of the materials to be used.
3. The gradation and approximate proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use.
4. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly No. 200 [75 μm]) should be accounted for and identified for the applicable sieves.
5. A single percentage of asphalt by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%. For structural mixes (S-I, S-II and S-III) establish the optimum asphalt content at a level corresponding to a minimum of 4.5% air voids. For FC-3 mixes, establish optimum asphalt content at a level corresponding to a minimum of 5.0% air voids.
6. A single temperature at which the mixture is intended to be discharged from the plant.
7. The laboratory density of the asphalt mixture for all mixes except Open-Graded Friction Courses.
8. Evidence that the completed mixture will meet all specified physical requirements.
9. The name of the individual responsible for the Quality Control of the mixture during production.

331-4.3.2 Revision of Mix Design: Submit all requests for revisions to approved mix designs, along with supporting documentation, in writing to the Engineer. In order to expedite the revision process, a verbal revision request or discussion of the possibility of a revision request may be made, but must be followed up with a written request. The verified mix design will remain in effect until a change is authorized by the Engineer. In no case will the effective date of the revision be established earlier than the date of the first communication with the Engineer regarding the revision.

Provide a new mix design for any change in source of aggregate.

331-4.3.3 Resistance to Plastic Flow: Include with the submitted mix design test data showing that the material as produced will meet the requirements specified in Table 331-2 when tested in accordance with FM 1-T 245. Further, determine the bulk specific gravity of the laboratory compacted bituminous mixture in accordance with FM 1-T 166.

Determine the percent of unfilled voids and the percent of aggregate voids filled with asphalt using the maximum specific gravity of the bituminous mixture and on the asphalt content of each group of specimens prepared from the same sample. Determine maximum specific gravity of the bituminous mixture by FM 1-T 209.

331-4.3.4 Revocation of Mix Design: The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

331-4.4 Contractor's Quality Control:

331-4.4.1 Personnel: In accordance with the requirements of 331-5.2 provide the necessary quality control personnel. Ensure that the Quality Control Technician is certified by the Department and possesses a valid certificate of qualification. When it becomes evident to the Department that the Quality Control Technician cannot perform as required by the position, the Department will revoke the certification and require replacement with a certified technician.

331-4.4.2 Extraction Gradation Analysis: Sample the bituminous mixture at the plant in accordance with FM 1-T 168. Determine the percent bitumen content of the mixture in accordance with FM 5-563, and determine the percent passing the standard sieves in accordance with FM 1-T 030. In the event the calibration factor for the mix exceeds 0.50%, conduct the extraction and gradation analysis in accordance with FM 5-544 and FM 5-545, respectively. Show all test results to the nearest 0.01. Carry all calculations to the nearest 0.001 and rounded to the nearest 0.01, in accordance with the Department's rules of rounding.

Run a minimum of one extraction gradation analysis of the mixture for each day's or part of a day's production and immediately following any change in the production process. Take the quality control sample of mixture for the extraction gradation analysis each day as soon as the plant operations have stabilized. Obtain the results in a timely manner (no later than the end of the day) so that adjustments can be made if necessary.

On initial use of a Type S or FC-3 mix design at a particular plant, as a minimum, run an additional extraction gradation analysis if more than 500 tons [450 metric tons] of mixture are produced on the first day of production.

Extraction gradation analysis will not be required on the days when mix production is less than 100 tons [90 metric tons]. However, when mix production is less than 100 tons [90 metric tons] per day on successive days, run the test when the accumulative tonnage on such days exceeds 100 tons [90 metric tons].

Use the target gradation and asphalt content as shown on the mix design. Any changes in target will require a change in the mix design in accordance with 331-4.3.2.

If the percentage of bitumen deviates from the optimum asphalt content by more than 0.55% or the percentage passing any sieve falls outside the limits shown in Table 331-3, make the necessary correction. If the results for two consecutive tests deviate from the optimum asphalt content by more than 0.55% or exceeds the limits as shown in Table 331-3 for any sieve, stop the plant operations until the problem has been corrected. In addition, if the results of two consecutive tests show an amount greater than 99.0% passing the 1/2 inch [12.5 mm] sieve for Type S-I, an amount greater than 99.0% passing the 3/4 inch [19.0 mm] sieve for Type S-II, or an amount greater than

99.0% passing the 3/8 inch [9.5 mm] sieve for Types S-III or FC-3, stop the plant operation until the problem has been corrected.

Maintain control charts showing the results of the extraction gradation analysis (bitumen content and sieve analysis).

Table 331-3 Tolerances for Quality Control Tests (Extraction Gradation Analysis)	
Sieve Size	Percent Passing
1 inch [25.0 mm]	7
3/4 inch [19.0 mm]	7
1/2 inch [12.5 mm]	7
3/8 inch [9.5 mm]	7
No. 4 [4.75 mm]	7
No. 10 [2.00 mm]	5.5
No. 40* [*425 µm]	4.5
No. 80* [*180 µm]	3
No. 200 [75 µm]	2
*Does not apply to SAHM, ABC-1 or Type II.	

331-4.4.3 Plant Calibration: At or before the start of mix production, perform a wash gradation on a set of hot bin samples for batch or continuous mix plants or belt cut for drum mix plants to verify calibration of the plant. When approved by the Engineer, extraction gradation analysis of the mix may be used to verify calibration of the plant. This extraction gradation analysis may also be used to fulfill the quality control requirements for the first day's production.

331-4.4.4 Viscosity of Asphalt in Mixes Containing RAP: When RAP is a component material, the viscosity of the asphalt material in the bituminous mixture, determined by the Engineer in accordance with ASTM D 2171, shall be 6,000 ± 2,000 poises [600 ± 200 Pa·s]. This determination will be made on samples obtained by the Department on a random basis at a frequency of approximately one per 2,000 tons [1,800 metric tons] of mix.

If the viscosity determined by the Engineer is out of the specified range, adjust the binder formulation or blend of RAP in the mix to bring the viscosity within tolerance.

331-5 Acceptance Procedures.

The Department will approve all materials for acceptance through the Department's Acceptance Procedures specified herein. The Engineer is responsible for determining the acceptability of the construction and materials incorporated therein. The Contractor is responsible for the quality of construction and materials incorporated therein. Accomplish all quality control sampling and testing on a random basis in accordance with the approved Quality Control Plan. The Department will perform all necessary sampling and testing for acceptance purposes on a random basis as specified herein, in addition to monitoring and observing the Contractor's quality control test procedures and results. Maintain effective quality control until final project acceptance.

A LOT is defined as an isolated quantity of a specified material produced from a single source or operation, or it is a measured amount of specified construction produced by the same process. In order to change the process, thereby necessitating the termination of the current LOT and starting a new LOT, submit a written request, with justification, to the Engineer for approval. Obtain the Engineer's approval prior to making the process change.

Perform all quality control sampling and testing of materials in strict conformance with the Florida Method of Sampling and Testing as found in the Field Sampling and Testing Manual. The Department will perform all acceptance sampling and testing of materials in strict conformance with the Florida Method of Sampling and Testing as found in the Field Sampling and Testing Manual. This manual, developed and distributed by the FDOT Materials Office, contains the detailed sampling and testing procedures from AASHTO and ASTM as modified by the Department.

331-5.1 Acceptance Plans:

331-5.1.1 Payment Based on Acceptance Results: The Department will adjust the payment for each LOT of material, product, item of construction or completed construction on the basis of acceptance test results in accordance with the requirements specified hereinafter in the applicable Sections.

331-5.1.2 Resampling of LOTs: The Department requires that LOTs of materials, products, items of construction or completed construction meet the requirements of these Specifications at the time of submission. The Department will not take check samples for acceptance purposes.

331-5.1.3 Referee System: The Department has established a referee system to verify the validity of the acceptance test results on LOTs at the asphalt plant. The Department will evaluate the acceptance test results with data from split samples run by the District and Central Labs. The Engineer will make a final determination and disposition of the acceptance test results. Acceptance results will be considered non-representative if the test results from the Field and Referee samples differ by more than 0.44% for asphalt content when obtained by the use of FM 5-563 or 0.56% for FM 5-544. Acceptance results for gradation will be considered non-representative if the test results from the Field and Referee samples differ by more than the precision values given in Figure 2 of FM 1-T 030 when using FM 5-563 or Figure 2 of FM 5-545 when using FM 5-544. When the referee analysis indicates that one or more test results are not representative, the Engineer will discard the non-representative test value(s) and base payment calculations for the LOT (including the sublot with the non-representative test values) on the remaining sublot(s) test data as defined in 331-6.

331-5.2 Quality Control by the Contractor: Provide and maintain a quality control system that provides reasonable assurance that all materials, products and completed construction submitted for acceptance meet Contract requirements. Develop and maintain a quality control system in conformance with the following requirements:

CONTRACTOR QUALITY CONTROL SYSTEM

I. SCOPE:

These Specifications establish minimum requirements and activities for a Contractor quality control system. These requirements pertain to the inspections and tests necessary to substantiate material and product conformance to Contract requirements and to all inspections and tests required by the Contract.

II. FUNCTIONS AND RESPONSIBILITIES:

1. The Department. The Department will verify the Contractor's design mixes, inspect plants and monitor control of the operations to ensure conformance with these Specifications. The Department will design all open-graded friction mixes (FC-2 and FC-5).

At no time will the Engineer issue instructions to the Contractor or producer as to the setting of dials, gauges, scales and meters. However, the Department's representatives may question and warn the Contractor against the continuance of any operations or sequence of operations that obviously do not result in satisfactory compliance with the requirements of these Specifications.

2. The Contractor. Submit in writing the proposed Quality Control Plan for each asphalt plant for the Engineer's approval. Maintain the approved Quality Control Plan in effect for the plant to which it is assigned until the Engineer rejects it in writing. Include in the plan the sampling, testing, inspection and the anticipated frequencies of each to maintain process control. A recommended series of sampling, testing and inspecting activities are shown in Table 331-4.

Table 331-4
RECOMMENDATIONS FOR A CONTRACTOR QUALITY CONTROL PLAN

A. All Types of Plants

1. Stockpiles
    a. Place materials in the correct stockpile.
    b. Use good stockpiling techniques.
    c. Inspect stockpiles for separation, contamination, segregation, etc.
2. Incoming Aggregate
    a. Obtain gradations and bulk specific gravity (BSG) values from the aggregate supplier.
    b. Determine gradation of all component materials.
    c. Compare gradations and BSG to mix design.
3. Cold Bins
    a. Calibrate the cold gate/feeder belt settings.
    b. Observe operation of cold feed for uniformity.
4. Dryer
    a. Observe pyrometer for aggregate temperature control.
    b. Observe efficiency of the burner.
5. Hot Bins
    a. Determine gradation of aggregates in each bin.
    b. Determine theoretical combined grading.
6. Bituminous Mixture
    a. Determine asphalt content.
    b. Determine mix gradation.
    c. Check mix temperature.
    d. Verify modifier addition.

B. Batch Plants

1. For batch weights, determine percent used and weight to be pulled from each bin to ensure compliance with the mix design.

2. Check mixing time.

3. Check operations of weigh bucket and scales.

C. Continuous Mix Plant

1. Determine gate calibration chart for each bin.

2. Determine gate settings for each bin to ensure compliance with the mix design.

3. Determine gallons [cubic meters] per revolution or gallons [cubic meters] per minute to ensure compliance with the mix design.

D. Drum Mixer Plant

1. Calibrate the cold feed and prepare a calibration chart for each cold gate.

2. Develop information for the synchronization of the aggregate feed, reclaimed asphalt pavement (RAP) feed and the bituminous material feed.

3. Calibrate the weigh bridge on the changing conveyor.

The activities shown in Table 331-4 are the normal activities necessary to control the production of bituminous concrete at an acceptable quality level. The Department recognizes, however, that depending on the type of process or materials, some of the activities listed may not be necessary and, in other cases, additional activities may be required. The frequency of these activities will also vary with the process and the materials. When the process varies from the defined process average and variability targets, increase the frequency of these activities until the proper conditions are restored. Take one sample and test for every 1,000 tons [900 metric tons] of incoming aggregate (including RAP) as it is stockpiled. Test RAP material for extracted gradation and asphalt content.

Plot and keep up-to-date control charts for all quality control sampling and testing. Provide control charts for the following:

a. gradation of incoming aggregates
b. gradation and asphalt content of RAP
c. combined gradations of hot bins
d. extracted asphalt content
e. mix gradation
f. gradation of cold feed (drum mixers)

Post all current control charts in the asphalt lab where they can be seen.

Formulate all design mixes with the exception of open-graded friction mixes (FC-2 and FC-5). Submit design mixes to the Engineer for verification prior to their use. Provide process control of all materials during handling, blending, mixing and placing operations.

III. QUALITY CONTROL SYSTEM:

1. General Requirements. Furnish and maintain a quality control system that provides reasonable assurance that all materials and products submitted to the Engineer for acceptance meet the Contract requirements. Perform, or have performed, the inspection and tests required to substantiate product conformance to Contract requirements, and also perform, or have performed, all inspections and tests otherwise required by the Contract. Keep a quality control technician, who has been certified by the

Department as a Qualified Asphalt Plant Technician (Plant Level II), available at the asphalt plant at all times when producing asphalt mix for the Department. Place a person in responsible charge of the paving operations who is qualified by the Department as a Qualified Asphalt Paving Technician (Paving Level II). Document the quality control procedures, inspection and tests, and make that information available for review by the Engineer throughout the life of the Contract.

2. Documentation. Maintain adequate records of all inspections and tests. Record the nature and number of tests made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken, as appropriate. The Department may review and approve all documentation procedures prior to the start of the work. The Department will take ownership of all charts and records documenting the Contractor's quality control tests and inspections upon completion of the work.

3. Charts and Forms. Record all conforming and nonconforming inspections and test results on approved forms and charts, and keep them up to date and complete and make them available at all times to the Engineer during the performance of the work. Prepare charts of test properties for the various materials and mixtures on forms that are in accordance with the applicable requirements of the Department. The Engineer will furnish a copy of each applicable chart and form. Provide a supply of the charts and forms from the copy furnished. Obtain the Engineer's approval of non-standard forms and charts prior to using them.

4. Corrective Actions. Take prompt action to correct any errors, equipment malfunctions, process changes or other problems that result or could result in the submission of materials, products or completed construction that do not meet the requirements of these Specifications. When it becomes evident to the Department that the Contractor is not controlling his process and is making no effort to take corrective actions, the Department will require the Contractor to cease plant operations until such time as the Contractor can demonstrate that he can and is willing to control the process.

5. Laboratories with Measuring and Testing Equipment. Furnish a fully equipped asphalt laboratory (permanent or portable) at the production site, and meeting the following requirements:

a. Area - Provide an effective working area for the laboratory that is a minimum of 180 ft^2 [17 m^2]. This area does not include the space for desks, chairs and file cabinets.

b. Lighting - Provide lighting in the lab adequate to illuminate all areas of work.

c. Temperature Control - Equip the lab with heating and air conditioning units that provide a satisfactory working environment.

d. Ventilation - Equip the lab with fume hoods and exhaust fans that will remove all hazardous fumes from within the laboratory in accordance with OSHA requirements.

e. Equipment and Supplies - Furnish the lab with the necessary sampling and testing equipment, and supplies, for performing Contractor quality control and Department acceptance sampling and testing. A detailed list of equipment and supplies required for each test is included in the Field Sampling and Testing Manual.

When running plants at a high production rate, furnish additional testing equipment as necessary to allow the completion of the Contractor's quality control tests and the Department's Acceptance tests within the specified time frame.

6. Sampling and Testing. Use the sampling and testing methods and procedures that the Department provides to determine quality conformance of the materials and products. The Department will use these same methods and procedures for its acceptance tests. Include the sampling for other material characteristics on a random basis and the plotting of the test results on control charts in the Quality Control Plan.

7. Alternative Procedures. The Contractor may use alternative sampling methods, procedures and inspection equipment when such procedures and equipment provide, as a minimum, the quality assurance required by the Contract Documents. Prior to applying such alternative procedures, describe them in a written proposal and demonstrate for the Engineer's approval that their effectiveness is equal to or better than the Contract requirements. In case of dispute as to whether certain proposed procedures provide equal assurance, use the procedures stipulated by the Contract Documents.

8. Nonconforming Materials. Establish and maintain an effective and positive system for controlling nonconforming materials, including procedures for identification, isolation and disposition. Reclaim or rework nonconforming materials in accordance with procedures acceptable to the Engineer. Discuss the details of this system at the preconstruction conference, and make these details a part of the record of the conference.

9. Department Inspection at Subcontractor or Supplier Facilities. The Department reserves the right to inspect materials not manufactured within the Contractor's facility. The Department's inspection does not constitute acceptance and does not, in any way, replace the Contractor's inspection or otherwise relieve the Contractor of his responsibility to furnish an acceptable material or product. When the Department inspects the subcontractor's or supplier's product, such inspection does not replace the Contractor's responsibility to inspect such subcontractor's or supplier's product.

Inspect subcontracted or purchased materials when received, as necessary, to ensure conformance to Contract requirements. Report to the Engineer any nonconformance found on Department source-inspected material, and require the supplier to take necessary corrective action.

331-5.3 Defective Materials:

331-5.3.1 Acceptance or Rejection: Following the application of the appropriate acceptance plan, the Engineer will make the final decision as to the acceptance, rejection or acceptance at an adjusted payment of the LOTs.

331-5.3.2 Disposition of LOTs: For nonconforming LOTs of materials, products, items of construction or complete construction that are not adaptable to correction by reworking, either remove and replace the nonconforming work, or accept no payment or an adjusted payment as stated in these Specifications, or, if not stated, as directed by the Engineer.

331-5.4 General Basis of Adjusted Payment For Deficiencies: When the Engineer determines that a deficiency exists, the Engineer will apply the applicable payment factor as shown in these Specifications to the entire LOT. When the Engineer determines that multiple deficiencies exist, the Engineer will apply an adjustment to the LOT of material that is identified by each deficiency. The Engineer will apply the adjustment for each deficiency separately as it occurs. The Engineer will not allow an adjustment to be affected by any other adjustment occurring for the same LOT. As an

exception to the foregoing requirements, when there are two or more deficiencies in the gradation acceptance tests (% pass No. 4 [4.75 mm] sieve, % pass No. 10 [2.0 mm] sieve, % pass No. 40 [425 μm sieve], % pass No. 200 [75 μm] sieve) the Engineer will only apply the greater adjustment. The Engineer will express all reductions in payment in terms of equivalent pay items at no pay. When the item is measured by the ton [metric ton], the Engineer will convert the LOT in the field, which is measured in feet [meters], to equivalent tons [metric tons] and by using the average calculated spread for that LOT. When the pay item is measured by the square yard [square meter], the Engineer will convert the LOT at the production point, which is measured in tons [metric tons], to equivalent square yards [square meters] at the design thickness and by using the laboratory density as a conversion factor.

331-6 Acceptance of the Mixture at the Plant.

331-6.1 General: The Engineer will accept the bituminous mixture at the plant, with respect to gradation and asphalt content, on a LOT to LOT basis. The material will be tested for acceptance in accordance with the provisions of 331-5 and the following requirements. However, the Engineer will reject any load or loads of mixture which are unacceptable for reason of being excessively segregated, aggregates improperly coated, or of excessively high or low temperature for use in the work.

For initial use of a Type S or FC-3 mix design with a Florida limestone source north of the 28th parallel at a particular plant, limit the first day's production to a maximum of 300 tons [275 metric tons]. Resume production upon notification of acceptable Marshall properties as determined in accordance with 331-6.4

A standard size LOT at the asphalt plant will consist of 4,000 tons [3,600 metric tons] with four equal sublots of 1,000 tons [900 metric tons] each. As an exception, the first LOT for the initial use of a Type S or FC-3 mix design with a particular plant will consist of four sublots, the first sublot of 500 tons [450 metric tons] or the first day's production (300 tons [275 metric tons] maximum for mix design with a Florida limestone source north of the 28th parallel), the second sublot of 500 tons [450 metric tons], and the remaining two sublots of 1,000 tons [900 metric tons] each.

A partial LOT may occur due to the following:

(1) the completion of a given mix type on a project.

(2) an approved LOT termination by the Engineer due to a change in process, extended delay in production, or change in mix design.

If the partial LOT contains one or two sublots with their appropriate test results, then the previous full-size LOT will be redefined to include this partial LOT and the evaluation of the LOT will be based on either five or six sublot determinations. If the partial LOT contains three sublots with their appropriate test results, this partial LOT will be redefined to be a whole LOT and the evaluation of it will be based on three sublot determinations.

When the total quantity of any mix is less than 3,000 tons [2,700 metric tons], the partial LOT will be evaluated for the appropriate number of sublots from n=1 to n=3. When the total quantity of any mix type is less than 500 tons [450 metric tons], the Department will accept the mix on the basis of visual inspection. The Department may run extraction and gradation analysis for information purposes; however, the provisions for partial payment will not apply.

On multiple project contracts, the LOT(s) at the asphalt plant will carry over from project to project.

331-6.2 Acceptance Procedures: Control all operations in the handling, preparation, and mixing of the asphalt mix so that the percent bitumen and the percents passing the No. 4, No. 10, No. 40 and No. 200 [4.75 mm, 2.00 mm, 425 µm and 75 µm] sieves will meet the approved job mix formula within the tolerance shown in Table 331-6.

Table 331-6
Tolerances for Acceptance Tests

Characteristic	Tolerance*
Asphalt Content (Extraction)	±0.55%
Asphalt Content (Printout)	±0.15%
Passing No. 4 [4.75 mm] sieve	±7.00%
Passing No. 10 [2.00 mm] sieve	±5.50%
Passing No. 40 [425 µm] sieve**	±4.50%
Passing No. 200 [75 µm] sieve	±2.00%

*Tolerances for sample size of n=1. See Table 331-7 for other sample sizes n=2 through n=6.
**Applies only to Types S-I, S-II, S-III, and FC-3.

Acceptance of the mixture will be on the basis of test results on consecutive random samples from each LOT. One random sample will be taken from each sublot. The bituminous mixture will be sampled and tested at the plant as specified in 331-4.4.2.

Calculations for the acceptance test results for bitumen content and gradation (percentages passing No. 4, No. 10, No. 40 and No. 200 [4.75 mm, 2.00 mm, 425 µm and 75 µm] sieves) will be shown to the nearest 0.01. Calculations for arithmetic averages will be carried to the nearest 0.001 and rounded to the nearest 0.01 in accordance with the Department's rules of rounding.

Payment will be made on the basis of Table 331-7, “Acceptance Schedule of Payment”. The process will be considered out of control when the deviation of any individual test result from the mix design falls in the 80% pay factor for the “one test” column of Table 331-7. When this happens, the LOT will be automatically terminated and production stopped. The approval of the Engineer will be required prior to resuming production of the mix. Acceptance of the LOT will then be determined in accordance with Table 331-7.

All acceptance tests will be completed on the same day the sample was taken, when possible, and on no occasion will they be completed later than the following work day.

Table 331-7
Acceptance Schedule of Payment (Asphalt Plant Mix Characteristics)

Average of Accumulated Deviations of the Acceptance Tests from the Mix Design.						
Pay Factor	1-Test	2-Tests	3-Tests	4-Tests	5-Tests	6-Tests
Asphalt Cement Content (Extraction - FM 5-544 or 5-563)						

Table 331-7 Acceptance Schedule of Payment (Asphalt Plant Mix Characteristics)						
Average of Accumulated Deviations of the Acceptance Tests from the Mix Design.						
Pay Factor	1-Test	2-Tests	3-Tests	4-Tests	5-Tests	6-Tests
1.00	0.00-0.55	0.00-0.43	0.00-0.38	0.00-0.35	0.00-0.33	0.00-0.31
0.95	0.56-0.65	0.44-0.50	0.39-0.44	0.36-0.40	0.34-0.37	0.32-0.36
0.90	0.66-0.75	0.51-0.57	0.45-0.50	0.41-0.45	0.38-0.42	0.36-0.39
0.80*	over 0.75	over 0.57	over 0.50	over 0.45	over 0.42	over 0.39
Asphalt Cement Content (Printout)						
1.00	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15	0.00-0.15
0.95	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25	0.16-0.25
0.90	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35	0.26-0.35
0.80*	over 0.35	over 0.35	over 0.35	over 0.35	over 0.35	over 0.35
No. 4 [4.75 mm] sieve**						
1.00	0.00-7.00	0.00-5.24	0.00-4.46	0.00-4.00	0.00-3.68	0.00-3.45
0.98	7.01-8.00	5.25-5.95	4.47-5.04	4.01-4.50	3.69-4.13	3.46-3.86
0.95	8.01-9.00	5.96-6.66	5.05-5.62	4.51-5.00	4.14-4.58	3.87-4.27
0.90	9.01-10.00	6.67-7.36	5.63-6.20	5.01-5.50	4.59-5.02	4.28-4.67
0.80*	over 10.00	over 7.36	over 6.20	over 5.50	over 5.02	over 4.67
No. 10 [2.00 mm] sieve**						
1.00	0.00-5.50	0.00-4.33	0.00-3.81	0.00-3.50	0.00-3.29	0.00-3.13
0.98	5.51-6.50	4.34-5.04	3.82-4.39	3.51-4.00	3.30-3.74	3.14-3.54
0.95	6.51-7.50	5.05-5.74	4.40-4.96	4.01-4.50	3.75-4.18	3.55-3.95
0.90	7.51-8.50	5.75-6.45	4.97-5.54	4.51-5.00	4.19-4.63	3.96-4.36
0.80*	over 8.50	over 6.45	over 5.54	over 5.00	over 4.63	over 4.36
No. 40 [425 µm] sieve**						
1.00	0.00-4.50	0.00-3.91	0.00-3.65	0.00-3.50	0.00-3.39	0.00-3.32
0.98	4.51-5.50	3.92-4.62	3.66-4.23	3.51-4.00	3.40-3.84	3.33-3.72
0.95	5.51-6.50	4.63-5.33	4.24-4.81	4.01-4.50	3.85-4.29	3.73-4.13
0.90	6.51-7.50	5.34-6.04	4.82-5.39	4.51-5.00	4.30-4.74	4.14-4.54
0.80*	over 7.50	over 6.04	over 5.39	over 5.00	over 4.74	over 4.54
No. 200 [75µm] sieve**						
1.00	0.00-2.00	0.00-1.71	0.00-1.58	0.00-1.50	0.00-1.45	0.00-1.41
0.95	2.01-2.40	1.72-1.99	1.59-1.81	1.51-1.70	1.46-1.63	1.42-1.57
0.90	2.41-2.80	2.00-2.27	1.82-2.04	1.71-1.90	1.64-1.80	1.58-1.73
0.80*	over 2.80	over 2.27	over 2.04	over 1.90	over 1.80	over 1.73

*If approved by the Engineer based on an engineering determination that the material is acceptable to remain in place, the Contractor may accept the indicated partial pay. Otherwise, remove and replace the material at no cost to the Department at any item.

**When there are two or more reduced payments for these items in one LOT of material, only the greatest reduction in payment will be applied. CAUTION: This rule applies only to these four gradation test results.

NOTES:

(1) The No. 40 [425 µm] sieve applies to Type S-I, S-II, S-III and FC-3.

(2) Deviations are absolute values with no plus or minus signs.

331-6.3 Automatic Batch Plant With Printout: Acceptance determinations for asphalt content for mixtures produced by automatic batch plants with printout will be based on the calculated bitumen content using the printout of the weights of asphalt actually used. Acceptance determinations for gradations (No. 4, No. 10, No. 40 and No. 200 [4.75 mm, 2.00 mm, 425 μm and 75 μm] sieves) will be based on the actual test results from extraction gradation analyses. Payment will be made based on the provisions of Table 331-7.

331-6.4 Additional Tests: The Engineer reserves the right to run any test at any time for informational purposes and for determining the effectiveness of the Contractor's quality control.

331-6.4.1 Determination of Marshall and Volumetric Properties: The Engineer will determine the Marshall and Volumetric Properties of the mix at a minimum frequency of one set per LOT, to determine whether or not the produced mix is meeting the specification requirements. The Department will sample and prepare test specimens and test them in accordance with FM 5-511 for Marshall stability and flow, FM 1-T 209 for maximum specific gravity, and FM 1-T 166 for density. Volumetric properties will be determined for Type S and FC-3 mixes only.

331-6.4.2 Failing Marshall Properties: When the average value of the specimens fails to meet specification requirements for stability or flow, the Engineer may stop the plant operations until all specification requirements can be met or until another verified mix design has been approved. Make revisions to a mix design in accordance with 331-4.3.2. If the Lab Density of the mix during production differs from the value shown on the verified mix design by more than 2 lbs/ft^3 [32 kg/m^3] for two consecutive tests, the Engineer will revise the target value.

331-6.4.3 Failing Volumetric Properties (Type S and FC-3 mixes only): When the Engineer determines the air void content to be less than 3.0%, or greater than 6.5%, make appropriate adjustments to the mix. When the air void content is determined to be less than 2.5% or greater than 7.0% on any one test, or less than 3.0% on two consecutive tests, cease operations until the problem has been resolved.

331-6.4.4 Resuming Production: In the event that plant operations are stopped due to a failure to meet specification requirements, obtain the Engineer's approval before resuming production of the mix. Limit production to a maximum of 300 tons [270 metric tons]. At this time, the Marshall and volumetric properties of the mix will be verified. After the Marshall and volumetric properties are verified, full scale production of the mix may be resumed.

331-6.5.5 Disposition of In-Place Material: Any material in-place that is represented by the failing test results (low stability, high flow, or less than 2.5% air voids) will be evaluated by the Engineer to determine if removal and replacement is necessary. Remove and replace any in-place material, if required, at no cost to the Department.

331-7 Acceptance of the Mixture at the Roadway

331-7.1 Density Control Nuclear Method: Determine the in-place density of each course of asphalt mix construction using the Nuclear Density Backscatter Method as specified by FM 1-T 238 (Method B). For a completed course, obtain an average in-place LOT density of at least 98% of the valid control strip density.

Do not perform density testing on patching courses, leveling and intermediate courses less than 1 inch [25 mm] thick (or a specified spread rate less than 100 lb/yd^2 [55kg/m^2]), overbuild courses where the minimum thickness is less than 1 inch [25 mm], projects less than 1,000 feet [300 m], sections with variable width, or open-graded friction courses. Compact these courses, with the exception of open-graded friction courses in accordance with 330-10.1.2.

331-7.2 Control Strips: In order to determine the density of compacted asphalt mixtures for the purpose of acceptance, first establish a control strip. Construct one or more control strips for the purpose of determining the control strip density. Construct a control strip at the beginning of asphalt construction and one thereafter for each successive course. Construct a new control strip for any change in the composition of the mix design, underlying pavement structure, compaction equipment, or procedures. The Engineer may require an additional control strip when the Engineer deems it necessary to establish a new control strip density or confirm the validity of the control strip density being used at that time. The Contractor may also request a confirmation of the control strip density. Construct the control strip as a part of a normal day's run.

Construct a control strip 300 feet [100 m] in length and of an adequately uniform width to maintain a consistent compactive effort throughout the section. When constructing the control strip, start it between 300 and 1,000 feet [100 and 300 m] from the beginning of the paving operation. Construct a control strip of a thickness that is the same as that specified for the course of which it is a part. Construct the control strip using the same mix, the same paving and rolling equipment, and the same procedures as those used in laying the asphalt course of which the control strip is to become a part. Leave every control strip in place to become a portion of the completed roadway.

In order to determine the acceptability of the control strip, make ten nuclear density determinations at random locations within the control strip after completing the compaction of the control strip. Do not make any determinations within 12 inches [300 mm] of any unsupported edge. Use the average of these ten determinations for the Control Strip Density. For purposes of determining the percent of laboratory density, as required in Table 331-8, the Engineer will develop a correction factor at four nuclear density locations from 6 inch [150 mm] diameter cores or by direct transmission nuclear determination where applicable. Cut the cores prior to opening the roadway to traffic. The Engineer will calculate the percent of lab density to the nearest 0.01% and round it to the nearest 0.1%. Should the percent of lab density in a control strip exceed 99.0%, notify the Engineer immediately.

In the event that a control strip does not meet the minimum density requirements specified in Table 331-8, take appropriate corrective actions and construct a new control strip. If three consecutive control strips fail to meet specification requirements, the Engineer will limit production and placement of the mix to 800 to 1,000 feet [250 to 300 m], regardless of the thickness and width the Contractor is placing, until the Contractor obtains a passing control strip.

Once the Contractor has obtained a passing control strip after a failing control strip (for the same mix, layer, and project), the Department will use the passing control strip to accept all previously laid mix. In the event the Contractor does not obtain a passing control strip, and this particular mix, layer, etc., is completed on the project, the Engineer will evaluate density in accordance with FM 5-543.

Table 331-8			
Roadway Requirements for Bituminous Concrete Mixes			
Mix Type	Density	Minimum Control Strip Density* (% of Lab Density)	Surface Tolerance
S-I, S-II, S-III, Type II, Type III, SAHM	per 331-7	96	per 330-12
ABC-1, ABC-2, ABC-3	per 280-8.6	96	per 200-7
FC-2	No density required	N/A	per 330-12
FC-3	per 331-7	96	per 330-12
* The minimum control strip density requirement for shoulders is 95% of lab density.			

331-7.3 LOTs: For the purpose of acceptance and partial payment, the Engineer will divide each day's production into LOTs. The Engineer will close out all LOTs at the end of the day. The standard size of a LOT is 5,000 feet [1,500 m] of any pass made by the paving train regardless of the width of the pass or the thickness of the course. A sublot will be 1,000 feet [300 m] or less. The Engineer will consider pavers traveling in echelon as two separate passes. When at the end of a production day, the completion of a given course, layer, or mix, or at the completion of the project, and a LOT size is determined to be less than 5,000 feet [1,500 m], it will be considered a partial LOT. Handle partial LOTs as follows:

If the length of the partial LOT is 2,000 feet [600 m] or less, and a previous full-size LOT from the same day, mix, layer, and project is available, then the previous full-size LOT will be redefined to include this partial LOT and the number of tests required for the combined LOT will be as shown in Table 331-9.

If the partial LOT is 2,000 feet [600 m] or less, and a previous full-size LOT from the same day, mix, layer, and project is not available, the Engineer will evaluate the partial LOT separately and perform the number of tests required for the partial LOT as shown in Table 331-9.

If the partial LOT is greater than 2,000 feet [600 m] long, the Engineer will evaluate the partial LOT separately and perform the number of tests required for the partial LOT as shown in Table 331-9.

Table 331-9	
Testing Requirements for Partial LOTs	
LOT Size	Number of Tests
Less than 3,000 feet [900 m]	3
3,001 to 4,000 feet [901 to 1,200 m]	4
4,001 to 5,000 feet [1,201 to 1,500 m]	5
5,001 to 6,000 feet [1,501 to 1,800 m]	6
6,001 to 7,000 feet [1,801 to 2,100 m]	7
Greater than 7,000 feet [2,100 m]	2 LOTs

For each LOT and partial LOT, the Engineer will make density determinations at a frequency shown in Table 331-9 at random locations within the LOT, but will not take them within 12 inches [300 mm] of any unsupported edge. The Engineer will determine the random locations by the use of statistically derived stratified random number tables. For the Contractor to receive full payment for density, the average density of a LOT shall be a minimum of 98.0% of the control strip density. Once the Engineer determines the average density of a LOT, do not provide additional compaction to raise the average. Notify the Engineer should the average density for two consecutive LOTs be greater than 102% of control strip density.

331-7.4 Acceptance: The Engineer will accept the completed pavement with respect to density on a LOT basis. The Department will make partial payment for those LOTs that have an average density less than 98.0% of the Control Strip Density based on Table 331-10:

Table 331-10	
Payment Schedule For Density	
Percent of Control Strip Density*	Percent of Payment
98.0 and above	100
97.0 to less than 98.0	95
96.0 to less than 97.0	90
Less than 96.0**	75
* In calculating the percent of control strip density, do not round off the final percentage. ** If approved by the Engineer, based on an engineering determination that the material is acceptable to remain in place, the Contractor may accept the indicated partial pay; otherwise, remove and replace the material at no expense to the Department. The Contractor may remove and replace the material at no expense to the Department at any time.	

331-7.5 Density Requirements for Small Projects and Other Non-mainline Roadway Areas: For projects less than 1,000 feet [300 m] in length and bridge projects with approaches less than 1,000 feet [300 m] each side, do not apply the requirements for control strips and nuclear density determination. Use the standard rolling procedures as specified in 330-10.1.2. Do not apply the provisions for partial payment to these small projects.

In other non-mainline roadway areas where it is not practical to establish a control strip, such as parking areas, toll plazas, turn lanes, and acceleration/deceleration lanes, the Contractor may use the standard rolling procedure to determine density requirements if so authorized in writing by the Engineer.

331-7.6 Surface Tolerance: The bituminous mixture will be accepted on the roadway with respect to surface tolerance in accordance with 330-12.

331-8 Method of Measurement.

The quantity to be paid for will be the weight of the mixture, in tons [metric tons], completed and accepted. The weight will be determined as provided in 320-2 (including the provisions for the automatic recordation system).

The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent. There will be no separate payment or unit price adjustment for the bituminous material in the asphalt mix.

331-9 Basis of Payment:

Price and payment will be full compensation for all the work specified under this Section, including the applicable requirements of Sections 320 and 330.

Payment will be made under:

Item No. 331- 2- Type S Asphaltic Concrete - per ton.
Item No. 2331- 2- Type S Asphaltic Concrete - per metric ton.

334 SUPERPAVE ASPHALT CONCRETE.
(REV 1-17-12) (FA 2-6-12) (7-12)

SECTION 334 (Pages 265 - 291) is deleted and the following substituted:

SECTION 334
SUPERPAVE ASPHALT CONCRETE

334-1 Description.

334-1.1 General: Construct a Superpave Asphalt Concrete pavement with the type of mixture specified in the Contract, or when offered as alternates, as selected. Superpave mixes are identified as Type SP-9.5, Type SP-12.5 or Type SP-19.0.

Meet the requirements of Section 320 for plant and equipment. Meet the general construction requirements of Section 330, except as modified herein, including the provision for Quality Control Plans and Quality Control Systems as specified in Section 105.

334-1.2 Traffic Levels: The requirements for Type SP Asphalt Concrete mixtures are based on the design traffic level of the project, expressed in 18,000 pound Equivalent Single Axle Loads (ESAL's). The five traffic levels are as shown in Table 334-1.

Table 334-1
Superpave Traffic Levels

Traffic Level	Traffic Level ($1x10^6$ ESAL's)
A	<0.3
B	0.3 to <3
C	3 to <10
D	10 to <30
E	≥30

The traffic level(s) for the project are as specified in the Contract. A Type SP mix one traffic level higher than the traffic level specified in the Contract may be substituted, at no cost to the Department (i.e. Traffic Level B may be substituted for Traffic Level A, etc.).

334-1.3 Gradation Classification: The Superpave mixes are classified as either coarse or fine, depending on the overall gradation of the mixture. Coarse and fine mixes are defined in 334-3.2.2.

The equivalent AASHTO nominal maximum aggregate size Superpave mixes are as follows:

Type SP-9.5..... 9.5 mm
Type SP-12.5..... 12.5 mm
Type SP-19.0..... 19.0 mm

334-1.4 Thickness: The total thickness of the Type SP asphalt layer(s) will be the plan thickness as shown in the Contract Documents. Before paving, propose a thickness for each individual layer meeting the requirements of this specification, which when combined with other layers (as applicable) will equal the plan thickness. For construction purposes, the plan thickness and individual layer thickness will be converted to spread rate based on the maximum specific gravity of the asphalt mix being used, as well as the minimum density level, as shown in the following equation:

Spread rate (lbs/yd^2) $= t \times G_{mm} \times 43.3$

Where: t = Thickness (in.) (Plan thickness or individual layer thickness)

G_{mm} = Maximum specific gravity from the verified mix design

The weight of the mixture shall be determined as provided in 320-3.2. For target purposes only, spread rate calculations should be rounded to the nearest whole number.

Note: Plan quantities are based on a G_{mm} of 2.540, corresponding to a spread rate of 110 lbs/yd^2-in. Pay quantities will be based on the actual maximum specific gravity of the mix being used.

334-1.4.1 Layer Thicknesses - Fine Mixes: The allowable layer thicknesses for fine Type SP Asphalt Concrete mixtures are as follows:

Type SP-9.5.....1 - 1 1/2 inches
Type SP-12.5.....1 1/2 - 2 1/2 inches
Type SP-19.0.....2 - 3 inches

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on fine mixes when used as a structural course:

Type SP-9.5 - Limited to the top two structural layers, two layers maximum.

Type SP-9.5 – May not be used on Traffic Level D and E applications.

Type SP-19.0 - May not be used in the final (top) structural layer.

334-1.4.2 Layer Thicknesses - Coarse Mixes: The allowable layer thicknesses for coarse Type SP Asphalt Concrete mixtures are as follows:

Type SP-9.5.....1 1/2 - 2 inches
Type SP-12.5.....2 - 3 inches
Type SP-19.0.....3 - 3 1/2 inches

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on coarse mixes when used as a structural course:

Type SP-19.0 - May not be used in the final (top) structural layer.

334-1.4.3 Additional Requirements: The following requirements also apply to coarse and fine Type SP Asphalt Concrete mixtures:

1. A minimum 1-1/2 inch initial lift is required over an Asphalt Rubber Membrane Interlayer (ARMI).

2. When construction includes the paving of adjacent shoulders (less than or equal to 5 feet wide), the layer thickness for the upper pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Contract Documents.

3. All overbuild layers must be fine Type SP Asphalt Concrete designed at the traffic level as stated in the Contract. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum and maximum allowable thicknesses will be as specified below, unless called for differently in the Contract Documents.

Type SP-9.5.....3/8 to 2 inches
Type SP-12.5.....3/4 to 3 inches
Type SP-19.0..... 1-1/2 to 3-1/2 inches

334-2 Materials.

334-2.1 General Requirements: Meet the material requirements specified in Division III. Specific references are as follows:

Superpave PG Asphalt Binder or
Recycling Agent.....916-1, 916-2
Coarse Aggregate.....Section 901
Fine Aggregate.....Section 902

334-2.2 Superpave Asphalt Binder: Unless specified otherwise in the Contract, use a PG 67-22 asphalt binder. In addition, meet the requirements of 334-2.3.

334-2.3 Reclaimed Asphalt Pavement (RAP) Material:

334-2.3.1 General requirements: RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. When using a PG 76-22 Asphalt Binder, limit the amount of RAP material used in the mix to a maximum of 20 percent by weight of total aggregate. As an exception, amounts greater than 20 percent RAP by weight of total aggregate can be used if no more than 20 percent by weight of the total asphalt binder comes from the RAP material.

2. Assume full responsibility for the design, production and construction of asphalt mixes which incorporate RAP as a component material.

3. Use RAP from an FDOT approved stockpile or RAP that has an FDOT furnished Pavement Composition Data Sheet.

4. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

5. Provide RAP material having a minimum average asphalt binder content of 4.0 percent by weight of RAP. As an exception, when using fractionated RAP, the minimum average asphalt binder content for the coarse portion of the RAP shall be 2.5 percent by weight of the coarse portion of the RAP. The coarse portion of the RAP shall be the portion of the RAP retained on the No. 4 sieve. The Engineer may sample the stockpile(s) to verify that this requirement is met.

334-2.3.2 Material Characterization for Mix Design: Assume responsibility for establishing the asphalt binder content, gradation, viscosity and bulk specific gravity (G_{sb}) of the RAP material based on a representative sampling of the material by roadway cores or stockpile samples. For roadway core samples, assume responsibility for the degradation that will occur during the milling operation.

334-2.3.3 RAP Stockpile Approval: Prior to the incorporation of RAP into the asphalt mixture, stockpile the RAP material and obtain approval for the stockpile by one of the following methods:

1. Continuous stockpile: When RAP is obtained from one or multiple sources and is either processed, blended, or fractionated, and stockpiled in a continuous manner, assure an adequate number of test results are obtained for stockpile approval. Test the RAP material for gradation and asphalt content at a minimum frequency of 1 sample per 1000 tons with a minimum of six test results. Test the RAP material for G_{mm} (for G_{sb} determination) and for recovered viscosity at a minimum frequency of 1 sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. In addition, address in the QC Plan the details and specifics of the processing, sampling, testing and actions to be taken.

2. Non-continuous single stockpile: When an individual stockpile is being constructed, obtain representative samples at random locations and test the RAP material for gradation and asphalt content at a minimum frequency of 1 sample per 1000 tons with a minimum of six test results. Test the RAP material for G_{mm} (for G_{sb} determination) and for recovered viscosity at a minimum frequency of 1 sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. Once the RAP stockpile has been approved, do not add additional material without prior approval of the Engineer.

Determine the asphalt binder content and gradation of the RAP material in accordance with FM 5-563 and FM 1-T 030, respectively. Extract and recover the asphalt binder from the RAP in accordance with FM 5-524 and FM 3-D 5404, respectively. Determine the viscosity of the recovered asphalt binder in accordance with ASTM D 2171. Establish the G_{sb} of the RAP material by using one of the following methods:

a. Calculate the G_{sb} value based upon the effective specific gravity (G_{se}) of the RAP material, determined on the basis of the asphalt binder content

and maximum specific gravity (G_{mm}) of the RAP material. The Engineer will approve the estimated asphalt binder absorption value used in the calculation.

b. Measure the G_{sb} of the RAP aggregate, in accordance with FM 1-T 084 and FM 1-T 085. Obtain the aggregate by using a solvent extraction method.

334-2.3.4 Pavement Composition: When the Contract includes milling of the existing asphalt pavement, the Pavement Composition Data Sheet may be available on the Department's website. The URL for obtaining this information, if available, is: www.dot.state.fl.us/statematerialsoffice/laboratory/asphalt/centrallaboratory/compositions/index.shtm .

334-2.3.5 Asphalt Binder for Mixes with RAP: Select the appropriate asphalt binder grade based on Table 334-2. The Engineer reserves the right to change the asphalt binder type and grade at design based on the characteristics of the RAP asphalt binder, and reserves the right to make changes during production. Maintain the viscosity of the recycled mixture within the range of 5,000 to 15,000 poises. Obtain a sample of the mixture for the Engineer within the first 1,000 tons of production and at a continuing frequency of one sample per 4,000 tons of mix.

Table 334-2
Asphalt Binder Grade for Mixes Containing RAP

Percent RAP	Asphalt Binder Grade
<20	PG 67-22
20 – 29	PG 64-22
≥ 30	Recycling Agent

334-2.4 Recycled Crushed Glass: Recycled crushed glass may be used as a component of the asphalt mixture subject to the following requirements:

1. Consider the recycled crushed glass a local material and meet all requirements specified in 902-6.

2. Limit the amount of recycled crushed glass to a maximum of 15 percent by weight of total aggregate.

3. Use an asphalt binder that contains a minimum of 0.5 percent anti-stripping agent by weight of binder. The antistrip additive shall be one of the products included on the Qualified Products List specified in 6-1 of the Specifications. The antistrip additive shall be introduced into the asphalt binder by the supplier during loading.

4. Do not use recycled crushed glass in friction course mixtures or in structural course mixtures which are to be used as the final wearing surface.

334-3 General Composition of Mixture.

334-3.1 General: Compose the asphalt mixture using a combination of aggregate (coarse, fine or mixtures thereof), mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate fractions to meet the grading and physical properties of the mix design. Aggregates from various sources may be combined.

334-3.2 Mix Design:

334-3.2.1 General: Design the asphalt mixture in accordance with AASHTO R35-09, except as noted herein. Prior to the production of any asphalt mixture, submit the proposed mix design with supporting test data indicating compliance with all mix design criteria to the Engineer. For Traffic Level B through E mix designs, include representative samples of all component materials, including asphalt binder. Allow the State Materials Engineer a maximum of four weeks to either conditionally verify or reject the mix as designed.

Do not use more than three mix designs per nominal maximum aggregate size per traffic level per binder grade per contract year. Exceeding this limitation will result in a maximum Composite Pay Factor of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, if available, is: http://www.dot.state.fl.us/Specificationsoffice/implemented/URLinSpecs/files/WarmMixAsphalt.pdf .

The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

334-3.2.2 Mixture Gradation Requirements: Combine the coarse and fine aggregate in proportions that will produce an asphalt mixture meeting all of the requirements defined in this specification and conform to the gradation requirements at design as defined in AASHTO M323-07, Table 3. Aggregates from various sources may be combined.

334-3.2.2.1 Mixture Gradation Classification: Plot the combined mixture gradation on an FHWA 0.45 Power Gradation Chart. Include the Control Points from AASHTO M323-07, Table-3, as well as the Primary Control Sieve (PCS) Control Point from AASHTO M323-07, Table 4. Coarse mixes are defined as having a combined aggregate gradation that passes below the primary control sieve control point and below the maximum density line for all sieve sizes smaller than the primary control sieve. Fine mixes are defined as having a gradation that passes above the primary control sieve control point and above the maximum density line for all sieve sizes smaller than the primary control sieve and larger than the #100 sieve. Use a fine mix for Traffic Levels A through C; use either a coarse mix or fine mix for Traffic Levels D and E.

334-3.2.3 Aggregate Consensus Properties: For Traffic Level C through E mixtures, meet the following consensus properties at design for the aggregate blend. Aggregate consensus properties do not apply to Traffic Level A and B mixtures.

334-3.2.3.1 Coarse Aggregate Angularity: When tested in accordance with ASTM D 5821, meet the percentage of fractured faces requirements specified in AASHTO M 323-07, Table 5.

334-3.2.3.2 Fine Aggregate Angularity: When tested in accordance with AASHTO T 304, Method A, meet the uncompacted void content of fine aggregate specified in AASHTO M 323-07, Table 5.

334-3.2.3.3 Flat and Elongated Particles: When tested in accordance with ASTM D 4791, (with the exception that the material passing the 3/8 inch

sieve and retained on the No. 4 sieve shall be included), meet the requirements specified in AASHTO M 323-07, Table 5. Measure the aggregate using the ratio of 5:1, comparing the length (longest dimension) to the thickness (shortest dimension) of the aggregate particles.

334-3.2.3.4 Sand Equivalent: When tested in accordance with AASHTO T 176, meet the sand equivalent requirements specified in AASHTO M 323-07, Table 5.

334-3.2.4 Gyratory Compaction: Compact the design mixture in accordance with AASHTO T 312-11, with the following exception: use the number of gyrations at N_{design} as defined in Table 334-3. Measure the inside diameter of gyratory molds in accordance with FM 5-585.

Table 334-3
Gyratory Compaction Requirements

Traffic Level	N_{design} Number of Gyrations
A	50
B	65
C	75
D	100
E	100

334-3.2.5 Design Criteria: Meet the requirements for nominal maximum aggregate size as defined in AASHTO M323-07, as well as for relative density, VMA, VFA, and dust-to-binder ratio as specified in AASHTO M323-07, Table 6. Use a dust-to-binder ratio of 0.8 to 1.6 for coarse mixes. $N_{maximum}$ requirements are not applicable for Traffic Level A and B mixtures.

334-3.2.6 Moisture Susceptibility:

1. For Traffic Level A and B mixtures, use a liquid anti-strip additive, which is on the Department's Qualified Products List, at a rate of 0.5% by weight of the asphalt binder. Other rates of anti-strip additive may be used upon approval of the Engineer.

2. For Traffic Level C through E mixtures, test 4 inch specimens in accordance with FM 1-T 283. Provide a mixture having a retained tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 psi. If necessary, add a liquid anti-stripping agent, which is on the Department's Qualified Products List and/or hydrated lime (meeting the requirements of Section 337) in order to meet these criteria.

334-3.2.7 Additional Information: In addition to the requirements listed above, provide the following information with each proposed mix design submitted for verification:

1. The design traffic level and the design number of gyrations (N_{design}).
2. The source and description of the materials to be used.
3. The DOT source number and the DOT product code of the aggregate components furnished from a DOT approved source.
4. The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be

representative of the material at the time of use. Compensate for any change in aggregate gradation caused by handling and processing as necessary.

5. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly material passing the No. 200 sieve) should be accounted for and identified.

6. The bulk specific gravity (G_{sb}) value for each individual aggregate and RAP component, as identified in the Department's aggregate control program.

7. A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1 percent.

8. A target temperature for the mixture at the plant (mixing temperature) and a target temperature for the mixture at the roadway (compaction temperature) in accordance with 320-6.3. Do not exceed a target temperature of 330°F for PG 76-22 asphalt binders, 320°F for ARB-12 asphalt binders, and 315°F for ARB-5 and unmodified asphalt binders.

9. Provide the physical properties achieved at four different asphalt binder contents. One of which shall be at the optimum asphalt content, and must conform to all specified physical requirements.

10. The name of the CTQP Qualified Mix Designer.

11. The ignition oven calibration factor.

12. The warm mix technology, if used.

334-3.3 Mix Design Revisions: During production, the Contractor may request a target value revision to a mix design, subject to meeting the following requirements: (1) the target change falls within the limits defined in Table 334-4, (2) appropriate data exists demonstrating that the mix complies with production air voids specification criteria, and (3) the mixture gradation meets the basic gradation requirements defined in 334-3.2.2.

Table 334-4
Limits for Potential Adjustments to Mix Design Target Values

Characteristic	Limit from Original Mix Design
No. 8 sieve and Coarser	± 5.0 percent
No. 16 sieve	± 4.0 percent
No. 30 sieve	± 4.0 percent
No. 50 sieve	± 3.0 percent
No. 100 sieve	± 3.0 percent
No. 200 sieve	± 1.0 percent
Asphalt Binder Content [(1)]	± 0.3 percent
Each Component of Aggregate Blend [(2)]	± 5.0 percent

[(1)] Reductions to the asphalt binder content will not be permitted if the VMA during production is lower than 1.0 percent below the design criteria.
[(2)] Revisions to FC-5 mixtures to be determined by the Engineer.

Submit all requests for revisions to mix designs, along with supporting documentation, to the Engineer. In order to expedite the revision process, the request for revision or discussions on the possibility of a revision may be made verbally, but must be followed up by a written request. The verified mix design will remain in effect until the

Engineer authorizes a change. In no case will the effective date of the revision be established earlier than the date of the first communication between the Contractor and the Engineer regarding the revision.

A new design mix will be required if aggregate sources change, or for any substitution of an aggregate product with a different aggregate code, unless approved by the Engineer.

334-4 Contractor Process Control.

Assume full responsibility for controlling all operations and processes such that the requirements of these Specifications are met at all times. Perform any tests necessary at the plant and roadway for process control purposes. Enter all Process Control test data into the Department's Laboratory Information Management System (LIMS) database. The Engineer will not use these test results in the acceptance payment decision.

Address in the Quality Control Plan how Process Control failures will be handled. When a Process Control failure occurs, investigate, at a minimum, the production process, testing equipment and/or sampling methods to determine the cause of the failure, and make any necessary changes to assure compliance with these Specifications. Obtain a follow up sample immediately after corrective actions are taken to assess the adequacy of the corrections. In the event the follow-up Process Control sample also fails to meet Specification requirements, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the Quality Control Manager.

334-5 Acceptance of the Mixture.

334-5.1 General: The mixture will be accepted at the plant with respect to gradation (P_{-8} and P_{-200}), asphalt content (P_b), and volumetrics (volumetrics is defined as air voids at N_{design}). The mixture will be accepted on the roadway with respect to density of roadway cores. Acceptance will be on a LOT-by-LOT basis (for each mix design) based on tests of random samples obtained within each sublot taken at a frequency of one set of samples per sublot. A roadway LOT and a plant production LOT shall be the same. Acceptance of the mixture will be based on Contractor Quality Control test results that have been verified by the Department.

334-5.1.1 Sampling and Testing Requirements: Obtain the samples in accordance with FM 1-T 168. Obtain samples at the plant of a sufficient quantity to be split into three smaller samples; one for Quality Control, one for Verification and one for Resolution testing; each sample at approximately 35 pounds. The split samples for Verification testing and Resolution testing shall be reduced in size and stored in three boxes each. The approximate size of each box must be 12 inches x 8 inches x 4 inches. Provide, label and safely store sample boxes in a manner agreed upon by the Engineer for future testing.

The asphalt content of the mixture will be determined in accordance with FM 5-563. In the event the FM 5-563 ignition oven goes out of service during production, the Contractor may elect to use a replacement oven at another location for no more than 72 hours while the oven is being repaired. The gradation of the recovered aggregate will be determined in accordance with FM 1-T 030. Volumetric testing will be in accordance with AASHTO T 312-08 and FM 1-T 209. Measure the inside diameter of gyratory molds in accordance with FM 5-585. Prior to testing volumetric samples, condition the test-sized sample for one hour plus or minus five

minutes at the target roadway compaction temperature in a shallow, flat pan, such that the mixture temperature at the end of the one hour conditioning period is within plus or minus 20°F of the roadway compaction temperature. Test for roadway density in accordance with FM 1-T 166.

334-5.1.2 Acceptance Testing Exceptions: When the total combined quantity of hot mix asphalt for the project, as indicated in the plans for Type SP and Type FC mixtures only, is less than 2000 tons, the Engineer will accept the mix on the basis of visual inspection. The Engineer may require the Contractor to run process control tests for informational purposes, as defined in 334-4, or may run independent verification tests to determine the acceptability of the material.

Density testing for acceptance will not be performed on widening strips or shoulders with a width of 5 feet or less, open-graded friction courses, variable thickness overbuild courses, leveling courses, any asphalt layer placed on subgrade (regardless of type), miscellaneous asphalt pavement, bike/shared use paths, crossovers, or any course with a specified thickness less than 1 inch or a specified spread rate that converts to less than 1 inch as described in 334-1.4. Density testing for acceptance will not be performed on asphalt courses placed on bridge decks or approach slabs; compact these courses in static mode only per the requirements of 330-7.7. In addition, density testing for acceptance will not be performed on the following areas when they are less than 1,000 feet (continuous) in length: turning lanes, acceleration lanes, deceleration lanes, shoulders, parallel parking lanes or ramps.

Density testing for acceptance will not be performed in intersections. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets. A random core location that occurs within the intersection shall be moved forward or backward from the intersection at the direction of the Engineer.

Where density testing for acceptance is not required, compact these courses (with the exception of open-graded friction courses) in accordance with the rolling procedure (equipment and pattern) as approved by the Engineer or with Standard Rolling Procedure as specified in 330-7.2. In the event that the rolling procedure deviates from the procedure approved by the Engineer, or the Standard Rolling Procedure, placement of the mix shall be stopped.

The density pay factor (as defined in 334-8.2) for LOTs where there are areas not requiring density testing for acceptance will be prorated based on a pay factor of 1.00 for the quantity (tonnage) of material in areas not requiring density testing for acceptance and the actual pay factor for the tonnage of material in areas requiring density testing.

334-5.2 Full LOTs: Each LOT will be defined (as selected by the Contractor prior to the start of the LOT) as either (1) 2,000 tons, with each LOT subdivided into four equal sublots of 500 tons each, or (2) 4,000 tons, with each LOT subdivided into four equal sublots of 1,000 tons each. As an exception to this, the initial LOT of all new mix designs shall be defined as 2,000 tons, subdivided into four equal sublots of 500 tons each. Before the beginning of a LOT, the Engineer will develop a random sampling plan for each sublot and direct the Contractor on sample points, based on tonnage, for each sublot during construction.

334-5.3 Partial LOTs: A partial LOT is defined as a LOT size that is less than a full LOT. A partial LOT may occur due to the following:

l. The completion of a given mix type or mix design on a project.

2. Closure of the LOT due to time. LOTs will be closed 30 calendar days after the start of the LOT. Time periods other than 30 calendar days may be used if agreed to by both the Engineer and the Contractor.

3. A LOT is terminated per 334-5.4.4.

All partial LOTs will be evaluated based on the number of tests available, and will not be redefined.

334-5.4 Quality Control Sampling and Testing: Obtain all samples randomly as directed by the Engineer.

Should the Engineer determine that the Quality Control requirements are not being met or that unsatisfactory results are being obtained, or should any instances of falsification of test data occur, approval of the Contractor's Quality Control Plan will be suspended and production will be stopped.

334-5.4.1 Lost or Missing Verification/Resolution Samples: In the event that any of the Verification and/or Resolution samples that are in the custody of the Contractor are lost, damaged, destroyed, or are otherwise unavailable for testing, the minimum possible pay factor for each quality characteristic as described in 334-8.2 will be applied to the entire LOT in question, unless called for otherwise by the Engineer. Specifically, if the LOT in question has more than two sublots, the pay factor for each quality characteristic will be 0.55. If the LOT has two or less sublots, the pay factor for each quality characteristic will be 0.80. In either event, the material in question will also be evaluated in accordance with 334-5.9.5.

If any of the Verification and/or Resolution samples that are in the custody of the Department are lost, damaged, destroyed or are otherwise unavailable for testing, the corresponding Quality Control test result will be considered verified, and payment will be based upon the Contractor's data.

334-5.4.2 Plant Sampling and Testing Requirements: Obtain one random sample of mix per sublot in accordance with 334-5.1.1 as directed by the Engineer. Test the Quality Control split sample for gradation, asphalt binder content and volumetrics in accordance with 334-5.1.1. Complete all Quality Control testing within one working day from the time the samples were obtained.

334-5.4.3 Roadway Sampling and Testing Requirements: Obtain five 6 inch diameter roadway cores within 24 hours of placement at random locations as directed by the Engineer within each sublot. Test these Quality Control samples for density (G_{mb}) in accordance with 334-5.1.1. In situations where it is impractical to cut five cores per sublot, obtain a minimum of three cores per sublot at random locations as identified by the Engineer. Do not obtain cores any closer than 12 inches from an unsupported edge. The Engineer may adjust randomly generated core locations for safety purposes or as the Engineer deems necessary. Maintain traffic during the coring operation; core the roadway, patch the core holes (within three days of coring); and trim the cores to the proper thickness prior to density testing.

Density for the sublot shall be based on the average value for the cores cut from the sublot with the target density being the maximum specific gravity (G_{mm}) of the sublot. Once the average density of a sublot has been determined, do not retest the samples unless approved by the Engineer. Ensure proper handling and storage of all cores until the LOT in question has been accepted.

334-5.4.4 Individual Test Tolerances for Quality Control Testing:

Terminate the LOT if any of the following Quality Control failures occur:

1) An individual test result of a sublot for air voids does not meet the requirements of Table 334-5,

2) The average sublot density does not meet the requirements of Table 334-5,

3) Two consecutive test results for gradation do not meet the requirements of Table 334-5,

4) Two consecutive test results for asphalt binder content do not meet the requirements of Table 334-5,

5) Two core densities for coarse mixes within a sublot are less than 91.00% of G_{mm}.

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the Quality Control Manager(s) and/or Asphalt Plant Level II technician(s) responsible for the decision to resume production after a quality control failure, as identified in 105-8.6.4. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production until appropriate corrections have been made. Inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a Quality Control failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future Quality Control failures.

Address any material represented by a failing test result in accordance with 334-5.9.5. Any LOT terminated under this Subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for each quality characteristic.

In the event that a G_{mm} test result differs by more than 0.040 from the mix design G_{mm}, investigate the cause(s) of the discrepancy and report the findings and proposed actions to the Engineer.

Table 334-5
Master Production Range

Characteristic	Tolerance [1]
Asphalt Binder Content (percent)	Target ±0.55
Passing No. 200 Sieve (percent)	Target ±1.50
Air Voids (percent) Coarse Graded	2.00 - 6.00
Air Voids (percent) Fine Graded	2.30 – 6.00
Density (percent G_{mm}) [2]	
Coarse Graded (minimum)	93.00
Fine Graded (minimum)	90.00

[1] Tolerances for sample size of n = 1 from the verified mix design
[2] Based on an average of 5 randomly located cores

334-5.5 Verification Testing: In order to determine the validity of the Contractor's Quality Control test results prior to their use in the Acceptance decision, the Engineer will run verification tests.

334-5.5.1 Plant Testing: At the completion of each LOT, the Engineer will test a minimum of one Verification split sample randomly selected from the LOT. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed. Verification samples shall be reheated at the target roadway compaction temperature for 1 1/2 hours plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1.

The Verification test results will be compared with the Quality Control test results based on the between-laboratory precision values shown in Table 334-6.

Table 334-6
Between-Laboratory Precision Values

Property	Maximum Difference
G_{mm}	0.016
G_{mb} (gyratory compacted samples)	0.022
Gmb (roadway cores – fine graded mixture)	0.015
Gmb (roadway cores – coarse graded mixture)	0.018
P_b	0.44 percent
P_{-200}	FM 1-T 030 (Figure 2)
P_{-8}	FM 1-T 030 (Figure 2)

If all of the specified mix characteristics compare favorably, then the LOT will be accepted, with payment based on the Contractor's Quality Control test data for the LOT.

If any of the results do not compare favorably, then the Resolution samples from the LOT will be sent to the Resolution laboratory for testing, as described in 334-5.6.

334-5.5.2 Roadway Testing: At the completion of each LOT, the Engineer will determine the density (G_{mb}) of each core (previously tested by Quality Control) as described in 334-5.1.1 from the same sublot as the Plant samples. For situations where roadway density is not required for the random sublot chosen, then another sublot shall be randomly chosen for roadway density cores only. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed.

The individual Verification test results will be compared with individual Quality Control test results by the Engineer based on the between-laboratory precision values given in Table 334-6.

If each of the core test results compare favorably, then the LOT will be accepted with respect to density, with payment based on the Contractor's Quality Control test data for the LOT.

If any of the results do not compare favorably, then the core samples from the LOT will be sent to the Resolution laboratory for testing as specified in 334-5.6.

334-5.6 Resolution System:

334-5.6.1 Plant Samples: In the event of an unfavorable comparison between the Contractor's Quality Control test results and the Engineer's Verification test results on any of the properties identified in Table 334-6, the Resolution laboratory will test all of the split samples from the LOT for only the property (or properties) in question. Resolution samples shall be reheated at the target roadway compaction temperature for 1-1/2 hours plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1.

334-5.6.2 Roadway Samples: In the event of an unfavorable comparison between the Contractor's Quality Control test data and the Engineer's Verification test data on the density results, the Resolution laboratory will test all of the cores from the LOT. Testing will be as described in 334-5.1.1. Any damaged roadway cores will not be included in the evaluation; replace damaged cores with additional cores at the direction of the Engineer.

334-5.6.3 Resolution Determination: The Resolution test results (for the property or properties in question) will be compared with the Quality Control test results based on the between-laboratory precision values shown in Table 334-6.

If the Resolution laboratory results compare favorably with all of the Quality Control results, then acceptance and payment for the LOT will be based on the Quality Control results, and the Department will bear the costs associated with Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution laboratory results do not compare favorably with all of the Quality Control results, then acceptance and payment for the LOT will be based on the Resolution test data for the LOT, and the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing. In addition, in the event that the application of the Resolution test data results in a failure to meet the requirements of Table 334-5, address any material represented by the failing test result in accordance with 334-5.9.5.

In the event of an unfavorable comparison between the Resolution test results and Quality Control test results, make the necessary adjustments to assure that future comparisons are favorable.

334-5.7 Independent Verification Testing:

334-5.7.1 Plant: The Contractor shall provide sample boxes and take samples as directed by the Engineer for Independent Verification testing. Obtain enough material for three complete sets of tests (two samples for Independent Verification testing by the Engineer and one sample for testing by the Contractor). If agreed upon by both the Engineer and the Contractor, only one sample for Independent Verification testing by the Engineer may be obtained. Independent Verification samples will be reheated at the target roadway compaction temperature for 1-1/2 hours plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. The Contractor's split sample, if tested immediately after sampling, shall be reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. If the

Contractor's sample is not tested immediately after sampling, then the sample shall be reheated at the target roadway compaction temperature for 1-1/2 hours plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. The Contractor's test results shall be provided to the Engineer within one working day from the time the sample was obtained.

If any of the Independent Verification test results do not meet the requirements of Table 334-5, then a comparison of the Independent Verification test results and the Contractor's test results, if available, will be made. If a comparison of the Independent Verification test results and the Contractor's test results meets the precision values of Table 334-6 for the material properties in question, or if the Contractor's test results are not available, then the Independent Verification test results are considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

If a comparison of the Independent Verification test results and the Contractor's test results does not meet the precision values of Table 334-6 for the material properties in question, then the second Independent Verification sample shall be tested by the Engineer for the material properties in question. If a comparison between the first and second Independent Verification test results does not meet the precision values of Table 334-6 for the material properties in question, then the first Independent Verification test results are considered unverified for the material properties in question and no action shall be taken.

If a comparison between the first and second Independent Verification test results meets the precision values of Table 334-6 for the material properties in question, then the first Independent Verification sample is considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

The Engineer has the option to use the Independent Verification sample for comparison testing as specified in 334-6.

334-5.7.2 Roadway: Obtain five 6 inch diameter roadway cores within 24 hours of placement, as directed by the Engineer, for Independent Verification testing. In situations where it is impractical to cut five cores per sublot, obtain a minimum of three cores per sublot at random locations, as identified by the Engineer. These independent cores will be obtained from the same LOTs and sublots as the Independent Verification Plant samples, or as directed by the Engineer. The density of these cores will be obtained as described in 334-5.1.1. If the average of the results for the sublot does not meet the requirements of Table 334-5 for density, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

334-5.8 Surface Tolerance: The asphalt mixture will be accepted on the roadway with respect to surface tolerance in accordance with the applicable requirements of 330-9.

334-5.9 Minimum Acceptable Quality Levels:

334-5.9.1 Pay Factors Below 0.90: In the event that an individual pay factor for any quality characteristic of a LOT falls below 0.90, take steps to correct the situation and report the actions to the Engineer. In the event that the pay factor for the same quality characteristic for two consecutive LOTs is below 0.90, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

334-5.9.2 Composite Pay Factors Less Than 0.90 and Greater Than or Equal to 0.80: If the composite pay factor for the LOT is less than 0.90 and greater than or equal to 0.80, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

334-5.9.3 Composite Pay Factors Less Than 0.80 and Greater Than or Equal to 0.75: If the composite pay factor for the LOT is less than 0.80 and greater than or equal to 0.75, address the defective material in accordance with 334-5.9.5.

334-5.9.4 Composite Pay Factors Less Than 0.75: If the composite pay factor for the LOT is less than 0.75, remove and replace the defective LOT at no cost to the Department, or as approved by the Engineer.

334-5.9.5 Defective Material: Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the Department.

As an exception to the above and upon approval of the Engineer, obtain an engineering analysis by an independent laboratory (as approved by the Engineer) to determine the disposition of the material. The engineering analysis must be signed and sealed by a Professional Engineer licensed in the State of Florida.

The Engineer may determine that an engineering analysis is not necessary or may perform an engineering analysis to determine the disposition of the material.

Any material that remains in place will be accepted with a composite pay factor as determined by 334-8, or as determined by the Engineer.

If the defective material is due to a gradation, asphalt binder content or density failure, upon approval of the Engineer the Contractor may perform delineation tests on roadway cores in lieu of an engineering analysis to determine the limits of the defective material that may require removal and replacement. Prior to any delineation testing, all sampling locations shall be approved by the Engineer. All delineation sampling and testing shall be monitored and verified by the Engineer. For materials that are defective due to air voids, an engineering analysis is required.

When evaluating defective material by engineering analysis or delineation testing, at a minimum, evaluate all material located between passing Quality Control, Process Control or Independent Verification test results. Exceptions to this requirement shall be approved by the Engineer.

334-6 Comparison Testing.

At the start of the project (unless waived by the Engineer) and at other times as determined necessary by the Engineer, provide split samples for comparison testing with the Engineer. The purpose of these tests is to verify that the testing equipment is functioning properly and that the testing procedures are being performed correctly. In the event that the Engineer determines that there is a problem with the Contractor's testing equipment and/or testing procedures, immediately correct the problem to the Engineer's satisfaction. In the event that the problem is not immediately corrected, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the Engineer.

If so agreed to by both the Contractor and the Engineer, the split sample used for comparison testing may also be used for the Quality Control sample. The split sample used for comparison testing will also meet the requirements for Independent Verification Testing described in 334-5.7.

334-7 Method of Measurement.

For the work specified under this Section (including the pertinent provisions of Sections 320 and 330), the quantity to be paid for will be the weight of the mixture, in tons. The pay quantity will be based on the project average spread rate, excluding overbuild, limited to a maximum of 105% of the spread rate determined in accordance with 334-1.4 or as set by the Engineer. The project average spread rate is calculated by totaling the arithmetic mean of the average daily spread rate values for each layer.

The bid price for the asphalt mix will include the cost of the liquid asphalt or the asphalt recycling agent and the tack coat application as directed in 300-8. There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix. For the calculation of unit price adjustments of bituminous material, the average asphalt content will be based on the percentage specified in 9-2.1.2. The weight will be determined as provided in 320-3.2 (including the provisions for the automatic recordation system).

Prepare a Certification of Quantities, using the Department's current approved form, for the certified Superpave asphalt concrete pay item. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the estimate cut-off or as directed by the Engineer, based on the quantity of asphalt produced and accepted on the roadway per Contract. The certification must include the Contract Number, FPID Number, Certification Number, Certification Date, period represented by Certification and the tons produced for each asphalt pay item.

334-8 Basis of Payment.

334-8.1 General: Price and payment will be full compensation for all the work specified under this Section (including the applicable requirements of Sections 320 and 330).

For materials accepted in accordance with 334-5, based upon the quality of the material, a pay adjustment will be applied to the bid price of the material as determined on a LOT by LOT basis. The pay adjustment will be assessed by calculating a Pay Factor for the following individual quality characteristics: pavement density, air voids, asphalt binder content, and the percentage passing the No. 200 and No. 8 sieves. The pay adjustment will be computed by multiplying a Composite Pay Factor for the LOT by the

bid price per ton. Perform all calculations with the Department's Asphalt Plant - Pay Factor Worksheets.

334-8.2 Pay Factors:

334-8.2.1 Partial LOTs: For Partial LOTs where no random sample is obtained due to insufficient tonnage, a Composite Pay Factor of 1.00 shall be applied.

334-8.2.2 Two or Less Sublot Test Results: In the event that two or less sublot test results are available for a LOT, Pay Factors will be determined based on the Small Quantity Pay Table. The Small Quantity Pay Table and Pay Factor calculations are determined in accordance with the instructions contained within the Department's Asphalt Plant – Pay Factor Worksheets.

334-8.2.3 Three or More Sublot Test Results: When three or more sublot test results are available for a LOT, the variability-unknown, standard deviation method will be used to determine the estimated percentage of the LOT that is within the specification limits shown in (Table 334-7). The Percent Within Limits (PWL) is determined in accordance with the instructions contained within the Department's Asphalt Plant – Pay Factor Worksheets.

Table 334-7
Specification Limits

Quality Characteristic	Specification Limits
Passing No. 8 sieve (percent)	Target ± 3.1
Passing No. 200 sieve (percent)	Target ± 1.0
Asphalt Content (percent)	Target ± 0.40
Air Voids - Coarse Mixes (percent)	4.00 ± 1.40
Air Voids - Fine Mixes (percent)	4.00 ± 1.20
Density - Coarse Mixes (percent of G_{mm}):	94.50 ± 1.30
Density - Fine Mixes (percent of G_{mm}):	93.00 + 2.00, - 1.20 (1)

Note (1): If the Engineer (or Contract Documents) limits compaction to the static mode only, or for all one-inch thick lifts, compaction shall be in the static mode. No vibratory mode in the vertical direction will be allowed. Other vibratory modes will be allowed, if approved by the Engineer. In either case, the specification limits will be as follows: 92.00 + 3.00, -1.20 percent of G_{mm}. No additional compensation, cost or time, shall be made.

334-8.2.3.1 Pay Factors (PF): Pay Factors will be calculated by using the following equation:

Pay Factor = (55 + 0.5 x PWL) / 100

The PWL is determined in accordance with the instructions contained within the Department's Asphalt Plant – Pay Factor Worksheets.

334-8.3 Composite Pay Factor (CPF): A Composite Pay Factor for the LOT will be calculated based on the individual Pay Factors (PF) with the following weighting applied: 35% Density (D), 25% Air Voids (V_a), 25% asphalt binder content (P_b), 10% Passing No. 200 (P_{-200}) and 5% Passing No. 8 (P_{-8}). Calculate the CPF by using the following formula:

CPF = [(0.350 x PF D) + (0.250 x PF V_a) + (0.250 x PF P_b) + (0.100 x PF P_{-200}) + (0.050 x PF P_{-8})]

Where the Pay Factor (PF) for each quality characteristic is determined in either 334-8.2.2 or 334-8.2.3, depending on the number of sublot tests. Note that the number after each multiplication will be rounded to the nearest 0.01.

The pay adjustment shall be computed by multiplying the Composite Pay Factor for the LOT by the bid price per ton.

334-8.4 Payment: Payment will be made under:

Item No. 334- 1- Superpave Asphaltic Concrete - per ton.

336 ASPHALT RUBBER BINDER.

(REV 5-24-10) (FA 8-16-10) (1-11)

SECTION 336 (Pages 291-294) is deleted and the following substituted:

SECTION 336
ASPHALT RUBBER BINDER

336-1 Description.

Produce asphalt rubber binder for use in Asphalt Concrete Friction Courses and Asphalt Rubber Membrane Interlayers.

336-2 Materials.

336-2.1 Superpave PG Asphalt Binder: For the particular grade of asphalt as specified in Table 336-1, meet the requirements of Section 916.

336-2.2 Ground Tire Rubber: For the type of ground tire rubber, meet the requirements of Section 919.

336-3 Asphalt Rubber Binder.

Thoroughly mix and react the asphalt binder and ground tire rubber in accordance with the requirements of Table 336-1. Accomplish blending of the asphalt binder and ground tire rubber at the project site or asphalt plant, or at the supplier's terminal.

Table 336-1

Asphalt Rubber Binder

Binder Type	ARB 5	ARB 12	ARB 20
Rubber Type	TYPE A (or B)(1)	TYPE B (or A)(2)	TYPE C (or B or A)(2)
Minimum Ground Tire Rubber (by weight of asphalt binder)	5%	12%	20%
Binder Grade	PG 67-22	PG 67-22	PG 64-22
Temperature Range	300 - 335°F	300 - 350°F	335 - 375°F
Minimum Reaction Time	10 minutes	15 minutes (Type B)	30 minutes (Type C)
Unit Weight @ 60ºF(3)	8.6 lbs/gal.	8.7 lbs/gal.	8.8 lbs/gal.
Viscosity Range(4)	4.0 - 6.0 Poises @ 300°F	10.0 - 15.0 Poises @ 300°F	15.0 - 20.0 Poises @ 350°F

Table 336-1			
Asphalt Rubber Binder			
Binder Type	ARB 5	ARB 12	ARB 20
Rubber Type	TYPE A (or B)[1]	TYPE B (or A)[2]	TYPE C (or B or A)[2]

(1) Use of Type B rubber may require an increase in the mix temperature in order to offset higher viscosity values.
(2) Use of finer rubber could result in the reduction of the minimum reaction time.
(3) Conversions to standard 60ºF are as specified in 300-9.3.
(4) FM 5-548, Viscosity of Asphalt Rubber by Rotational (Dip-N-Read) Viscometer or AASHTO T 316, Viscosity Determination of Asphalt Binder Using Rotational Viscometer.
NOTE: The Contractor may adjust the minimum reaction time if approved by the Engineer depending upon the temperature, size of the ground tire rubber and viscosity measurement determined from the asphalt rubber binder material prior to or during production. Apply the asphalt rubber binder for use in membrane interlayers within a period of six hours, unless some form of corrective action such as cooling and reheating is approved by the Engineer.

336-4 Equipment.

Use blending equipment that is designed for asphalt rubber binder and capable of producing a homogeneous mixture of ground tire rubber and asphalt binder meeting the requirements of Table 336-1. Use a batch type or continuous type blending unit that provides for sampling of the blended and reacted asphalt rubber binder material during normal production and provides for accurate proportioning of the asphalt binder and ground tire rubber either by weight or volume.

In order to meet specification requirements, keep the asphalt rubber uniformly blended while in storage. Equip storage tanks with a sampling device.

336-5 Testing of Asphalt Rubber Binder:

336-5.1 Quality Control Requirements: Test the asphalt rubber binder for the viscosity requirement of Table 336-1 at the following frequencies and situations:

1. One per batch (for batch blending) or two per day (for continuous blending) during blending at the project site or asphalt plant, or the supplier's terminal.
2. Each load delivered to the project site/asphalt plant when blended at the supplier's terminal.
3. Beginning of each day from the storage tank when storing the asphalt rubber binder at the project site or asphalt plant, or the supplier's terminal, obtain the sample for testing from the discharge piping exiting the storage tank.

Obtain the viscosity testing equipment specified in FM 5-548 and make it available to the Engineer for verification purposes at the project site/asphalt plant and supplier's terminal.

336-5.1.1 Action at Project Site or Asphalt Plant: If the asphalt rubber binder does not meet the minimum viscosity requirement at the project site or asphalt plant, stop use of the asphalt rubber binder in the Asphalt Concrete Friction Course and Asphalt Rubber Membrane Interlayer, notify the Engineer, and make the appropriate adjustments as necessary to meet the requirements of Table 336-1 in order to: (1) correct the viscosity of the blended material and (2) correct the blending operation. In the event that the corrective actions taken fail to correct the problem, or the material consistently fails to meet the minimum viscosity requirement, do not use the asphalt rubber binder in storage, and where applicable, stop all asphalt rubber blending operations at the project site or asphalt plant and solve the problem.

Do not use asphalt rubber binder with low viscosity in mix and interlayer construction, or resume blending operations at the project site or asphalt plant until the Engineer grants approval. The Engineer may require that any mix and interlayer placed with low viscosity asphalt rubber binder be evaluated in accordance with 334-5.9.5. In the event that the viscosity of the asphalt rubber binder increases to the extent that plant production or paving operations of the mix are adversely affected (i.e. density or texture problems occur), stop plant operations and resolve the problem to the Engineer's satisfaction.

336-5.1.2 Action at Supplier's Terminal: If the asphalt rubber binder does not meet the minimum viscosity requirement at the supplier's terminal, stop shipment and blending of asphalt rubber binder, and make the appropriate adjustments as necessary to meet the requirements of Table 3361 in order to (1) correct the viscosity of the blended material in the tank, and (2) correct the blending operation. Resume shipment and blending of asphalt rubber binder when a retest indicates the viscosity meets Specifications. Document actions taken in the Quality Control records.

336-5.2 Verification Requirements: The Engineer will test the asphalt rubber in accordance with FM 5-548 or AASHTO T 316 randomly on an as needed basis at the project site or asphalt plant , or the supplier's terminal to ensure conformance with the minimum viscosity requirement as specified in Table 336-1.

336-5.2.1: Action at Project Site or Asphalt Plant: If the asphalt rubber binder does not meet the viscosity requirements at the project site or asphalt plant, stop use of asphalt rubber binder. Do not use asphalt rubber binder with a viscosity outside of the specified range in mix and interlayer construction until corrective actions, as necessary to meet the requirements of Table 336-1, have been made, verified by passing test results, and the Engineer grants approval. The Engineer may require that any mix and interlayer placed with an asphalt rubber binder with a viscosity outside of the specified range be evaluated in accordance with 334-5.9.5. In the event that the viscosity of the asphalt rubber binder adversely affects plant production or paving operations, stop plant and paving operations and resolve the problem to the Engineer's satisfaction.

336-5.2.2: Action at Supplier's Terminal: If the asphalt rubber binder does not meet the viscosity requirements at the supplier's terminal, stop shipment and blending of asphalt rubber binder until corrective actions are made to meet the requirements of Table 336-1.

336-5.3 Asphalt Rubber Binder Blending Quality Control Records: Maintain adequate Quality Control records for the Engineer's review of all blending activities. The Quality Control records shall include at a minimum the following information (for each batch of asphalt rubber binder produced): asphalt rubber binder type, asphalt rubber binder batch quantity, asphalt binder supplier (including QPL number and LOT), asphalt binder quantity in gallons, ground tire rubber supplier (including QPL number and LOT), ground tire rubber quantity in pounds, individual quantities of asphalt rubber binder shipped, financial project number, shipping date, customer name, delivery location, and viscosity test results.

336-5.3.1 Additional Records for Blending at Project Site or Asphalt Plant: Monitor the ground tire rubber content in the asphalt rubber binder on a daily basis based on one of the following methods:

1. Record the weight of the ground tire rubber used and the number of gallons of asphalt rubber binder produced. Calculate the percentage of rubber used and confirm that the minimum rubber requirements are met. Use the unit weight per gallon for the various types of asphalt rubber binder shown in Table 336-1 for the calculations.

2. Record the weight of the ground tire rubber used and the number of gallons of asphalt binder used. Calculate the percentage of rubber used and confirm that the minimum rubber requirements are met.

336-6 Use of Excess Asphalt Rubber.

The Contractor may use excess asphalt rubber in other asphalt concrete mixes requiring the use of a PG 67-22 binder by blending with straight PG 67-22 binder so that the total amount of ground tire rubber in the binder is less than 2.0%. The Contractor may use excess asphalt rubber in asphalt concrete mixtures requiring the use of a recycling agent in a recycled mixture by blending with a recycling agent in such proportions that the total amount of ground tire rubber in the recycling agent is less than 1.0%.

336-7 Certification Requirements for Blending at Suppliers Terminal:

Where blending the asphalt rubber binder at the supplier's terminal, the supplier shall furnish certification on the bill of lading for each load delivered to the project site or asphalt plant that includes: the quantity of asphalt rubber binder, the asphalt rubber binder type, the customer name, the delivery location, and a statement that the asphalt rubber binder has been produced in accordance with and meets the requirements of Section 336. In addition, include, with the certification, copies of the certifications for the asphalt binder and ground tire rubber, as specified in 916-1.3.6 and 919-6, respectively.

336-8 Basis of Payment.

Payment for Asphalt Rubber Binder will be included in Sections 337 and 341, as appropriate.

337 ASPHALT CONCRETE FRICTION COURSES.
(REV 12-2-11) (FA 2-6-12) (7-12)

SECTION 337 (Pages 294 - 304) is deleted and the following substituted:

SECTION 337
ASPHALT CONCRETE FRICTION COURSES

337-1 Description.

Construct an asphalt concrete friction course pavement with the type of mixture specified in the Contract, or when offered as alternates, as selected. This Section specifies mixes designated as FC-5, FC-9.5, and FC-12.5.

Meet the plant and equipment requirements of Section 320, as modified herein. Meet the general construction requirements of Section 330, as modified herein.

337-2 Materials.

337-2.1 General Requirements: Meet the requirements specified in Division III as modified herein. The Engineer will base continuing approval of material sources on field performance. Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, if available, is: www.dot.state.fl.us/Specificationsoffice/implemented/URLinSpecs/files/WarmMixAsphalt.pdf .

337-2.2 Asphalt Binder: Meet the requirements of Section 336, and any additional requirements or modifications specified herein for the various mixtures. When called for in the Contract Documents, use a PG 76-22 asphalt binder meeting the requirements of 916-1. For projects with a total quantity of FC-5, FC-9.5, or FC-12.5 less than 500 tons, the Contractor may elect to substitute a PG 76-22 for the ARB-12 or ARB-5, meeting the requirements of 916-1.

337-2.3 Coarse Aggregate: Meet the requirements of Section 901, and any additional requirements or modifications specified herein for the various mixtures.

337-2.4 Fine Aggregate: Meet the requirements of Section 902, and any additional requirements or modifications specified herein for the various mixtures.

337-2.5 Hydrated Lime: Meet the requirements of AASHTO M 303, Type 1.

Provide certified test results for each shipment of hydrated lime indicating compliance with the specifications.

337-2.6 Liquid Anti-strip Additive: Meet the requirements of 916-5 and be listed on the Department's Qualified Products List (QPL).

337-2.7 Fiber Stabilizing Additive (Required for FC-5 only): Use either a mineral or cellulose fiber stabilizing additive. Meet the following requirements:

337-2.7.1 Mineral Fibers: Use mineral fibers (made from virgin basalt, diabase, or slag) treated with a cationic sizing agent to enhance the disbursement of the fiber, as well as to increase adhesion of the fiber surface to the bitumen. Meet the following requirements for physical properties:

1. Size Analysis
   - Average fiber length: 0.25 inch (maximum)
   - Average fiber thickness: 0.0002 inch (maximum)
2. Shot Content (ASTM C612)
   - Percent passing No. 60 Sieve: 90 - 100
   - Percent passing No. 230 Sieve: 65 - 100

Provide certified test results for each batch of fiber material indicating compliance with the above tests.

337-2.7.2 Cellulose Fibers: Use cellulose fibers meeting the following requirements:

1. Fiber length: 0.25 inch (maximum)
2. Sieve Analysis
   - a. Alpine Sieve Method
     - Percent passing No. 100 sieve: 60-80
   - b. Ro-Tap Sieve Method
     - Percent passing No. 20 sieve: 80-95
     - Percent passing No. 40 sieve: 45-85

Percent passing No. 100 sieve: 5-40

3. Ash Content: 18% non-volatiles (plus or minus±5%)
4. pH: 7.5 (plus or minus±1.0)
5. Oil Absorption: 5.0% (plus or minus±1.0) (times fiber weight)
6. Moisture Content: 5.0% by weight (maximum)

Provide certified test results for each batch of fiber material indicating compliance with the above tests.

337-3 General Composition of Mixes.

337-3.1 General: Use a bituminous mixture composed of aggregate (coarse, fine, or a mixture thereof), asphalt binder, and in some cases, fibers and/or hydrated lime. Size, uniformly grade and combine the aggregate fractions in such proportions that the resulting mix meets the requirements of this Section.

337-3.2 Specific Component Requirements by Mix:

337-3.2.1 FC-5:

337-3.2.1.1 Aggregates: Use an aggregate blend which consists of either 100% crushed granite, 100% crushed Oolitic limestone or 100% other crushed materials (as approved by the Engineer for friction courses per Rule 14-103.005, Florida Administrative Code).

Crushed limestone from the Oolitic formation may be used if it contains a minimum of 12% silica material as determined by FM 5-510 and the Engineer grants approval of the source prior to its use.

A list of aggregates approved for use in friction course may be available on the Department's website. The URL for obtaining this information, if available, is:
www.dot.state.fl.us/statematerialsoffice/quality/programs/qualitycontrol/materialslistings/sources/frictioncourse.pdf .

337-3.2.1.2 Asphalt Binder: Use an ARB-12 asphalt rubber binder. If called for in the Contract Documents, use a PG 76-22 asphalt binder.

337-3.2.1.3 Hydrated Lime: Add the lime at a dosage rate of 1.0% by weight of the total dry aggregate to mixes containing granite.

337-3.2.1.4 Liquid Anti-strip Additive: Use a liquid anti-strip additive at a rate of 0.5% by weight of the asphalt binder for mixtures containing limestone aggregate. Other rates of anti-strip additive may be used upon approval of the Engineer.

337-3.2.1.5 Fiber Stabilizing Additive: Add either mineral fibers at a dosage rate of 0.4% by weight of the total mix, or cellulose fibers at a dosage rate of 0.3% by weight of total mix.

337-3.2.2 FC-9.5 and FC-12.5:

337-3.2.2.1: Aggregates: Use an aggregate blend that consists of crushed granite, crushed Oolitic limestone, other crushed materials (as approved by the Engineer for friction courses per Rule 14-103.005, Florida Administrative Code), or a combination of the above. Crushed limestone from the Oolitic formation may be used if it contains a minimum of 12% silica material as determined by FM 5-510 and the Engineer grants approval of the source prior to its use. As an exception, mixes that contain a minimum of 60% crushed granite may either contain: 1) up to 40% fine aggregate from other sources or 2) a combination of up to 20% RAP and the remaining fine aggregate

from other sources.

A list of aggregates approved for use in friction course may be available on the Department's website. The URL for obtaining this information, if available, is:
www.dot.state.fl.us/statematerialsoffice/quality/programs/qualitycontrol/materialslistings/sources/frictioncourse.pdf .

337-3.2.2.2: Asphalt Binder: Use an ARB-5 asphalt rubber binder. If called for in the Contract Documents, use a PG 76-22 asphalt binder.

337-3.3 Grading Requirements:

337-3.3.1 FC-5: Use a mixture having a gradation at design within the ranges shown in Table 337-1.

Table 337-1
FC-5 Gradation Design Range

3/4 inch	1/2 inch	3/8 inch	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
100	85-100	55-75	15-25	5-10	--	--	--	--	2-4

337-3.3.2 FC-9.5: Meet the design gradation requirements for a SP-9.5 Superpave fine mix as defined in 334-3.2.2.

337-3.3.3 FC-12.5: Meet the design gradation requirements for a SP-12.5 Superpave fine mix as defined in 334-3.2.2.

337-4 Mix Design.

337-4.1 FC-5: The Department will design the FC-5 mixtures. Furnish the materials and all appropriate information (source, gradation, etc.) as specified in 334-3.2.7. The Department will have two weeks to design the mix.

The Department will establish the design binder content for FC-5 within the following ranges based on aggregate type:

Aggregate Type	Binder Content
Crushed Granite	5.5 - 7.0
Crushed Limestone (Oolitic)	6.5 - 8.0

337-4.2 FC-9.5 and FC-12.5: Provide a mix design conforming to the requirements of 334-3.2 unless otherwise designated in the plans. Develop the mix design using an ARB-5 or PG 76-22 asphalt binder if called for in the Contract Documents.

337-4.3 Revision of Mix Design: For FC-5, FC-9.5 and FC-12.5, meet the requirements of 334-3.3. For FC-5, all revisions must fall within the gradation limits defined in Table 337-1.

337-5 Contractor's Process Control.

Provide the necessary process control of the friction course mix and construction in accordance with the applicable provisions of 320-2, 330-2 and 334-4.

The Engineer will monitor the spread rate periodically to ensure uniform thickness. Provide quality control procedures for daily monitoring and control of spread rate variability. If the spread rate varies by more than 5% of the spread rate set by the

Engineer in accordance with 337-8, immediately make all corrections necessary to bring the spread rate into the acceptable range.

337-6 Acceptance of the Mixture.

337-6.1 FC-9.5 and FC-12.5: Meet the requirements of 334-5.

337-6.2 FC-5: Meet the requirements of 334-5 with the following exceptions:

1. The mixture will be accepted with respect to gradation ($P_{-3/8}$, P_{-4}, and P_{-8}), and asphalt binder content (P_b) only.

2. Testing in accordance with AASHTO T 312-11 and FM 1-T 209 (and conditioning prior to testing) will not be required as part of 334-5.1.1.

3. The standard LOT size of FC-5 will be 2,000 tons, with each LOT subdivided into four equal sublots of 500 tons each.

4. The Between-Laboratory Precision Values described in Table 334-6 are modified to include ($P_{-3/8}$, P_{-4}, and P_{-8}) with a maximum difference per FM 1-T 030 (Figure 2).

5. Table 334-5 (Master Production Range) is replaced by Table 337-2.

6. The mixture will be accepted on the roadway with respect to surface tolerance in accordance with 334-5.8. No density testing will be required for these mixtures.

Table 337-2
FC-5 Master Production Range

Characteristic	Tolerance (1)
Asphalt Binder Content (%)	Target ± 0.60
Passing 3/8 inch Sieve (%)	Target ± 7.50
Passing No. 4 Sieve (%)	Target ± 6.00
Passing No. 8 Sieve (%)	Target ± 3.50

(1) Tolerances for sample size of n = 1 from the verified mix design

337-6.2.1 Individual Test Tolerances for FC-5 Production: Terminate the LOT if any of the following Quality Control failures occur:

1) An individual test result of a sublot for asphalt binder content does not meet the requirements of Table 337-2,

2) Two consecutive test results for gradation on any of the following sieve sizes ($P_{-3/8}$, P_{-4}, and P_{-8}) do not meet the requirements of Table 337-2,

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the Quality Control Manager(s) and/or Asphalt Plant Level II technician(s) responsible for the decision to resume production after a quality control failure, as identified in 105-8.6.4. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production until appropriate corrections have been made. Inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a Quality Control failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future Quality Control failures.

Address any material represented by a failing test result in accordance with 334-5.9.5. Any LOT terminated under this Subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 337-12.3) for each quality characteristic.

337-7 Special Construction Requirements.

337-7.1 Hot Storage of FC-5 Mixtures: When using surge or storage bins in the normal production of FC-5, do not leave the mixture in the surge or storage bin for more than one hour.

337-7.2 Longitudinal Grade Controls for Open-Graded Friction Courses: On FC-5, use either longitudinal grade control (skid, ski or traveling stringline) or a joint matcher.

337-7.3 Temperature Requirements for FC-5:

337-7.3.1 Air Temperature at Laydown: Spread the mixture only when the air temperature (the temperature in the shade away from artificial heat) is at or above 65ºF. As an exception, place the mixture at temperatures no lower than 60ºF, only when approved by the Engineer based on the Contractor's demonstrated ability to achieve a satisfactory surface texture and appearance of the finished surface. The minimum ambient temperature may be further reduced to 55ºF when using warm mix technology, if agreed to by both the Engineer and the Contractor.

337-7.3.2 Temperature of the Mix: Heat and combine the asphalt binder and aggregate in a manner to produce a mix having a temperature, when discharged from the plant, meeting the requirements of 320-6.3. Meet all requirements of 330-6.1.3 at the roadway. The target mixing temperature shall be established at 320ºF for mixtures utilizing ARB-12 asphalt binder. For mixtures utilizing PG 76-22 asphalt binder, the target mixing temperature shall be established by the Contractor. The target mixing temperature may be reduced when using warm mix technology.

337-7.4 Compaction of FC-5: Provide two, static steel-wheeled rollers, with an effective compactive weight in the range of 135 to 200 PLI, determined as follows:

$$\text{PLI} = \frac{\text{Total Weight of Roller (pounds)}}{\text{Total Width of Drums (inches)}}$$

(Any variation of this equipment requirement must be approved by the Engineer.) Establish an appropriate rolling pattern for the pavement in order to effectively seat the mixture without crushing the aggregate. In the event that the roller begins to crush the aggregate, reduce the number of coverages or the PLI of the rollers. If the rollers continue to crush the aggregate, use a tandem steel-wheel roller weighing not more than 135 lb. per linear inch (PLI) of drum width.

337-7.5 Temperature Requirements for FC-9.5 and FC-12.5:

337-7.5.1 Air Temperature at Laydown: Spread the mixture only when the air temperature (the temperature in the shade away from artificial heat) is at or above 45ºF. The minimum ambient temperature may be reduced by 5ºF when using warm mix technology, if agreed to by both the Engineer and the Contractor.

337-7.5.2 Temperature of the Mix: Heat and combine the asphalt binder and aggregate in a manner to produce a mix having a temperature, when discharged from the plant, meeting the requirements of 320-6.3. Meet all requirements of 330-6.1.3 at the roadway.

337-7.6 Prevention of Adhesion: To minimize adhesion to the drum during the rolling operations, the Contractor may add a small amount of liquid detergent to the water in the roller.

At intersections and in other areas where the pavement may be subjected to cross-traffic before it has cooled, spray the approaches with water to wet the tires of the approaching vehicles before they cross the pavement.

337-7.7 Transportation Requirements of Friction Course Mixtures: Cover all loads of friction course mixtures with a tarpaulin, or waterproof cover, meeting requirements of 320-7.

337-7.8 Asphalt Rubber Binder Requirements: Meet the requirements of Section 336 Asphalt Rubber Binder, particularly noting testing and action requirements to be met at the project site.

337-8 Thickness of Friction Courses.

337-8.1 FC-12.5 and FC-9.5: The thickness of the friction course layer will be the plan thickness as shown in the Contract Documents. For construction purposes, the plan thickness will be converted to spread rate as defined in 334-1.4.

Plan quantities are based on a G_{mm} of 2.540, corresponding to a spread rate of 110 lbs. per square yard per inch. Pay quantities will be based on the actual maximum specific gravity of the mix being used.

337-8.2 FC-5: The total thickness of the FC-5 layer will be the plan thickness as shown in the Contract Documents. For construction purposes, the plan thickness will be converted to spread rate based on the combined aggregate bulk specific gravity of the asphalt mix being used as shown in the following equation:

$$\text{Spread rate (lbs. per square yard)} = t \times G_{sb} \times 40.5$$

Where: t = Thickness (in.) (Plan thickness)

G_{sb} = Combined aggregate bulk specific gravity from the verified mix design

The weight of the mixture shall be determined as provided in 320-3.2.

Plan quantities are based on a G_{sb} of 2.635, corresponding to a spread rate of 80 lbs. per square yards. Pay quantities will be based on the actual combined aggregate bulk specific gravity (G_{sb}) of the mix being used.

337-9 Special Equipment Requirements for FC-5.

337-9.1 Fiber Supply System: Use a separate feed system to accurately proportion the required quantity of mineral fibers into the mixture in such a manner that uniform distribution is obtained. Interlock the proportioning device with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes. Control the proportion of fibers to within plus or minus 10% of the amount of fibers required. Provide flow indicators or sensing devices for the fiber system, interlocked with plant controls so that the mixture production will be interrupted if

introduction of the fiber fails.

When a batch plant is used, add the fiber to the aggregate in the weigh hopper or as approved and directed by the Engineer. Increase the batch dry mixing time by 8 to 12 seconds, or as directed by the Engineer, from the time the aggregate is completely emptied into the pugmill. Ensure that the fibers are uniformly distributed prior to the addition of asphalt rubber into the pugmill.

When a drum-mix plant is used, add and uniformly disperse the fiber with the aggregate prior to the addition of the asphalt rubber. Add the fiber in such a manner that it will not become entrained in the exhaust system of the drier or plant.

337-9.2 Hydrated Lime Supply System: For FC-5 mixes containing granite, use a separate feed system to accurately proportion the required quantity of hydrated lime into the mixture in such a manner that uniform coating of the aggregate is obtained prior to the addition of the asphalt rubber. Add the hydrated lime in such a manner that it will not become entrained in the exhaust system of the drier or plant. Interlock the proportioning device with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes and to ensure that all mixture produced is properly treated with hydrated lime. Control the proportion of hydrated lime to within plus or minus 10% of the amount of hydrated lime required. Provide and interlock flow indicators or sensing devices for the hydrated lime system with plant controls so that the mixture production will be interrupted if introduction of the hydrated lime fails. The addition of the hydrated lime to the aggregate may be accomplished by Method (A) or (B) as follows:

337-9.2.1 Method (A) - Dry Form: Add hydrated lime in a dry form to the mixture according to the type of asphalt plant being used.

When a batch plant is used, add the hydrated lime to the aggregate in the weigh hopper or as approved and directed by the Engineer. Increase the batch dry mixing time by eight to twelve seconds, or as directed by the Engineer, from the time the aggregate is completely emptied into the pugmill. Uniformly distribute the hydrated lime prior to the addition of asphalt rubber into the pugmill.

When a drum-mix plant is used, add and uniformly disperse the hydrated lime to the aggregate prior to the addition of the asphalt rubber. Add the hydrated lime in such a manner that it will not become entrained in the exhaust system of the drier or plant.

337-9.2.2 Method (B) - Hydrated Lime/Water Slurry: Add the required quantity of hydrated lime (based on dry weight) in a hydrated lime/water slurry form to the aggregate. Provide a solution consisting of hydrated lime and water in concentrations as directed by the Engineer. Use a plant equipped to blend and maintain the hydrated lime in suspension and to mix it with the aggregates uniformly in the proportions specified.

337-9.3 Hydrated Lime Pretreatment: For FC-5 mixes containing granite, as an alternative to 337-9.2, pretreat the aggregate with hydrated lime prior to incorporating the aggregate into the mixture. Use a feed system to accurately proportion the aggregate and required quantity of hydrated lime, and mix them in such a manner that uniform coating of the aggregate is obtained. Control the proportion of hydrated lime to within plus or minus 10% of the amount required. Aggregate pretreated with hydrated lime in this manner shall be incorporated into the asphalt mixture within 45 days of pretreatment.

337-9.3.1 Hydrated Lime Pretreatment Methods: Pretreat the aggregate

using one of the following two methods:

Pretreatment Method A – Dry Form: Add the required quantity of hydrated lime in a dry form to the aggregate. Assure that the aggregate at the time of pretreatment contains a minimum of 3% moisture over saturated surface dry (SSD) conditions. Utilize equipment to accurately proportion the aggregate and hydrated lime and mix them in such a manner as to provide a uniform coating.

Pretreatment Method B – Hydrated Lime/Water Slurry: Add the required quantity of hydrated lime (based on dry weight) in a hydrated lime/water slurry form to the aggregate. Provide a solution consisting of hydrated lime and water in a concentration to provide effective treatment. Use equipment to blend and maintain the hydrated lime in suspension, to accurately proportion the aggregate and hydrated lime/water slurry, and to mix them to provide a uniform coating.

337-9.3.2 Blending Quality Control Records: Maintain adequate Quality Control records for the Engineer's review for all pretreatment activities. Include as a minimum the following information (for each batch or day's run of pretreatment): pretreatment date, aggregate certification information, certified test results for the hydrated lime, aggregate moisture content prior to blending, as-blended quantities of aggregate and hydrated lime, project number, customer name, and shipping date.

337-9.3.3 Certification: In addition to the aggregate certification, provide a certification with each load of material delivered to the HMA plant, that the material has been pretreated in conformance with these specifications. Include also the date the material was pretreated.

337-10 Failing Material.

Meet the requirements of 334-5.9. For FC-5, use the Master Production Range defined in Table 337-2 in lieu of Table 334-5.

337-11 Method of Measurement.

For the work specified under this Section (including the pertinent provisions of Sections 320 and 330), the quantity to be paid for will be the weight of the mixture, in tons. The pay quantity will be based on the project average spread rate, limited to a maximum of 105% of the spread rate determined in accordance with 337-8 or as set by the Engineer. The project average spread rate is calculated by totaling the arithmetic mean of the average daily spread rate values for each layer.

The bid price for the asphalt mix will include the cost of the asphalt binder (asphalt rubber (or polymer), asphalt cement, ground tire rubber, anti-stripping agent, blending and handling) and the tack coat application as directed in 300-8, as well as fiber stabilizing additive and hydrated lime (if required). There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix. The weight will be determined as provided in 320-3.2 (including the provisions for the automatic recordation system).

Prepare a Certification of Quantities, using the Department's current approved form, for the certified asphalt concrete friction course pay item. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the estimate cut-off or as directed by the Engineer, based on the quantity of asphalt produced and accepted on the roadway per Contract. The certification must include the Contract Number, FPID Number, Certification Number, Certification Date, period represented by

Certification and the tons produced for each asphalt pay item.

337-12 Basis of Payment.

337-12.1 General: Price and payment will be full compensation for all the work specified under this Section (including the applicable requirements of Sections 320 and 330).

Based upon the quality of the material, a pay adjustment will be applied to the bid price of the material as determined on a LOT by LOT basis. The pay adjustment will be assessed by calculating a Pay Factor for individual quality characteristics. The pay adjustment will be computed by multiplying a Composite Pay Factor for the LOT by the bid price per ton. Perform all calculations with the Department's Asphalt Plant - Pay Factor Worksheets.

337-12.2 FC-9.5 and FC-12.5: Meet the requirements of 334-8.

337-12.3 FC-5: Meet the requirements of 334-8 with the following exceptions:

1. Pay factors will be calculated for asphalt binder content and the percentages passing the 3/8 inch, the No. 4, and the No. 8 sieves only.

2. The Small Quantity Pay Table for FC-5 Mixtures replaces the Small Quantity Pay Table for Dense Graded Mixtures in the Department's Asphalt Plant - Pay Factor Worksheets.

3. Table 337-3 replaces Table 334-7.

4. The Composite Pay Factor equation in 334-8.3 is replaced with the following:

$$CPF = [(0.20 \times PF\ 3/8\ inch) + (0.30 \times PF\ No.\ 4) + (0.10 \times PF\ No.\ 8) + (0.40 \times PF\ AC)]$$

Table 337-3
Specification Limits for FC-5

Quality Characteristic	Specification Limits
Asphalt Binder Content (%)	Target ± 0.45
Passing 3/8 inch sieve (%)	Target ± 6.00
Passing No. 4 sieve (%)	Target ± 4.50
Passing No. 8 sieve (%)	Target ± 2.50

337-12.4 Payment: Payment will be made under:

Item No. 337- 7- Asphaltic Concrete Friction Course - per ton.

339 MISCELLANEOUS ASPHALT PAVEMENT – METHOD OF MEASUREMENT.

(REV 5-19-11) (FA 8-4-11) (1-12)

ARTICLE 339-7 (Page 313) is deleted and the following substituted:

339-7 Method of Measurement.

The quantity to be paid for will be the weight, in tons, determined by an electronic weighing system as described in 320-3.2. The pay quantity will be based on the average spread rate of the area shown on the plans or authorized by the Engineer or dimensions for the project, limited to a maximum of 105% of the plan thickness quantity. For calculation, a weight of 100 lbs/yd^2 per inch thickness of asphalt will be used.

Prepare a Certification of Quantities, using the Department's current approved form, for the certified miscellaneous asphalt pavement pay item. Submit this certification to the Engineer no later than Twelve O'clock noon Monday after the estimate cut-off or as directed by the Engineer, based on the quantity of asphalt produced and accepted on the Contract. The certification must include the Contract Number, FPID Number, Certification Number, Certification Date, period represented by Certification and the tons produced for each asphalt pay item.

341 ASPHALT RUBBER MEMBRANE INTERLAYER.

(REV 7-29-09) (FA 8-11-09) (1-10)

ARTICLE 341-4 (Pages 314 and 315) is deleted and the following substituted:

341-4 Contractor's Quality Control.

Provide the necessary quality control of the asphalt rubber binder, and interlayer construction in accordance with the Contract requirements. Provide in the Quality Control Plan procedures for monitoring and controlling of rate of application. If the rate of application varies by more than 5% from the rate set by the Engineer in accordance with 341-6, immediately make all corrections necessary to bring the spread rate into the acceptable range. The Engineer may take additional measurements at any time. The Engineer will randomly check the Contractor's measurement to verify the spread rate.

ARTICLE 341-5 (Page 315) is deleted and the following substituted:

341-5 Preparation of Asphalt Rubber Binder.

Meet the requirements of Section 336 Asphalt Rubber Binder, particularly noting testing and action requirements to be met at the project site/asphalt plant. Combine the materials as rapidly as possible for such a time and at such a temperature that the consistency of the binder approaches that of a semi-fluid material. The Engineer will be the sole judge of when the material has reached application consistency and will determine if an extender oil or diluent is needed for that purpose. After reaching the proper consistency, proceed with application immediately. Never hold the mixture at temperatures over 350^{o}F for more than six hours after reaching that temperature.

346 PORTLAND CEMENT CONCRETE.
(REV 3-28-11) (FA 5-18-11) (1-12)

SECTION 346 (Pages 317 - 340) is deleted and the following substituted:

SECTION 346
PORTLAND CEMENT CONCRETE

346-1 Description.

Use concrete composed of a mixture of portland cement, aggregate, water, and, where specified, admixtures, pozzolan and ground granulated blast furnace slag. Deliver the portland cement concrete to the site of placement in a freshly mixed, unhardened state.

Obtain concrete from a plant that is currently on the list of Producers with Accepted Quality Control Programs. Producers seeking inclusion on the list shall meet the requirements of 105-3. If the concrete production facility's Quality Control Plan is suspended, the Contractor is solely responsible to obtain the services of another concrete production facility with an accepted Quality Control Plan or await the re-acceptance of the affected concrete production facility's Quality Control Plan prior to the placement of any further concrete on the project. There will be no changes in the contract time or completion dates. Bear all delay costs and other costs associated with the concrete production facility's Quality Control Plan acceptance or re-acceptance.

346-2 Materials.

346-2.1 General: Meet the following requirements:

Coarse Aggregate	Section 901
Fine Aggregate*	Section 902
Portland Cement	Section 921
Water	Section 923
Admixtures**	Section 924
Pozzolans and Slag	Section 929

*Use only silica sand except as provided in 902-5.2.3.

**Use products listed on the Department's Qualified Products List (QPL).

Do not use materials containing hard lumps, crusts or frozen matter, or that is contaminated with dissimilar material.

346-2.2 Types of Cement: Unless a specific type of cement is designated elsewhere, use Type I, Type P, Type IS, Type II, Type II (MH) or Type III cement in all classes of concrete. Use Type II (MH) for all mass concrete elements.

Use only the types of cements designated for each environmental condition in structural concrete. A mix design for a more aggressive environment may be substituted for a lower aggressive environmental condition.

TABLE 1
BRIDGE SUPERSTRUCTURES

Component	Slightly Aggressive Environment	Moderately Aggressive Environment	Extremely Aggressive Environment
Precast Superstructure and Prestressed Elements	Type I or Type III	Type I, Type II, Type III, Type IP, or Type IS	Type II (MH)
Cast In Place	Type I	Type I, Type II, Type IP, or Type IS	Type II (MH)
BRIDGE SUBSTRUCTURE, DRAINAGE STRUCTURES AND OTHER STRUCTURES			
All Elements	Type I or Type III	Type I, Type II, Type IP, or Type IS	Type II (MH)

346-2.3 Pozzolans and Slag: Use fly ash or slag materials as a cement replacement, on an equal weight replacement basis, in all classes of concrete with the following limitations:

(1) Mass Concrete:

a. Fly Ash - Ensure that the quantity of cement replaced with fly ash is 18% to 50% by weight, except where the core temperature is expected to rise above 165°F. In that case, ensure that the percentage of fly ash is 35% to 50% by weight.

b. Slag - Ensure that the quantity of cement replaced with slag is 50% to 70% by weight. Ensure that slag is 50% to 55% of total cementitious content by weight when used in combination with silica fume, ultrafine fly ash and/or metakaolin.

c. Fly Ash and Slag - Ensure that there is at least 20% fly ash by weight and 40% portland cement by weight for mixes containing portland cement, fly ash and slag.

(2) Drilled Shaft:

a. Fly Ash - Ensure that the quantity of cement replaced with fly ash is 33% to 37% by weight.

b. Slag - Ensure that the quantity of cement replaced with slag is 58% to 62% by weight.

(3) Precast Concrete – Ensure that the precast concrete has a maximum of 25% fly ash or a maximum of 70% slag. In extremely aggressive environments, ensure that the precast concrete has a minimum of 18% fly ash or a minimum of 50% slag.

(4) For all other concrete uses not covered in (1), (2) and (3) above,

a. Fly Ash - Ensure that the quantity of cement replaced with fly ash is 18% to 22% by weight.

b. Slag - Ensure that the quantity of cement replaced with slag is 25% to 70% for slightly and moderately aggressive environments and 50% to 70% by weight when used in extremely aggressive environments. Ensure that slag is 50% to 55% of total cementitious content by weight when used in combination with silica fume, ultra fine fly ash and/or metakaolin.

c. Fly Ash and Slag - Ensure that there is at least 20% fly ash by weight and 40% portland cement by weight for mixes containing portland cement, fly ash and slag.

d. Class I and Class II concrete, excluding Class II (Bridge Deck), are not required to meet the minimum fly ash or slag requirements in slightly and moderately aggressive environments. The fly ash content shall be less than or equal to 25% by weight of cement and the slag content shall be less than or equal to 70% by weight of cement.

(5) Blended Cements:

a. Type IS - Ensure that the quantity of slag in Type IS is less than or equal to 70% by weight.

b. Type IP - Ensure that the quantity of the pozzolan in Type IP is less than or equal to 40% by weight.

(6) Silica Fume, Metakaolin and Ultrafine Fly Ash - When silica fume, metakaolin or ultrafine fly ash is used, it must be used in combination with fly ash or slag.

a. Silica Fume - Ensure that the quantity of cementitious material replaced with silica fume is 3% to 9% by weight.

b. Metakaolin - Ensure that the quantity of cementitious material replaced with metakaolin is 8% to 12% by weight.

c. Ultrafine Fly Ash - Ensure that the quantity of cementitious material replaced with ultrafine fly ash is 8% to 12% by weight.

d. Cure in accordance with the manufacturer's recommendation and as approved by the Engineer.

346-2.4 Coarse Aggregate Gradation: Produce all concrete using Size No. 57, 67 or 78 coarse aggregate. With the Engineer's approval, Size No. 8 or Size No. 89 may be used either alone or blended with Size No. 57, 67 or 78 coarse aggregate. The Engineer will consider requests for approval of other gradations individually. Submit sufficient statistical data to establish production quality and uniformity of the subject aggregates, and establish the quality and uniformity of the resultant concrete. Furnish aggregate gradations sized larger than nominal maximum size of 1.5 inch as two components.

For Class I and Class II, excluding Class II (Bridge Deck), the coarse and fine aggregate gradation requirements set forth in Sections 901 and 902 are not applicable and the aggregates may be blended; however, the aggregate sources must be approved by the Department. Do not blend the aggregate if the size is smaller than Size No. 78.

346-2.5 Admixtures: Use admixtures in accordance with the requirements of this subarticle. Chemical admixtures not covered in this subarticle may be approved by the Department. Submit statistical evidence supporting successful laboratory and field trial mixes which demonstrate improved concrete quality or handling characteristics.

Use admixtures in accordance with the manufacturer's recommended dosage rate. Do not use admixtures or additives containing calcium chloride (either in the raw materials or introduced during the manufacturing process) in reinforced concrete.

346-2.5.1 Water-Reducer/Water-Reducer Retardant Admixtures: When a water-reducing admixture is used, meet the requirements of a Type A. When a water-reducing and retarding admixture is used, meet the requirements of a Type D.

346-2.5.2 Air Entrainment Admixtures: Use an air entraining admixture in all concrete mixes except counterweight concrete. For precast concrete products, the use of air entraining admixture is optional for Class I and Class II concrete.

346-2.5.3 High Range Water-Reducing Admixtures:

346-2.5.3.1 General: When a high range water-reducing admixture is used, meet the requirements of a Type F or Type I. When a high range water-reducing and retarding admixture is used, meet the requirements of a Type G or Type II. Do not use Type I, II, F or G admixtures in drilled shaft concrete. When silica fume or metakaolin is incorporated into a concrete mix design, the use of a high range water-reducing admixture Type I, II, F or G is mandatory.

346-2.5.3.2 Flowing Concrete Admixtures for Precast/Prestressed Concrete: Use a Type I, II, F or G admixture for producing flowing concrete. If Type F or G admixture is used, verify the distribution of aggregates in accordance with ASTM C 1610 except allow for minimal vibration for consolidating the concrete. The maximum allowable difference between the static segregation is less than or equal to 15 percent. Add the flowing concrete admixtures at the concrete production facility.

346-2.5.4 Corrosion Inhibitor Admixture: Use only with concrete containing Type II cement, or Type II (MH) cement, and a water-reducing retardant admixture, Type D, or High Range Water-Reducer retarder admixture, Type G, to normalize the setting time of concrete. Ensure that all admixtures are compatible with the corrosion inhibitor admixture.

346-2.5.5 Accelerating Admixture for Precast Concrete: The use of non-chloride admixtures Type C or Type E is allowed in the manufacturing of precast concrete products that are used in slightly aggressive environments.

346-3 Classification, Strength, Slump and Air Content.

346-3.1 General: The separate classifications of concrete covered by this Section are designated as Class I, Class II, Class III, Class IV, Class V and Class VI. Strength, slump, and air content of each class are specified in Table 2.

Substitution of a higher class concrete in lieu of a lower class concrete may be allowed when the substituted concrete mixes are included as part of the Contractor's Quality Control Plan, or for precast concrete, the Precast Concrete Producer's Quality Control Plan. The substituted higher class concrete must meet or exceed the requirements of the lower class concrete and both classes must contain the same types of mix ingredients. When the compressive strength acceptance data is less than the minimum compressive strength of the higher design mix, notify the Engineer. Acceptance is based on the requirements in Table 2 for the lower class concrete.

TABLE 2

Class of Concrete	Specified Minimum Strength (28 day) (psi)	Target Slump Value (inches) (c)	Air Content Range (%)
STRUCTURAL CONCRETE			
I (a)	3,000	3 (b)	1.0 to 6.0
I (Pavement)	3,000	2	1.0 to 6.0
II (a)	3,400	3 (b)	1.0 to 6.0
II (Bridge Deck)	4,500	3 (b)	1.0 to 6.0

III (e)	5,000	3 (b)	1.0 to 6.0
III (Seal)	3,000	8	1.0 to 6.0
IV	5,500	3 (b) (d)	1.0 to 6.0
IV (Drilled Shaft)	4,000	8.5	0.0 to 6.0
V (Special)	6,000	3 (b) (d)	1.0 to 5.0
V	6,500	3 (b) (d)	1.0 to 5.0
VI	8,500	3 (b) (d)	1.0 to 5.0

(a) For precast three-sided culverts, box culverts, endwalls, inlets, manholes and junction boxes, the target slump value and air content will not apply. The maximum allowable slump is 6 inches, except as noted in (b). The Contractor is permitted to use concrete meeting the requirements of ASTM C 478 4,000 psi in lieu of Class I or Class II concrete for precast endwalls, inlets, manholes and junction boxes.

(b) The Engineer may allow a higher target slump when a Type F, G, I or II admixture is used, except when flowing concrete is used. The maximum target slump shall be 7 inches.

(c) For a reduction in the target slump for slip-form operations, submit a revision to the mix design to the Engineer.

(d) When the use of silica fume, ultrafine fly ash, or metakaolin is required as a pozzolan in Class IV, Class V, Class V (Special) or Class VI concrete, ensure that the concrete exceeds a resistivity of 29 KOhm-cm at 28 days, when tested in accordance with FM 5-578. Submit three 4 x 8 inch cylindrical test specimens to the Engineer for resistivity testing before mix design approval. Take the resistivity test specimens from the concrete of the laboratory trial batch or from the field trial batch of at least 3 yd^3. Verify the mix proportioning of the design mix and take representative samples of trial batch concrete for the required plastic and hardened property tests. Cure the field trial batch specimens similar to the standard laboratory curing methods. Submit the resistivity test specimens at least 7 days prior to the scheduled 28 day test. The average resistivity of the three cylinders, eight readings per cylinder, is an indicator of the permeability of the concrete mix.

(e) When precast three-sided culverts, box culverts, endwalls, inlets, manholes or junction boxes require a Class III concrete, the minimum cementitious materials is 470 lb/yd^3. Do not apply the air content range and the maximum target slump shall be 6 inches, except as allowed in (b).

346-3.2 Drilled Shaft Concrete: When drilled shaft concrete is placed in any wet shaft, provide concrete in accordance with the following specified slump loss requirements.

Test each load of concrete for slump to ensure the concrete is within the limits of 346-6.4. Ensure that the slump loss is gradual as evidenced by slump loss tests described below. The concrete elapsed time is the sum of the mixing and transit time, the placement time, the time required for removal of any temporary casing that causes or could cause the concrete to flow into the space previously occupied by the temporary casing and bolt/embedment installation.

346-3.2.1 Slump Loss Test Requirements: Provide slump loss tests before drilled shaft concrete operations begin, demonstrating that the drilled shaft concrete maintains a slump of at least 5 inches throughout the concrete elapsed time. Inform the Engineer at least 48 hours before performing such tests. Perform slump loss testing of the drilled shaft mix using personnel meeting the requirements of Section 105. The Engineer may require a new slump loss test in the event that the ambient temperature changes more than plus or minus 15°F, the environmental conditions change or the volume increases.

Perform the following procedures for slump loss tests:

(1) Begin all elapsed times when water is initially introduced into the mixer. Ensure that the initial slump does not exceed 10 inches.

(2) The slump loss test is performed at a temperature consistent with the highest ambient and concrete temperatures expected during actual concrete placement. This test may be used for lower ambient temperature placements without any admixture adjustments.

(3) Ensure that the mix is at least 3 cubic yards and is mixed in a truck mixer with a valid mixer identification card.

(4) After initial mixing, determine the slump, ambient and concrete temperatures and air content. Ensure that the concrete properties are within the required limits as specified in 346-3.1, Table 2.

(5) Verify the water to cementitious materials ratio and other delivery ticket data meet design mix requirements.

(6) Mix the concrete intermittently for 30 seconds every 5 minutes, at a speed greater than or equal to the midrange of the manufacturer's recommended mixing speed. When concrete is not being mixed, agitate the mixer at the midrange of the manufacturer's recommended agitating speed.

(7) Determine slump, ambient and concrete temperatures at 30 minute intervals until the slump is 5 inches or less. Remix the mix for one minute at the mixing speed of the mixer before these tests are run.

(8) Ensure that the concrete maintains a slump of at least 5 inches for the anticipated elapsed time.

(9) Cast cylinders to determine when 500 psi compressive strength is obtained for the purpose of transporting field samples to the laboratory.

(10) Obtain the Engineer’s approval of slump loss test results in terms of elapsed time before concrete placements.

346-3.3 Mass Concrete: When mass concrete is designated in the Contract Documents, provide an analysis of the anticipated thermal developments in the mass concrete elements for all expected project temperature ranges using the selected mix design, casting procedures, and materials.

Use a Specialty Engineer competent in the design and temperature control of concrete in mass elements. The Specialty Engineer shall follow the procedure outlined in Section 207 of the ACI Manual of Concrete Practice to formulate, implement, administer and monitor a temperature control plan, making adjustments as necessary to ensure compliance with the Contract Documents. The Specialty Engineer shall select the concrete design mix proportions that will generate the lowest maximum temperatures possible to ensure that a 35°F differential temperature between the concrete core and the

exterior surface is not exceeded. The mass concrete maximum allowable temperature is 180°F. If either the differential temperature or the maximum allowable temperature is exceeded, the Specialty Engineer shall be available for immediate consultation.

Describe the measures and procedures intended for use to maintain a temperature differential of 35°F or less between the interior core center and exterior surface(s) of the designated mass concrete elements during curing. Submit both the mass concrete mix design and the proposed mass concrete plan to monitor and control the temperature differential to the Engineer for acceptance. Provide temperature monitoring devices to record temperature development between the interior core center and exterior surface(s) of the elements in accordance with the accepted mass concrete plan.

The Specialty Engineer, or a qualified technician employed by the Specialty Engineer, must personally inspect and approve the installation of monitoring devices and verify that the process for recording temperature readings is effective for the first placement of each size and type mass component. Submit to the Engineer for approval the qualification of all technicians employed to inspect or monitor mass concrete placements. For placements other than the first, designate an employee(s) approved by the Specialty Engineer, as qualified to inspect monitoring device installation, to record temperature readings, to be in contact at all times with the Specialty Engineer if adjustments must be made as a result of the temperature differential or the maximum allowable temperature being exceeded, and to immediately implement adjustments to temperature control measures as directed by the Specialty Engineer. Read the monitoring devices and record the readings at intervals no greater than 6 hours. The readings will begin when the mass concrete placement is complete and continue until the maximum temperature differential and the temperature is reached and a decreasing temperature differential is confirmed as defined in the temperature control plan. Do not remove the temperature control mechanisms until the core temperature is within 50°F of the ambient temperature. Furnish a copy of all temperature readings to the Engineer as they are recorded, the determined temperature differentials and a final report within three days of completion of monitoring of each element.

If the 35°F differential or the 180°F maximum allowable temperature has been exceeded, take immediate action as directed by the Specialty Engineer to retard further growth of the temperature differential. Describe methods of preventing thermal shock in the temperature control plan. Use a Specialty Engineer to revise the previously accepted plan to ensure compliance on future placements. Do not place any mass concrete until the Engineer has accepted the mass concrete plan(s). When mass concrete temperature differentials or maximum allowable temperature has been exceeded, provide all analyses and test results deemed necessary by the Engineer for determining the structural integrity and durability of the mass concrete element, to the satisfaction of the Engineer. The Department will make no compensation, either monetary or time, for the analyses or tests or any impacts upon the project.

346-3.4 Flowing Concrete for Precast/Prestressed Concrete: Produce flowing concrete mix with target slump of 9 inches.

Subsequent to the laboratory trial batch, perform a field demonstration of the proposed mix design by production and placement of at least three batches, 3 yd^3 minimum size each, of concrete containing flowing concrete HRWR admixture. Take representative samples from each batch and perform slump, air content, density (unit

weight), and temperature tests on these samples. Cast specimens from each sample for compressive strength tests. Record the ambient air temperature during the test. Ensure that the concrete properties are within the required specification limits. The plants that are producing concrete with batch sizes of less than 3 yd^3 are required to produce and place at least a total amount of 9 yd^3 and perform the aforementioned tests on at least three randomly selected batches.

Determine the workability of the demonstration concrete batches by performing the slump tests on the samples taken at 15 minute intervals from each batch. Continue sampling and testing until the slump measures 6 inches or less. From the plot of slump versus time, determine the time for each batch when the slump is at 7.5 inches. The shortest time period determined from three consecutive batches, at 7.5 inches slump, is considered the cutoff time of the proposed concrete mix. For production concrete, ensure that the time between the batching and depositing of each load of concrete is less than the cutoff time of the mix and also does not exceed the allowable time limit specified in this Section.

Ensure that the demonstration concrete is mixed, delivered, placed, consolidated and cured in accordance with the proposed method and sequence. Produce the flowing concrete batches at slumps between 7.5 inches to 10.5 inches.

Perform inspection of the demonstration concrete during batching, delivery, placement and post placement. During placement, ensure that the concrete batches meet all plastic property requirements of the specifications and maintain their cohesive nature without excessive bleeding, segregation, or abnormal retardation.

Dispose of concrete produced for demonstration purposes at no expense to the Department. Subject to the Engineer's approval, the Contractor may incorporate this concrete into non-reinforced concrete items and may be included for payment, provided it meets Contract requirements for slump, entrained air, and strength.

After removal of the forms, perform the post-placement inspection of the in-place concrete. Observe for any signs of honeycombs, cracks, aggregate segregation or any other surface defects and ensure that the hardened concrete is free from these deficiencies. The Engineer may require saw cutting of the mock-up products to verify the uniform distribution of the aggregates within the saw cut surfaces and around the reinforcing steel and prestressing strands. The Engineer will require saw cutting of the demonstration mock-up products for plants that are demonstrating the use of the flowing concrete for the first time. Obtain core samples from different locations of mock-up products to inspect the aggregate distribution in each sample and compare it with the aggregate distribution of other core samples. Perform surface resistivity tests on the core samples or test cylinders at 28 days.

Submit the results of the laboratory trial batch tests and field demonstration of verified test data and inspection reports to the Engineer, along with certification stating that the results of the laboratory trial batch tests and field demonstration tests indicate that the proposed concrete mix design meets the requirements of the specifications. For the proposed mix design, state the anticipated maximum time limit between the batching and when the concrete of each batch is deposited during the production.

Upon the review and verification of the laboratory trial batch, field demonstration test data, inspection reports and contractor's certification statement, the Department will approve the proposed mix design.

The Department may approve proposed flowing concrete mixes, centrally mixed at the placement site, without the production of demonstration batches, provided that the proposed mix meets the following two criteria:

(1) A previously approved flowing concrete mix of the same class has demonstrated satisfactory performance under the proposed job placing conditions with a minimum of fifteen consecutive Department acceptance tests, which met all plastic and hardened concrete test requirements.

(2) The cementitious materials and chemical admixtures, including the flowing concrete HRWR admixture, used in the proposed mix are the same materials from the same source used in the previously approved mix, (1) above.

Do not produce or place concrete until the design mixes have been approved.

346-4 Composition of Concrete.

346-4.1 Master Proportion Table: Proportion the materials used to produce the various classes of concrete in accordance with Table 3:

TABLE 3

Class of Concrete	Minimum Total Cementitious Materials Content lb/yd^3	*Maximum Water to Cementitious Materials Ratio lb/lb
I	470	0.53
I (Pavement)	470	0.50
II	470**	0.53
II (Bridge Deck)	611	0.44
III	611**	0.44
III (Seal)	611	0.53
IV	658**	0.41***
IV (Drilled Shaft)	658**	0.41
V (Special)	752	0.37***
V	752	0.37***
VI	752	0.37***

*The calculation of the water to cementitious materials ratio (w/cm) is based on the total cementitious material including cement and any supplemental cementitious materials that are used in the mix.
**The maximum total cementitious materials for mass concrete is 752 lb/yd^3. In cases where a higher class of concrete is substituted for a lower class of concrete, the maximum total cementitious materials for mass concrete is limited to 752 lb/yd^3.
***When the use of silica fume or metakaolin is required, the maximum water to cementitious material ratio will be 0.35. When the use of ultrafine fly ash is required, the maximum water to cementitious material ratio will be 0.30.

346-4.2 Chloride Content Limits for Concrete Construction:

346-4.2.1 General: Use the following maximum chloride content limits for the concrete application and/or exposure environment shown:

TABLE 4		
Application/Exposure Environment		Maximum Allowable Chloride Content, lb/yd^3
Non Reinforced Concrete		No Test Needed
Reinforced Concrete	Slightly Aggressive Environment	0.70
	Moderately or Extremely Aggressive Environment	0.40
Prestressed Concrete		0.40

346-4.2.2 Control Level for Corrective Action: If chloride test results exceed the limits of Table 4, suspend concrete placement immediately for every mix design represented by the failing test results, until corrective measures are made. Perform an engineering analysis to demonstrate that the material meets the intended service life of the structure on all concrete represented by the failing chloride test results. Supply this information within 30 business days of the failing test results from a Professional Engineer, registered in the State of Florida and knowledgeable in the areas of corrosion and corrosion control.

346-5 Sampling and Testing Methods.

Perform concrete sampling and testing in accordance with the following methods:

TABLE 5	
Description	Method
Slump of Hydraulic Cement Concrete	ASTM C 143
Air Content of Freshly Mixed Concrete by the Pressure Method*	ASTM C 231
Air Content of Freshly Mixed Concrete by the Volumetric Method*	ASTM C 173
Making and Curing Test Specimens in the Field	ASTM C 31
Compressive Strength of Cylindrical Concrete Specimens**	ASTM C 39
Obtaining and Testing Drilled Core and Sawed Beams of Concrete	ASTM C 42
Early Sampling of Fresh Concrete from Revolving Drum Truck Mixers or Agitators	FM 5-501
Low Levels of Chloride in Concrete and Raw Materials	FM 5-516
Density (Unit Weight), Yield and Air Content (Gravimetric) of Concrete	ASTM C 138
Temperature of Freshly Mixed Portland Cement Concrete	ASTM C 1064

TABLE 5	
Description	Method
Sampling Freshly Mixed Concrete	ASTM C 172
Static Segregation of Self Consolidating Concrete using Column Techniques	ASTM C 1610
Slump Flow of Self Consolidating Concrete	ASTM C 1611
Passing Ability of Self Consolidating Concrete by J-Ring	ASTM C 1621
Concrete Resistivity as an Electrical Indicator of its Permeability	FM 5-578
*Use the same type of meter for QC tests as the Department uses for Verification testing. When using pressure type meters, use an aggregate correction factor determined by the concrete producer for each mix design to be tested. Record and certify test results for correction factors for each type of aggregate at the concrete production facility. **Use 4 x 8 or 6 x 12 inch cylinders for determination of the compressive strength.	

346-6 Control of Quality.

346-6.1 General: Develop a Quality Control Plan (QCP) as specified in Section 105. Meet the requirements of the approved QCP and Contract Documents. Ensure the QCP includes the necessary requirements to control the quality of the concrete.

Perform QC activities to ensure materials, methods, techniques, personnel, procedures and processes utilized during production meet the specified requirements. For precast/prestressed operations, ensure that the QC testing is performed by the producer.

Accept the responsibility for QC inspections on all phases of work. Ensure all materials and workmanship incorporated into the project meet the requirements of the Contract Documents.

When concrete plastic properties (slump, air content and temperature) could be significantly affected by handling between the point of delivery and the point of final placement, including the use of pumps, conveyor belts, troughs, chutes, barge transport or other means, include provisions in the QCP to sample the plastic concrete for all testing at the point of final placement.

Ensure the QCP includes any anticipated requirements for adjusting the concrete at the placement site. Include the testing procedures that will be implemented to control the quality of the concrete and ensure that concrete placed is within the tolerance range. Also, include provisions for the addition of water to concrete delivered to the placement site at designated level areas, to ensure the allowable amount of water stated on the concrete delivery ticket or the maximum water to cementitious materials ratio on the approved design mix are not exceeded. Ensure the anticipated ranges of jobsite water additions are described and the proposed methods of measuring water for concrete adjustments are included.

Failure to meet the requirements of this Specification or the QCP will automatically void the concrete portion of the QCP. To obtain QCP re-approval, implement corrective actions as approved by the Engineer. The Engineer may allow the Contractor to continue any ongoing concrete placement but the Engineer will not accept concrete for any new placement until the QCP re-approval is given by the Engineer.

346-6.2 Concrete Design Mix: Provide concrete that has been produced in accordance with a Department approved design mix, in a uniform mass free from balls and lumps. Discharge the concrete in a manner satisfactory to the Engineer. Perform

demonstration batches to ensure complete and thorough placements in complex elements, when requested by the Engineer.

Do not place concretes of different compositions such that the plastic concretes may combine, except where the plans require concrete both with and without silica fume, ultrafine fly ash, metakaolin or calcium nitrite in a continuous placement. Produce these concretes using separate design mixes. For example, designate the mix with calcium nitrite as the original mix and the mix without calcium nitrite as the redesigned mix. Ensure that both mixes contain the same cement, fly ash or slag, coarse and fine aggregates and compatible admixtures. Submit both mixes for approval as separate mix designs, both meeting all requirements of this Section. Ensure that the redesigned mix exhibits plastic and hardened qualities which are additionally approved by the Engineer as suitable for placement with the original mix. The Engineer will approve the redesigned mix for commingling with the original mix and for a specific project application only. Alternately, place a construction joint at the location of the change in concretes.

346-6.3 Delivery Certification: Ensure that an electronic delivery ticket is furnished with each batch of concrete before unloading at the placement site. The delivery ticket may be proprietary software or in the form of an electronic spreadsheet, but shall be printed. Ensure that the materials and quantities incorporated into the batch of concrete are printed on the delivery ticket. Include the following information on the Delivery Ticket:

(1) Arrival time at jobsite,
(2) Time that concrete mix has been completely placed,
(3) Number of revolutions upon arrival at the jobsite,
(4) Total gallons of water added at the jobsite,
(5) Additional mixing revolutions when water is added,
(6) Total number of revolutions at mixing and agitating speed.

Items 3 through 6 do not apply to non-agitating concrete transporting vehicles.

Ensure the batcher responsible for production of the batch of concrete signs the delivery ticket, certifying the batch of concrete was produced in accordance with the Contract Documents.

Verify that the chloride test results on the delivery ticket meet the requirements of Table 4.

Sign the delivery ticket certifying that the design mix maximum specified water to cementitious materials ratio was not exceeded due to any jobsite adjustments to the batch of concrete, and that the batch of concrete was delivered and placed in accordance with the Contract Documents.

346-6.4 Plastic Property Tolerances: Do not place concrete with a slump more than plus or minus 1.5 inches from the target slump value specified in Table 2.

Reject concrete with slump or air content that does not fall within the specified tolerances and immediately notify the concrete production facility that an adjustment of the concrete mixture is required so that it will fall within specified tolerances. If a load does not fall within the tolerances, test each subsequent load and the first adjusted load. If failing concrete is not rejected or adjustments are not implemented,

the Engineer may reject the concrete and terminate further production until the corrections are implemented.

Do not allow concrete to remain in a transporting vehicle to reduce slump. Water may be added only upon arrival of the concrete to the jobsite and not thereafter.

346-7 Mixing and Delivering Concrete.

346-7.1 General Requirements: Operate all concrete mixers at speeds and volumes per the manufacturer's design or recommendation as stipulated on the mixer rating plate.

346-7.2 Transit Mixing: When water is added at the jobsite, mix the concrete 30 additional drum mixing revolutions. When the total number of drum mixing revolutions exceeds 160, do not make additional mix adjustments. Discharge all concrete from truck mixers before total drum revolutions exceed 300. Seek approval from the Engineer prior to using a central mixer and depositing the batch into a truck mixer.

346-7.3 Mixing at the Site: Include provisions in the QCP for the mixing at the site. Use a mixer of sufficient capacity to prevent delays that may be detrimental to the quality of the work. Ensure that the accuracy of batching equipment is in accordance with requirements of this Section.

346-7.4 Concreting in Cold Weather: Do not mix or place concrete when the air temperature is below 45ºF. Protect the fresh concrete from freezing until the concrete reaches a minimum compressive strength of 1,500 psi unless the concrete is to be heat cured. The requirements of concreting in cold weather are not applicable to precast concrete mixing and placement operations occurring in a temperature controlled environment.

346-7.5 Concreting in Hot Weather: Hot weather concreting is defined as the production, placing and curing of concrete when the concrete temperature at placing exceeds 85ºF but is less than 100ºF.

Unless the specified hot weather concreting measures are in effect, reject concrete exceeding 85ºF at the time of placement. Regardless of special measures taken, reject concrete exceeding 100ºF. Predict the concrete temperatures at placement time and implement hot weather measures to avoid production shutdown.

346-7.6 Transit Time: Ensure compliance with the following maximum allowable time between the initial introduction of water into the mix and depositing the concrete in place:

TABLE 6	
Non-Agitator Trucks	Agitator Trucks
45 minutes	60 minutes
75 minutes*	90 minutes*
*When a water-reducing and retarding admixture (Type D, Type G or Type II) is used.	

346-7.7 Adding Water to Concrete at the Placement Site: Perform an initial slump test before the addition of water at the jobsite. If the slump, as delivered, is outside the tolerance range, reject the load. If the slump is within the tolerance range, that load may be adjusted by adding water provided the addition of water does not exceed the water to cementitious materials ratio as defined by the mix design. After adjusting the

slump, perform a slump test to confirm the concrete is within the slump tolerance range. Perform a slump test on the next load to ensure the concrete is within the slump tolerance range. Do not place concrete represented by slump test results outside of the tolerance range. Include water missing from the water storage tanks upon arrival at the project site in the jobsite water added.

346-7.8 Sample Location: Describe concrete placement and sampling methods in the QCP. Obtain samples from the point of final placement.

Where concrete buckets are used to discharge concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge of the bucket. When the concrete is discharged directly from the mixer into the bucket, within 25% of the total allowable transit time before discharge of the bucket, samples may be obtained from the discharge of the mixer.

Where conveyor belts, troughs, pumps, or chutes are used to transport concrete directly to the point of final placement or into the hopper of a tremie pipe, samples will be obtained from the discharge end of the entire conveyor belt, trough, pump, or chute system.

Where concrete is placed in a drilled shaft or other element using a tremie pipe and a concrete pump, samples will be obtained from the discharge of the pump line at the location of the tremie hopper.

Where a concrete pump is used to deposit concrete directly into a drilled shaft which is a wet excavation without the use of a tremie, or other applications as approved by the Engineer, ensure the discharge end of the pump line remains immersed in the concrete at all times after starting concrete placement.

Obtain Department approval for sampling at the discharge of the mixer in lieu of sampling at the point of final placement. Use the following sampling correlation procedure when sampling at the discharge of the mixer:

a. Develop a comparative sampling correlation between the discharge of the mixer and the end of the pump line for slump and air results. Obtain one sample from the discharge of the pump line using the full length of pump line and one sample from the discharge of the mixer for five different loads. Average the five samples from each sample location and compare the two averages to establish the comparative sampling correlation. Ensure the plastic properties of the concrete sampled from the pump line are within the tolerance range.

b. Once the comparative sampling correlation is established, and approved by the Engineer, apply this correlation to the plastic properties tolerances for samples obtained from the discharge of mixer.

c. Obtain all other samples from the discharge of the mixer delivering concrete to the pump. Ensure the plastic properties of the concrete being delivered to the pump compare with the comparative sampling correlation.

d. If the ambient temperature changes by more than 10°F, or the configuration of the pumping system changes, the Engineer may require a new comparative sampling correlation.

346-8 Plastic Concrete Sampling and Testing.

QC tests include air content, temperature, slump, and preparing compressive strength cylinders for testing at later dates. In addition, calculate the water to

cementitious materials ratio in accordance with FM 5-501 for compliance to the approved mix design.

Ensure that each truck has a rating plate and a valid mixer identification card issued by the Department. Ensure that the revolution counter on the mixer is working properly, and calibration of the water dispenser has been performed within the last twelve months. Reject any concrete batches that are delivered in trucks that do not have mixer identification cards. Remove the mixer identification card when a truck mixer is discovered to be in noncompliance and the mixer deficiencies cannot be repaired immediately. When the mixer identification card is removed for noncompliance, make note of the deficiency or deficiencies found, and forward the card to the District Materials and Research Engineer who has Producer QC Plan acceptance authority.

Perform plastic concrete tests on the initial delivery of each concrete design mix each day. Ensure QC technicians meeting the requirements of Section 105 are present and performing tests throughout the placement operation. Ensure one technician is present and performing tests throughout the placement operation at each placement site. If a placement site has multiple concrete trucks, identify the number of technicians in the Quality Control Plan. If a placement site has multiple trucks placing concrete, then have at least two technicians present at that site. Ensure that the equipment used for delivery, placement and finishing meets the requirements of this Specification. Do not proceed with the placement operation until QC tests confirm that the delivered concrete complies with the plastic properties specified. When a truck designated for QC testing arrives at the site of discharge, subsequent trucks may not discharge until QC testing results are known. Reject non-complying loads at the jobsite. Ensure that corrections are made on subsequent loads.

Furnish sufficient concrete of each design mix as required by the Engineer for verification testing. When the Engineer's verification test results do not compare with the QC plastic properties test results, within the limits defined by the Independent Assurance (IA) checklist comparison criteria, located in Materials Manual Chapter 5, disposition of the concrete will be at the option of the Contractor.

On concrete placements consisting of only one load of concrete, perform initial sampling and testing in accordance with this Section. The acceptance sample and plastic properties tests may be taken from the initial portion of the load.

If any of the QC plastic properties tests fail, reject the remainder of that load, terminate the LOT and notify the Engineer. Make cylinders representing that LOT from the same sample of concrete.

Following termination of a LOT, obtain samples from a new load, and perform plastic properties tests until such time as the water to cementitious materials ratio, air content, temperature and slump comply with the Specification requirements. Initiate a new LOT once the testing indicates compliance with Specification requirements.

Suspend production when any five loads in two days of production of the same design mix are outside the specified tolerances. Make the necessary revisions to concrete operations and increase the frequency of QC testing in the QCP to bring the concrete within allowable tolerances. Obtain the Engineer's approval of the revisions before resuming production. After production resumes, obtain the Engineer's approval before returning to the normal frequency of QC testing.

If concrete placement stops for more than 90 minutes, perform initial plastic properties testing on the next batch and continue the LOT. Cylinders cast for that LOT will represent the entire LOT.

When the Department performs Independent Verification, the Contractor may perform the same tests on the concrete at the same time. The Department will compare results based on the Independent Assurance Checklist tolerances.

When the Department's Independent Verification test results do not meet the requirements of this Section, the Engineer may require the Contractor to revise the QCP.

346-9 Acceptance Sampling and Testing.

346-9.1 General: Perform plastic properties tests in accordance with 346-8 and cast a set of three QC cylinders, for all structural concrete incorporated into the project. Take these acceptance samples randomly as determined by a random number generator (acceptable to the Department). The Department will independently perform verification plastic properties tests and cast a set of verification cylinders. The verification cylinders will be the same size cylinder selected by the Contractor, from a separate sample from the same load of concrete as the Contractor's QC sample.

The Department may perform inspections in lieu of plastic properties tests of the precast plants producing Class I and II concrete.

For each set of QC cylinders verified by the Department, cast one additional cylinder from the same sample, and identify it as the QC "hold" cylinder. The Department will also cast one additional "hold" cylinder from each Verification sample. Provide curing facilities that have the capacity to store all QC, Verification, "hold" and Independent Verification cylinders simultaneously for the initial curing. All cylinders will be clearly identified as outlined in the Sample/Lot Numbering System instructions located on the State Materials Office website. Deliver the QC samples, including the QC "hold" cylinder to the final curing facility in accordance with ASTM C 31. At this same time, the Department will deliver the Verification samples, including the Verification "hold" cylinder, to their final curing facility.

Test the QC laboratory cured samples for compressive strength at the age of 28 days, or any other specified age, in a laboratory meeting and maintaining at all times the qualification requirements listed in Section 105.

The QC testing laboratory will input the compressive strength test results into the Department's sample tracking database within 24 hours. When the QC testing laboratory cannot input the compressive strength test results into the Department's sample tracking database within 24 hours, the QC testing laboratory will notify the Verification testing laboratory within 24 hours of testing the cylinder and provide the Verification testing laboratory the compressive strength test results. Ensure the compressive strength results are input into the Department's sample tracking database within 72 hours of determining the compressive strength of the cylinders.

The Department will average the QC compressive strength test data, average the Verification compressive strength test data, and compare the averages. In the event that one set of compressive strength data for a set of cylinders falls outside the range of the other set of cylinders, use the lower Range of Average Compressive Strength to determine the comparison criteria. Based on this comparison, the Department will determine if the Comparison Criteria as shown in Table 7 has been met. When the difference between QC and Verification are less than or equal to the Comparison Criteria,

the QC data is verified. When the difference between QC and Verification data exceeds the Comparison Criteria, the Engineer will initiate the resolution procedure.

Table 7	
Range of Average Compressive Strength	Comparison Criteria
Less than 3500 psi	420 psi
3,501 – 4,500 psi	590 psi
4,501 – 6,500 psi	910 psi
6,501 – 8,500 psi	1,275 psi
Greater than 8,500 psi	1,360 psi

346-9.2 Sampling Frequency:

As a minimum, sample and test concrete of each design mix for water to cementitious materials ratio, air content, temperature, slump and compressive strength once per LOT as defined by Table 8. When a mix design is used for a different application, the LOT is defined by the application. When more than one concrete production facility is used for the same mix design, describe the method of sampling, testing and LOT numbering in the QC Plan. The Engineer will randomly verify one of every four consecutive LOTs of each design mix based on a random number generator. The Department may perform Independent Verification testing to verify compliance with specification requirements. All QC activities, calculations, and inspections will be randomly confirmed by the Department.

TABLE 8	
Class Concrete	Maximum LOT Size
I	one day's production
I (Pavement)	250 lane ft, or one day's production, whichever is less
II, II (Bridge Deck), III, IV, V (Special), V, VI	50 yd^3, or one day's production, whichever is less
IV (Drilled Shaft)	50 yd^3, or two hours between placements, whichever is less
III (Seal)	Each Seal placement

346-9.2.1 Reduced Frequency for Acceptance Tests: When ten consecutive strength test results from the same mix design for a Class IV or higher class of concrete are produced at the same concrete production facility, on a given Contract have all been verified and have attained an average strength greater than two standard deviations above the specified minimum, then the LOT may represent a maximum production quantity of 100 yd^3. When five consecutive strength test results from the same mix design for a mix design lower than a Class IV is produced at the same concrete production facility on a given Contract have all been verified and have attained an

average strength greater than two standard deviations above the specified minimum, the LOT may represent a maximum production quantity of 100 yd^3.

The average of the consecutive compressive strength test results, based on the class of concrete, can be established using historical data from a previous Department project. The data must also represent the same prime/subcontractor. The tests from the previous Department project must be within the last 60 calendar days or may also be established by a succession of samples on the current project. Only one sample can be taken from each LOT. Test data must be from a laboratory meeting the requirements of Section 105. Submit the test data to the Engineer and obtain Department approval before beginning reduced frequency LOT's.

If at any time a strength test is not verified and/or the average strength of the previous ten or five consecutive samples based on the class of concrete described above, from the same mix design and the same production facility is less than the specified minimum plus two standard deviations, the maximum production quantity represented by the LOT will return to 50 yd^3. In order to reinitiate reduced frequency, a new set of strength test results will be required.

346-9.3 Strength Test Definition: The strength test of a LOT is defined as the average of the compressive strengths tests of three cylinders cast from the same sample of concrete from the LOT.

346-9.4 Acceptance of Concrete:

Accept or reject concrete on the basis of plastic property results in accordance with 346-6.4.

Ensure that the hardened concrete strength test results are obtained in accordance with 346-9.3. Do not discard a cylinder strength test result based on low strength (strength below the specified minimum strength as per the provisions of this Section).

When one of the three QC cylinders from a LOT is lost, damaged or destroyed, determination of compressive strength will be made by averaging the remaining two cylinders. If more than one QC cylinder from a LOT is lost, damaged or destroyed, the Contractor will core the structure at no additional expense to the Department to determine the compressive strength. Acceptance of LOT may be based on verification data at the discretion of the Engineer. Obtain the approval of the Engineer to core, and of the core location prior to coring.

For each QC cylinder that is lost, damaged or destroyed, payment for that LOT will be reduced by $750.00 per 1,000 psi of the specified design strength [Example: loss of two Class IV (Drill Shaft) QC cylinders that has no verification data will require the element to be cored and a penalty will be assessed (4,000 psi / 1,000 psi) x $750 x 2 = $6,000. This reduction will be in addition to any pay adjustment for low strength.

When QC compressive strength test results are not verified, the resolution procedure will be used to accept or reject the concrete. Maintain the "hold" cylinders until the verification of the compressive strength test results.

When QC test results are verified, the Engineer will accept the concrete based on QC test results. The Engineer will accept at full pay only LOTs of concrete represented by plastic property results which meet the requirements of the approved mix design and strength test results which equal or exceed the respective specified minimum strength.

346-9.5 Resolution Procedure: The Department may initiate an IA review of sampling and testing methods. The resolution procedure may consist of, but need not be limited to, a review of sampling and testing of fresh concrete, calculation of water to cementitious materials ratio, handling of cylinders, curing procedures and compressive strength testing. Core samples of the hardened concrete may be required.

The Engineer will determine through the resolution procedure whether the QC strength test results or the verification strength test results can be relied upon. When the Engineer cannot determine that either the QC or verification strength test results are in error, the concrete represented by the four consecutive LOTs will be evaluated based on the QC data. The Engineer will inform the QC and the Verification lab within four working days of the acceptance compressive strength test to transport their "hold" cylinders to the resolution lab. The QC and Verification laboratories will transport their own hold cylinder to the resolution testing laboratory within 72 hours after the Engineer notifies the Contractor that a resolution is required. In addition, the Engineer will ensure that the QC and verification "hold" cylinders are tested within seven days of the acceptance strength tests.

The resolution investigation will determine the strength test results for each of the four or less LOTs. When the QC strength test results are deemed to be the most accurate, the QC strength test results will represent the four or less consecutive LOTs and the Department will pay for the resolution testing and investigation. When the verification strength test results are deemed to be the most accurate, the Department will assess a 5 percent reduction of payment for the quantity represented by the Resolution Investigation.

The results of the resolution procedure will be forwarded to the Contractor within five days after completion of the investigation. If the Department finds deficiencies based on the Contractor's QCP, the Engineer may suspend that part of the QCP. When the QC plan is suspended, submit corrective actions for approval to the Engineer. The Engineer may take up to five working days to review corrective actions to the QCP. The Engineer will not allow changes to contract time or completion dates. Incur all delay costs and other costs associated with QC plan suspension and re-approval.

346-9.6 Small Quantities of Concrete: When a project has a total plan quantity of less than 50 yd^3, that concrete will be accepted based on the satisfactory compressive strength of the QC cylinders. Provide certification to the Engineer that the concrete was batched and placed in accordance with the Contract Documents. Submit a quality control plan for the concrete placement operation in accordance with Section 105. In addition, the Engineer may conduct Independent Verification (IV) testing as identified in 346-9. Evaluate the concrete in accordance with 346-10 at the discretion of the Engineer.

346-10 Investigation of Low Strength Concrete for Structural Adequacy.

346-10.1 General: When a concrete acceptance strength test result falls more than 500 psi below the specified minimum strength, from the specified minimum strength, and the Department determines that an investigation is necessary, make an investigation into the structural adequacy of the LOT of concrete represented by that acceptance strength test result at no additional expense to the Department. The Engineer may also require the Contractor to perform additional strength testing as necessary to determine structural adequacy of the concrete.

Furnish either a structural analysis performed by the Specialty Engineer to establish strength adequacy or drilled core samples as specified in 346-10.3 to determine the in-place strength of the LOT of concrete in question at no additional expense to the Department. Obtain the Engineer's approval before taking any core samples. When the concrete is deemed to have low strength, obtain and test the cores and report the data to the Engineer within 14 days of the 28 day compressive strength tests. Core strength test results obtained from the structure will be accepted by both the Contractor and the Department as the in-place strength of the LOT of concrete in question. The core strength test results will be final and used in lieu of the cylinder strength test results for determination of structural adequacy and any pay adjustment. The Department will calculate the strength value to be the average of the compressive strengths of the three individual cores. This will be accepted as the actual measured value.

346-10.2 Determination of Structural Adequacy: If core strength test results are less than 500 psi below the specified minimum strength, consider the concrete represented by the cores structurally adequate. If the core strength test results are more than 500 psi below the specified minimum strength, the Department will consider the concrete represented by the cores structurally questionable. Submit a structural analysis performed by the Specialty Engineer. If the results of the structural analysis indicate adequate strength to serve its intended purpose with adequate durability, and is approved by the Department, the Contractor may leave the concrete in place subject to the requirements of 346-11, otherwise, remove and replace the LOT of concrete in question at no additional expense to the Department.

346-10.3 Coring for Determination of Structural Adequacy: Furnish three undamaged core samples taken from the same approximate location where the questionable concrete is represented by the low strength concrete test cylinders. Select the location of the drilled cores so that the structure is not impaired and does not sustain permanent damage after repairing the core holes. Obtain the Engineer's approval of the core location prior to coring.

346-10.4 Core Conditioning and Testing: The Department will test the cores in accordance with ASTM C 2. The Engineer will make the determination whether to test the cores in a dry or wet condition. If the Engineer decides to test the cores in a wet condition, immerse the cores in water for at least 40 hours, and test the cores wet. The cores will be tested after obtaining the samples within three days for wet cores and within six days for dry cores.

346-11 Pay Adjustments for Low Strength Concrete.

346-11.1 General: Any LOT of concrete failing to meet the specified minimum strength as defined in 346-3, 346-9, 346-10 and satisfactorily meeting all other requirements of the Contract Documents, including structural adequacy, the Engineer will individually reduce the price of each low strength LOT in accordance with this Section.

346-11.2 Basis for Pay Adjustments: When an acceptance strength test result falls more than 500 psi below the specified minimum strength, core samples may be obtained in accordance with ASTM C 42 from the respective LOT of concrete represented by the low acceptance strength test result for determining pay adjustments. Price adjustment will be applied to the certified invoice price the Contractor paid for the concrete or the precast product.

Do not core hardened concrete for determining pay adjustments when the 28 day acceptance cylinder strength test results are less than 500 psi below the specified minimum strength.

Submit acceptable core samples to the Engineer for testing for determination of payment reductions based upon the results of the strength tests. The results of strength tests of the drilled cores, subject to 346-11.5 and 346-11.6, will be accepted as final and will be used in lieu of the cylinder strength test results for determining pay adjustments.

In precast operations, excluding prestressed, ensure that the producer submits acceptable core samples to the Engineer for testing. The producer may elect to use the products in accordance with 346-11. Otherwise, replace the concrete in question at no additional cost to the Department. For prestressed concrete, core sample testing is not allowed for pay adjustment. The results of the cylinder strength tests will be used to determine material acceptance and pay adjustment.

346-11.3 Coring for Determination of Pay Adjustments: Obtain the cores in accordance with 346-10.3.

346-11.4 Core Conditioning and Testing: The Department will test the cores in accordance with 346-10.4.

346-11.5 Core Strength Representing Equivalent 28 Day Strength: For cores tested no later than 42 days after the concrete was cast, the Engineer will accept the core strengths obtained as representing the equivalent 28 day strength of the LOT of concrete in question. The Engineer will calculate the strength value to be the average of the compressive strengths of the three individual cores. The Engineer will accept this strength at its actual measured value.

346-11.6 Core Strength Adjustments: For cores tested later than 42 days after the concrete was cast, the Engineer will establish the equivalency between 28 day strength and strength at ages after 42 days based on test data developed by a Department approved testing laboratory to relate strength at the actual test age to 28 day strength for the particular class of concrete and design mix represented by the cores. Obtain such data at no additional expense to the Department. When such data is not available and cannot be produced, as determined by the Department, the Engineer will determine the equivalent 28 day strength by adjusting the tested core strengths according to the following relationship:

346-11.6.1 Portland Cement Concrete without Pozzolan or Slag:

Equivalent 28 Day Strength, f'c (28) = 1/F (Average Core Strength) x 100, where:

$F = 4.4 + 39.1 (\ln x) - 3.1 (\ln x)^2$ (Type I Cement)

$F = -17.8 + 46.3 (\ln x) - 3.3 (\ln x)^2$ (Type II Cement)

$F = 48.5 + 19.4 (\ln x) - 1.4 (\ln x)^2$ (Type III Cement)

x = number of days since the concrete was placed
ln = natural log

346-11.6.2 Pozzolanic-Cement Concrete:

Equivalent 28 day compressive strength = $f'_C(28)$, where:

$$f_c'(28) = 0.490\ f_c'(t)\, e^{\left(\frac{8.31}{t}\right)^{0.276}}$$ (Type I Cement)

$$f_c'(28) = 0.730\ f_c'(t)\, e^{\left(\frac{2.89}{t}\right)^{0.514}}$$ (Type II Cement)

$$f_c'(28) = 0.483\ f_c'(t)\, e^{\left(\frac{5.38}{t}\right)^{0.191}}$$ (Type III Cement)

$f'_c(t)$ = Average Core Strength at time t (psi)

t = time compressive strength was measured (days)

346-11.6.3 Slag-Cement Concrete:

Equivalent 28 day compressive strength = $f'_C(28)$, where:

$$f_c'(28) = 0.794\ f_c'(t)\, e^{\left(\frac{7.06}{t}\right)^{1.06}}$$ (Type I Cement)

$$f_c'(28) = 0.730\ f_c'(t)\, e^{\left(\frac{6.02}{t}\right)^{0.747}}$$ (Type II Cement)

$$f_c'(28) = 0.826\ f_c'(t)\, e^{\left(\frac{2.36}{t}\right)^{0.672}}$$ (Type III Cement)

$f'_c(t)$ = Average Core Strength at time t (psi)

t = time compressive strength was measured (days)

346-11.7 Calculating Pay Adjustments: The Engineer will determine payment reductions for low strength concrete accepted by the Department and represented by either cylinder or core strength test results below the specified minimum strength, in accordance with the following:

Reduction in Pay is equal to the reduction in percentage of concrete cylinder strength (specified minimum strength minus actual strength divided by specified minimum strength).

For the elements that payments are based on the per foot basis, the Engineer will adjust the price reduction from cubic yards basis to per foot basis, determine the total linear feet of the elements that are affected by low strength concrete samples and apply the adjusted price reduction accordingly.

346-12 Pay Reduction for Plastic Properties

If concrete is placed even when the result of plastic properties testing requires its rejection, the payment for concrete represented by the plastic property tests will be reduced by twice the invoice price per cubic yard for all concrete in the load that is

placed. If the Engineer authorizes placement of the concrete, there will be no pay reduction.

347 PORTLAND CEMENT CONCRETE – CLASS NS.
(REV 11-10-10) (FA 11-22-10) (7-11)

Subarticle 347-2-1 (Page 340) is deleted and the following substituted:

347-2.1 General: Certify that all materials used in concrete are from Department approved sources, and free from frozen or other detrimental matter.

Meet the following requirements:

Portland Cement	Section 921
Coarse Aggregate	Section 901
Fine Aggregate	Section 902
Water	Section 923
Chemical Admixtures	Section 924
Pozzolans and Slag	Section 929

Subarticle 347-4.1 (Page 342) is deleted and the following substituted:

347-4.1 Concrete Mix Design: Before producing any concrete, submit the proposed mix design to the Engineer on a form provided by the Department. A similar form containing the same information may be used. Also submit three compressive strength test results tested in accordance with ASTM C 39 demonstrating the mix meets the minimum 28 day compressive strength requirement. The test results must be within twelve months of the submittal of the mix design. Use only concrete mix designs having prior approval of the Engineer.

Materials may be adjusted provided that the theoretical yield requirement of the approved mix design is met. Show all required original approved design mix data and batch adjustments and substituted material on the Department concrete delivery ticket. The Engineer may disqualify any concrete production facility for non-compliance with Specification requirements.

425 INLETS, MANHOLES, AND JUNCTION BOXES.
(REV 1-10-12) (FA 1-20-12) (7-12)

SUBARTICLE 425-3.2 (Page 443) is deleted and the following substituted:

425-3.2 Gratings, Covers, and Frames: Use gratings and frames fabricated from structural steel or cast iron as designated in the appropriate Design Standard. When "Alt. G" grates are specified in the plans, provide structural steel grates that are galvanized in accordance with the requirements of ASTM A-123.

Use rigid frames and covers either 24 inches or 36 inches or optional three-piece adjustable frames and covers as indicated in Design Standards Index No. 201.

For three-piece adjustable frames, the inner frame may include replaceable resilient seats to support the cover. In addition, the inner frame shall indicate it is adjustable, by clearly having the word “adjustable” imprinted into the exposed portion of the inner frame so ”adjustable” is visible from the roadway after installation.

SUBARTICLE 425-6.3 (Page 444) is deleted and the following substituted:

425-6.3 Setting Manhole Castings: After curing the concrete as specified above, set the frame of the casting in a full mortar bed composed of one part portland cement to two parts of fine aggregate.

425-6.3.1 Standard Castings: Set manhole frames in a mortar bed and adjust to grade using brick or concrete grade rings, with a maximum 12 inch adjustment.

425-6.3.2 Optional Adjustable Castings: When using a three-piece adjustable frame and cover, install the frame and cover with brick or concrete grade rings to the base course height. Make adjustments using the inner frame in accordance with the manufacturer’s installation recommendations so the inner frame and cover meet the grade and slope of the pavement surface opened to traffic.

SUBARTICLE 425-6.7 (Page 444) is deleted and the following substituted:

425-6.7 Adjusting Existing Structures: Cut down or extend existing manholes, catch basins, inlets, valve boxes, etc., within the limits of the proposed work, to meet the finished grade of the proposed pavement, or if outside of the proposed pavement area, to the finished grade designated on the plans for such structures. Use materials and construction methods which meet the requirements specified above to cut down or extend the existing structures.

The Contractor may extend manholes needing to be raised using adjustable extension rings of the type which do not require the removal of the existing manhole frame. Use an extension device that provides positive locking action and permits adjustment in height as well as diameter and meets the approval of the Engineer.

When a three-piece adjustable frame and cover is installed, make adjustments using the inner frame in accordance with the manufacturer’s installation recommendations so the inner frame and cover meet the grade and slope of the pavement surface opened to traffic.

522 CONCRETE SIDEWALK.
(REV 7-29-10) (FA 9-20-10) (7-11)

SUBARTICLE 522-7.2 (Page 654) is deleted and the following substituted:

522-7.2 Surface Requirements: Provide the concrete with a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot straightedge, or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

524 CONCRETE DITCH AND SLOPE PAVEMENT.
(REV 8-13-09) (10-6-09) (7-10)

ARTICLE 524-2 (Page 657) is deleted and the following substituted:

524-2 Materials.

Concrete.....Section 347
Preformed Expansion Joint Material and Hot Poured Sealer
.....Section 932
Filter Fabric .....Section 985
Reinforcing Steel.....Section 415

ARTICLE 524-9 (Pages 658 – 659) is deleted and the following substituted:

524-9 Method of Measurement.

524-9.1 Concrete Ditch and Slope Pavement: The quantities to be paid for Concrete Ditch Pavement and Concrete Slope Pavement will be the plan quantity, in square yards, completed and accepted. Where the plans show headers or cut-off walls at the end or edge of the pavement, the volume of the additional thickness of pavement that constitutes the headers, calculated in accordance with plan dimensions, will be converted into equivalent square yards of standard thickness pavement and included in the quantity to be paid for.

No deduction will be made for any areas occupied by manholes, inlets, or other drainage structures or by public utility appurtenances within the pavement area. The square yard quantity includes any ditch blocks with ditch or slope pavement on top. When steel reinforcement is called for in the plans, payment will be included in the square yard item.

524-9.2 Concrete Core Ditch Blocks: The quantity to be paid for Concrete Core Ditch Blocks will be the plan quantity of concrete, in cubic yards, completed and accepted. When steel reinforcement is called for in the plans, payment will be included in the cubic yard pay item. The cubic yard pay item includes any ditch block within a grass or earth ditch, without other pavement on top.

ARTICLE 524-10 (Page 659) is deleted and the following substituted:

524-10 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section, including all earthwork, skimmers, and incidental materials necessary to complete the work.

Payment will be made under:

Item No. 524-	1-	Concrete Ditch Pavement - per square yard.
Item No. 524-	2-	Concrete Slope Pavement - per square yard.
Item No. 524-	3-	Concrete Core Ditch Block- per cubic yard.

527 DETECTABLE WARNINGS ON WALKING SURFACES. (REV 1-12-11) (FA 1-21-11) (7-11)

SECTION 527 (Pages 662 – 664) is deleted and the following substituted:

SECTION 527
DETECTABLE WARNINGS ON WALKING SURFACES

527-1 Description.

Furnish and install Detectable Warning devices on newly constructed and/or existing concrete or asphalt walking surfaces (curb ramps, sidewalks, shared-use paths, etc.) constructed in accordance with the Design Standards Index No. 304.

527-2 Materials.

527-2.1 Detectable Warning: Provide Detectable Warnings in accordance with the Americans with Disabilities Act Standards for Transportation Facilities, Section 705. Use Detectable Warnings consisting of materials intended for exterior use subject to routine pedestrian traffic and occasional vehicular traffic. Use Detectable Warnings with size and pattern shown in the plans comprised of truncated domes aligned in parallel rows in accordance with the Design Standards, Index No. 304. Do not use detectable warnings with a diagonal pattern.

527-2.1.1 Preformed Materials: Use Detectable Warnings consisting of weather-resistant tiles or pavers that are cast into concrete, or tiles or mats that are surface-applied to concrete or asphalt surfaces with adhesives and mechanical fasteners or torch-applied preformed thermoplastic.

527-2.1.2 Field-Formed Materials: Use Detectable Warnings applied as a secondary application to the substrate.

527-2.2 Material Properties: Provide Detectable Warnings that meet the following minimum material property requirements when tested in accordance with the indicated Standard appropriate to the material.

PROPERTY	STANDARD	TEST VALUE

PROPERTY	STANDARD	TEST VALUE
Slip Resistance	FM 3-C 1028	Dry Coefficient of Friction – 0.8 min. Wet Coefficient of Friction – 0.65 min. (include recessed areas between truncated domes)
Wear Resistance	FM 5-594	Average Volume Loss: no more than 0.06 cm^3
Water Absorption*	ASTM D-570	Not to exceed 5%.
Adhesion/Bond Strength**	FM 5-589	150 psi min. tensile adhesion strength
Non-Hazardous Classification	Submit Material Safety Data Sheet (MSDS)	Non-Hazardous, per RCRA Subtitle C
* Applies only to plastic materials. ** Applies only to surface-applied materials.		

527-2.3 Color/Contrast: Use safety yellow, brick red or black colored Detectable Warnings on concrete walking surfaces. Use safety yellow colored Detectable Warnings on asphalt walking surfaces. Acceptable Detectable Warnings shall meet the following criteria for a duration of three years.

COLOR	LIGHT REFLECTANCE VALUES (LRV) CAP Y*
Safety Yellow	25 – 45
Brick Red	5 – 15
Black	0 – 5
*When measured with a spectrophotometer	

527-2.4 Qualified Products List: Methods or products used to form Detectable Warnings in wet concrete will not be permitted. Use Detectable Warnings listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of products for inclusion on the QPL shall submit an application in accordance with Section 6 and include certified test reports from an independent lab showing the product meets the requirements of this Section and the Design Standards, Index No. 304 Acceptance Criteria and manufacturer's drawings, specifications and procedures for materials and installation, including touch-up and repair.

527-3 Installation Procedures.

527-3.1 Surface Preparation and Installation: Prepare the surface in accordance with the manufacturer's recommendations. Use only products and materials appropriate for the surface on which they will be applied. Install in accordance with the manufacturer's instructions, using materials and equipment recommended and approved by the manufacturer. For surface-applied tiles or mats, use adhesives applied over the entire surface and mechanical fasteners.

527-4 Method of Measurement.

Detectable Warnings applied to newly constructed walking surfaces will be included in the cost of the walking surface. Detectable Warnings applied to existing

walking surfaces will be paid per each location where Detectable Warnings are furnished, installed and accepted.

527-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including all labor, surface preparation, materials and incidentals necessary to complete the work for Detectable Warnings installed on existing walking surfaces.

Payment will be made under:

Item No. 527-	1-	Detectable Warnings on Existing Walking Surfaces - each.

550 FENCING

(REV 5-14-10) (FA 7-20-10) (1-11)

SUBARTICLE 550-3.1 (Page 690) is deleted and the following substituted:

550-3.1 Type A Fence (Farm Fence): Meet the requirements of Section 954 for timber posts and braces. For metal posts and braces, and for recycled plastic fence posts, meet the requirements of the Design Standards.

For the fabric and all other accessories, meet the requirements of the Design Standards.

555 DIRECTIONAL BORE.

(REV 4-5-11) (FA 5-31-11) (1-12)

SECTION 555 (Pages 693 – 701) is deleted and the following substituted:

SECTION 555
DIRECTIONAL BORE

555-1 Description.

555-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Directional Boring, also commonly called Horizontal Directional Drilling (HDD).

555-1.2 General: HDD is a trenchless method for installing a product that serves as a carrier pipe for transporting solids, liquids or gasses (under pressure or gravity flow), or serves as a conduit, casing, or duct for a carrier pipe, cable, or wire line products. It is a multi-stage process consisting of site preparation and restoration, equipment setup, and drilling a pilot bore along a predetermined path and then pulling the product back through the drilled space. When necessary, enlargement of the pilot bore hole may be necessary to accommodate a product larger than the pilot bore hole size. This process is referred to as back reaming and is done at the same time the product is being pulled back through the pilot bore hole.

Accomplish alignment of the bore by proper orientation of the drill bit head as it is being pushed into the ground by a hydraulic jack and determine orientation and tracking of the drill bit. In order to minimize friction and prevent collapse of the bore hole, introduce a soil stabilizing agent (drilling fluid) into the annular bore space from the trailing end of the drill bit.

Select or design drilling fluids for the site specific soil and ground water conditions. Confine free flowing (escaping) slurry or drilling fluids at the ground surface during pull back or drilling. Remove all residual slurry from the surface and restore the site to preconstruction conditions.

555-2 Materials.

555-2.1 General: Materials are defined as carrier pipe or conduit, casing, or duct that becomes the installed product. Incidental materials that may or may not be used to install the product depending on field requirements are not paid for separately and will be included in the cost of the installed product. Plastic pipe sections are to be butt fused. Metal pipe sections are to be butt welded. Restrained joint connectors (external connectors, bell and spigot and any joint that overlaps a portion of the product to be installed) are to be installed according to the manufacturer's specifications and instructions.

555-2.2 Material Type: The following material standards are to be interpreted as the minimum in place standards. Use materials that are appropriate for the stresses generated by the selected equipment and field conditions. It is not intended to portray that the use of materials with these minimum material standards will retain their required properties if the stress limits are exceeded for which they were designed during installation. Ensure that the appropriate material is used to retain compliance once it is installed.

Material Standards for HDD Installation		
Material Type	Non-Pressure	Pressure
Polyethylene (PE)	ASTM D 2447	ASTM D 2513 ASTM D 2447
High Density Polyethylene (HDPE)	ASTM D 2447 ASTM D 3350 ASTM F 714	ASTM D 2447 ASTM D 3350 ASTM F 714 ASTM D 2513
Polyvinyl-Chloride (PVC)	ASTM D 4396 ASTM D 1784	ASTM D 1784 AWWA C900 AWWA C905 AWWA C605
Steel	ASTM A 139 Grade B [(1)]	AWWA C200 API 2B[(2)]
[(1)] No hydrostatic test required [(2)]Dimensional tolerances only		

555-3 Construction Site Requirements.

555-3.1 Pedestrian Traffic: When and where installations temporarily disrupt use of a pedestrian way, provide a safe alternate route in accordance with the Design Standards, Index Nos. 600 and 660.

555-3.2 Site Conditions:

(a) Carry out excavation for entry, exit, recovery pits, slurry sump pits, or any other excavation as specified in Section 120. Sump pits are required to contain drilling fluids if vacuum devices are not operated throughout the drilling operation, unless approved by the Engineer.

(b) Within 48 hours of completing installation of the product, clean the work site of all excess slurry or spoils. Take responsibility for the removal and final disposition of excess slurry or spoils. Ensure that the work site is restored to pre-construction conditions or as identified on the plans.

(c) Provide MOT in accordance with the Design Standards and the MUTCD when and where the former is silent.

(d) Exposure of product shall be limited to 3 feet and 14 consecutive days unless approved by the Engineer.

555-3.3 Damage Restoration: Take responsibility for restoration for any damage caused by heaving, settlement, separation of pavement, escaping drilling fluid (frac-out), or the directional drilling operation, at no cost to the Department.

555-3.3.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

555-4 Quality Control.

555-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring and Department procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

555-4.1.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop all work, notify the Engineer and investigate the damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours, unless otherwise approved by the Engineer. Furnish a copy of test results to the Engineer for review and approval. The Engineer is allowed up to 72 hours to approve or determine if the product installation is not in compliance with the specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

555-4.1.2 Testing Methods: Testing may consist of one of the following methods and must always meet or exceed the Department's testing requirements:

(a) Follow the product manufacturer's pressure testing recommendations.

(b) Ensure carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

(c) A water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders is required. The Engineer will determine when and where water tight joint requirements will be applied to the ultimate roadway section for future widening. When a product is located elsewhere, the pipe and joint configuration must meet or exceed soil tight joint requirements. Conduct tests for joint integrity for one hour. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressure of 5 PSI.

555-4.1.3 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids with excavatable flowable fill.

555-4.2 Product Locating and Tracking: The method of locating and tracking the drill head during the pilot bore will be shown in the plans. The Department recognizes walkover, wire line, and wire line with surface grid verification, or any other system as approved by the Engineer, as the accepted methods of tracking directional bores. Use a locating and tracking system capable of ensuring the proposed installation is installed as intended. If an area of radio signal interference is expected to exceed 5 feet, the Engineer may specify the use of a suitable tracking system. The locating and tracking system must provide information on:

(a) Clock and pitch information

(b) Depth

(c) Transmitter temperature

(d) Battery status

(e) Position (x,y)

(f) Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility)

(g) Ensure proper calibration of all equipment before commencing directional drilling operation.

(h) Take and record alignment readings or plot points such that elevations on top of and offset dimensions from the center of the product to a permanent fixed feature are provided. Such permanent fixed feature must have prior approval of the Engineer. Provide elevations and dimensions at all bore alignment corrections (vertical and horizontal) with a minimum distance between points of 100 feet. Provide a sufficient number of elevations and offset distances to accurately plot the vertical and horizontal alignment of the installed product. A minimum of three elevation and plot points are required.

Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement with the carrier pipes or minimum #14 AWG for internal placement in the conduit, casing or duct) or a coated conductive tape. Conductors must be located on opposite sides when

installed externally. Connect any break in the conductor line before construction with an electrical clamp, or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Test conductors for continuity. Each conductor that passes must be identified as such by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

555-4.3 Product Bore Hole Diameter: Minimize potential damage from soil displacement/settlement by limiting the ratio of the bore hole to the product size. The size of the back reamer bit or pilot bit, if no back reaming is required, will be limited relative to the product diameter to be installed as follows:

Maximum Pilot or Back-Reamer Bit Diameter When Rotated 360 Degrees	
Outside Pipe Diameter Inches*	Maximum Bit Diameter Inches
<8	Diameter + 4
8 to 24	1.5 x Diameter
>24	Diameter + 12
*Use manufacturer's recommendation for pipe with restrained joints.	

555-4.4 Drilling Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Do not use any other chemicals or polymer surfactants in the drilling fluid without written consent from the Engineer. Certify to the Engineer in writing that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid. Any water source used other than a potable water source may require a pH test.

555-4.5 Equipment Requirements: Ensure that appropriate equipment is provided to facilitate the installation as follows:

HDD Equipment				
System Description	Pipe [1] Diameter Inches	Bore Length Feet	Torque Ft-Lbs	Trust/Pullback Lbs
Maxi-HDD	18 and greater	>1,000	>10,000	>70,000
Midi-HDD	Up to 16	Up to 1,000	1,900 to 9,999	20,001 to 69,999
Mini-HDD	Up to 6	Up to 600	Up to 1,899	Up to 20,000
[1] For the above, multiple pipe or conduit installations must not exceed the total outside pipe diameters stated above (not coupler diameter if using pipe with restrained joints).				

Match equipment to the size of pipe being installed. Obtain the Engineer's approval for installations differing from the above chart. Ensure that the drill rod can meet the bend radius required for the proposed installation.

555-4.6 Thrust/Pullback Requirements: Unless approved by the Engineer, limit use of HDD equipment to installing the following product sizes and lengths based on the following product size, force and length relationships.

HDD Bore Equipment Thrust/Pullback Capacity						
Lbs	5,000 to 7,000	7,001 to 12,000	12,001 to 16,000	16,001 to 25,000	25,001 to 40,000	>40,000
Product Size [(1)] Inches	Maximum Pullback Distance In Feet					
4 or <	400 or <					
6 or <		600 or <				
8 or <			800 or <			
10 or <				1,000 or <		
12 [300] or <					2,000 or <	
> 12 [300]						Engineer's Discretion
[(1)] for the above, where a single pull of multiple conduits is to be attempted, the applicable product size must be determined by the diameter of a circle that will circumscribe the individual conduits as a group.						

555-5 Drilling Operations:

555-5.1 Installation Process: Ensure adequate removal of soil cuttings and stability of the bore hole by monitoring the drilling fluids such as the pumping rate, pressures, viscosity and density during the pilot bore, back reaming and pipe installation. Relief holes can be used as necessary to relieve excess pressure down hole. Obtain the Engineer's approval of the location and all conditions necessary to construct relief holes to ensure the proper disposition of drilling fluids is maintained and unnecessary inconvenience is minimized to other facility users.

To minimize heaving during pull back, the pull back rate is determined in order to maximize the removal of soil cuttings without building excess down hole pressure. Contain excess drilling fluids at entry and exit points until they are recycled or removed from the site or vacuumed during drilling operations. Ensure that entry and exit pits are of sufficient size to contain the expected return of drilling fluids and soil cuttings.

Ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate local, state, or federal regulatory agencies. When drilling in suspected contaminated ground, test the drilling fluid for contamination and appropriately dispose of it. Remove any excess material upon completion of the bore. If in the drilling process it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue drilling without the Engineer's approval.

When conditions warrant, as determined by the Engineer, back reaming for enlarging the bore diameter shall be accomplished by connecting the reamer to trailing drill stems at the exit pit of the pilot bore. The drill pipe shall remain in the bore

hole until the final product is pulled into place. After the pilot bore is established, do not push anything from the entry pit to the exit pit.

The timing of all boring processes is critical. Install a product into a bore hole within the same day that the pre-bore is completed to ensure necessary support exists.

555-5.2 Boring Failure: If an obstruction is encountered during boring which prevents completion of the installation in accordance with the design location and specification, the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If, during construction, damage is observed to the FDOT facility, cease all work until resolution to minimize further damage and a plan of action for restoration is obtained and approved by the Engineer.

555-6 Documentation Requirements.

555-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within seven days of the completion of each bore path. Include the following in the report:

(a) Location of project and financial project number including the Permit Number when assigned

(b) Name of person collecting data, including title, position and company name

(c) Investigation site location (Contract plans station number or reference to a permanent structure within the project right of way)

(d) Identification of the detection method used

(e) Elevations and offset dimensions as required in 555-4.2

555-6.2 As-Built Plans: Provide the Engineer a complete set of As-Built Plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract plans and include roadway plan and profile, cross-section, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations and be referenced to a Department Bench Mark when associated with a Department project, otherwise to a U.S. Geological Survey (USGS) grid system and datum, or a specific location on top of an existing Department head wall. Plans must be same scale in black ink on white paper, of the same size and weight as the Contract plans. Submittal of electronic plans data in lieu of hard copy plans is preferred and may be approved by the Engineer if compatible with the Department software. Specific plans content requirements include but may not be limited to the following:

(a) The Contract plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.

(b) As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway show stationing of the crossing on the Contract plans. On the profile plans for the bore paths paralleling the roadway, show the Contract plans stationing. If the profile

plan for the bore path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as "Failed Bore Path - Taken Out of Service". Also show the name of the Utility owner, location and length of the drill head and any drill stems not removed from the bore path.

(d) Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

(e) Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipes placed within the casing as part of the Contract work.

555-7 Method of Measurement.

The method of measurement will be based on the length of product measured in place along the surface of the ground, complete and accepted. No additions or deductions will be made for sweeps in either the vertical or horizontal direction to complete the installation.

555-8 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section, including furnishing and installing product, from plan point of beginning to plan point of ending at plan depth, removal of excavated materials and spoils, removal and disposal of drilling fluids, backfilling, and complete restoration of the site. Bundled product in a single bore will be paid for as a single bore based on the equivalent outside pipe diameter (not restrained joint diameter). Separate payment shall not be made for individual products in a bundle.

The cost to populate the installed product (such as wires, pipes or carriers in conduit/casing/ducts) will be made under a separate pay item.

The installation and attachment of tracking conductors (wire or tape) will be included in the cost of the bore and will not be paid for separately.

No payment will be made for failed bore paths, injection of excavatable flowable fill, products taken out of service or incomplete installations.

No payment will be made for directional boring until a Bore Path Report has been delivered to the Engineer.

Payment will be made under:

Item No. 555- 1- Directional Bore - per foot.

570 PERFORMANCE TURF.
(REV 10-14-09) (FA 12-28-09) (7-10)

SECTION 570 (Pages 717 - 722) is deleted and the following substituted:

SECTION 570
PERFORMANCE TURF

570-1 Description.

Establish a growing, healthy turf over all areas designated on the plans. Use sod in areas designated on the plans to be sodded. Use seed, hydroseed, bonded fiber matrix, or sod in all other areas. Maintain turf areas until final acceptance of all contract work in accordance with Section 5-11.

570-2 Materials.

Meet the following requirements:

Turf Materials .....Section 981
Fertilizer.....Section 982
Water.....Section 983

570-3 Construction Methods.

570-3.1 General: Incorporate turf installation into the project at the earliest practical time.

Shape the areas to be planted to the plan typical sections and lines and grade shown in the Contract Documents.

Except in areas where the Contract Documents requires specific types of grass to match adjoining private property, any species of grass designated in Section 981 may be used. Use the methods and materials necessary to establish and maintain the initial grassing until acceptance of the Contract work in accordance with 5-11. All of the permanent grassing material shall be in place prior to final acceptance.

The Department will only pay for replanting as necessary due to factors determined by the Engineer to be beyond control of the Contractor.

Complete all grassing on shoulder areas prior to the placement of the friction course on adjacent pavement.

570-3.2 Seeding: At the Contractor's option, wildflower seed may be included in the turf seeding operation or performed separately from the turf seeding.

Use of compost meeting the requirements of Section 987 as mulch is acceptable unless otherwise specified.

570-3.3 Sod: Place the sod on the prepared surface, with edges in close contact. Do not use sod which has been cut for more than 48 hours.

Place the sod to the edge of all landscape areas as shown in the plans and as shown in the Design Standards.

Peg sod at locations where the sod may slide. Drive pegs through sod blocks into firm earth, flush with the sod soil surface, at intervals approved by the Engineer. The work and materials for pegging of sod as directed by the Engineer will be paid for as Unforeseeable Work.

Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

Monitor placed sod for growth of pest plants and noxious weeds. If pest plants and/or noxious weeds manifest themselves within 30 days of placement of the sod during the months April through October, within 60 days of placement of the sod during the months of November through March treat affected areas by means acceptable to the Department at no expense to the Department. If pest plants and/or noxious weeds manifest themselves after the time frames described above from date of placement of sod, the Engineer, at his sole option, will determine if treatment is required and whether or not the Contractor will be compensated for such treatment. If compensation is provided, payment will be made as Unforeseeable Work as described in 4-4.

Remove and replace any sod as directed by the Engineer.

570-3.4 Hydroseeding: Use equipment specifically designed for mixing the mulch, seed, fertilizer, tackifier and dye, and applying the slurry uniformly over the areas to be hydroseeded.

Use mulch that does not contain reprocessed wood or paper fibers. Ensure that 50% of the fibers will be retained on a twenty-five mesh screen.

Mix fertilizer as required into the hydroseeding slurry.

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Ensure that the dye does not contain growth or germination inhibiting chemicals.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

570-3.5 Bonded Fiber Matrix (BFM): Meet the minimum physical and performance criteria of this Specification for use of BFM in hydroseeding operations or temporary non-vegetative erosion and sediment control methods.

Provide evidence of product performance testing, manufacturer's certification of training and material samples to the Engineer at least seven calendar days prior to installation.

Provide documentation to the Engineer of manufacturer's testing at an independent laboratory, demonstrating superior performance of BFM as measured by reduced water runoff, reduced soil loss and faster seed germination in comparison to erosion control blankets.

Use only BFMs that contain all components pre-packaged by the manufacturer to assure material performance. Deliver materials in UV and weather resistant factory labeled packaging. Store and handle products in strict compliance with the manufacturer's directions.

When polyacrylamide is used as part of hydroseeding mix, only anionic polymer formulation with free acrylamide monomer residual content of less than 0.05% is allowed. Cationic polyacrylamide shall not be used in any concentration. Do not spray polyacrylamide containing mixtures onto pavement. These may include tackifiers, flocculants or moisture-holding compounds.

Meet the following requirements after application of the formed matrix:

Ensure that the tackifier does not dissolve or disperse upon re-wetting.

Ensure that the matrix has no gaps between the product and the soil and that it provides 100% coverage of all disturbed soil areas after application.

Ensure that the matrix has no germination or growth inhibiting properties and does not form a water-repelling crust.

Ensure that the matrix is comprised of materials which are 100% biodegradable and 100% beneficial to plant growth.

Mix and apply the BFM in strict compliance with the manufacturer's recommendations.

Apply the BFM to geotechnically stable slopes at the manufacturer's recommended rates.

Degradation of BFM will occur naturally as a result of chemical and biological hydrolysis, UV exposure and temperature fluctuations. Re-application, as determined by the Engineer, will be required if BFM-treated soils are disturbed or water quality or turbidity tests show the need for an additional application. The work and materials for re-application, will be paid for as Unforeseeable Work.

570-3.6 Watering: Water all turf areas as necessary to produce a healthy and vigorous stand of turf. Ensure that the water used for turf irrigation meets the requirements of Section 983.

570-3.7 Fertilizing: Fertilize as necessary based on soil testing performed in accordance with Section 162. Refer to Section 982 for fertilizer rates.

For bid purposes, base estimated quantities on an initial application of 265 lbs/acre and one subsequent application of 135 lbs/acre of 16-0-8.

570-4 Turf Establishment.

Perform all work necessary, including watering and fertilizing, to sustain an established turf until final acceptance, at no additional expense to the Department. Provide the filling, leveling, and repairing of any washed or eroded areas, as may be necessary.

Established turf is defined as follows:

Established root system (leaf blades break before seedlings or sod can be pulled from the soil by hand).

No bare spots larger than one square foot.

No continuous streaks running perpendicular to the face of the slope.

No bare areas comprising more than 1% of any given 1,000 square foot area.

No deformation of the turf areas caused by mowing or other Contractor equipment.

Monitor turf areas and remove all competing vegetation, pest plants, and noxious weeds (as listed by the Florida Exotic Pest Plant Council, Category I "List of Invasive Species", Current Edition, www.fleppc.org). Remove such vegetation regularly by manual, mechanical, or chemical control means, as necessary. When selecting herbicides, pay particular attention to ensure use of chemicals that will not harm desired turf or wildflower species. Use herbicides in accordance with 7-1.7.

If at the time that all other work on the project is completed, but all turf areas have not met the requirements for established turf set forth in 570-4, continuously maintain all turf areas until the requirements for established turf set forth in 570-4 have been met.

During the entire establishment period and until turf is established in accordance with this specification, continue inspection and maintenance of erosion and sedimentation control items in accordance with Section 104. Take responsibility for the proper removal and disposal of all erosion and sedimentation control items after turf has been established.

Notify the Engineer, with a minimum of seven calendar days advance notice, to conduct inspections of the turf at approximate 90-day intervals during the establishment period to determine establishment. Results of such inspections will be made available to the Contractor within seven calendar days of the date of inspection. Determination of an established turf will be based on the entire project and not in sections.

Upon the determination by the Engineer that the requirements of 570-4 have been met and an established turf has been achieved and all erosion and sedimentation control items have been removed, the Engineer will release the Contractor from any further responsibility provided for in this Specification.

The Contractor's establishment obligations of this specification will not apply to deficiencies due to the following factors, if found by the Engineer to be beyond the control of the Contractor, his Subcontractors, Vendors or Suppliers:

a. Determination that the deficiency was due to the failure of other features of the Contract.

b. Determination that the deficiency was the responsibility of a third party performing work not included in the Contract or its actions.

The Department will only pay for replanting as necessary due to factors determined by the Department to be beyond the control of the Contractor.

570-5 Responsible Party.

For the purposes of this Specification, the Contractor shall be the responsible party throughout construction and establishment periods.

Upon final acceptance of the Contract in accordance with 5-11, the Contractor's responsibility for maintenance of all the work or facilities within the project limits of the Contract will terminate in accordance with 5-11; with the sole exception that the facilities damaged due to lack of established turf and the obligations set forth in this Specification for Performance Turf shall continue thereafter to be responsibility of the Contractor as otherwise provided in this Section.

570-6 Disputes Resolution.

The Contractor and the Department acknowledge that use of the Statewide Disputes Review Board is required and the determinations of the Statewide Disputes Review Board for disputes arising out of the Performance Turf Specification will be binding on both the Contractor and the Department, with no right of appeal by either party, for the purposes of this Specification.

Any and all Statewide Disputes Review Board meetings after final acceptance of the Contract in accordance with 5-11 shall be requested and paid for by the Contractor. The Department will reimburse the Contractor for all fees associated with meetings.

570-7 Failure to Perform.

Should the Contractor fail to timely submit any dispute to the Statewide Disputes Review Board, refuse to submit any dispute to the Statewide Disputes Review Board, fail to provide an established turf in accordance with 570-4 within one-year of final acceptance of the Contract in accordance with 5-11, or fail to compensate the Department for any remedial work performed by the Department in establishing a turf and other remedial work associated with lack of an established turf, including but not limited to, repair of shoulder or other areas due to erosion and removal of sediments deposited in roadside ditches and streams, as determined by the Statewide Disputes Review Board to be the Contractor's responsibility, the Department shall suspend, revoke or deny the Contractor's certificate of qualification under the terms of Section 337.16(d)(2), Florida Statutes, until the Contractor provides an established turf or makes full and complete payment for the remedial work performed by the Department. In no case shall the period of suspension, revocation, or denial of the Contractor's certificate of qualification be less than six (6) months. Should the Contractor choose to challenge the Department's notification of intent for suspension, revocation or denial of qualification and the Department's action is upheld, the Contractor shall have its qualification suspended for a minimum of six (6) months or until the remedial action is satisfactorily performed, whichever is longer.

570-8 Method of Measurement.

The quantities to be paid for will be plan quantity in square yards based on the area shown in the plans, completed and accepted.

570-9 Basis of Payment.

Prices and payments will be full compensation for all work and materials specified in this Section.

Payment will be made under:

Item No. 570- 1- Performance Turf - per square yard.

603 GENERAL REQUIREMENTS FOR THE INSTALLATION AND EVALUATION OF TRAFFIC CONTROL SIGNALS AND DEVICES. (REV 6-16-11) (FA 8-5-11) (1-12)

SECTION 603 (Pages 727 – 730) is deleted and the following substituted:

SECTION 603
GENERAL REQUIREMENTS FOR THE INSTALLATION AND EVALUATION OF TRAFFIC CONTROL SIGNALS AND DEVICES

603-1 Description.

The provisions contained in this Section include general requirements for all traffic control signals and devices.

603-2 Equipment and Materials.

603-2.1 General: Except as provided in 603-2.2, only use traffic control signals and devices meeting the requirements of the Minimum Specifications for Traffic Control Signals and Devices (MSTCSD), the Contact Documents, and listed on the Department's Approved Product List (APL).

Only use new equipment and materials, except as specified in the Contract Documents.

603-2.2 Exceptions: The Department may grant exceptions to the requirements of 603-2.1 by Temporary Permit to evaluate new technology or for other circumstances that are found to be in the public interest.

603-2.3 Uniformity: Only use compatible units of any one item of equipment, such as signal heads, detectors, controllers, cabinets, poles, signal system or interconnection equipment, etc.

603-2.4 Hardware and Fittings: Ensure that all bolts and nuts less than 5/8 inch in diameter are passivated stainless steel, Type 316 or Type 304 and meet the requirements of ASTM F 593 and ASTM F 594 for corrosion resistance.

Ensure that all bolts and nuts 5/8 inch and over in diameter are galvanized and meet the requirements of ASTM A 307.

Use high-strength steel anchor bolts and U-bolts, having a minimum yield strength of 55,000 psi and a minimum ultimate strength of 90,000 psi.

603-2.5 Galvanizing: Meet the requirements of Section 962 when galvanizing for fittings and appurtenances for all structural steel (including steel poles).

603-3 Definitions.

Traffic Control Signals and Devices: Any signal or device, manually, electrically or mechanically operated by which traffic is alternately directed to stop and permitted to proceed or controlled in any manner. Traffic Control Signals and Devices regulate, warn, or guide traffic on, over or adjacent to a street, highway, pedestrian facility, or bikeway by authority of a public agency having jurisdiction. Traffic Control Signals and Devices include, but are not limited to, controller assemblies (controller cabinets and their contents); signal heads including their hanging or mounting devices; vehicle detection systems (loops, sealant, amplifier, lead-in wire, or cable); pedestrian detection systems (push button, push button housing, lead-in wires, and signal); Motorist Information Systems, Video Equipment, Network Devices, Dynamic Message Signs, Highway Advisory Radios, Cameras, Vehicle Detection Systems, and other equipment used within a traffic control system.

Minimum Specifications for Traffic Control Signals and Devices: The minimum specifications used for the evaluation, certification, and approval of official traffic control signals and devices and ancillary devices for use on the streets and highways of Florida. The specifications are available on the Traffic Engineering and Operations web site.

Approved Product List (APL): A listing of approved traffic control signals and devices, and ancillary devices or system equipment that the Department has reviewed for compliance to specifications and authorized for use on the streets and highways of Florida. The APL is available on the Traffic Engineering and Operations web site.

Temporary Permit: A permit issued by the Traffic Engineering and Operations Office to a public or private entity for the purpose of evaluating the operational effectiveness and safety of a device for a specified time period at specific locations. This

permit is issued only when the limited use of the device is in the best interest of the public.

603-4 Systems Approval Requirement.

The Engineer will review and approve any system design plan of traffic control signals and devices, that is controlled and/or operated from a remote location by computers or similar devices, and which affects the movement of traffic on any portion of the State Highway System, prior to installation. Within such system, only use traffic control signals and devices that meet all certification or approval requirements contained herein.

603-5 Device Approval Process.

The Department's Approved Product List certification and approval process is described in the FDOT Traffic Engineering Manual, Section 7.1

603-6 Marking of Approved Equipment.

Ensure that traffic control signals and devices are marked in accordance with Section A601 of the MSTCSD.

603-7 Submittal Data Requirements.

Prior to the installation of equipment and within 30 days after the preconstruction conference, submit a completed listing of all traffic control signals, devices, or hardware with FDOT APL approval number(s) to the Engineer for approval on the form provided by the Department. For non-structural equipment or materials that do not have a FDOT APL approval number, submit one copy of the manufacturer's descriptive literature and technical data fully describing the equipment to the Engineer for approval.

Develop shop drawings for all structural support materials and other special designs, such as non-electrical, non-mechanical, or other fabricated items, which may not be specifically detailed in the plans. Have the Specialty Engineer approve all shop drawings. Do not submit shop drawings for those items that have been previously evaluated and approved. Meet the requirements of 5-1.4 for shop drawings. Send two copies of the shop drawings signed and sealed by the Specialty Engineer to the Engineer.

Provide a complete operable signal installation as specified in the Contract regardless of any failure of the Department to discover or note any unsatisfactory material. Meet the requirements of Section 608.

603-8 Documentation for Electronic Equipment.

Prior to final acceptance, furnish the Engineer with two copies of the following documentary items obtained from the manufacturer for the electronic equipment listed below:

1. Operation Manual
2. Troubleshooting and Service Manual
3. Assembly and Installation Instructions
4. Pictorial layout of components and schematics for circuit boards
5. Parts list, including the location
6. Diagram of the field installation wiring (not applicable to the detectors)
7. Warranty information

Furnish documentary items for the following equipment:

1. Controllers
2. Vehicle detectors
3. Load switches
4. Flasher units
5. Preemption units
6. Conflict monitors
7. Special sequence relays
8. Cameras
9. Dynamic Message Signs
10. Highway Advisory Radios
11. Road Weather Information Systems
12. Any other equipment which has a logic, timing, or communications function
13. Other equipment specified in the Contract Documents

603-9 Department-Furnished Equipment Installed By Contractor.

Where the Contract includes installation of Department-furnished equipment, the Department will turn over such equipment to the Contractor when the construction progress allows or as designated in the Contract Documents. The Department will test and certify the equipment to be in proper condition and ready to use and will bear the costs of correcting any defects in the equipment prior to pick-up by the Contractor. The Engineer will coordinate the pick-up and installation of the equipment. Maintain the equipment in proper operational condition after pick-up at no cost to the Department, until either final acceptance or the equipment is returned to the Department.

608 GUARANTIES FOR TRAFFIC CONTROL SIGNALS AND DEVICES. (REV 1-20-10) (FA 1-28-10) (7-10)

SECTION 608 (Page 730) is deleted and the following substituted:

SECTION 608
GUARANTIES FOR TRAFFIC CONTROL SIGNALS AND DEVICES

608-1 Description.

This Section sets forth guaranty requirements for traffic control signals and devices furnished to the Department. The Department will consider manufacturer and Contractor costs associated with providing and delivering equipment guaranties, requirements, terms, and conditions incidental to the payment for equipment or construction feature utilizing the equipment.

608-2 Guaranty Provisions.

608-2.1 Contractor's Responsibility: Secure all guaranties that are customarily issued by the equipment manufacturer for the specific equipment included in the Contract. Ensure that all manufacturers' warranties are fully transferable to the

Department and meet or exceed the Department's minimum warranty requirements for the equipment. The Contractor shall ensure that the form in which such guaranties are delivered to the Contractor includes the provision that they are subject to transfer to the maintaining agency as named by the Department, and is accompanied by proper validation of such fact. Transfer guaranties at final acceptance of the work (or equipment) by the Department.

608-2.2 Terms: Ensure that the terms of guaranties are stipulated by the manufacturer when submitting a request to the Department for certification and equipment submittals for construction projects. Include terms for a specified service performance with provisions for repair parts and labor, or for replacement. Provisions shall define the equipment "installation date" as the date for such guaranty to be in effect. For construction projects, the "installation date" is the first day of equipment "burn-in". For warehouse purchases, the "installation date" is the date of visual inspection approval, not to exceed ten days after delivery date.

608-2.3 Conditions: When guaranty is available, ensure that a written and signed guaranty accompanies the manufacturer's billing invoice. The Engineer will sign and retain the original and provide a copy to the maintaining agency and to the manufacturer. If the Contractor does not comply with the terms of the guaranty, the Department may suspend the certification. Comply with additional terms and conditions as stated in purchasing agreements.

611 ACCEPTANCE PROCEDURES FOR TRAFFIC CONTROL SIGNALS AND DEVICES.

(REV 5-12-11) (FA 8-5-11) (1-12)

SECTION 611 (Pages731 – 736) is deleted and the following substituted:

SECTION 611
ACCEPTANCE PROCEDURES FOR TRAFFIC CONTROL SIGNALS AND DEVICES

611-1 Description.

This Section sets forth Contract acceptance procedures for installations of traffic control signals and devices and for equipment purchase contracts.

611-2 Acceptance of Traffic Control Signal and Device Installations.

611-2.1 Partial Acceptance: The Engineer may make inspection for partial acceptance under the Contract in accordance with 5-10 of a complete traffic control signal and device installation upon its completion in accordance with the Contract Documents and at such time that other parts of the total Contract are at a stage of completion that either require or allow the installation to operate in a manner which is in accordance with the Contract Documents. Before inspection for partial acceptance, the Engineer will require the satisfactory completion of all field tests of completed installations in accordance with the requirements of 611-4. The Engineer will make inspection for partial acceptance in accordance with 5-10 in company with a Contractor's

representative and, when applicable, a representative of the agency designated to accept maintenance responsibility.

611-2.2 Final Acceptance: The Engineer will make inspection for final acceptance of traffic control signal and device installations as part of all work under the Contract in accordance with 5-11, only after satisfactory completion of all field tests of completed installations in accordance with the requirements of 611-4 and on the basis of a comprehensive final field inspection of all equipment installations. Submit three copies of Form 750-010-02, Submittal Data – Traffic Control Equipment, to the Engineer. The Engineer will make the final inspection with a Contractor's representative and, when applicable, a representative of the agency designated to accept maintenance responsibility. Transfer warranties and guarantees on equipment to the Department in accordance with Section 608. For traffic signal installations, submit three completed copies of form 700-010-22, Final Acceptance of Traffic Signal Installation(s) and Transfer of Maintenance, to the Engineer.

611-2.3 As-Built Drawings: As a condition precedent to acceptance under 611-2.1 or 611-2.2, furnish as-built drawings of all installations in accordance with the following requirements:

611-2.3.1 Submittal Requirements: Submit three sets of as-built plans for review by the Engineer on reproductions of the original 11 by 17 inch sheets. Record all as-built information using block lettering or typed text to ensure legibility. Signing and pavement marking plan sheets may be used instead of signalization plan sheets, if a substantial number of changes from the original plans must be recorded. ITS as-built plans must include an accurate table (spreadsheet) that provides the true final location of devices by mile post to three decimal places, plus an offset dimension given for each above-ground structure. Global positioning system (GPS) coordinates can be utilized as supplemental information in the table. Aerial photographs may be furnished with the table to provide supplementary information. The aerials should not include the extra features of the ROW, baseline, or roadway edges being drawn in. The aerials may be used as a base for the as-built plans with mile post and offset dimensions. If, in the opinion of the Engineer, the changes can not be clearly delineated on reproductions of the original 11 by 17 inch sheets, clearly delineate all changes on 11 by 17 inch detail sheets, enlarged 200% from the reproductions. Make any corrections resulting from the Engineer’s review, and resubmit three sets of the completed as-built plans as a condition precedent to acceptance of the installation.

611-2.3.2 Components: Include as-built information for all components of the installation. As a minimum, identify the following components in the format indicated below.

611-2.3.2.1 Conduit and Cable: Identify all conduit and cable with unique linestyles for routing (overhead, conduit, saw cut, etc.) that are clearly identified in a legend on each sheet. Identify the type of cable (i.e., 7 conductor signal cable) and label the number of conductors, fiber strands or other identifying features of the cable. For conduit, clearly note conduit size and number of runs.

611-2.3.2.2 Loops and Detection Zones: Identify the location of all installed loops (including the distance from the stop bar for the advance loops), the path of each loop to the pull box, the loop window and the path of the loop lead-in to the

controller cabinet. Identify the device location and the approximate detection area for detection systems that are not embedded in or under pavement.

611-2.3.2.3 Pull Boxes: Label unused and out of service pull boxes clearly. Show distances to each pull box from the nearest edgeline, stop bar, or other permanent feature. If an edgeline is not near a pull box or would not clearly identify its location; a fixed monument may be used (i.e. FDOT pole or structure).

611-2.3.2.4 Poles: Locate Poles from the nearest edgeline of both approaches. If an edgeline is not near a pole or would not clearly identify its location, a fixed monument may be used.

611-2.3.2.5 Signal Heads: Locate all signal heads with respect to the pavement markings. Each signal head shall be identified by its corresponding movement number.

611-2.3.2.6 Cabinet: Clearly locate all cabinets. The type of cabinets and inventory of internal components must be documented. Controller manufacturer along with the controller model number shall be provided for all traffic signal cabinets. A cabinet corner "blow up" shall be provided detailing pull box locations with all conduit and cable per 611-2.3.2.1 and 611-2.3.2.3.

611-2.3.2.7 Preemption: Clearly locate all preemption equipment. The type of preemption equipment and the manufacturer along with the model number shall be provided. Additionally, the type of communication medium (i.e. closed loop) shall be identified. Any underground conduit and cable as well as pull boxes shall be per 611-2.3.2.1 and 611-2.3.2.3.

611-2.3.3 Compensation: All costs involved with providing as-built drawings are incidental to the other items of work associated with traffic control signals and devices.

611-2.4 Installation Inspection Requirements: Meet the requirements of Section 105.

611-3 Signal Timing.

Set the timing of a traffic signal or system of traffic control devices in accordance with the Contract Documents, unless approved otherwise in writing by the Engineer.

611-4 Field Tests of Installations.

Perform the following tests in the presence of the Engineer and, when applicable, a representative of the agency designated to accept maintenance responsibility.

Continuity: Test each signal head circuit, pedestrian detector circuit, vehicle detector loop circuit, and interconnect signal circuit for continuity.

Functional: Perform a functional test that demonstrates that each and every part of the installation functions as specified.

Induced Voltage on traffic signal connections: Measure the voltage between each signal head indication field terminal and the AC neutral circuit in the controller cabinet during the off (dark) state of each signal head indication. Ensure that the voltage does not exceed 2 $V_{AC, RMS}$. If this value is exceeded, take the following action to reduce the value to 2 $V_{AC, RMS}$:

(1) Check for loose or broken connections in the signal head circuit from the controller cabinet to the signal heads.

(2) If (1) above does not correct the problem, connect additional neutral circuits between the signal head and the controller cabinet.

Inductive Loop Assembly: An inductive loop assembly is defined as a loop plus the lead-in cable. Measure and record the series resistance of each inductive loop assembly. Ensure that the resistance does not exceed 10 Ω. Perform an insulation resistance megger test, at 500 V_{DC}, for each inductive loop assembly at the cabinet in which the inductive loop assembly is terminated. Do not connect the inductive loop assembly to the cabinet terminal strips during the test, except for the drain wire of a shielded lead-in cable. Insulation resistance is defined as the resistance between one wire of the lead-in cable and a ground rod or bussbar. Record the insulation resistance of each inductive loop assembly. Ensure that the resistance is equal to or greater than 100 MΩ.

Perform the 48 hour test only after achieving acceptable results from the other tests listed in 611-4.

Forty-Eight Hour Test for Traffic Signal installations:

(a) Before beginning the 48 hour test, place all new signal installations (no existing signals) in flash for 48 to 336 hours. The length of the flash period will be determined by the Engineer.

(b) Continuously operate each new or modified traffic signal installation or system for not less than 48 hours. If unsatisfactory performance of the system develops, correct the condition, and repeat the test until obtaining 48 hours of satisfactory continuous operation.

(c) During the 48 hour test period, the Contractor is fully responsible for the signal or signal systems. Provide a responsible representative (technically qualified) who can monitor signal operation and troubleshoot any malfunctions within a one hour period.

When coordination is specified in the Contract Documents, provide a two hour training session on the operation and programming of the coordination features of the controller units during the 48 hour test. Arrange the time and place of the training session with the Engineer.

(d) Perform a 48 hour test for flashing beacon installations in the same manner as for traffic signal installations.

(e) Start the 48 hour test on a Monday, Tuesday, or Wednesday. Ensure the 48 hour test does not include weekends, Holidays, or Special Events.

(f) Start the 48 hour test between 9:00 AM and 2:00 PM.

(g) Before the 48 hour test, install and have standing by all equipment specified in the Contract Documents.

611-5 Contractor's Warranty Period for Installations.

611-5.1 General Requirements: After satisfactory completion of all field tests in accordance with 611-4, repair or replace any defective components or work of the installations for a 90 day period after final acceptance in accordance with 5-11.

611-5.2 Contractor's Responsibilities: During the warranty period, the Contractor is responsible for the following:

(a) Repair or replacement of equipment that fails to function properly due to defective materials or workmanship.

(b) Upon notification by the Engineer of a malfunction, restore the equipment to proper operating condition within 12 hours after notification by the Engineer.

If the Contractor fails to restore the equipment to proper operating condition within 12 hours after notification, the Engineer has the authority to have the remedial work performed by other forces. The Contractor is responsible for all incurred costs of the work performed by other forces. Remedial work performed by other forces does not alter any of the requirements, responsibilities or obligations of this warranty.

(c) In the event that the equipment does not function or malfunctions due to defective materials or workmanship, the Contractor is liable for any impairment to the safety of pedestrian and vehicular traffic resulting from such malfunction.

611-5.3 Department's Responsibilities: During the warranty period, the Department is responsible for the following:

(a) Electrical energy costs which are paid for by the local maintaining agency.

(b) All adjustments, such as timing, necessary for the normal operations of equipment.

(c) Documentation of the individuals involved and the time of Contractor notification upon failure or malfunction of equipment.

(d) Repair or replacement of any part of the installation damaged as a result of natural causes or those resulting from vehicular or pedestrian traffic not associated with Contractor activities.

611-6 Manufacturer's Tests and Certifications.

For materials which may not require formal testing, the Engineer reserves the right to require certifications from the manufacturer of such equipment and material, to the effect that they meet all Specification requirements, and, in the event of questionable equipment or material, to require that such material or equipment be tested at no expense to the Department.

The Engineer reserves the right to withhold any payments which may be due; if the Engineer determines that the equipment does not meet the Specifications or evaluation criteria.

611-7 Contracts for Purchase of Equipment.

611-7.1 Acceptance Tests Required: For each unit of equipment furnished under purchase contracts (furnish only), the Engineer will perform the following tests:

(a) Visual inspection within five days after delivery.

(b) Operational tests which determine whether the equipment performs in accordance with the requirements of the Contract Documents. The Engineer will complete such tests within 15 days after delivery. If the equipment is listed on the Department's Approved Product List (APL), the Engineer may verify the APL Certification number in lieu of the operational tests.

611-7.2 Eligibility for Payment:

The Department will base payment for equipment furnished under purchase contracts on satisfactory completion of the visual inspection and operational tests required by 611-7.1.

Before any payment will be made for each functional group, deliver to the Engineer and receive from the Engineer acceptance of all units of each functional group of equipment required to be furnished by the Contract Documents. The Department will make separate payment for a staged delivery of each functional group of equipment only when staged delivery is specified in the Contract Documents.

611-7.3 Equipment Failing to Pass Acceptance Tests:

When any unit of equipment fails to pass the acceptance tests, correct the deficiencies (by repair or replacement), at no expense (including all freight costs) to the Department, to attain compliance. If the original Contract Time has expired, the Department will charge and continue to assess liquidated damages in accordance with 8-10 until final acceptance of the equipment. Upon compliance with such correction requirements, the Engineer will perform tests on the equipment as specified above and will determine their eligibility for payment.

The Department will not assess liquidated damages during the acceptance test period in 611-7.1. The Department will allow only one acceptance test exclusion with regard to liquidated damages assessment per lot of units required to be delivered.

620 TRAFFIC CONTROL SIGNAL AND DEVICE INSTALLATION GROUNDING.

(REV 1-17-12) (1-30-12) (7-12)

SECTION 620 (Pages 736 – 738) is deleted and the following substituted:

SECTION 620
TRAFFIC CONTROL SIGNAL AND DEVICE INSTALLATION GROUNDING

620-1 Description.

Install grounding for traffic signal and device installations to provide personnel and equipment protection against faults, surge currents and lightning transients.

620-2 Materials.

620-2.1 Ground Rods: Use ground rods made of copper-clad steel with a minimum diameter of 5/8 inches. Ground rod sections must be a minimum of 8 feet in length and manufactured for the sole purpose of providing electrical grounding.

620-2.2 Grounding Conductors: Use solid No. 6 AWG copper insulated (green) conductor for electrical or lightning protection ground from the system ground bus or barrier plates to the grounding electrode assembly. Use either solid or stranded No. 6 AWG copper insulated (green) conductor for all ground connections.

620-2.3 Exothermic Grounding Bond: Use materials from the same source, meeting the requirements of the Institute of Electrical and Electronics Engineers Standards 80 and 837.

620-2.4 Ground Rod Coupling Devices: Use a coupling device for grounding electrode to grounding electrode connections approved by the Engineer.

620-3 Requirements for Grounding.

620-3.1 General: Meet all local electrical codes which exceed these Specifications. Install all grounding conductors, which bond grounding electrode assemblies, 18 inches below finished grade. Accomplish grounding for any element of a traffic control signal and device installation by installing either a grounding electrode assembly or a grounding electrode array, unless otherwise specified in the Contract Documents.

Bond all grounding electrode assemblies and arrays together and place in a location that minimizes the length of the grounding conductor between the assembly or array and the element being grounded.

Install 40 feet of ground assembly or array for each of the following elements:

(a) Electric power service
(b) Pole with electrical power service installed
(c) Pole mounted cabinet with electrical power service installed
(d) Controller or detector cabinet

Install 20 feet of ground assembly or array for each of the following elements:

(a) Pole
(b) Pedestals for pedestrian signals
(c) Metal cover used with pull boxes with AC power

Ensure that all separately grounded elements at an intersection are bonded together to form an intersection grounding network.

For span wire assemblies, use the span wire to connect the grounding electrode assemblies or arrays of the poles.

Do not install a grounding electrode assembly or array for a base mounted cabinet within 6 feet of a grounding electrode assembly or array installed for a pole.

Make all bonds between ground wires and grounding electrode assemblies or arrays with an exothermic bond with the following exception: do not exothermically bond grounding electrode to grounding electrode connections or the system ground bussbar or barrier plate connections located within a cabinet.

620-3.2 Grounding Electrode Assembly: Provide a grounding electrode assembly consisting of one or more grounding electrodes coupled together, such that the total length of the electrodes in the assembly is a minimum of 20 feet, driven into the earth at a single point, without disrupting the electrical continuity of the assembly.

Install the grounding electrode assembly so that the final elevation at the top is 6 inches below finished earth grade. Mark the location of the assembly with a stake and keep uncovered until the Engineer performs a final inspection of the installation.

620-3.3 Grounding Electrode Array: Provide a grounding electrode array consisting of two or more grounding electrode assemblies, bonded together and spaced a minimum of 6 feet apart.

620-3.4 Grounding Poles: Ground all poles, including pedestals for pedestrian signals, in accordance with the details for grounding and connections shown in the Design Standards.

For non-metallic traffic signal poles, including pedestals for pedestrian signals, accommodate the ground connection from signal heads and span wires to the

ground electrode assembly or array located at the pole base in accordance with the details in the Design Standards, Index No. 17727.

When erecting new metal poles within 10 feet of existing metal poles or structures, bond the new and existing poles or structures together.

620-3.5 Grounding Electric Power Service: Ground all electric power services in accordance with the details for grounding and connections shown in the Design Standards, Index No. 17736.

620-3.6 Grounding Controller or Detector Cabinets: Ground controller or detector cabinets to the bussbar located in the cabinet. Place the grounding electrode assembly or array as close to the cabinet as possible.

620-3.7 Grounding Span Wire Mounted Signal Heads and Electrically Powered Signs: Ground span wire mounted signal heads and electrically powered signs through the span wire assembly in accordance with the details shown in the Design Standards, Index No. 17727.

Do not use guy wires for grounding purposes, however bond any guy wire to the span wire as part of the intersection grounding network.

620-4 Basis of Payment.

The work specified in this Section will not be paid for directly, but will be considered as incidental work.

630 CONDUIT – FIBER OPTIC CABLE LOCATE WIRE. (REV 11-22-10) (FA 1-6-11) (7-11)

SUBARTICLE 630-3.1.2 (Pages 739 - 740) is deleted and the following substituted:

630-3.1.2 Fiber Optic Cable Locate Wire: Install locate wire in the trench or bore with all underground conduits to provide end-to-end electrical continuity for electronically locating the underground conduit system.

For direct burial conduit or trench, bury locate wire along the centerline of the top outer surface of installed conduit. Install the locate wire no more than 3 inches above the conduit.

For bored conduit, place locate wire within its own inner duct or use conduit with integral locate wire.

Ensure that the locate wire enters all pull boxes and splice boxes, and that a minimum of 10 feet of slack locate wire is coiled and neatly stored in each box. Drill a hole in the pull box or splice box for wire entry. Fill any gaps between the locate wire and the hole it passes through with non-shrink grout or a similar sealant suitable for the application and approved by the Engineer.

Do not run locate wires into field cabinets. Terminate locate wires at the first and last pull boxes in the conduit run. Ensure that wire termination occurs only at the top of a pull box. Perform continuity tests and insulation resistance tests on all locate wires. Provide the Engineer with all test results. Replace or repair defective locate wire at no additional cost.

Make locate wire splices in a flush grade-level box. Ensure that locate wire splices are waterproof and suitable for direct burial. Ensure that locate wire splices at the pull box meet NEC requirements. Ensure that locate wire splices include a mechanical crimp connection with a butt sleeve, an oxide-preventing aerosol lacquer, mastic electrical splicing tape, and standard electrical tape using methods and materials approved by the Engineer. At the completion of the installation, provide the Engineer with as-built drawings that document all splice locations.

635 PULL AND JUNCTION BOXES.
(REV 7-28-10) (FA 8-3-10) (1-11)

ARTICLE 635-3 (Page 749) is deleted and the following substituted:

635-3 Pull Boxes Installation.

Install pull boxes in accordance with the Design Standards, Index No. 17700. Ensure that the pull box cover is flush with the finished grade or sidewalk. Do not install pull boxes in roadways, driveways, parking areas, ditches or public sidewalk curb ramps.

639 ELECTRICAL POWER SERVICE ASSEMBLIES.
(REV 1-17-12) (FA 1-30-12) (7-12)

SECTION 639 (Pages 750 – 752) is deleted and the following substituted:

SECTION 639
ELECTRICAL POWER SERVICE ASSEMBLIES

639-1 Description.

Install electrical power service assemblies for either overhead service or underground service in accordance with the details shown in the Design Standards, Index No. 17736.

639-2 Definitions.

(a) Overhead Service: A service assembly which is supplied electrical power from an overhead power company source. Include with an overhead electrical power service assembly the following components:

(1) Weatherhead
(2) Conduit
(3) Electrical Service wire
(4) Meter base (when required)
(5) Service disconnect
(6) Surge Protective Device

(b) Underground Service: A service assembly which is supplied electrical power from an underground power company source. Include with an underground electrical power service assembly the following components:

(1) Conduit
(2) Electrical Service wire
(3) Meter base (when required)
(4) Service disconnect
(5) Surge Protective Device

639-3 Materials.

639-3.1 Weatherhead: Use a weatherhead made of a copper free aluminum alloy with three electrical service wire entrance holes, meeting NEC requirements.

639-3.2 Conduit: Use conduit meeting the requirements of Section 630. Meet the requirements of Section 562 for coating all field cut and threaded galvanized pipe.

639-3.3 Electrical Service Wire: Use No. 6 AWG stranded copper wire with XHHW (cross-linked polyethylene (XLPE) high heat-resistant, water-resistant) insulation, rated at 600 V in dry and wet condition.

639-3.4 Meter Base: Use meter bases approved by the local electric power company.

639-3.5 Service Disconnect:

639-3.5.1 Enclosure (Cabinet): Use an enclosure conforming to NEMA Standards for Type 3R, Type 3S or Type 4, made of galvanized steel, aluminum, stainless steel or other materials approved by the Engineer. Ensure that the enclosure has a hinged door which can be locked with a padlock. Provide padlock and two keys. Do not use external handles or switches. Ensure that the inside dimensions meet NEC requirements.

639-3.5.2 Circuit Breaker: Use a manually resettable circuit breaker which has a current rating above the current rating of the circuit breaker to which electrical power is provided. Do not use less than a 40A circuit breaker.

639-3.6 Surge Protective Device: Use a lightning arrester rated for a maximum permissible line to ground voltage of 175 VAC.

639-3.7 Attachment Hardware: Use attachment hardware that meets the requirements of Section 603.

639-4 Installation Requirements.

639-4.1 General: Meet the following requirements for the installation of individual components of the electrical power service assembly:

Use extreme care and caution in the installation of all components of the electrical power service assembly.

Follow installation procedures recommended by NEC and National Electrical Safety Code (NESC).

Consider the location of electrical power service assemblies as shown in the plans to be approximate, and coordinate with the appropriate electrical power company authority to determine the exact locations of each assembly.

639-4.2 Weatherhead: Securely attach the weatherhead to the upper end of the conduit which extends upward from the meter base (or service disconnect if a meter base is not required) to a minimum height of 22 feet above grade.

639-4.3 Conduit: Securely attach all conduit to the pole or cabinet with a maximum distance of 5 feet between conduit attachment hardware.

639-4.4 Electrical Service Wire: Install the electrical service wire in a manner which will ensure that damage to the installation will not occur.

Ensure that the service wire is of sufficient length after installation in the conduit to provide for attachment to the power company service and for termination within the cabinet for which power is required.

639-4.5 Meter Base: When a meter base is required, securely fasten the meter base to the pole or cabinet. Install pole mounted meter bases at a minimum height of 5-1/2 feet above grade when measured from the center of the meter base or meet the local electric power company requirement, whichever is greater.

639-4.6 Service Disconnect: Securely fasten the service disconnect to the pole (or cabinet with the Engineers approval), and electrically position the service disconnect between the service meter and the traffic control device cabinet to which electrical service is being supplied. Install pole mounted service disconnects a minimum of 4 feet above grade when measured from the bottom of the disconnect. For cabinet installations, mount the service disconnect at a height approved by the Engineer or as shown in the plans.

639-5 Method of Measurement.

639-5.1 General: Measurement for payment will be in accordance with the following work tasks.

Payment for Electrical Service Wire is based upon the distance of the cable run and includes payment for all conductors used in the run.

Payment for conduit and electrical service wire which is vertically attached to the electrical power assembly is considered incidental and paid under item 639-1.

639-5.2 Furnish and Install: The Contract unit price per foot of Electrical Service Wire, or the Contract unit price each for Electrical Service Disconnect, furnished and installed, will include furnishing all materials and hardware as specified in the Contract Documents, and all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation.

639-5.3 Furnish: The Contract unit price per foot of Electrical Service Wire, or the Contract unit price each, for Electrical Service Disconnect, furnished, will include the cost of the required materials and hardware as specified in the Contract Documents, plus all shipping and handling costs involved in delivery as specified in the Contract Documents.

639-5.4 Install: The Contract unit price per foot of Electrical Service Wire, or the Contract unit price each, for Electrical Service Disconnect, installed, will include all labor, equipment, and miscellaneous materials necessary for a complete and accepted installation. The Engineer will supply electrical service wire or electrical service disconnect.

639-5.5 Electrical Power Service: The Contract unit price per assembly for Electrical Power Service will include furnishing and installing all material and hardware as specified in the Contract Documents, and all labor and equipment necessary to make a complete and accepted installation.

639-6 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section.

Payment will be made under:

Item No. 639- 1-	Electrical Power Service - per assembly.
Item No. 639- 2-	Electrical Service Wire - per foot.
Item No. 639- 3-	Electrical Service Disconnect - each.

649 GALVANIZED STEEL STRAIN POLES, MAST ARMS AND MONOTUBE ASSEMBLIES – MATERIALS.

(REV 6-8-11) (FA 6-16-11) (1-12)

ARTICLE 649-2 (Pages 754 – 755) is deleted and the following substituted:

649-2 Materials.

Use pole assemblies as shown in the Design Standards when standard mast arm assemblies or standard strain pole assemblies are required by the Contract Documents.

Obtain strain poles, mast arm, and monotube assemblies from a fabrication facility that is listed on the Department's list of metal producers with accepted quality control program, meeting the requirements of 105-3.

Provide shop drawings and signed and sealed calculations, as needed, in accordance with Section 5 for configurations shown in the plans.

Use coating products meeting the requirements of Section 975.

Use grouts meeting the requirements of Section 934 listed on the QPL.

Use water meeting the requirements of Section 923.

Use membrane curing compounds meeting the requirements of Section 925.

SUBARTICLE 649-4.3. (Pages 755 and 756) is deleted and the following substituted:

649-4.3 Painting:

649-4.3.1 General: When required by the Contract Documents, provide painted strain poles, mast arms and monotube assemblies. Provide products from a fabricator on the Department's list of Prequalified Fabricators of Painted Galvanized Steel Strain Poles, Mast Arms and Monotube Assemblies. Provide products that will meet specification requirements throughout the warranty period. Meet the color requirement as specified in the Contract Documents. Provide the Engineer with two metal sample coupons, a minimum of 2 x 4 inches, painted concurrently and with the same paint as was used on the first lot of any strain poles, mast arms and monotube assemblies delivered to the jobsite. Provide sample coupons and manufacturer product data sheets to the Engineer along with the delivery of the first shipment of any painted strain poles, mast arms or monotube assemblies delivered to the jobsite. At the time of their delivery, the sample coupons described in this paragraph shall match the color of the strain poles, mast arms and monotube assemblies to within 1ΔE measured as specified in 975-4. If the delivered

sample coupons exhibit a difference in color from the strain poles, mast arms and monotube assemblies greater than 1ΔE then the sample coupons will be considered unacceptable and no payment shall be made for the materials which the sample coupons represent. Those materials shall not be accepted by the Department until acceptable representative sample coupons in accordance with the requirements of this Section have been delivered to the Engineer.

649-4.3.2 Responsible Party Warranty: When the Contract Documents call for painted galvanized steel strain poles, mast arms or monotube assemblies, the Contractor shall designate a Responsible Party to accept responsibility. The Responsible party designated by the Contractor must execute and deliver to the Department a form, provided by the Department, prior to the first delivery to the jobsite of any painted strain poles, mast arms or monotube assemblies, stipulating that the Responsible Party accepts responsibility for ensuring the coating system adhesion and color retention requirements as specified in 975-4 are met for a period of five years after final acceptance in accordance with 5-11. The Responsible Party shall also bear the continued responsibility for performing all remedial work associated with repairs of any adhesion or color retention failure as defined in Section 975, as to which notice was provided to the Responsible Party within the five year warranty period. Failure to timely designate the Responsible Party will result in the Contractor being the Responsible Party unless otherwise agreed to in writing by the Department. The responsible Party shall be either the Contractor or the Fabricator. When the Responsible Party is the Fabricator, the Responsible Party shall be one of the Fabricators listed on the "Prequalified Fabricators of Painted Galvanized Steel Strain Poles, Mast Arms and Monotube Assemblies." This list may be viewed on the Department's website at the following URL: www.dot.state.fl.us/construction/ .

Upon final acceptance of the Contract in accordance with 5-11, the Contractor's responsibility to ensure that the coating system adhesion and color retention requirements specified in 975-4 will terminate. The obligations of the Responsible Party set forth in this Section shall start at final acceptance of the Contract in accordance with 5-11 and continue thereafter until expiration of the five year warranty period.

650 VEHICULAR SIGNAL ASSEMBLIES (REV 2-2-11) (FA 2-7-11) (7-11)

ARTICLE 650-2 (Page 760) is deleted and the following substituted:

650-2 Materials.

Use signal housings, light emitting diode (LED) modules, backplates, and signal auxiliaries currently listed on the Department's Approved Product List (APL). Ensure that all equipment is marked in accordance with Section 603.

SUBARTICLE 650-3.1(Page760) is deleted and the following substituted:

650-3.1 Preassembly: Pre-assemble the signal heads when more than one signal section is required prior to installation at the site. Furnish signal heads with LED modules, backplates, and visors. Use tunnel visors unless otherwise specified in the Contract Documents. Install the LED ball module in the door so that the UP arrow or the word UP or TOP is in the up orientation of the signal housing. Install the LED arrow modules in the signal housing door in the direction of the intended use.

SUBARTICLES 650-3.7 thru 650-3.10 (Page761) are deleted and the following substituted:

650-3.7 Vertically Mounted Polycarbonate (Light-Weight) Signal Head Assemblies:
The top section of all multi- section (5- section, 3- section), vertically mounted, light-weight signal heads must be constructed of die cast aluminum, unless the entire 3-section polycarbonate signal head assembly is specifically approved and listed on the APL as a 12" Polycarbonate 3- Section Vehicle Assembly. Ensure that all sections of multi- section assemblies are from the same manufacturer.

Single section signals may be constructed of die cast aluminum or polycarbonate construction.

650-3.8 Backplates: Install louvered backplates on all signal head assemblies. On posted speed limits of 45 mph or greater, provide backplates with a reflectorized border.

650-3.9 Sealing Installed Signal Head Assembly: Ensure that the installed signal head assembly is sealed to exclude dust and moisture. Drill two 1/4 inch drain holes in the bottom of the installed signal head assembly.

650-3.10 Concealing Signals Not in Use: Where traffic signals are installed and not put into service immediately, conceal the signal head assembly by placing burlap bags or other covering approved by the Engineer over a weather resistant covering of non-transparent material open at the bottom to prevent condensation buildup.

650-3.11 Installation Sequence: Install all traffic signal assemblies at any intersection as a single operation unless a staged operation is approved by the Engineer.

SUBARTICLE 650-4.2 (Page 761) is deleted and the following substituted:

650-4.2 Furnish and Install: The Contract unit price per assembly for Traffic Signal, furnished and installed, will consist of the traffic signal assembly, including all attachment hardware necessary to make a complete unit, all mounting brackets, drop-pipe, disconnect hangers, backplates, visors, LED modules, labor, and materials necessary for a complete and accepted installation.

ARTICLE 650-5 (Page 762) is deleted and the following substituted:

650-5 Basis of Payment.

Price and payment will be full compensation for all work specified in this Section.

Payment will be made under:

Item No. 650- 5- Traffic Signal–per assembly.

690 REMOVAL OF EXISTING TRAFFIC CONTROL SIGNALS AND DEVICES.

(REV 6-16-10) (FA 7-26-10) (1-11)

SECTION 690 (Pages 772 – 775) is deleted and the following substituted:

SECTION 690
REMOVAL OF EXISTING TRAFFIC CONTROL SIGNALS AND DEVICES

690-1 Description.

Remove existing traffic control signals and devices including electrical and electronic equipment, supporting hardware and structures, electrical wiring, conduit, and all other elements specified and required to clear the areas of concern for new installations.

When removing existing traffic signals and devices , salvage and protect all equipment and materials designated for removal in the Contract Documents.

690-2 Ownership.

The Department retains ownership of the equipment removed unless otherwise stated in the Contract Documents.

690-3 General Removal Operations.

Remove and salvage all equipment, appurtenances, and materials designated on the plans to remain the property of the Department or other owner.

Where the removals require excavation, backfill, compact, and level the excavated areas (unless to be used as areas for other installations) so as to form a smooth contour, uniform in density with adjacent ground areas.

Where the removal operations require the removal or disturbance of overlying pavement, curb, grass, or sidewalk, remove such pavement and subsequently replace it in kind (or equivalent).

Remove, handle, and transport electronic equipment to be removed with all due care. Correct any damage to such equipment caused by negligence at no expense to the Department regardless of whether the damage occurs before or after removal of the equipment.

When removing all electronic equipment, also remove all attaching devices and all other devices and auxiliaries related to the electronic unit which the Department does not require to remain in place for use with replacing equipment.

Perform all removals in such a manner as to not damage or disturb adjacent property, utilities, or other equipment.

When replacing existing functioning installations with new installations, do not remove the existing installations until the new installations are in place and operating or until temporary traffic control approved by the Engineer is in place.

Notify the proper authorities or the owners of affected adjacent installations at least 24 hours in advance of any removal operations which might endanger or otherwise affect the operations of their facilities.

When the Contract Documents indicate that owners (or others) will remove their own poles, carefully remove and handle all equipment from such poles prior to such removal of the poles.

690-4 Specific Removal Operations.

690-4.1 Removal of Poles: Remove direct burial, strain poles, steel strain poles, mast arm and monotube assemblies and associated foundations as specified in the plans. Obtain the Engineer's approval for the removal process before beginning any removal work. These requirements do not apply to poles used for highway lighting, unless they are jointly used to support traffic control signals and devices, signal mast arm, or span wire assemblies.

Accomplish the removal process of each pole/foundation in such a manner as not to result in a safety hazard to motorists or adjacent property or damage to existing utilities. Ensure that all utilities have been located prior to removal.

When shallow pole removal is specified in the plans, ensure the remaining pole/foundation and any protrusions, such as pole keys, dead men, guying apparatus, conduit, anchor bolts, or reinforcing steel, are removed to a minimum depth of 4 feet below existing grade.

When deep pole removal is specified in the plans completely remove each pole including the foundation and all accessories or attachments, such as pole keys, dead men, guying apparatus, conduit, anchor bolts, and reinforcing steel.

Do not remove or disturb utility poles located within the right-of-way.

690-4.2 Removal of Signal Pedestal: Remove each signal pedestal and associated foundations as specified in the plans. Obtain the Engineer's approval for the removal process before beginning any removal work.

Accomplish the removal process of each pedestal/foundation in such a manner as not to result in a safety hazard to motorists, pedestrians or adjacent property or damage to existing utilities. Ensure that all utilities have been located prior to removal.

Completely remove each pedestal including the foundation and all accessories or attachments, such as pole keys, conduit, anchor bolts, and reinforcing steel.

690-4.3 Removal of Controllers and Cabinets: When removing controller assemblies, also remove the cabinet. For base mounted cabinets, completely remove the concrete base and technician pad.

Prior to removal, conduct an inventory of the cabinet and all cabinet contents, including identification of the model number and serial numbers of each item. Submit the inventory list to the Engineer for retention by the Department and provide a copy of the list to the equipment owner.

690-4.4 Removal of Signal Heads (Vehicular and Pedestrian): Remove all signal head assemblies and attachment hardware in such a manner as to avoid unnecessary damage.

690-4.5 Removal of Detectors (Vehicular and Pedestrian): Divide the removal of detector assemblies into the following categories:

(a) Vehicular Detector Assemblies: When the removal of vehicular detector assemblies is specified in the Contract Documents, remove the amplifier from the controller cabinet, the loop, and the lead-in wiring that is in the conduit and pull boxes.

When removing pressure type vehicular detector assemblies, remove the amplifier and the detector pad and its framework from the roadway pavement. After removing such detector assemblies, repair the roadway areas by backfilling and tamping with an approved asphalt concrete mix or concrete pavement mix so as to restore the roadway to the satisfaction of the Engineer.

When removing non-intrusive detectors that are not embedded in or under pavement, remove the roadside detector assembly, cabling, mounting hardware, and detector electronics in cabinet.

(b) Pedestrian Detector Assemblies: Include in the removal of pedestrian detector assemblies the removal of the push button detector, sign, and all mounting hardware, including the supporting post and foundation.

690-4.6 Removal of Mast Arms and Span Wires: Disconnect the mast arms and span wires carefully at the pole, and salvage all usable hardware and attachment devices as determined by the Engineer. Remove all devices supported by the mast arm or span wire (including wiring) prior to the removal of the mast arm or span wire.

For integrally installed mast arms and mast arm poles, remove the pole and mast arm combination as a unit after removing the devices supported by the mast arms.

690-4.7 Removal of Cabling and Conduit: After removing the conductor cable and conduit, carefully stub, or protect with other appropriate procedures, the remaining conductor cable and conduit at the point of removal.

If the removal of any cables and conduit requires excavation, restore disturbed areas compatible with adjacent ground areas.

690-5 Transporting and Storing Removed Equipment.

When the Contract Documents specify special handling, deliver equipment and materials that are not stipulated to be reused in the new installations to the location(s) designated in the Contract. When the Contract Documents note no special handling, stockpile or dispose of the removed materials as approved by the Engineer. The Engineer will determine ownership of removed equipment and will approve of the removal of any salvaged equipment from the project in advance.

Provide disposal areas, and dispose of removed concrete strain poles in such areas.

690-6 Method of Measurement.

690-6.1 General: The quantities to be paid for will be measured in accordance with the different work tasks required in this Section. The Contract unit price for each

different work task as specified in the Contract Documents will include all labor and equipment required to remove the specified items specified by the Pay Item Numbers.

690-6.2 Remove Poles:

690-6.2.1 Pole Removal Shallow: The quantity to be paid for will be the removal of each pole including the foundation and all accessories or attachments to a depth not less than 4 feet below existing grade.

690-6.2.2 Pole Removal Deep: The quantity to be paid for will be the complete removal of the pole and foundation including all accessories or attachments.

690-6.3 Remove Signal Pedestal: The quantity to be paid for will be the complete removal of each pedestal including the foundation and all accessories or attachments.

690-7 Basis of Payment.

Prices and payments will be full compensation for all work specified in this Section.

Payment will be made under:

Item No. 690- 10-	Remove Traffic Signal Head Assembly - each.
Item No. 690- 20-	Remove Pedestrian Signal Assembly - each.
Item No. 690- 31-	Remove Signal Pedestal - each.
Item No. 690- 32-	Pole Removal Shallow - each.
Item No. 690- 34-	Pole Removal Deep - each.
Item No. 690- 50-	Remove Controller or Cabinet - each.
Item No. 690- 60-	Remove Vehicular Detector Assembly - each.
Item No. 690- 70-	Remove Pedestrian Detector Assembly - each.
Item No. 690- 80-	Remove Span Wire Assembly - each.
Item No. 690- 90-	Remove Cabling and Conduit - per intersection or interchange.
Item No. 690-100-	Remove Miscellaneous Traffic Control Signals and Devices - per site.

699 INTERNALLY ILLUMINATED SIGNS.
(REV 11-15-10) (FA 1-4-11) (7-11)

ARTICLE 699-3 (Page 776) is deleted and the following substituted:

699-3 Submittal Requirements.

699-3.1 General: Free-swinging, internally illuminated signs and clamp-on cantilever arms mounted on the upright poles of mast arm assemblies or monotube signal structures may be accepted either by certification or by shop drawing submittal and approval as stipulated in this Section.

699-3.2 Acceptance of signs by Certification: Meet all of the following requirements:

1. Article 699-2,
2. Are not more than 18.0 sq. ft. in area, and
3. Weigh no more than 8 lbs. per sq. ft.

699-3.3 Acceptance of signs by Shop Drawing Approval: Submit Shop Drawings in accordance with Section 5 for internally illuminated street name signs not meeting all of the requirements of 699-3.2. Signs submitted for acceptance by shop drawing approval must be manufactured by a vendor with an approved internally illuminated sign listed on the APL.

699-3.4 Acceptance of Clamp-On Cantilever Arms: For Cantilever arms supporting signs meeting the requirements of 699-3.2, certify to the Engineer that the arm meets the criteria in this Section. For Cantilever Arms supporting signs which do not meet the requirements of 699-3.2, submit shop drawings and design calculations for the arm design in accordance with Section 5.

700 HIGHWAY SIGNING.

(REV 1-18-12) (FA 2-6-12) (7-12)

SECTION 700 (Pages 779-786) is deleted and the following substituted:

SECTION 700
HIGHWAY SIGNING

700-1 Description.

Furnish and erect roadway signs, at the locations shown in the plans, in accordance with the details shown in the plans. All overhead cantilever and truss mounted signs are to be lighted and retroreflective unless otherwise noted in the plans.

The Department designates Ground Traffic Signs as signs erected on the shoulders, slopes, or medians, but not extending over the traveled roadway.

The Department designates signs erected partially or completely over the traveled roadway or mounted on bridges as Overhead Traffic Signs, and may further classify some of these signs as Overhead Cantilever or Span Traffic Signs.

The Department designates signs that include certain electronic display components as Electronic Display Signs (EDS) and may further classify them as Electronic Warning Signs (EWS), Electronic Regulatory Signs (ERS), Electronic Speed Feedback Signs (ESFS), or Blank Out Signs (BOS). EDS may be erected on the shoulders, slopes, or in the medians, or installed on mast arms, monotube assemblies, or span wires.

Obtain multi-post and overhead sign structures from a fabrication facility that is listed on the Department's list of metal producers with an accepted quality control program, meeting the requirements of 105-3.

700-2 Sign Assembly Design Requirements.

700-2.1 General: Sign assemblies as specified in the plans fall into three general categories: ground sign assemblies, overhead sign assemblies, and electronic display signs.

700-2.2 Sign Panels: All sign panels shall be aluminum. Fabricate standard sign panel messages in accordance with details included in the Standard Highway Signs Manual published by the U.S. Department of Transportation. The Engineer will not

require the submittal of shop drawings for these signs or for non-standard sign panels and messages fabricated in accordance with details shown in the plans. Submit seven copies of shop drawings indicating detailed layout of the sign legend, spacing, and border for all other signs to the Engineer prior to fabrication.

If the size of a sign is not specified in the plans, provide the size sign for conventional roadways as shown in the MUTCD.

700-2.3 Breakaway Support Mechanisms for Ground Traffic Signs:

700-2.3.1 Frangible Supports: Provide posts for all frangible sign assemblies consisting of aluminum tubes up to 3 1/2 inches outside diameter with 3/16 inch wall thickness in accordance with the requirements in the Design Standards.

700-2.3.2 Slip Bases: For posts with slip base assemblies, use galvanized steel in accordance with the requirements in the Design Standards.

700-2.4 Overhead Sign Structures:

700-2.4.1 Shop Drawings: Submit shop drawings to the Department for approval as specified in Section 5. Prior to the submittal of the shop drawings, determine the actual length of support columns for all sign structures on the basis of existing field conditions and include these lengths on the shop drawings.

700-2.4.2 Installation: Install nuts on anchor bolts in accordance with 649-5 and 649-6. Use ASTM A325 bolt, nut and washer assemblies for all installations other than anchor bolts as follows. Use bolt, nut and washer assemblies that are free of rust and corrosion and that are lubricated properly as demonstrated by being able to easily hand turn the nut on the bolt thread for its entire length. Tighten nuts to the full effort of an ironworker using an ordinary spud wrench to bring the faying surfaces of the assembly into full contact which is referred to as snug tight condition. After bringing the faying surfaces of the assembly into full contact and to a snug tight condition, tighten nuts to achieve the minimum torque as specified in Table 700-1 unless the connection is an alternate splice connection of a span sign structure, in which case, tighten nuts in accordance with the turn-of-nut method of Table 460-7 of Section 460. Maintain uniform contact pressure on the faying surfaces during snugging and the subsequent final tightening process, by using a bolt tightening pattern that balances the clamping force of each bolt, as closely as possible, with the equal clamping force of a companion bolt. Within 24 hours after final tightening, the Engineer will witness a check of the minimum torque using a calibrated torque wrench for 3 bolts or a minimum of 10% of the bolts, whichever is greater, for each connection; however, do not perform this check on alternate splice connections of span sign structures.

Table 700-1

Bolt Diameter (in.)	Minimum Torque (ft.-lbs.)
3/8	15
1/2	37
5/8	74
3/4	120
7/8	190
1	275
1 1/8	375

1 1/4	525

700-2.5 Sign Retroreflective Sheeting: Meet the requirements of Section 994. Use Type III, VII or XI sheeting for background sheeting, white legends, borders and shields on all signs with the following exceptions:

a. Use Type VII sheeting for STOP, DO NOT ENTER and WRONG WAY signs.

b. Use Type III or greater prismatic material for white sheeting for overhead signs.

Use Type III, VII or XI yellow-green fluorescent sheeting for S1-1 school advance signs and supplemental panels used with S1-1, S3-1 and S4-5 school signs. Do not mix signs having fluorescent yellow-green sheeting with signs having yellow retroreflective sheeting. Use fluorescent orange Type VI or VII for all orange work zone signs. Mesh signs shall meet the color, daytime luminance and nonreflective property requirements of Section 994, Type VI.

700-2.6 Breakaway Support Mechanisms for Electronic Display Signs: Provide posts or posts with slip bases as shown in the plans.

700-3 Materials.

700-3.1 General: Meet the materials requirements shown below and any additional requirements which the plans might show.

700-3.2 Concrete: Use concrete meeting the requirements of Section 346.

700-3.3 Reinforcing Steel: For reinforcing steel in footings, meet the requirements of Section 415.

700-3.4 Aluminum Materials:

700-3.4.1 General: For aluminum materials, meet the general provisions of 965-1.

700-3.4.2 Sheets and Plates: For aluminum sheets and plates for sign panels, meet the requirements of ASTM B 209, Aluminum Association Alloy 6061-T6, 5154-H38 or 5052-H38 and those shown in the plans.

700-3.4.3 Extruded Tubing: For extruded aluminum tubing, meet the requirements shown in the plans.

700-3.4.4 Castings: Provide aluminum castings of the alloys shown in the plans. For aluminum alternates the Engineer will allow a cast base, provided the Contractor submits test reports giving evidence that the base to be used for each pole size is as strong as the pole with which it is to be used. Perform physical tests and submit certified reports for one base to be used with each pole size. Use Alloy A 356-T6 for the castings. Use aluminum bolts for connecting parts of the cast base.

700-3.4.5 Channels: For aluminum channels, meet the requirements of ASTM B 308 for the alloys shown in the plans.

700-3.4.6 Bolts, Nuts, and Lockwashers: For aluminum bolts, nuts, and lockwashers, meet the requirements shown in the plans. Ensure that finished bolts and washers are given an anodic coating of at least 0.0002 inch in thickness and are chromate-sealed.

700-3.5 Steel:

700-3.5.1 General: Only use structural steel, including bolts, nuts, and washers, that have been hot dip galvanized or metalized after fabrication. Perform hot dip

galvanizing in accordance with ASTM A 123 or ASTM A 153 and metalizing in accordance with Section 562. For galvanized steel members meet the general requirements of Section 962 and the specific requirements of 962-9.

700-3.5.2 Specific Uses of Aluminum and Galvanized Steel: Use aluminum bolts, nuts, and hardware to connect parts of the cast base.

Use galvanized steel anchor bolts for anchoring base plates to concrete bases and for the nuts and washers.

For all other metal parts of the cast base, the Engineer will allow galvanized steel as an alternate to aluminum.

700-3.6 Bearing Pads: For bearing pads, meet the requirements of 932-2.

700-3.7 Retroretroreflective Sheeting: All retroreflective sheeting must be listed on the QPL and meet the retroreflective sheeting requirements of Section 994.

700-3.8 Process Colors: Use transparent and black opaque process colors listed on the QPL meeting the requirements of 994-4 on retroreflective and nonreflective sheeting.

700-3.9 Electronic Display Signs: Use electronic display signs and mounting hardware that meet the requirements of the MSTCSD and are listed on the Department's Approved Products List.

Use only new signs and mounting hardware.

Provide signs marked in accordance with Section 603 and ensure the markings are visible after installation.

Provide installation guides and operator's manuals for each EDS. Ensure the manuals include functional block diagrams and wiring diagrams; with information required to operate, maintain, troubleshoot, and repair the EDS; and with recommended maintenance and calibration procedures.

Ensure signs have a manufacturer's warranty covering defects in assembly, fabrication, and materials for a minimum of three years from the date of final acceptance in accordance with 5-11. Ensure Guaranties on EDS comply with Section 608.

700-4 Preparation of Sign Blanks.

700-4.1 De-greasing and Etching for Aluminum Sign Blanks:

700-4.1.1 General: Prior to the application of retroreflective sheeting, use any of the methods shown below to de-grease and etch the aluminum sign blanks.

700-4.1.2 Hand Method: Under this method, de-grease and etch the blanks in one operation, using steel wool (medium grade) with any of the following combinations of materials:

(1) An abrasive cleanser of a commercial grade kitchen scouring powder.

(2) Acid and a suitable detergent solution.

(3) An alkaline solution.

Thoroughly rinse the blanks with clean water following all hand de-greasing operations.

700-4.1.3 Power-Washer Method: Under this method, de-grease the blanks with an inhibited alkaline cleanser, by spraying for 90 seconds with the solution between 135 and 249ºF, the exact temperature to be as recommended by the manufacturer of the cleanser. After the spraying, rinse the blanks with clean water. Then

etch the blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100 to 180ºF for 60 seconds. After immersion, rinse the blanks in clean water.

700-4.1.4 Immersion Method: Under this method, de-grease the blanks by immersing them in a solution of inhibited alkaline cleanser at a temperature between 160 and 180ºF for three to five minutes, and then rinsing with clean water. Then etch blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100ºF for three minutes. After immersion, rinse the blanks in clean water.

700-4.1.5 Vapor De-greasing Method: Under this method, de-grease the blanks by totally immersing them in a saturated vapor of trichloroethylene. Remove trademark printing with lacquer thinner or a controlled alkaline cleaning system.

700-4.1.6 Alkaline De-greasing Method: De-grease the blanks by totally immersing them in a tank containing an alkaline solution, controlled and titrated in accordance with the solution manufacturer's directions. Adapt immersion time to the amount of soil present and the thickness of the metal. After immersion, thoroughly rinse the blanks with running water.

700-4.1.7 Etching Method when De-greasing is Separate Operation: If using either of the de-greasing methods described under 700-4.1.5 and 700-4.1.6, accomplish etching by one of the following alternate methods:

(1) Acid Etch: Etch well in a 6 to 8% phosphoric acid solution at 100ºF, or in a proprietary acid etching solution. Rinse thoroughly with running cold water, which may be followed by a hot water rinse.

(2) Alkaline Etch: Etch aluminum surfaces in an alkaline etching material that is controlled by titration. Meet the time, temperature, and concentration requirements specified by the solution manufacturer. After completing etching is complete, rinse the panel thoroughly.

700-4.2 Drying: Dry the panels using a forced-air drier. Use a device or clean canvas gloves, to handle the material between all cleaning and etching operations and the application of retroreflective sheeting. Do not allow the metal to come in contact with greases, oils or other contaminants prior to the application of retroreflective sheeting.

700-4.3 Fabrication of Sign Blanks: Fabricate all metal parts to ensure a proper fit of all sign components. Complete all fabrication, with the exception of cutting and punching of holes, prior to metal de-greasing and applying the retroreflective sheeting. Cut metal panels to size and shape and keep free of buckles, warp, dents, burrs, and defects resulting from fabrication. Provide all sign panels with a flat surface.

700-5 Fabrication of Retroreflectorized Sign Faces.

700-5.1 Application of Sheeting: Apply retroreflective sheeting to the base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. Ensure that sheeting applied to extruded aluminum sections adheres over and around the side legs of all panels to a minimum distance of 1/16 inch beyond the radius of top edge.

Match sign faces comprising two or more pieces of retroreflective sheeting for color and retroreflectivity at the time of sign fabrication. Reverse and apply consecutively alternate successive width sections of either sheeting or panels to ensure that corresponding edges of sheeting lie adjacent on the finished sign. The Engineer will

not accept nonconformance that may result in non-uniform shading and an undesirable contrast between adjacent widths of applied sheeting.

700-5.2 Finish: Seal retroreflective sheeting splices and sign edges with materials the sheeting manufacturer supplies in a manner the sheeting manufacturer specifies for traffic control signs.

700-5.3 Screening-on Message: Screen message and borders on retroreflective sheeting in accordance with the recommendations of the ink or overlay manufacturer. Process either before or after applying the sheeting to the base panels.

700-5.4 Finished Sign Face: Provide finished signs with clean cut and sharp messages and borders. Ensure that finished background panels are essentially a plane surface.

700-5.5 Stenciling: For permanent roadway signs, mark the back of all finished panels at the bottom edge with "FDOT", the date of fabrication, the date of installation, and the fabricator's initials. Make the markings unobtrusive, but legible enough to be easily read by an observer on the ground when the sign is in its final position. Apply the markings in a manner that is at least as durable as the sign face.

700-6 Acceptance of Signs.

700-6.1 Manufacturer's Certification and Recommendations: Ensure that the sign manufacturer certifies that the delivered signs conform to this Section and provides recommendations for storing and repairing signs.

700-6.2 Packaging and Shipping: Have the manufacturer package and ship the signs in a manner which will minimize possible damage.

700-6.3 Storage of Signs: If signs are stored prior to installation, store them in accordance with the manufacturer's recommendations.

700-6.4 Sign Inspection: Do not install signs until the Engineer inspects them for conformance with this Section. Provide all manufacturer certifications and recommendations prior to the Engineer's inspection. The Engineer will inspect the signs upon delivery to the storage or project site and again at the final construction inspection. Repair and replace signs deemed unacceptable by the Engineer at no expense to the Department.

700-6.5 Imperfections and Repairs: Repair and replace signs containing imperfections or damage regardless of the kind, type, or cause of the imperfections or damage. Make repairs according to the manufacturer's recommendations and to the satisfaction of the Engineer. Ensure that completed repairs provide a level of quality necessary to maintain the service life warranty of the sign and are satisfactory in appearance to the Engineer.

700-6.6 Electronic Display Signs: In addition to the requirements of this Section, meet the requirements of Section 611.

700-7 Foundations.

700-7.1 Footings:

700-7.1.1Excavation and Backfilling: Perform excavation and backfilling for the footings in accordance with Section 125, with the exceptions that no specific density is required and that the backfill may be tamped in 4 inches maximum layers. Use material that is at near optimum moisture and neither dry or saturated, and

tamp to the extent directed by the Engineer. The Department may require that the backfilling be done with poured concrete.

Install spread footings which support sign structures overhanging the roadway as required in 455-25 through 455-37.

700-7.1.2 Mixing and Placing Concrete: For batching and mixing of concrete for footings, meet the requirements of Section 346, except that the Engineer will allow hand mixing by approved methods where the quantity to be mixed does not exceed 1/2 yd^3. Use cast-in-place or precast concrete for the footings. Obtain precast concrete footings from a plant that is currently on the list of Producers with Accepted Quality Control Programs. Producers seeking inclusion on the list shall meet the requirements of 105-3.

700-7.1.3 Forms: The Engineer will not require forms when the ground is sufficiently firm, in which case, sufficiently moisten the adjacent earth to prevent it from absorbing the moisture from the concrete. Where forms are required and the soil is not moist, place sufficient water, as directed by the Engineer, in the hole, and pour the concrete as soon as the water has been absorbed. Place at least 4 inches of loose earth, free from clods or gravel, over the top of the footing to effect curing.

700-7.1.4 Finishing Concrete: Trowel the top of the concrete to a smooth finish.

700-7.2 Drilled Shafts: Meet the requirements of Section 455.

700-8 Erection of Signs and Sign Supports.

Do not erect overhead sign supports until the concrete strength in the support footing is at least 2,500 psi. Determine concrete strength from tests on a minimum of two test cylinders sampled and tested in accordance with ASTM C 31 and ASTM C 39 and verifying test results have been provided to the Engineer.

Erect the signs and sign structures in accordance with the details shown in the plans. The Contractor may fabricate the structural steel sign trusses in sections that will fit into available galvanizing vats. Prior to galvanizing, weld the joints as specified in 460-6 and in accordance with the details shown in the plans. Re-galvanize damaged parts as specified in Section 562.

Weld aluminum structures in accordance with 965-3.

Attach electronic display signs to the supporting structure in accordance with the manufacturer's recommendations using the mounting hardware provided by the manufacturer.

700-9 Removal or Relocation of Signs.

Relocation of signs shall consist of removing the existing sign assembly and installing the sign on a new foundation.

When the plans call for existing ground-mounted signs to be relocated or removed, immediately remove supports and footings that project more than 6 inches above the ground surface after removing the sign panel from the assembly. Remove existing footings to a depth at least 12 inches below the ground surface. The costs will be included in the Contract unit price of the item to which it is incidental.

Notify the Engineer a minimum of 30 days prior to removal of existing Logo sign structures.

700-10 Overlay Existing Sign Panels.

Use 0.040 inch thick aluminum sheeting for overlays larger than 3 square feet placed on a sign panel. Replace hex head bolts on the sign surface using stainless steel flat head machine screws with nuts and lock washers to give a flat surface for the overlay panel. Install the overlay panels starting at the edge away from traffic. Place each panel against the sign using a clamp at the top to hold the panel in place. Drill 1/8 inch holes 1 inch inside the panel edge every 6 inches to 8 inches and install 1/4-inch to 3/8 inch length pop rivets. Install additional rivets along the outer edge 6 inches to 8 inches. Place the remaining panels using the same procedure with the overlap in the direction away from the traffic and with rivets along the overlap on 12 inch centers.

700- 11 Method of Measurement.

The quantities to be paid for will be:

(1) The number of ground traffic signs of each designated class of assembly, complete.

(2) The number of lighted overhead traffic signs of each designated class of assembly, complete.

(3) The number of existing signs removed, relocated, modified of each designated class of assembly, complete.

(4) The number of overhead signs span wire mounted, bridge mounted, and lighted sequential, of each designated class of assembly, complete.

(5) The number of electronic display signs, of each designated class of assembly, complete.

(6) The number of flashing beacon signs, of each designated class of assembly, complete.

For the purpose of payment, a sign assembly consists of all the signs mounted on a single structure (one, two or three posts, or overhead structure) or all the signs on a bridge mounted sign structure and the sign structure.

700-12 Basis of Payment.

Price and payment will be full compensation for furnishing and installation of all materials necessary to complete the signs in accordance with the details shown in the plans; including sign panels complete with sheeting, painting, and message; sign posts and supports, foundations, excavation, etc.; for lighted signs, include all costs of the electrical installation for lighting, up to the point of connection by others; for flashing beacon signs, include all costs of beacons, controllers, and electrical installation, up to the point of connection by others; and all other work specified in this Section, including all incidentals necessary for the complete item.

705 OBJECT MARKERS AND DELINEATORS.
(REV 5-17-10) (FA 7-16-10) (1-11)

SUBARTICLE 705-2.1 (Page 790) is deleted and the following substituted:

705-2.1 General: Meet the following requirements:

Object Markers and Delineators.....Section 993
Retroreflective and Nonreflective
Sign Sheeting.....Section 994

901 COARSE AGGREGATE.
(REV 5-31-11) (FA 6-7-11) (1-12)

SECTION 901 (Pages 814 – 819) is deleted and the following substituted:

SECTION 901
COARSE AGGREGATE

901-1 General.

901-1.1 Composition: Coarse aggregate shall consist of naturally occurring materials such as gravel, or resulting from the crushing of parent rock, to include natural rock, slags, expanded clays and shales (lightweight aggregates) and other approved inert materials with similar characteristics, having hard, strong, durable particles, conforming to the specific requirements of this Section.

Coarse aggregate for use in pipe backfill under wet conditions, underdrain aggregate, or concrete meeting the requirements of Section 347 may consist of reclaimed Portland cement concrete meeting the requirements of 901-5. Coarse aggregate for use in bituminous mixtures may consist of reclaimed Portland cement concrete meeting the requirements of 901-5, except that the reclaimed concrete shall be from a concrete mix which was produced and placed in accordance with applicable Department Specifications.

Materials substantially retained on the No. 4 sieve, shall be classified as coarse aggregate.

Approval of mineral aggregate sources shall be in accordance with 6-2.3.

901-1.2 Deleterious Substances: All coarse aggregates shall be reasonably free of clay lumps, soft and friable particles, salt, alkali, organic matter, adherent coatings, and other substances not defined which may possess undesirable characteristics. The weight of deleterious substances shall not exceed the following percentages:

Coal and lignite (AASHTO T 113).....1.00
Soft and friable particles (AASHTO T 112)*.....2.00
Clay lumps (AASHTO T 112)*.....2.00
Plant root matter (visual inspection in
AASHTO T 27)****.....0.005
Wood and wood matter (visual inspection in
AASHTO T 27)****.....0.005
Cinders and clinkers.....0.50
Free shell**.....1.00
Total Material passing the No. 200 sieve (FM 1-T 011)
At Source with Los Angeles Abrasion less than or equal
to 30 .....2.50
At Source with Los Angeles Abrasion greater than

30.....1.75
At Point of Use.....3.75
Fine-Grained Organic Matter (AASHTO 194).....0.03
Chert (less than 2.40 specific gravity SSD)
(AASHTO T-113)***.....3.00

* The maximum percent by weight of soft and friable particles and clay lumps together shall not exceed 3.00.

** Aggregates to be used in asphalt concrete may contain up to 5% free shell. Free shell is defined as that portion of the coarse aggregate retained on the No. 4 sieve consisting of loose, whole, or broken shell, or the external skeletal remains of other marine life, having a ratio of the maximum length of the particle to the shell wall thickness exceeding five to one. Coral, molds, or casts of other shells, and crushed clam and oyster shell indigenous to the formation will not be considered as free shell.

*** This limitation applies only to coarse aggregates in which chert appears as an impurity. It is not applicable to aggregates which are predominantly chert.

**** Plant root matter, and wood and wood matter shall be considered deleterious when any piece exceeds two inches in length or 1/2 inch in width.

The weights of deleterious substances for reclaimed Portland cement concrete aggregate shall not exceed the following percentages:

Bituminous Concrete 1.00
Bricks 1.00
Wood and other organic substances (by weight)***** 0.1
Reinforcing Steel and Welded Wire Fabric 0.1
Plaster and gypsum board 0.1
Joint Fillers.....0.1
***** Supersedes requirement for other coarse aggregate

901-1.3 Physical Properties: Coarse aggregates shall meet the following physical property requirements, except as noted herein:

Los Angeles Abrasion (FM 1-T 096).....maximum loss 45%
Soundness (Sodium Sulfate) AASHTO T104 .....
.....maximum loss 12%*
Flat or elongated pieces** .....maximum 10%

* For source approval - Aggregates exceeding soundness loss limitations will be rejected unless performance history shows that the material will not be detrimental for Portland Cement Concrete or other intended usages.

** A flat or elongated particle is defined as one having a ratio between the maximum and the minimum dimensions of a circumscribing prism exceeding five to one.

901-1.4 Gradation: Coarse aggregates shall conform to the gradation requirements of Table 1, when the stone size is specified. However, Table 1 is waived for those aggregates intended for usage in bituminous mixtures, provided the material is graded on sieves specified in production requirements contained in 6-2.3, and meets uniformity and bituminous design requirements.

TABLE 1 Standard Sizes of Coarse Aggregate

Amounts Finer than Each Laboratory Sieve (Square Openings), weight percent								
Size No.	Nominal Size Square Openings	4 inches	3 1/2 inches	3 inches	2 1/2 inches	2 inches	1 1/2 inches	1 inch
1	3 1/2 to 1 1/2 inches	100	90 to 100	-	25 to 60	-	0 to 15	-
2	2 1/2 inches to 1 1/2 inches	-	-	100	90 to 100	35 to 70	0 to 15	-
24	2 1/2 inches to 3/4 inch	-	-	100	90 to 100	-	25 to 60	-
3	2 inches to 1 inch	-	-	-	100	90 to 100	35 to 70	0 to 15
357	2 inches to No. 4	-	-	-	100	95 to 100	-	35 to 70
4	1 1/2 inches to 3/4 inch	-	-	-	-	100	90 to 100	20 to 55
467	1 1/2 inches to No. 4	-	-	-	-	100	95 to 100	-
5	1 inch to 1/2 inch	-	-	-	-	-	100	90 to 100
56	1 inch to 3/8 inch	-	-	-	-	-	100	90 to 100
57	1 inch to No. 4	-	-	-	-	-	100	95 to 100
6	3/4 inch to 3/8 inch	-	-	-	-	-	-	100
67	3/4 inch to No. 4	-	-	-	-	-	-	100
68	3/4 inch to No. 8	-	-	-	-	-	-	-
7	1/2 inch to No. 4	-	-	-	-	-	-	-
78	1/2 inch to No. 8	-	-	-	-	-	-	-
8	3/8 inch to No. 8	-	-	-	-	-	-	-
89	3/8 inch to No. 16	-	-	-	-	-	-	-
9	No. 4 to No. 16	-	-	-	-	-	-	-
10	No. 4 to 0	-	-	-	-	-	-	-

TABLE 1 (Continued)
Standard Sizes of Coarse Aggregate

Amounts Finer than Each Laboratory Sieve (Square Openings), weight percent								
Size No.	Nominal Size Square Openings	3/4 inch	1/2 inch	3/8 inch	No. 4	No. 8	No. 16	No. 50
1	3 1/2 inches to 1 1/2 inches	0 to 5						
2	2 1/2 inches to 1 1/2 inches	0 to 5						
24	2 1/2 inches to 3/4 inch	0 to 10	0 to 5					
3	2 inches to 1 inch	-	0 to 5					
357	2 inches to No. 4	-	10 to 30	-	0 to 5			
4	1 1/2 inches to 3/4 inch	0 to 15	-	0 to 5				
467	1 1/2 inches to No. 4	35 to 70	-	10 to 30	0 to 5			
5	1 inch to 1/2 inch	20 to 55	0 to 10	0 to 5				
56	1 inch to 3/8 inch	40 to 85	10 to 40	0 to 15	0 to 5			
57	1 inch to No. 4	-	25 to 60	-	0 to 10	0 to 5		
6	3/4 inch to 3/8 inch	90 to 100	20 to 55	0 to 15	0 to 5			
67	3/4 inch to No. 4	90 to 100	-	20 to 55	0 to 10	0 to 5		
68	3/4 inch to No. 8	90 to 100	-	30 to 65	5 to 25	0 to 10	0 to 5	
7	1/2 inch to No. 4	100	90 to 100	40 to 70	0 to 15	0 to 5		
78	1/2 inch to No. 8	100	90 to 100	40 to 75	5 to 25	0 to 10	0 to 5	
8	3/8 inch to No. 8	-	100	85 to 100	10 to 30	0 to 10	0 to 5	
89	3/8 inch to No. 16	-	100	90 to 100	20 to 55	5 to 30	0 to 10	0 to 5
9	No. 4 to No. 16	-	-	100	85 to 100	10 to 40	0 to 10	0 to 5
10	No. 4 to 0	-	-	100	85 to 100	-	-	-

The gradations in Table 1 represent the extreme limits for the various sizes indicated which will be used in determining the suitability for use of coarse aggregate from all sources of supply. For any grade from any one source, the gradation shall be held reasonably uniform and not subject to the extreme percentages of gradation specified above.

901-2 Natural Stones.

Course aggregate may be processed from gravels, granites, limestones, dolomite, sandstones, or other naturally occurring hard, sound, durable materials meeting the requirements of this Section.

901-2.1 Gravels: Gravel shall be composed of naturally occurring quartz, free from deleterious coatings of any kind. The minimum dry-rodded weight AASHTO T 19 shall be 95 lb/ft^3.

Crushed gravel shall consist of a minimum of 85%, by weight, of the material retained on the No. 4 sieve, having at least three fractured faces.

901-2.2 Granites: Coarse aggregate produced from the crushing of granites shall be sound and durable. For granites to be used in bituminous mixtures and surface treatments, the Los Angeles Abrasion requirement of 901-1.3 is modified to permit a maximum loss up to 50 (FM 1-T 096). Maximum amount of mica schist permitted is 5% (FM 5-584).

901-2.3 Limestones, Dolomite and Sandstone: Coarse aggregates may be produced from limestone, dolomite, sandstones, and other naturally occurring hard, durable materials meeting the requirements of this Section.

Pre-Cenozoic limestones and dolomite shall not be used as crushed stone aggregates either coarse or fine for Asphalt Concrete Friction Courses, or any other asphalt concrete mixture or surface treatment serving as the final wearing course. This specifically includes materials from the Ketone Dolomite (Cambrian) Newala Limestone (Mississippian), and Northern Alabama and Georgia.

As an exception to the above up to 20% fine aggregate from these materials may be used in asphalt concrete mixtures other than Friction Courses which serve as the final wearing course.

901-2.4 Cemented Coquina Rock: For Cemented Coquina Rock to be used in bituminous mixtures, the Los Angeles Abrasion requirement of 901-1.3 is modified to permit a maximum loss up to 50 (FM 1-T 096) provided that the amount of material finer than No. 200 generated during the Los Angeles Abrasion test is less than 18%.

901-3 Manufactured Stones.

901-3.1 Slags: Coarse aggregate may be produced from molten nonmetallic by-products consisting essentially of silicates and aluminosilicates of calcium and other bases, such as air-cooled blast-furnace slag or phosphate slag, provided it is reasonably uniform in density and quality, and reasonably free from deleterious substances as specified in 901-1.2. In addition, it must meet the following specific requirements:

Sulphur content ..... not more than 1.5%
Dry rodded weight AASHTO T 19 ..... minimum 70 lb/ft^3
Glassy Particles ..... not more than 10%

Slag shall not be used as an aggregate for Portland cement concrete.

For Air-Cooled Blast Furnace Slag, the Los Angeles Abrasion requirement of 901-1.3 is modified to permit a maximum loss up to 50 (FM 1-T 096) provided that the amount of material finer than No. 200 sieve generated during the Los Angeles Abrasion test is less than 18%.

901-4 Lightweight Aggregates.

901-4.1 Lightweight Coarse Aggregate for Bituminous Construction: Lightweight coarse aggregate may be produced from naturally occurring materials such as pumice, scoria and tuff or from expanded clay, shale or slate fired in a rotary kiln. It shall be reasonably uniform in quality and density, and free of deleterious substances as specified in 901-1.2, except that the term cinders and clinkers shall apply to those particles clearly foreign to the extended aggregate in question.

In addition, it must meet the following specific requirements:

Material passing the No. 200 Sieve .....maximum 3.00%, (FM 1-T 011)
Dry loose weight (AASHTO T 19)*..... 33-55 lb/ft^3
Los Angeles Abrasion (FM 1-T 096) maximum 35%
Ferric Oxide (ASTM C 641)..... maximum 1.5 mg

* Source shall maintain dry-loose unit weight within plus or minus 6% of Quality Control average. Point of use dry-loose unit weight shall be within plus or minus 10% of Source Quality Control average.

901-4.2 Lightweight Coarse Aggregate for Structural Concrete: The requirements of 901-4.1 are modified as follows:

Aggregates shall not be produced from pumice and scoria.

Los Angeles Abrasion (FM 1-T 096, Section 12) shall be 45%, maximum.

Gradation shall meet the requirements of AASHTO M 195 for 3/4 inch, 1/2 inch and 3/8 inch.

901-5 Reclaimed Portland Cement Concrete.

The reclaimed Portland cement concrete shall be crushed and processed to provide a clean, hard, durable aggregate having a uniform gradation free from adherent coatings.

The Contractor's (Producer's) crushing operation shall produce an aggregate meeting the applicable gradation requirements. The physical property requirements of 901-1.3 for Soundness shall not apply and the maximum loss as determined by the Los Angeles Abrasion (FM 1-T 096) is changed to 50.

The sources of reclaimed Portland cement concrete will be treated as a mine and subject to the requirements of Section 6 and Section 105. These sources shall qualify as facilities generating clean debris, defined in Rule 62-701.200(15), Florida Administrative Code, as uncontaminated concrete exempt from solid waste regulation in accordance with Rule 62-701.220(2)(f), FAC.

If the Department determines that the concrete has been contaminated with petroleum products or lead-based paint, the concrete shall not be considered clean debris and the source shall be required to be permitted and to perform testing in accordance with Rule 62-701, FAC, subject to any ensuing enforcement action by the Florida Department of Environmental Protection.

Concrete shall be asbestos free.

Operators of demolition recycling facilities shall demonstrate that they are in compliance with 40 Code of Federal Regulations (CFR) 61.141 and 61.145. Notification requirements from each owner or operator of a demolition or renovation activity supplying reclaimed concrete shall be available at the recycling facility.

901-6 Exceptions, Additions and Restrictions.

Pertinent specification modifications, based on material usage, will be found in other Sections of the specifications.

914 STABILIZATION MATERIALS.
(REV 5-17-11) (FA 6-7-11) (1-12)

SECTION 914 (Page 827) is deleted and the following substituted:

SECTION 914
STABILIZATION MATERIALS

914-1 General.

This Section governs materials to be used in subgrade stabilization. Meet the following requirements:

Plasticity Index (AASHTO T 90)	Maximum 10
Liquid Limit (AASHTO T 89)	Maximum 40
Passing a 3-1/2 inch screen (AASHTO T 27)	Minimum 97%
LBR	No Requirement

914-2 Materials for Stabilizing (Limerock Bearing Ratio).

914-2.1 Commercial Materials: Materials may be either limerock, shell rock, cemented coquina or shell base sources approved in accordance with 6-2.3.

914-2.2 Local Materials: Local materials used for stabilizing may be soils or recyclable materials such as crushed concrete, roof tiles and asphalt coated base or reclaimed pavement provided the following limits for Organic Content are met.

Average Organic Content* (FM 1-T 267)	Maximum 2.5%
Individual Organic Content Sample (FM 1-T 267)	Maximum 4%
*Note: A minimum of three samples per source. If the Organic Content exceeds the allowable values and RAP or RAP-blended material is used as stabilizing material, the Engineer may allow FM 5-563 (with the exception of gradation analysis) in lieu of FM 1-T 267 after mixing. The maximum allowable test result is 4.7%.	

Materials that contain hazardous substances or contaminates shall not be used.

If toxic substances, elements or compounds are suspected to exist at concentrations exceeding limits defined by EPA, qualifying tests shall be performed. Test methods for these substances shall be those mandated by EPA and analyzed by a certified laboratory.

916 BITUMINOUS MATERIALS.
(REV 5-19-11) (FA 8-4-11) (1-12)

SECTION 916 (Pages 828 - 842) is deleted and the following substituted:

SECTION 916
BITUMINOUS MATERIALS

916-1 Superpave PG Asphalt Binder:

916-1.1 Requirements: Superpave Performance Graded (PG) asphalt binders, identified as PG 64-22, PG 67-22, and PG 76-22, shall meet the requirements of 916-1.2, AASHTO M 320 Table 1 and the following additional requirements:

1. The mass change per AASHTO T 240 shall be a maximum of 0.5% for all grades.

2. The intermediate test temperature at 10 rad/s. for the Dynamic Shear Rheometer test AASHTO T 315 shall be 25ºC for all grades.

3. An additional high temperature grade of PG 67 is added for which the high test temperature at 10 rad/sec for the Dynamic Shear Rheometer test AASHTO T 315 shall be 67ºC.

4. All PG asphalt binders having a high temperature designation of PG 67 or lower shall be prepared without modification.

5. All PG asphalt binders having a high temperature designation higher than PG 67 shall be produced with a styrene-butadiene-styrene (SBS) or styrene-butadiene (SB) elastomeric polymer modifier and resultant binder shall meet all requirements of this Specification; in addition the phase angle at 76ºC (AASHTO T 315) shall be a maximum of 75 degrees.

6. The maximum viscosity AASHTO T 202 shall be 2400 poises for PG 64-22 and 3600 poises for PG 67-22.

All hot mix asphalt (except hot mix asphalt containing 20% RAP or greater) shall contain Superpave PG asphalt binder grade PG 67-22 unless otherwise specified in the plans and/or Specifications for the hot mix asphalt product.

For all PG binder used in all hot mix asphalt, silicone may be added to the PG binder at the rate of 25 cubic centimeters of silicone mixed to each 5,000 gallons of PG binder. If a disbursing fluid is used in conjunction with the silicone, the resultant mixture containing the full 25 cubic centimeters of silicone shall be added in accordance with the manufacturer's recommendation. The blending of the silicone with the PG binder shall be done by the supplier prior to the shipment.

All PG binder and asphalt rubber binder for Friction Course mixes and for other hot mix asphalt products containing RAP shall contain 0.5% heat stable anti-strip additive by weight of PG binder unless specifications for the hot mix asphalt product requires testing by FM 1-T 283 and the test results indicate it is not required, or the mixture contains hydrated lime. Where FM 1-T 283 indicates an anti-strip additive is required, it shall be from 0.25 to 0.75%. The anti-strip additive shall meet the requirements of 916-5. The anti-strip additive shall be introduced into the PG binder by the supplier during loading.

Where PG binder is used in mixes containing reclaimed asphalt pavement (RAP), the requirements of 334-2.3.4 must also be met.

916-1.2 Qualified Products List: The Superpave PG asphalt binders supplied under this Specification shall be one of the products included on the Qualified Products List as specified in 6-1. Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include a report of test results from an independent laboratory confirming the material meets the requirements of this section. Any marked variation from the original test values for a material below the established limits or evidence of inadequate quality control or field performance of a material will be considered to be sufficient evidence that the properties of the material have changed, and the material will be removed from the Qualified Products List.

For each binder grade, the supplier may be required to submit to the State Materials Office a split sample of material representative of test results submitted with the Product Evaluation Application. In addition, for modified binders, the original PG binder grade, the modifier product designation, and amount added shall be indicated on the Product Evaluation Application and in the Quality Control Program below. Suppliers shall not ship any PG binder until notified that the product is on the Qualified Products List and an approved Quality Control Program meeting the requirements of 916-1.3 has been implemented.

916-1.3 Quality Control Program: The supplier of Superpave PG asphalt binder shall at a minimum have a Quality Control Program meeting the requirements of this Specification which is based on AASHTO R 26. The Quality Control Program shall be submitted in electronic format to the State Materials Office for approval.

The requirements for the Quality Control program apply to the supply location of PG binders for the use on Florida Department of Transportation projects. The supply location of PG binder may represent refinery production, terminal distribution, blending, processing, and/or modification location. Rack blending (blending from two tank sources) will be permitted to meet the requirements for a PG asphalt binder product. Any special handling requirements such as rack blending and manufacture of polymer modified asphalt shall be described in the Quality Control program. The requirements of these Specifications for a Quality Control Program do not apply to Recycle Agents at this time.

916-1.3.1 Identification of Personnel and Supply Locations: The supplier's primary and secondary representatives responsible for Quality Control shall be identified by name, title, address, telephone, fax and e-mail address. At least one of the representatives shall be located at the supply location. The supply locations shall be identified by name, address and telephone.

916-1.3.2 Specification Compliance and Quality Control Testing: Specification Compliance Testing shall consist of complete testing of each PG binder shipped in accordance with AASHTO M 320 and 916-1.1 of these Specifications. Results of Specification Compliance Testing shall be available to the supplier within five working days of sampling. Specification Compliance Testing shall be conducted by a testing laboratory that participates at least annually in the AASHTO Materials Reference Laboratory (AMRL) Proficiency Sample Program for both Performance Graded Asphalt Binder and Viscosity Graded Asphalt Cement. The primary testing lab and any other labs to be used for Specification Compliance Testing shall be identified in the suppliers Quality Control Program. The results from each AMRL Proficiency Sample for each testing laboratory shall be forwarded by the supplier for each supply location in

electronic format to the State Materials Office. Acceptable performance in the AMRL Proficiency Sample Program shall be a minimum of 3 for each test. A rating of less than 3 shall require identification of appropriate action on the part of the supplier and be acceptable to the State Materials Engineer.

Quality Control testing as a minimum shall consist of testing a representative sample of each PG binder shipped by the supplier in accordance with either:

(1) AASHTO T 202 Standard Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer or

(2) AASHTO T 315 Test Method for Determining Rheological Properties of Asphalt Binder using a Dynamic Shear Rheometer (DSR).

Results of Quality Control Testing shall be available to the supplier within five hours of sampling. A Quality Control test result outside the specification limits will require immediate sampling and testing for Specification Compliance and appropriate action taken. The Quality Control testing and location where the test will be done shall be identified in the suppliers Quality Control Program.

916-1.3.3 Frequency of Sampling and Testing: Sampling of PG binders shall be done in accordance with AASHTO T 40. Initial Specification Compliance test results shall be required for each PG binder grade for each new LOT of material which will be further subjected to Quality Control Testing in accordance with 916-1.3.2. A new LOT will occur when the material in a tank changes and the Specification Compliance Test may no longer be representative of the material in the tank. This may be due to an incoming bulk shipment of material, change in refinery run, the manufacture of a product, or a blend of material in a tank. Additional testing is as follows:

(1) Any PG binder shipped to a Department project during any one calendar month shall be tested at least once during that month for Specification Compliance in accordance with 916-1.3.2.

(2) When being shipped to Department projects, samples shall be obtained by the supplier and tested for Quality Control testing in accordance with 916-1.3.2. A single one quart representative sample of each PG binder shall be obtained and tested by the supplier each calendar week; for each rack blended PG binder, additional representative samples shall be obtained daily. Each Quality Control sample and additional daily rack blended samples shall be adequately identified and retained not less than eight weeks at the supply location. Any PG binder not shipped to Department projects is not required to be sampled or tested.

(3) Split samples of any PG binder will be provided when requested by a representative of the Department. In this situation three representative one quart samples will be obtained by the supplier under the direction of the Department. One sample will be submitted to the State Materials Office, one will be tested by the supplier for Specification Compliance and one will be tested by the supplier for Quality Control. The method of obtaining the three representative one quart samples is to obtain a single gallon sample, which is then stirred and poured into three one quart cans. When split samples are requested by the Department, the results from both parties will be made available within ten working days.

(4) For each rack blended PG binder, identify minimum daily Process Control Testing in the QC Plan.

916-1.3.4 Reporting: A monthly report by the supplier containing Specification Compliance and Quality Control Test results for each PG binder LOT shall be submitted by the supplier in electronic format using the form provided by the Department to the State Materials Office within seven days following the end of the calendar month. Test results for split samples shall also be included. Process Control Test results shall not be included. Copies of these monthly reports and supporting test reports shall be available at the supply location for a minimum of three years.

The report shall consist of the Specification compliance testing and Quality Control Testing of the following as applicable by these Specifications.

SUPERPAVE PG ASPHALT BINDER		
Test and Method	Conditions	Specification Minimum/Maximum Value
Original Binder		
Superpave PG Asphalt Binder Grade		Report
Qualified Products List Number		Report
Polymer Modifier Type	(PG 76-22 Only)	Report
Solubility, AASHTO T 44	in Trichloroethylene	Minimum 99.0%
Flash Point, AASHTO T 48	COC	Minimum 450ºF
Rotational Viscosity, AASHTO T 316	275ºF	Maximum 3 Pa-s
Absolute Viscosity, AASHTO T 202	140ºF	Max. 2400 P (PG 64-22) Max. 3600 P (PG 67-22)
Dynamic Shear Rheometer, AASHTO T 315	$G^*/\sin\delta$, Test Temperature @ 10 rad/sec, °C Phase Angle, δ, (PG 76-22 Only)	Minimum 1.00 kPa Maximum 75 degrees
Rolling Thin Film Oven Test Residue (AASHTO T 240)		
Rolling Thin Film Oven, AASHTO T 240	Mass Change%	Maximum 0.50
Dynamic Shear Rheometer, AASHTO T 315	$G^*/\sin\delta$, Test Temperature @ 10 rad/sec, °C	Minimum 2.20 kPa
Pressure Aging Vessel Residue (AASHTO R 28) at 100ºC		
Dynamic Shear Rheometer, AASHTO T 315	$G^*\sin\delta$, 10 rad/sec. @ 25°C	Maximum 5000 kPa

Creep Stiffness, AASHTO T 313	S (Stiffness), @ 60 sec. @ -12°C M-value, @ 60 sec. @ -12°C	Maximum 300 Mpa Minimum 0.300

916-1.3.5 Notification and Evaluation: In the event that a Specification Compliance test is outside specification requirements or a Quality Control test is outside limits established by the supplier as part of his Quality Control Program shipments of that product to Department projects will cease immediately and the Contractor and the State Materials Office will be notified and the product retested for Specification Compliance (resampling as appropriate). Where the retest for Specification Compliance meets all requirements, shipments of that product may resume. Where off-specification material has been shipped and the retest confirms the original test, the Contractor and State Materials Office will be informed of the steps taken to achieve specification compliance on the product shipped.

Where off-specification materials has been shipped, further shipment of that product to Department projects shall remain suspended until the cause of the problem is evaluated and corrected by the supplier to the satisfaction of the State Materials Engineer.

916-1.3.6 Certification and Verification: The supplier shall furnish certification on the bill of lading for each shipment of PG binder delivered to a Department project that includes: the quantity, the Superpave PG asphalt binder grade (including QPL number), PG binder LOT designation, the customer name, the delivery location, a statement that the binder is in conformance with 916-1 and the suppliers Quality Control Program, and the quantity of silicone and anti-strip agent addition, as applicable, including product designation (QPL number as applicable). Any special handling or temperature requirements shall be indicated on the certification and are solely the responsibility of the Contractor to follow.

The Department may sample and test PG binder from the suppliers storage tank, the delivery vehicle, and/or Contractors storage tank to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that PG binder product. Further shipment of that PG binder product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

916-2 Recycling Agents.

916-2.1 Requirements: The asphalt recycling agent (RA) shall be an asphalt binder (PG asphalt binder) or an asphalt binder blended (as necessary) with a softening agent or flux oil, and shall meet the four Target Viscosity values of 550, 750, 1000, and 1500 poises and the following requirements:

RECYCLING AGENTS

Test	Conditions	Recycling Agent Minimum/Maximum Value
Absolute Viscosity AASHTO T 202	140ºF	Target Viscosity ± 20%
Viscosity Ratio After AASHTO T 240	Visc. 140ºF after RTFOT / Visc. 140ºF before RTFOT	maximum 3
Flash Point AASHTO T 48	COC	minimum 400ºF
Solubility AASHTO T 44	in Trichloroethylene	minimum 99.0%

Rack blending of recycling agents (blending from two RA tank sources) will be permitted to meet a required target viscosity value.

For all recycling agents used in all hot mix asphalt, silicone mayl be added to the recycling agent at the rate of 25 cubic centimeters of silicone mixed to each 5,000 gallons of recycling agent. If a disbursing fluid is used in conjunction with the silicone, the resultant mixture containing the full 25 cubic centimeters of silicone shall be added in accordance with the manufacturer's recommendation. The blending of the silicone with the recycling agent shall be done by the supplier prior to the shipment.

All recycling agents for hot mix asphalt products containing RAP shall contain 0.5% heat stable anti-strip additive by weight of the recycle agent unless specifications for the hot mix asphalt product requires testing by FM 1-T 283 and the test results indicate it is not required, or the mixture contains hydrated lime. Where FM 1-T 283 indicates an anti-strip additive is required, it shall be from 0.50 to 0.75%. The anti-strip additive shall meet the requirements of 916-5. The anti-strip additive shall be introduced into the recycling agent by the supplier during loading.

Where a recycling agent is used in mixes containing reclaimed asphalt pavement (RAP), the requirements of 334-2.3.4 must also be met.

916-2.2 Sampling and Reporting: Sampling of recycling agents shall be done in accordance with AASHTO T-40. Initial Specification Compliance test results shall be required for each new LOT of material. A new LOT will occur when the material in a tank changes and the Specification Compliance Test may not be representative of the material in the tank. This may be due to an incoming bulk shipment of material, change in refinery run, the manufacture of a product, or a blend of material in a tank.

A monthly report by the supplier containing Specification Compliance Test results for each RA LOT shall be submitted by the supplier in electronic format using the form provided by the Department to the State Materials Office within seven days following the end of the calendar month. Copies of these monthly reports and supporting test reports shall be available at the supply location for a minimum of three years.

916-2.3 Certification and Verification: The supplier shall furnish certification on the bill of lading for each shipment of recycling agent delivered to a Department project that includes: the quantity, the RA target viscosity, the RA LOT designation, customer name, delivery location, a statement that the RA is in conformance with 916-2,

and the quantity of silicone and anti-strip agent addition, as applicable, including product designation (QPL number as applicable).

The Department may sample and test recycling agents from the suppliers storage tank, the delivery vehicle, and/or Contractors storage tank to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of RA binder from that RA LOT(s). Further shipment of RA binder from that RA LOT(s) to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

916-3 Cut-Back Asphalts.

916-3.1 Requirements: Rapid-curing, cut-back asphalt shall conform with the requirements of AASHTO M 81, except that the penetration range shall be from 60-120 instead of 80-120.

For Grade RC-3000, in addition to the requirements shown in Table 1 of AASHTO M 81 the following values shall be added to the requirements for Distillation Test:

Distillate, Percentage by Volume of Total Distillate to 680ºF	Grade RC-3000 Maximum
to 320ºF	0
to 374ºF	10
to 437ºF	40

All other requirements for the distillation test (and for other properties included in the table) shall be as shown in Table 1 of AASHTO M 81.

Medium-curing, cut-back asphalt shall conform with the requirements of AASTHO M 82.

916-3.2 Sampling, Certification, and Verification: Sampling of cut-back asphalts shall be done in accordance with AASHTO T 40. For each tank of cut-back asphalt delivered to or prepared at the asphalt terminal, the asphalt supplier shall submit a sample to the State Materials Office for testing before use. A pretest number will then be assigned by the State Materials Office which shall be furnished with all cut-back asphalt delivered to the project. The pretest number shall be valid for three months from the date of issue.

The Department may sample and test pre-tested cut-back asphalt from the suppliers storage tank, the Contractor's transport tank and/or distributor to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that pretested cut-back asphalt product. Further shipment of that pretested cut-back asphalt product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

916-4 Emulsified Asphalts.

916-4.1 Requirements: Anionic Emulsified Asphalt shall meet the requirements of AASHTO M 140 with the exception that the cement mix test will be waived when the asphalt is used in non-mix application, such as tack coats and primes. Cationic Emulsified Asphalt shall meet the requirements of AASHTO M 208. Additional emulsions permitted by specifications shall meet the following requirements:

HIGH FLOAT EMULSIONS		
Test	Conditions	Asphalt Emulsion Grade AE-60
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122ºF	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL $CaCl_2$ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500ºF. Dist.	maximum 1% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 40
Absolute Viscosity	140ºF	minimum 3,200 poise
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Float Test	140ºF	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-90
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122ºF	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL $CaCl_2$ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500ºF. Dist.	maximum 2% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 70
Absolute Viscosity	140ºF	minimum 1,600 poise
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Float Test	140ºF	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-150
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122ºF	75/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour(b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL $CaCl_2$ 0.10 N	minimum 75%
Residue by Distillation		minimum 65%
Oil Portion	500ºF. Dist.	maximum 3% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 125
Absolute Viscosity	140ºF	minimum 800 poise
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Float Test	140ºF	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%

Test	Conditions	Asphalt Emulsion Grade AE-200
		Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122ºF	minimum 45 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.10%
Demulsibility	50 mL $CaCl_2$ 0.10 N	minimum 75%
Residue by Distillation		minimum 62%
Oil Portion	500ºF. Dist.	maximum 8% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 150
Absolute Viscosity	140ºF	minimum 400 poise
Ductility	77ºF, 50 mm/minute	
Float Test	140ºF	minimum 1,200 seconds
Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days. (b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test.		

SPECIAL MS-EMULSION		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	minimum 45 seconds
Storage Stability	24 hour	maximum 1%

SPECIAL MS-EMULSION		
Test	Conditions	Minimum/Maximum
Sieve Test	50 mL $CaCl_2$ 0.10 N	maximum 0.10%
Demulsibility		minimum 65%
Residue by Distillation		minimum 62%
Naphtha Content	500ºF. Dist.	maximum 8% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 50
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Absolute Viscosity	140ºF	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%
Maximum application temperature shall be 170ºF.		

EMULSIFIED ASPHALT GRADE CRS-2H		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	122ºF	100/400 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Demulsibility	35 mL 0.8% Sodium Dioctyl Sulfosuccinate (c)	minimum 40%
Particle Charge		positive
Sieve Test		maximum 0.1%
Residue		minimum 65%
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	80/140
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days. (b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test. (c) The demulsibility test shall be made within 30 days from date of shipment.		

ASPHALT EMULSION PRIME (AEP)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	20/150 seconds
Settlement	5 days (a)	maximum 5%
Storage Stability	24 hour (b)	maximum 1%
Sieve Test		maximum 0.1%
Residue		minimum 55%
Naphtha Content	500ºF. Dist	maximum 12% by volume
Tests on Residue:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	40/200
Ductility	77ºF, 50 mm/minute	minimum 400 mm

Solubility	in Trichloroethylene	minimum 97.5%
(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than five days. (b) The 24-hour (one day) storage stability test may be used instead of the five day settlement test.		

ASPHALT EMULSION GRADE RS-1h		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	20/100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility	35 mL 0.02N $CaCl_2$ (a)	minimum 60%
Sieve Test		maximum 0.10%
Residue by Distillation		minimum 55%
Naphtha Portion	500ºF. Dist (b)	maximum 3% by volume
Tests on Residue From Distillation Test:		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 60
Viscosity	140ºF	minimum 1,600 poise
Ductility	77ºF, 50 mm/minute	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%
(a) The demulsibility test shall be made within 30 days from the date of shipment. (b) When RS-1H has been modified to include naphtha, the 24-hour storage stability test will be waived.		

EMULSION PRIME (RS TYPE)		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	minimum 75 seconds
Storage Stability	24 hour	maximum 1.0%
Sieve Test		maximum 0.1%
Naphtha Content		5/15% by volume
Residue		minimum 55%
Tests on Residue:*		
Penetration (0.1 mm)	77ºF, 100 g, 5 seconds	minimum 50
Viscosity	140ºF	minimum 800 poise
Solubility	in Trichloroethylene	minimum 97.5%
* Residue by distillation shall be in accordance with AASHTO T 59 except that the maximum temperature shall be 329 ± 10ºF [165 ± 5ºC] and the sample shall be maintained at this temperature for 20 minutes.		

EPR-1 PRIME (e)		
Tests	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77ºF	6/24 seconds
Sieve Test (a)		maximum 0.1%
Residue by Distillation (b)		minimum 20%
Particle Charge Test (c)		positive

EPR-1 PRIME (e)		
Tests	Conditions	Minimum/Maximum
Tests on Emulsion:		
Test on Residue: (d)		
Flash Point	COC	minimum 410ºF
Viscosity	140ºF	600/1000 cSt

(a) Distilled water shall be used in place of 2% sodium oleate solution.
(b) Residue by distillation shall be in accordance with AASHTO T 59 with the exception that a 50 g sample is heated to 300ºF [149ºC] until foaming ceases, then cooling immediately and calculating results.
(c) Caution: this material has a positive particle charge, and therefore should not be mixed with materials having a negative particle charge.
(d) Residue by distillation shall be in accordance with AASHTO T 59 except that the maximum temperature shall be 329 plus or minus 10ºF [165 plus or minus 5ºC] and the sample shall be maintained at this temperature for 20 minutes.
(e) EPR-1 Prime shall not be diluted. In the event that EPR-1 Prime is not used in a 12 hour period, the material shall be thoroughly mixed by circulation or other suitable means prior to use.

EMULSIFIED ASPHALT GRADE CRS-1h		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 100 seconds
Storage Stability	24 hour	maximum 1%
Demulsibility	35 ml 0.8% Sodium Dioctyl Sulfosuccinate (a)	minimum 60%
Sieve Test		maximum 0.10%
Residue by Distillation	500°F. Distillation	minimum 55%
Naphtha Portion	500°F. Distillation. (b)	maximum 3% by volume
Particle charge		positive
Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	minimum 45
Viscosity	140°F	minimum 1600 poise
Ductility	77°F	minimum 400 mm
Solubility	in Trichloroethylene	minimum 97.5%

(a) The demulsibility test shall be made within 30 days from the date of shipment.
(b) When CRS-1 has been modified to include naphtha, the 24 hour storage stability will be waived.

EMULSIFIED ASPHALT GRADE NTSS-1hm		
Test	Conditions	Minimum/Maximum
Tests on Emulsion:		
Saybolt Furol Viscosity	77°F	20 – 500 seconds
Storage Stability	24 hour	maximum 1%
Settlement	5 days	maximum 5%
Residue by Distillation		minimum 50%
Naphtha Content	500°F. Distillation	maximum 1% by volume
Sieve Test		maximum 0.30% (a)
Tests on Residue From Distillation Test:		
Penetration (0.1mm)	77°F, 100 g, 5 seconds	maximum 20
Softening Point		minimum 149°F

ASTM D 36		
Dynamic Shear Rheometer AASHTO T 315	G* sin&, 186.8°F @ 10 rad/sec	minimum 1.00 kPa
Solubility	in Trichloroethylene	minimum 97.5%
(a) Sieve test may be waived if no application problems are present in the field.		

916-4.2 Sampling, Certification, and Verification: For each tank of emulsified asphalt delivered to or prepared at the asphalt terminal, the asphalt supplier shall submit a sample to the State Materials Office for testing before use. A pretest number will then be assigned by the State Materials Office which shall be furnished with all emulsified asphalt delivered to the project. The pretest number shall be valid for three months from the date of issue.

The Department may sample and test pretested emulsified asphalt from the suppliers storage tank, the Contractors transport tank and/or distributor to verify and determine compliance with this and other specification requirements. Where these tests identify material outside specification requirements, the State Materials Engineer may require the supplier to cease shipment of that pretested emulsified asphalt product. Further shipment of that pretested emulsified asphalt product to Department projects may remain suspended until the cause of the problem is evaluated and corrected by the supplier as necessary to the satisfaction of the State Materials Engineer.

916-5 Liquid Anti-strip Agents.

916-5.1 Requirements: Liquid anti-strip agents shall be tested in accordance with FM 5-508. Tensile strength ratios will be calculated for the following two conditions and expressed as percentages: 1) conditioned mixture without anti-strip to unconditioned mixture without anti-strip and 2) conditioned mixture with anti-strip to unconditioned mixture without anti-strip. A 20% gain in tensile strength ratio for condition 2 as compared to condition 1 shall be required.

916-5.2 Qualified Products List: Liquid anti-strip agents supplied under this Specification shall be one of the products included on the Qualified Products List (QPL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include a report of test results from an independent laboratory confirming the material meets the requirements of this section. In lieu of submitting test results from an independent laboratory, the Department will evaluate the material. For each liquid anti-strip agent, the supplier will submit to the State Materials Office one pint of a representative sample of liquid anti-strip agent when submitting the QPL application to the Department's Product Evaluation Section.

Any marked variation from the original test values for a material below the established limits or evidence of inadequate quality control or field performance of a material will be considered sufficient evidence that the properties of the material have changed, and the material will be removed from the Qualified Products List.

916-5.3 Mix Design Verification: Inclusion of a liquid anti-strip agent on the QPL does not guarantee that the anti-strip will be approved for use in an asphalt mixture. Specifications may require subsequent moisture susceptibility testing per FM 1-T 283 for the particular mix design. Results from this testing may indicate the need for a larger dosage rate of anti-strip agent (up to 0.75% maximum) or a different anti-strip agent to meet the specification requirements.

919 GROUND TIRE RUBBER FOR USE IN ASPHALT RUBBER BINDER. (REV 6-22-09) (FA 6-25-09) (1-10)

ARTICLE 919-3 (Page 843) is deleted and the following substituted:

919-3 Physical Requirements.

The physical properties of the ground tire rubber shall be determined in accordance with FM 5-559, and shall meet the following requirements:

Specific Gravity ..... 1.06 to 1.20
Moisture Content .....Maximum 0.75%
Metal Contaminants .....Maximum 0.01%

Gradation - The gradation shall meet the limits shown in Table 919-1 for the type of rubber specified.

Table 919-1
Gradations of Ground Tire Rubber

Sieve Size % Passing	Type A	Type B	Type C
No. 16	---	---	100
No. 30	---	100	70-100
No. 50	100	40-60	20-40
No. 100	50-80	---	---

921 PORTLAND CEMENT AND BLENDED CEMENT. (REV 10-21-10) (FA 1-4-11) (7-11)

ARTICLE 921-1 (Page 845) is deleted and the following substituted:

921-1 General.

921-1.1 Type of Cement: Cement shall conform to the requirements of the following AASHTO designations except where a particular type of cement is specified on the plans or Specifications, and as specifically restricted in Section 346, cement may be Types I, II, II (MH), III, IV, V (AASHTO M-85), or IP, IP (MS), IS (AASHTO M-240). Different brands of cement, cement of the same brand from different facilities, or different types of cement shall be stored separately and shall not be mixed.

921-1.2 Alkali Content: Only Portland cement containing a maximum of 0.60% alkali, or less, calculated as Na_2O (% Na_2O plus 0.658% K_2O), may be used with no further testing. When tests performed in accordance with ASTM C-33 X1.3 on coarse and fine aggregate indicate the aggregate to be non-reactive to alkalis, cements exceeding 0.60% alkali is allowed.

921-1.3 Heat of Hydration: The cement heat of hydration for Type II (MH) shall be 80 cal/g or less at seven days in accordance with ASTM C-186.

923 WATER FOR CONCRETE.
(REV 5-20-10) (FA 6-9-10) (1-11)

SECTION 923 (Pages 848 - 849) is deleted and the following substituted:

SECTION 923
WATER FOR CONCRETE

923-1 General Requirements.

Water for use with cement shall be clear and free from oil, and injurious amounts of acid, alkali, chlorides, organic matter, and other deleterious substances. It shall not be salty or brackish. If it contains quantities of substances which discolor it or make it smell or taste unusual or objectionable or cause suspicion, it shall not be used unless approved by the Department. Water sources permitted include potable water supplies that are approved by a public health department, open bodies of water, well water, reclaimed water, and recycled water. Reclaimed water shall be as defined in Chapter 62-610, F.A.C. Open bodies of water are defined as naturally occurring rivers, lakes, and ponds. Recycled water includes wash water from mixer washout operations (stored in a lined settling pond). All other sources of water not listed above shall be considered recycled and reclaimed water. Recycled and reclaimed may be used only to sprinkle the coarse aggregate stockpiles and for batching concrete meeting the requirements of Section 347.

923-2 Evaluation of Water for Concrete.

923-2.1 General: Water from potable water supplies approved by a public health department may be used without additional testing. The concrete producer shall provide test data of water samples from other sources. To determine chemical properties, use a laboratory accredited by the National Environmental Laboratory or Construction Materials Engineering Council Accreditation Program. To determine physical properties, use a laboratory accredited by the Construction Materials Engineering Council Accreditation Program or Cement and Concrete Reference Laboratory.

923-2.2 Initial Sampling and Testing Frequency: Open bodies of water and well water shall be initially sampled once prior to use. Recycled and reclaimed water shall be tested once per week for four weeks initially, and thereafter once per month for four months prior to its use, provided that the results of the test samples comply with all the applicable limits. Failing test results will result in restarting initial sampling and testing.

923-2.3 Production Sampling and Testing Frequency: Open bodies of water and recycled water shall be tested monthly. Well water and reclaimed water shall be tested once every three months. If the last eight consecutive well water and reclaimed water samples meet the requirements, then the sample frequency may be reduced to one sample every six months, as approved by the Department. If a well water or reclaimed

water sample fails once the frequency has been reduced, then the sampling frequency shall revert back to once every three months.

923-3 Chemical Requirements.

923-3.1 Testing: All chemical analysis or tests shall be performed in accordance with the test methods listed in Tables 1 and 2 or Standard Methods for the Examination of Water and Wastewater.

923-3.2 Recycled and Reclaimed Water: Recycled and reclaimed water shall be tested before use and shall not exceed the limits in Table 1:

Table 1		
Chemical Test	Test Method	Maximum (%)
Equivalent Alkalis as (Na_2O + 0.658 K_2O)	ASTM D 6919	0.06
Total Solids	AASHTO T 26	5.00
Total Chlorides as Cl^-	ASTM D 512	0.031
Total Sulfates as SO_4	ASTM D 516	0.30

923-3.3 Open Bodies of Water and Well Water: Open bodies of water and well water shall be tested before use and shall not exceed the limits of Table 2:

Table 2		
Chemical Test	Test Method	Maximum (%)
Acidity or Alkalinity Calculated in terms of Calcium Carbonate	AASHTO T 26	0.05
Total Organic Solids	AASHTO T 26	0.05
Total Inorganic Solids	AASHTO T 26	0.08
Total Chlorides as Cl^-	ASTM D 512	0.031
Total Sulfates as SO_4	ASTM D 516	0.30

923-4 Physical Requirements for Mortar.

Mortar shall be tested in accordance with ASTM C 109 with the following exception: the mortar shall not be tested for flow. The mortar, composed of the sampled water, shall have a compressive strength of not less than 90% when compared to a mortar prepared using distilled water and tested at seven days.

Water of a questionable quality, as determined by the Department, shall be subject to the acceptance criteria for time of set as required by ASTM C 1602, Table 1.

926 EPOXY COMPOUNDS.
(REV 1-4-10) (FA 1-14-10) (7-10)

ARTICLE 926-1 (Pages 854 – 855) is deleted and the following substituted:

926-1 Types of Compounds.

Epoxy resin compounds for application to portland cement concrete, bituminous cement concrete, metals and other type surfaces shall be two-component systems of the applicable of the following types as designated.

Type	Description
A	An epoxy resin, for bonding fresh concrete to hardened concrete.
B	An epoxy resin adhesive, for bonding hardened concrete to hardened concrete and constructing doweled splices in precast prestressed concrete piles.
E	A fluid epoxy for crack injection in the repair of old structures.
F F-1 F-2	An epoxy for repairing spalled areas on concrete bridge structures with these subtypes: A non sagging gel type for vertical surfaces. A pourable type for repairs where forms are to be used.
G	An epoxy for rebuilding expansion joints and associated wearing surfaces.
H	An epoxy for structural bonding where asphalt overlays are to be in contact with the hardened compound.
I	An epoxy for filling small holes in concrete such as lifting bolt cut-outs on beams, etc.
J	An epoxy for installing rebar and anchor bolts into hardened concrete.
K	An epoxy for underwater sealing of the bottom of the jacket of an integral pile jacket system.
L	An epoxy for coating the interior of sewage disposal tanks.
M	A coal tar epoxy coating for steel sheet piles and H piles (water immersion).
N	An epoxy for preparing mortars and concrete for patching portland cement concrete pavement.
Q	An epoxy for use in post tensioning anchorage protection systems.
T	Hot applied coal tar epoxy tape.

SUBARTICLE 926-2.2 (Page 855) is deleted and the following substituted:

926-2.2 Qualified Products List: All epoxy materials shall be one of the products listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of their products shall submit product data sheets, performance test reports from an independent laboratory showing the product meets the requirements of this section, an infrared identification curve (2.5 to 15 μm) and a QPL application in accordance with Section 6. Information on the QPL application must identify the epoxy type.

Products may only be used for applications recommended by the manufacturer.

929 POZZOLANS AND SLAG.
(REV 12-17-10) (FA 1-3-11) (7-11)

ARTICLE 929-2 (Pages 861 – 862) is expanded by the following:

929-2 Fly Ash.

929-2.1 General: Sampling and testing of fly ash shall follow the requirements of ASTM C-311. Fly ash shall not include the residue resulting from the burning of municipal garbage or any other refuse with coal, or the burning of industrial or municipal garbage in incinerators.

929-2.2 Fly Ash (Class F): Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class F fly ash.

929-2.2.1 Petroleum Coke Class F: Fly ash resulting from the combustion of coal and petroleum coke shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When petroleum coke Class F fly ash is used in concrete, the test results shall verify improved or comparable strength, sulfate resistance, corrosion protective properties and other durability requirements of concrete, as compared to ASTM C-618 Class F fly ash concrete. The strength and durability tests of concrete shall be performed in accordance with ASTM C-39, ASTM C-157, ASTM C-1012, ASTM C-1202, ASTM G-109, FM 5-516 and FM 5-522.

929-2.2.2 Bark Ash Class F: Fly ash resulting from the combustion of timber bark ash and coal shall meet the physical and chemical requirements of ASTM C-618 Class F fly ash. When bark ash is used in concrete, the strength and durability of the bark ash concrete shall be improved or comparable to the strength and the durability properties of ASTM C-618 Class F fly ash concrete. The tests shall be performed as specified in 929-2.2.1.

929-2.3 Fly Ash (Class C): Fly ash derived from the combustion of ground or powdered coal shall meet the requirements of ASTM C-618 Class C fly ash. When Class C fly ash is used in concrete, the test results shall verify improved sulfate resistance and improved or comparable corrosion protective properties, as compared to ASTM C-618 Class F fly ash concrete. The durability tests of concrete shall be performed in accordance with FM 3-C-1012.

929-2.4 Exceptions: Fly ash shall not be used in conjunction with Type IP or Type IS cements.

929-2.5 Acceptance Testing of Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618. When the loss on ignition exceeds 5%, the Supplementary Optional Physical Requirements shall be mandatory except that the Effectiveness in Controlling Alkali-Silica Reaction will not be required. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request.

SUBARTICLE 929-3.2 (Page 862) is deleted and the following substituted:

929-3.2 Acceptance Testing of Silica Fume: Acceptance of silica fume from sources operating under an approved quality control plan shall be based on certification that the material meets the requirements of ASTM C-1240 and this Specification.

SUBARTICLE 929-4.2 (Page 863) is deleted and the following substituted:

929-4.2 Acceptance Testing of Metakaolin: Acceptance of metakaolin from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618 Class N, as modified herein. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office, when the material is in use on Department projects. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request. The certification shall indicate that the metakaolin meets the requirements of this Specification.

SUBARTICLE 929-6.3 (Page 864) is deleted and the following substituted:

929-6.3 Acceptance Testing of Ultra Fine Fly Ash: Acceptance of fly ash from sources operating under an approved quality control plan shall be based on the monthly certified test report meeting the chemical and physical requirements of ASTM C-618. When the loss on ignition exceeds 2.0%, the Uniformity Requirements in the Supplementary Optional Physical Requirements shall be mandatory. An approved laboratory shall perform the monthly quality control tests and a copy of their certified test reports shall be sent to the State Materials Office when the material is in use on Department projects. The certification shall indicate that the fly ash meets the requirements of this Specification. Also, the corresponding samples along with certified test reports shall be submitted to the Department, upon request.

930 MATERIALS FOR CONCRETE REPAIR.
(REV 12-6-11) (FA 1-13-12) (7-12)

SECTION 930 (Pages 807 – 812) is deleted and the following substituted:

SECTION 930
MATERIALS FOR CONCRETE REPAIR

930-1 Description.

This Section covers cementitious materials used to repair concrete including defects or purposely placed openings in concrete elements. Materials containing organic compounds, such as bitumens and epoxy resin as the principal binder are not included. The requirements for epoxy resin materials are covered in Section 926. Any depth larger than the manufacturer's recommendation for the specific material shall be repaired with portland cement concrete meeting the requirements of Section 346.

930-2 Product Acceptance on the Project.

930-2.1 Product Acceptance: Use only products listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of products must submit an application in accordance with Section 6 and include independently certified test reports that the material meets the requirements of this Section. The application package must describe detailed quality control requirements for installation including, but not limited to: maximum water to cementitious material ratio, formulation for two or more component systems, special materials and/or equipment, recommendations for all surface preparation, and curing requirements.

Provide the Engineer certification conforming to the requirements of Section 6 from the manufacturer confirming that the material(s) used meets the requirements of this Section and is the appropriate product for the intended use.

When specified in the Contract Documents, furnish a report of test results from an independent laboratory on samples taken from material shipped. Ensure the test was performed within 45 days prior to the shipping date of the material.

930-2.2 Material Supply, Storage, and Marking: The material shall be pre-proportioned including aggregate. Deliver products in original, unopened containers with manufacturer's name, date of manufacture, and clearly marked with all information described below. Store the material in an elevated dry and weather protected enclosure in full compliance with the manufacturer's recommendations. Material must be used within manufacturer's recommended shelf life.

The material from which the containers are made shall have water vapor transmission not greater than 100 g/m^2 in 24 hours as determined in accordance with Procedure B of ASTM E-96.

All containers shall be marked with the following information:

(a) LOT identification number and material expiration date

(b) Directions for use shall include but are not limited to the following:

(1) The type and kind of adhesive recommended (if any) to bond fresh repair material to the concrete or mortar being repaired.

(2) The recommended amount of resin, other liquid component, or both, to be mixed with the package contents.

(3) The recommended length of mixing time or sequence of mixing and resting times in minutes.

(c) Date the material was packaged.

(d) The yield in cubic feet or yield in ft^2/in thickness when mixed with the recommended amount of liquid.

(e) The net weight in each container. The contents of any container shall not vary by more than 2% from the weight stated in the declarations. The average weight of filled containers in a LOT shall be not less than the individual weight stated in the declarations.

(f) Instructions for the maximum and minimum water (or solutions) to cementitious material ratio.

(g) State the approximate working time.

930-2.3 Sampling, Mixing, and Additional Testing: A LOT is the packaged repair material normally placed on a pallet. A unit sample is a single container or package of material randomly selected from the LOT. Mix and install the material(s) in accordance with the manufacturer's recommendations. Manufacturers will be required to provide field representation upon request by the Engineer. The Department reserves the right to conduct further field testing on any approved material.

930-2.4 Rejection: All broken containers will be rejected. Material that fails to meet any of the requirements of this Specification will be rejected. Report all materials failing to meet this specification and state the reason(s) for rejection in writing to the Engineer and the producer or supplier. Material in local storage in the hands of a vendor for more than six months after testing will be retested before use, except for the scaling resistance test and length change immersed in sulfate solution test for Magnesium Ammonium Phosphate Concrete. Retested material will be rejected if it fails to conform to any of the requirements of this Specification.

930-3 Laboratory Specimen Preparation:

930-3.1 Mixing and Fabrication: Mechanically mix the dry packaged materials with liquid components in accordance with the manufacturer's recommendations.

930-3.2 Length Change: Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.

930-3.3 Manifestly Faulty Specimens: Visually examine each group of specimens representing a given test or a given age of test, including tests of freshly mixed concrete, before or during the test, or both, whichever is appropriate. Discard any specimen found to be manifestly faulty by such examination without testing. Visually examine all specimens representing a given test at a given age after testing, and should any specimen be found to be manifestly faulty the test results thereof shall be disregarded. Should more than one specimen representing a given test at a given age be found manifestly faulty either before or after testing, the entire test shall be disregarded and repeated. The test result reported shall be the average of the individual test results of the specimens tested or, in the event that one specimen or one result has been discarded, it shall be the average of the test results of the remaining specimens.

930-4 Materials for Repair of Predominately Horizontal Surfaces.

930-4.1 General: This material is intended to be used to repair concrete where the area to be treated will be on a horizontal surface. Examples of the type of locations for these materials are bridge decks, portland cement concrete pavements and other locations required by the Contract Documents. Follow the manufacturer's recommendations for preparing the surfaces, mixing, placing, and curing the repair material unless otherwise directed in the Contract Documents.

930-4.2 Classification: The materials to be considered under this classification shall meet the following requirements:

930-4.2.1 Rapid Hardening: Moderate compressive strength for repairing concrete with an in-place compressive strength less than or equal to 4,000 psi.

930-4.2.2 Very Rapid Hardening: High compressive strength for repairing concrete with an in-place compressive strength greater than 4,000 psi. This material may be used in lieu of Rapid Hardening materials.

930-4.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 1 as determined by the specified test methods.

Table 1 - Physical Properties of Repair Materials for Horizontal Surfaces

Requirement	Test Method	Rapid Hardening	Very Rapid Hardening
Minimum Compressive Strength, psi			
3 hours	ASTM C-39* or ASTM C-109*	N/A	2,000
24 hours		2,000	4,000
7 days		4,000	6,000
28 days		Greater than or equal to strength at 7 days.	
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C-157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.12	-0.12
Allowable difference between increase in water and decrease in air		0.20	0.20
Minimum Slump (Concrete), inches	ASTM C-143***	3	3
Minimum Flow (Mortar), %	ASTM C-1437***	100	80
Time of Setting (Initial), minutes	ASTM C-191* or ASTM C-403*	Minimum 30	10 to 29

Coefficient of Thermal Expansion, in/in/°F	ASTM C-531* or AASHTO T-336	5.0 x 10^{-6} to 9.0 x 10^{-6}	5.0 x 10^{-6} to 9.0 x 10^{-6}
Minimum Bond Strength by Slant Shear, psi			
24 hours	FM 5-587	400	450
7 days		Greater than or equal to strength at 24 hours.	
Maximum Allowable Total Chlorides lbs/yd^3	FM 5-516	0.40	

* as applicable
** Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.
*** Testing for flow/slump will be completed in 5 plus or minus 1/2 minutes after the start of mixing liquid with the Rapid Hardening materials or 15 plus or minus 1/2 minutes after mixing the liquid with the Very Rapid Hardening materials.

930-4.4 Specimen Preparation:

930-4.4.1 Flow/Slump: Testing for flow/slump will be completed in 5 plus or minus 1/2 minutes after the start of mixing liquid with the Rapid Hardening materials or 15 plus or minus 1/2 minutes after mixing the liquid with the Very Rapid Hardening materials.

930-5 Materials for Repair of Predominately Vertical Surfaces.

930-5.1 General: This material is intended to be used to repair concrete where the area exposed in the field to be treated will be on a vertical surface. If an element has both horizontal and vertical surfaces, then the repair used will be for vertical surfaces. If it is not apparent which material is to be used, the vertical application will prevail. Examples of the type of locations for these materials are columns, caps, beams, piles, incidental concrete products, drainage structures and other locations required by the Contract Documents. Follow the manufacturer's recommendations for preparing the surfaces and for mixing, placing and curing the repair material.

930-5.2 Classification: The materials to be considered under this classification shall meet the following requirements:

930-5.2.1 High Performance: Moderate compressive strength for repairing concrete with a designed compressive strength greater than or equal to 5,000 psi.

930-5.2.2 Ultra-high Performance: High compressive strength for repairing concrete with a designed compressive strength greater than 5,000 psi. These materials may be used in lieu of High Performance Vertical materials.

930-5.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 2 as determined by the specified test methods.

Table 2 - Physical Properties of Repair Materials for Vertical Surfaces*			
Requirement	Test Method	High Performance	Ultra-high Performance
Minimum Compressive Strength, psi			

24 hours	ASTM C-39** or ASTM C-109**	1,000	2,000
7 days		N/A	5,000
28 days		5,000	Greater than or equal to strength at 7 days
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C-157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.08	-0.08
Maximum Slump (Concrete), inches	ASTM C-143	3****	3****
Maximum Flow (Mortar), %	ASTM C-1437	100****	100****
Time of Setting (Initial), minutes	ASTM C-191** or ASTM C-403**	10 to 180****	10 to 180****
Coefficient of Thermal Expansion, in/in/°F	ASTM C-531*** or AASHTO T 336***	5.0×10^{-6} to 9.0×10^{-6}	
Minimum Bond Strength by Slant Shear, psi,			
24 hours	FM 5-587	450	750
7 days		750.	750
Minimum Flexural Strength (at 7 days), psi	ASTM C-580	500	700
Maximum Absorption (Mortar at 7 days), %	ASTM C-413	4	4
Minimum Surface Resistivity (Concrete at 28 days), KOhm-cm	FM 5-578	N/A	22
Maximum Allowable Total Chlorides lbs/yd^3	FM 5-516	0.40	

* Use cement based materials modified with polymers and silica fume for extremely aggressive environments

** Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.

*** As applicable

**** For pump and pour applications, the maximum flow, slump and time of setting can be adjusted according to the manufacturer's recommendation.

930-6 Material for Repair of Concrete in High Stress Concentration Areas.

930-6.1 General: This material is intended to be used to repair block-outs and voids in post-tensioned elements, load bearing area of a beam, and other locations

required by the Contract Documents. This material may be used for the repair of horizontal or vertical surfaces. Follow the manufacturer's recommendations for preparing the surfaces and for mixing, placing and curing the concrete. This material shall be a magnesium ammonium phosphate based concrete (MAPC).

930-6.2 Physical Properties: The MAPC material shall meet or exceed physical properties stated in Table 3 as determined by the specified standard test methods.

Table 3 - Physical Properties of Repair Material in High Stress Areas		
Requirement	Test Method	Test Value
Minimum Compressive Strength (at 28 days), psi	ASTM C-109*	8,500
Minimum Flexural Strength (at 28 days), psi	ASTM C-348*	600
Minimum Slant Shear Bond (at 14 days), psi	FM 5-587*	2,500
Time of Setting (Initial), minutes	ASTM C-191**	15 to 60
Maximum Scaling Resistance	ASTM C 672	No scaling
Maximum Length Change, %		
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C-157***	0.03
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.03
Maximum Allowable Total Chlorides lbs/yd^3	FM 5-516	0.40
* The test methods for compressive strength (ASTM C-109), flexural strength (ASTM C-348), and Slant Shear Bond (FM 5-587) shall be modified so that the specimens are air cured instead of moist cured. All of these samples shall be air cured until the time of testing.. ** Initial time of set for MAPC will be tested in accordance with ASTM C-191 with the following modification. The initial time of set shall be tested at 95° plus or minus 5° F. *** Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.		

930-6.3 Specimen Requirements:

930-6.3.1 Curing of Compressive Strength, Flexural Strength and Slant Shear Bond Specimens: The test methods for compressive strength (ASTM C-109), flexural strength (ASTM C-348), and Slant Shear Bond (FM 5-587) shall be modified so that the specimens are air cured instead of moist cured. All of these samples shall be air cured until the time of testing.

930-6.3.2 Time of Setting: Initial time of set for MAPC will be tested in accordance with ASTM C-191 with the following modification. The initial time of set shall be tested at 95° plus or minus 5° F.

930-7 Special Fillers.

930-7.1 General: This material is intended to be used as filler material and for rapid repairs to pile jacket structures and other locations specified in the Plans when no design mix concrete is available or a special filler is specified in the Contract Documents.

Meet the requirements of Section 457 for preparing the surfaces, placing, testing and curing the concrete. Mix the material in accordance with the manufacturer's recommendations.

930-7.2 Classification: The materials to be considered under this classification shall meet the following requirements:

930-7.2.1 Cathodic Protection (CP) Filler: Provide cementitious based materials with a minimum cement content of 900 pounds of cement per cubic yard of mix. Material formulation must not contain fly ash, slag, silica fume or other mineral admixtures which may produce increased electrical resistance. The material shall not contain any substances corrosive to metals.

930-7.2.2 Non-Cathodic Protection (Non-CP) Filler: Provide cementitious based materials with a minimum cement content of 650 pounds of cement per cubic yard of mix. The material shall not contain any substances corrosive to metals.

930-7.2.3 Extended Materials: Where concrete filler materials are specified, approved mortar materials may be extended using size number 89 gradation aggregates from a certified FDOT approved source.

930-7.3 Physical Properties: The repair material shall meet or exceed the physical properties stated in Table 4 as determined by the specified standard test methods. If extended, materials shall meet the minimum requirements of Table4.

Table 4 - Physical Properties of Special Fillers

Requirement	Test Method	Cathodic Protection	Non-Cathodic Protection
Minimum Compressive Strength, psi			
24 hours	ASTM C-39* or ASTM C-109*	1,500	2,000
28 days		5,000	5,000
Maximum Length Change, %			
Allowable expansion at 28 days when water cured compared to length at one day	ASTM C-157**	0.12	0.12
Allowable shrinkage at 28 days when air cured compared to length at one day		-0.12	-0.12
Allowable difference between increase in water and decrease in air		0.20	0.20
Slump (Concrete), inches	ASTM C-143	7-9	7-9
Minimum Flow (Mortar), %	ASTM C 1437	100	100
Time of Setting (Initial), minutes	ASTM C-191* or ASTM C-	200 to 400	200 to 400

	403*		
Minimum Bond Strength by Slant Shear (at 7 days), psi	FM 5-587	450	450
Minimum Flexural Strength (at 7 days), psi	ASTM C-580	700	700
Minimum Tensile Strength (at 7 days), psi	ASTM C-307	200	200
Surface Resistivity (at 28 days), KOhm-cm	FM 5-578	15 or less	22 or greater
Maximum Allowable Total Chlorides lbs/yd^3	FM 5-516	0.40	
* as applicable ** Make and cure the test specimens in accordance with ASTM C-157, except omit the curing period in Section 10.3; however both 11.1.1 and 11.1.2 shall apply for 28 day curing period.			

930-7.4 Constructability: Furnish to the Engineer for approval shop drawing as may be required to complete repairs in compliance with the design shown in the Plans and the manufacturer's recommended repair system.

931 METAL ACCESSORY MATERIALS FOR CONCRETE PAVEMENT AND CONCRETE STRUCTURES.

(REV 7-11-11) (FA 8-10-11) (1-12)

SECTION 931 (Pages 875 – 877) is deleted and the following substituted:

SECTION 931
METAL ACCESSORY MATERIALS FOR CONCRETE PAVEMENT AND CONCRETE STRUCTURES

931-1 Reinforcement Steel (for Pavement and Structures).

931-1.1 Steel Bars: Unless otherwise shown in the plans, billet steel bars for concrete reinforcement shall conform to the requirements of ASTM A-615 Grade 60 except that the process of manufacture will not be restricted. For processes not included in ASTM A-615 the phosphorus content will be limited to 0.08%.

The following special requirements shall apply:

(1) Unless otherwise specified or shown on the plans all reinforcement bars No. 3 and larger shall be deformed bars.

(2) All billet-steel bars shall be of the grade called for on the plans.

(3) Twisted bars shall not be used.

(4) Wherever in the Specifications the word "purchaser" appears it shall be taken to mean the Department.

Acceptance of reinforcing steel shall be based on test samples taken randomly by the Department and manufacturer's certified mill analysis of test results meeting the specification limits of the ASTM or AASHTO designation for the particular

size, grade and any additional requirements. Randomly taken test samples and certification of test values, representing each production LOT of reinforcing steel, shall be provided to the Engineer for each Contract prior to use. Randomly taken test samples shall be cut from bundled steel that is shipped to the jobsite.

931-1.2 Welded Wire Reinforcement: Welded wire reinforcement shall meet the requirements of AASHTO M-55.

Welded deformed wire reinforcement shall meet the requirements of AASHTO M-221.

Wherever the word "purchaser" is used it shall mean the Department.

931-2 Metal Materials for Joints in Concrete Pavement.

931-2.1 Sheet Metal Bottom Strips: The sheet metal strip for protecting the bottom and side edges of transverse expansion joints shall be composed of galvanized sheet metal of 0.0157 inch minimum thickness and shall conform to the requirements of ASTM A-653.

The sheets shall be furnished in accordance with the dimensions shown on the plans. They may be in one continuous piece, or spliced. When splicing is used the metal shall be lapped not less than 3 inches and securely fastened, by welding or otherwise, in such manner as to leave the spelter undamaged and produce a smooth sliding surface in contact with the pavement slab. The splices shall be spaced not less than 10 feet apart and not less than 5 feet from either end. The complete sheet shall not vary from a straight line by more than 1 inch from end to end.

The Contractor shall provide the Engineer a certified mill analysis from the manufacturer of the sheet metal bottom strips including test results for thickness, dimension, grade, length, size, and spacing. Each certified mill analysis shall cover only one type of metal material for joints.

931-2.2 Bars and Chairs for Longitudinal Joints: Transverse reinforcing steel across the joint shall be deformed steel bars conforming to the requirements of 931-1.1 except that the bars may be any Grade shown in ASTM A-615.

These bars, and the chairs to hold them in place, shall be of the type and spacing as indicated on the plans.

931-2.3 Dowel Bars: Dowel bars shall be plain steel bars conforming to the requirements of ASTM A-615 for any Grade of steel shown. They shall be of the length, size and spacing as shown on the plans.

The Contractor shall provide the Engineer a certified test report from the manufacturer of the dowel bars confirming that the requirements of this Section are met. The certified test report shall conform to the requirements of Section 6 and include metallurgical mill analysis, grade, length and size. Each certification shall cover only one LOT for dowel bars.

931-2.4 Chairs and Metal Expansion Caps: The chairs and metal expansion caps shall be of an approved type as shown on the plans.

Dowel bars for expansion joints shall have a metal cap on one end so placed to provide ample space for movement of the slab. Continuous sleeves covering one half of the length of the bar will not be permitted. Other fasteners may be approved. Dowel bars shall be coated with an approved material to break the bond.

931-3 Metal Dowel Bar Assemblies for Joints in Concrete Pavement.

931-3.1 Qualified Products List: The dowel bar assembly used shall be a product included on the Qualified Products List.

Manufacturers or distributors seeking approval of their material in accordance with this specification shall demonstrate the performance of their products in accordance with the requirements in 931-3.2 thru 931-3.6.

931-3.2 Rigidity: The dowel bars shall be supported by an approved welded assembly possessing sufficient rigidity to hold the dowel bars in position to such accuracy that error or deviation from its required position in any bar in the entire installation after the pavement has been finished shall be no greater than 1/2 inch.

The assembly shall have continuous parallel spacer bars and two continuous parallel bearing members of no less than 1/4 inch diameter wire. One spacer bar shall be located at or near each end of the dowel. Alternate ends of dowels shall be welded to a spacer bar in such a manner as to maintain the dowels parallel to each other and permit sliding movement in the joint.

The free ends of each dowel shall be retained securely in place by means of wire loops or metal tubes welded to the other spacer bar. An expansion cap shall be installed on one end of each bar if the dowels are being used in an expansion joint.

Suitable struts or ties shall be provided to hold the assembly in correct position during installation.

The assembly shall have an upright support welded to the spacer bar and continuous bearing member at the end of each dowel and a continuous bearing member.

If the upright support consists of a single vertical wire, the support shall be no less than 5/16 inch diameter wire. Otherwise, the support shall be no less than 1/4 inch in diameter.

931-3.3 Sand Plates: Sand plates, if required, shall be made from no less than 3/8 inch sheet steel. Each plate shall have no less than 0.1 ft^2 of bearing area. The plates shall be furnished in sufficient number to provide uniform support for the complete assembly. They may be furnished separate from the assembly units or attached thereto by welding, suitable clips, or other approved means.

931-3.4 Welds: The welds of the assembly shall be made securely. A broken weld will be cause for rejection of the length of section of the assembly where it occurs.

931-3.5 Assembly Placement: When the dowel bar assembly is in place, it shall act as a rigid unit with each component part securely held in position relative to the other member of the assembly.

The entire assembly shall be held securely in place during placing, consolidating, and finishing the concrete by means of metal pins. Pins used on granular subbase or cold mixed bituminous stabilized subbase shall penetrate at least 12 inches below the dowel bar assembly. The pins shall be of no less than 1/4 inch diameter wire and shall be provided with a hook or arm welded to the pin in such a manner that it shall secure the assembly in place.

Nail securing systems may be used as an anchoring device on hot bituminous stabilized subbase. The nail shall be no less than 1/8 inch in diameter, no less than 2 inches in length and the nail head or attached washer shall be not less than 1/2 inch outside diameter. The nail shall be driven through both ends of a metal strap after it has been placed around one of the lower transverse bars on the dowel bar assembly.

At least eight pins or nails shall be used for each 12 foot section (a lane width) of assembly. Sand plates, if required, shall be drilled to receive the pins.

The Contractor shall provide the equipment and personnel necessary to verify dowel bar location after the concrete is placed and has received the initial screeding.

931-3.6 Materials: The wire for the welded assembly shall be in accordance with all applicable requirements of ASTM A-82.

Apply one coat of alkyd primer meeting the material requirements of SSPC Paint 25. Apply the primer in accordance with the manufacturer's recommendations.

932 NONMETALLIC ACCESSORY MATERIALS FOR CONCRETE PAVEMENT AND CONCRETE STRUCTURES.

(REV 12-19-11) (FA 1-10-12) (7-12)

ARTICLE 932-1 (Pages 878 - 883) is deleted and the following substituted:

932-1 Joint Materials.

932-1.1 Preformed Joint Filler for Pavement and Structures: Preformed joint filler shall meet the requirements of AASHTO M-153 or AASHTO M-213, or cellulose fiber types meeting all the requirements of AASHTO M-213 (except for the asphalt content) is acceptable provided they contain minimums of 0.2% zinc borate as a preservative and 1.5% waterproofing wax. For AASHTO M-153, unless a particular type is specified, either Type I, Type II or Type III may be used.

Preformed joint fillers shall have a thickness equal to the width of the joint required, and shall be furnished in lengths equal to the widths of the slabs in which they are to be installed, except that strips which are of a length not less than the distance between longitudinal joints, or between longitudinal joint and edge, may be used if laced or clipped together in a manner approved by the Engineer. The depth and shape of the joint filler shall conform to the dimensions shown in the plans. For doweled joints, proper provision shall be made for the installation of the dowels.

932-1.1.1 Certification: The Contractor shall provide the Engineer a certification conforming to the requirements of Section 6 from the manufacturer, confirming that the preformed joint filler meets the requirements of this Section.

932-1.2 Joint Sealer for Pavement and Structures:

932-1.2.1 General: This Specification covers joint sealer intended for use in sealing joints in asphaltic concrete pavement and portland cement concrete pavement. These materials may also be used to seal joints in portland cement concrete bridges and other structures.

932-1.2.2 Material: The joint sealant shall be composed of a mixture of materials, typically but not limited to bituminous based, that will melt when heated for application and then solidify to form a resilient and adhesive compound capable of sealing joints in portland cement concrete and/or asphaltic concrete against the infiltration of moisture and foreign materials throughout normal pavement conditions and at ambient temperatures. The manufacturer shall have the option of formulating the

material according to their Specifications. However, the requirements delineated in this Specification shall apply regardless of the type of formulation used. The material shall cure sufficiently to not flow from the joint or be picked up by vehicle tires after 3 hours at 77°F. The material shall be capable of a uniform application consistency suitable for filling joints without the inclusion of large air holes or discontinuities and without damage to the material.

Materials for pavement joints shall be tested according to ASTM D 5329.

932-1.2.2.1 Physical Requirements of Joint Sealants for Portland Cement Concrete Only:

Parameter	Limits
Pour Point	At least 20°F lower than the safe heating temperature as stated by the manufacturer.
Cone-Penetration, Non-immersed at 77°F, 150 g, 5 s	Less than or equal to 90 mm
Flow at 140°F, 5 h	Less than or equal to 5.0 mm
Bond, Non-immersed, 0°F for 5 cycles*	No cracking, separation, or opening that at any point is over 1/4 inch deep, in the sealant or between the sealant and the substrate.
*The depth of a crack, separation or opening shall be measured perpendicular to the side of the sealant showing the defect. At least two test samples in a group of three representing a given sample of sealant shall meet this requirement.	

932-1.2.2.2 Physical Requirements of Joint Sealants for Portland Cement Concrete and/or Asphaltic Concrete:

Parameters	Limits
Pour Point	At least 20° lower than the safe heating temperature as stated by the manufacturer.
Cone-Penetration, Non-immersed at 77°F, 150 g, 5 s	Less than or equal to 90 mm
Flow at 140°F, 5 h	Less than or equal to 3.0 mm
Bond, Non-immersed, -20°F for 3 cycles, 50% extension*	No cracking, separation, or opening that at any point is over 1/4 inch deep, in the sealant or between the sealant and the substrate.
Resilience at 77°F	Recovery greater than or equal to 60%
Asphaltic Concrete Compatibility at 140°F	No failure in adhesion, formation of an oily exudates at the interface between the sealant and the asphaltic concrete, or softening or other deleterious effects on the asphaltic concrete or sealant.
*The depth of a crack, separation or opening shall be measured perpendicular to the side of the sealant showing the defect. At least two test samples in a group of three representing a given sample of sealant shall meet this requirement.	

932-1.2.3 Qualified Products List: The joint sealant materials used shall be one of the products listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of their products shall submit product datasheets,

performance test reports from an independent laboratory showing the product meets the requirements of this section, and a QPL application in accordance with Section 6. Information on the QPL application must identify the sealant type.

932-1.2.4 Shipment: The material shall be delivered in containers plainly marked with the manufacturer's name or trademark product name, LOT number and date of expiration.

932-1.2.5 Bond Breaker Rod: The bond breaker rod shall be a closed cell, expanded polyethylene foam rod of the size and dimensions shown on the plans. It shall be compatible with the joint sealant and no bond or reaction shall occur between the rod and the sealant.

All bond breaker rods installed shall be covered by a sealant at the end of each work day.

Bond breaker tape approved by the sealant manufacturer may be used in lieu of bond breaker rod when sealing random cracks.

932-1.3 Low Modulus Silicone Sealant Materials:

932-1.3.1 Low Modulus Silicone Sealants: Silicone sealant shall be furnished in a one part or pre-measured two part formulation meeting the requirements specified herein.

Acetic acid cure sealants are not acceptable. A primer as specified in 932-1.4 for bonding sealant to concrete shall be used if required by the manufacturer. When a manufacturer's product is tested and approved by the Department using a primer, primer will be required for project installation.

Do not use Low Modulus Silicone Sealants Types A, B or C for bridge expansion joints.

Silicones shall be identified in the following manner:

Type A - A low modulus, non-sag (non-self-leveling) silicone formulation, used in sealing horizontal and vertical joints in cement concrete pavements and bridges (i.e., concrete-concrete joints). Tooling is required.

Type B - A very low modulus, self-leveling silicone formulation, used in sealing horizontal joints (including joints on moderate slopes) in cement concrete pavements and bridges (i.e., concrete-concrete joints). Tooling is not normally required.

Type C - An ultra-low modulus, self-leveling silicone formulation, used in sealing horizontal joints (including joints on moderate slopes) in cement concrete pavements and bridges (i.e., concrete-concrete joints). It can also be used to seal the joints between cement concrete pavements and asphalt concrete shoulders (including asphalt-asphalt joints). Tooling is not normally required.

Type D - An ultra-low modulus, self-leveling silicone formulation, cold-applied, rapid-cure, used to seal expansion joints that experience both thermal and/or vertical movements. The material must cure by chemical reaction and not by evaporation of solvent or fluxing of harder particles. Tooling shall not be required. Use according to Design Standards, Index No. 21110.

932-1.3.2 Physical Requirements:

Silicone Sealant Type	Test Method	Type A	Type B	Type C	Type D
Flow	ASTM D 5893	No Flow			
Slump (maximum)	ASTM D 2202	0.3 inches			
Extrusion rate (minimum)	ASTM C 1183, Procedure A	20 ml/min	20 ml/min	20 ml/min	20 ml/min
Tack-free time at 77 ± 3ºF and 45 to 55% Relative Humidity	ASTM C 679	90 minutes maximum	180 minutes, maximum	60 minutes, maximum	30 – 60 minutes
Specific gravity	ASTM D 792, Method A	1.1 to 1.515	1.10 to 1.40	1.26 to 1.34	1.26 to 1.34
Durometer hardness, Shore A (Cured seven days at 77 ± 3ºF and 50 ± 5% Relative Humidity)	ASTM D 2240	10-25			
Durometer hardness, Shore 00 (Cured 21 days at 77 ± 3ºF and 50 ± 5% Relative Humidity)	ASTM D 2240		40-80	20-80	
Tensile stress (maximum) at 150% elongation	ASTM D 412 (Die C)	45 psi	40 psi	15 psi	
Elongation (Cured seven days at 77 ± 3ºF and 50 ±	ASTM D 412 (Die C)	800% minimum			600% minimum

Silicone Sealant Type	Test Method	Type A	Type B	Type C	Type D
5% Relative Humidity)					
Elongation (Cured 21 days at 77 ± 3ºF and 50 ± 5% Relative Humidity)	ASTM D 412 (Die C)		800% minimum	1400% minimum	
Ozone and Ultraviolet Resistance	ASTM C 793	No chalking, cracking or bond loss after 5,000 hours, minimum.			
Bond to concrete mortar briquets (primed if required) (Cured seven days at 77 ± 3ºF and 50 ± 5% Relative Humidity)	AASHTO T-132	50 psi minimum			
Bond to concrete briquets (Cured 21 days at 77 ± 3ºF and 50 ± 5% Relative Humidity)	AASHTO T-132		40 psi minimum	35 psi minimum (includes bond to asphalt)	
Movement Capability	ASTM C 719	No adhesive or cohesive failure and adhesion, 10 cycles at -50 to +100%			No adhesive or cohesive failure and adhesion, 10 cycles at +100/-50 % (joints 2” wide)

Portland Cement Mortar: Briquettes shall be molded and cured 28 days minimum in accordance with AASHTO T-132. Cured briquettes shall be dried at 230° plus or minus 5ºF, sawed in half and bonded together with a thin section of sealant. After cure of sealant, briquettes shall be tested in accordance with AASHTO T-132.

932-1.3.3 Field Cure: Six-inch samples of the sealant shall be taken by the Engineer from the joint at the end of a two week curing period and tested for durometer hardness (by Florida Method ANSI/ASTM D 2240), except that the requirements of a 1 inch sample width shall not apply. A minimum hardness of 7.0 is required as evidence of adequate cure.

932-1.3.4 Qualified Products List: The low modulus silicone sealant used shall be one of the products listed on the Department's Qualified Products List. Manufacturers seeking evaluation of their products shall submit product datasheets, performance test reports from an independent laboratory showing the product meets the requirements of this section, an infrared identification curve (2.5 to 15 μm) and a QPL application in accordance with Section 6. Information on the QPL application must identify the sealant type.

932-1.3.5 Shipment: The material shall be delivered in containers plainly marked with the manufacturer's name or trademark product name, LOT number and date of expiration.

932-1.3.6 Primer: When required by the manufacturer's product, a primer shall be used.

The manufacturer shall perform quality control tests on each LOT of sealant primer material furnished to each project and furnish a certified report that each LOT of primer material furnished to a project meets his Company's Specifications for that product and the primer is suitable for its intended use.

Sealant primer material shall be delivered in containers plainly marked with the manufacturer's name or trademark and product name, LOT number and date of expiration.

932-1.3.7 Backer Rod and Tape Bond Breakers: Backer rods and tape shall be compatible with the joint sealant and approved by the sealant manufacturer. No bond or reaction shall occur between the rod and the sealant.

932-1.3.8 Installation: Installation, material selection, joint dimensions, bond breaker suitability (by type and project) shall be in agreement with the requirements of Design Standards, Index Nos. 305 and 21110. Any modifications or exceptions to these requirements shall be shown in the plans.

For new construction projects or general use where the joints to be sealed have uniform width, a closed cell, expanded polyethylene foam backer rod bond breaker shall be required. For rehabilitation projects and similar joint seals where the joints to be sealed have irregular width, an open cell, expanded polyethylene foam backer rod bond breaker with an impervious skin shall be required.

The backer rod shall be compatible with the joint sealant. No bond or reaction shall occur between the rod and the sealant.

Tape bond breaker approved by the sealant manufacturer may be used in lieu of backer rod bond breaker when sealing joints and/or random cracks, as required.

Type D Silicone sealant shall be placed when the ambient temperature is rising and is between 55°F and 85°F and the temperature is expected to rise for the next three hours minimum to provide to adequate joint opening and compression of the sealant during curing.

All installed bond breakers shall be covered by sealant at the end of each work day.

A tolerance in cross-sectional height at midpoint of minus 1/16 to plus 3/16 inch will be allowed to the nominal values shown for each joint width on the plan sheet. The Engineer shall check one joint for each 1,000 feet of roadway by cutting out specimens. If the cross section of the cut specimen is out of the allowable range, additional specimens shall be taken as follows:

One joint every 100 feet of pavement, not to exceed 500 feet.

If the average of the specimens is out of tolerance, the Contractor shall remove and replace the entire 500 feet section at no additional expense to the Department.

Installation tolerance shall be verified at 1,000 feet intervals.

932-1.4 Pre-cured Silicone Sealant:

932-1.4.1 General: Pre-cured silicone sealants are intended for sealing vertical joints on concrete surfaces. Type V1 sealant is intended for contraction joints or joints with movements less than 1/4 inch. Type V2 sealant is intended for expansion joints not exceeding 200% of the nominal joint opening. Type V2 sealant may be substituted for Type V1 sealant. The joint sealant must be listed on the Department's Qualified Products List (QPL).

932-1.4.2 Physical Requirements: Sealant material shall be a nominal 1/16 inch thick, available in standard widths from 1 inch to 6 inches, colored to match the finish surface coating of the concrete, and meet the following minimum testing requirements:

TEST PROPERTY DESCRIPTION	TEST METHOD	TYPE V1	TYPE V2
Minimum Movement, Cohesion/Adhesion	ASTM C 1523	100%	200%
Dry/Room Temperature Loss of Adhesion/Cohesion	ASTM C 1523	None	None
Water Immersion Loss of Adhesion/Cohesion	ASTM C 1523	None	None
Frozen Loss of Adhesion/Cohesion	ASTM C 1523	None	None
Heat Loss of Adhesion/Cohesion	ASTM C 1523	None	None
Artificial Weathering Loss of Adhesion/Cohesion	ASTM C 1523	None	None
Tear Propagation	ASTM C 1523	NT or PT (No Tear or Partial/Knotty Tear)	NT or PT (No Tear or Partial/Knotty Tear)

TEST PROPERTY DESCRIPTION	TEST METHOD	TYPE V1	TYPE V2
Ultimate Elongation	ASTM D 412	250%	500%

932-1.4.3 Qualified Products List: Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6. Applications must include test results, an infrared identification curve (2.5 to 15 µm), and a product data sheet with the recommended adhesive and installation requirements.

932-1.5 Compression Seals and Adhesive Lubricant

932-1.5.1 Preformed Elastomeric Compression Seals: Preformed Elastomeric Compression Seals shall meet the requirements of ASTM D 2628 except that immersion oil IRM 903 may be substituted for Oil No. 3 in the Oil Swell test procedure.

932-1.5.2 Compression Seal Adhesive Lubricant: Compression Seal Adhesive Lubricant shall meet the requirements of ASTM D 4070. The material shall be fluid from 5° to 120°F (-15° to 49°C).

932-1.5.3 Certification: The manufacturer shall provide a certified test report for each lot of material furnished to each project along with a statement certifying that the material conforms to this specification and identifying the project number and manufacturer's lot number.

932-1.5.4 Verification Samples: Provide verification samples in accordance with Section 6.

ARTICLE 932-2 (Pages 883 - 885) is deleted and the following substituted:

932-2 Structure Bearing Pads.

932-2.1 General: Furnish elastomeric structure bearing pads as shown in the Contract Documents. Elastomeric bearings as defined herein shall include plain pads (elastomer only) and laminated bearings with steel or fabric laminates. Flash tolerance, finish and appearance of bearings shall meet the requirements of the latest edition of the Rubber Handbook as published by the Rubber Manufacturer's Association, Inc. RMA-F3-T.063 for molded bearings, and RMA-F2 for extruded bearings.

932-2.2 Materials: Use elastomer that is Grade 2 or higher, as defined in the AASHTO LRFD Bridge Design Specifications, crystallization resistant, 100% virgin polychloroprene (neoprene). Use only new materials; reclaimed material is not allowed in the finished product. No wax, anti-ozonants, or other foreign material may accumulate or be applied to the surfaces of the bearing. The steel layers of the laminated pads shall utilize 10 gauge steel sheet (0.1345 inches thick). The steel utilized for the steel layers and for external load bearing plates (if specified) shall meet the requirements of ASTM A-36 or ASTM A-1011 Grade 36 Type I steel sheet. External load bearing plates shall be finished or machined flat to within 0.01 inches. The bottom surfaces of external load plates (masonry plates) designed to rest on bearing pads shall not exceed an out of flatness value of 0.0625 inches. External load bearing plates shall be protected from rust until all exposed surfaces can be field painted. Any rust inhibitor shall be removed from all surfaces prior to welding.

932-2.3 Sampling: A sampling LOT shall consist of a maximum of 100 bearing pads of a single type of bearing, of the same design, materials, and thickness, delivered to the project site.

932-2.3.1 Ancillary Structure Pads: Sampling is not required and acceptance is by certification.

932-2.3.2 Bridge Structure Pads: A minimum of two bridge bearing pads per LOT will be selected by the Engineer at the project site- one for testing and one for confirmation in the event of a failing test result. Samples shall consist of complete pads as detailed in the Plans. Furnish additional complete bridge bearing pads to replace those selected for testing. Bridge bearing pads shall be available for sampling a minimum of three weeks prior to their installation. The sample bridge bearing pads shall be tested by an independent laboratory approved by the Department.

932-2.4 Dimensional Tolerances: Fabricate elastomeric bearings within the dimensional tolerances specified below or as designated in the Plans. If any of the dimensions are outside the limits specified, the bearing pad shall be rejected.

Measurement		Tolerance (inches)
1. Overall vertical dimensions	Design thickness ≤1.25 inches	-0, +0.125
	Design thickness >1.25 inches	-0, +0.25
2. Overall horizontal dimensions	measurements ≤36 inches	-0, +0.25
	measurements >36 inches	-0, +0.50
3. Thickness of individual layers of elastomer (laminated bearings only) at any point within the bearing		±0.125
4. Variation from a plane parallel to the theoretical surface (as determined by measurements at the edge of the bearings)	Top (slope relative to bottom)	≤0.005 radians
	Sides	0.25
5. Position of exposed connection members		±0.125
6. Edge cover of embedded laminates of connection members		-0, +0.125
7. Position and size of holes, slots, or inserts		±0.125

Note: If the variation in thickness of individual layers of elastomer is greater than that allowed in the tolerance for Measurement (3) (±0.125 in.), use the following equation to determine compliance: $7.5\theta + v/hr < 0.35$ provided $\theta \leq 0.02$ where θ (radians) and v (in) are absolute values of steel laminate rotation and vertical displacement. If the specified layer elastomeric layer thickness is h_r, the bearing length is L, and H_1 and H_2 are the measured maximum and minimum thicknesses at the edges of the layer, then $v=|h_r-1/2(H_1+H_2)|$ and $\theta=|(H_1-H_2)/2L|$ for interior layers and $\theta=|(H_1-H_2)/L|$ for top and bottom layers provided that the minimum elastomer layer thickness $H_2 \geq 0.2$ in.

932-2.5 Ancillary Structures – Plain, Fiber Reinforced, or Fabric Laminated Bearing Pads:

932-2.5.1 Plain Pads: Plain pads shall be either molded, extruded, or vulcanized in large sheets and cut to size. Cutting shall not heat the material and shall produce a smooth finish conforming to ANSI B46.1, 6.3 µm (0.248 mils). Plain pads shall be molded or extruded to the finished thickness. Plying pads of lesser thickness

together shall not be permitted. External load plates, when used, shall be protected from rusting and shall be hot bonded by vulcanization during the primary molding process.The finished pads shall withstand a minimum uniform compressive load of 1200 psi when tested in accordance with FM 5-598.

932-2.5.2 Fiber Reinforced or Fabric Laminated Pads: Fiber reinforced pads shall be constructed with a homogeneous blend of elastomer and random-oriented high strength synthetic fiber cords. Bearing pads may be molded and vulcanized in large sheets and cut to size. Cutting shall be performed so as to prevent heating and must produce a smooth finish conforming to ANSI B46.1.

Fabric laminated bearings shall be constructed of multiple layers of fabric and elastomer. The fabric shall be composed of 8 ounce cotton duck and the pads manufactured in accordance with Military Specification MIL-C-882. Ensure the fabric is free of folds or ripples and parallel to the top and bottom surfaces.

Fiber reinforced and fabric pads shall withstand a minimum uniform compressive load of 2,400psi when tested in accordance with FM 5-598.

932-2.5.3 Certification: The Contractor shall provide the Engineer a certification conforming to the requirements of Section 6 stating that the ancillary structure pads meet the requirements of this Section and the physical and heat resistance properties of section 6 of FM 5-598.

932-2.6 Bridge Structures - Elastomeric Bearing Pads: Bearings with steel laminates shall be cast as a unit in a mold and bonded and vulcanized under heat and pressure. Bearings with steel laminates which are designed to act as a single unit with a given shape factor must be manufactured as a single unit. The mold shall have a standard shop practice mold finish. The internal steel laminates shall be blast cleaned to a cleanliness that conforms to SSPC-SP6 at the time of bonding. Plates shall be free of sharp edges and burrs and shall have a minimum edge cover of 0.25 inches. External load plates (sole plates) shall be hot bonded to the bearing during vulcanization.

Edges of the embedded steel laminates, including the laminate restraining devices and around holes and slots shall be covered with not less than 3/16 inch of elastomer or the minimum edge cover specified on the Plans. All exposed laminations or imperfections that result in less than the specified elastomer cover of any surface of the steel laminations shall be repaired by the manufacturer at the point of manufacture. The repair shall consist of sealing the imperfections flush on the finished pads with a bonded vulcanized patch material compatible with the elastomeric bearing pad. Repairs employing caulking type material or repairing the bearings in the field will not be permitted.

932-2.6.1 Testing: Test bridge bearing pads in accordance with FM 5-598. Laminated bridge bearings must meet a minimum compressive load of 2,400 psi and non-laminated (plain) pads must meet a minimum compressive load of 1,200 psi. If any properties are identified as non compliant with the criteria specified, the bearing shall be rejected and the confirmation sample tested. If the confirmation sample test results are also non compliant, the LOT shall be rejected.

932-2.6.2 Marking: Each elastomeric bearing pad shall be permanently marked. The marking shall consist of the order number, LOT number, pad identification number, elastomer type, and shear modulus or hardness (when shear modulus is not

specified). Where possible, the marking shall be on a face of the bridge bearing pad that will be visible after erection of the structure.

932-2.6.3 Certified Test Results: For bridge bearing pads, provide a certified copy of the independent laboratory's complete test results for all tests specified, properly identified by LOT and project number, to the Engineer.

932-2.6.4 Certification: The Contractor shall provide the Engineer a certification conforming to the requirements of Section 6 stating that the bearing pads, (plain, fiber reinforced or elastomeric) meet the requirements of this Section. The certification shall designate the bearings in each LOT and state that each of the bearings in the LOT was manufactured in a reasonably continuous manner from the same batch of elastomer and cured under the same conditions.

948 MISCELLANEOUS TYPES OF PIPE.
(REV 1-26-12) (FA 2-9-12) (7-12)

SECTION 948 (Pages 900 - 906) is deleted and the following substituted:

SECTION 948
MISCELLANEOUS TYPES OF PIPE

948-1 Polyvinyl-Chloride (PVC) Pipe, or Acrylonitrite-Butadiene-Styrene (ABS) Plastics Pipe.

948-1.1 For Bridge Drains: PVC pipe shall conform to the requirements of ASTM D-1785, for Type I, Grade 1, Schedule 80 PVC pipe with a minimum polymer cell classification of 12454 per ASTM D 1784 and a minimum of 1.5% by weight of titanium dioxide for UV protection.

948-1.2 Pressure Pipe: Pressure pipe for direct burial under pavement shall conform to the requirements of ASTM D-1785, for Type I, Grade I, Schedule 40, for sizes up to and including 2 1/2 inches, and Schedule 80 for sizes up to 4 inches. Pressure pipe 4 inches in diameter and larger shall conform to the requirements of AWWA C900-75, DR18, and ASTM D-1785, Type I, Grade I or other types as may be specifically called for in the Plans or special provisions.

948-1.3 Pipe Marking: All PVC pipe shall be marked as required by Article 8 of ASTM D-1785, and acceptance of the pipe may be based on this data.

948-1.4 Nonpressure Pipe: PVC pipe and ABS pipe intended for direct-burial or concrete encasement, shall meet the following requirements:

(a) PVC Pipe: ASTM D-3034, SDR-35, or ASTM F-949, profile wall without perforations.

(b) ABS Pipe: ASTM D-2680.

The manufacturer of the PVC or ABS pipe shall furnish to the Engineer six copies of mill analysis covering chemical and physical test results.

948-1.5 Underdrain: PVC pipe for use as underdrain shall conform to the requirements of ASTM F-758 or ASTM F-949. Also, PVC underdrain manufactured from PVC pipe meeting ASTM D-3034, perforated in accordance with the perforation requirements given in AASHTO M-36 or AASHTO M-196 will be permitted.

948-1.6 Edgedrain: PVC pipe for use as edgedrain shall conform to the requirements of ASTM F-758, ASTM F-949 or ASTM D-3034 pipe shall be perforated in accordance with the perforation requirements given in AASHTO M-36 or AASHTO M-196. Additional perforations will be required as indicated in the Design Standards, Index No. 286 for pipes designated under ASTM F-758 and ASTM D-3034. PVC pipe intended for direct burial in asphalt shall meet the following requirements:

(a) ASTM D-3034, SDR-35, or ASTM F-949

(b) NEMA TC-2 (pipe material and compounds) and NEMA TC-3 (pipe fittings) for PVC (90ºC electrical conduit pipe) NEMA ECP-40 and NEMA ECP-80. Underwriter Laboratory Specifications referenced under NEMA specifications for electrical conductivity are not required.

(c) Pipe shall withstand asphalt placement temperatures specified without permanent deformation.

(d) Perforations shall be in accordance with AASHTO M-36 or AASHTO M-196.

948-1.7 PVC Pipe (12 to 48 Inches): PVC pipe for side drain, cross drain, storm drain and other specified applications shall conform to AASHTO M-278 for smooth wall PVC pipe or ASTM F-949 for PVC ribbed pipe. Resin shall contain a minimum of 1.5% by weight of titanium dioxide for UV protection. Mitered end sections are not to be constructed of polyvinyl chloride. Use only concrete or metal mitered end sections as indicated in the Design Standards.

All pipe produced and shipped to the job site shall meet the requirements of 105-3.2.

948-2 Corrugated Polyethylene Tubing and Pipe.

948-2.1 General: For underdrain, Corrugated Polyethylene Tubing and fittings shall meet the requirements of AASHTO M-252. For edgedrain, Corrugated Polyethylene Tubing and fittings shall meet the requirements of AASHTO M-252, except as modified in 948-2.2. For storm drain side drain, french drain and cross drain corrugated Polyethylene Pipe shall meet the requirements of AASHTO M-294 and 948-2.3.2.

The tubing or pipe shall not be left exposed to sunlight for periods exceeding the manufacturer's recommendation.

948-2.2 Edgedrain (4 to 10 inches): The requirements for edgedrain as specified in AASHTO M-252 are modified as follows:

(a) Coiling of tubing 6 inches in diameter or greater is not permitted. Tubing shall have a minimum pipe stiffness of 46 psi at 5% deflection.

948-2.3 Corrugated High Density Polyethylene Pipe (12 to 60 inches):

948-2.3.1 General: Class I (50 year) corrugated Polyethylene Pipe used for side drain, storm and cross drain or french drain shall meet the requirements of AASHTO M-294. Class II Corrugated Pipe shall meet the requirements of AASHTO M-294 and the additional requirements as specified herein. Corrugations may only be annular. Ensure that pipe resin conforms to ASTM D-3350 minimum cell classification 435400C except that cell class 435400E may be used if the combination of color and UV stabilizer provides the same or better UV protection than that of resin cell class 435400C. Mitered end sections are not to be constructed of polyethylene. Use only concrete or metal mitered end sections as indicated in the Design Standards.

All pipe produced and shipped to the job site shall meet the requirements of 105-3.2.

948-2.3.2 Additional Requirements for Class II (100 Year), Type S Polyethylene Pipe Meet the following requirements:

Table 1			
Stress Crack Resistance of Pipes			
Pipe Location	Test Method	Test Conditions	Requirement
Pipe Liner	FM 5-572, Procedure A	10% Igepal solution at 122°F and 600 psi applied stress, 5 replicates	Average failure time of the pipe liner shall be ≥18.0 hours, no single value shall be less than 13.0 hours.
Pipe Corrugation[1], (molded plaque)	ASTM F-2136	10% Igepal solution at 122°F and 600 psi applied stress, 5 replicates	Average failure time shall be ≥24.0 hours, no single value shall be less than 17.0 hours.
Junction	FM 5-572, Procedure B and FM 5-573	Full Test[2][3] Test at 3 temperature/stress combinations: 176°F at 650 psi 176°F at 450 psi 158°F at 650 psi; 5 replicates at each test condition	Determine failure time at 500 psi at 73.4°F ≥ 100 years (95% lower confidence) using 15 failure time values[4] The tests for each condition can be terminated at duration equal to or greater than the following criteria: 110.0 hr at 176°F 650 psi 430.0 hr at 176°F 450 psi 500.0 hr at 158°F 650 psi
		Single Test[5]: Test temperature 176°F and applied stress of 650 psi.; 5 replicates	The average failure time must be equal to or greater than 110.0 hr

Table 1			
Longitudinal Profiles[6]	FM 5-572, Procedure C, and FM 5-573	Full Test[2][3]: Test at 3 temperature/stress combinations: 176°F at 650 psi 176°F at 450 psi 158°F at 650 psi; 5 replicates at each test condition	Determine failure time at 500psi at 73.4°F ≥ 100 years (95% lower confidence) using 15 failure time values[4]. The tests for each condition can be terminated at duration equal to or greater than the following criteria: 110.0 hr at 176°F 650 psi 430.0 hr at 176°F 450 psi 500.0 hr at 158°F 650 psi
		Single Test[5]: Test temperature 176°F and applied stress of 650 psi.; 5 replicates	The average failure time must be equal to or greater than 110.0 hr
Oxidation Resistance of Pipes			
Pipe Location	Test Method	Test Conditions	Requirement
Liner and/or Crown[7]	OIT Test (ASTM D- 3895)	2 replicates (to determine initial OIT value) on the as manufactured (not incubated) pipe.	25.0 minutes, minimum
Liner and/or Crown[7]	Incubation test FM 5-574 and OIT test (ASTM D-3895)	Three samples for incubation of 265 days at 176°F[8] and applied stress of 250 psi. One OIT test per each sample	Average of 3.0 minutes[9] (no values shall be less than 2.0 minutes)
Liner and/or Crown[7]	MI test (ASTM D-1238 at 190°C/2.16Kg)	2 replicates on the as manufactured (not incubated) pipe.	< 0.4 g/10 minutes
Liner and/or Crown[7]	Incubation test FM 5-574 and MI test (ASTM D-1238 at 190°C/2.16Kg)	2 replicates on the three aged sampled after incubation of 265 days at 176°F[8] and applied stress of 250 psi	MI Retained Value[9][10] shall be greater than 80% and less than 120%.

Table 1
Note: FM = Florida Method of Test. (1) Required only when the resin used in the corrugation is different than that of the liner. (2) A higher test temperature (194° F) may be used if supporting test data acceptable to the State Materials Engineer is submitted and approved in writing. (3) Full test shall be performed on alternative pipe diameter of pipe based on wall profile design, raw material cell classification, and manufacturing process. Full test must be performed on maximum and minimum pipe diameters within a manufacturing process. (4) Computer program to predict the 100 year SCR with 95% lower confidence can be obtained from FDOT. (5) Single test for the junction and longitudinal profile may be used on alternating pipe sizes within a manufacturing process. Single point tests may not be used on maximum and minimum pipe sizes within a manufacturing process except by approval of the Engineer. Single point tests may be used for quality assurance testing purposes. (6) Longitudinal profiles include vent holes and molded lines. (7) OIT and MI tests on the crown are required when resin used in the corrugation is different than that of the liner. (8) The incubation temperature and duration can also be 196 days at 185°F. (9) The tests for incubated and "as-manufactured" pipe samples shall be performed by the same lab, same operator, the same testing device, and in the same day. (10) The MI retained value is determined using the average MI value of incubated sample divided by the average MI value of as-manufactured pipe sample.

Manufacturer may use ground Class II, but not Class I, pipe for reworked plastic.

948-2.3.3 Certification: Furnish to the Engineer certification from the manufacturer for each pipe diameter manufacturers LOT to be incorporated into the project that the pipe meets the requirements of these Specifications.

Manufacturers seeking evaluation of a product in accordance with Departmental procedures must submit test reports conducted by a laboratory qualified by the Geosynthetic Accreditation Institute-Laboratory Accreditation Program (GAI-LAP) or qualified by ISO 17025 accreditation agency using personnel with actual experience running the test methods for Class II HDPE pipe. Submit the test reports to the State Materials Office.

948-2.3.4 Verification Samples: Furnish verification samples as directed by the Engineer.

948-3 Fiberglass Reinforced Polymer Pipe.

948-3.1 For Bridge Drains: Fiberglass pipe shall conform to the requirements of ASTM D-2996 or ASTM D-2310, for Type I, Grade 2, Class E, using polyvinyl ester as the only resin. The minimum designation shall be RTRP-11EA. The resin shall contain UV stabilizers or a two-part 100% solids polyurethane coating.

948-4 Ductile Iron Pipe.

948-4.1 For Bridge Drains: Ductile iron pipe shall conform to the requirements of AWWA C151.

948-5 Hot Dip Galvanized Steel Pipe.

948-5.1 For Bridge Drains: Hot dip galvanized steel pipe shall conform to the requirements of ASTM A-53.

948-6 Flexible Transition Couplings and Pipe.

948-6.1 For Bridge Drains: Flexible transition couplers and pipe shall conform to the requirements of ASTM C-1173.

948-7 Profile Wall Polypropylene (PP) Pipe.

PP pipe (12 to 60 inches) for side drain, cross drain, storm drain, and other specified applications shall meet the requirements of AASHTO MP21-11. Mitered end sections are not to be constructed of polypropylene. Use only concrete or metal mitered end sections as indicated in the Design Standards.

All pipe produced and shipped to the job site shall meet the requirements of 105-3.2. The manufacturer shall demonstrate that resin oxidation resistance will last using accelerated aging by use of incubation tests in accordance with FM 5-574. Tests shall demonstrate that stabilization package is present and that no degradation has occurred.

948-8 Filter Fabric Sock for Use with Underdrain.

For Type I Underdrain specified in the Design Standards, Index No. 286, filter sock shall be an approved strong rough porous, polyester or other approved knitted fabric which completely covers and is secured to the perforated plastic tubing underdrain in such a way as to prevent infiltration of trench backfill material.

The knitted fabric sock shall be a continuous one piece material that fits over the tubing like a sleeve. It shall be knitted of continuous 150 denier yarn and shall be free from any chemical treatment or coating that might significantly reduce porosity and permeability.

The knitted fabric sock shall comply with the following physical properties:

Weight, applied (oz/sq. yd.)	3.5 min	ASTM D-3887
Grab tensile strength (lbs.)	50 min.*	ASTM D-5034
Equivalent opening size (EOS No.)	25 min.**	Corps of Engineers CW-02215-77
Burst strength (psi)	100 min.**	ASTM D-3887
*Tested wet. **Manufacturer's certification to meet test requirement.		

The knitted fabric sock shall be applied to the tubing in the shop so as to maintain a uniform applied weight. The tubing with knitted fabric sock shall be delivered to the job site in such manner as to facilitate handling and incorporation into the work without damage. The knitted fabric sock shall be stored in UV resistant bags until just prior to installation. Torn or punctured knitted fabric sock shall not be used.

948-9 Pipe Liner.

948-9.1 Cured-In-Place Pipe Liner: Cured-in-place pipe liner shall be continuous, resin impregnated, flexible tubing that meets the requirements of ASTM D-5813 and ASTM F-1216.

948-9.2 Deformed Pipe Liner: Deformed pipe liner shall be manufactured in an out of round state, usually collapsed circumferentially and folded on the long axis. After installation in a host pipe, the liner is rounded by means of heat and pressure to fit the host pipe. Deformed pipe liner, when installed, shall extend from one structure to the next in one continuous length with no intermediate joints.

(1) Polyethylene: Deformed polyethylene pipe liner shall meet the requirements of ASTM F-714 with a minimum cell classification of 335420c.

(2) PVC: Deformed PVC pipe liner shall meet the requirements of ASTM F-1504.

948-9.3 Discrete Pipe Liner: Discrete pipe liner shall be round, flexible or semi-rigid liner, manufactured in lengths that may be joined in a manhole or access pit before insertion in a host pipe.

(1) High Density Polyethylene Solid Wall: Discrete high density polyethylene pipe liner shall meet the requirements of ASTM F-714 or AASHTO M-326 and shall have a minimum of cell classification of 345464c.

(2) High Density Polyethylene Profile Wall: Discrete high density polyethylene pipe liner shall meet the requirements of AASHTO M-294 and shall have a minimum cell classification of 435400c.

(3) PVC: Discrete PVC pipe liner shall meet the requirements of ASTM F-794, ASTM F-949, or AASHTO M-304 and shall have a minimum cell classification of 12454.

(4) Fiberglass: Discrete fiberglass pipe liner shall meet the requirements of ASTM D-3262.

948-9.4 Spiral Wound Pipe Liner: Spiral wound pipe liner shall consist of coils of profile strips that are wound into a host pipe helically, after which a cementious grout is injected into the annular space between the liner and the host pipe, forming a rigid composite structure.

(1) PVC: PVC spiral wound pipe liner shall meet the requirements of ASTM F-1697 or ASTM F-1735 and shall have a minimum cell classification of 12454.

948-9.4.1 Machine Spiral Wound Pipe Liner: Machine spiral wound pipe liner shall consist of a continuous one piece profile strip wound directly into the deteriorated pipelines. The liner can be installed in close fit to the host pipe, or alternatively installed at a fixed diameter. Where the liner is installed at a fixed diameter, the annular space between the spiral wound liner pipe and the existing pipe is grouted.

(1) PVC: PVC machine spiral wound pipe liner shall meet the requirements of ASTM F-1697 and shall have a minimum cell classification of 12454.

948-9.5 Paneled Pipe Liner: Paneled pipe liner consists of custom-cut flat or curved panels that are formed to the inside circumference of a host pipe.

(1) PVC: PVC paneled pipe liner shall meet the requirements of ASTM F-1735 and shall have a minimum cell classification of 12454.

948-9.6 Point Pipe Liner: Point pipe liner may consist of any materials covered by this specification when used to repair and rehabilitate an isolated portion of an existing storm drain pipe. Materials which are restricted (as primary components) to point repair are; steel, which shall meet the requirements of AASHTO M-167M, ASTM A-167, or ASTM A-240; aluminum, which shall meet the requirements of AASHTO M-196, and rubber; which shall meet the requirements of ASTM C-923.

948-9.7 Coated Pipe Liner: Coated pipe liner consists of liquid, slurry, foam or gel that is spread or sprayed over the interior surface of an existing pipe to rehabilitate it. Materials that may be used for coating are hydrophilic urethane gel, epoxy resin, polyester resin, gunite, shotcrete, low density cellular concrete, and cementious grout.

971 TRAFFIC MARKING MATERIALS.
(REV 12-20-11) (FA 1-13-12) (7-12)

SECTION 971 (Pages 922 - 936) is deleted and the following substituted:

SECTION 971
TRAFFIC MARKING MATERIALS

971-1 General Requirements.

971-1.1 Packaging and Labeling: All traffic marking materials shall be shipped in strong containers plainly marked with the weight in pounds per gallon, the volume of traffic marking materials content in gallons, the color, user information, date of manufacture, batch and DOT code number. Each batch manufactured shall have a unique number. A true statement of the percentage composition of the pigment, the proportion of pigment to vehicle, and the name and address of the manufacturer, also shall be shown. The label shall warn the user of any special handling or precautions of the material, as recommended by the manufacturer. Any package not so marked will not be accepted for use under these specifications.

Preformed thermoplastic materials and permanent tape products shall be marked with content, color, date of manufacture and batch number.

971-1.2 Storage: Any traffic marking materials which, although inspected and approved at the point of manufacture, hardens or livers in the containers so that it cannot be readily broken up with a paddle to a smooth, uniform painting consistency, will be rejected. All materials shall have a container storage life of one year from date of manufacture. Any traffic marking materials not acceptable for proper application will be rejected, even though it conforms to these Specifications in all other respects.

971-1.3 Mixing: All paints shall be delivered to the project completely mixed, and ready to be used without additional oil or thinner. Gasoline shall not be used for thinner under any circumstances.

971-1.4 Qualified Products List: All traffic marking materials shall be one of the products listed on the Qualified Products List. Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 accompanied by a copy of the infrared identification curve (2.5 to 15 µm) for the vehicle component. Products may only be used for applications recommended by the manufacturer. A notation of the number of coats and the thickness of each coat at which the product passes testing may be placed on the QPL. When listed, this will be the minimum criteria for application of the traffic marking material.

971-1. 5 Samples: Field samples will be obtained in accordance with the Department's Sampling, Testing and Reporting Guide Schedule.

971-1. 6 Color: Materials for pavement markings shall meet the following performance requirements.

The initial daytime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
X	0.530	0.510	0.455	0.472

Y	0.456	0.485	0.444	0.400

The in-service daytime chromaticity for yellow materials shall fall within the box created by the following coordinates:

In-Service Daytime Chromaticity Coordinates (Corner Points)

	1	2	3	4
X	0.530	0.510	0.435	0.449
Y	0.456	0.485	0.429	0.377

The nighttime chromaticity for yellow materials shall fall within the box created by the following coordinates:

Nighttime Chromaticity Coordinates (Corner Points)

	1	2	3	4
X	0.575	0.508	0.473	0.510
Y	0.425	0.415	0.453	0.490

971-1.7 Additional Requirements: Traffic stripe materials shall be characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA) 40 CFR 261 and the material shall not exude fumes which are hazardous, toxic or detrimental to persons or property. Provide supporting independent analytical data or product Material Safety Data Sheets (MSDS) identifying nonhazardous designations.

Additionally, traffic stripe materials shall contain no more that 5.0 ppm lead by weight when tested in accordance with the RCRA reference above. Provide supporting independent analytical data.

971-2 Glass Spheres.

971-2.1 General Requirements: Glass spheres shall be of a composition designed to be highly resistant to traffic wear and to the effects of weathering for the production of a reflective surface, creating night visibility of the pavement markings without altering day visibility of the marking. The general requirements of 971-1 apply to glass spheres.

971-2.2 Specific Properties: The large (Type 3 or larger) glass spheres used for drop on beads shall have an adhesion coating. Type 1 glass spheres used for drop on beads shall have a dual coating. Beads used in the intermix of materials are not required to be coated.

The following physical requirements apply:

Property	Test Method	Specification
Roundness*	ASTM D 1155	Min: 70 % by weight
Roundness**	ASTM D 1155	Min: 80% by weight
Refractive Index*	Becke Line Method (25+/-5C)	1.5 minimum

Refractive Index**	Becke Line Method (25+/-5C)	1.9 minimum
*Type 1, 3, 4 and 5 beads **High Index beads		

Sieve Size	Percent by Mass Passing Designated Sieve (ASTM D 1214)				
	Grading Designation				
	Type 1 (AASHTO)	Type 3 (FP 96)	Type 4 (FP 96)	Type 5 (FP 96)	High Index
No. 8				100	
No. 10			100	95 – 100	
No. 12		100	95 – 100	80 – 95	
No. 14		95 – 100	80 – 95	10 – 40	
No. 16	100	80 – 95	10 – 40	0 – 5	100
No. 18		10 – 40	0 – 5	0 – 2	
No. 20	95 - 100	0 – 5	0 – 2		95 - 100
No. 25		0 – 2			
No. 30	75 – 95				55 - 85
No. 40					15 - 45
No. 50	15 – 35				0 - 5
No. 80					
No. 100	0 – 5				

Provide the Engineer Certified test reports from the manufacturer confirming that all glass spheres conform to the requirements of this Section.

971-2.3 Sampling:

971-2.3.1 Sampling: A random 50 lb sample of glass spheres shall be obtained for each 50,000 lb shipped. Upon arrival, the quantity of material will be reduced in a sample splitter to a size of approximately 1 quart by the Engineer, or one 50 lb unopened bag.

971-2.3.2 Containers: The spheres shall be furnished in new 50 lb moisture-proof bags. All containers shall meet ICC requirements for strength and type and be marked in accordance with AASHTO 247 Part 5.

971-3 Standard Waterborne Fast Dry Traffic Paint.

971-3.1 General: Standard waterborne fast dry traffic paints intended for use under this Specification shall include water reducible products that are single packaged and ready mixed. Upon curing, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The material shall have the capability of being cleaned and flushed from the striping machines using regular tap water and any required rust inhibitors. The manufacturer shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 710 shall apply regardless of the type of formulation used. The material shall be free from all skins, dirt and foreign objects.

971-3.2 Composition:

Component	Test Method	Criteria
Total Solids, by weight	ASTM D 2369	minimum 75%
Pigments, by weight	ASTM D 3723	minimum 57%
Vehicle Solids % of Vehicle*		minimum 40%
TiO_2, Type II Rutile (white paint only)	ASTM D 476	minimum 1.0 lb/gal
Volatile Organic Content, (VOC)	ASTM D 3960	maximum 150 g/L
*Vehicle Solids % of Vehicle = $\frac{\%\text{ total solids} - \%\text{ pigment}}{100 - \%\text{ pigment}}$		

971-3.3 Physical Requirements: The material shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Density	ASTM D 1475	13.5 ± 1.4 lb/gal	-
Viscosity at 77ºF	ASTM D 562	80 KU	100 KU
Fineness of Grind	ASTM D 1210	3 (HS)	
Dry Opacity at 5 mils WFT	ASTM D 2805	0.92	-
Bleed Ratio	ASTM D 969	0.95	-
Flexibility	ASTM D 522 Method B	Pass	-
Abrasion Resistance	971-3.3.2	Pass	-

971-3.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-3.3.2 Abrasion Resistance: Test four samples per LOT using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 26 mils. Air dry each sample for 30 minutes and bake at 220ºF for 18 hours. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with 500 g weights and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 50 mg per plate.

971-3.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m^2 and 250 mcd/lx·m^2. The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m^2.

971-3.4 Packaging and Labeling: The traffic paint shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket. No more than 50 gallons of material shall be placed in any drum to allow for expansion during transport and storage.

971-4 Fast Dry Solvent Traffic Paint.

971-4.1 General: Fast dry traffic paints intended for use under this Specification shall include products that are single packaged and ready mixed. Upon curing, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall have the option of formulating the material according to his own specifications. However, the requirements delineated in

this Specification and Section 710 shall apply regardless of the type of formulation used. The material shall be free from all skins, dirt and foreign objects.

971-4.2 Composition:

Component	Test Method	Criteria
Total Solids, by weight	ASTM D 2369	75% minimum
Pigments, by weight	ASTM D 3723	57% minimum
Vehicle Solids, % on Vehicle*		40% minimum
TiO_2, Type II Rutile (white paint only)	ASTM D 476	1.5 lb/gal minimum
Volatile Organic Content, (VOC)	ASTM D 3960	150 g/L maximum

971-4.3 Physical Requirements: The material shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Density	ASTM D 1475	13.5 ± 0.37 lb/gal	N/A
Viscosity at 77ºF	ASTM D 562	80 KU	100 KU
Fineness of Grind	ASTM D 1210	3 (HS)	
Dry Opacity at 5 mils WFT	ASTM D 2805	0.92	-
Bleed Ratio	ASTM D 969	0.95	-
Flexibility	ASTM D 522 Method B	Pass	-
Abrasion Resistance	971-4.3.2	Pass	-

971-4.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-4.3.2 Abrasion Resistance: Test four samples per LOT using a Taber Abrader. The paint shall be applied to specimen plates using a drawdown blade having a clearance of 26 mils. Air dry each sample for 30 minutes and bake at 220ºF for 18 hours. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with 500 g and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 50 mg per plate.

971-4.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m^2 and 250 mcd/lx·m^2, respectively. The retroreflectance of the white and yellow pavement markings at the end of the six month service life shall not be less than 150 mcd/lx·m^2.

971-4.4 Application Properties: Application properties shall meet the requirements of Section 710.

971-4.5 Packaging and Labeling: The traffic paint shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket. No more than 50 gallons of material shall be placed in any drum to allow for expansion during transport and storage.

971-5 Thermoplastic Materials for Traffic Stripes.

971-5.1 General: Upon cooling to normal pavement temperature, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 711 shall apply regardless of the type of formulation used. The pigment, glass spheres, and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt and foreign objects.

971-5.2 Composition:

Component	Test Method	White	Yellow
Binder		20.0% minimum	20.0% minimum
TiO_2, Type II Rutile	ASTM D 476	10.0% minimum	-
Glass Spheres	AASHTO T 250	40.0% minimum	40.0% minimum
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		30.0% maximum	37.5% maximum
Percentages are by weight.			

The alkyd/maleic binder must consist of a mixture of synthetic resins (at least one synthetic resin must be solid at room temperature) and high boiling point plasticizers. At least one-half of the binder composition must be 100% maleic-modified glycerol of rosin and be no less than 15% by weight of the entire material formulation.

971-5.3 Glass Spheres: The glass spheres in the intermix shall consist of 50% Type 1 and 50% Type 3. Glass spheres shall meet the requirements of 971-2.

971-5.4 Sharp Silica Sand: Sharp silica sand used for bike lane symbols and pedestrian crosswalk lines shall meet the following gradation requirements:

Sieve Size	% Passing
20	100
50	0 to 10

971-5.5 Physical Requirements: Laboratory samples shall be prepared in accordance with ASTM D 4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Water Absorption	ASTM D 570	-	0.5%
Softening Point	ASTM D 36	195ºF	-
Low Temperature Stress Resistance	AASHTO T 250	Pass	-
Specific Gravity	Water displacement	1.9	2.3
Indentation Resistance	ASTM D 2240* Shore Durometer, A2	40	75
Impact Resistance	ASTM D 256, Method A	1.0 N·m	-

Property	Test Method	Minimum	Maximum
Flash Point	ASTM D 92	475ºF	-
*The durometer and panel shall be at 110ºF with a 4.4 lb load applied. Instrument measurement shall be taken after 15 seconds.			

971-5.5.1 Set To Bear Traffic Time: The thermoplastic shall set to bear traffic in not more than two minutes.

971-5.5.2 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m^2 and not less than 350 mcd/lx·m^2, respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2.

971-5.5.3 Durability: Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0% at the end of the service life.

971-5.6 Application Properties: Application properties shall meet the requirements of Section 711.

971-5.7 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 lb. The label shall warn the user that the material shall be heated in the range as recommended by the manufacturer.

971-6 Preformed Thermoplastic Materials for Traffic Stripes.

971-6.1 General: Upon cooling to normal pavement temperature, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification and Section 711 shall apply regardless of the type of formulation used. The pigment, glass spheres, and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt and foreign objects.

971-6.2 Composition: The preformed thermoplastic shall consist of high quality materials, pigments and glass spheres or other reflective material uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres or other reflective material embedded in the top surface.

971-6.3 Glass Spheres: Material shall contain no less than 30% glass spheres by weight.

971-6.4 Color: Materials shall meet the performance requirements specified in 971-1 and the following additional requirements. The initial luminance factor, Cap Y, shall not be less than 55.

971-6.5 Physical Requirements: Laboratory samples shall be prepared in accordance with ASTM D 4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Softening Point	ASTM D 36	195ºF	-
Low Temperature Stress Resistance	AASHTO T 250	Pass	-

Property	Test Method	Minimum	Maximum
Indentation Resistance	ASTM D 2240* Shore Durometer, A2	40	75
Impact Resistance	ASTM D 256, Method A**	1.0 N·m	-
*The durometer and panel shall be at 110ºF with a 4.4 lb load applied. Instrument measurement shall be taken after 15 seconds. **The test specimen for ASTM D 256 shall be 1 in. x 1 in. x 6 in. and shall not be notched.			

971-6.5.1 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m^2. The retroreflectance of the white pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2. All pedestrian crosswalks, bike lane symbols and messages in a proposed bike lane shall attain initial retroreflectivity of not less than 275 mcd/lx·m^2.

971-6.5.2 Skid Resistance: The surface of the stripes and markings shall provide a minimum skid resistance value of 35 BPN (British Pendulum Number) when tested according to ASTM E 303. Bike lane symbols and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

971-6.5.3 Durability: Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0% at the end of the service life.

971-6.6 Application Properties: Application properties shall meet the requirements of Section 711.

971-6.7 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage.

971-7 Permanent Tape Materials for Pavement Stripes and Markings.

971-7.1 General: The materials for pavement stripes and markings shall consist of white or yellow weather-resistant reflective film as specified herein. The markings are divided into two classes: Standard and High Performance. The classes are differentiated by their durability and retroreflectivity. The pigment, glass spheres, and filler shall be well dispersed in the resin. However, the requirements delineated in this Specification and Section 713 shall apply. The material shall be free from all skins, dirt and foreign objects.

971-7.2 Composition: The pavement stripes and markings shall consist of high-quality plastic materials, pigments, and glass spheres uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres embedded in the top surface.

971-7.3 Skid Resistance: The surface of the stripes and markings shall provide a minimum skid resistance value of 35 BPN (British Pendulum Number) when tested according to ASTM E 303. Bike lane symbols and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

971-7.4 Thickness: The Qualified Products List will list the specified thickness of each approved product.

971-7.5 Durability and Wear Resistance: When properly applied, the material shall provide neat, durable stripes and markings. The materials shall provide a cushioned resilient substrate that reduces sphere crushing and loss. The film shall be weather resistant and, through normal wear, shall show no significant tearing, rollback or other

signs of poor adhesion. Durability is the measured percent of pavement marking material completely removed from the pavement. The pavement marking material line loss must not exceed 5.0% of surface area at the end of its service life.

971-7.6 Conformability and Resealing: The stripes and markings shall be capable of conforming to pavement contours, breaks and faults under traffic at pavement temperatures recommended by the manufacturer. The film shall be capable of use for patching worn areas of the same types of film in accordance with the manufacturer's recommendations.

971-7.7 Tensile Strength: The stripes and markings shall have a minimum tensile strength of 40 psi when tested according to ASTM D 638. A rectangular test specimen 6 by 1 by 0.05 minimum thickness shall be tested at a temperature range of 40 to 80ºF using a jaw speed of 0.25 inch/min.

971-7.8 Elongation: The stripes and markings shall have a minimum elongation of 25% when tested in accordance with ASTM D 638.

971-7.9 Plastic Pull test: The stripes and markings shall support a dead weight of 4 lb for not less than five minutes at a temperature range of 70 to 80ºF. Rectangular test specimen size shall be 6 by 1 by 0.05 inch minimum thickness.

971-7.10 Pigmentation: The pigment shall be selected and blended to provide a material which is white or yellow conforming to standard highway colors through the expected life of the stripes and markings.

971-7.11 Glass Spheres: The stripes and markings shall have glass retention qualities such that, when at room temperature a 2 by 6 inches specimen is bent over a 0.5 inch diameter mandrel axis, a microscopic examination of the area on the mandrel shall show no more than 10% of the spheres with entrapment by the material of less than 40%. The bead adhesion shall be such that spheres are not easily removed when the film surface is scratched firmly with a thumbnail.

971-7.12 Standard Markings: The preformed materials for pavement stripes and markings shall have a service life of three year. The materials shall attain an initial retroreflectance of not less than 300 mcd/lx·m^2 for white and contrast markings and not less than 250 mcd/lx·m^2, for yellow markings. The retroreflectance of the white, yellow and contrast pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2. All pedestrian crosswalks, bike lane symbols and messages in a proposed bike lane shall attain initial retroreflectivity of not less than 275 mcd/lx·m^2.

971-7.13 High Performance Markings: The preformed materials for pavement stripes and markings shall have a service life of five years. The materials shall attain an initial retroreflectance of not less than 450 mcd/lx·m^2 for white and contrast markings and not less than 350 mcd/lx·m^2 for yellow markings. The pavement stripes and markings shall retain a minimum retroreflectance for two years of not less than 300 mcd/lx·m^2 for white and contrast markings and not less than 250 mcd/lx·m^2 for yellow markings. The retroreflectance of the white, yellow and contrast pavement markings at the end of the five year service life shall not be less than 150 mcd/lx·m^2.

971-8 Two Reactive Component Materials For Traffic Stripes And Markings.

971-8.1 General: Two reactive component materials intended for use under this Specification shall include, but not be limited to, epoxies, polyesters and urethanes. Upon curing, these materials shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall have the option of formulating

the material according to his own specifications. However, the criteria outlined in this Specification and Section 709 shall apply regardless of the type of formulation used. The material shall be free from all skins, dirt and foreign objects.

971-8.2 Composition:

Component	Test Method	Criteria
TiO_2, Type II Rutile (white material only)	ASTM D 476	minimum 10% by weight
Volatile Organic Content, (VOC)	ASTM D 3960	maximum 150 g/L

971-8.3 Physical Requirements: The material shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Adhesion to Concrete	ASTM D 4541, ASTM D 7234 or ACI 503	Concrete Failure	-
Hardness	ASTM D 2240 (Shore D)	75	-
Abrasion Resistance	971-8.3.2	Pass	-

971-8.3.1 Set To Bear Traffic Time: The material shall set to bear traffic in not more than two minutes.

971-8.3.2 Abrasion Resistance: Test four samples per LOT using a Taber Abrader. The material shall be applied to specimen plates using a drawdown blade having a clearance of 26 mils. Air dry each sample for 30 minutes and bake at 220ºF for 18 hours. Clean with a soft brush and weigh each sample. Abrade samples for 1,000 cycles with 500 g weights and CS-10 wheels. Clean the samples with a soft brush and weigh again. The average weight loss for the four plates shall not exceed 50 mg per plate.

971-8.3.3 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 450 mcd/lx·m^2 and not less than 350 mcd/lx·m^2, respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2.

971-8.4 Application Properties: Application properties shall meet the requirements of Section 709.

971-8.5 Packaging and Labeling: The two reactive component material shall be placed in 55 gallon open-end steel drums with a re-usable multi-seal sponge gasket. No more than 50 gallons of material shall be placed in any drum to allow for expansion during transport and storage. Other containers will be used for applicable products. Each container shall designate the color, generic type (e.g. epoxy), user information, manufacturer's name and address, batch number and date of manufacture. Each batch manufactured shall have a unique number. The label shall warn the user of hazards associated with handling or using the material.

971-9 Thermoplastic Material for Audible and Vibratory Traffic Stripes.

971-9.1 General: Upon cooling to normal pavement temperature, the thermoplastic material shall produce an adherent, reflective pavement marking capable of

resisting deformation by traffic. The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to his own specifications. However, the requirements delineated in this Specification shall apply regardless of the type of formulation used. The pigment, reflective elements, and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt and foreign objects.

971-9.2 Composition:

Component	Test Method	White	Yellow
Binder		20.0% minimum	20.0% minimum
TiO_2, Type II Rutile	ASTM D 476	10.0% minimum	-
Reflective Elements	AASHTO T 250	% minimum per manufacturer	% minimum per manufacturer
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		% minimum per manufacturer	% minimum per manufacturer
Percentages are by weight.			

The alkyd/maleic binder must consist of a mixture of synthetic resins (at least one synthetic resin must be solid at room temperature) and high boiling point plasticizers. At least one-half of the binder composition must be 100% maleic-modified glycerol of rosin and be no less than 15% by weight of the entire material formulation.

971-9.3 Retroreflective Elements: The reflective elements in the intermix shall be determined by the manufacturer and identified for the QPL System.

971-9.4 Physical Requirements: Laboratory samples shall be prepared in accordance with ASTM D 4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Water Absorption	ASTM D 570	-	0.5%
Softening Point	ASTM D 36	210ºF	-
Low Temperature Stress Resistance	AASHTO T 250	Pass	-
Specific Gravity	Water displacement	1.9	2.3
Indentation Resistance	ASTM D 2240* Shore Durometer, A2	65	-
Impact Resistance	ASTM D 256, Method A	1.0 N·m	-
Flash Point	ASTM D 92	475ºF	-
*The durometer and panel shall be at 80ºF, but not exceeding 90ºF with a 4.4 lb load applied. Instrument measurement shall be taken after 15 seconds.			

971-9.4.1 Set To Bear Traffic Time: When applied at the temperatures and thickness specified by Section 701, the baseline material shall set to bear traffic in not more than two minutes. The audible bump shall set to bear traffic in not more than 10 minutes at ambient air temperatures of 80ºF or less and in not more than 15 minutes for ambient air temperatures exceeding 80ºF.

971-9.4.2 Retroreflectivity: The white and yellow pavement markings shall attain an initial retroreflectance of not less than 300 mcd/lx·m^2 and not less than 250 mcd/lx·m^2, respectively. The retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2.

971-9.4.3 Durability: Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0% at the end of the three year service life. Durability shall also include flattening of the profile or raised portions of the line. The flattening of the profile or raised portion of the line shall not exceed 25% at the end of the three year service life.

971-9.5 Application Properties: Application properties shall meet the requirements of Section 701.

971-9.6 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 lb. The label shall warn the user that the material shall be heated in the range as recommended by the manufacturer.

971-10 Thermoplastic Material for Wet Weather Pavement Markings.

971-10.1 General: Upon cooling to normal pavement temperature, the thermoplastic material shall produce an adherent, reflective pavement marking capable of resisting deformation by traffic. The manufacturer shall utilize alkyd based materials only and shall have the option of formulating the material according to their specifications. However, the requirements delineated in this specification shall apply regardless of the type of formulation used. The pigment, reflective elements, and filler shall be well dispersed in the resin. The material shall be free from all skins, dirt and foreign objects.

971-10.2 Composition:

Component	Test Method	White	Yellow
Binder		20.0% minimum	20.0% minimum
TiO_2, Type II Ructile	ASTM D 476	10.0% minimum	N/A
Reflective Elements (intermix)	AASHTO T 250	% minimum per manufacturer	% minimum per manufacturer
Yellow Pigment		N/A	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		% minimum per manufacturer	% minimum per manufacturer
Percentages are by weight.			

971-10.3 Retroreflective Elements: The reflective elements in the intermix shall be determined by the manufacturer and identified for the QPL System.

971-10.4 Physical Requirements: Laboratory samples shall be prepared in accordance with ASTM D 4960 and shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Water Absorption	ASTM D 570	-	0.5%
Softening Point	ASTM D 36	200ºF	-
Low Temperature Stress Resistance	AASHTO T 250	Pass	-
Specific Gravity	Water displacement	1.9	2.3
Indentation Resistance	ASTM D 2240* Shore Durometer, A2	40	-
Impact Resistance	ASTM D 256, Method A	1.0 N·m	-
Flash Point	ASTM D 92	475ºF	-
*The durometer and panel shall be at 90ºF with a 4.4 lb load applied. Instrument measurement shall be taken after 15 seconds.			

971-10.4.1 Set To Bear Traffic Time: When applied at the temperatures and thickness specified by Section 702, the baseline material shall set to bear traffic in not more than two minutes. When the audible bump is required, the bump shall set to bear traffic in not more than 10 minutes at ambient air temperatures of 80ºF or less and in not more than 15 minutes for ambient air temperatures exceeding 80ºF.

971-10.4.2 Retroreflectivity: The white and yellow pavement markings shall attain an initial dry retroreflectivity of not less than 300 mcd/lx·m^2 and not less than 250 mcd/lx·m^2, respectively, and also attain an initial wet recovery retroreflectivity of not less than 150 mcd/lx·m^2 and not less than 125 mcd/lx·m^2, respectively. The dry retroreflectance of the white and yellow pavement markings at the end of the three year service life shall not be less than 150 mcd/lx·m^2, and also the wet recovery retroreflectivity at the end of the service life shall not be less than 75 mcd/lx·m^2. The retroreflectivity will be determined in accordance with Florida Method FM-5-541 for dry and ASTM E 2177 (Bucket Method) for wet recovery.

971-10.4.3 Durability: Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0% at the end of the three year service life. When an audible bump is required, durability shall also include flattening of the profile or raised portions of the line. The flattening of the profile or raised portion of the line shall not exceed 25% at the end of the three year service life.

971-10.5 Application Properties: Application properties shall meet the requirements of Section 702.

971-10.6 Packing and Labeling: The thermoplastic material shall be packaged in suitable biodegradable or thermo-degradable containers which will not adhere to the product during shipment and storage. The container of thermoplastic material shall weigh approximately 50 lb. The label shall warn the user that the material shall be heated in the range as recommended by the manufacturer.

972 RECYCLED PLASTIC PRODUCTS.
(REV 7-8-10) (FA 7-20-10) (1-11)

ARTICLE 972-1 (Page 936) is deleted and the following substituted:

972-1 Description.

Recycled plastic products shall include certified test reports from an approved independent test laboratory that shows the material meets all specifications herein and the manufacturer shall certify the following:

a. The source of the recycled plastic waste, including the state (FL, GA, etc.) from which the recycled plastic was obtained, and type of waste (consumer or industrial).

b. The total percent of recycled plastic in the final product.

ARTICLE 972-3 (Page 937) is deleted and the following substituted:

972-3 Materials.

The materials used for recycled plastic products shall consist of a minimum of 70% by weight of recycled plastic. The products shall exhibit good workmanship and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability. Only chemicals, including fillers and colorants, designed to inhibit photo degradation, biological/biochemical decomposition, insect infestation, or burning will be permitted to enhance durability. The use of sufficient additives to inhibit photo degradation over the lifetime of the product is required.

ARTICLE 972-4 (Page 937-938) is deleted:

ARTICLE 972-5 (Page 938) is deleted:

ARTICLE 972-6 (Page 939) is deleted and the following substituted:

972-4 Sampling.

One additional product per 1,000, or a minimum of one per order shall be included in the order for Department testing.

973 STRUCTURAL PLASTICS.
(REV8-1-11) (FA 8-4-11) (1-12)

SECTION 973 (Pages 939 - 944) is deleted and the following substituted:

SECTION 973
STRUCTURAL PLASTICS

973-1 Description.

This work covers structural plastic components including fiberglass structurally reinforced composite lumber (SCL) and smaller dimensional fiberglass fiber reinforced composite lumber (FFRCL).

973-2 Product Acceptance.

Use only products listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of products must submit an application in accordance with Section 6 and include independently certified test reports that the material meets the requirements of this Section.

In accordance with Section 6, provide manufacturer's certification that the material meets the requirements of this section.

973-3 Materials.

Use polyethylene made from recycled post consumer or post industrial thermoplastics. Mix the plastic with appropriate colorants, UV inhibitors, hindered amine light stabilizers and antioxidants so that the resulting product meets the material property requirements specified in Tables 1 and 2. Structural plastic must not corrode, rot, warp, splinter or crack. The skin must be smooth and black in color unless otherwise specified in the Contract Documents. Skin is the surface material exposed to the atmosphere. Core is the material that surrounds and bonds to the fiberglass reinforcing rods. The use of separate materials for skin and core is at the discretion of each manufacturer; however, if a single material is used, that material must meet the requirements for both skin and core.

Manufacture structural plastic as one continuous piece with no joints or splices to the dimensions and tolerances in accordance with Table 3. Interior voids shall not exceed ¾ inch in diameter. Structural plastic members shall be free of twist and curvature.

Reinforce 10" x 10" fiberglass structurally reinforced composite lumber with a minimum of four 1-1/2 inch fiberglass reinforcing rods placed in the corners of the section.

Reinforcing rods must be continuous and offer a minimum flexural strength of 70.0 ksi when tested in accordance with ASTM D 4476 and a minimum compressive strength of 40.0 ksi when tested in accordance with ASTM D 695. Steel reinforcing rods are not permitted.

Reject any sections of structural plastic containing cracks or splits. Also, inspect the ends of the reinforcing rods and reject any sections containing reinforcing rods with voids or cracks.

Add a minimum of 15% (by weight) chopped fiberglass reinforcement to the polyethylene used for fiberglass structurally reinforced composite lumber and a minimum of 15% (by weight) chopped fiberglass reinforcement for smaller dimensional fiberglass

fiber reinforced composite lumber. The fiberglass reinforcement may be reduced when other means of controlling cracking are specified with test results which show long term cracking is nonexistent.

Fiberglass structurally reinforced composite lumber must meet the minimum structural properties listed in Table 4.

Smaller dimensional fiberglass fiber reinforced composite lumber must meet the minimum physical properties listed in Table 5.

Table 1 Plastic Material Properties- SCL			
Density	ASTM D792	Skin	55-63 pcf
Density	ASTM D792	Core	48–63 pcf
Water Absorption	ASTM D570	Skin	2 hrs:<1.0% weight increase 24 hrs:<3.0% weight increase
Brittleness	ASTM D746	Skin	Brittleness temperature to be less than - 40 deg. C
Impact Resistance	ASTM D256 Method A (Izod)	Skin	Greater than 0.55 ft-lbs/in
Hardness	ASTM D2240	Skin	44-75 (Shore D)
Ultraviolet	ASTM D4329 UVA	Skin	500 hours<10% change in Shore D Durometer Hardness
Chemical Resistance	ASTM D756 or ASTM D543	Skin/Core Sea Water Gasoline No. 2 Diesel	 <1.5% weight increase < 9.5% weight increase <6.0% weight increase
Tensile Properties	ASTM D638	Core	Minimum 2200 psi at break
Compressive Modulus	ASTM D695	Core	Minimum 40 ksi
Static Coefficient of Friction	ASTM D1894	Skin	Maximum 0.25, wet
Nail Withdrawal or Screw Withdrawal	ASTM D 6117	Skin/Core	Minimum 60 lb (nail) Minimum 400 lb (screw)

Table 2 Plastic Material Properties FFRCL		
Density	ASTM D 792	50-65 pcf
Impact Resistance	ASTM D256 Method A (Izod)	Greater than 2.0 ft-lbs/in
Hardness	ASTM D2240	44-75 (Shore D)
Ultraviolet	ASTM D4329 (UVA)	500 hours <10% change in Shore D Durometer Hardness
Chemical Resistance	ASTM D756 or ASTM D543 Sea Water Gasoline No. 2 Diesel	 <1.5% weight increase <7.5% weight increase <6.0% weight increase
Tensile Properties	ASTM D638	Minimum 3000 psi at break

Table 2 Plastic Material Properties FFRCL		
Static Coeffecient of Friction	ASTM D2394	Minimum 0.25, wet or dry
Nail Withdrawal or Screw Withdrawal	ASTM D 6117	Minimum 250 lb (nail) Minimum 400 lb (screw)

Table 3 Dimensions and Tolerances		
Structural Plastic	Dimension	Tolerance
Length	Per order (80 ft Maximum)	0/+6 inch
Width – SCL Width – FFRCL	See Contract Plans	±1/2 inch ±1/4 inch
Height – SCL Width – FFRCL	See Contract Plans	±1/2 inch ±1/4 inch
Skin Thickness	3/16 inch minimum	n/a
Distance from outer surface to center rebar elements (SCL)	2 inches	±1/2 inch
Straightness (gap, bend or inside while lying on a flat surface)		<1 1/2 inches per 10 feet

Table 4 Structural Properties for SCL		
Member Size		10 inches x 10 inches
Modulus of Elasticity	ASTM D 6109	521 ksi
Stiffness, E.I.	ASTM D 6109	4.05E+08 lb-inch^2
Yield Stress in Bending	ASTM D 6109	5.3 ksi
Weight		30-37 lb/ft

Table 5 Properties for FFRCL		
Modulus of Elasticity	ASTM D 6109	300,000 psi
Flexural Strength	ASTM D 6109	2,500 psi
Compressive Strength	ASTM D 6108	2,200 psi
Compressive Strength Perpendicular to grain	ASTM D 6108	700 psi

The values stated in these tables are the required minimums.

975 STRUCTURAL COATING MATERIALS.
(REV 11-30-11) (FA 1-10-12) (7-12)

SECTION 975 (Pages 944 – 950) is deleted and the following substituted:

SECTION 975
STRUCTURAL COATING MATERIALS

975-1 General Requirements.

975-1.1 General: Upon curing, all coatings and/or coating systems must produce an adherent coating that is visually uniform. The composition of the coating is left to the discretion of the manufacturer but the finished product shall meet all requirements of this Section. All coats of multi-coat systems shall be supplied by the same manufacturer. Multi-component coatings shall be prepackaged in the required ratios.

975-1.2 Environmental Requirements: Coating materials and their waste shall be characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA) Subarticle C rules, Table 1 of 40 CFR 261.24 Toxicity Characteristic.

Volatile Organic Compounds (VOC) shall be less than 3.5 lb/gal when tested in accordance with ASTM D 3960.

975-1.3 Qualified Products List: All polymeric coating materials except the materials in 975-4 shall be listed on the Department's Qualified Products List (QPL). Manufacturers seeking evaluation of their products shall submit (1) the product data sheets, (2) performance test reports from an independent laboratory showing the product meets the requirements of this section, (3) a Product MSDS or performance test reports showing percent weight compositional analysis including Chemical Abstract Number, ACGIH time weighted average and ceiling exposure limits for all components, lower and upper explosive limits, flash point, boiling point, amount of volatile organic compounds by weight, and specific gravity for each component of the coating system, and (4) a QPL application in accordance with Section 6.

975-1.4 Packaging and Labeling: Materials shall be shipped in containers legibly marked with application instructions, lot number, batch number, date of manufacture, shelf life, and Department QPL number. Each lot or batch manufactured must have a unique number.

975-2 Structural Steel Coating Systems.

975-2.1 General: Structural steel coatings shall meet the application requirements of Section 560.

975-2.2 Performance Requirements: Outdoor exposure testing will be performed by the Department. Prepare four composite and four flat-scribed test panels in accordance with AASHTO R-31 (Federal Standard 595B, Shade X6134 or X4062) and submit to the State Materials Office. Also submit 1-quart wet samples of each component of each coating incorporated in the system being evaluated. Panels will be exposed at the Department's outdoor test site in accordance with ASTM G7. All coatings, regardless of color, shall meet the requirements below.

Laboratory Testing

Property	Test Method	Requirement
Slip Coefficient	AASHTO R-31	Min. Class B (primer only)
Salt Fog Resistance	AASHTO R-31	Blister Size = 10 Average Rust Creep at the Scribe ≤ 0.1 inches
Cyclic Weathering Resistance	AASHTO R-31	Blister Size = 10 Average Rust Creep at the Scribe ≤ 0.2 inches, Color Retention $\Delta E \leq 8$, Gloss loss less than 30 units
Abrasion Resistance	AASHTO R-31	Wear Index ≤ 2.7 mg/cycle
Adhesion	AASHTO R-31	Avg. system tensile strength ≥ 800 psi
Freeze Thaw Stability	AASHTO R-31	Avg. tensile strength ≥ 800 psi
Coatings Identification	Fourier Transform Infrared Spectroscopy	IR scan (2.5 to 15 um) for each base, catalyst, and mixed coating.
Impact Resistance	ASTM D 2794	Greater than 25 inch/lbs, 1/2” impact, intrusion
Flexibility	AASHTO R-31, ASTM D 522, 1 inch cylindrical mandrel	No cracking
Outdoor Testing		
Property	Test Method	Requirement
Rusting	ASTM D 610 ASTM D 1654 (scribed) ASTM D 1654 (un-scribed)	≥ 9 after 5 years ≥ 9 after 5 years ≥ 9 after 5 years
Blistering	ASTM D 714	10 after 5 years
Adhesion	ASTM D 4541;annex A4	≥ 800 psi (un-scribed area) after 5 years
Color Retention	ASTM D 2244	$\Delta E \leq 8$ after 2 years
Gloss	ASTM D 523	≤ 30 gloss units after 2 years

975-2.3 Structural Steel Coating Systems for New Structures.

975-2.3.1 High Performance Coating Systems (Color Pigmented):

975-2.3.1.1 Prime Coat: Zinc dust pigment shall be a minimum of Type II in accordance with ASTM D 520. Inorganic zinc rich primers shall meet the requirements of the Society for Protective Coatings (SSPC) Paint 20, Type I, Level 2.

975-2.3.1.2 Intermediate Coat: Intermediate coatings, when required by the manufacturer, shall be a component of the full coating system.

975-2.3.1.3 Finish Coat: The finish coat shall provide the color and gloss required for the completed coating system. A finish coat may be comprised of a single pigmented coat or a pigmented coat with a clear coat. The clear coat shall contain a dissipating colorant. The dissipating colorant shall be visible for a minimum of 12 hours after application and shall completely dissipate within 96 hours after application.

975-2.3.2 Inorganic Zinc Coating System: Zinc dust pigment shall be a minimum of Type II in accordance with ASTM D 520. Inorganic zinc rich primers shall meet the requirements of SSPC Paint 20, Type I, Level 2. The performance requirements for gloss and color retention are not applicable.

975-2.3.3 Interior Box Girder Coating System:

975-2.3.3.1 Prime Coat: Inorganic zinc dust pigment shall be a minimum of Type II in accordance with ASTM D 520. Inorganic zinc rich primers shall meet the requirements of SSPC Paint 20, Type I, Level 2.

975-2.3.3.2 Finish Coat: The finish coat shall be one coat of white polyamide or cycloaliphatic amine epoxy coating. The performance requirements for gloss and color retention are not applicable.

975-2.4 Structural Steel Coating Systems for Existing Structures.

975-2.4.1 Prime Coat: Zinc dust pigment shall be a minimum of Type II in accordance with ASTM D 520. Organic zinc rich primers shall meet the requirements SSPC Paint 20, Type II, Level 2.

975-2.4.2 Intermediate Coat: Intermediate coatings, when required by the manufacturer, shall be a component of the full coating system.

975-2.4.3 Finish Coat: Finish coating shall provide the color and gloss required for the completed coating system. A finish coat may be comprised of a single pigmented coating or a pigmented coating with a clear coat. The clear coat shall contain a dissipating colorant. The dissipating colorant shall be visible for a minimum of 12 hours after application and shall completely dissipate within 96 hours after application.

975-3 Galvanized Steel Coating System.

Coatings applied over galvanized steel shall meet the outdoor exposure requirements of 975-2.2 with the exception that test panels shall be galvanized in accordance with ASTM A 123 prior to application of subsequent coatings.

Coatings applied over galvanized steel strain poles, mast arms, and monotube assemblies shall meet the requirements of Section 649 and 975-4.

975-4 Painting Strain Poles, Mast Arms and Monotube Assemblies.

Paint systems used on galvanized steel strain poles, galvanized steel mast arms and galvanized steel monotube assemblies shall meet the color requirements as specified in the Contract Documents and shall exhibit no loss of adhesion or loss of color greater than 8ΔEs for five years after final acceptance as specified in 5-11. A galvanized steel strain pole, mast arm or monotube assembly that exhibits a cumulative surface area of delamination in excess of 100 square inches will constitute an adhesion failure.

Delamination shall be defined as any area of exposed metal surface subsequent to hand tool cleaning in accordance with SSPC-SP2. A change in the coating color in excess of 8ΔEs per the CIE L*a*b* 1976 will constitute a color retention failure. The Department will measure the CIE 1976 color chromaticity coordinates for the color of the top coat of the two sample coupons provided with a BYK-Gardner Handicolor colorimeter using D65 illuminant and 2 degree geometry settings. The Department-measured L*a*b* chromaticity coordinates shall define the initial color and will be used for resolution of color retention failures and the resolution of color retention disputes. All paint systems shall possess physical properties and handling characteristics that are compatible with the application requirements of Section 649. Materials shall be specifically intended for use over galvanized steel.

975-5 Elastomeric Coatings.

975-5.1 General: Use an elastomeric coating system to provide a waterproof barrier over post-tensioning anchorages or other areas designated in the plans. The components of the coating system shall be supplied by a single manufacturer and sold as a waterproof coating system. The surface preparation and application of the coating system shall be performed in strict accordance with the manufacturer's specifications.

975-5.2 Physical Properties: The use of an epoxy prime coat is dependent upon the requirements of the manufacturer's waterproofing system. The polyurethane chemistry may be either waterborne aromatic (moisture-curing) or aromatic (moisture-sensitive). The minimum thickness of the system shall not be less than 30 mils. The elastomeric coating shall meet the following requirements:

Property	Test Method	Requirement
Hardness, Shore A	ASTM D 2240	Between 60 and 90
Tensile Strength	ASTM D 412	≥750 psi
Elongation	ASTM D 412	≥400%
Tear Strength	ASTM C 957	>70 pli
Abrasion Resistance H-18 wheels 1,000 gm/wheel	ASTM C 957	≤350 mg loss / 1,000 revs.
Crack Bridging 1,000 Cycles	ASTM C 957	System Passes
Elongation Recovery	ASTM C 957	≥94%

975-5.3 System Modifications for Use on Bridge Substructure: Supply the elastomeric coating system with a 100% acrylic aliphatic polyurethane top coating.

975-6 Class 5 Applied Finish Coatings.

975-6.1 General: All coatings shall possess physical properties and handling characteristics compatible with the application requirements of Section 400.Unless otherwise specified, the color of the finish coat shall meet Federal Color Standard No. 595B, Table VIII, Shade No. 36622.

975-6.2 Coating Requirements: Use 4 inch by 8 inch (except as required below) fiber cement test panels with a mass of 7 to 9 pounds per square foot of surface area to perform the laboratory tests. Coating performance shall meet the following requirements:

Laboratory Testing		
Property	Test Method	Requirement
Resistance to Wind Driven Rain	ASTM D 6904	No visible water leaks, and if the rear face of the block is damp, the average gain in weight of the three 8 by 16 by 2 inch blocks must be less than 0.2 lb.
Freeze thaw resistance	AASHTO R-31	No disbondment
Water Vapor Transmission	ASTM D 1653; Method B, Condition C	WVT≥10 perms
Abrasion Resistance	ASTM D 968, 3,000 liters of sand	No loss of coating thickness ASTM D 6132
Salt Spray (fog) resistance	ASTM B 117, 2,000 hours	No disbondment
Fluorescent UV-Condensation Exposure	ASTM D 4587, 2000 hours, 4 hours UV, 4 hours condensation	No blistering (ASTM D 714), cracking (visual), or delamination (visual). chalking (ASTM D 4214Method D) rating no less than 8.
Fungal Resistance	ASTM D 3273	Rating of 10, ASTM D 3274

Submit four fiber cement test panels and a 1 quart wet sample of each component of each coating incorporated in the total system being evaluated. Prepare test panels by applying the finished coating at a rate of 50 plus or minus 10 square feet per gallon. In addition, completely seal the corners of all test panels with a high build epoxy or equivalent to prevent moisture ingress at corners and cut edges.

975-7 Anti-Graffiti Coating Materials.

975-7.1 General Requirements: Anti-graffiti coatings intended for use under this specification shall be of a composition capable of preventing the adhesion of and facilitating the removal of acrylic, polyurethane, and alkyd spray paint. All anti-graffiti coatings shall possess the physical and handling characteristics that are compatible with the requirements of Section 563.

Anti-graffiti coatings shall contain less than 5.0 lb per gallon volatile organic compounds (VOC) as defined by 40 CFR Part 59, Subpart D, and evaluated as per ASTM D 3960.

The manufacturer shall supply the following additional information:

a. Graffiti removal instructions, including any solvents or other materials, as necessary. Graffiti removal must be accomplished with nonproprietary cleaners as defined in ASTM D 6578.

b. Sacrificial Coating Removal instructions, as applicable.

c. Identification of coating components.

975-7.2 Performance Requirements: For laboratory testing, use flat test panels prepared in accordance with AASHTO R-31. Outdoor exposure testing will be performed by the Department. Submit four 4 inch by 8 inch fiber cement test panels to the State Materials Office. Panels will be exposed at the Department's outdoor test site in accordance with ASTM G 7.

Laboratory Testing - Non-Sacrificial		
Property	Test Method	Requirement
Cyclic Weather Testing (solvent cleanable and water cleanable)	AASHTO R-31	No blistering, cracking, checking, chalking, or delamination; color change less than 3 Delta E CIE LAB units; Retention of 60° Gloss ratio >= 0.80
Graffiti Resistance (solvent cleanable)	ASTM D 6578. Complete removal of solvent-based acrylic, polyurethane, and alkyd spray paint; after exposure; and recleanability	Cleanability Level 8, 9, or 10.
Fluid Resistance (solvent cleanable)	ASTM D 1308 – Spot Test; Paint Thinner, Gasoline	No blistering, discoloration, softening or adhesion loss.
Outdoor Exposure Testing – Non-Sacrificial		
Property	Test Method	Requirement
Graffiti Resistance (water cleanable)	ASTM G 7: 6 months exposure at FDOT test site 2500 psi using pressure washer	Complete removal of solvent based acrylic, polyurethane, and alkyd based spray paint. No delamination or visual defects.

Laboratory Testing - Sacrificial		
Property	Test Method	Requirement
Cyclic Weather Testing	AASHTO R-31, no salt fog, 95°F, 0%- 90% Relative Humidity, 500 hours, alternating RH every 100 hours	No melting or disbondment
Outdoor Exposure Testing - Sacrificial		
Property	Test Method	Requirement
Sacrificial Coating removability	ASTM G 7: 6 months exposure at FDOT test site	Complete removal of solvent based acrylic, polyurethane, and alkyd based spray paint from substrate

981 TURF MATERIALS.
(REV 7-1-10) (FA 8-16-10) (1-11)

ARTICLE 981-1 (Page 951) is deleted and the following substituted:

981-1 General.

The types of seed and sod will be specified in the Contract Documents. All seed and sod shall meet the requirements of the Florida Department of Agriculture and

Consumer Services and all applicable state laws, and shall be approved by the Engineer before installation.

All seed, sod and mulch shall be free of noxious weeds and exotic pest plants, plant parts or seed listed in the current Category I "List of Invasive Species" from the Florida Exotic Pest Plant Council (FLEPPC, www.fleppc.org). Any plant officially listed as being noxious or undesirable by any Federal Agency, any agency of the State of Florida or any local jurisdiction in which the project is being constructed shall not be used. Any such noxious or invasive plant or plant part found to be delivered in seed, sod or mulch will be removed by the Contractor at his expense and in accordance with the law.

All materials shall meet plant quarantine and certification entry requirements of Florida Department of Agriculture & Consumer Services, Division of Plant Industry Rules.

ARTICLE 981-4 (Page 952) is deleted and the following substituted:

981-4 Mulch.

The mulch material shall be compost meeting the requirements of Section 987, hardwood barks, shavings or chips; or inorganic mulch materials as approved by the Engineer; or hydraulically applied wood fiber mulch or bonded fiber matrix (BFM) for the establishment of turf material.

ARTICLE 981-5 (Page 952) is deleted:

987 PREPARED SOIL LAYER MATERIALS (REV 1-15-10) (FA 2-17-10) (7-10)

ARTICLE 987-1 (Page 955) is deleted and the following substituted:

987-1 Description.

All material shall be suitable for plant growth. The organic matter content of the prepared soil layer after mixing shall be a minimum of 2.5%, a maximum of 10%, in accordance with FM 1-T-267 and have a pH value of 4.5 or greater and less than or equal to 8.5 as determined in accordance with FM 5-550. The organic matter content shall be created using any of the following materials.

990 TEMPORARY TRAFFIC CONTROL DEVICES AND MATERIALS. (REV 6-15-11) (FA 8-9-11) (1-12)

SECTION 990 (Pages 956 - 966) is deleted and the following substituted:

SECTION 990
TEMPORARY TRAFFIC CONTROL DEVICES MATERIALS

990-1 General.

This Section specifies the material requirements for Temporary Traffic Control Devices.

990-2 Retroreflective Sheeting for Temporary Traffic Control Devices.

990-2.1 Qualified Products List: Sheeting for use on Temporary Traffic Control Devices shall be one of the products listed on the Qualified Products List (QPL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6.

990-2.1.1 Sign Panels, Bands for Tubular Markers, Vertical Panels, Barricades and other Devices: Sign Panels, Bands for Tubular Markers, Vertical Panels, Barricades and other Devices shall meet the requirements of ASTM D 4956 for Type III or higher retroreflective sheeting materials identified in Section 994 except for mesh signs shall meet the color, daytime luminance and nonreflective property requirements of Section 994, Type VI.

990-2.1.2 Collars for Traffic Cones: Collars for Traffic Cones shall meet the requirements of ASTM D 4956 Type VI.

990-2.1.3 Drums: Drums shall meet the requirements of ASTM D 4956 for Type III or higher retroreflective sheeting materials identified in Section 994 including Supplementary requirements for Reboundable Sheeting.

990-3 Portable Devices (Arrow Boards, Changeable (Variable) Message Signs, Regulatory Signs and Radar Speed Display Units).

990-3.1 General: All portable devices shall meet the physical display and operational requirements of the MUTCD and be listed on the Approved Products List (APL). Manufacturers seeking approval of their portable devices shall provide a working sample to be evaluated by the Department that meets all requirements specified herein.

990-3.1.1 Electrical Systems:

990-3.1.1.1 Diesel Engine: The Diesel Engine shall meet the following:

(a) The power supply and electrical system shall be self-contained within the unit.

(b) The engine shall have an electrical starting system.

(c) The power source furnished shall be of sufficient size to provide the required maximum load energy plus 25%.

(d) The electrical system shall meet the National Electrical Code where applicable.

(e) A backup power system that will operate the unit for a minimum of three hours automatically when the motor driven generator fails to operate.

(f) The starting batteries and back-up power supply system batteries shall be automatically charged when the generator is operating.

(g) The engine shall be supplied with an ammeter and the generator shall be supplied with a voltmeter showing voltage to the sign assembly.

990-3.1.1.2. Solar Powered Unit: The Solar Powered Unit shall meet the following:

(a) The unit shall provide automatic recharging of power supply batteries to normal operating levels with meters showing charge.

(b) Solar array recovery time for Arrow Boards and Regulatory Signs shall be accomplished in a maximum of three hours.

(c) Arrow Boards and Changeable Variable Message Signs shall be designed to provide 180 days of continuous operation with minimum onsite maintenance.

990-3.1.1.3 Battery Life Test: Meet the following:

(a) The photovoltaic unit shall be designed to provide 21 days of continuous operation without sunlight with a minimum of onsite maintenance for arrow boards and changeable message signs, or 10 days of continuous operation without sunlight with a minimum of onsite maintenance for regulatory signs and radar speed display units.

(b) The battery shall be equipped with a battery controller to prevent overcharging and over-discharging. An external battery level indicator shall be provided.

(c) The battery, controller, and power panel shall be designed to be protected from the elements and vandalism.

(d) Automatic recharging of power supply batteries shall be provided with charge indicator meter.

(e) An AC/DC battery charger unit shall be provided.

990-3.1.2 Display Panel and Housing:

(a) The display housing assembly shall be weather-tight.

(b) All nuts, bolts, washers and other fasteners shall be of corrosion resistant material.

(c) The display assembly shall be equipped with an automatic dimming operational mode capable of a minimum of 50% dimming and a separate manual dimmer switch

(d) The display panel background and frame for the display assembly shall be painted flat black and shall meet Federal Specification TT-E-489.

(e) The display panel for arrow boards and changeable message signs, when raised in the upright position, shall have a minimum height of 7 feet from the bottom of the panel to the ground, in accordance with the MUTCD. The display panel for radar speed display units, when raised in the upright position, will have a minimum height of 5 feet from the bottom of the panel to the ground.

(f) The regulatory speed sign panel for regulatory signs and radar speed display units, when raised in the upright position, shall have a minimum height of 7 feet from the bottom of the regulatory sign panel to the ground.

(g) The unit shall have an accessible mechanism to easily raise and lower the display assembly. A locking device shall also be provided to ensure the display panel will remain in the raised or lowered position.

990-3.1.3 Controller: The Controller shall meet the following:

(a) Controller and control panel shall be housed in a weather, dust, and vandal resistant lockable cabinet.

(b) Controller and associated on-board circuitry shall meet the requirements of the Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise by Class A digital devices.

(c) For Changeable Variable Message Signs and Arrow Boards ensure that the sign control software provides an on-site graphical representation that visibly depicts the message displayed on the sign face.

(d) For Changeable Variable Message Signs, if remote communication is included, meet the following National Transportation Communications for ITS Protocol (NTCIP) requirements: Ensure that the sign controller software implements all mandatory objects as defined in the FDOT Standard Global MIB v01 in Appendix A, all mandatory objects as defined in the FDOT Standard DMS MIB v01 in Appendix B, and all mandatory objects as defined in the FDOT Specific DMS MIB v01 in Appendix C. Ensure that additional objects implemented by the software do not interfere with the standard operation of mandatory objects.

990-3.1.4 Support Chassis: The Support Chassis shall meet the following:

(a) The support chassis shall be self-contained and self-supporting without the use of additional equipment or tools.

(b) Both trailer and truck-mounted units are allowed for arrow boards. Trailer mounted units are required for changeable message signs, regulatory signs and radar speed display units.

(1) Trailer mounted unit:

(a) The sign, power supply unit and all support systems shall be mounted on a wheeled trailer.

(b) The trailer shall be equipped with Class-A lights, using a plug adaptor.

(c) The trailer shall be equipped with adjustable outrigger leveling pads, one on each of the four frame corners.

(d) The trailer shall be designed to be set up at the site with its own chassis and outriggers, without being hitched to a vehicle.

(e) The trailer shall be equipped with fenders over the tires and shall be made from heavy-duty material sufficient to allow a person to stand and operate or perform maintenance on the unit.

(f) The trailer shall meet all equipment specifications set forth in Chapter 316 of the Florida Statutes, and by such rule, regulation or code that may be adopted by the Department of Highway Safety and Motor Vehicles.

(g) The trailers should be delineated on a permanent basis by affixing retroreflective material, known as conspicuity material, in a continuous line on the face of the trailer as seen by oncoming road users.

(2) Truck mounted unit:

(a) The truck-mounted assembly shall be designed to fit on a 1/2 ton or greater duty truck.

(b) The unit shall be self-contained with its own power supply, controls, raising and lowering device and shall be capable of being operated by one person.

(c) The unit shall be secured in the vehicle for normal operation.

990-3.1.5 Other Requirements: Meet the following:

(a) The portable device assembly shall be designed to function in dry, wet, hot or cold weather (ambient temperature ranges from-30 to 165ºF. Other environmental requirements shall be as specified in Section A-615 of the Minimum Specifications for Traffic Control Signal Devices, which can be located at the following URL: http://www.dot.state.fl.us/trafficoperations/Traf_Sys/terl/apl4.shtm .

(b) The controller shall not be affected by mobile radio, or any other radio transmissions.

(c) An operator's manual shall be furnished with each unit.

(d) The manufacturer's name and FDOT approval number shall be affixed on the equipment.

990-3.2 Portable Arrow Board:

990-3.2.1 Arrow Board Matrix:

(a) The minimum legibility distance for various traffic conditions are based on the decision-sight distance concept. The minimum legibility distance is the distance at which a driver can comprehend the arrow board message on a sunny day or a clear night. The arrow board size that is needed to meet the legibility distance is listed as follows:

Type	Minimum Size	Minimum Number of Elements	Minimum Legibility Distance
B	30 by 60 inches	13	3/4 mile
C	48 by 96 inches	15	1 mile

Type B arrow boards may be used on low to intermediate speed (0 to 50 mph) facilities or for maintenance or moving operations on any speed facility. Type C arrow boards shall be used for all other operations on high-speed (50 mph and greater) facilities and may be substituted for Type B arrow boards on any speed facility.

(b) Devices shall meet all arrow board displays identified in the MUTCD.

(c) The element lens should be 5 3/4 inches in diameter. Smaller element lens diameters are permissible only if they provide an equivalent or greater brightness indication and meet the legibility criteria in Section (a) of this Specification.

(d) The color of the light emitted shall be in accordance with the MUTCD.

(e) There shall be a 360-degree hood for close-up glare reduction.

(f) For solar powered arrow boards the bulbs shall provide a 350-candle power intensity for day use and an automatic reduction or dimming capacity for night use. The dimmed night operation shall provide adequate indication without excessive glare.

(g) The flashing rate of the element shall not be less than 25 nor more than 40 flashes per minute as required in the MUTCD.

(h) The minimum element “on time” shall be 50% for the flashing arrow and 25% for the sequential chevron.

990-3.3 Changeable Variable Message Sign:

990-3.3.1 Message Matrix:

(a) Message matrix panel shall be a maximum height of 7 feet by a maximum width of 10 feet.

(b) The message matrix panel shall contain three separate lines. Each line shall consist of eight characters, equally spaced a minimum of 3 inches. Each character shall contain 35 pixels in a five by seven horizontal to vertical grid arrangement.

(c) Each message line of the 7 foot by 10 foot PCMS shall provide for characters 13 inches in width by 18 inches in height minimum and variable graphic and symbol sizes to a minimum of 18 inches in height.

(d) For flip disk matrix signs, the disk elements shall be coated on the display side with a highly reflective florescent yellow Mylar material, and on the back with a flat black to blend in with the flat black background.

(e) Similar components shall be interchangeable.

990-3.3.2 Operation and Performance:

(a) The message shall be displayed in upper case except when lower case is project specific and is allowed by the MUTCD.

(b) The message matrix panel shall be visible from 1/2 mile and legible from a distance of 650 feet under both day and night conditions. Under variable light level conditions the sign shall automatically adjust its light source to meet the 650 feet visibility requirement. The message panel shall have adjustable display rates, so that the entire message can be read at least twice at the posted speed.

(c) The control panel shall have the capability to store a minimum 50 pre-programmed messages.

(d) The controller in the control panel shall be able to remember messages during non-powered conditions.

(e) The controller shall allow the operator to generate additional messages on site via the keyboard.

(f) For a PCMS using Flip-Disk technology, the controller shall have the capability to provide a stipulated default message upon loss of controller function.

(g) All messages shall be flashed or sequenced. In the sequence mode, the controller shall have the capability to sequence three line messages during one cycle.

990-3.4 Portable Regulatory Signs:

990-3.4.1 Sign Panel Assembly: The sign panel assembly shall consist of a 24 by 30 inches “SPEED LIMIT XX” sign panel and a “WHEN FLASHING” sign panel, intended to notify oncoming traffic the speed limit where workers are present. The sign panel assembly shall meet the following minimum physical requirements:

(a) all nuts, bolts, washers, and other fasteners shall be of corrosion resistant material.

(b) the sign panel shall fold down and be pinned in place for towing. Maximum travel height shall be 80 inches.

(c) construct the sign panel and light housing to allow the unit to be operated in the displayed position at speeds of 30 mph. Design the sign panel assembly to withstand transport speeds of 65 mph.

(d) construct the sign panel such that, when in the raised position, the sign panel will have a height of seven feet from the bottom of the lowest panel to the ground, in accordance with the MUTCD.

(e) provide the unit with a mechanism to raise and lower the sign panel. Provide the unit with a device to lock the sign panel in the raised and lowered position.

990-3.4.2 Flashing Lights: Provide a pair of hooded PAR 46 LED advance warning flashing lamps on each side of the top of the sign panel. These lamps shall be visible day or night at a distance of one mile with a flash rate of approximately 55 flashes per minute.

The lamp lens should be at least 5 3/4 inches in diameter. Smaller diameter lens are permissible if they provide an equivalent or greater brightness indication and meet the legibility criteria above.

The color of the light emitted shall be in accordance with the MUTCD. For solar powered units, the bulbs shall provide a 350 candlepower intensity for day use and an automatic reduction or dimming capacity for night use. The dimmed night operation shall provide adequate indication without excessive glare.

990-3.5 Radar Speed Display Unit:

990-3.5.1 Display Unit Panel and Housing: Meet the requirements of 990-3.1.2 and the following physical requirements as a minimum:

(a) Provide capability to mount a 24 by 30 inches regulatory sign with interchangeable numbers showing the posted speed limit above the message display.

(b) Provide legend “YOUR SPEED” either above or below the message display.

990-3.5.2 Message Display: The message Display shall meet the following physical requirements as a minimum:

(a) Provide a bright LED, two digit speed display on a flat black background with bright yellow LEDs.

(b) Each digit shall contain either a seven-segment layout or matrix-style design. Each digit shall measure a minimum 18 inches in height.

(c) Speed display shall be visible from a distance of at least 1/2 mile and legible from a distance of at least 650 feet under both day and night conditions.

(d) Display shall adjust for day and night operation automatically with a photocell.

990-3.5.3 Radar: The radar unit shall not be affected by normal radio transmissions and meet the following physical requirements as a minimum:

(1) Approach-Only sensor.

(2) Equipped with a low power K-Band transmitter.

(3) Part 90 FCC acceptance, 3 amps, 10.8 to 16.6 vdc. Fuse and reverse polarity protected.

(4) Range of 1,000 feet for mid-size vehicle, capable of accurately sensing speeds of 10 to 99 mph with over speed function that operates when a vehicle approaches over the posted speed limit.

990-3.5.4 Traffic Counter: The unit shall be fitted with a device, which counts the number of vehicles passing the Radar Speed Display Unit. The counter device shall be capable of:

(1) Digital readout of the number of vehicles passing the radar speed display unit.

(2) Digital readout of the number of vehicles exceeding the speed shown on the radar speed display unit.

990-4 Removable Tape.

990-4.1 Composition: Removable Tape shall be one of the products listed on the QPL. The pavement stripes and markings shall consist of high quality plastic materials, pigments, and glass spheres or other retroreflective materials uniformly distributed throughout their cross-sectional area, with a reflective layer of spheres or other retroreflective material embedded in the top surface. No foil type materials shall be allowed.

990-4.2 Skid Resistance: The surface of the stripes and markings shall provide a minimum skid resistance value of 35 BPN (British Pendulum Number) when tested according to ASTM E-303. Bike lane symbols and pedestrian crosswalks shall provide a minimum skid resistance value of 55 BPN.

990-4.3 Thickness: The Qualified Products List will list the specified thickness of each approved product.

990-4.4 Durability and Wear Resistance: When properly applied, the material shall provide neat, durable stripes and markings. The materials shall provide a cushioned resilient substrate that reduces sphere crushing and loss. The film shall be weather resistant and, through normal wear, shall show no significant tearing, rollback or other signs of poor adhesion. Durability is the measured percent of pavement marking material completely removed from the pavement. The pavement marking material line loss must not exceed 5.0% of surface area.

990-4.5 Conformability and Resealing: The stripes and markings shall be capable of conforming to pavement contours, breaks and faults under traffic at pavement temperatures recommended by the manufacturer. The film shall be capable of use for patching worn areas of the same types of film in accordance with the manufacturer's recommendations.

990-4.6 Tensile Strength: The stripes and markings shall have a minimum tensile strength of 40 psi when tested according to ASTM D 638. A rectangular test specimen 6 by 1 by 0.05 inch minimum thickness shall be tested at a temperature range of 40 to 80ºF using a jaw speed of 0.25 inch/minute.

990-4.7 Elongation: The stripes and markings shall have a minimum elongation of 25% when tested in accordance with ASTM D-638.

990-4.8 Plastic Pull test: The stripes and markings shall support a dead weight of 4 lb for not less than five minutes at a temperature range of 70 to 80ºF. Rectangular test specimen size shall be 6 by 1 by 0.05 inch minimum thickness.

990-4.9 Adhesive: Precoat removable tape with a pressure sensitive adhesive capable of being affixed to asphalt concrete and portland cement concrete pavement

surfaces without the use of heat, solvents, and other additional adhesives or activators. Ensure that the adhesive does not require a protective liner when the removable tape is in rolled form for shipment. Ensure that the adhesive is capable of temporarily bonding to the roadway pavement at temperatures of 50ºF and the above without pick-up distortion by vehicular traffic.

990-4.10 Color: Meet the requirements of 971-1.6.

990-4.11 Removability: Ensure that the manufacturer shows documented reports that the removable tape is capable of being removed intact or in substantially large strips after being in place for a minimum of 90 days and under an average daily traffic count per lane of at least 5,000 vehicles per day.

990-5 Temporary Retroreflective Pavement Markers.

Temporary Retroreflective Pavement Markers (RPM's) shall meet the requirement of 970-1.2.1, be one of the products listed on the QPL and be certified as meeting the following:

(a) Composition: Use markers made of plastic, ceramic or other durable materials. Markers with studs or mechanical attachments will not be allowed.

(b) Dimensions: Marker minimum and maximum surface dimensions is based on an x and y axis where the y dimension is the axis parallel to the centerline and the x axis is 90 degrees to y. Class E markers shall be
4 inch (W) by 2 inch (H) by 1 inch (D).

The x and y dimension of Class D markers shall be a maximum of 5 inches. The x dimension shall be a minimum of 4 inches and the minimum y dimension will be 2.25 inches.

The maximum installed height of Class D markers shall be 1 inch. The maximum installed height of Class E markers shall be 2 inches. Use Class D markers having a minimum reflective face surface of 0.35 square inches. Use Class E markers having a minimum reflective surface area of 1 square inch.

The marker's reflective face shall be completely visible and above the pavement surface after installation, measured from a line even with the pavement perpendicular to the face of the marker.

(c) Optical Performance: Ensure that the specific intensity of each white reflecting surface at 0.2 degrees observation angle shall be at least the following when the incident light is parallel to the base of the marker:

Horizontal Entrance Angle	Specific Intensity
0 deg.	3
20 deg.	1.2

For yellow reflectors, the specific intensity shall be 60% of the value for white.

For red reflectors, the specific intensity shall be 25% of the value for white. Reflectivity of all RPM's shall not be less than 0.2 Specific Intensity (SI) any time after installation.

(d) Strength requirements: Markers shall support a load of 5,000 pounds. Three markers per lot or shipment will be randomly tested as follows:

Position the marker base down, between the flat, parallel 0.5 inch steel plates of a compression testing machine. Place on top of the marker, a flat piece of 60 (Shore A) durometer rubber, 6 inch by 6 inch by 0.37 inch, centered on the marker. Apply the compressive load through the rubber to the top of the marker at a rate of 0.1 inches per minute.

Either cracking or significant deformation of the marker at any load less than 5,000 pounds will constitute failure.

(e) Adhesion: Use bituminous adhesive materials for bonding the markers to the pavement that meet the requirements of Section 970 and are listed on the QPL.

(f) Removability: Ensure that the pavement marker is removable from asphalt pavement and portland cement concrete pavement intact or in substantially large pieces, either manually or by mechanical devices at temperatures above 40°F, and without the use of heat, grinding or blasting.

990-6 Temporary Glare Screen.

990-6.1 Design and Installation: Meet the following requirements:

(a) Glare screen units shall be manufactured in lengths such that when installed the joint between any one modular unit will not span barrier sections. Color shall be green, similar to Federal Color Standard 595-34227.

(b) Blades, rails and/or posts shall be manufactured from polyethylene, fiberglass, plastic, polyester or polystyrene, and be ultraviolet stabilized and inert to all normal atmospheric conditions and temperature ranges found in Florida.

(c) For paddle type designs, the blade width shall not be more than 9 inches. Blades or screen for individual or modular systems shall be 24 to 30 inches high and capable of being locked down at an angle and spacing to provide a cut-off angle not less than 20 degrees.

(d) For glare screen mounted on temporary barrier wall, a strip (6 by 12 inches) of reflective sheeting as specified in 994-2 shall be placed on a panel, centered in each barrier section (at a spacing not to exceed 15 feet) and positioned in such a manner as to permit total right angle observation by parallel traffic. When glare screen is utilized on temporary concrete barriers, warning lights will not be required.

(e) Prior to approval an impact test shall be performed by the manufacturer to verify the safety performance of the proposed system. The minimum impact strength of the posts, blades, rail and the barrier attachment design shall be sufficient to prevent the unit from separating from the barrier when impacted by a 3 inches outside diameter steel pipe traveling at 30 mph and impacting mid-height on the glare screen assembly.

(f) All hardware shall be galvanized in accordance with ASTM A-123 or stainless steel in accordance with AISI 302/305.

Alternative designs for temporary glare screen may be submitted as a Cost Savings Initiative Proposal in accordance with 4-3.9.

990-6.2 Qualified Products List: Manufactured glare screen systems may be modular or individual units listed on the QPL.

990-7 Temporary Traffic Control Signals.

990-7.1 General: Temporary Traffic Control Signals shall be one of the products listed on the APL. Meet the physical display and operational requirements of

conventional traffic signal described in the MUTCD for portable traffic signals. The standard includes but is not limited to the following:

(a) Use signal heads having three 12 inch vehicular signal indications (Red, Yellow and Green). Ensure there are two signal heads for each direction of traffic.

(b) The traffic signal heads on this device will be approved by the Department.

(c) Department approved lighting sources will be installed in each section in accordance with the manufacturer's permanent directional marking(s), that is, an "Up Arrow", the word "UP" or "TOP," for correct indexing and orientation within a signal housing.

(d) The masts supporting the traffic signal heads will be manufactured with the lowest point of the vehicular signal head as follows:

(1) Eight feet above finished grade at the point of their installation for "pedestal" type application or

(2) Seventeen to 19 feet above pavement grade at the center of roadway for "overhead" type application.

(e) The yellow clearance interval will be programmed three seconds or more. Under no condition can the yellow clearance interval be manually controlled. It must be timed internally by the controller as per Department specifications.

(f) The green interval must display a minimum of five seconds before being advanced to the yellow clearance interval.

(g) The controller will allow for a variable all red clearance interval from 0 to 999 seconds.

(h) Portable traffic control signals will be either manually controlled or traffic actuated. Indicator lights for monitoring the signal operation of each approach will be supplied and visible from within the work zone area.

(i) When the portable traffic control signals are radio actuated the following will apply:

(1) The transmitter will be FCC Type accepted and not exceed 1 watt output per FCC, Part 90.17. The manufacturer must comply with all "Specific limitations" noted in FCC Part 90.17.

(2) The Controller will force the traffic signal to display red toward the traffic approach in case of radio failure or interference.

(j) The trailer and supports will be painted construction/maintenance orange enamel in accordance with the MUTCD color.

(k) The device will meet NEMA environmental standard. The test report certified by an independent laboratory will be provided.

(l) Ensure the certification number is engraved or labeled permanently on equipment.

(m) Ensure the device has an external, visible, water resistant label with the following information: "Certification of this device by the Florida Department of Transportation allows for its use in Construction Zones Only."

990-8 Work Zone Signs.

Provide steel flanged U-channel or Square Tube steel meeting the mechanical requirements of ASTM A 499, Grade 60. For each U-channel or Square Tube, punch or drill 3/8 inch diameter holes on 1 inch centers through the center of the post, starting

approximately 1 inch from the top and extending the full length of the post. Ensure that the weight per foot of a particular manufacturer's post size does not vary more than plus or minus 3.5% of its specified weight per foot. Taper the bottom end of the post for easier installation. Machine straighten the U-channel to a tolerance of 0.4% of the length. Use only non-corrosive metal, aluminum, or galvanized steel attachment hardware. Work zone sign systems shall be one of the products listed on the QPL.

990-9 Temporary Raised Rumble Strips:

990-9.1 General: Temporary Raised Rumble Strips shall be one of the products listed on the QPL. Meet the physical display and operational requirements in the MUTCD for Temporary Raised Rumble Strips. The Temporary Raised Rumble Strip may be either a removable polymer striping tape type or a molded engineered polymer material type as described below:

990-9.1.1 Removable Polymer Striping Tape:

Characteristic	Requirement
Composition:	Removable Polymer Striping Tape with pre-applied adhesive
Color:	White, Black or Orange
Cross-section:	0.25 in. to 0.50 in. (height) x 4 in. (wide)

990-9.1.2 Molded Engineered Polymer Material:

Characteristic	Requirement
Composition:	Molded Engineered Polymer Material
Weight	Internally ballasted to provide proper weight to maintain position in use without the use of adhesives or mechanical fasteners
Color:	White, Black or Orange
Shape	Beveled on the leading edge
Cross-section:	0.625 in. to 0.875 in. (height) x 12 in. (wide)

990-10 Automated Flagger Assistance Devices (AFAD):

990-10.1 General: AFAD's shall be one of the products listed on the APL. Meet the physical display and operational requirements in the MUTCD for the AFAD as well as the detailed requirements below.

990-10.1.1 Stop/Slow Automated Flagger Assistance Devices: Provide a Stop/Slow AFAD including a Stop/Slow sign that alternately displays the stop face and the slow face of a Stop/Slow paddle without the need for a flagger in the immediate vicinity of the AFAD or on the roadway.

Ensure that the Stop/Slow AFAD includes a gate arm that descends to a down position across the approach lane of traffic when the stop face is displayed and then ascends to an upright position when the slow face is displayed.

Ensure the Gate arm is fully retroreflectorized on both sides, with vertical alternating red and white stripes at 16-inch intervals measured horizontally in accordance with the MUTCD. When the arm is in the down position blocking the approach lane:

A. The minimum vertical aspect of the arm and sheeting shall be 2 inches; and,

B. The end of the arm shall reach at least to the center of the lane being controlled.

990-10.1.2 Red/Yellow Lens Automated Flagger Assistance Devices: Provide a Red/Yellow Lens AFAD that alternately displays a steadily illuminated circular red lens and a flashing circular yellow lens to control traffic without the need for a flagger in the immediate vicinity of the AFAD or on the roadway.

Ensure that the Red/Yellow Lens AFAD includes a gate arm that descends to a down position across the approach lane of traffic when the steady circular red lens is illuminated and then ascends to an upright position when the flashing circular yellow lens is illuminated.

Ensure that the gate arm is fully retroreflectorized on both sides, with vertical alternating red and white stripes at 16-inch intervals measured horizontally in accordance with the MUTCD. When the arm is in the down position blocking the approach lane:

A. The minimum vertical aspect of the arm and sheeting shall be 2 inches; and,

B. The end of the arm shall reach at least to the center of the lane being controlled.

Do not provide a change interval between the display of the steady circular red indication and the display of the flashing circular yellow indication. Provide a steady illuminated circular yellow indication, with at least a 5 second duration, between the transition from flashing circular yellow indication and the display of the steady circular red indication. The Engineer may approve a different duration, provided it falls within the range recommended by the MUTCD.

993 OBJECT MARKERS AND DELINEATORS.
(REV 7-8-10) (FA 7-16-10) (1-11)

SUBARTICLE 993-1.4 (Page 975) is deleted and the following substituted:

993-1.4 Posts: The marker posts shall be of steel or aluminum as shown in the Design Standards or plans. Steel posts shall be 2.5 lb/ft. flanged U-Channel . The U-channel posts shall meet the mechanical requirements of ASTM A 499, Grade 60. Provide U-channel posts that have been galvanized after fabrication in accordance with ASTM A 123 and have a smooth uniform finish free from defects affecting strength, durability and appearance. For each U-channel, punch or drill 3/8 inch diameter holes on 1 inch centers through the center of the post, starting approximately 1 inch from the top and extending the full length of the post. Punching or drilling operations shall be completed prior to galvanization. The weight per foot of a manufacturer's U-channel size shall not vary more than plus or minus 3.5% of its specified weight per foot. Machine-straighten the U-channel to a tolerance of 0.4% of the length. U-channel posts shall be listed on the QPL. Round aluminum posts shall meet the requirements of Index 11860.

Use attachment hardware (nuts, bolts, clamps, brackets, braces, etc.) of aluminum or galvanized steel.

SUBARTICLE 993-2-2 (Page 975) is deleted and the following substituted:

993-2.2 Flexible Post Delineators:

993-2.2.1 Dimensions: The post shall have a minimum width of 3 inches facing traffic and of such length to generally provide a height of 48 inches above the pavement surface.

993-2.2.2 Color: The post shall be opaque white. The yellowness index shall not exceed 12 when tested in accordance with ASTM D 1925 or ASTM E 313. The daylight 45 degree, 0 degree luminous directional reflectance shall be a minimum of 70 when tested in accordance with ASTM E 1347.

993- 2.2.3 Retroreflective Sheeting: The reflective sheeting shall be Types III, IV, V or VII and meet the requirements of Section 994. The reflective sheeting shall have a minimum width of 3 inches and have a minimum area of 30 square inches.

993-2.2.4 Impact Performance: Posts shall be tested and evaluated according to the National Testing Product Evaluation Program (NTPEP) Project Work Plan for Field Evaluation of Flexible Surface Mounted Delineator Posts. A temperature of 65°F or greater may be used in lieu of the NTPEP temperature requirements. Posts shall be capable of returning to a vertical position plus or minus 5 degrees with no delaminating, and one post may list no more than 10 degrees. No post shall split, crack, break, or separate from base.

SUBARTICLE 993-2.3.1 (Page 975) is deleted and the following substituted:

993-2.3.1 Posts: The posts shall meet the requirements of 993-1.4, except the steel delineator post shall be 1.1 lb/ft.

994 RETROREFLECTIVE AND NONREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES.

(REV 1-23-12) (FA 2-6-12) (7-12)

SECTION 994 (Pages 977 – 980) is deleted and the following substituted:

SECTION 994
RETROREFLECTIVE AND NONREFLECTIVE SHEETING FOR TRAFFIC CONTROL DEVICES

994-1 Description.

994-1.1 General: This Section specifies the requirements for retroreflective and nonreflective sheeting materials, transparent and opaque process inks for retroreflective sheeting materials and film overlays for traffic control devices.

994-1.2 Classification: Retroreflective sheeting material Types III, IV, V, VI and XI shall be classified in accordance with ASTM D-4956. In addition, a special classification, Type VII (Special) is added for super high intensity retroreflective sheeting. This special classification shall include materials classified as Type VIII and above in accordance with ASTM D-4956.

994-1.3 Qualified Products List: All sheeting, process inks and film overlay materials shall be listed on the Qualified Products List (QPL). Manufacturers seeking evaluation of their products shall submit product data sheets, performance test reports from an independent laboratory showing the product meets the requirements of this section, and a QPL application in accordance with Section 6. Information on the QPL application must include the product colors included in the application, classification, adhesive backing class, and liner type. Information on the QPL application for process inks and film overlay products must also include the compatible reflective sheeting material.

994-2 Materials.

Sheeting shall meet the requirements of Types III, IV, V, VI, and XI in ASTM D-4956 or Type VII (Special) and fluorescent pink listed below in accordance with their approved usage.

994-3 Performance Requirements.

994-3.1 General: Sheeting, process inks and film overlay materials shall be tested in accordance with, and meet all the performance requirements of ASTM D-4956, including Supplemental Requirement S2, Reboundable Sheeting Requirements, except as amended in this Section. Classification Type VII (Special) shall be tested in accordance with, and meet the performance requirements of ASTM D-4956 Type VIII, except as amended in this Section. For performance requirements that are color dependant, each color included in the QPL application must be tested and meet the requirements identified in ASTM D-4956 or this Section as applicable. Process inks and film overlay materials shall be applied to reflective sheeting in accordance with Section 994-4 for testing.

994-3.2 Retroreflective Intensity: The retroreflective sheeting shall meet the minimum initial requirements as stated for 0.2 degree and 0.5 degree observation angles in ASTM D-4956. Type VI fluorescent pink sheeting and Type VII (Special) sheeting shall meet the minimum retroreflectivity requirements listed below.

Type VII (Special) Sheeting										
Minimum Coefficient of Retroreflection (cd/foot-candle·ft^2)(cd/fc·ft^2)										
Observation/Entrance Angle (degree)	White	Yellow	Red	Orange	Blue	Green	Brown	Fluorescent Orange	Fluorescent Yellow	Fluorescent Yellow/Green
0.2/-4	380	304	95	250	19	38	19	180	220	360
0.5/-4	250	195	55	100	12	25	8	60	145	235
0.2/30	220	176	48	110	11	22	9	85	125	205
0.5/30	135	105	30	50	7	14	3	33	75	125

Type VI Sheeting

Minimum Coefficient of Retroreflection (cd/foot-candle·ft^2)(cd/fc·ft^2)	
Observation/Entrance Angle	Fluorescent Pink
(degree)	
0.2/-4	160
0.5/-4	100
0.2/30	100
0.5/30	40

994-3.3 Color: The fluorescent pink initial color shall meet the following x, y chromaticity coordinates:

Fluorescent Pink	1	2	3	4
x	.450	.590	.644	.536
y	.270	.350	.290	.230

Fluorescent pink sheeting shall have a minimum luminance factor of 25.

994-3.4 Outdoor Weathering: Outdoor weathering exposure of sign sheeting materials shall be in accordance with, and meet the requirements of ASTM D-4956 for each product color and classification and conducted at an exposure location meeting the Tropical Summer Rain Climate Type (Miami, Florida or equivalent). Outdoor weathering is not required for Type VI fluorescent pink and fluorescent yellow.

994-4 Direct and Reverse Screen Processing.

The transparent and opaque process inks furnished for direct and reverse screen processing shall be of a type and quality formulated for retroreflective sheeting materials as listed on the QPL and applied in accordance with the manufacturer's instruction. Screen processing in accordance with the techniques and procedures recommended by the manufacturer shall produce a uniform legend of continuous stroke width of either transparent or opaque ink, with sharply defined edges and without blemishes on the sign background that will affect the intended sign use.

The retroreflective sheeting shall permit color processing with compatible transparent and opaque process inks as approved by the sheeting manufacturer and listed on the QPL.

994-5 In-Service Minimum Requirements.

The retroreflective sheeting and screen processed retroreflective sheeting shall have the minimum coefficient of retroreflection as shown in ASTM D-4956, Outdoor Weathering Photometric Requirements for All Climates except Type VI fluorescent pink and fluorescent yellow. In addition, Type VII (Special) classified sheeting materials shall have a minimum coefficient of retroreflection of 80% of the values listed in the above table. Only the observation angle of 0.2 degrees and an entrance angle of -4 degrees shall be used in measuring in-service minimums. The in-service life for opaque overlay films, black processing inks and opaque lettering shall equal the life of the reflective sheeting to which it is applied.

994-6 Packaging and Labeling.

Packaging and labeling shall meet the requirements of ASTM D-4956.

994-7 Samples.

Field samples will be obtained in accordance with the Department's Sampling, Testing and Reporting Guide Schedule or on a random basis at the discretion of the Engineer.

THIS COMPLETES THIS SPECIFICATIONS PACKAGE

CSDG PROJ. NO.	SHEET NO.
024:001001	1

COMPONENTS OF CONTRACT PLANS SET
- ROADWAY PLANS
- LIGHTING PLANS
- SIGNALIZATION PLANS

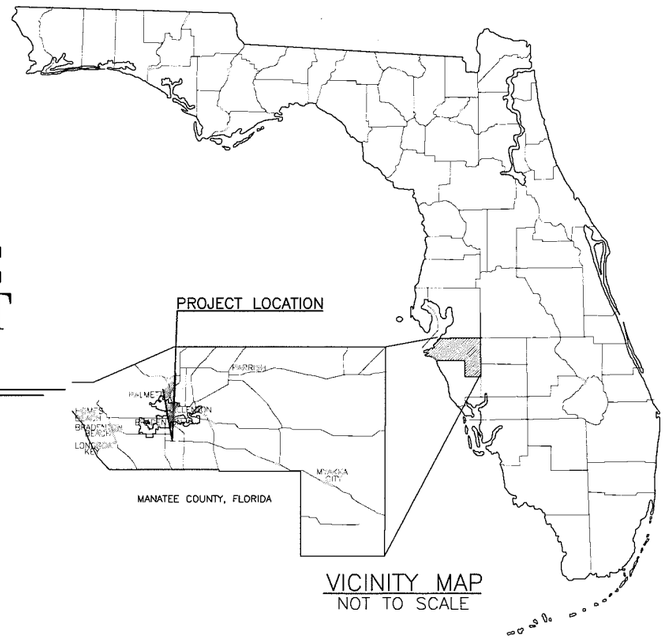
MANATEE COUNTY
BOARD OF COUNTY COMMISSIONERS
BRADENTON, FLORIDA

PLANS OF PROPOSED

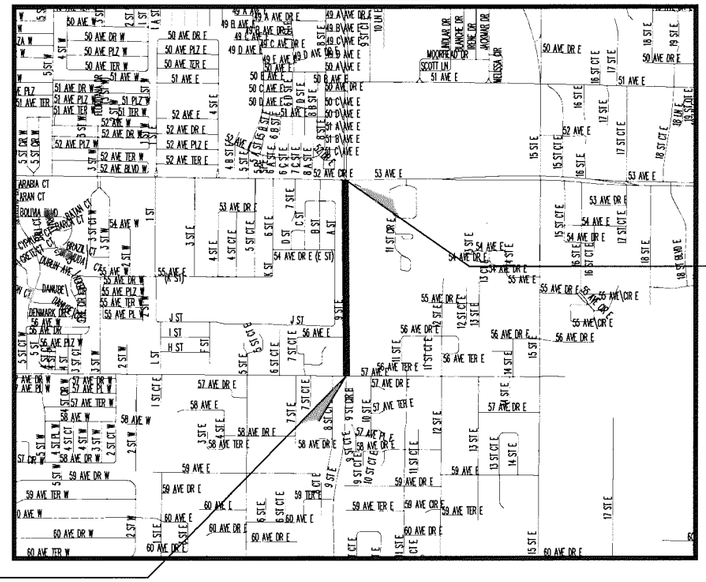
9TH STREET EAST – 4 LANE BETWEEN 57TH AVENUE EAST AND 53RD AVENUE EAST

COUNTY PROJECT NO. 6040460
CSDG PROJECT NO. 024:001001
MANATEE COUNTY, FLORIDA
S13 T35S R17E

INDEX OF PLANS



VICINITY MAP
NOT TO SCALE



BEGIN PROJECT
9TH ST E STA.
112+24.25

END PROJECT
9TH ST E.
STA. 139+83.50

LOCATION MAP

PROJECT LENGTH
2620.46 LF OR 0.50 MILES

UTILITY OWNERS

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PEACE RIVER ELECTRIC COMPANY
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1. ALL INDEX REFERENCES IN THIS SET OF PLANS REFER TO F.D.O.T. "DESIGN STANDARDS" DATED 2010.
2. GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2010 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.
3. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
4. UNDERGROUND UTILITIES: THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS HAVE BEEN OBTAINED BY FIELD SURVEYS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THIS DATA IS ESSENTIALLY CORRECT. HOWEVER, THESE PLANS DO NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR WILL BE REQUIRED TO VERIFY THE EXACT LOCATION OF EACH FACILITY WITH THE UTILITY COMPANY WHEN THE POTENTIAL EXISTS FOR INVOLVEMENT AND SHALL TAKE DUE CARE IN ALL PHASES OF THE CONSTRUCTION TO PROTECT ANY SUCH FACILITIES WHICH MAYBE AFFECTED BY THE WORK. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

FINAL PLANS
7/18/12

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

PLANS PREPARED BY:

CIVILSURV
A Tradition of Innovative Engineering
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Tel: 863-648-4771
Certificate of Authorization No. 28988

ENGINEER OF RECORD:
JOHN E. HOWLE, P.E.
P.E. NO. 27584

APPROVED BY: JOHN E. HOWLE, P.E. NO. 27584
DATE: 9/10/12

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ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK OPERATIONS.

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156201COVER.dwg, 1, 12

CSDG PROJ. NO.	SHEET NO.
024:001001	2

SUMMARY OF PAY ITEMS ROADWAY

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	QUANTITY
101- 1-	MOBILIZATION	LS	1
102- 1-	MAINTENANCE OF TRAFFIC	LS	1
102- 3-	COMMERCIAL MATERIALS FOR DRIVEWAY MAINT	CY	250
104- 10- 3	SEDIMENT BARRIER	LF	6,366
104- 11-	FLOATING TURBIDITY BARRIER	LF	80
104- 15	SOIL TRACKING PREVENTION DEVICE	EA	2
104- 18	INLET PROTECTION SYSTEM	EA	34
110- 1- 1	CLEARING AND GRUBBING	LS	1
110- 4-	REMOVAL OF EXISTING PAVEMENT (CONCRETE)	SY	1,238
110- 7- 1	MAIL BOX (FURNISH AND INSTALL)	EA	8
120- 1-	REGULAR EXCAVATION	CY	17,519
120- 4-	SUBSOIL EXCAVATION	CY	3,486
120- 6-	EMBANKMENT	CY	6,182
160- 4-	TYPE B STABILIZATION	SY	22,486
285-706-	OPTIONAL BASE GROUP 6 (8" CEMENT TREATED SHELL)(LBR 100)	SY	20,902
327- 70- 04	MILLING EXISTING ASPHALT PAVEMENT (3" AVERAGE DEPTH)	SY	2,100
331- 2-	TYPE S ASPHALTIC CONCRETE	TN	3,499
334- 1 -13	SUPERPAVE ASPHALTIC CONCRETE, TRAFFIC C	TN	174
337- 7- 3	ASPHALTIC CONCRETE FRICTION COURSE (INC BIT)(FC-3)	TN	1,171
337- 7- 33	ASPHALTIC CONCRETE FRICTION COURSE (TRAFFIC C)(INC PG 67-22)(FC-12.5)	TN	174
400- 0- 11	CLASS NS CONCRETE (GRAVITY WALL)	CY	178
400- 1- 2	CLASS I CONCRETE (ENDWALLS)	CY	28.33
425- 1-311	INLETS (CURB TYPE P-1) (<10)	EA	1
425- 1-351	INLETS (CURB TYPE P-5) (<10)	EA	8
425- 1-359	INLETS (CURB TYPE P-5) (MODIFIED) (<10)	EA	3
425- 1-361	INLETS (CURB TYPE P-6) (<10')	EA	5
425- 1-369	INLETS (CURB TYPE P-6) (MODIFIED) (<10)	EA	1
425- 1-451	INLETS (CURB TYPE J-5) (<10)	EA	2
425- 1-521	INLETS (DITCH BOTTOM TYPE "C") (<10')	EA	1
425- 1-549	INLETS (DITCH BOTTOM TYPE "D") (<10')(MODIFIED)	EA	2
425- 2- 61	MANHOLE (P-8) (<10')	EA	2
425- 2- 91	MANHOLE (J-8) (<10')	EA	4
425- 2- 93	MANHOLE (J-8) (<10') (PARTIAL)	EA	2
425- 5-	MANHOLES (ADJUST)	EA	6
430-175-118	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ROUND)(18")(RCP)	LF	1298
430-175-124	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ROUND)(24")(RCP)	LF	847
430-175-130	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ROUND)(30")(RCP)	LF	329
430-175-215	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ELLIP)(12"x18")(ERCP)	LF	9
430-175-218	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ELLIP)(14"x23")(ERCP)	LF	84
430-175-236	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ELLIP)(29"x45")(ERCP)	LF	308
430-175-266	PIPE CULVERT OPTIONAL MATERIAL (S/CD)(ELLIP)(53"x83")(ERCP)	LF	95
430-984-125	MITERED END SECTION (18" RCP SD) (INCLUDES RIP RAP)	EA	1
430-984-133	MITERED END SECTION (30" RCP SD) (INCLUDES RIP RAP)	EA	1
430-984-638	MITERED END SECTION(OPT/ELLIP/ARCH)(29"X45" ERCP)(INCLUDES RIP RAP)	EA	1
515- 2- 301	PEDESTRIAN/BICYCLE RAILING (ALUMINUM, 42" PICKET RAILING)	LF	1269
520- 1- 10	CONCRETE CURB AND GUTTER (TYPE F)	LF	5647
520- 2- 4	CONCRETE CURB (TYPE D)	LF	312
520- 5- 41	CONCRETE TRAFFIC SEPARATOR (TYPE IV, 4' WIDE)	LF	796
522- 1-	CONCRETE SIDEWALK, 4" THICK	SY	3,040
522- 2-	CONCRETE SIDEWALK, 6" THICK (DRIVEWAYS)	SY	704
550- 10- 220	FENCE (TYPE B) (5.1' TO 6' HEIGHT)	LF	1,057
550- 60- 224	FENCE GATES (TYPE B)(DOUBLE)(20' OPENING)	EA	2
570- 1- 2	PERFORMANCE TURF, SOD	SY	10,470
700- 20- 11	SIGN SINGLE POST (<12 SF)	AS	20
700- 20- 40	SIGN EXISTING (RELOCATE, SINGLE POST)	AS	5
700- 20- 60	SIGN EXISTING (REMOVE, SINGLE POST)	AS	8
700- 48- 18	SIGN PANEL (F&I)(15 OR LESS SF)	EA	10
706- 3-	RETRO-REFLECTIVE PAVEMENT MARKERS	EA	425
710- 11-290	REFLECTIVE PAINT (ISLAND NOSE)(YELLOW)	SF	38
711- 11- 111	SOLID TRAFFIC STRIPE,THERMOPLASTIC (WHITE)(6")	NM	1.205
711- 11-123	SOLID TRAFFIC STRIPE,THERMOPLASTIC (WHITE)(12")	LF	1352
711- 11-125	SOLID TRAFFIC STRIPE,THERMOPLASTIC (WHITE)(24")	LF	293
711- 11-131	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (10'-30' SKIP)	GM	0.924
711- 11-151	SKIP TRAFFIC STRIPE, THERMOPLASTIC (WHITE) (6") (2'-4' SKIP)	LF	553
711- 11-160	PAVEMENT MESSAGES, THERMOPLASTIC (WHITE)	EA	16
711- 11-170	DIRECTIONAL ARROWS, THERMOPLASTIC (WHITE)	EA	44
711- 11- 211	SOLID TRAFFIC STRIPE,THERMOPLASTIC (YELLOW)(6")	NM	1.012
711- 11- 224	SOLID TRAFFIC STRIPE,THERMOPLASTIC (YELLOW)(18")	LF	42
711- 11- 231	SKIP TRAFFIC STRIPE, THERMOPLASTIC (YELLOW) (6") (10'-30' SKIP)	GM	0.441
SPECIAL - 01	ALUMINUM SHEET PILE	LF	206

PAY ITEM FOOTNOTES

PAY ITEM NO.	DESCRIPTION
ITEM 102-1	MAINTENANCE OF TRAFFIC ALL COSTS INVOLVED IN PLAN PREPARATION, FURNISHING, INSTALLING AND MAINTAINING EQUIPMENT NECESSARY TO SAFELY MAINTAIN TRAFFIC THROUGOUT THE LIFE OF THE CONTRACT IS INCLUDED IN LUMP SUM PAYMENT. PROVIDE AND MAINTAIN ADEQUATE ACCESS TO ALL INTERSECTING STREETS AND/OR DRIVES. INCLUDES THE COST OF TEMPORARY PAVEMENT, TRAFFIC CONTROL OFFICER, AND CHANGEABLE VARIABLE MESSAGE SIGNS. CHANGEABLE VARIABLE MESSAGE SIGNS SHALL BE INSTALLED A MINIMUM OF 2 WEEKS PRIOR TO START OF CONSTRUCTION.
ITEM 104-10-3	THE CONTRACTOR WILL SUBMIT AN EROSION CONTROL PLAN FOR APPROVAL PRIOR TO THE BEGINNING OF CONSTRUCTION.
ITEM 110-1-1	IN ADDITION TO THE REQUIREMENTS AS SET FORTH IN SECTION 110-2 OF THE STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, THIS PAY ITEM SHALL ALSO INCLUDE REMOVAL OF EXISTING PAVEMENT, GUARDRAIL, TREES, INLETS, CONCRETE CURBS, STORM PIPES, UTILITY PIPES, FIXTURES AND FENCES WITHIN RIGHT OF WAY, AND SAW CUTTING EXISTING PAVEMENT.
ITEM 120-1	ANY EXCESS MATERIAL TO BE DISPOSED OF BY THE CONTRACTOR IN OFFISTE AREAS PROVIDED BY HIM
ITEM 120-4	UNSUITABLE MATERIAL WAS LOCATED IN THE GEOTECHNICAL SOIL BORINGS AT STA. 116+42, 119+18, AND 120+93. SEE GEOTECHNICAL REPORT
ITEM 331-2	INCLUDES 50 TONS FOR MISCELLANEOUS CONSTRUCTION, AS DIRECTED BY THE ENGINEER (SEE SUPPLEMENTAL SPECIFICATIONS). FOR MARSHALL MIX ASPHALT SPECIFICATIONS, SEE SUPPLEMENTAL SPECIFICATIONS.
ITEM 425-1-359	INLET TOPS TO BE POURED IN PLACE AND MODIFIED AS REQUIRED TO MATCH PROPOSED EDGE OF PAVEMENT AND INLET BOTTOM. OFFSET LOCATION SHOWN IS TO CENTER OF BOX.
425-1-369	FIELD VERIFICATION OF LOCATION OF EXISTING 60" RCP AND PROPOSED INLET LOCATION REQUIRED PRIOR TO CONSTRUCTION FOR INLETS AT STATION 135+75 (S-12), 133+25 (S-14), 131+00 (S-16), 129+00 (S-18), 127+13.99 (S-20), AND 125+84.39 (S-33).
ITEM 570-1-2	INCLUDES THE COST OF TOPSOIL, FERTILIZER, AND WATER NEEDED TO ESTABLISH A STAND OF GRASS
ITEM 700-20-60	SIGN EXISTING (REMOVAL) (SINGLE POST) AS DIRECTED BY THE COUNTY'S REPRESENTATIVE
ITEM 711-	ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED IN THE PLANS. PAY ITEM INCLUDES PAINT MARKINGS UNTIL THE CURE PERIOD FOR ASPHALT HAS ELAPSED AND THE THERMOPLASTIC MARKINGS CAN BE APPLIED.
ITEM 1050-11-222 1050-11-223 1050-11-423	COST OF PIPE INCLUDES FITTINGS AND RESTRAINTS.
ITEM SPECIAL-01	ALUMINUM SHEET PILING SHALL BE PZM-19. MATERIAL SHALL BE TYPE 6061-T6 MARINE GRADE OR EQUIVALENT. SHEET JOINTS SHALL BE SEALED WITH WADIT INTERLOCK SEALANT OR APPROVED EQUAL. THE SHEET PILE CAP WILL BE ALUMINUM DESIGN AND PLANS FOR ALUMINUM SHEET PILING AND CAPS TO BE SUBMITTED BY CONTRACTOR. THE SHEET PILE WALL WILL BE CANTILEVERED. THE LIVE LOAD SURCHARGE FOR THE WALL DESIGN IS 250 PSF. RETURNS ARE TO BE INSTALLED AT THE ENDS OF THE SHEET PILE WALL. THE TOP ELEVATION FOR THE SHEET PILING IS 21.00. THE TIP ELEVATION IS 10.00.

SUMMARY PAY ITEMS FORCEMAIN

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	QUANTITY
1050- 11-222	UTILITY PIPE (4" PVC)	LF	1280
1080-11-204	VALVE ASSEMBLY (F&I)(CAST IRON)(GATE)(150PSI)(4")(FM)	EA	1
SPECIAL -06	CONNECTION TO EXISTING SYSTEM	EA	2

SUMMARY OF PAY ITEMS WATERMAIN

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	QUANTITY
1050- 11-223	UTILITY PIPE (6" PVC)	LF	1342
1050- 11-423	UTILITY PIPE (6" DI)	LF	170
1080-11-304	VALVE ASSEMBLY (F&I)(CAST IRON)(GATE)(150PSI)(6")(WM)	EA	3
1080-14	UTILITY FIXTURES RELOCATE (WATER METERS)	EA	2
1080-15	UTILITY FIXTURES ADJUST	EA	5
1644-116- 08	FIRE HYDRANT	EA	3
SPECIAL-02	6" BACKFLOW PREVENTER (RELOCATE)	EA	1
SPECIAL-03	2" WATER METER/BACKFLOW PREVENTER (RELOCATE)	EA	2
SPECIAL-04	CONNECTION TO EXISTING SYSTEM	EA	2
SPECIAL-05	CUT & CAP EXISTING WATER MAIN	EA	1

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc
2025 Drane Field Rd.
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Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

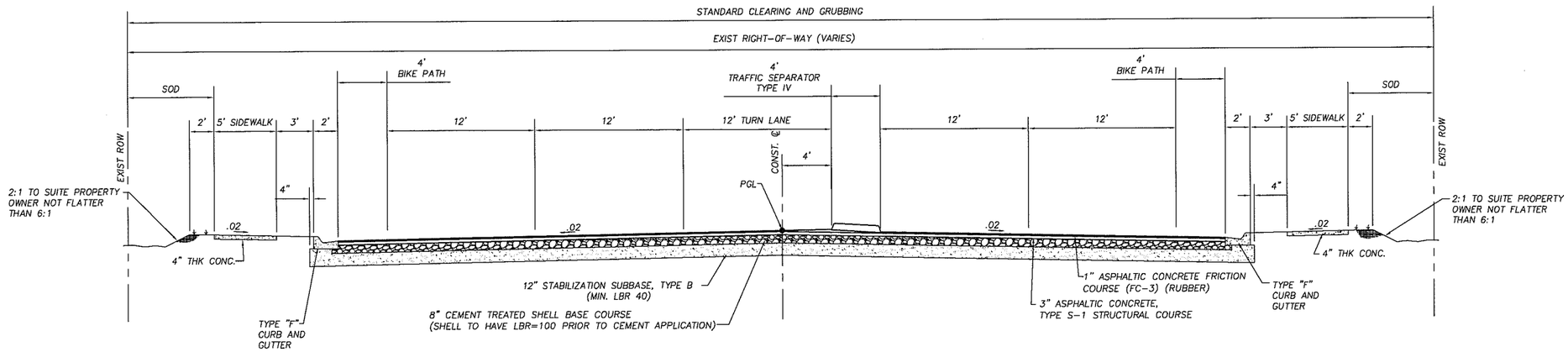
JOHN E. HOSMER, P.E.
FLA. REG. NO. 37988
DATE: 8/27/12

9TH ST E-4 LANE

SUMMARY OF PAY ITEMS

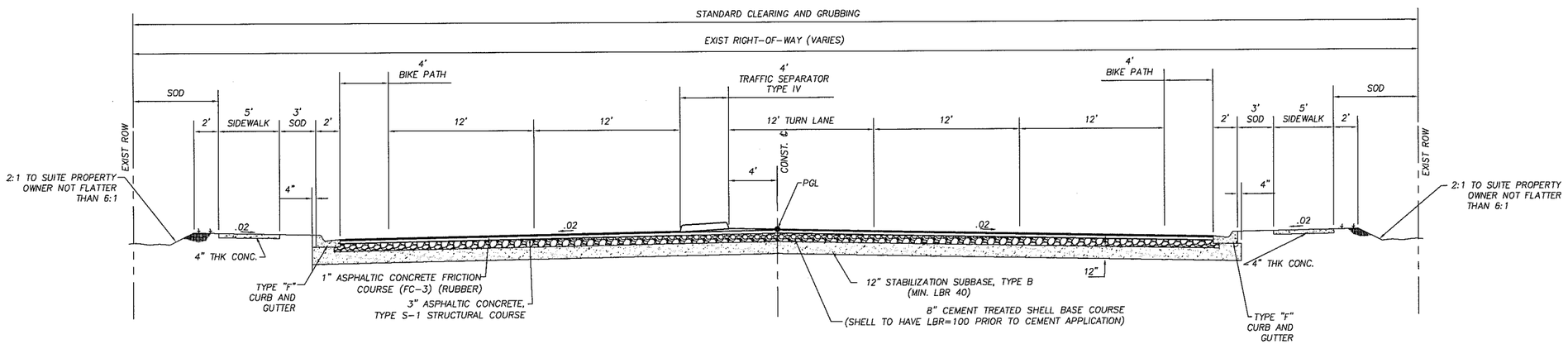
MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	3



TYPICAL SECTION
STA 112+24.25 TO 115+17.94
STA 118+83.27 TO 120+33.36

SCALE: NTS



TYPICAL SECTION
STA 115+17.94 TO 116+65.46

SCALE: NTS

TRAFFIC DATA

CURRENT YEAR = 2005 AADT = 12,624
ESTIMATED OPENING YEAR =2008 AADT = 10,100
ESTIMATED DESIGN YEAR = 2028 AADT = 18,100
DESIGN SPEED = 45 MPH

PAVEMENT STRUCTURE

EXISTING PAVEMENT:

2-1/4" OR 6-5/8" (VARIES) ASPHALT WEARING SURFACE
7" SOIL CEMENT OR 4" LIMEROCK BASE COURSE (VARIES)
18" STABILIZED SUBBASE

PROPOSED PAVEMENT STRUCTURE:

1" ASPHALTIC CONCRETE FRICTION COURSE (FC-3) (RUBBER)
3" ASPHALTIC CONCRETE, TYPE S-1 STRUCTURAL COURSE
8" CEMENT TREATED SHELL BASE COURSE (SHELL TO HAVE LBR=100 PRIOR TO CEMENT APPLICATION)
12" STABILIZED SUBBASE, TYPE B (MIN. LBR 40)

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Division of Innovative Engineering
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Certificate of Authorization No. 28561

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FLA. REG. NO. 27964
DATE: 8/10/12

9TH ST E-4 LANE

TYPICAL SECTION

MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
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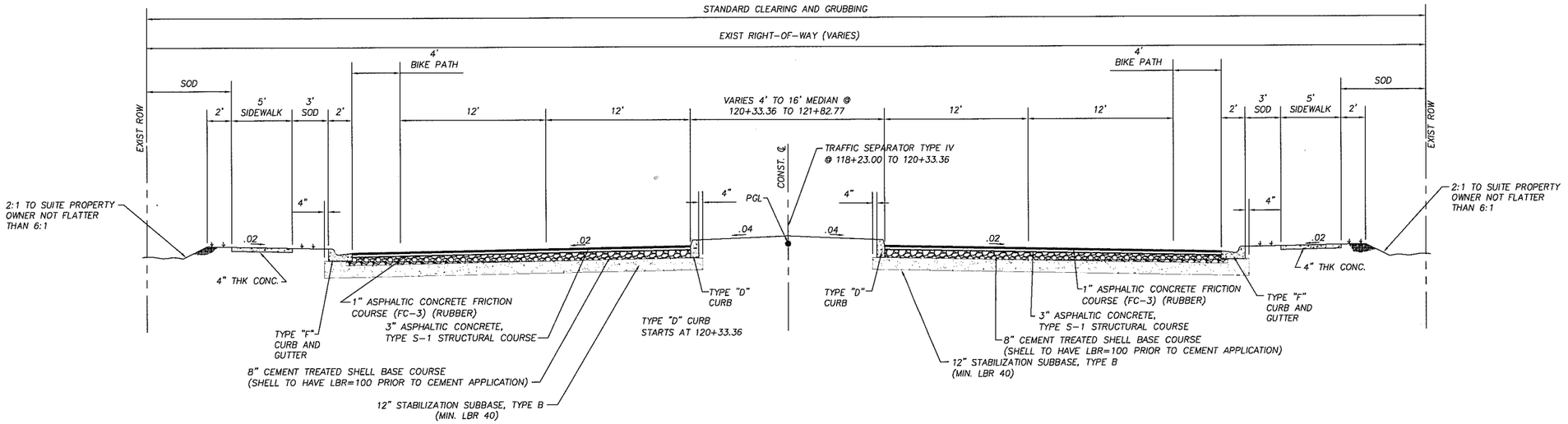
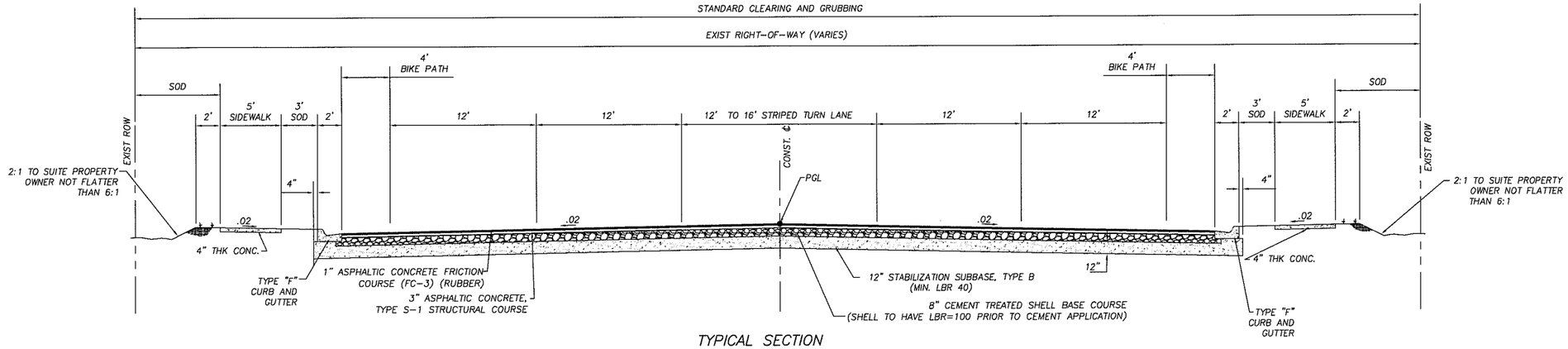


TYPICAL SECTION
STA 120+33.36 TO 121+82.77

SCALE: NTS



TYPICAL SECTION
STA 116+65.46 TO 118+83.27

SCALE: NTS

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HINKLE, P.E.
FLA. REG. NO. 47974
DATE: 2/10/12

9TH ST E-4 LANE

TYPICAL SECTION

MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
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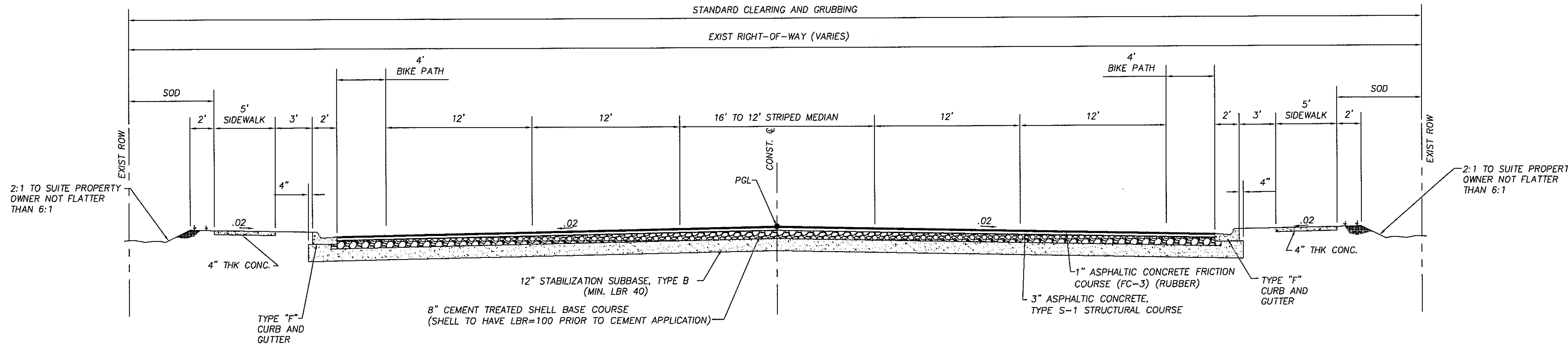
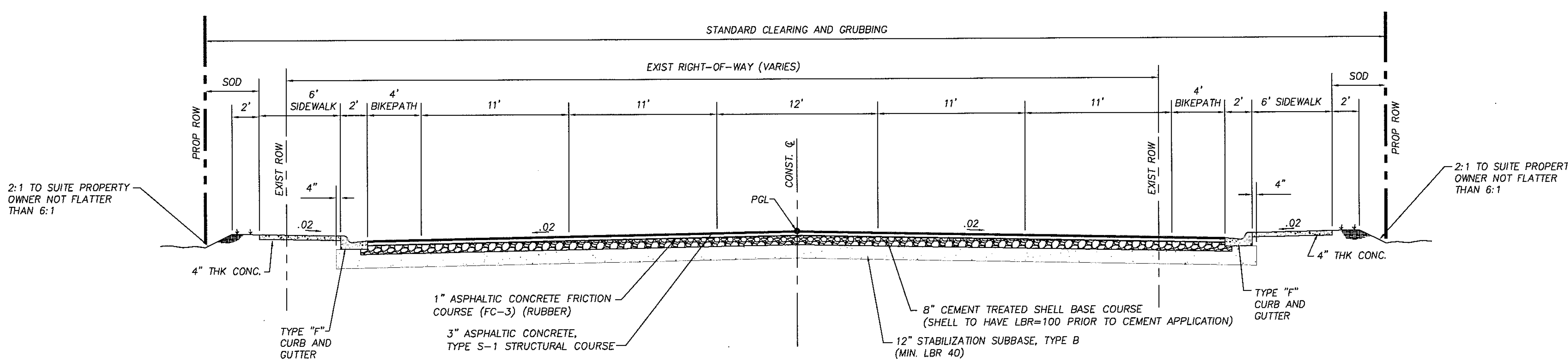


TYPICAL SECTION
STA 121+82.77 TO 123+25.37
SCALE: NTS



NOTE: 11' LANES TO 12' LANE TRANSITION STA. 134+38 TO 135+62.34

TYPICAL SECTION
STA 123+25.37 TO 135+62.34
SCALE: NTS

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REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

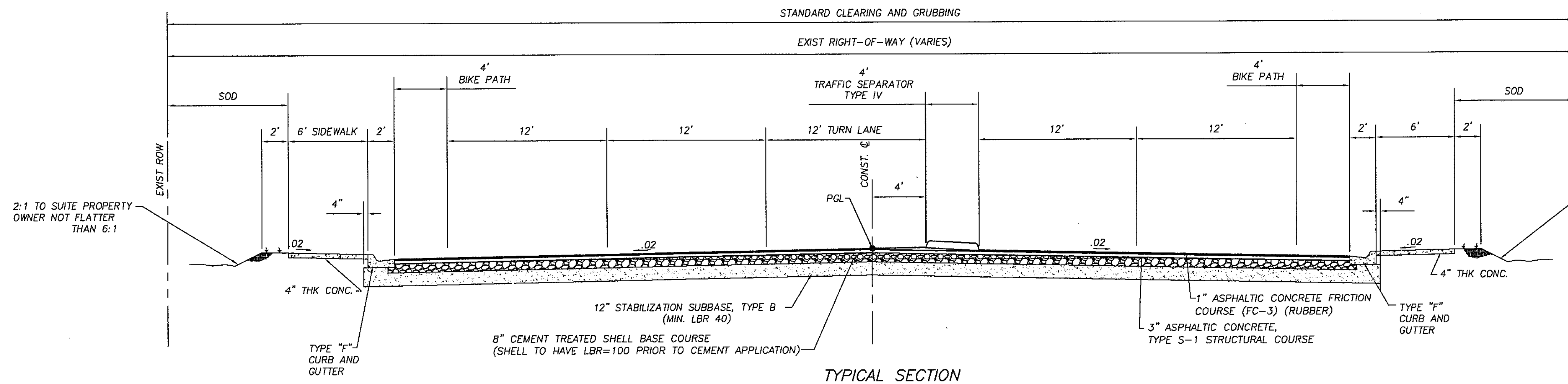
JOHN E. HOLLE, P.E.
FLA. REG. NO.
DATE 2/10/12

9TH ST E-4 LANE

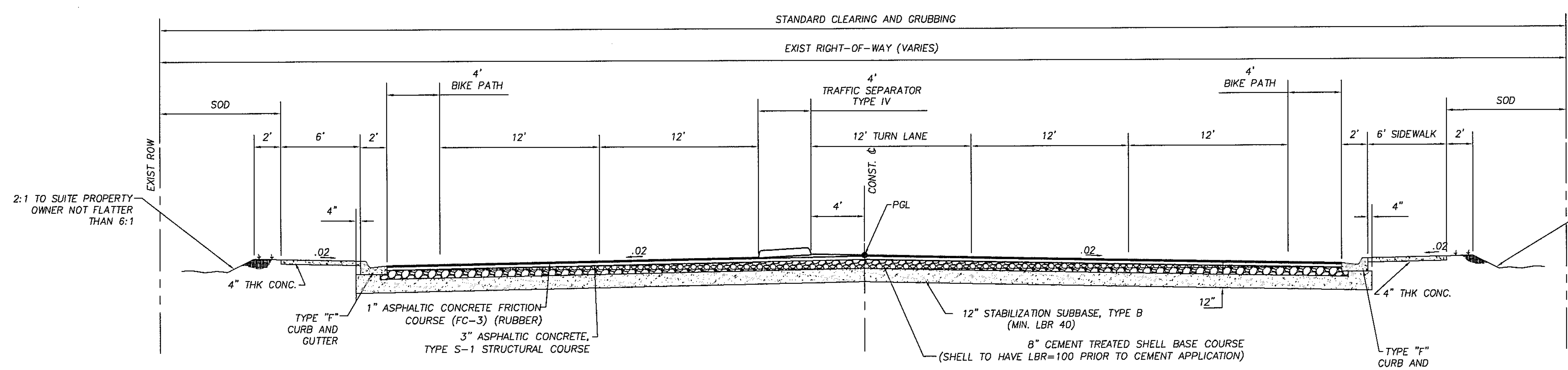
TYPICAL SECTION

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	6



TYPICAL SECTION
STA 135+62.34 TO 136+61.67
SCALE: NTS



TYPICAL SECTION
STA 136+61.67 TO 138+44.71
SCALE: NTS

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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DESIGNED BY	TWR	9/05
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JOHN E. HOLE, P.E.
DATE: 8/10/12

9TH ST E-4 LANE
TYPICAL SECTION
MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
024:001001	7

QUANTITY	STRUCTURE NO.	INDEX NO.	STATION LOCATION	SIDE	DESCRIPTION	BARRELS	SIZE	ROUND CONCRETE PIPE STORM SEWER (L.F.) 18"	24"	30"	ERCP STORM SEWER (L.F.) 12"X18"	14"X23"	29"X45"	53"X83"	CURB INLETS (EA) P-1	P-5	MOD P-5	P-6	MOD P-6	J-5	MANHOLES P-8	J-8	PARTIAL J-8 MH	MITERED END SECTIONS 18"	29"X45"	30"	MODIFIED DITCH BOTTOM INLETS D	CLASS I CONC. (CY)	DITCH BOTTOM INLET C	REMARKS
P	S-1	200, 201, 211	113+21.54 37.25	LT	INLET, PIPE	1	14"x23"					72						1												
F																														
P	S-2	200, 201, 211	113+21.54 37.25	RT	INLET, PIPE	1	18	276										1												
F																														
P	S-3	200, 201, 211	117+69.83 37.25	RT	INLET, PIPE	1	18	77										1												
F																														
P	S-4	200, 201, 211	117+85.82 37.25	LT	INLET, PIPE	1	24		275									1												
F																														
P	S-5	200, 201, 211	120+65 37.25	LT	INLET, PIPE	1	29X45						72							1										
F																														
P	S-6	200, 201, 211	120+65 37.25	RT	INLET, PIPE	1	29X45						40							1										
F																														
P	S-7	272	120+87 87.00	RT	MES		29X45																		1					NCL. RIP RAP RUBBLE 5'X5'
F																														
P	S-8	SPECIAL	120+66 148.06	RT	TYPE D MODIFIED	1	18	8																			1			POND A OUTFALL STRUCT.
F																														
P	S-9	200, 201	120+54.48 148.35	RT	MANHOLE	1	24		118												1									
F																														
P	S-10	200, 201	120+51.19 28.11	RT	MANHOLE	1	24															1								DOG HOUSE
F																														
P	S-11	272	112+77.59 50.00	LT	MES		18	15																1						
F																														
P	S-12	200,201,210,280	135+75 41.49	LT	INLET, PIPE	1	18	3							1															INCL. CONC. COLLAR
F																														
P	S-13	200, 201, 211	135+75 37.25	RT	INLET, PIPE	1	18	247								1														
F																														
P	S-14	200, 201, 211	133+25 31.00	LT	MODIFIED INLET, PIPE	1	18	60									1													INCL. MH TOP & THROAT
F																														
P	S-15	200, 201, 211	133+25 33.25	RT	INLET, PIPE	1	24		222							1														
F																														
P	S-16	200, 201, 211	131+00 29.31	LT	MODIFIED INLET, PIPE	1	18	60									1													INCL. MH TOP & THROAT
F																														
P	S-17	200, 201, 211	131+00 33.25	RT	INLET, PIPE	1	24		197							1														
F																														
P	S-18	200, 201, 211	129+00 29.29	LT	MODIFIED INLET, PIPE	1	18	60									1													INCL. MH TOP & THROAT
F																														
P	S-19	200, 201, 211	129+00 33.25	RT	INLET, PIPE	1	30			182						1														
F																														
P	S-20	200, 201, 211	127+13.99 29.72	LT	MODIFIED INLET, PIPE	1	18	60											1											INCL. MH TOP & THROAT
F																														
P	S-21	200, 201, 211	127+13.99 33.25	RT	INLET, PIPE	1	30			126								1												
F																														
P	S-22	200, 201, 211	125+84.39 33.25	RT	INLET, PIPE	1	18			21						1														
F																														
P	S-23	272	125+84.39 60.80	RT	MES		30																			1				INCL.RIP RAP RUBBLE 5'X5'
F																														
P	S-24	SPECIAL	125+73.84 148.00	RT	TYPE D MODIFIED	1	24		35																		1			POND B
F																														
P	S-25	250	125+33.41 148.00	RT	CONC. ENDWALL	1	24																					2.24		POND B
F																														
P	S-26	280	120+04	LT	PIPE ONLY	1	14X23					12																		INCL. CONC. JACKET
F																														
P	S-27	250	125+18 39.00	RT	CONC. ENDWALL	1	53X83							42														12.50		
F																														
P	S-28	200, 201	125+18.54 2.93	RT	MANHOLE	1	53X83							53								1								
F																														
TOTALS (THIS SHEET)	P PLAN QUANTITY							866	847	329	0	84	112	95	1	5	3	5	1	2	1	2	0	1	1	1	2	14.74	0	
	F FINAL QUANTITY																													
TOTALS (PREVIOUS SHEET)	P PLAN QUANTITY																													
	F FINAL QUANTITY																													
PROJECT TOTALS	P PLAN QUANTITY							1298	847	329	9	84	308	95	1	8	3	5	1	2	2	4	2	1	1	1	2	28.33	1	
	F FINAL QUANTITY																													

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLETT, P.E. FLA. REG. NO. 27584
DATE: 8/10/12

9TH ST E-4 LANE

SUMMARY OF DRAINAGE STRUCTURES

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	8

QUANTITY	STRUCTURE NO.	INDEX NO.	STATION LOCATION	SIDE	DESCRIPTION	BARRELS	SIZE	ROUND CONCRETE PIPE STORM SEWER (L.F.) 18"	24"	30"	ERCP STORM SEWER (L.F.) 12"X18"	14"X23"	29"X45"	53"X83"	CURB INLETS (EA) P-1	P-5	MOD P-5	P-6	MOD P-6	J-5	MANHOLES P-8	J-8	PARTIAL J-8 MH	MITERED END SECTIONS 18"	29"X45"	30"	MODIFIED DITCH BOTTOM INLETS D	CLASS I CONC. (CY)	DITCH BOTTOM INLETS C	REMARKS
P	S-29	ENDWALL	125+06 53.52	LT	ENDWALL	1	53X83																					12.50		
F																														
P	S-30	200, 201	123+16.07 3.63	RT	MANHOLE, PIPE	1	29X45						196									1								
F																														
P	S-31	200, 201	123+27.84 45.35	RT	MANHOLE, PIPE	1	18	40													1									
F																														
P	S-32	200, 201	122+73.12 45.53	RT	MANHOLE, PIPE	1	18	51														1								
F																														
P	S-33	200, 201, 211	125+84.39 33.25	LT	INLET, PIPE	1	18	64								1														
F																														
P	S-34	250	130+16.69 41.92	RT	ENDWALL	1	12X18				9																	1.09		
F																														
P	S-35	232	124+21 44.92	RT	TYPE C	1	18	88																					1	
F																														
P	S-36		NOT USED																											
F																														
P	S-37		NOT USED																											
F																														
P	S-38		NOT USED																											
F																														
P	S-39		NOT USED																											
F																														
P	S-40	200, 201, 211	138+26.94 52.50	RT	INLET, PIPE	1	18	24								1														
F																														
P	S-2B	200, 201, 211	116+00 37.25	RT	INLET, PIPE	1	18	165								1														
F																														
P	S-2A	200, 201	115+18.35 45.35	RT	MANHOLE PARTIAL																		1							
F																														
P	S-3A	200, 201	118+62.58 43.41	RT	MANHOLE PARTIAL																		1							
F																														

		18"	24"	30"	12"X18"	14"X23"	29"X45"	53"X83"	P-1	P-5	MOD P-5	P-6	MOD P-6	J-5	P-8	J-8	PARTIAL J-8 MH	18"	29"X45"	30"	D	CLASS I CONC.	C	REMARKS
TOTALS (THIS SHEET)	P PLAN QUANTITY	432	0	0	9	0	196	0	0	3	0	0	0	0	1	2	2	0	0	0	0	13.59	1	
	F FINAL QUANTITY																							
TOTALS (PREVIOUS SHEET)	P PLAN QUANTITY	866	847	329	0	84	112	95	1	5	3	5	1	2	1	2	0	1	1	1	2	14.74	0	
	F FINAL QUANTITY																							
PROJECT TOTALS	P PLAN QUANTITY	1298	847	329	9	84	308	95	1	8	3	5	1	2	2	4	2	1	1	1	2	28.33	1	
	F FINAL QUANTITY																							

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel 863-646-4771
Certificate of Authorization No. 28986

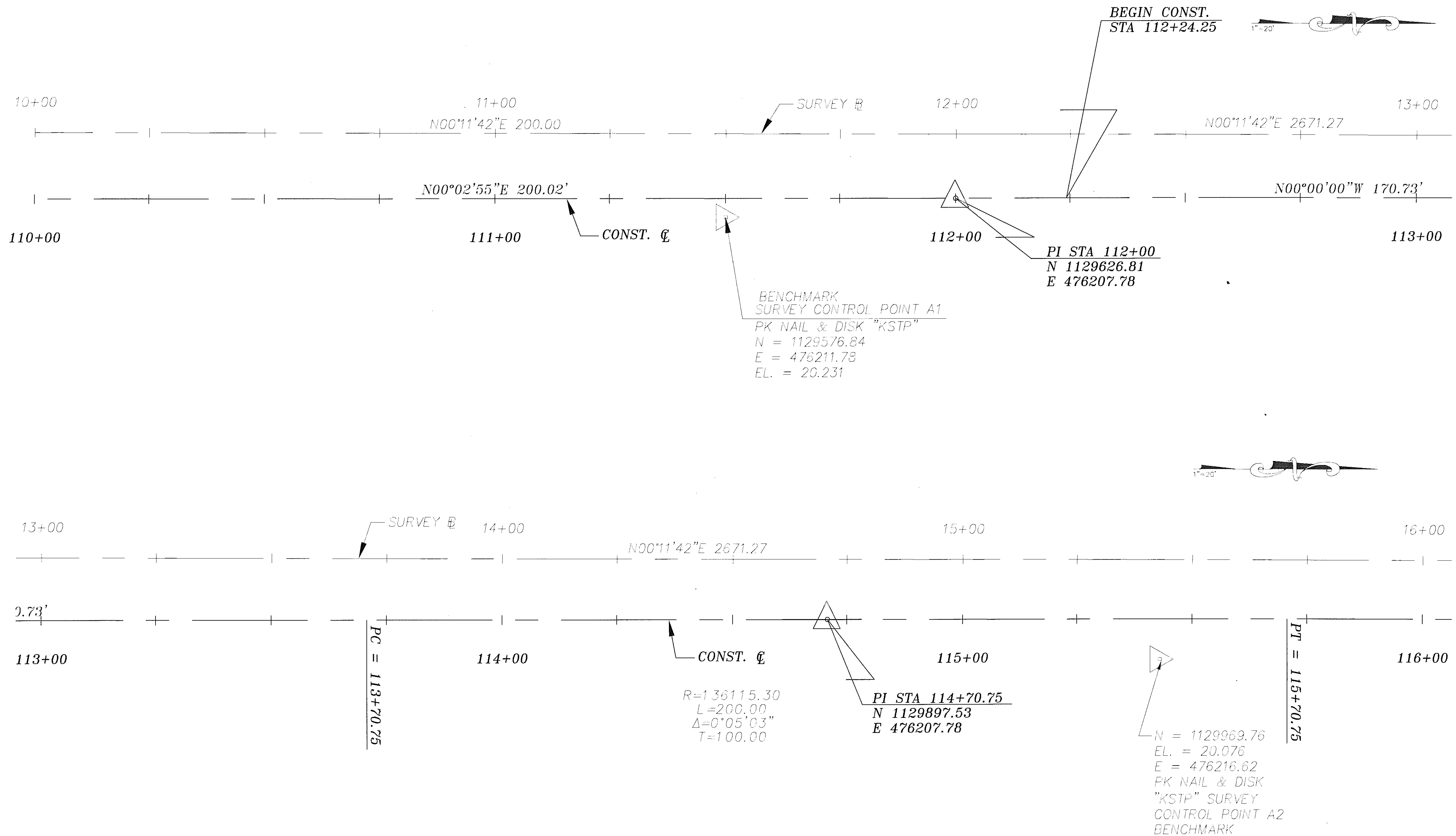
	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOMING, P.E.
FLA. REG. NO.
DATE: 8/10/12

9TH ST E-4 LANE
SUMMARY OF DRAINAGE STRUCTURES
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620SUMDRAIN.dwg, 8/10/2012 1:11:04 PM, \\cs-data\KONICA MINOLTA 423SeriesPCL

CSDG PROJ. NO.	SHEET NO.
024:001001	9



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Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

DATE: 8/10/12

9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20LAYOUT.dwg, 8/10/2012 1:23:44 PM, \\cs-data\KONICA MINOLTA 423SeriesPCL

CSDG PROJ. NO.	SHEET NO.
024:001001	10

1"=20'

16+00 — SURVEY ℄ — 17+00 — N00°11'42"E 2671.27 — 18+00 — 19+00

N00°05'03"E 361.39'

CONST. ℄

116+00 — 117+00 — 118+00 — 119+00

1"=20'

BENCHMARK
SURVEY CONTROL POINT A3
PK NAIL & DISK "KSTP"
N = 1130585.75
E = 476192.75
EL. = 20.206

19+00 — SURVEY ℄ — 20+00 — N00°11'42"E 2671.27 — 21+00 — 22+00

119+00

PC = 119+32.14

R=4498.33
L=164.48
Δ=2°05'42"
T=82.25

120+00

PI STA 120+14.39
N 1130441.17
E 476208.45

CONST. ℄

121+00

PRC = 120+96

PI STA 121+78.87
N 1130605.56
E 476414.47

122+00

R=4498.33
L=164.48
Δ=2°05'42"
T=82.25

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
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Tel: 863-646-4771
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	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HEBE, P.E.
FLA. REG. NO. 47594
DATE: 8/10/12

9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
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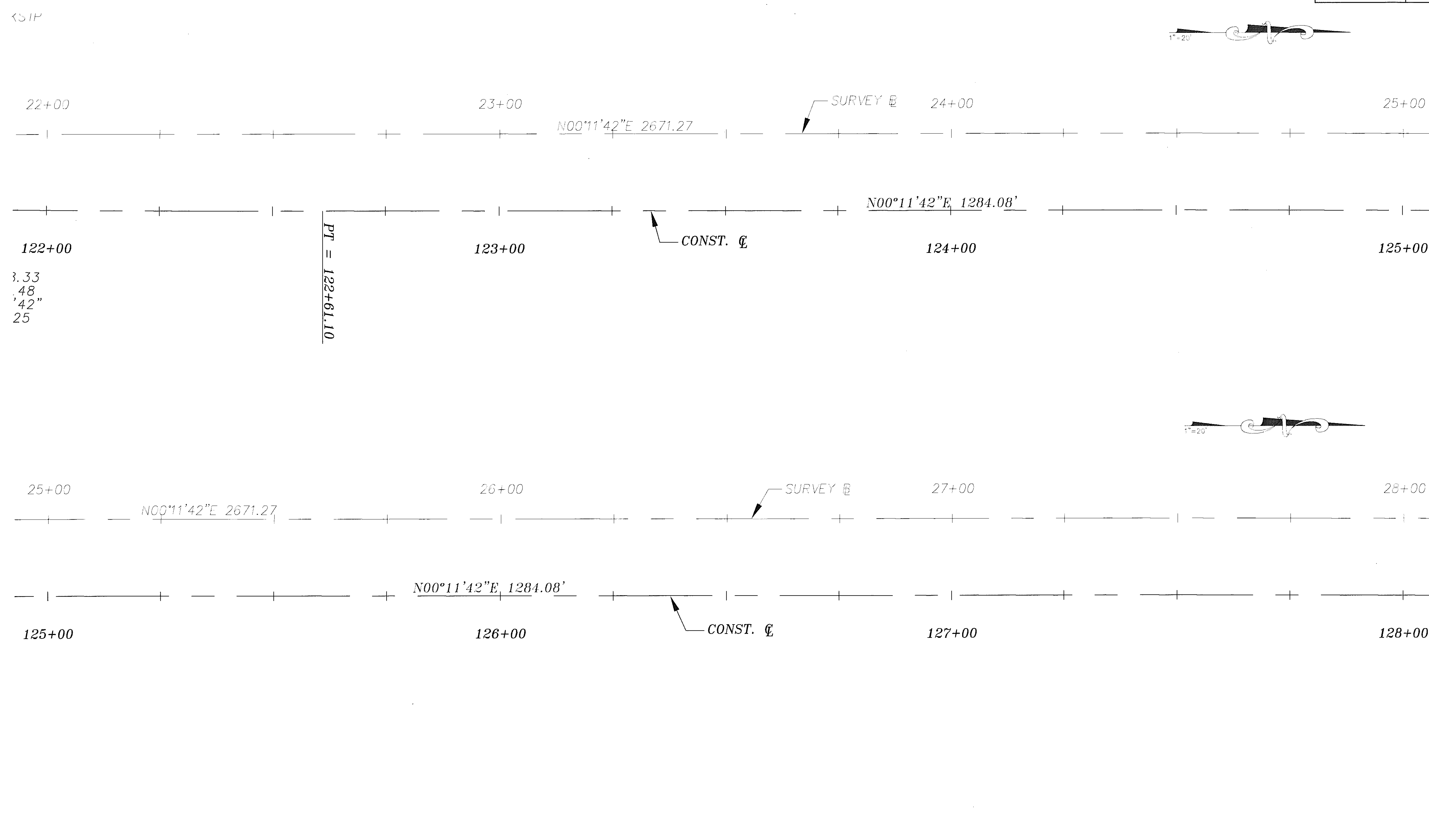

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel: 863-646-4771 Certificate of Authorization No. 26980

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLER P.E.

DATE: 8/10/12

9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620LAYOUT.dwg, 8/10/2012 1:24:52 PM, \\rs-data\KONICA MINOLTA 423SeriesPCL

OSDG PROJ. NO.	SHEET NO.
024:001001	12

1"=20'

28+00 | 29+00 | SURVEY ℄ | 30+00 | 31+00

N00°11'42"E 1284.08'

128+00 | 129+00 | CONST. ℄ | 130+00 | 131+00

E = 476189.68
N = 1131583.87
PK NAIL & DISK "KSTP"
EL. = 20.007
SURVEY CONTROL
POINT A4
BENCHMARK

1"=20'

31+00 | 32+00 | SURVEY ℄ | 33+00 | 34+00

N00°11'42"E 1284.08'

131+00 | 132+00 | CONST. ℄ | 133+00 | 134+00

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\171562OLAYOUT.dwg, 8/10/2012 1:30:21 PM, \\cs-data\KONICA MINOLTA 423series\PCL

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

OSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
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	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HALE, P.E.
FLORIDA REG. NO. 37906
DATE: 8/16/12

9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
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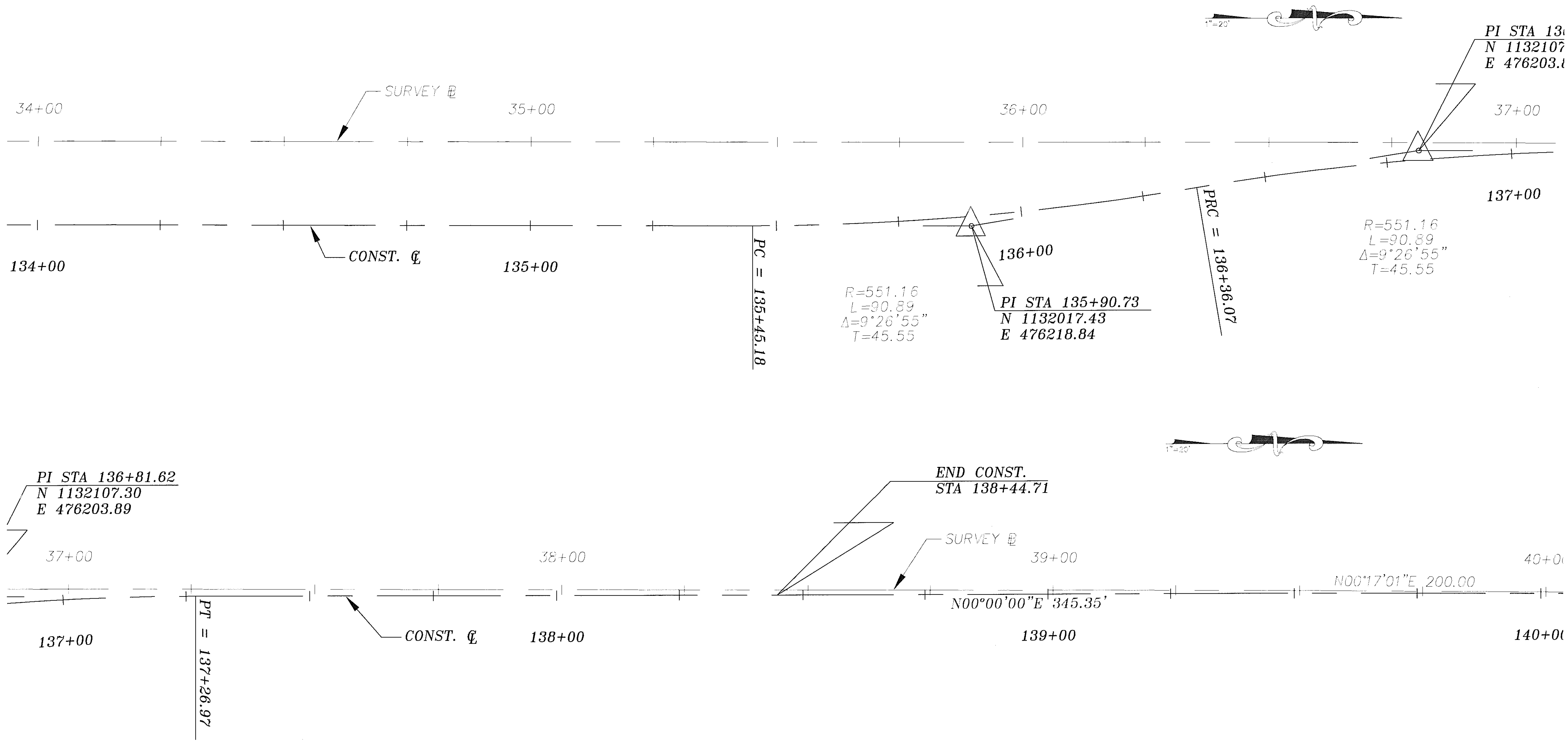

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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CIVILSURV — A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel. 863-646-4771 Certificate of Authorization No. 28...

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E. FLA. REG. NO. ... DATE 8/10/12

9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620LAYOUT.dwg, 8/10/2012 1:26:26 PM, \\cs-data\KONICA MINOLTA 423SeriesPCL

CSDG PROJ. NO.	SHEET NO.
024:001001	14

Horizontal Alignment Station and Curve Report.

```
Desc.  Station      Spiral/Curve Data          Northing       Easting
------------------------------------------------------------------------

------------------------------------------------------------------------
PI     110+00                                  1129426.78     476207.61
          Length:         200.02   Course:     N 00-02-55 E
------------------------------------------------------------------------
PI     112+00.02                               1129626.81     476207.78
          Length:         270.73   Course:     N 00-00-00 W
           Delta:        0-02-55
------------------------------------------------------------------------
                    Tangent Data
       110+00                                  1129426.78     476207.61
       112+00.02                               1129626.81     476207.78
          Length:         200.02   Course:     N 00-02-55 E
------------------------------------------------------------------------
PI     114+70.75                               1129897.53     476207.78
          Length:         461.39   Course:     N 00-05-03 E
           Delta:        0-05-03
------------------------------------------------------------------------
                    Tangent Data
       112+00.02                               1129626.81     476207.78
       113+70.75                               1129797.53     476207.78
          Length:         170.73   Course:     N 00-00-00 W
------------------------------------------------------------------------
                    Circular Curve Data
PC     113+70.75                               1129797.53     476207.78
RP                                             1129797.53     612323.08
PT     115+70.75                               1129997.53     476207.92
           Delta:       00-05-03     Type:          RIGHT
          Radius:      136115.30      DOC:       00-02-32
          Length:         200.00  Tangent:         100.00
         Mid-Ord:           0.04 External:           0.04
           Chord:         200.00   Course:     N 00-02-32 E
              Es:           0.04

------------------------------------------------------------------------
PI     119+32.14                               1130358.92     476208.45
          Length:          82.25   Course:     N 00-00-00 E
           Delta:        0-05-03
------------------------------------------------------------------------
                    Tangent Data
       115+70.75                               1129997.53     476207.92
       119+32.14                               1130358.92     476208.45
          Length:         361.39   Course:     N 00-05-03 E
------------------------------------------------------------------------
PI     120+14.39                               1130441.17     476208.45
          Length:         164.50   Course:     N 02-05-42 E
           Delta:        2-05-42
------------------------------------------------------------------------
                    Circular Curve Data
PC     119+32.14                               1130358.92     476208.45
RP                                             1130358.92     480706.78
PT     120+96.62                               1130523.37     476211.46
           Delta:       02-05-42     Type:          RIGHT
          Radius:        4498.33      DOC:       01-16-25
          Length:         164.48  Tangent:          82.25
         Mid-Ord:           0.75 External:           0.75
           Chord:         164.47   Course:     N 01-02-51 E
              Es:           0.75
```

```
Desc.  Station      Spiral/Curve Data          Northing       Easting
------------------------------------------------------------------------

------------------------------------------------------------------------
PI     121+78.87                               1130605.56     476214.47
          Length:          82.25   Course:     N 00-00-00 E
           Delta:        2-05-42
------------------------------------------------------------------------
                    Circular Curve Data
PC     120+96.62                               1130523.37     476211.46
RP                                             1130687.81     471716.14
PT     122+61.10                               1130687.81     476214.47
           Delta:       02-05-42     Type:           LEFT
          Radius:        4498.33      DOC:       01-16-25
          Length:         164.48  Tangent:          82.25
         Mid-Ord:           0.75 External:           0.75
           Chord:         164.47   Course:     N 01-02-51 E
              Es:           0.75

------------------------------------------------------------------------
PI     122+61.10                               1130687.81     476214.47
          Length:        1284.08   Course:     N 00-11-42 E
           Delta:        0-11-42

------------------------------------------------------------------------
PI     135+45.18                               1131971.88     476218.84
          Length:          45.55   Course:     N 00-00-00 E
           Delta:        0-11-42
------------------------------------------------------------------------
                    Tangent Data
       122+61.10                               1130687.81     476214.47
       135+45.18                               1131971.88     476218.84
          Length:        1284.08   Course:     N 00-11-42 E

------------------------------------------------------------------------
PI     135+90.73                               1132017.43     476218.84
          Length:          91.10   Course:     N 09-26-55 W
           Delta:        9-26-55
------------------------------------------------------------------------
                    Circular Curve Data
PC     135+45.18                               1131971.88     476218.84
RP                                             1131971.88     475667.68
PT     136+36.07                               1132062.37     476211.36
           Delta:       09-26-55     Type:           LEFT
          Radius:         551.16      DOC:       10-23-44
          Length:          90.89  Tangent:          45.55
         Mid-Ord:           1.87 External:           1.88
           Chord:          90.79   Course:     N 04-43-28 W
              Es:           1.88

------------------------------------------------------------------------
PI     136+81.62                               1132107.30     476203.89
          Length:         390.90   Course:     N 00-00-00 E
           Delta:        9-26-55
------------------------------------------------------------------------
                    Circular Curve Data
PC     136+36.07                               1132062.37     476211.36
RP                                             1132152.85     476755.05
PT     137+26.97                               1132152.85     476203.89
           Delta:       09-26-55     Type:          RIGHT
          Radius:         551.16      DOC:       10-23-44
          Length:          90.89  Tangent:          45.55
         Mid-Ord:           1.87 External:           1.88
           Chord:          90.79   Course:     N 04-43-28 W
              Es:           1.88

------------------------------------------------------------------------
PI     140+72.32                               1132498.20     476203.89
------------------------------------------------------------------------
                    Tangent Data
       137+26.97                               1132152.85     476203.89
       140+72.32                               1132498.20     476203.89
          Length:         345.35   Course:     N 00-00-00 E
```

GENERAL NOTES:

1. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE ENGINEER, WITHOUT DELAY, BY TELEPHONE.

2. EXISTING DRIVEWAYS WITHIN THE LIMITS OF THIS PROJECT ARE TO BE REPLACED AT THE SAME LOCATION AND WIDTH, UNLESS OTHERWISE SHOWN IN THE PLANS.

3. THE LOCATION OF UTILITIES SHOWN IN THE PLANS ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE CERTIFIED LOCATIONS/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN THESE POINTS HAVE NOT BEEN VERIFIED.

UTILITY OWNERS

MR. TOM WINGO
PEACE RIVER ELECTRIC COMPANY
P.O. BOX 1310
WAUCHULA, FL 33873

MS DENISE HUTTON
VERIZON
1701 RINGLING BLVD.
SARASOTA, FL 34236
(941) 906-6722 (OFFICE)

MR. JAMES FLEMING
BRIGHTHOUSE NETWORKS
P.O. BOX 25206
BRADENTON, FL 34206
(941) 748-3816 EXT. 24051 (OFFICE)
(941) 737-1352 (MOBILE)

MR. GREG COKER
FLORIDA POWER & LIGHT
1253 12TH AVENUE EAST
PALMETTO, FL 34221
(941) 723-4430 (OFFICE)
(941) 704-9087 (MOBILE)

MR. DAN SHANAHAN TECO
PEOPLES GAS
8261 VICO CT.
SARASOTA, FL 34240
(941) 342-4006 (OFFICE)

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
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Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28985

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

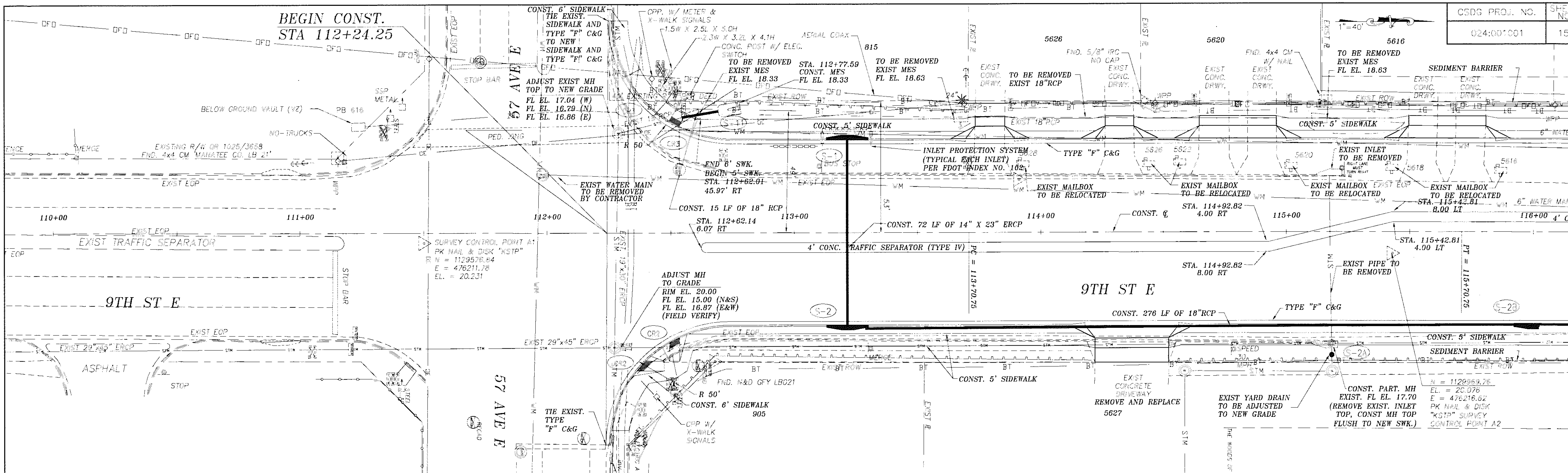
JOHN E. HOWLE, P.E.
FLA. REG. NO. 27534
DATE: 8/10/12

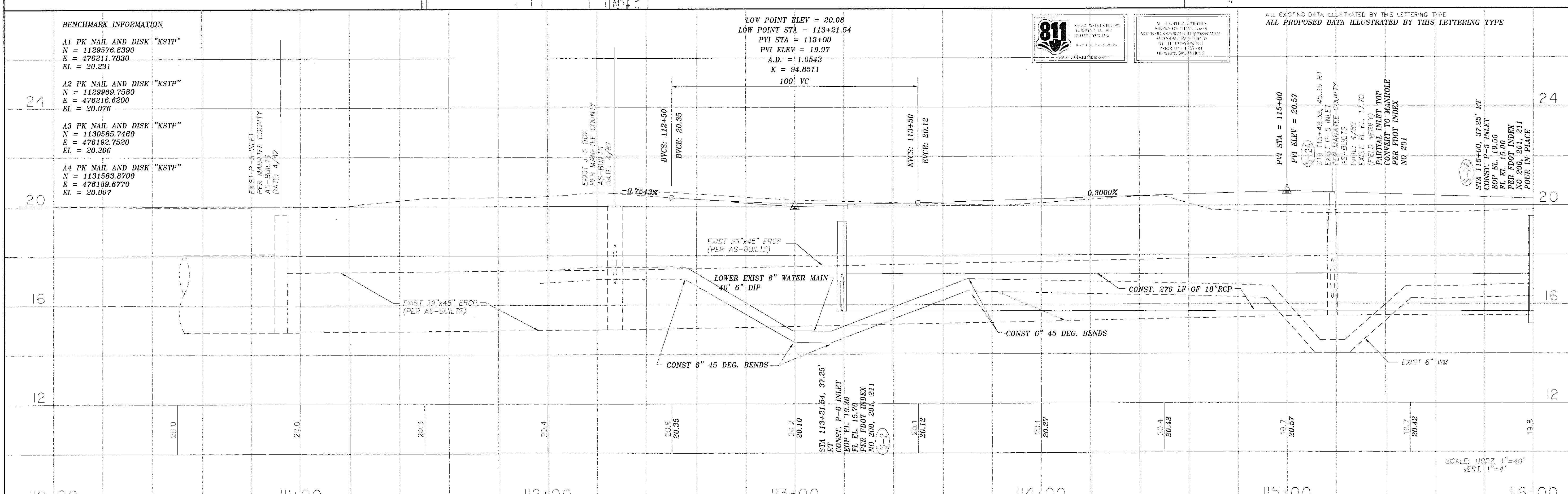
9TH ST E-4 LANE

PROJECT LAYOUT

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	15





REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2976 Cross Field Rd. Suite 7 Lakeland, FL 33811 Tel. 863-646-4771

Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

9TH ST E-4 LANE

PLAN & PROFILE SHEET

STA. 110+00 TO STA. 116+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156-20PP.dwg, 15, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	16

1" = 40'

STA. 117+13.56
76.06 LT
19.14+/-

5606
10' EXISTING UTILITY EASEMENT PER PLAT

STA. 117+37.33
76.06 LT
19.03+/-

5536
10' EXISTING UTILITY EASEMENT PER PLAT

AERIAL COAX
AERIAL FIBER OPTIC
SEDIMENT BARRIER (TYPICAL)

2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE

STA 119+00
BEGIN GRAVITY WALL W/ PICKET RAILING PER FDOT INDEX NO. 520, 860

REMOVE HEADWALL

CONST. 14"x23" PIPE THROUGH GRAVITY WALL FL 16.50

CONST. 12 LF OF 14"x23" ERCP

AERIAL COAX

2" PLASTIC GAS MAIN

15' EXISTING BUFFER PER PLAT BOOK 11 PAGE 106 CONDO

SURVEY CONTROL POINT A3
PK NAIL & DISK "KSTP"
N = 1143585.25
E = 476192.75
EL. = 20.206

SEDIMENT BARRIER

56 AVE. E.

40' EXISTING R/W PER PLAT

CONST. 5' SIDEWALK

6" WATER MAIN

ADJUST VALVE BOX

STOP SIGN ASSEM.

BUS STOP

(ASPHALT)

EXIST EOP

CONST. 275 LF OF 24"RCP

TYPE "F" C&G

3/4" PLASTIC SERVICE TO REMAIN IN PLACE AND SERVICE

CONST. CONC. JACKET PER FDOT INDEX NO. 280 FL 16.43 +/-

GAS PIPELINE MARKER

CONST. 5' SIDEWALK

EXIST EOP

END GRAVITY WALL AND PICKET RAILING STA 121+99.97 PER FDOT INDEX NO. 520, 860

EXIST WATER MAIN TO BE REMOVED BY CONTRACTOR

6" WATER MAIN

STA. 118+83.27

4' CONC. TRAFFIC SEPARATOR (TYPE IV)

CONST. 72 LF OF 29"x45" ERCP

STA. 120+33.36

"KSTP"

4' CONC. TRAF. SEP. (TYPE IV)

STA. 116+65.46
5.94 LT

CONST. ℄

CONST. 77 LF OF 18"RCP

9TH ST E

CONST. PART. MH TOP FLUSH TO SWK. STA. 118+62.58, 43.41 RT
EXIST INLET
EL. EL. 15.61 (N)
FL EL. 15.66 (E)
FL EL. 15.56 (S)

ASPHALT DRIVEWAY

25' EXISTING R/W PER DEED

EXIST 29"x45" ERCP

ADJUST TO GRADE
EXIST MH
TOP EL. 19.51
FL EL. 16.02 (N)
FL EL. 16.07 (E)

TYPE "D" CURB

STA. 121+82.77

TYPE "F" C&G

CONST. 165 LF OF 18"RCP

CONST. 5' SIDEWALK

EXIST SIDEWALK TO BE REMOVED

CONST. 40 LF 29" X 45" ERCP

CONST. 26' GATE

EXIST FENCE TO REMAIN

4' WOOD BOARD FENCE

66' EXISTING R/W PER DEED 1599/2632

BUS STOP SHELTER (TO REMAIN)

MATCH EXIST. SIDEWALK

BACKFLOW PREVENTOR

EXIST HANDRAIL TO BE REMOVED

5531

SEDIMENT BARRIER

PARKING LOT

FL EL. 16.12

ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE

LOW POINT ELEV = 19.83
LOW POINT STA = 117+64.27
PVI STA = 117+75
PVI ELEV = 19.74
A.D. = 0.7665
K = 130.1262
100' VC

BVCS: 117+25
BVCE: 19.89

STA 117+69.83, 37.25' RT
CONST. P-6 INLET
EOP EL. 19.11
FL EL. 14.65
PER FDOT INDEX NO 200, 201, 211

STA 117+85.82, 37.25' LT
CONST. P-6 INLET
EOP EL. 19.13
FL EL. 14.50
PER FDOT INDEX NO 200, 201, 211

EVCS: 118+25
EVCE: 19.97

PVI STA = 120+60
PVI ELEV = 20.79

STA 120+65, 37.25' LT
CONST. J-5 INLET
EOP EL. 20.27
FL EL. 14.00 (S)
FL EL. 12.75 (E)
PER FDOT INDEX NO 200, 201, 211

CONST. PARTIAL J-8 MH MATCH PROP. PAVT. EL. PER FDOT INDEX NO 200,201
EXIST EL. 16.54
FL EL. 16.02 (N)
FL EL. 16.07 (E)

-0.3018%
0.4667%
0.3000%

EXIST 29"x45" ERCP (PER AS-BUILTS)
CONST. 165 LF OF 18"RCP
EXIST 6" WM
CONST. 273 LF OF 24"RCP
CONST. 77 LF OF 18"RCP (SKEWED)
LOWER 6" WATER MAIN FL EL. 13.53
CONST. 4-6" 45 DEG. BENDS 40" OF 6" DIP
EXIST 29"x45" ERCP
FL EL. 14.00
FL EL. 13.10

19.8 20.27 | 20.0 20.12 | 20.0 19.97 | 20.0 19.84 | 20.2 19.89 | 20.2 20.09 | 20.2 20.32 | 20.3 20.56 | 20.2 20.79 | 20.1 20.94 | 20.3 21.09 | 19.8 21.24 | 19.7

SCALE: HORZ. 1"=40'
VERT. 1"=4'

116+00 | 117+00 | 118+00 | 119+00 | 120+00 | 121+00 | 122+00

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description
8/9/11	RVD	VALVE ⚠						

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWARD, P.E.
FL REG. NO. 71584
DATE: 8/10/12

9TH ST E.-4 LANE

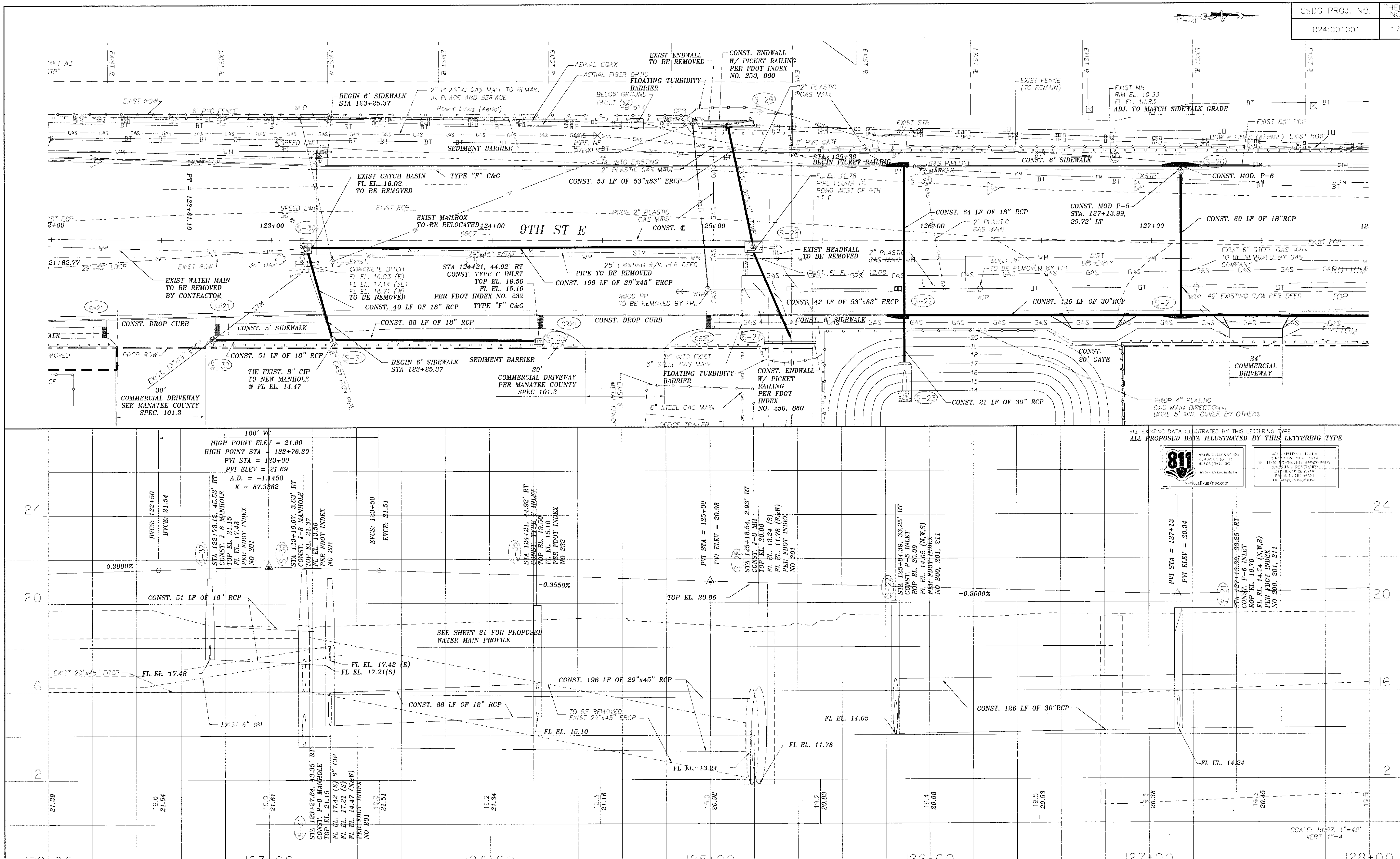
PLAN & PROFILE SHEET

STA. 116+00 TO STA. 122+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\171562PP.dwg, 16, 12

CSDG PROJ. NO.	SHEET NO.
024:001001	17


1"=40'
9TH ST E
EXIST ROW
8' PVC FENCE
BEGIN 6' SIDEWALK STA 123+25.37
2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE
AERIAL COAX
AERIAL FIBER OPTIC
FLOATING TURBIDITY BARRIER
BELOW GROUND VAULT (VZ)
EXIST ENDWALL TO BE REMOVED
CONST. ENDWALL W/ PICKET RAILING PER FDOT INDEX NO. 250, 860
2" PLASTIC GAS MAIN
EXIST FENCE (TO REMAIN)
EXIST MH RIM EL. 16.33 FL EL. 10.83 ADJ. TO MATCH SIDEWALK GRADE
EXIST 60" RCP
POWER LINES (AERIAL)
EXIST ROW
SEDIMENT BARRIER
STA. 125+36 BEGIN PICKET RAILING
CONST. 6' SIDEWALK
CONST. MOD. P-6
EXIST CATCH BASIN FL EL. 16.02 TO BE REMOVED
TYPE "F" C&G
CONST. 53 LF OF 53"x83" ERCP
FL EL. 11.78 PIPE FLOWS TO POND WEST OF 9TH ST E.
CONST. 64 LF OF 18" RCP
CONST. MOD P-5 STA. 127+13.99, 29.72' LT
CONST. 60 LF OF 18"RCP
EXIST MAILBOX TO BE RELOCATED
CONST. ℄
EXIST HEADWALL TO BE REMOVED
EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY
EXIST WATER MAIN TO BE REMOVED BY CONTRACTOR
EXIST. CONCRETE DITCH FL EL. 16.93 (E) FL EL. 17.14 (SE) FL EL. 16.71 (W) TO BE REMOVED
STA 124+21, 44.92' RT CONST. TYPE C INLET TOP EL. 19.50 FL EL. 15.10 PER FDOT INDEX NO. 232 TYPE "F" C&G
PIPE TO BE REMOVED
CONST. 196 LF OF 29"x45" ERCP
25' EXISTING R/W PER DEED
WOOD PP TO BE REMOVED BY FPL
CONST. 40 LF OF 18" RCP
CONST. 42 LF OF 53"x83" ERCP
CONST. 126 LF OF 30"RCP
40' EXISTING R/W PER DEED
CONST. DROP CURB
CONST. 5' SIDEWALK
CONST. 88 LF OF 18" RCP
CONST. 6' SIDEWALK
CONST. 51 LF OF 18" RCP
TIE EXIST. 8" CIP TO NEW MANHOLE @ FL EL. 14.47
BEGIN 6' SIDEWALK STA 123+25.37
SEDIMENT BARRIER
30' COMMERCIAL DRIVEWAY PER MANATEE COUNTY SPEC 101.3
30' COMMERCIAL DRIVEWAY SEE MANATEE COUNTY SPEC. 101.3
TIE INTO EXIST 6" STEEL GAS MAIN
CONST. ENDWALL W/ PICKET RAILING PER FDOT INDEX NO. 250, 860
CONST. 20' GATE
24' COMMERCIAL DRIVEWAY
CONST. 21 LF OF 30" RCP
PROP 4" PLASTIC GAS MAIN DIRECTIONAL BORE 5' MIN. COVER BY OTHERS
ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE
100' VC
HIGH POINT ELEV = 21.60
HIGH POINT STA = 122+76.20
PVI STA = 123+00
PVI ELEV = 21.69
A.D. = -1.1450
K = 87.3362
BVCS: 122+50
BVCE: 21.54
EVCS: 123+50
EVCE: 21.51
0.3000%
-0.3550%
-0.3000%
PVI STA = 125+00
PVI ELEV = 20.98
PVI STA = 127+13
PVI ELEV = 20.34
CONST. 51 LF OF 18" RCP
SEE SHEET 21 FOR PROPOSED WATER MAIN PROFILE
EXIST 29"x45" ERCP
FL EL. 17.48
FL EL. 17.42 (E)
FL EL. 17.21(S)
CONST. 88 LF OF 18" RCP
CONST. 196 LF OF 29"x45" RCP
TO BE REMOVED EXIST 29"x45" ERCP
FL EL. 15.10
FL EL. 13.24
FL EL. 11.78
FL EL. 14.05
CONST. 126 LF OF 30"RCP
FL EL. 14.24
TOP EL. 20.86
SCALE: HORZ. 1"=40' VERT. 1"=4'
122+00
123+00
124+00
125+00
126+00
127+00
128+00

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel: 863-646-4771

Certificate of Authorization No. 28985

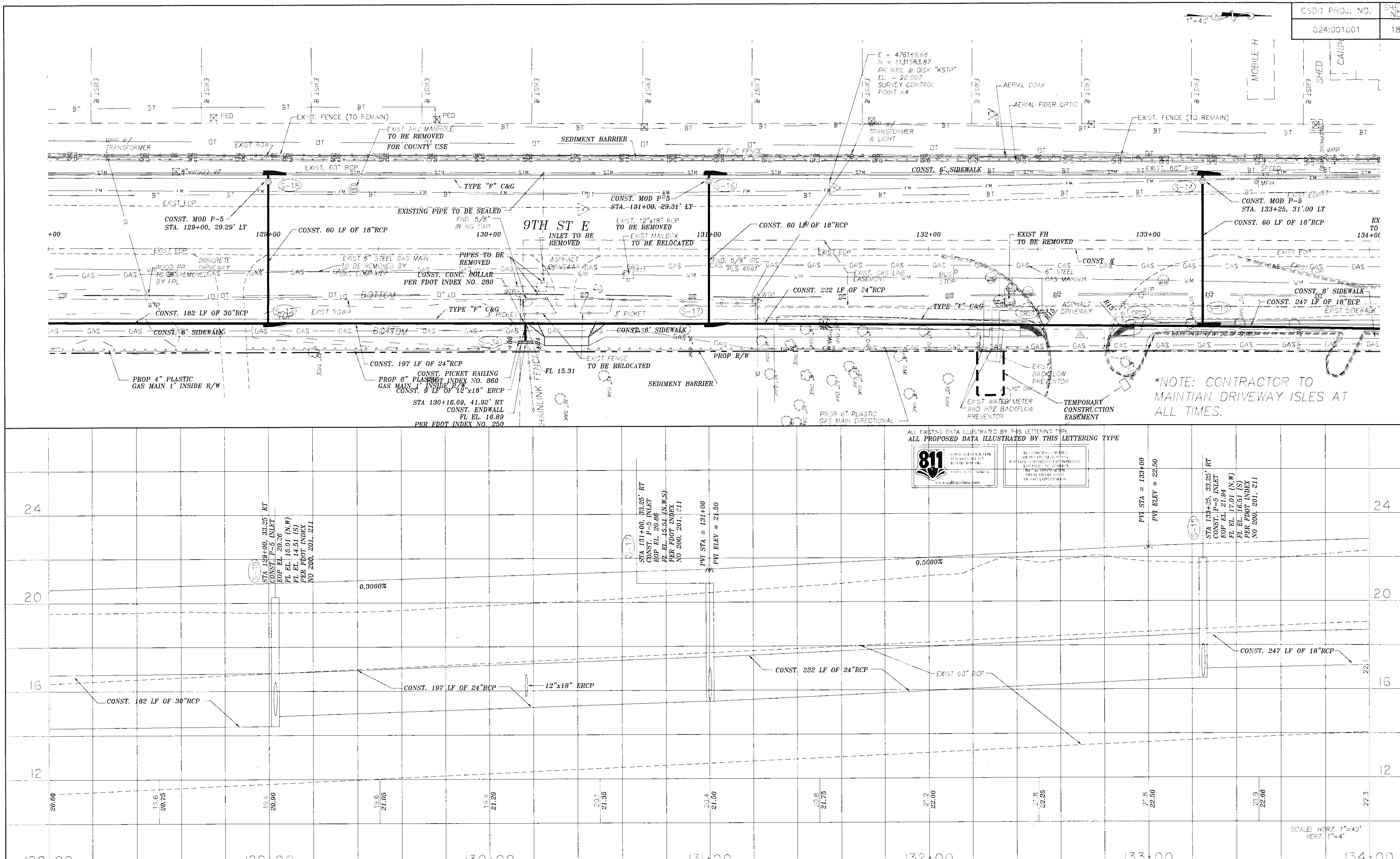
	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

9/10/12

9TH ST E 4 LANE
PLAN & PROFILE SHEET
STA. 122+00 TO STA. 128+00
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20PP.dwg, 17, 12

CSDG PROJ. NO.	SHEET NO.
024:001001	18



REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description
8/9/11	RVD	VALVE BOXES ⚠						

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28985

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 27434
DATE: 8/10/12

9TH ST E-4 LANE

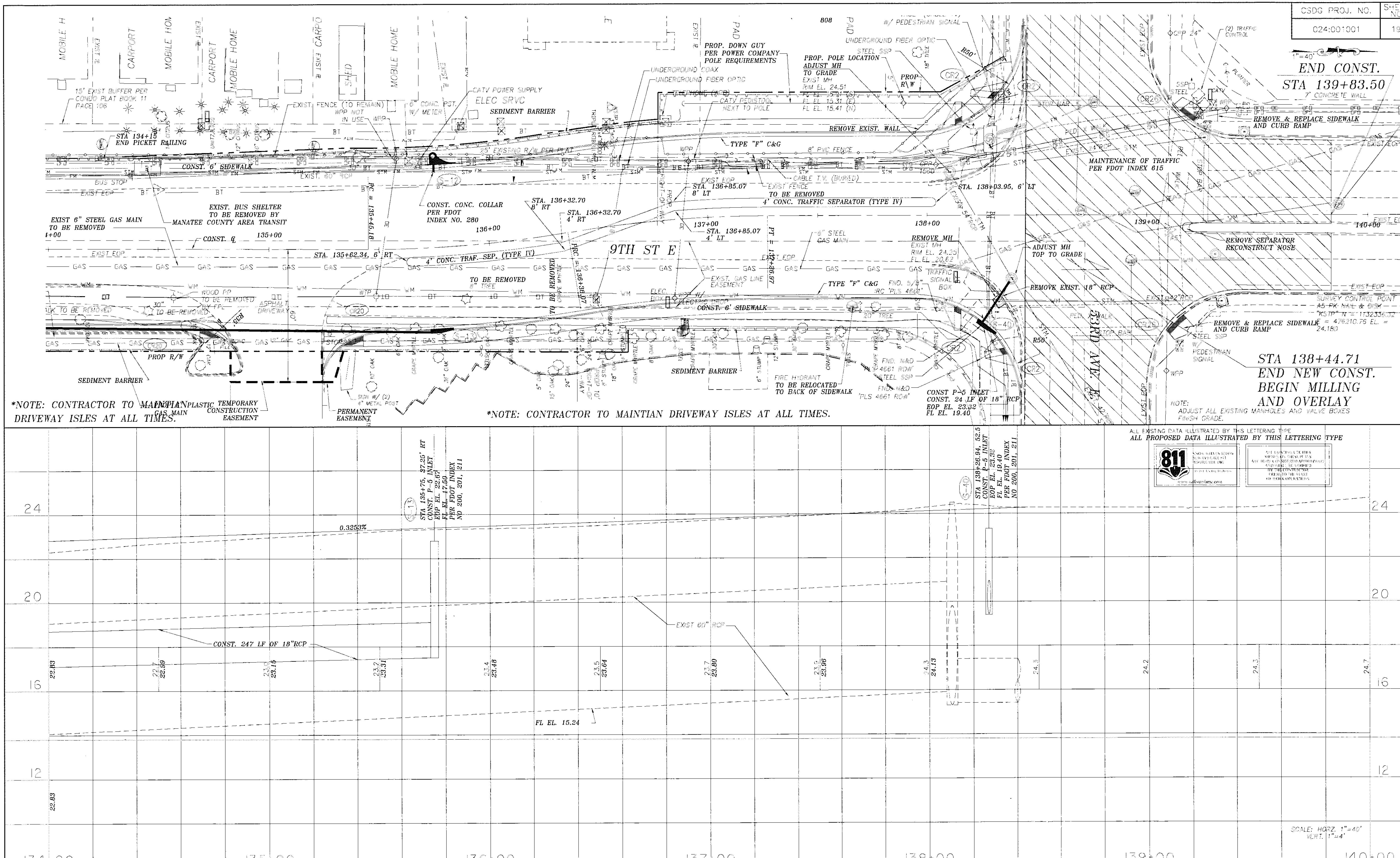
PLAN & PROFILE SHEET

STA. 128+00 TO STA. 134+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620PP.dwg, 18, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	19



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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Certificate of Authorization No. 28958

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HAWLEY P.E.
FLA. REG. NO. 23584
DATE: 2/10/12

9TH ST E-4 LANE

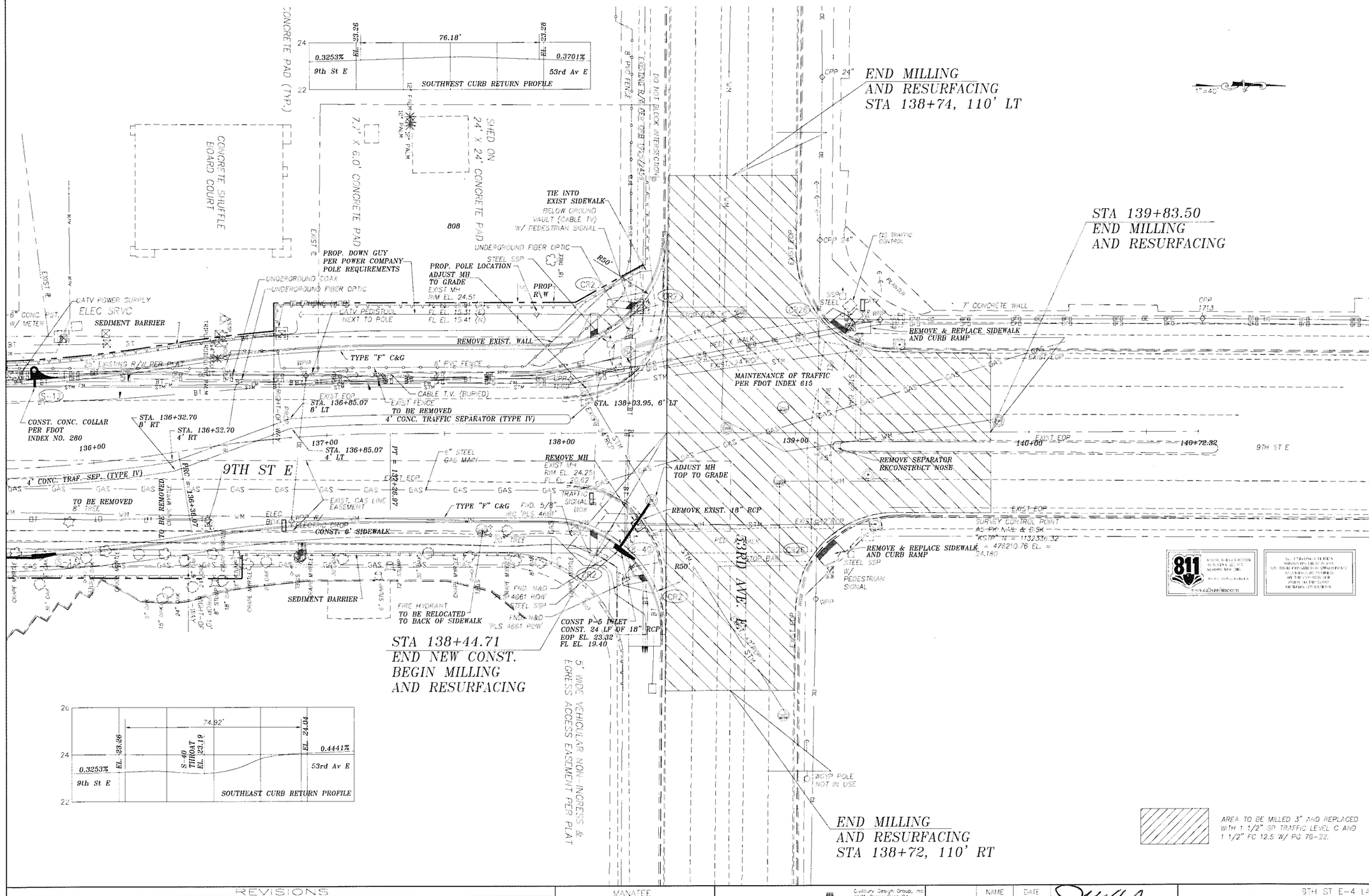
PLAN & PROFILE SHEET

STA. 134+00 TO STA. 140+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620PP.dwg, 19, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	20



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

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Suite 7
Lakeland, FL 33811
Tel.: 863-646-4721
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HEWLE, P.E. FLA. REG. NO. 27884
DATE: 8/16/12

9TH ST E-4 LANE
INTERSECTION PLAN @ 53RD AVE E AND 9TH E
MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	21

SHUT DOWN LINE BETWEEN 10:00 AM & 3:00 PM
NOTIFY EFFECTED CUSTOMERS 48 HRS
PRIOR TO SHUTTING DOWN LINE

EXIST PVC TIE PROP. WATERMAIN TO EXIST WATERMAIN

SAMPLE POINT #1

CONST. 6" 45° BEND
STA 123+20, 12' RT

CONST. 6" 45° BEND
STA 123+32.32, 42' RT

3' SEPERATION

9TH ST E

CONST. ℄

25' EXISTING R/W PER DEED

WOOD PP
TO BE REMOVED BY FPL

TELEPHONE LINE TO
BE RELOCATED BY
TELEPHONE COMPANY

EXIST FL EL. GAS 12.08

FL EL. 11.78
PIPE FLOWS TO
POND WEST OF 9TH
ST E.

EXIST WATERMAIN TO BE REMOVED
CONNECT SERVICES TO NEW WATERMAIN
PRIOR TO TAKING OUT OF SERVICE

2" PLASTIC
GAS MAIN
(TO BE REMOVED)

WOOD PP
TO BE REMOVED BY FPL

EXIST FIRE HYDRANT
TO BE REMOVED

PROPOSED GAS MAIN

CONST. 6" GATE VALVE

CONSTRUCT
FIRE HYDRANT ASSEMBLY
STA 127+02, 43.66 RT

EXIST 6" STEEL GAS MAIN
TO BE REMOVED BY GAS
COMPANY

WOOD PP
TO BE REMOVED
BY FPL

EXIST WATER MAIN
TO BE REMOVED

CONST.
6" WATERMAIN

40' EXISTING R/W PER DEED

TOP

BOTTOM

CONST. 130 LF OF DUCTILE IRON

PROP 20"
DRAINAGE
EASEMENT

6" STEEL GAS MAIN

OFFICE TRAILER
12' X 36'

EXIST 6" METAL FENCE (STRADDLE)

NOTE: COORDINATE INSTALLATION OF WATER MAIN
UNDER 9TH STREET E. WITH CONSTRUCTION PHASES

EXIST 2" PLASTIC GAS MAIN

EXIST STR W/ SIGN

6" PVC GATE

GAS PIPELINE MARKER

EXIST MH
RIM EL. 19.33
FL EL. 10.83

CP 15' DRAINAGE EASEMENT

EXIST 60' ROW

POWER LINES (AERIAL) EXIST ROW

XFMR W/ TRANSFORMER

EXIST ROW

EXIST FENCE (TO REMAIN)

EXIST EOP

DIRT DRIVEWAY

CONCRETE DRIVEWAY

WOOD PP TO BE REMOVED BY FPL

EXIST 29"x45" ERCP

ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE

= 123+00
= 21.69
−1.15
87.34
VC

EVCS: 123+50
EVCE: 21.27

PVI STA = 125+00
PVI ELEV = 20.00

PVI STA = 127+20
PVI ELEV = 19.34

−0.65%

−0.30%

24" MIN. COVER

36" MIN. COVER

PROP 6" WATERMAIN

130' 6" DUCTILE IRON WATERMAIN

PROP 6" GAS MAIN

PROP 6" WATERMAIN

21.55 | 19.4 21.44 | 19.0 21.27 | 19.1 | 19.2 20.85 | 19.3 | 19.3 20.42 | 19.1 | 19.2 20.00 | 18.9 | 19.2 19.85 | 19.4 | 19.4 19.70 | 19.3 | 19.2 19.55 | 19.5 | 19.2 19.40 | 19.5 | 19.5 19.44 | 19.4 | 19.5 19.61 | 19.5 | 19.6 19.77 | 19.6 | 19.6

123+00 | 124+00 | 125+00 | 126+00 | 127+00 | 128+00 | 129+00

24 | 20 | 16 | 12

SCALE: HORZ. 1"=40'
VERT. 1"=4'

*NOTES:
1. ALL FITTINGS FOR 6" WATER MAIN ARE TO BE RESTRAINED. COST FITTINGS AND RESTRAINTS TO BE INCLUDED IN THE COST OF THE PIPE.
2. SEE SHEET 62 FOR RESTRAINT DETAIL.
3. INSTALLATION OF 6" WATER MAIN TO INCLUDE THE COST OF TESTING, SAMPLING, AND AS-BUILTS FOR DEP CERTIFICATION.
4. TIE-IN EXISTING 6" WATERMAIN TO INCLUDE THE COST OF SLEEVES AND RESTRAINING EXISTING WATERMAIN.
5. INSTALL 3M MAGNETIC MARKERS AT EACH GATE AND PLUG VALVE. MARKERS TO BE INSTALLED BESIDE VALVE BOX 12" MIN – 18" MAX BELOW FINAL GRADE.
6. EXIST. 6" WATERMAIN TO REMAIN IN SERVICE UNTIL NEW 6" WATERMAIN IS CONSTRUCTED, PRESSURE TESTED, CLEARED BY FDEP, AND PUT INTO SERVICE.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY
GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2505 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-666-4711
Certificate of
Authorization
No. 28488

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 47884
DATE: 12/10/12

9TH ST E-4 LANE

WATER MAIN RELOCATION

STA. 123+00 TO STA. 129+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17152020WATER.dwg, 21, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	22

1"=40'

EXIST. FENCE (TO REMAIN)
EXIST. MH MANHOLE TO BE REMOVED FOR COUNTY USE
SEDIMENT BARRIER
EXIST. 42" RCP
PROP 15' DRAINAGE UTILITY EASEMENT
E = 475189.68
N = 1131583.87
PK NAIL & DISK "KSTP"
EL. = 20.007
SURVEY CONTROL POINT A4
AERIAL COAX
AERIAL FIBER OPTIC
TRANSFORMER & LIGHT
EXIST. FENCE (TO REMAIN)
15' EXIST BUFFER PER CONDO PLAT BOOK 11 PAGE 106
STA 134+16 END PICKET RAILING
EXIST. 60" RCP
BUS STOP
EXIST EOP
FND. 5/8" IR NO CAP
9TH ST E
EXIST. 12"x18" RCP
FND. 5/8" IRC "PLS 4681"
130+00
131+00
132+00
133+00
134+00
END WATERMAIN CONST. UNDER PERMIT #0133068-989-DSGP/02
BEGIN NEW PERMITTED WATERMAIN
EXIST FH TO BE REMOVED
CONST. G
EXIST 6" STEEL GAS MAIN TO BE REMOVED
EXIST. BUS SHEL TO BE REMOVED MANATEE COUNTY AREA TR
EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY
EXIST. GAS LINE EASEMENT
EXIST WATER MAIN TO BE REMOVED
ASPHALT DRIVEWAY
CONST. 6" GATE VALVE, M1
WOOD PP TO BE REMOVED BY FPL
EXIST ROW
TOP
BOTTOM
3' PICKET
EXISTING R/W 53.5' DED.
PROP R/W
PROP 6" PLASTIC GAS MAIN 1' INSIDE R/W
CHAINLINK FENCE
SEDIMENT BARRIER
CONST. 6" WATERMAIN RECONNECT ALL WATER SERVICES
SAMPLE PT #2
CONST. 15 LF OF 6" FIREMAIN
RELOCATE 6" BACKFLOW PREVENTER AND TWO 2" ABOVE GROUND WATER METERS – RELOCATE AFTER BUSINESS HOURS.
TEMPORARY CONSTRUCTION EASEMENT
PROP 6" PLASTIC GAS MAIN DIRECTIONAL BORE 5' MIN. COVER
CONST. FIRE HYDRANT ASSY. 132+16.98, 41.38' RT
PROP 6" PLASTIC TEMPORARY CONSTRUCTION EASEMENT
ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE

*NOTES:
1. ALL FITTINGS FOR 6" WATERMAIN ARE TO BE RESTRAINED. COST OF FITTINGS AND RESTRAINTS TO BE INCLUDED IN THE COST OF THE PIPE.
2. SEE SHEET 62 FOR RESTRAINT DETAIL.
3. INSTALLATION OF 6" WATERMAIN TO INCLUDE THE COST OF TESTING, SAMPLING, AND ASBUILTS FOR DEP CERTIFICATION.
4. TIE-IN EXISTING 6" WATERMAIN TO INCLUDE THE COST OF SLEEVES AND RESTRAINING EXISTING WATERMAIN.
5. INSTALL 3M MAGNETIC MARKERS AT EACH GATE AND PLUG VALVE. MARKERS TO BE INSTALLED BESIDE VALVE BOX 12" MIN – 18" MAX BELOW FINAL GRADE
6. EXIST. 6" WATERMAIN TO REMAIN IN SERVICE UNTIL NEW 6" WATERMAIN IS CONSTRUCTED, PRESSURE TESTED, CLEARED BY FDEP, AND PUT INTO SERVICE.

811 SUNSHINE STATE ONE CALL OF FLORIDA, INC. — IT'S THE LAW!

PVI STA = 131+00
PVI ELEV = 20.60
PVI STA = 133+00
PVI ELEV = 22.50
0.33%
0.55%
36" MIN. COVER
18" MIN. COVER
PROP 6" WATERMAIN
PROP 6" GAS MAIN
EXIST 60" RCP

	12.6	19.6	18.7	19.9	20.6	20.1	20.3	20.4	20.6	20.8	21.0	21.2	21.7	21.8	22.1	21.8	21.8	21.4	22.1	22.3	22.5	22.7	22.8	23.2
18.1		20.10		20.27		20.43		20.60		21.08		21.55		22.02		22.50		22.66		22.83		22.99		

24
20
16
12
129+00
130+00
131+00
132+00
133+00
134+00
135+00

SCALE: HORZ. 1"=40'
VERT. 1"=4'

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering
CivilSurv Design Group, Inc
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28668

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

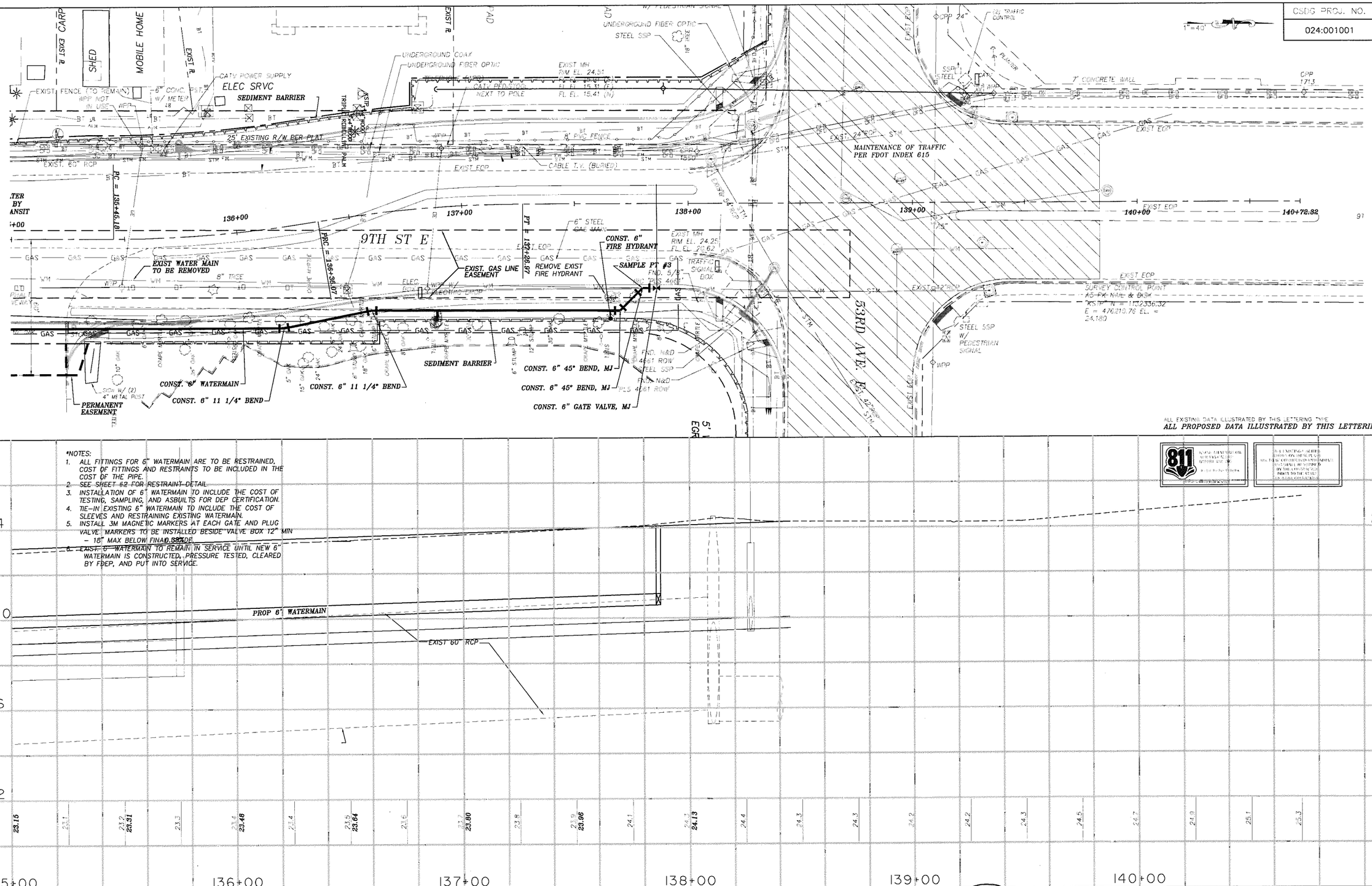
JOHN E. HOFFER, P.E. FLORIDA REG. NO. 57664
DATE: 9/10/12

9TH ST E-4 LANE
WATER MAIN RELOCATION
STA. 129+00 TO STA. 135+00
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156201WATER.dwg, 22, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	22A

1"=40'



ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE

811 — KNOW WHAT'S BELOW ... CALL BEFORE YOU DIG

THE EXISTING UTILITIES SHOWN ON THESE PLANS ARE BASED ON INFORMATION OBTAINED FROM RECORDS SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES AND/OR FIELD SURVEYS BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.

*NOTES:

1. ALL FITTINGS FOR 6" WATERMAIN ARE TO BE RESTRAINED. COST OF FITTINGS AND RESTRAINTS TO BE INCLUDED IN THE COST OF THE PIPE.
2. SEE SHEET 62 FOR RESTRAINT DETAIL.
3. INSTALLATION OF 6" WATERMAIN TO INCLUDE THE COST OF TESTING, SAMPLING, AND ASBUILTS FOR DEP CERTIFICATION.
4. TIE-IN EXISTING 6" WATERMAIN TO INCLUDE THE COST OF SLEEVES AND RESTRAINING EXISTING WATERMAIN.
5. INSTALL 3M MAGNETIC MARKERS AT EACH GATE AND PLUG VALVE. MARKERS TO BE INSTALLED BESIDE VALVE BOX 12" MIN – 18" MAX BELOW FINAL GRADE.
6. EXIST. 6" WATERMAIN TO REMAIN IN SERVICE UNTIL NEW 6" WATERMAIN IS CONSTRUCTED, PRESSURE TESTED, CLEARED BY FDEP, AND PUT INTO SERVICE.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CivilSurv Design Group, Inc.
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Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FLA. REG. NO. 27851
DATE 9/19/12

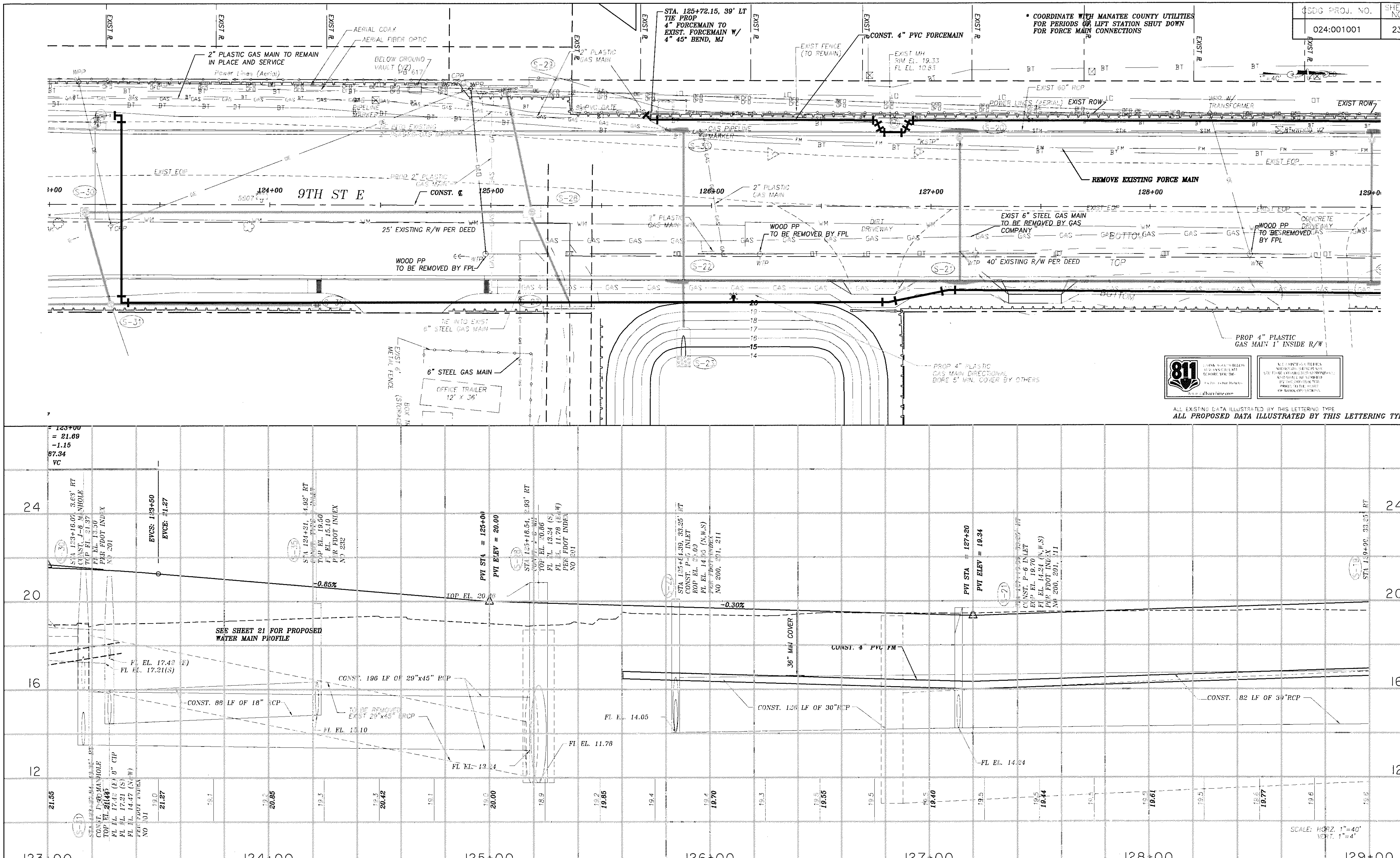
9TH ST E-4 LANE

WATER MAIN RELOCATION

STA. 135+00 TO STA. 140+00

MANATEE COUNTY, FLORIDA

V:\Projects\171560.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\171560WATER.dwg, 22A, 1:2



REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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CIVILSURV
A Tradition of Innovative Engineering

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Certificate of Authorization No. 28908

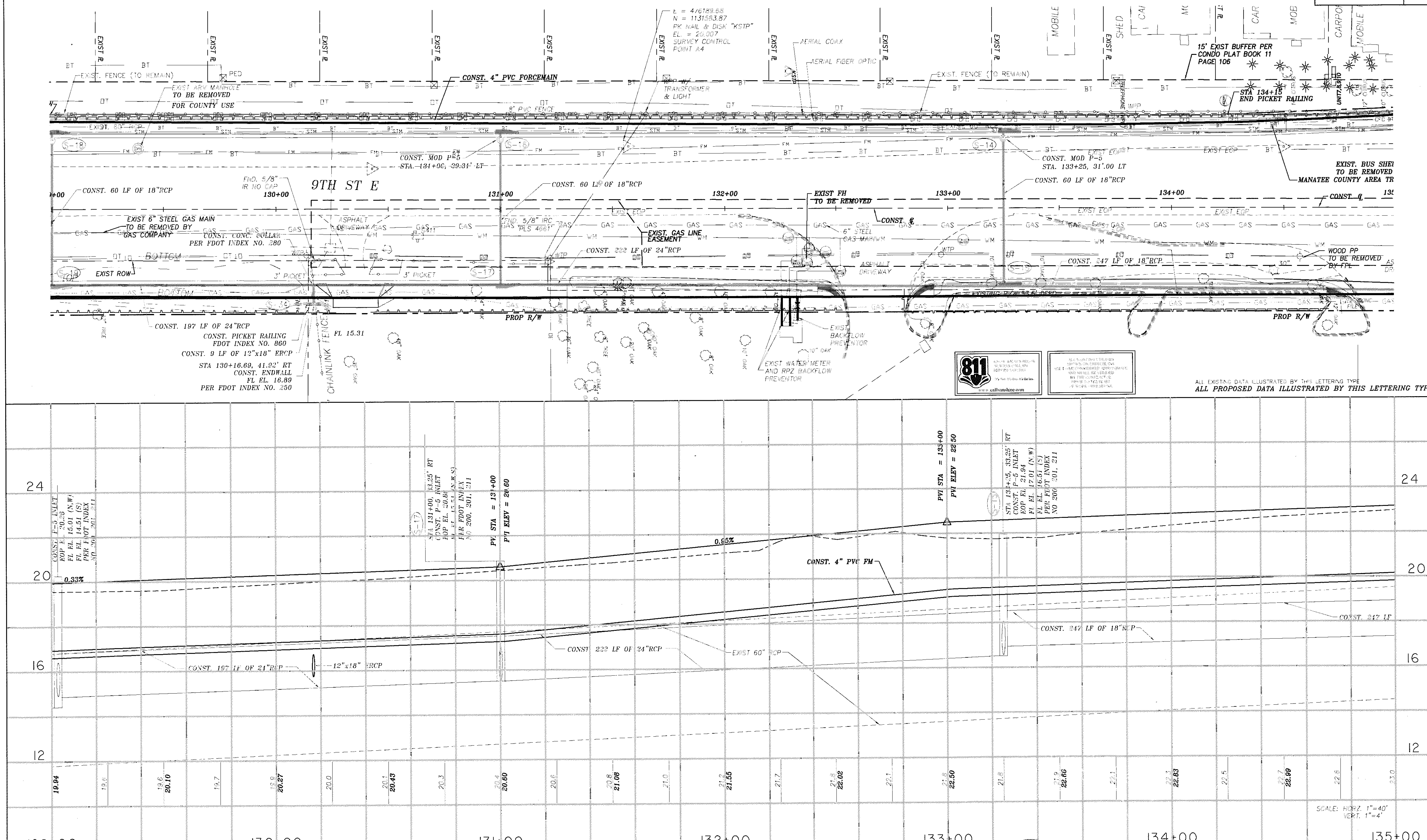
	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 27564
DATE: 6/19/12

9TH ST E-4 LANE
SANITARY FORCE MAIN RELOCATION
STA. 123+00 TO STA. 129+00
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\171562OSEWER.dwg, 23, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	24



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771

Certificate of Authorization No. 28968

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 27584
DATE: 8/10/12

9TH ST E-4 LANE

SANITARY FORCE MAIN RELOCATION

STA. 129+00 TO STA. 135+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620SEWER.dwg, 8/10/2012 2:48:15 PM, \\cs-data\KONICA MINOLTA 423SeriesPCL

CSDG PROJ. NO.	SHEET NO.
024:001001	25

1"=40'

CONST. 4" PVC FORCEMAIN

TIE PROP. FORCEMAIN TO EXIST FORCEMAIN

PROP. DOWN GUY PER POWER COMPANY POLE REQUIREMENTS

PROP. POLE LOCATION ADJUST MH TO GRADE

PROP R/W

EXIST. FENCE (TO REMAIN)

6" CONC. PST. W/ METER

WPP NOT IN USE

CATV POWER SUPPLY

ELEC SRVC

EXISTING R/W PER PLAT

EXIST. EOP

CONST. 4" ISOLATION GATE VALVE

CONST. 1-4" 45° BEND

MAINTENANCE OF TRAFFIC PER FDOT INDEX 615

7' CONCRETE WALL

CPP 1713

EXIST EOP

9TH ST E

EXIST. GAS LINE EASEMENT

REMOVE MH

ADJUST MH TOP TO GRADE

REMOVE SEPARATOR RECONSTRUCT NOSE

REMOVE EXIST. 18" RCP

53RD AVE. E.

SURVEY CONTROL POINT
45 PK NAIL & DISK
"CP 13" N = 1413316.32
E = 476210.79 EL. = 24.180

STEEL SSP W/ PEDESTRIAN SIGNAL

TRAFFIC SIGNAL BOX

FND. 5/8" IRC PLS 4661

FND. N&D 4661 ROW

STEEL SSP

CONST P-5 INLET

CONST. 34 LF 20 OF 18" RCP

PC = 135+45.18

PT = 137+36.97

PRC = 138+36.07

136+00

137+00

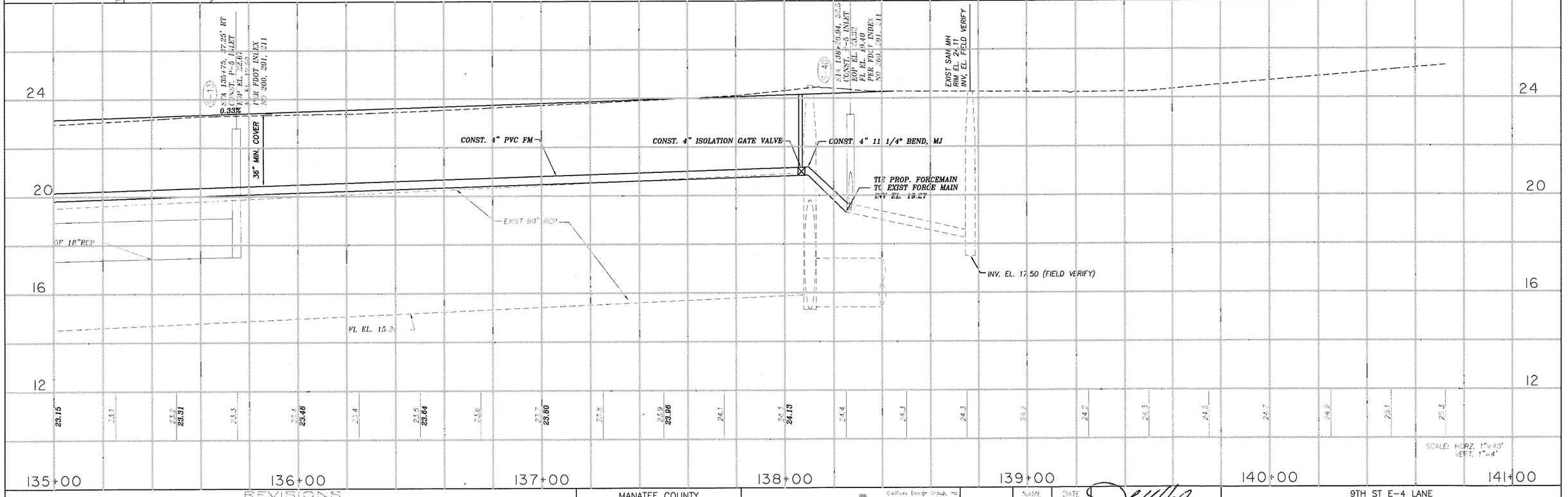
138+00

139+00

140+00

140+72.32

ALL EXISTING DATA ILLUSTRATED BY THIS LETTERING TYPE
ALL PROPOSED DATA ILLUSTRATED BY THIS LETTERING TYPE



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

Civilsurv Design Group, Inc.
3925 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28938

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, PE.
FLA. REG. NO. 52584
DATE: 10/10/12

9TH ST E-4 LANE

SANITARY FORCE MAIN RELOCATION

STA. 135+00 TO STA. 141+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156209SEWER.dwg, 8/10/2012 2:49:13 PM, \\cs-data\KONICA MINOLTA 423SeriesPCL

CSDG PROJ. NO.	SHEET NO.
024:001001	26

TYPE "D" CURB

TYPE "F" C&G

CONST. 5' SIDEWALK

CONST. 40 LF 29" X 45" ERCP

CONST. 20' GATE

10' TEMPORARY CONST. ESMT.

BEGIN SHEET PILE
STA. 121+27,
64.95' RT

CONST. TYPE B 6' CHAINLINK FENCE

CONST. DOUBLE 20' GATE

EXIST MES
FL EL. 16.81

PROP RIGHT-OF-WAY

CONST. POND A
TOP ELEV. 20.00
BOTTOM EL. 12.00

PRC = 120+96.62

STA. 120+87, 78.81' RT
CONST MES
FL ELEV. 12.00
PER FDOT INDEX
NO. 272

STA 120+66, 148.06' RT
CONST. DBI INLET
TYPE D MODIFIED
TOP ELEV. 19.60
FL. ELEV. 16.10
PER FDOT INDEX
NO 232

STA. 120+65, 37.25' RT
CONST P-5 INLET
EOP EL. 20.27
FL EL. 13.00 (W)
FL. EL. 12.70 (E)
PER FDOT INDEX
NO. 211

END SHEET PILE
STA. 120+52,
229.92' RT

STING R/W PER DEED

CONST. 118 LF OF 24" RCP

CONST. 8 LF
OF 18" RCP

STA. 120+51.19, 28.11' RT
CONST STM J-8 MH
RIM EL. 20.38
FL ELEV. 15.87
PER FDOT INDEX
NO. 200, 201

STA. 120+54.48, 148.35' RT
CONST STM P-8 MH
RIM EL. 20.10
FL ELEV. 16.05
PER FDOT INDEX
NO. 200, 201

ASPHALT DRIVEWAY

PARKING LOT

EXIST 15" RCP

INLET
TOP EL. 19.74
INV EL. 16.92 (SE)
INV EL. 17.05 (W)
INV EL. 16.68 (N)

15" PALM
18" PALM
26" PINE
24" PINE
24" PALM
28" PINE
16" PINE

6" HOLLY
8" ORNAMENTAL

R35

S-6 S-7 S-8 S-9 S-10

A 21 B 21 C 21

CR21

1"=20'

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28088

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

DATE: 7/10/12

9TH ST E-4 LANE

POND A PLAN

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156POND.dwg, 26, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	27

CONST. 6' SIDEWALK

CONST. MOD P-5
STA. 127+13.99,
29.72' LT

CONST. 64 LF OF 18" RCP

2" PLASTIC GAS MAIN

CONST. 126 LF OF 30"RCP

WOOD PP TO BE REMOVED BY FPL

CONST. DOUBLE 20' GATE

CONST. 20' GATE

CONST. TYPE B 6' CHAINLINK FENCE

PROP RIGHT-OF-WAY

CONST. 21 LF OF 30" RCP

CONST. POND B
TOP ELEV. 20.00
BOTTOM EL. 14.00

STA. 125+84.39 60.80' RT
CONST. MES
FL. ELEV. 14.00
PER FDOT INDEX
NO 272

STA. 125+73.84 148' RT
CONST. TYPE D MODIFIED
INLET TOP ELEV. 19.70
FL ELEV. 15.40
PER FDOT INDEX
NO. 232
SEE SHEET 67

20' EXISTING DRAINAGE EASEMENT
PER O.R. BOOK 1164 PG 3803,
O.R. BOOK 1164 PG 3805,
O.R. BOOK 1164 PG 3809,
O.R. BOOK 1164 PG 3811, &
O.R. BOOK 1164 PG 3813

CONST. 35 LF
OF 24" RCP

STA. 125+36
BEGIN PICKET RAILING

EXIST. HEADWALL
TO BE REMOVED

CONST. 42 LF OF 53"X83" ERCP

CONST. 6' SIDEWALK

PROP 28' DRAINAGE EASEMENT

CONST. ENDWALL W/ PICKET RAILING PER FDOT INDEX NO. 550, 860

STA. 125+33.41 148' RT
CONST. ENDWALL
FL. ELEV. 15.00
PER FDOT INDEX
NO. 250

TOP OF BANK

TOE OF BANK

DITCH HAS DEBRIS FROM HURRIC

WETLAND IMPACT

EXIST. 52"X72" FCMP

S-22 S-23 S-24 S-25 S-28 S-33

D 21

E 21

1"=20'

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
Civilsurv Design Group, Inc.
2525 State Road 60 E.
Suite 7
Lakeland, FL 33811
Tel: 863-686-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 57961
DATE: 9/19/12

9TH ST E-4 LANE

POND B PLAN

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156ZPOND.dwg, 27, 1:2

CSDG PROJ. NO.	SHEET NO.
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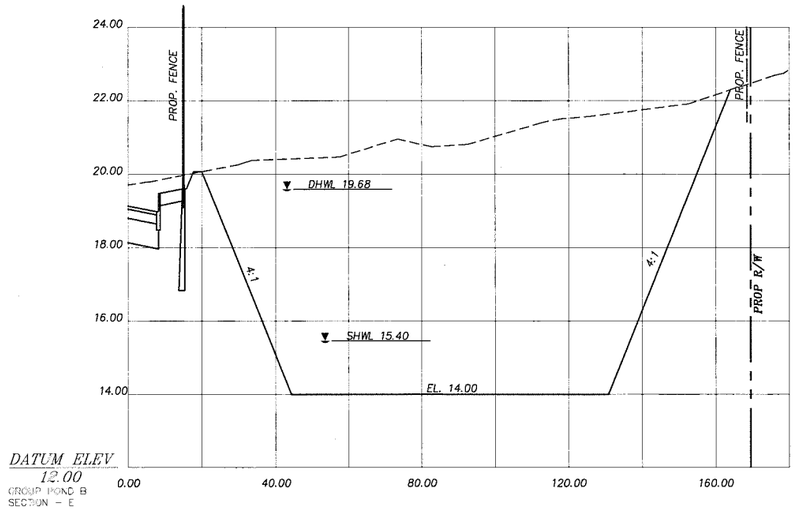
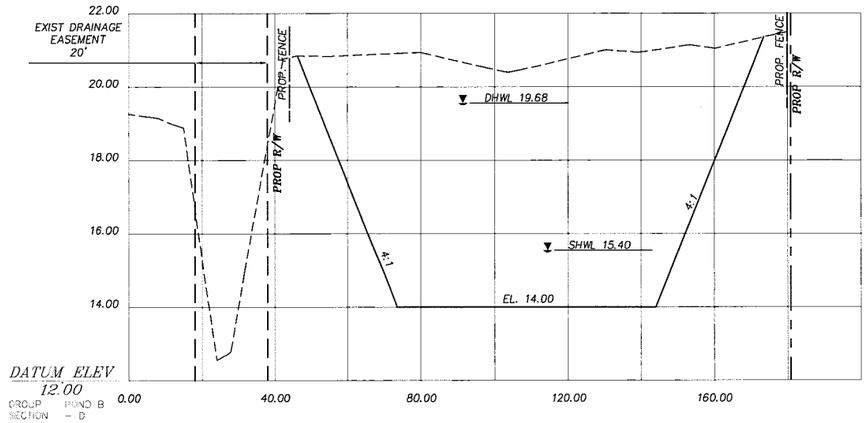


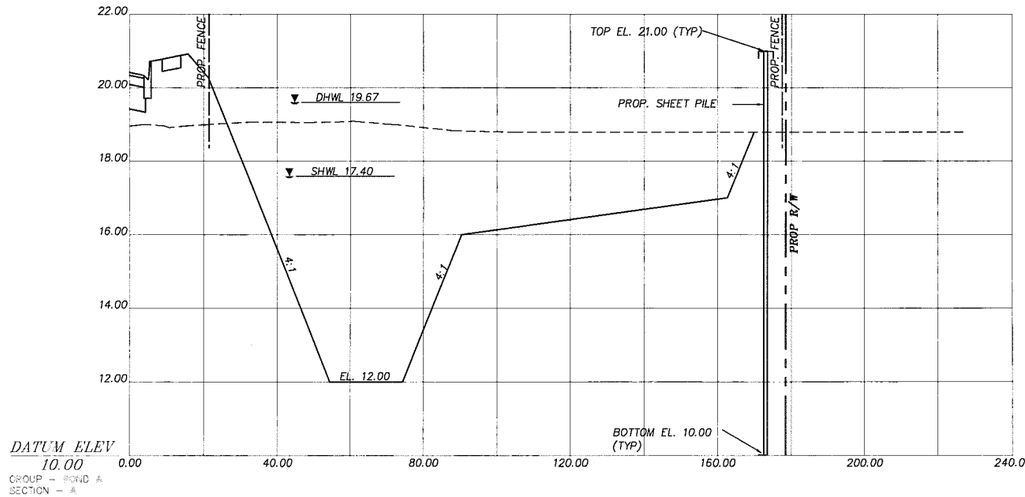
SECTION E



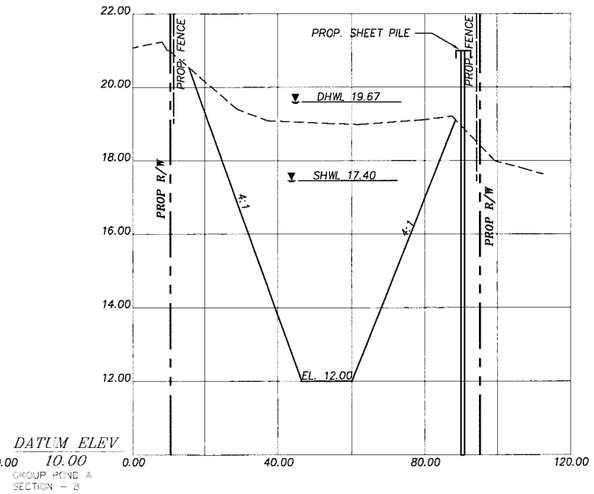
SECTION D

POND B

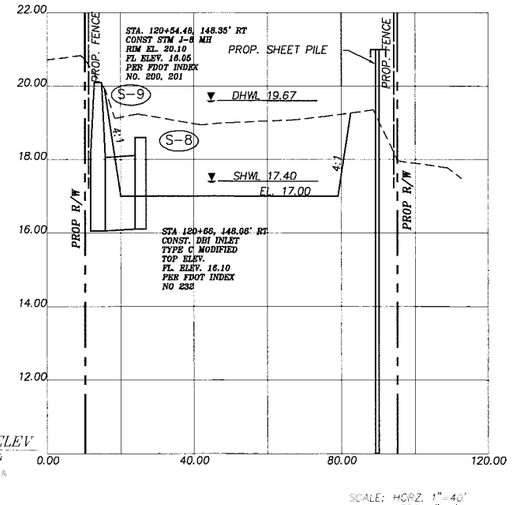
POND A



SECTION A



SECTION B



SECTION C

SCALE: HORZ. 1"=40'
VERT. 1"=4'

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description
8-9-11	KND	GRAVITY WALL △.						

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4221
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, PE
FLA. REG. NO. 49284
DATE: 8/10/12

9TH ST E-4 LANE

POND SECTIONS

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17152DPOND.dwg, 28, 12

CSDG PROJ. NO.	SHEET NO.
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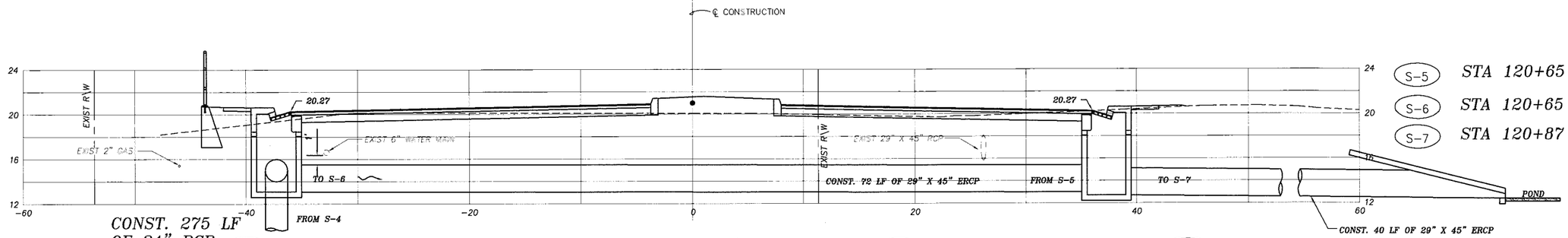
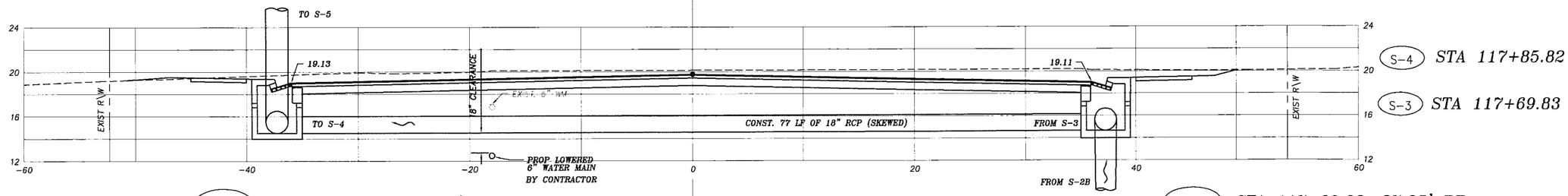


CONST. 275 LF OF 24" RCP

S-5 STA 120+65, 37.25' LT
CONST. J-5 INLET
EOP EL. 20.27
FL. EL. 12.75 (E)
FL. EL. 14.00 (S)
PER FDOT INDEX
NO 200,201,211

S-6 STA 120+65, 37.25' RT
CONST. J-5 INLET
EOP EL. 20.27
FL. EL. 12.40 (W)
FL. EL. 12.40 (E)
PER FDOT INDEX
NO 200,201,211

S-7 STA 120+87, 87.00' RT
CONST. MES
FL. ELEV. 12.30
PER FDOT INDEX
NO 272

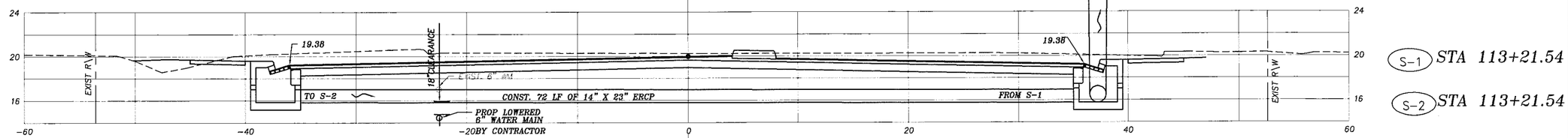


S-4 STA 117+85.82, 37.25' LT
CONST. P-6 INLET
EOP EL. 19.13
FL. EL. 14.50
PER FDOT INDEX
NO 200,201,211

S-2B STA 116+00
SEE SHEET #33

S-3 STA 117+69.83, 37.25' RT
CONST. P-6 INLET
EOP EL. 19.11
FL. EL. 14.65
PER FDOT INDEX
NO 200,201,211

CONST. 276 LF OF 18" RCP



S-1 STA 113+21.54, 37.25' LT
CONST. P-6 INLET
EOP EL. 19.36
FL. ELEV. 15.85
PER FDOT INDEX
NO 200,201,211

S-2 STA 113+21.54, 37.25' RT
CONST. P-6 INLET
EOP EL. 19.36
FL. ELEV. 15.70
PER FDOT INDEX
NO 200,201,211

S-4 STA 117+85.82
S-3 STA 117+69.83
S-1 STA 113+21.54
S-2 STA 113+21.54

GENERAL NOTES

1. SPECIAL ATTENTION IS DIRECTED TO THE FACT THAT PORTIONS OF SOME DRAINAGE STRUCTURES EXTEND INTO THE STABILIZED PORTION OF THE ROADBED AND EXTREME CAUTION WILL BE NECESSARY IN STABILIZATION OPERATIONS AT THOSE LOCATIONS.

1" = 10' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

0530 Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc
2335 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-6711
Certificate of Authorization No. 28085

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 39585
DATE: 9/10/12

9TH ST E-4 LANE

DRAINAGE STRUCTURES

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156DDRAINAGESTR.dwg, 29, 1:2

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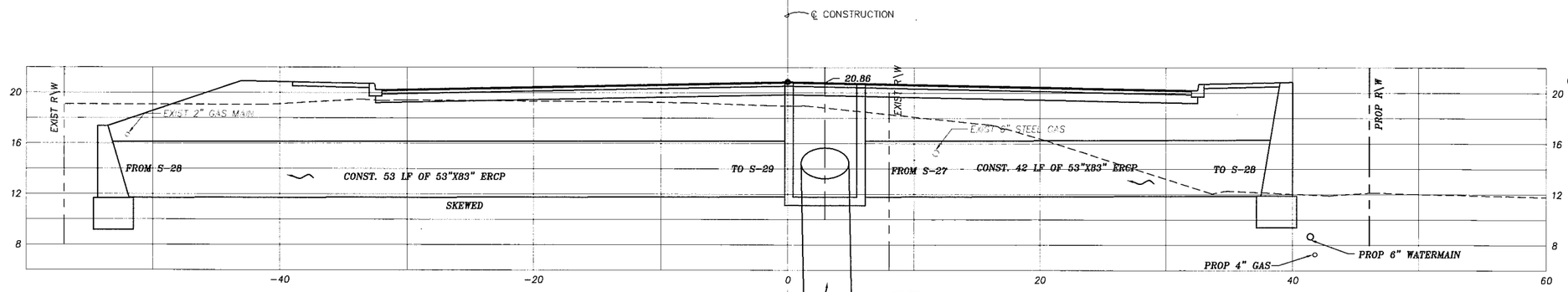


S-29 STA 125+06
S-28 STA 125+18.54
S-27 STA 125+18

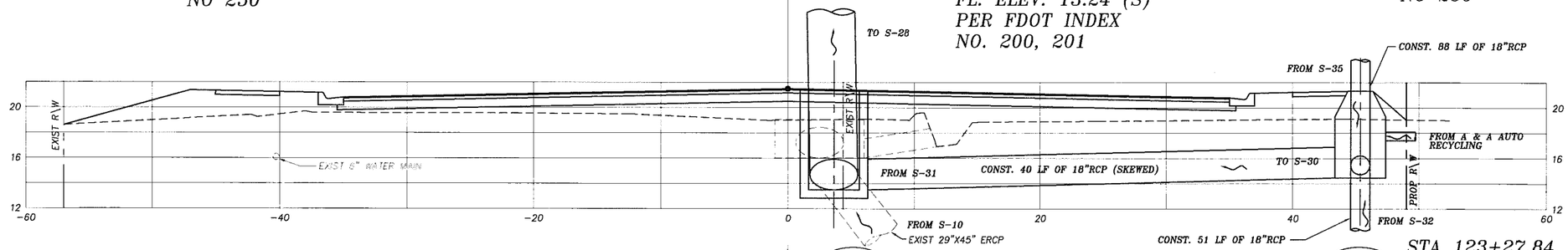
S-29 STA 125+06, 53.52' LT
CONST. CONC. ENDWALL
FL. ELEV. 11.69
PER FDOT INDEX
NO 250

CONST. 196 LF OF
29"X45" ERCP

FROM S-30

S-28 STA 125+18.54, 2.93' RT
CONST. J-8 MH
RIM EL. 20.86
FL. ELEV. 11.78 (E&W)
FL. ELEV. 13.24 (S)
PER FDOT INDEX
NO. 200, 201

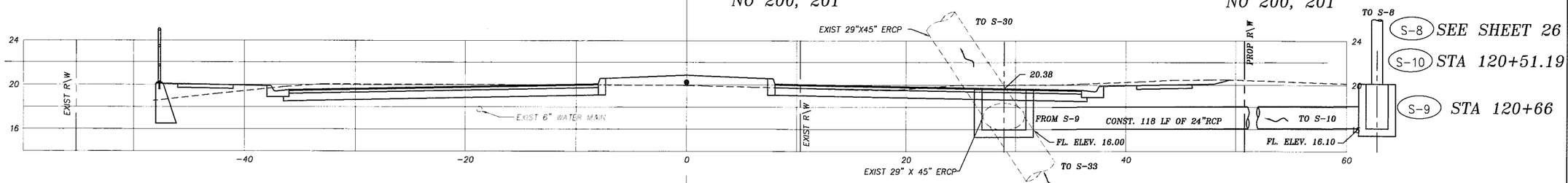
S-27 STA 125+18, 39.00' RT
CONST. CONC. ENDWALL
FL. ELEV. 11.88
PER FDOT INDEX
NO 250



S-30 STA 123+16.07
S-31 STA 123+27.84

S-30 STA 123+16.07, 3.63' RT
CONST. J-8 MH
RIM EL. 21.37
FL. ELEV. 13.50
PER FDOT INDEX
NO 200, 201

S-31 STA 123+27.84, 45.35' RT
CONST. P-8 INLET
RIM EL. 21.15
FL. ELEV. 14.47 (N&W)
FL. ELEV. 17.21 (S)
FL. ELEV. 17.42 (E)
PER FDOT INDEX
NO 200, 201



S-8 SEE SHEET 26
S-10 STA 120+51.19
S-9 STA 120+66

S-10 STA 120+51.19, 28.11' RT
CONST. J-8 MH
RIM EL. 20.38
FL. ELEV. 15.87
PER FDOT INDEX
NO 200, 201

S-9 STA 120+54.48, 148.35' RT
CONST. P-8 MH
RIM EL. 20.10
FL. ELEV. 16.05
PER FDOT INDEX
NO 200, 201

1" = 10' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
Civilsurv Design Group, Inc
2525 Drane Field Rd.
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Certificate of Authorization No. 28918

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HUWLES, P.E.
FLA REG. NO. 27584
DATE: 8/10/12

9TH ST E-4 LANE

DRAINAGE STRUCTURES

MANATEE COUNTY, FLORIDA

CSDS PROJ. NO.	SHEET NO.
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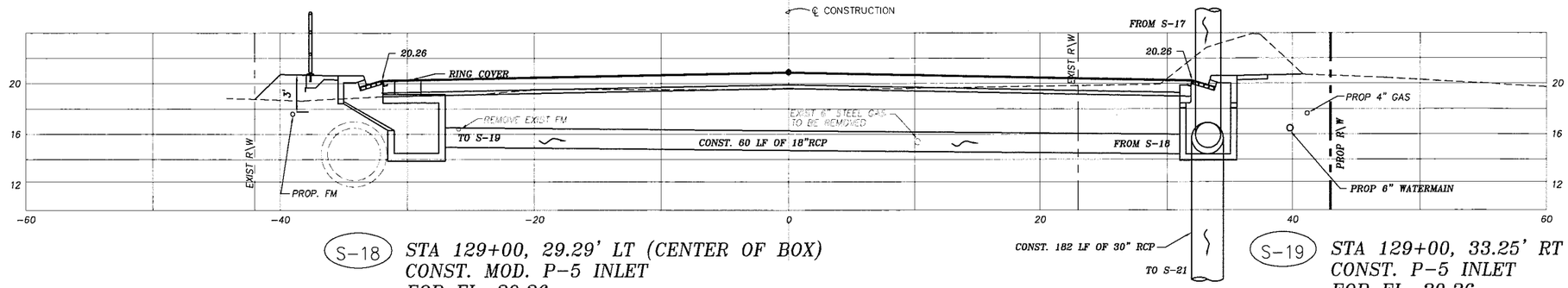
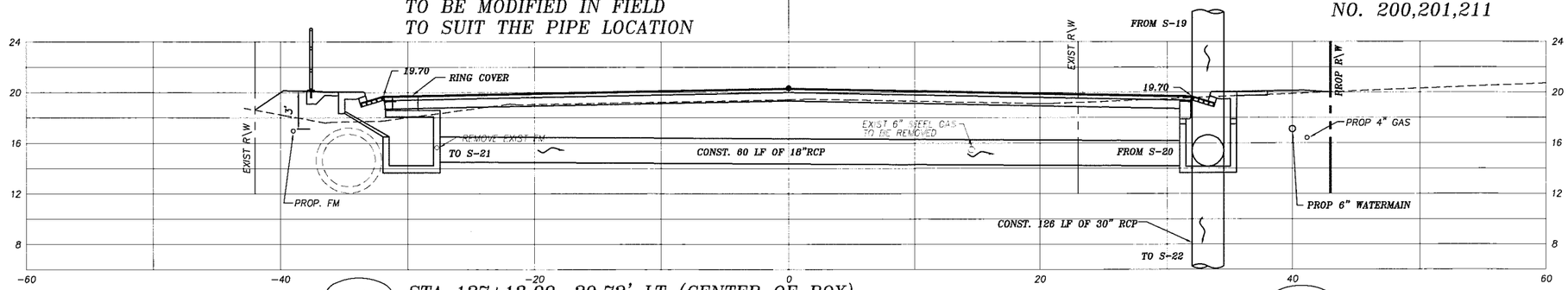


S-18 STA 129+00

S-19 STA 129+00

S-18 STA 129+00, 29.29' LT (CENTER OF BOX)
CONST. MOD. P-5 INLET
EOP EL. 20.26
FL. EL. 14.50
PER FDOT INDEX
NO 200,201,211
TO BE MODIFIED IN FIELD
TO SUIT THE PIPE LOCATION

S-19 STA 129+00, 33.25' RT
CONST. P-5 INLET
EOP EL. 20.26
FL. EL. 15.01 (N,W)
FL. EL. 14.51 (S)
PER FDOT INDEX
NO. 200,201,211

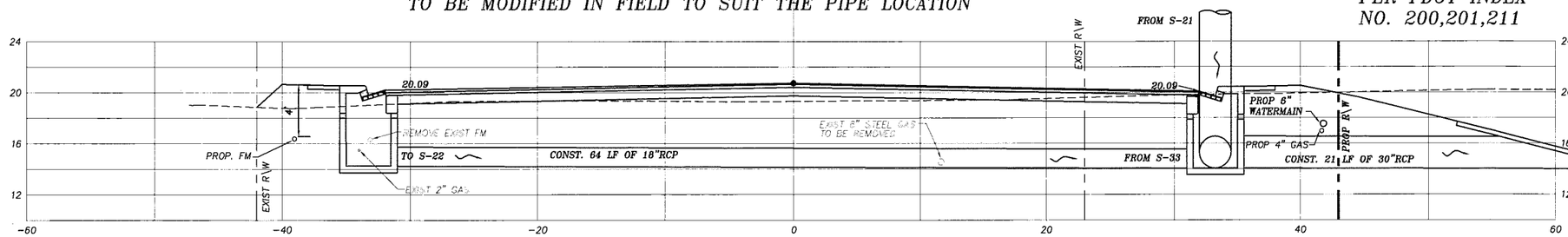


S-21 STA 127+13.99

S-20 STA 127+13.99

S-20 STA 127+13.99, 29.72' LT (CENTER OF BOX)
CONST. MOD. P-6 INLET
EOP EL. 19.70
FL. ELEV. 14.34
PER FDOT INDEX NO 211
TO BE MODIFIED IN FIELD TO SUIT THE PIPE LOCATION

S-21 STA 127+13.99, 33.25' RT
CONST. P-6 CURB INLET
EOP EL. 19.70
FL. ELEV. 14.24 (N,W,S)
PER FDOT INDEX
NO. 200,201,211



S-33 STA 125+84.39

S-22 STA 125+84.39

S-23 STA 125+84.39

S-33 STA 125+84.39, 33.25' LT
CONST. P-5 INLET
EOP EL. 20.09
FL. ELEV. 14.25
PER FDOT INDEX
NO 200,201,211

S-22 STA 125+84.39, 33.25' RT
CONST. P-5 INLET
EOP EL. 20.09
FL. ELEV. 14.05 (N,W,S)
PER FDOT INDEX
NO 200,201,211

S-23 STA 125+84.39 60.80' RT
CONST. MES
FL. ELEV. 14.00
PER FDOT INDEX
NO 272

1" = 10' HORIZ.
1" = 10' VERT.

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDS Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2295 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28885

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/054

JOHN E. HOWE, P.E.
FLA. REG. NO. 37384
DATE: 6/10/12

9TH ST E-4 LANE

DRAINAGE STRUCTURES

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156200RAINAGESTR.dwg, 31, 1:2

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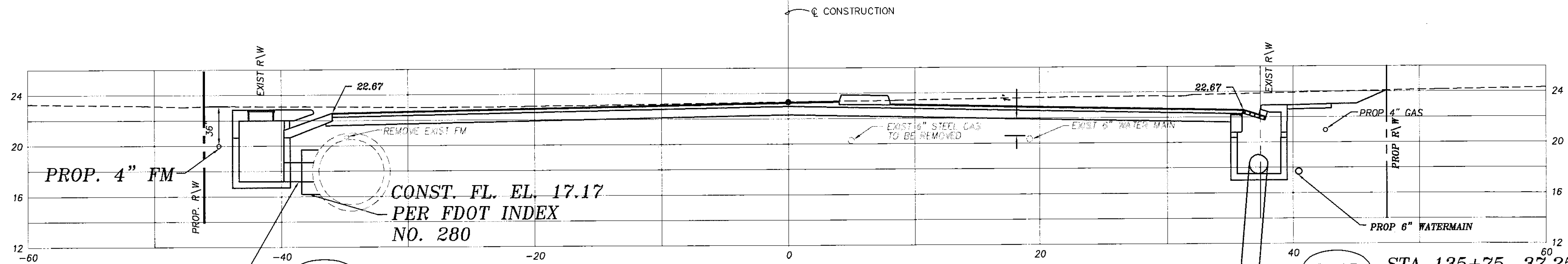


CONST. 3 LF OF 18"RCP W/ CONCRETE COLLAR TO 60"RCP PER FDOT INDEX NO. 280

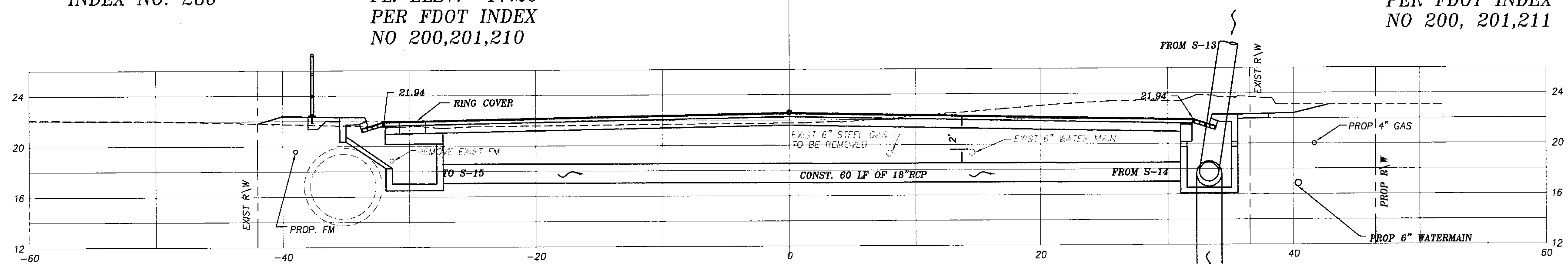
(S-12) STA 135+75, 41.49' LT
CONST. P-1 INLET
EOP EL. 22.67
FL. ELEV. 17.20
PER FDOT INDEX
NO 200,201,210

CONST. 247 LF OF 18" RCP

(S-13) STA 135+75, 37.25' RT
CONST. P-5 INLET
EOP EL. 22.67
FL. ELEV. 17.50
PER FDOT INDEX
NO 200, 201,211

(S-13) STA 135+75

(S-12) STA 135+75



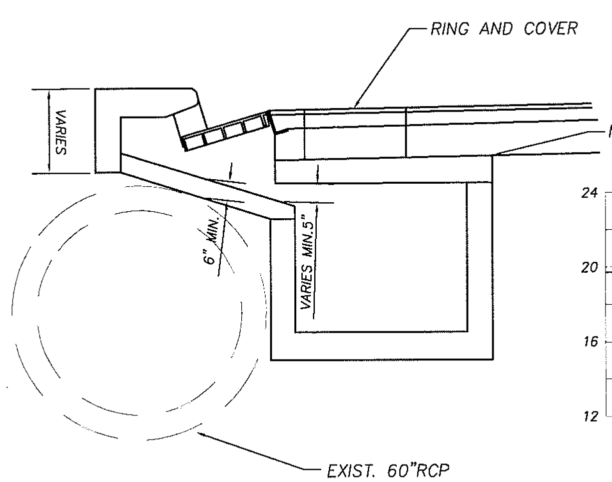
(S-14) STA 133+25

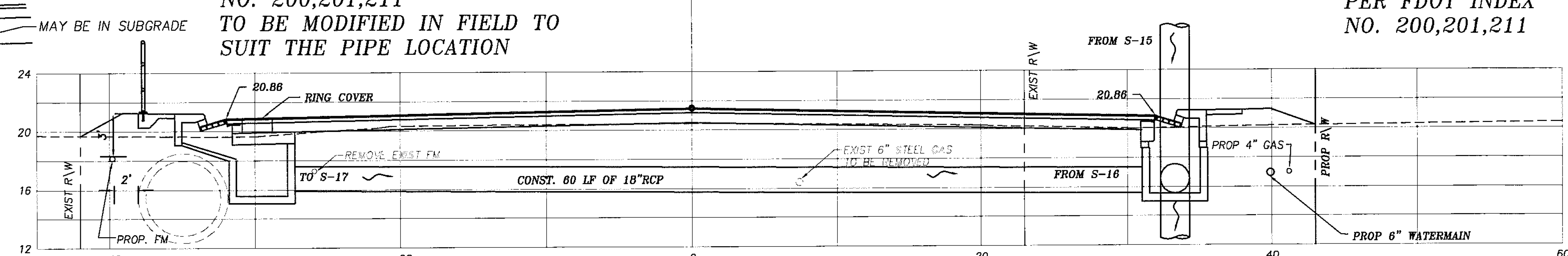
(S-15) STA 133+25

(S-14) STA 133+25, 31.00' LT (CENTER OF BOX)
CONST. MOD. P-5 INLET
EOP EL. 21.94
FL. ELEV. 17.13
PER FDOT INDEX
NO. 200,201,211
TO BE MODIFIED IN FIELD TO SUIT THE PIPE LOCATION

CONST. 222 LF OF 24" RCP

(S-15) STA 133+25, 33.25' RT
CONST. P-5 INLET
EOP EL. 21.94
FL EL. 17.01 (N,W)
FL. EL. 16.51 (S)
PER FDOT INDEX
NO. 200,201,211





(S-17) STA 131+00

(S-16) STA 131+00

FIELD VERIFICATION OF LOCATION OF EXISTING 60" RCP AND PROPOSED INLET LOCATION NEEDED PRIOR TO CONSTRUCTION FOR INLETS AT STA. 135+75 (S-12),133+25 (S-14), 131+00 (S-16), 129+00 (S-18), 127+13.99 (S-20) AND 125+84.39 (S-33).

MODIFIED P-5 INLET DETAIL
SCALE: NTS

(S-16) STA 131+00, 29.31' LT (CENTER OF BOX)
CONST. MOD P-5 INLET
EOP EL. 20.86
FL. ELEV. 15.96
PER FDOT INDEX
NO. 200,201,211
TO BE MODIFIED IN FIELD
TO SUIT THE PIPE LOCATION

CONST. 197 LF OF 24" RCP

(S-17) STA 131+00, 33.25' RT
CONST. P-5 INLET
EOP EL. 20.86
FL. EL. 15.51 (N,W,&S)
PER FDOT INDEX
NO. 200,201,211

1" = 10' HORIZ.
1" = 10' VERT.

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel: 863-646-4771 Certificate of Authorization No. 28888

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

9/10/12

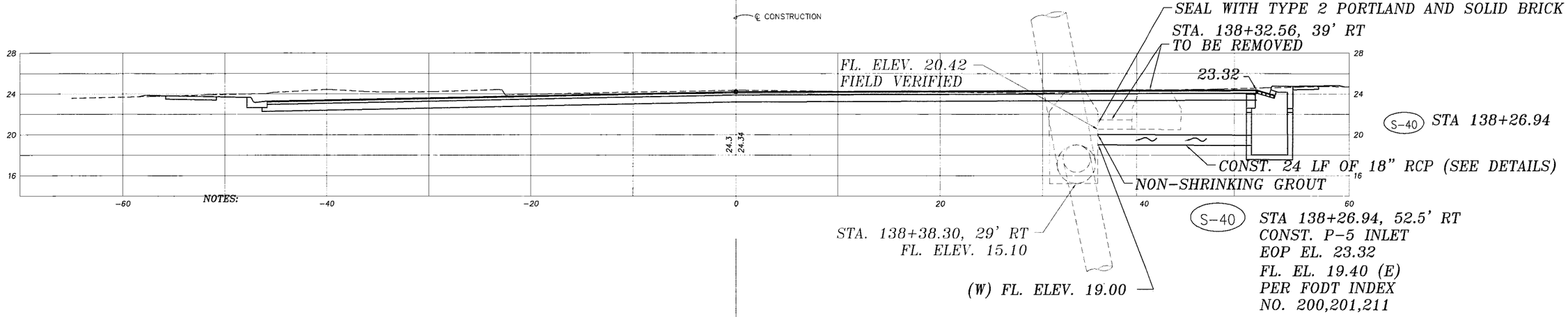
9TH ST E-4 LANE

DRAINAGE STRUCTURES

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20DRAINAGESTR.dwg, 32, 1:2

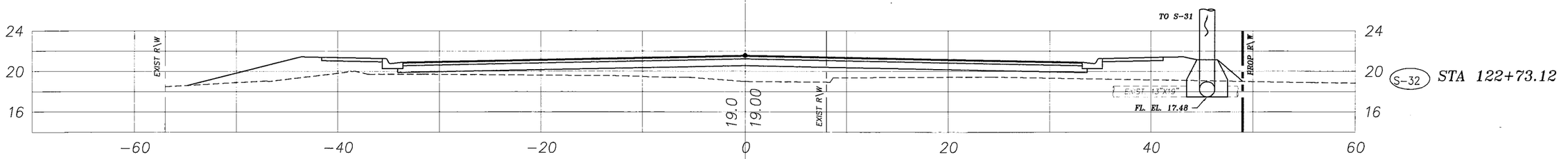
CSDG PROJ. NO.	SHEET NO.
024:001001	33

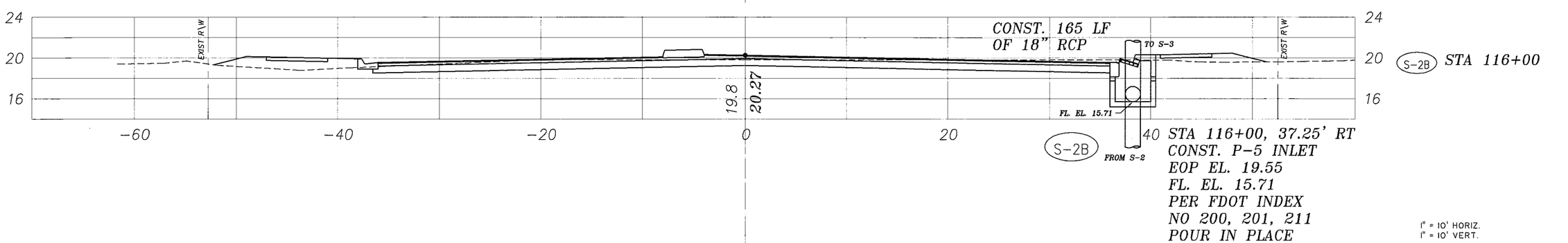


* DETAILS

A. SAW CUT OR CORE BORE EXISTING STRUCTURE TO RECEIVE NEW RCP (18") , (NO JACKHAMMER).

B. AFTER PIPE IS CONNECTED WITH THE INLET, THE END OF THE PIPE MUST BE MADE FLUSH WITH THE INSIDE SURFACE OF THE INLET.





1" = 10' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
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2555 Drane Field Rd.
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Tel: 863-646-4771
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	NAME	DATE
DESIGNED BY	JEH	11/06
DRAWN BY	EW	11/06
CHECKED BY	JEH	11/06

JOHN E. HANCE, P.E.
REGISTERED ENGINEER
DATE: 9/10/12

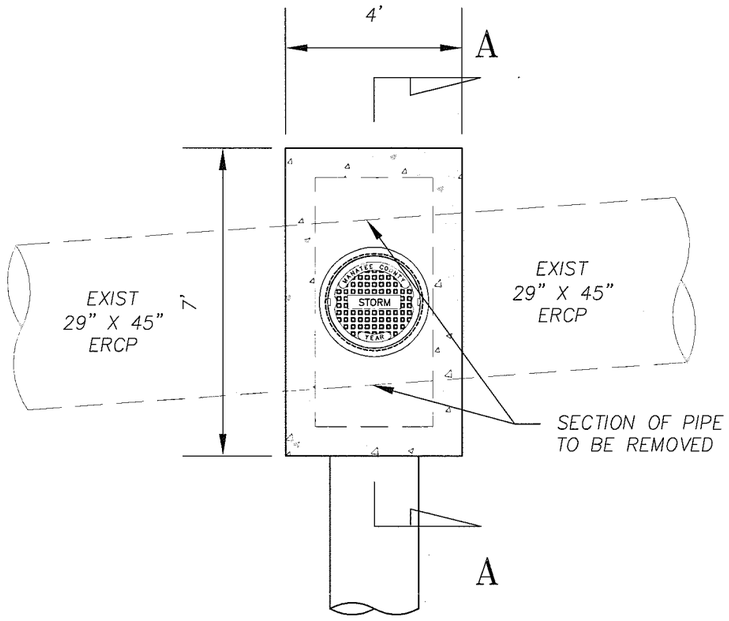
9TH ST E-4LANE

DRAINAGE STRUCTURES

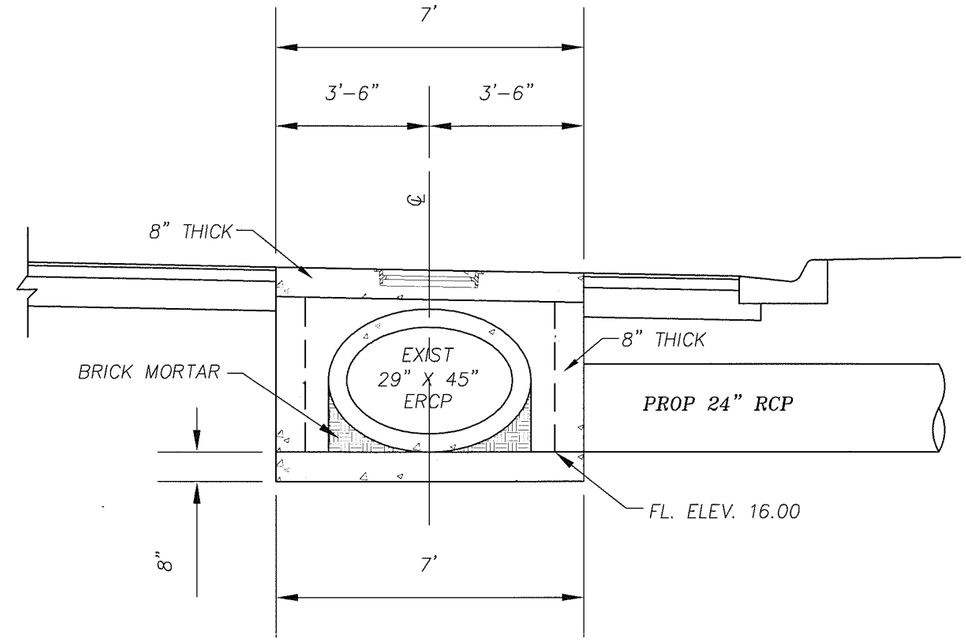
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156201DRAINAGESTR.dwg, 33, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	33A



PLAN



SECTION A-A

STRUCTURE DETAIL (S-10)
N.T.S.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2635 Drane Field Rd.
Suite 7
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Tel: 863-686-4771
Certificate of Authorization No. 28981

	NAME	DATE
DESIGNED BY	RD	7/12
DRAWN BY	EW	7/12
CHECKED BY	JEH	7/12

JOHN E. HOWE, P.E.
FLA. REG. NO. 71584
DATE: 9/10/12

9TH ST E-4 LANE

DOG HOUSE STRUCTURE DETAIL

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156200RAINAGESTR.dwg, 33A, 1:2

CSDG PROJ. NO.	SHEET NO.
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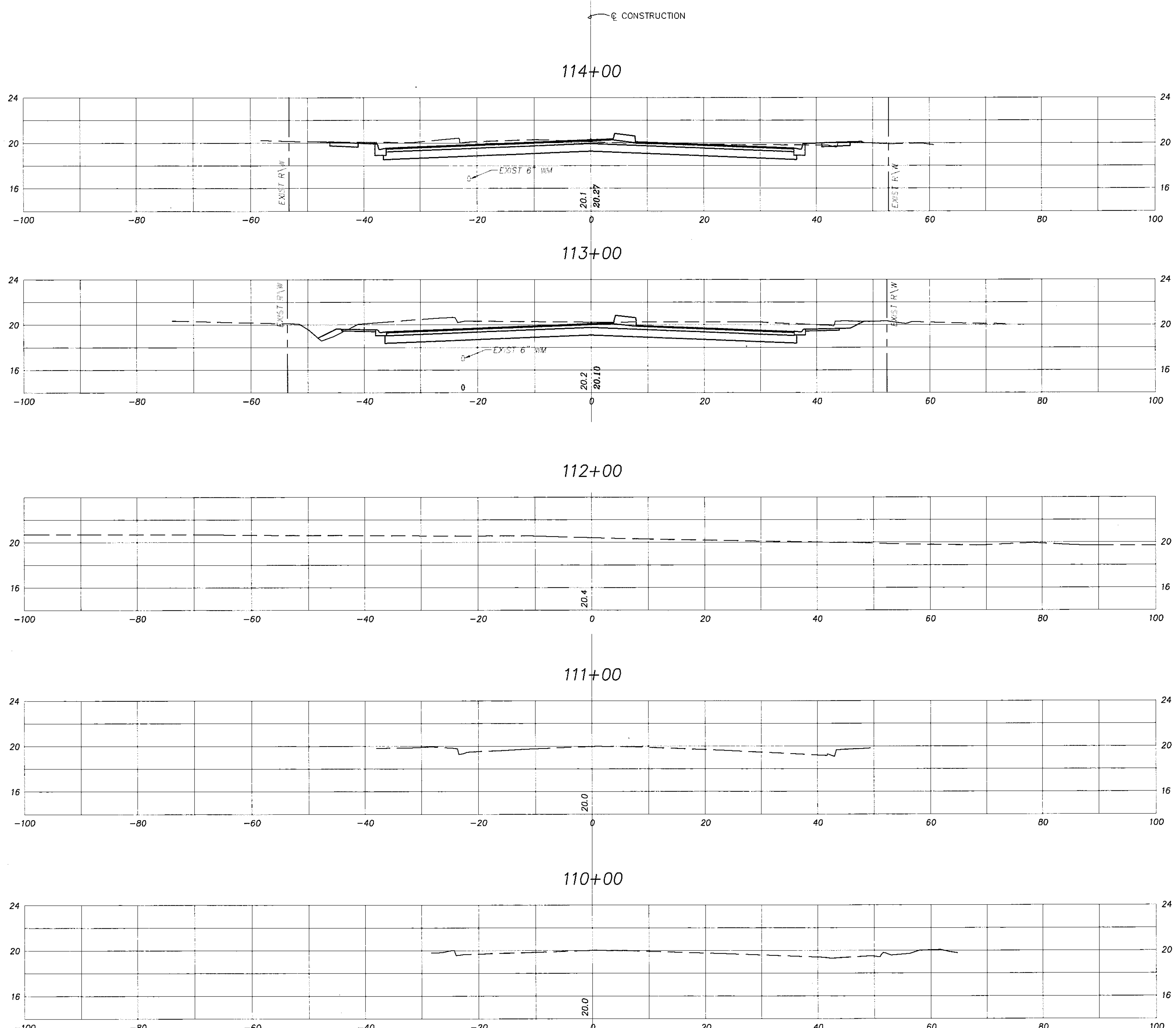

EARTHWORK			
RDWY EXC		FILL	
A	V	A	V
89.86		0.66	
	396.86		4.78
124.46		1.92	
	230.48		3.56
0		0	
	0		0
0		0	
	0		0
0		0	

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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CivilSurv Design Group, Inc.
2525 Drane Field Rd.
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Lakeland, Fl 33811
Tel: 863-646-4771

Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 23584
DATE 9/10/12

9TH ST E-4 LANE

CROSS SECTIONS

STA. 110+00 TO STA.114+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620XS.dwg, 34, 1:2

CSDG PROJ. NO.	SHEET NO.
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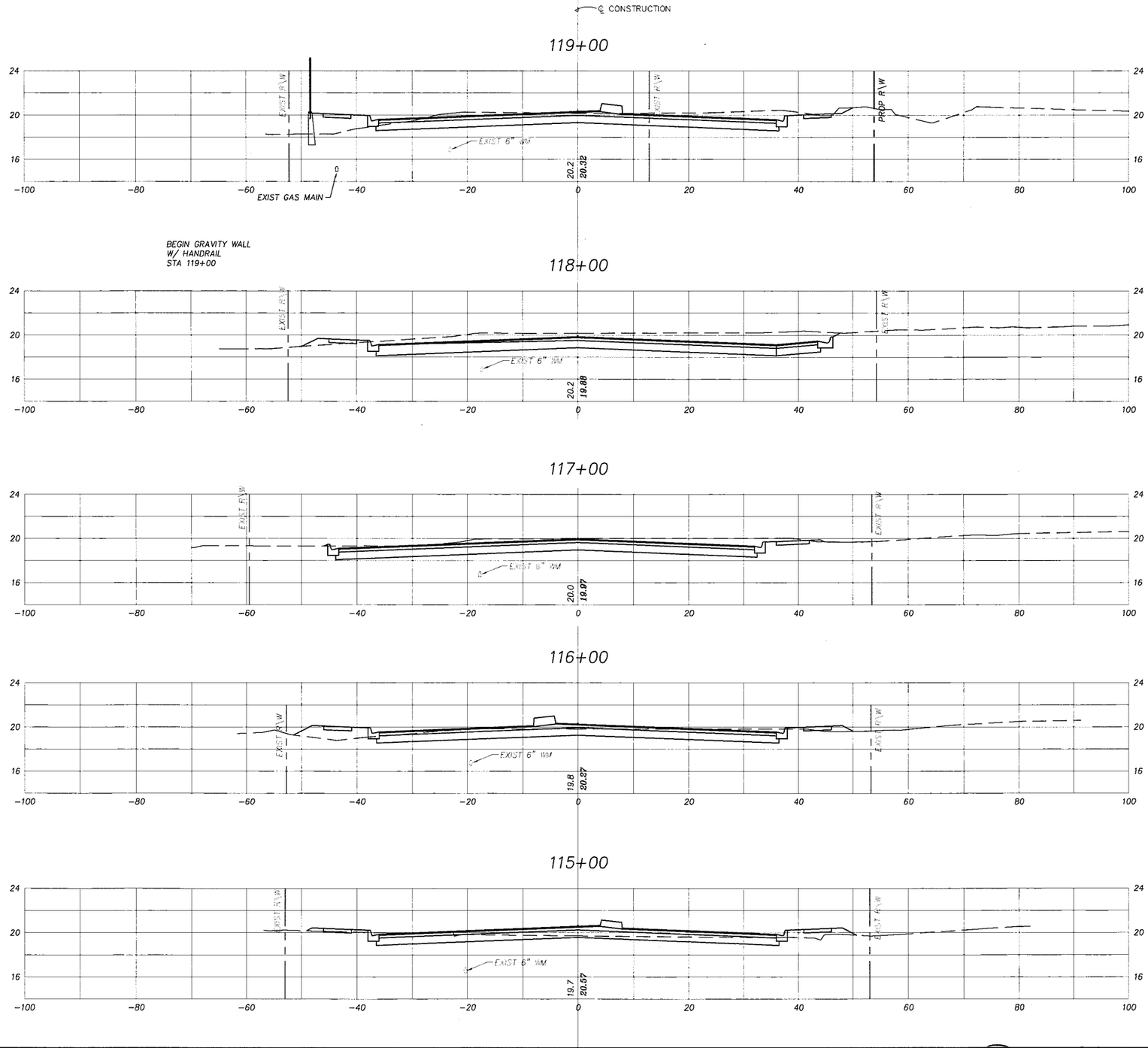

EARTHWORK

ROWY EXC		FILL	
A	V	A	V
89.83		15.33	
	417.5		33.48
135.57		2.75	
	439.8		5.72
101.82		0.34	
	305.67		28.78
63.24		14.12	
	192.83		67.70
40.89		22.44	
	242.04		42.76

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2525 Drane Field Rd.
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Tel. 863-646-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOBLE, P.E.
FLA. REG. NO. 38984
DATE: 2/10/12

9TH ST E-4 LANE

CROSS SECTIONS

STA. 115+00 TO STA. 119+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20XS.dwg, 35, 1:2

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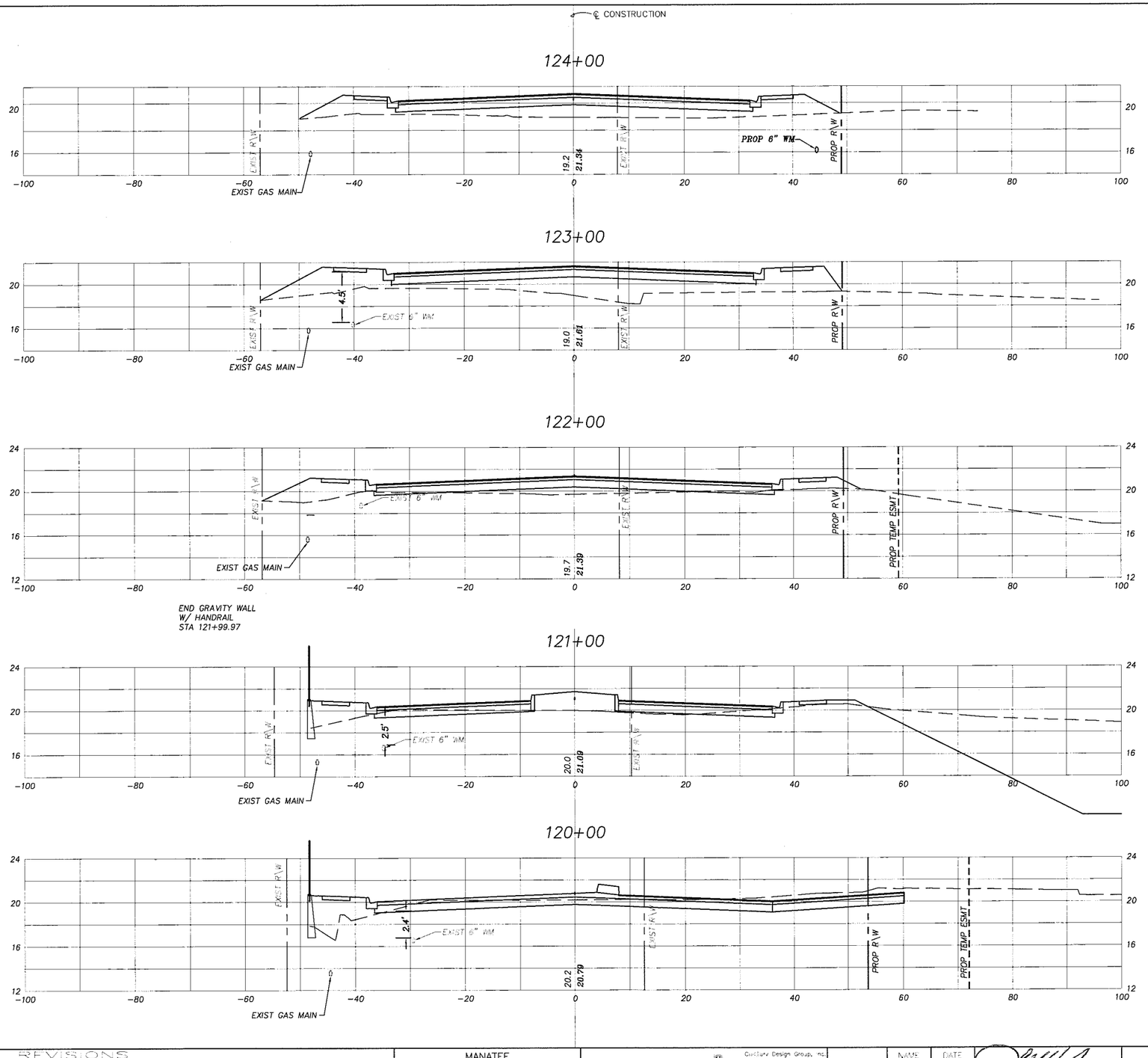

EARTHWORK			
RDWY EXC.		FILL	
A	V	A	V
0		89.01	
	2		419
0		37.25	
	7.3		349
3.85		51.21	
	42.02		173.37
18.64		45.38	
	131.67		30.13
58.28		24.89	
	263.22		74.48

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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Tel: 863-648-4771
Certificate of Authorization No. 26988

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FLA. REG. NO. 34
DATE: 8/15/12

9TH ST E-4 LANE

CROSS SECTIONS

STA. 120+00 TO STA. 124+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156203DS.dwg, 36, 12

CSDG PROJ. NO.	SHEET NO.
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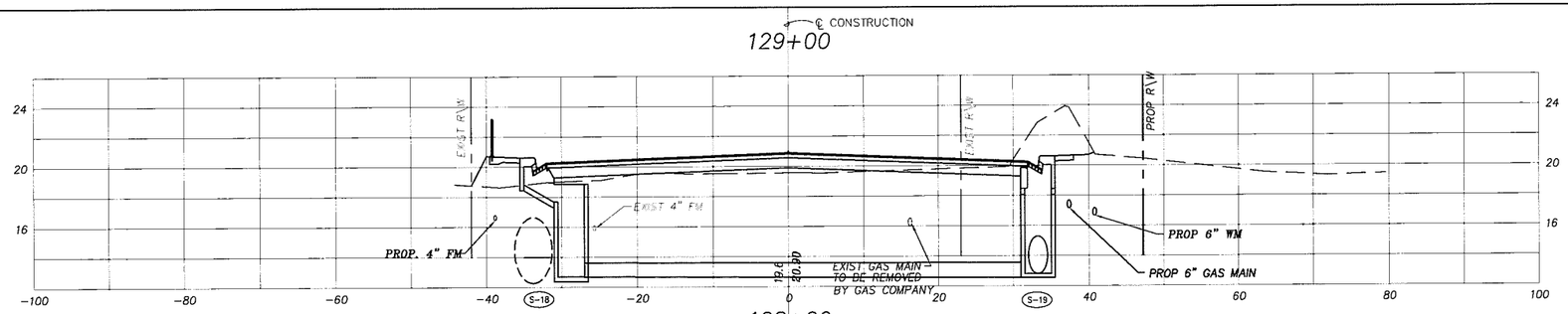

EARTHWORK			
RDWY EXC		FILL	
A	V	A	V
32.99		23.15	
	21.04		93.07
31.44		27.11	
	233.43		71.98
44.61		11.76	
	94.07		59.61
6.19		20.43	
	12.04		169.65
0.31		81.98	
	0.57		316.65

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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Civilsurv Design Group, Inc.
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Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28985

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

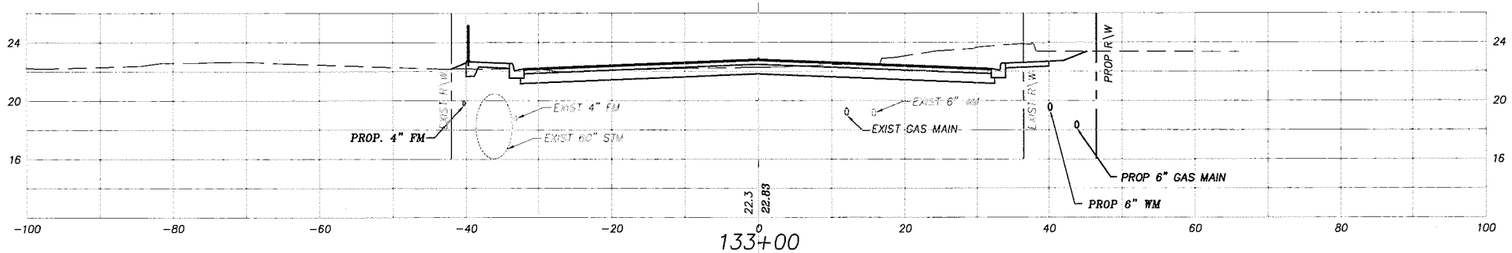
JOHN E. HOWLE, P.E.
FLA. REG. NO. 27884
DATE: 9/01/12

9TH ST E-4 LANE
CROSS SECTIONS
STA. 125+00 TO STA. 129+00
MANATEE COUNTY, FLORIDA

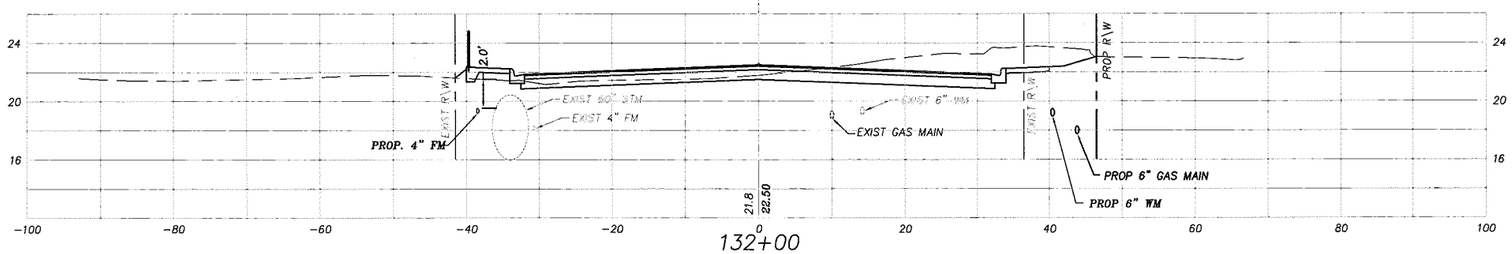
CSDG PROJ. NO.	SHEET NO.
024:001001	38

℄ CONSTRUCTION

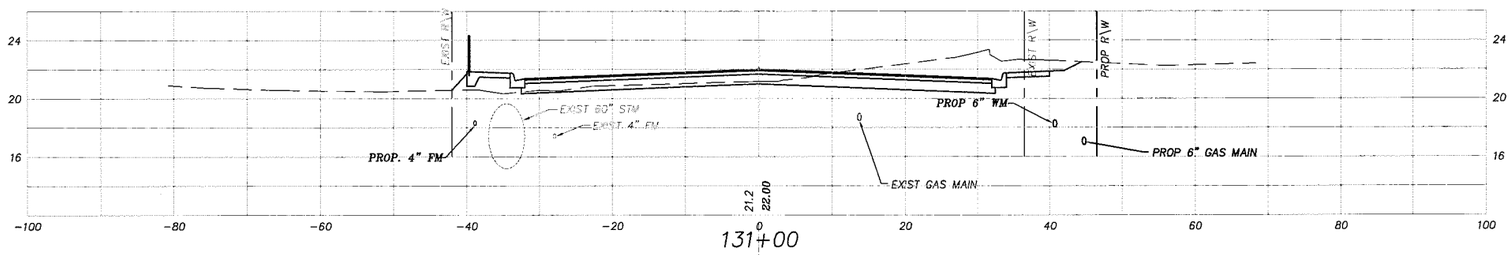
134+00



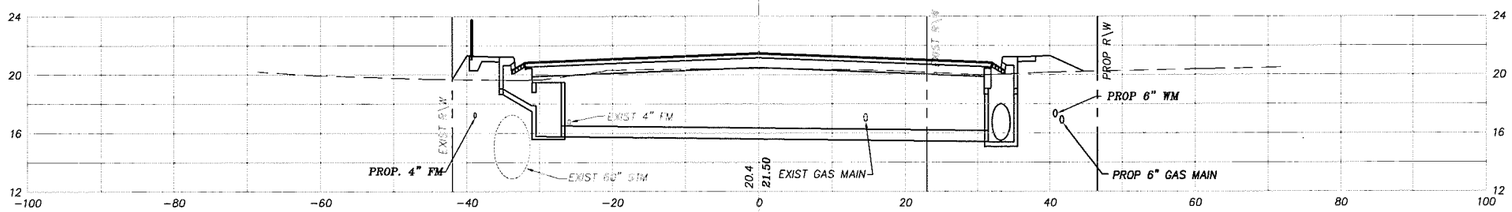
133+00



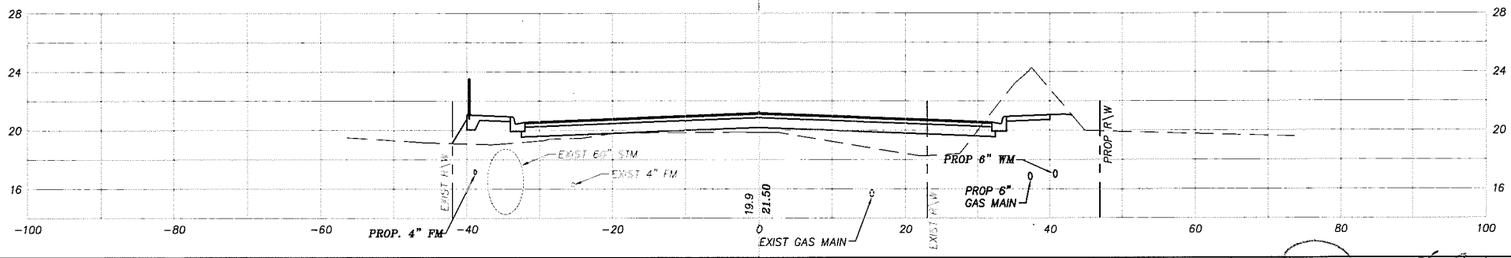
132+00



131+00



130+00



EARTHWORK			
RDWY EXC.		FILL	
A	V	A	V
81.15		0.81	
	299.73		6.24
80.16		2.56	
	271.85		16.87
66.84		6.44	
	173.65		46.83
5.53		18.65	
	57.98		38.76
25.78		44.29	
	108.83		124.72

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Ticaldon of Innovative Engineering
Civilsurv Design Group, Inc.
5025 Drane Field Rd
Suite 7
Lakeland, FL 33811
Tel. 863-646-4777
Certificate of Authorization No. 28888

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HELE, P.E.
FLA. REG. NO. 45284
DATE 9/10/12

9TH ST E-4 LANE

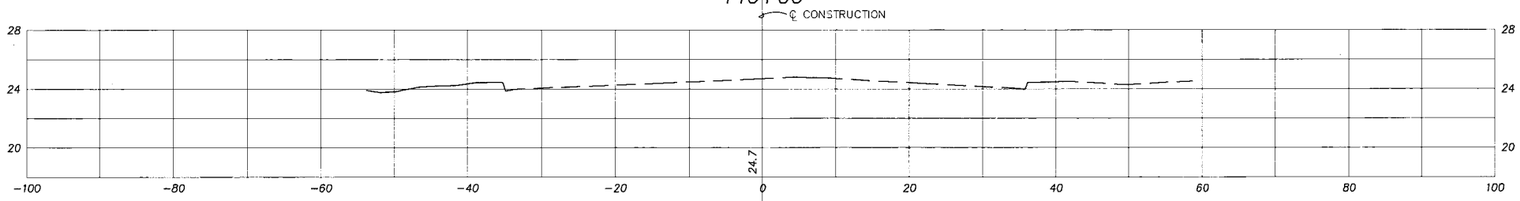
CROSS SECTIONS

STA. 130+00 TO STA. 134+00

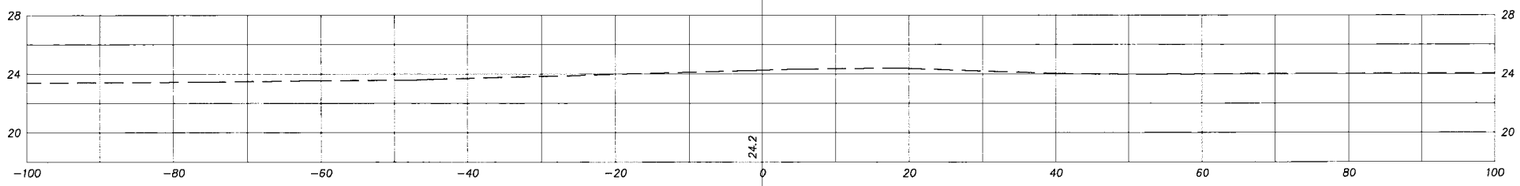
MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	39

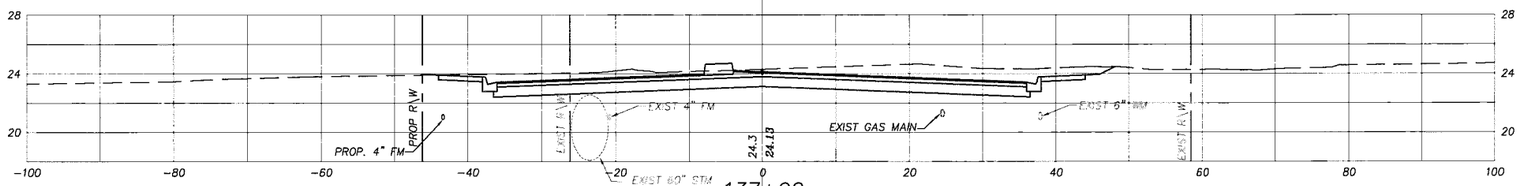
140+00



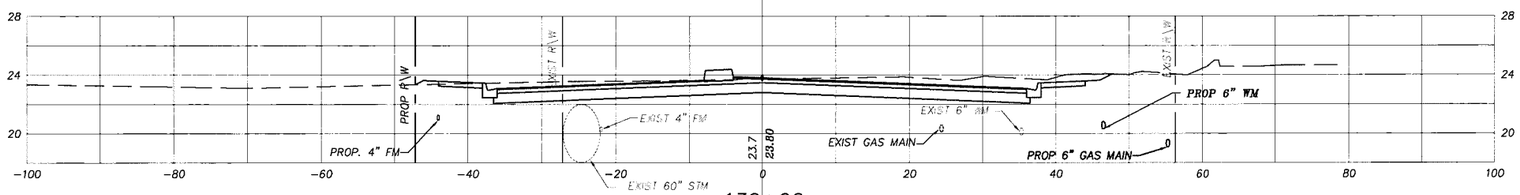
139+00



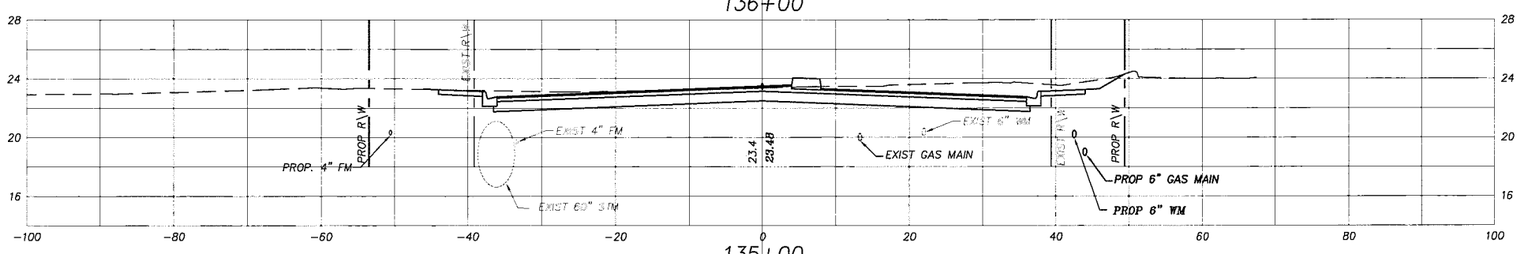
138+00



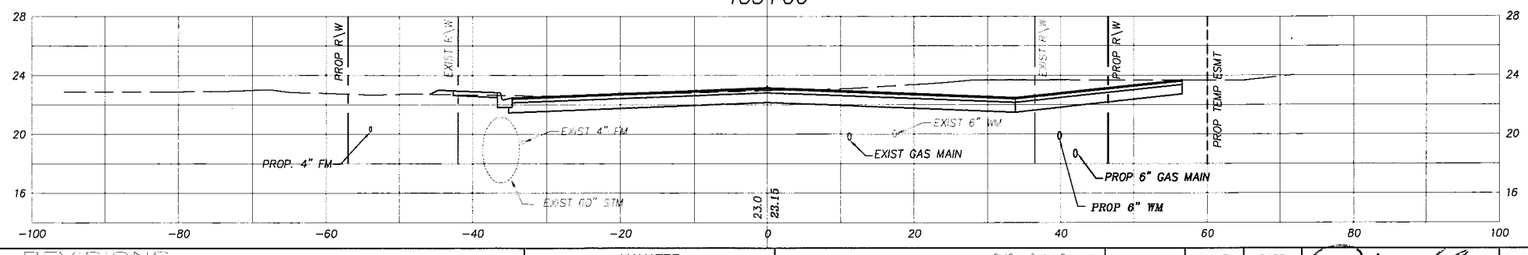
137+00



136+00



135+00



EARTHWORK			
RDWY EXC.		FILL	
A	V	A	V
0		0	
	0		0
0		0	
	230.33		0.11
124.36		0.06	
	418.28		1.26
101.51		0.62	
	384.94		1.15
106.36		0	
	398.37		157.02
0.76		84.79	
	151.69		156.12

1" = 20' HORIZ.
1" = 10' VERT.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
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7925 Drane Field Rd.
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Certificate of Authorization No. 28858

	NAME	DATE
DESIGNED BY	TWR	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLORIDA REG. NO. 39844
DATE: 2/10/12

9TH ST E-4 LANE

CROSS SECTIONS

STA. 135+00 TO STA. 140+00

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156205.dwg, 39, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	40

NOTE:
REMOVE EXIST STRIPING AS DIRECTED BY THE ENGINEER.

BIKE LANE R3-17 / ENDS R13-17B

815 RELOCATED I-6

EXIST R

5626 5620 5616

SPEED LMT 30 R2-1

EXIST ROW

BIKE LANE MESSAGE

12" WHITE STRIPE

6" WHITE 2' - 4' SKIP

6" SOLID WHITE EDGE LINE

24" WHITE STOP BAR

6" SOLID WHITE WITH W/R RPM'S @ 20' O/C

CONST. ℄

112+00 113+00 114+00 115+00 116+00 117+00 118+

EXIST. MUST TURN SIGN TO BE REMOVED

6" WHITE 10'-30' SKIP WITH W/R RPM'S @ 40' O/C

6" SOLID YELLOW

REFLECTIVE PAINT NOSE ISLAND YELLOW

PC = 113+70.75

PT = 115+70.75

9TH ST E

6" SOLID WHITE WITH W/R RPM'S @ 20' O/C

6" WHITE 10'-30' SKIP WITH W/R RPM'S @ 40' O/C

EXIST. BUS STOP SIGN TO BE RELOCATED

BUS STOP

57 AVE E

EXIST ROW

MERGE

EXIST. MERGE SIGN TO BE REMOVED

EXIST. SPEED SIGN TO BE REMOVED

SPEED 30 MPH

905 AHEAD R13-17A / BIKE LANE R3-17

5627

THE WOODS OF M

R4-7 OM1-1

56 AVE. E.

R1-1 STOP

5606

5536

6" DBL YELLOW

24" WHITE STOP BAR

12" SOLID WHITE

(E) EXISTING R/

STOP W/ ASSEM.

6" WHITE 2' - 4' SKIP

EXIST. STOP SIGN W/ASSEM. TO BE REMOVED

EXIST. BUS STOP SIGN TO BE RELOCATED

BUS STOP

RELOCATED I-6

NG R/W PER PLAT

GAS PIPELINE MARKER

REFLECTIVE PAINT NOSE ISLAND YELLOW

6" SOLID WHITE

6" SOLID WHITE WITH W/R RPM'S @ 20' O/C

9TH ST E

6" WHITE 10' - 30' SKIP WITH W/R RPM'S @ 40' O/C

EXIST ROW

EXIST. SIGN TO BE REMOVED

SPEED LIMIT 30

R4-7 OM1-1

118+00 119+00 120+00 121+00 122+00 123+00 124+00

STA. 119+83.27

STA. 120+33.36

STA. 121+82.77

PC = 119+32.14

PRC = 120+98.82

PT = 122+61.10

6" SOLID YELLOW

6" YELLOW SKIP

6" SOLID WHITE EDGE LINE

6" WHITE 2' - 4' SKIP

BIKE LANE MESSAGE

12" SOLID WHITE

24" STOP BAR

PROP RIGHT-OF-WAY

EXIST. STOP SIGN TO BE REMOVED

STOP R1-1

6" DBL YELLOW

24" STOP BAR

5531

ADD SIGN PANEL FTP-055R-06

ONLY

PROP ROW

SPEED LIMIT 30 R2-1

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

Civilsurv Design Group, Inc.
2515 Drane Field Rd.
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Tel: 863-646-4771
Certificate of Authorization No. 28438

	NAME	DATE
DESIGNED BY	EW	9/05
DRAWN BY	RVD	7/11
CHECKED BY	JEH	7/11

JOHN E. HOWLE, P.E.
FLA. REG. NO. 72988
DATE: 8/10/11

9TH ST E-4 LANE
SIGNING AND PAVEMENT MARKINGS
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane Transportation\Drawings\17156.20STRIPING.dwg, 40, 1:2

CSDG PROJ. NO.	SHEET NO.
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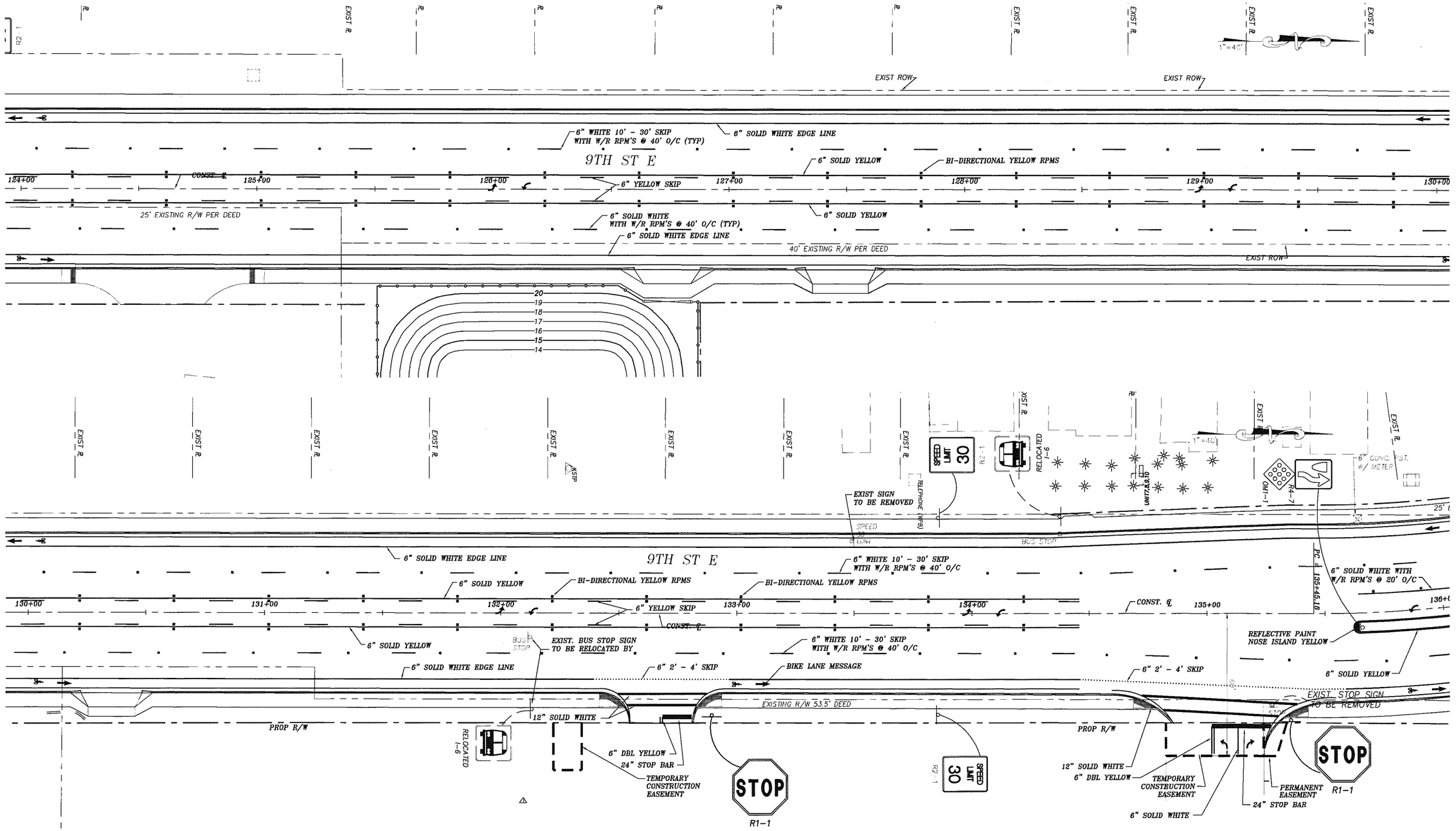

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description
8/9/11	RVD	BUS STOP SGN. ⚠						

MANATEE COUNTY GOVERMENT

CSDG Field Book No.:

CIVILSURV
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2225 Drane Field Rd.
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Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	EW	9/05
DRAWN BY	RVD	7/11
CHECKED BY	JEH	7/11

JOHN E. HOWE, P.E.
FLA. REG. NO. 49912
DATE: 8/9/12

9TH ST E-4 LANE
SIGNING AND PAVEMENT MARKINGS
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156203STRIPING.dwg, 41, 12

CSDG PROJ. NO.	SHEET NO.
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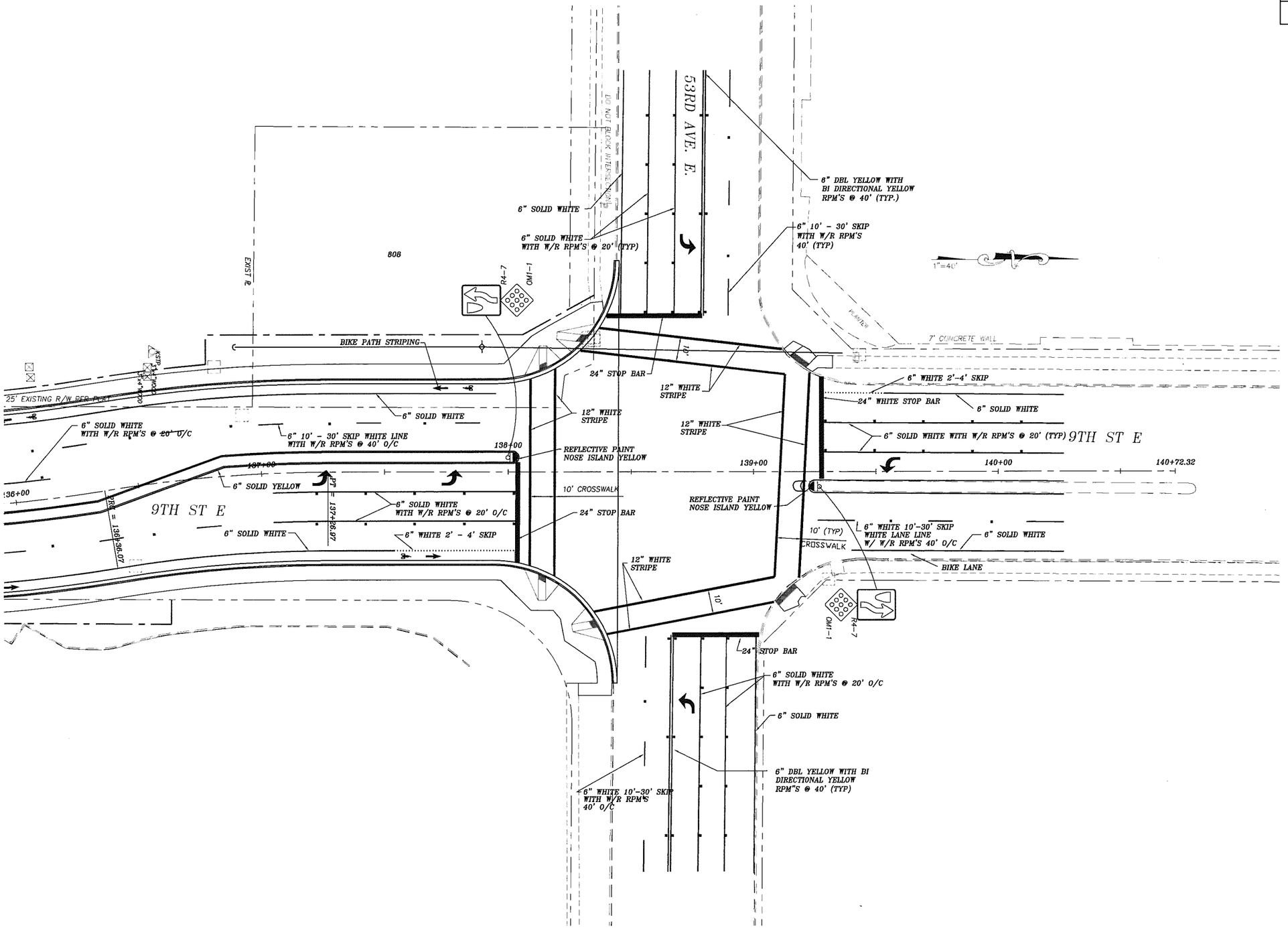

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY
GOVERMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, PSC
2425 Crane Field Rd.
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Lakeland, FL 33811
Tel: 863-665-4721
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	EW	9/05
DRAWN BY	RVD	7/11
CHECKED BY	JEH	7/11

JOHN E. HOWLE, P.E.
FLA. REG. NO. 72564
DATE: 9/6/12

9TH ST E-4 LANE
SIGNING AND PAVEMENT MARKINGS
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156203STRIPING.dwg, 42, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	43

PHASE I

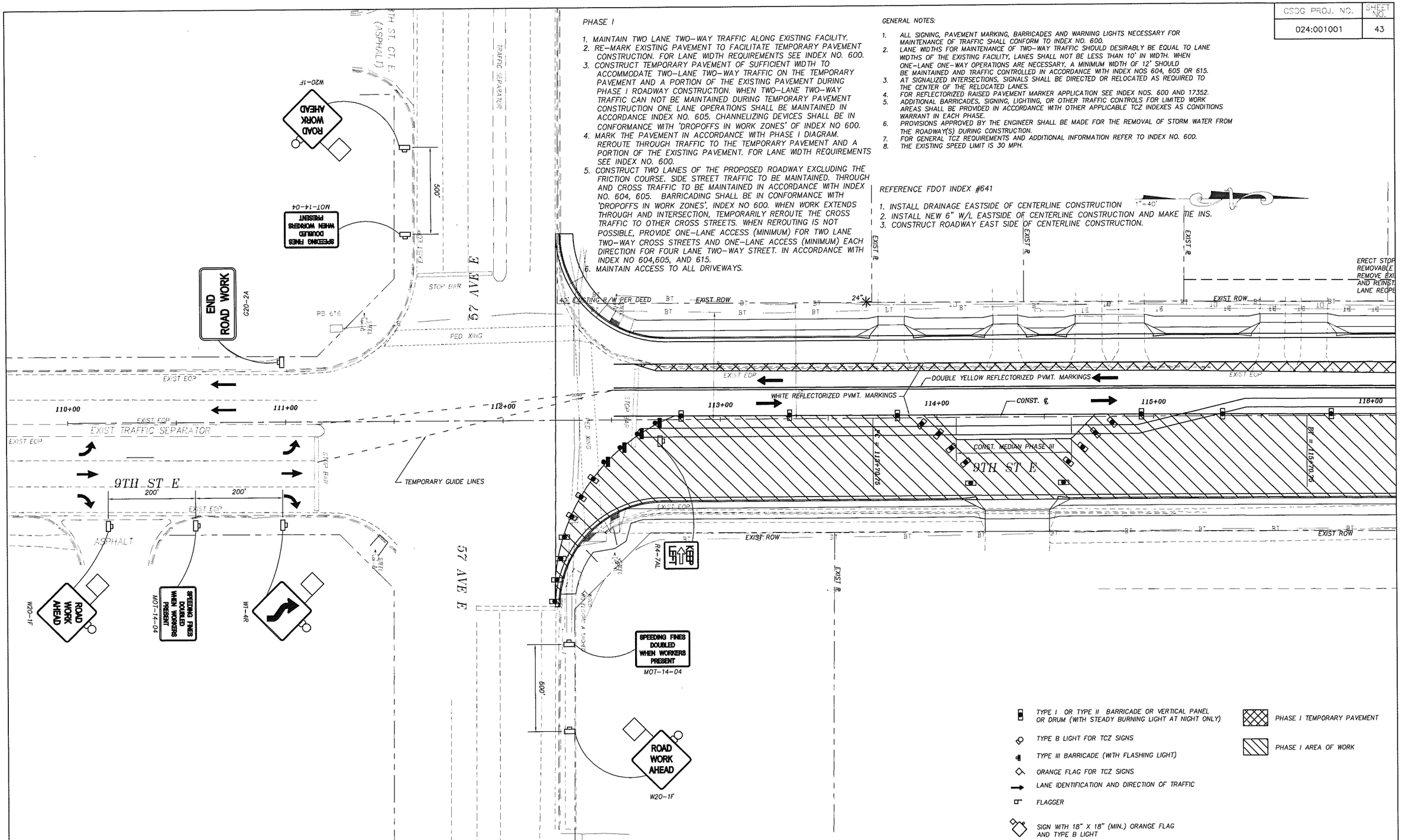
1. MAINTAIN TWO LANE TWO-WAY TRAFFIC ALONG EXISTING FACILITY.
2. RE-MARK EXISTING PAVEMENT TO FACILITATE TEMPORARY PAVEMENT CONSTRUCTION. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
3. CONSTRUCT TEMPORARY PAVEMENT OF SUFFICIENT WIDTH TO ACCOMMODATE TWO-LANE TWO-WAY TRAFFIC ON THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT DURING PHASE I ROADWAY CONSTRUCTION. WHEN TWO-LANE TWO-WAY TRAFFIC CAN NOT BE MAINTAINED DURING TEMPORARY PAVEMENT CONSTRUCTION ONE LANE OPERATIONS SHALL BE MAINTAINED IN ACCORDANCE INDEX NO. 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600.
4. MARK THE PAVEMENT IN ACCORDANCE WITH PHASE I DIAGRAM. REROUTE THROUGH TRAFFIC TO THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
5. CONSTRUCT TWO LANES OF THE PROPOSED ROADWAY EXCLUDING THE FRICTION COURSE. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE MAINTAINED IN ACCORDANCE WITH INDEX NO. 604, 605. BARRICADING SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES', INDEX NO 600. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE THE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE-LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO-WAY STREET. IN ACCORDANCE WITH INDEX NO 604,605, AND 615.
6. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIE INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.



TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)

TYPE B LIGHT FOR TCZ SIGNS

TYPE III BARRICADE (WITH FLASHING LIGHT)

ORANGE FLAG FOR TCZ SIGNS

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

FLAGGER

SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

PHASE I TEMPORARY PAVEMENT

PHASE I AREA OF WORK

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 47664
DATE: 9/10/12

9TH ST E-4 LANE
MAINTENANCE OF TRAFFIC PHASE I
MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
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PHASE I

1. MAINTAIN TWO LANE TWO-WAY TRAFFIC ALONG EXISTING FACILITY.
2. RE-MARK EXISTING PAVEMENT TO FACILITATE TEMPORARY PAVEMENT CONSTRUCTION. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
3. CONSTRUCT TEMPORARY PAVEMENT OF SUFFICIENT WIDTH TO ACCOMMODATE TWO-LANE TWO-WAY TRAFFIC ON THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT DURING PHASE I ROADWAY CONSTRUCTION. WHEN TWO-LANE TWO-WAY TRAFFIC CAN NOT BE MAINTAINED DURING TEMPORARY PAVEMENT CONSTRUCTION ONE LANE OPERATIONS SHALL BE MAINTAINED IN ACCORDANCE INDEX NO. 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600.
4. MARK THE PAVEMENT IN ACCORDANCE WITH PHASE I DIAGRAM. REROUTE THROUGH TRAFFIC TO THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
5. CONSTRUCT TWO LANES OF THE PROPOSED ROADWAY EXCLUDING THE FRICTION COURSE. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE MAINTAINED IN ACCORDANCE WITH INDEX NO. 604, 605. BARRICADING SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES', INDEX NO 600. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE THE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE , PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE-LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO-WAY STREET. IN ACCORDANCE WITH INDEX NO 604,605, AND 615.
6. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIE IN.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

1"=40'

TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
TYPE B LIGHT FOR TCZ SIGNS
TYPE III BARRICADE (WITH FLASHING LIGHT)
ORANGE FLAG FOR TCZ SIGNS
LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
FLAGGER
SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

PHASE I TEMPORARY PAVEMENT
PHASE I AREA OF WORK

W20-1F
ROAD WORK AHEAD
500'
M0T-14-04
SPEEDING FINES DOUBLED WHEN WORKERS PRESENT
ERECT STOP SIGN AND INSTALL REMOVABLE STOP BAR AND MARKING. REMOVE EXISTING STOP SIGN AND REINSTALL WHEN THROUGH LANE REOPENED TO TRAFFIC
STOP
56 AVE. E.
(ASPHALT)
EXIST EOP
40' EXISTING R/W PER PLAT
2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE
3/4" PLASTIC SERVICE TO REMAIN IN PLACE AND SERVICE
2" PLASTIC GAS MAIN
118+00
117+00
DOUBLE YELLOW REFLECTORIZED PVMT. MARKINGS
118+00
WHITE REFLECTORIZED PVMT. MARKINGS
STA. 118+83.27
119+00
120+00
STA. 120+33.36
121+00
122+00
9TH ST E
PC = 119+92.14
PRC = 121+89.62
STA. 121+82.77
25' EXISTING R/W PER DEED
PROP RIGHT-OF-WAY
ASPHALT DRIVEWAY
STOP
66' EXISTING R/W PER DEED 1695/2632
12"
15" PALM
18" PALM
30" P
6" HOLLY
20
19
18
17
16
15
EXIST ROW
PB 617
2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE
WHITE REFLECTORIZED PVMT. MARKINGS
TIE INTO EXISTING 2" PLASTIC GAS MAIN
GAS PIPELINE MARKER
DOUBLE YELLOW REFLECTORIZED PVMT. MARKINGS
PROP 2" PLASTIC GAS MAIN CONST. E
123+00
124+00
125+00
126+00
127+00
128+00
EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY
40' EXISTING R/W PER DEED
PROP ROW
TIE INTO EXIST

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
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JOHN E. HOALE, P.E.
FLA. REG. NO. 42364
DATE: 8/10/12

9TH ST E-4 LANE
MAINTENANCE OF TRAFFIC PHASE I
MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
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PHASE I

1. MAINTAIN TWO LANE TWO–WAY TRAFFIC ALONG EXISTING FACILITY.
2. RE–MARK EXISTING PAVEMENT TO FACILITATE TEMPORARY PAVEMENT CONSTRUCTION. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
3. CONSTRUCT TEMPORARY PAVEMENT OF SUFFICIENT WIDTH TO ACCOMMODATE TWO–LANE TWO–WAY TRAFFIC ON THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT DURING PHASE I ROADWAY CONSTRUCTION. WHEN TWO–LANE TWO–WAY TRAFFIC CAN NOT BE MAINTAINED DURING TEMPORARY PAVEMENT CONSTRUCTION ONE LANE OPERATIONS SHALL BE MAINTAINED IN ACCORDANCE INDEX NO. 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600.
4. MARK THE PAVEMENT IN ACCORDANCE WITH PHASE I DIAGRAM. REROUTE THROUGH TRAFFIC TO THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
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6. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO–WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE–LANE ONE–WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
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4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
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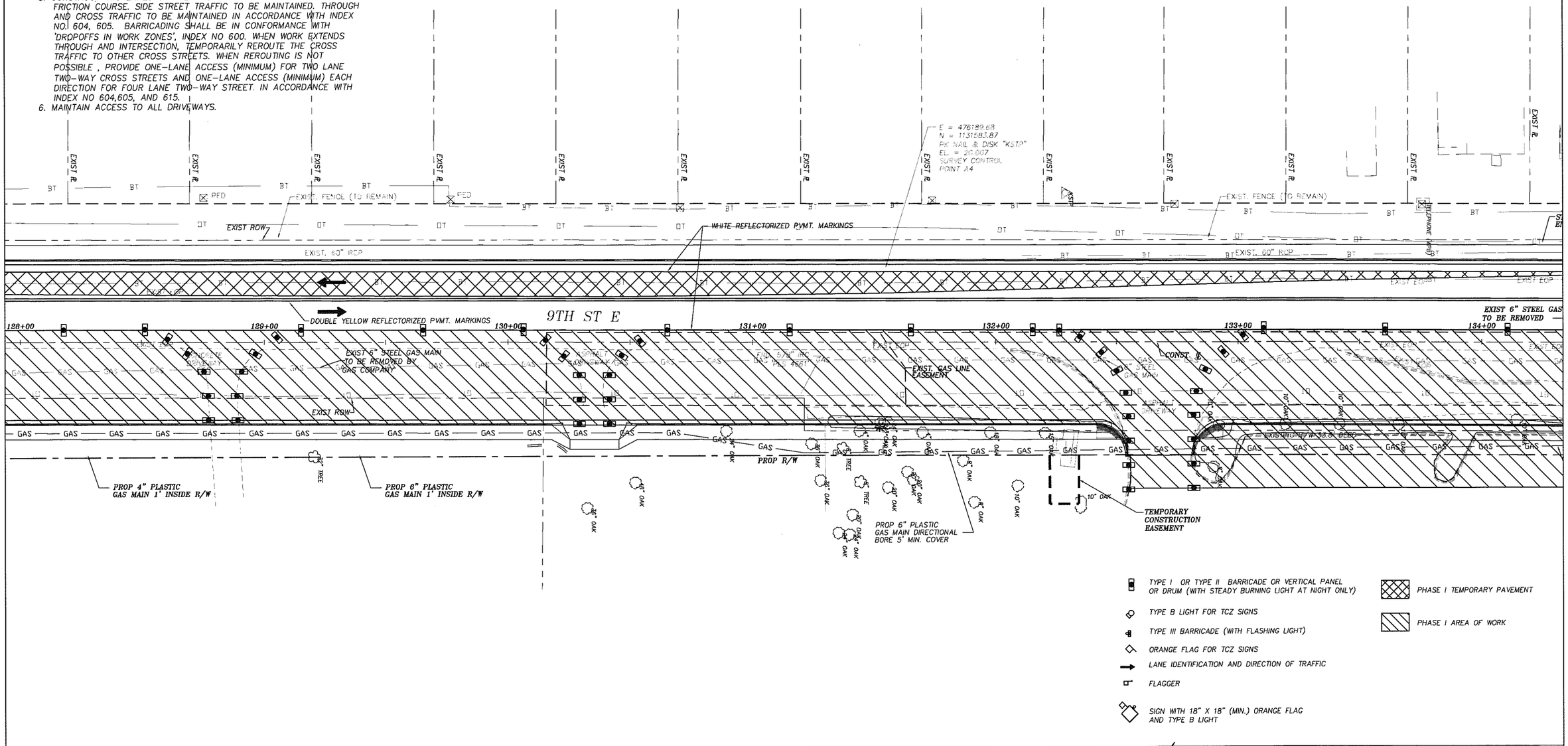
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIE IN.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

1"=40'



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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Certificate of Authorization No. 28988

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWARD, P.E.
FLORIDA REG. NO. 25041
DATE: 10/10/12

9TH ST E–4 LANE

MAINTENANCE OF TRAFFIC PHASE I

MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
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GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
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7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
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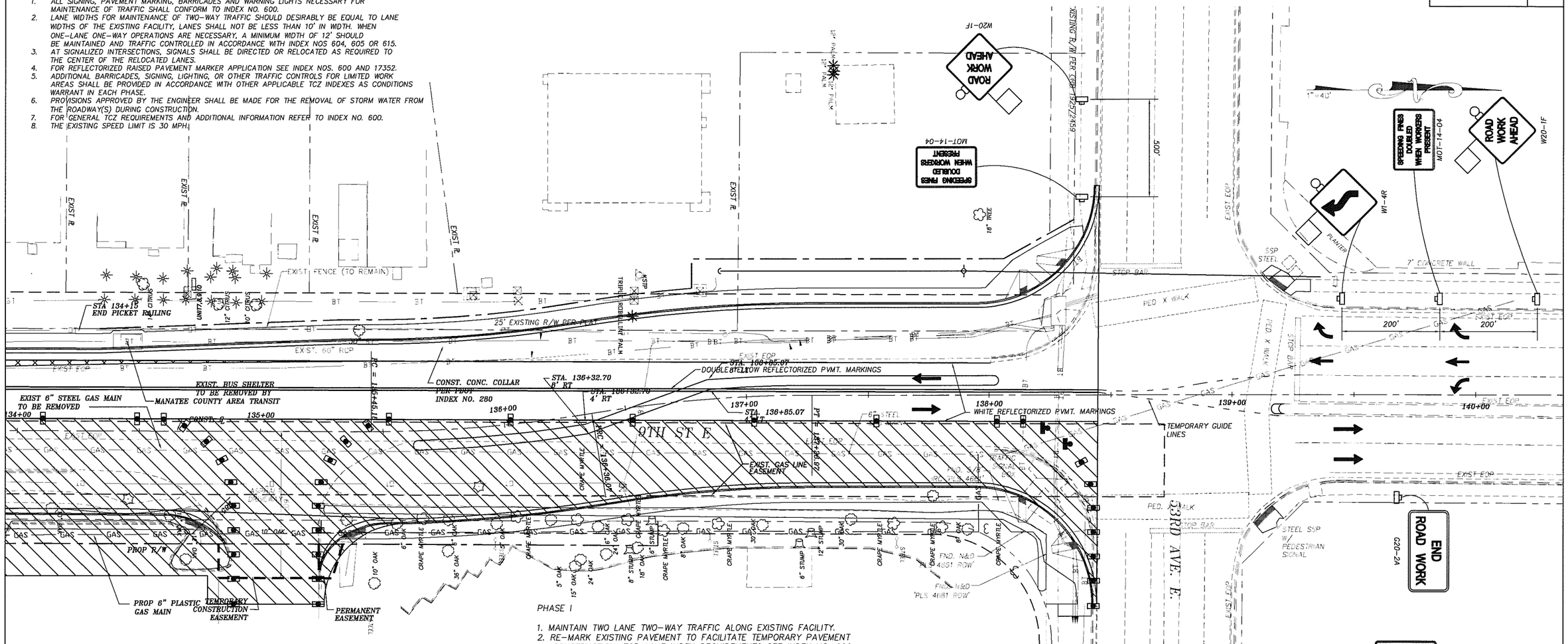
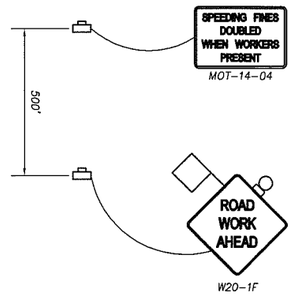


PHASE I

1. MAINTAIN TWO LANE TWO-WAY TRAFFIC ALONG EXISTING FACILITY.
2. RE-MARK EXISTING PAVEMENT TO FACILITATE TEMPORARY PAVEMENT CONSTRUCTION. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
3. CONSTRUCT TEMPORARY PAVEMENT OF SUFFICIENT WIDTH TO ACCOMMODATE TWO-LANE TWO-WAY TRAFFIC ON THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT DURING PHASE I ROADWAY CONSTRUCTION. WHEN TWO-LANE TWO-WAY TRAFFIC CAN NOT BE MAINTAINED DURING TEMPORARY PAVEMENT CONSTRUCTION ONE LANE OPERATIONS SHALL BE MAINTAINED IN ACCORDANCE INDEX NO. 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600.
4. MARK THE PAVEMENT IN ACCORDANCE WITH PHASE I DIAGRAM. REROUTE THROUGH TRAFFIC TO THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
5. CONSTRUCT TWO LANES OF THE PROPOSED ROADWAY EXCLUDING THE FRICTION COURSE. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE MAINTAINED IN ACCORDANCE WITH INDEX NO. 604, 605. BARRICADING SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES', INDEX NO 600. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE THE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE , PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE-LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO-WAY STREET. IN ACCORDANCE WITH INDEX NO 604,605, AND 615.
6. MAINTAIN ACCESS TO ALL DRIVEWAYS.

- TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
- TYPE B LIGHT FOR TCZ SIGNS
- TYPE III BARRICADE (WITH FLASHING LIGHT)
- ORANGE FLAG FOR TCZ SIGNS
- LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
- FLAGGER
- SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT
- PHASE I TEMPORARY PAVEMENT
- PHASE I AREA OF WORK



REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIE INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWELL, P.E.
FLA. REG. NO. 42988
DATE: 9/19/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE I

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620MOT.dwg, 46, 1:2

CSDG PROJ. NO.	SHEET NO.
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GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
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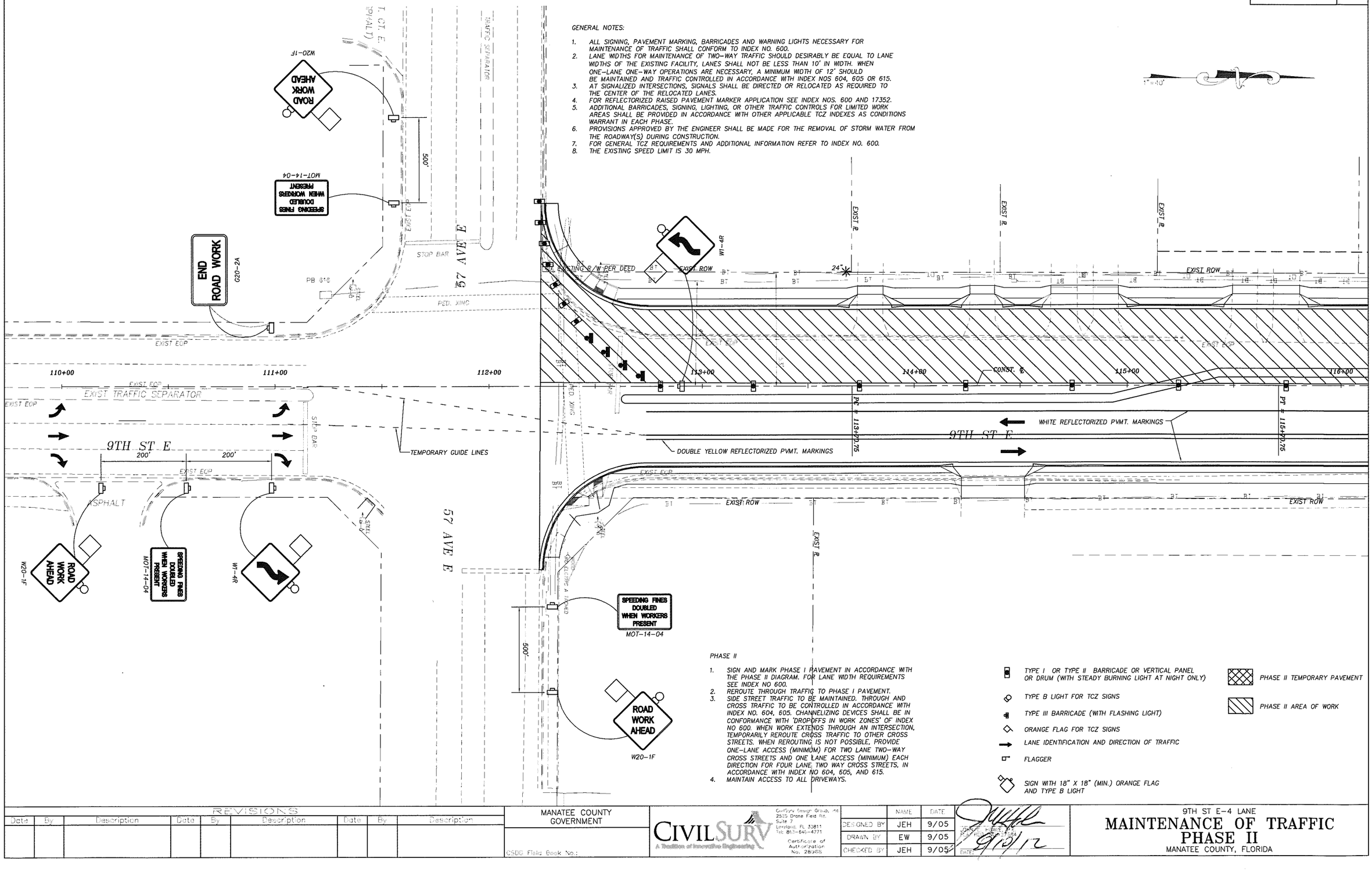
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

1"=40'



PHASE II

1. SIGN AND MARK PHASE I PAVEMENT IN ACCORDANCE WITH THE PHASE II DIAGRAM. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO 600.
2. REROUTE THROUGH TRAFFIC TO PHASE I PAVEMENT.
3. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NO. 604, 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROP-OFFS IN WORK ZONES' OF INDEX NO 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NO 604, 605, AND 615.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

- TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
- TYPE B LIGHT FOR TCZ SIGNS
- TYPE III BARRICADE (WITH FLASHING LIGHT)
- ORANGE FLAG FOR TCZ SIGNS
- LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
- FLAGGER
- SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT
- PHASE II TEMPORARY PAVEMENT
- PHASE II AREA OF WORK

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2935 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28955

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

DATE: 9/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE II

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	48

W20-1F

ROAD WORK AHEAD

500'

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT

M0T-14-04

TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)

TYPE B LIGHT FOR TCZ SIGNS

TYPE III BARRICADE (WITH FLASHING LIGHT)

ORANGE FLAG FOR TCZ SIGNS

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

FLAGGER

SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

PHASE II TEMPORARY PAVEMENT

PHASE II AREA OF WORK

PHASE II

1. SIGN AND MARK PHASE I PAVEMENT IN ACCORDANCE WITH THE PHASE II DIAGRAM. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO 600.
2. REROUTE THROUGH TRAFFIC TO PHASE I PAVEMENT.
3. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NO. 604, 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NO 604, 605, AND 615.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

1"=40'

59 AVE E (ASPHALT)

9TH ST E

EXIST EOP

EXIST R/W

EXIST ROW

PROP ROW

40' EXISTING R/W PER PLAT

66' EXISTING R/W PER DEED 1893/2632

25' EXISTING R/W PER DEED

2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE

3/4" PLASTIC SERVICE TO REMAIN IN PLACE AND SERVICE

2" PLASTIC GAS MAIN

PROP 2" PLASTIC GAS MAIN CONST

TIE INTO EXISTING 2" PLASTIC GAS MAIN

TIE INTO EXIST 6" STEEL GAS MAIN

EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY

DOUBLE YELLOW REFLECTORIZED PVMT. MARKINGS

WHITE REFLECTORIZED PVMT. MARKINGS

GAS PIPELINE MARKER

ASPHALT DRIVEWAY

PROP RIGHT-OF-WAY

PB 617

STA. 118+83.27

STA. 120+33.36

STA. 121+82.77

PC = 119+32.14

PRC = 120+14.82

116+00 117+00 118+00 119+00 120+00 121+00 122+00

122+00 123+00 124+00 125+00 126+00 127+00 128+00

12" PALM 15" PALM 24" PALM 30" PALM 18" PALM 6" HOLLY 15" TREE 36" OAK

20 19 18 17 16 15 14 13 12

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
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Tel: 863-644-1791
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FOR REGISTRY OF FIRMS
DATE: 8/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE II

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156208MOT.dwg, 48, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	49

1"=40'

E = 476189.68
N = 1131583.87
PK NAIL & DISK "K&TP"
EL. = 20.287
SURVEY CONTROL
POINT A4

EXIST. FENCE (TO REMAIN)

EXIST ROW

EXIST. 60" ROW

EXIST. EOP

9TH ST E

128+00 129+00 130+00 131+00 132+00 133+00 134+00

EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY

WHITE REFLECTORIZED PVMT. MARKINGS

DOUBLE YELLOW REFLECTORIZED PVMT. MARKINGS

CONCRETE DRIVEWAY

ASPHALT DRIVEWAY

FND. 5/8" IRC PLS 4667

EXIST. GAS LINE EASEMENT

8" STEEL GAS MAIN

CONST. ℄

EXIST 6" STEEL G TO BE REMOVED

EXISTING R/W 52.5' DEED

PROP R/W

PROP 4" PLASTIC GAS MAIN 1' INSIDE R/W

PROP 6" PLASTIC GAS MAIN 1' INSIDE R/W

PROP 6" PLASTIC GAS MAIN DIRECTIONAL BORE 5' MIN. COVER

TEMPORARY CONSTRUCTION EASEMENT

GAS

BT

OT

PED

TELEPHONE HAND

TREE

OAK

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

PHASE II

1. SIGN AND MARK PHASE I PAVEMENT IN ACCORDANCE WITH THE PHASE II DIAGRAM. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO 600.
2. REROUTE THROUGH TRAFFIC TO PHASE I PAVEMENT.
3. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NO. 604, 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NO 604, 605, AND 615.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

- TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
- TYPE B LIGHT FOR TCZ SIGNS
- TYPE III BARRICADE (WITH FLASHING LIGHT)
- ORANGE FLAG FOR TCZ SIGNS
- LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
- FLAGGER
- SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT
- PHASE II TEMPORARY PAVEMENT
- PHASE II AREA OF WORK

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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CivilSurv Design Group, Inc.
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Tel: 863-666-4731
Certificate of Authorization No. 28918

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWARD
FLA. REG. NO. 57184
DATE: 5/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE II

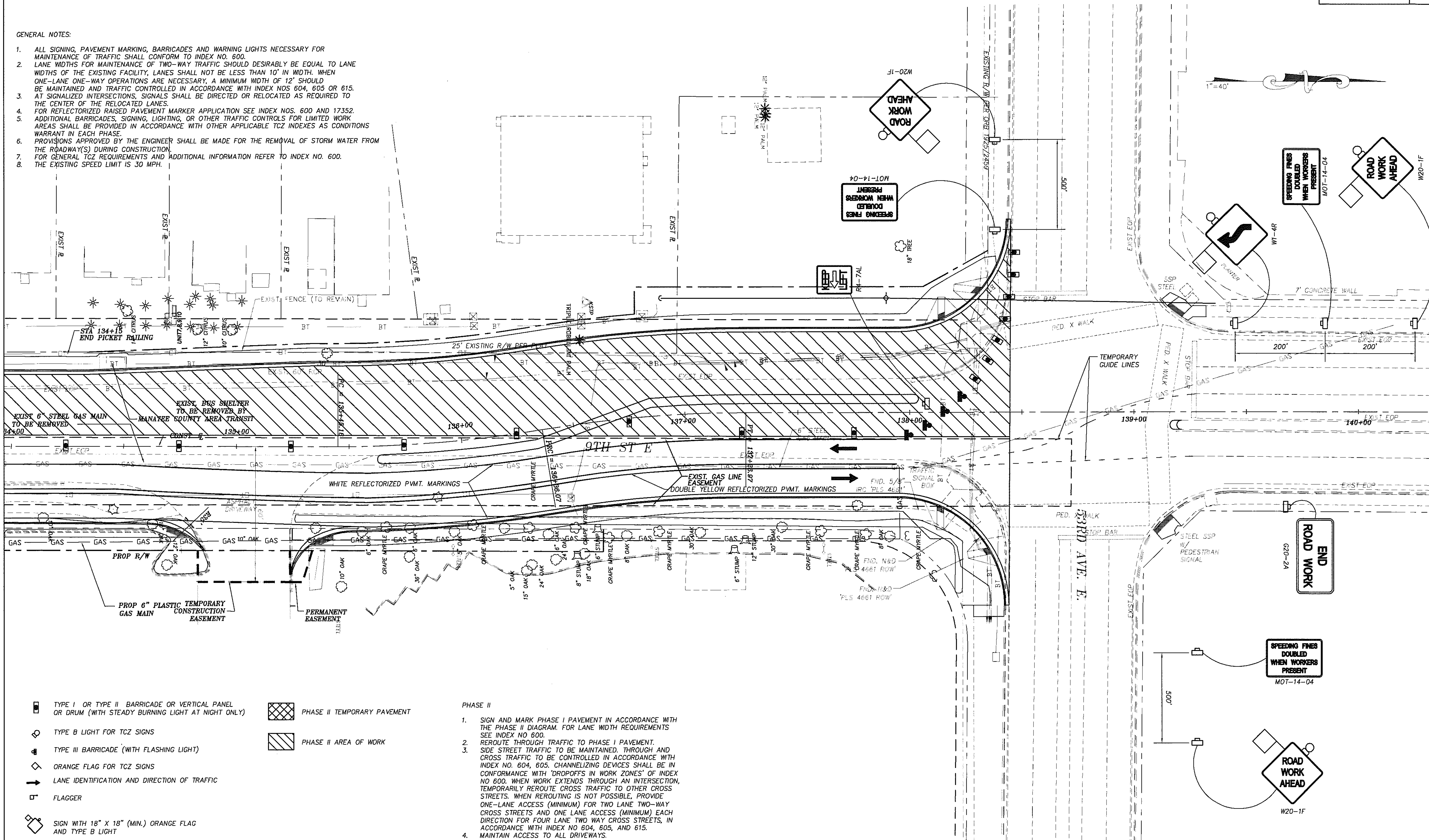
MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20MOT.dwg, 49, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	50

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.



- TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
- TYPE B LIGHT FOR TCZ SIGNS
- TYPE III BARRICADE (WITH FLASHING LIGHT)
- ORANGE FLAG FOR TCZ SIGNS
- LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
- FLAGGER
- SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT
- PHASE II TEMPORARY PAVEMENT
- PHASE II AREA OF WORK

PHASE II

1. SIGN AND MARK PHASE I PAVEMENT IN ACCORDANCE WITH THE PHASE II DIAGRAM. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO 600.
2. REROUTE THROUGH TRAFFIC TO PHASE I PAVEMENT.
3. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NO. 604, 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO-WAY CROSS STREETS AND ONE LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR LANE TWO WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NO 604, 605, AND 615.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV A Tradition of Innovative Engineering

CivilSurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel: 863-646-4771

Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOBBS, P.E. FLA. REG. NO. 47584

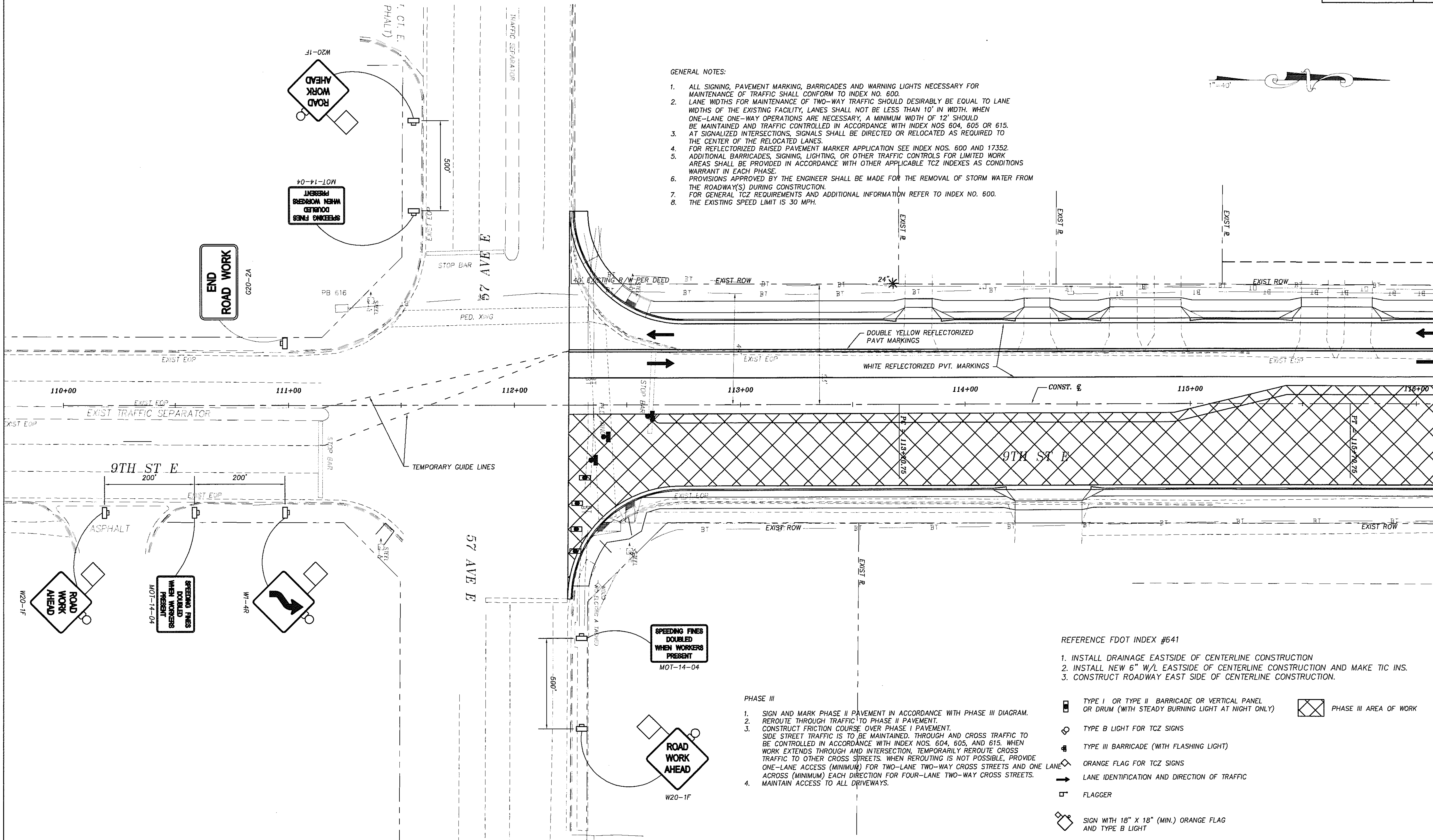
DATE: 8/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE II

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20MOT.dwg, 50, 1:2



GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIC INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

PHASE III

1. SIGN AND MARK PHASE II PAVEMENT IN ACCORDANCE WITH PHASE III DIAGRAM.
2. REROUTE THROUGH TRAFFIC TO PHASE II PAVEMENT.
3. CONSTRUCT FRICTION COURSE OVER PHASE I PAVEMENT.
   SIDE STREET TRAFFIC IS TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605, AND 615. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO-LANE TWO-WAY CROSS STREETS AND ONE LANE ACROSS (MINIMUM) EACH DIRECTION FOR FOUR-LANE TWO-WAY CROSS STREETS.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

- TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)
- PHASE III AREA OF WORK
- TYPE B LIGHT FOR TCZ SIGNS
- TYPE III BARRICADE (WITH FLASHING LIGHT)
- ORANGE FLAG FOR TCZ SIGNS
- LANE IDENTIFICATION AND DIRECTION OF TRAFFIC
- FLAGGER
- SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Lakeland, FL 33811
Tel: [illegible]
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E.
FLA. REG. NO. 27384
DATE: 9/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE III (FRICTION COURSE)

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\1715620MOT.dwg, 51, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	52

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIC INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)

PHASE III AREA OF WORK

TYPE B LIGHT FOR TCZ SIGNS

TYPE III BARRICADE (WITH FLASHING LIGHT)

ORANGE FLAG FOR TCZ SIGNS

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

FLAGGER

SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

PHASE III

1. SIGN AND MARK PHASE II PAVEMENT IN ACCORDANCE WITH PHASE III DIAGRAM.
2. REROUTE THROUGH TRAFFIC TO PHASE II PAVEMENT.
3. CONSTRUCT FRICTION COURSE OVER PHASE I PAVEMENT. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605, AND 615. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO-LANE TWO-WAY CROSS STREETS AND ONE LANE ACROSS (MINIMUM) EACH DIRECTION. FOR FOUR-LANE TWO-WAY CROSS STREETS.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED, RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. ALL EXCAVATIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

1"=40'

56 AVE. E.

9TH ST E

500'

40' EXISTING R/W PER PLAT

2" PLASTIC GAS MAIN TO REMAIN IN PLACE AND SERVICE

3/4" PLASTIC SERVICE TO REMAIN IN PLACE AND SERVICE

DOUBLE YELLOW REFLECTORIZED PAVT MARKINGS

WHITE REFLECTORIZED PVT. MARKINGS

STA. 118+83.27

STA. 120+33.36

PT = 115+70.25

PC = 119+82.14

PRC = 120+95.82

25' EXISTING R/W PER DEED

40' EXISTING R/W PER DEED 1699/2632

EXIST ROW

EXIST EOP

PROP ROW

PB 617

TIE INTO EXISTING 2" PLASTIC GAS MAIN

PROP 2" PLASTIC GAS MAIN

CONST. ℄

TIE INTO EXIST 6" STEEL GAS MAIN

EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY

PT = 122+61.10

121+82.77

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Division of Innovative Engineering
Civilsurv Design Group, Inc
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Certificate of Authorization No. 28846

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOLLE PE
FLA. REG. NO. 47564
DATE: 8/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE III (FRICTION COURSE)

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156.20MOT.dwg, 52, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	53

1"=40'

E = 476199.68
N = 1131383.87
PK NAIL & DISK "KSTP"
EL. = 20.007
SURVEY CONTROL
POINT A4

EXIST. FENCE (TO REMAIN)

EXIST ROW

EXIST. 60" RCP

DOUBLE YELLOW REFLECTORIZED PAVT MARKINGS

WHITE REFLECTORIZED PVT. MARKINGS

9TH ST E

EXIST. 6" STEEL GAS TO BE REMOVED

128+00 129+00 130+00 131+00 132+00 133+00 134+00

EXIST 6" STEEL GAS MAIN TO BE REMOVED BY GAS COMPANY

EXIST ROW

EXIST. GAS LINE EASEMENT

CONST. ℄

EXISTING R/W 53.0' DEED

PROP R/W

PROP 4" PLASTIC GAS MAIN 1' INSIDE R/W

PROP 6" PLASTIC GAS MAIN 1' INSIDE R/W

PROP 6" PLASTIC GAS MAIN DIRECTIONAL BORE 5' MIN. COVER

TEMPORARY CONSTRUCTION EASEMENT

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIC INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)

PHASE III AREA OF WORK

TYPE B LIGHT FOR TCZ SIGNS

TYPE III BARRICADE (WITH FLASHING LIGHT)

ORANGE FLAG FOR TCZ SIGNS

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

FLAGGER

SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

PHASE III

1. SIGN AND MARK PHASE II PAVEMENT IN ACCORDANCE WITH PHASE III DIAGRAM.
2. REROUTE THROUGH TRAFFIC TO PHASE II PAVEMENT.
3. CONSTRUCT FRICTION COURSE OVER PHASE I PAVEMENT. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605, AND 615. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO WAY CROSS STREETS AND ONE LANE ACROSS (MINIMUM) EACH DIRECTION. FOR FOUR-LANE TWO-WAY CROSS STREETS.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

DATE: 6/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE III (FRICTION COURSE)

MANATEE COUNTY, FLORIDA

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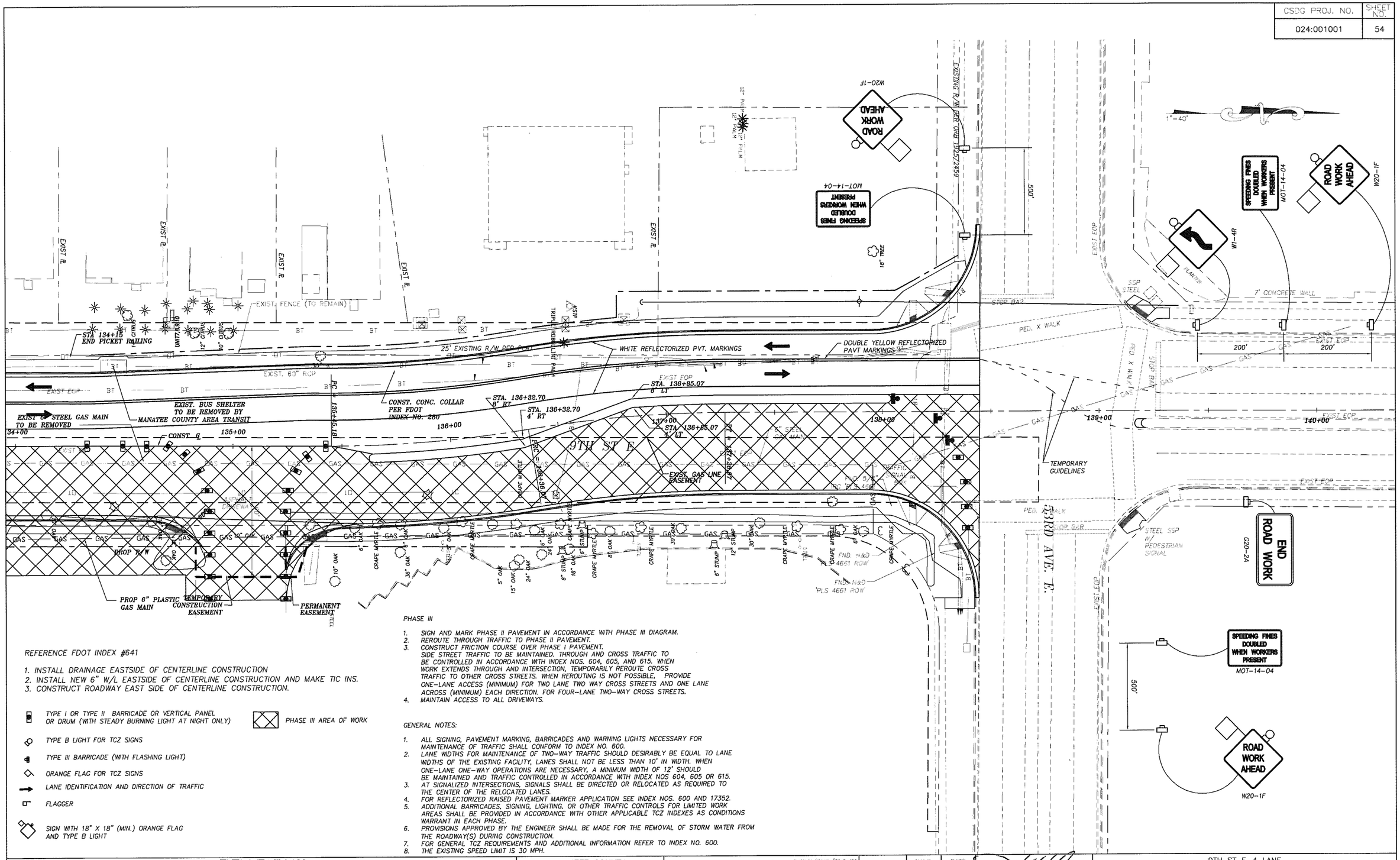

REFERENCE FDOT INDEX #641

1. INSTALL DRAINAGE EASTSIDE OF CENTERLINE CONSTRUCTION
2. INSTALL NEW 6" W/L EASTSIDE OF CENTERLINE CONSTRUCTION AND MAKE TIC INS.
3. CONSTRUCT ROADWAY EAST SIDE OF CENTERLINE CONSTRUCTION.

TYPE I OR TYPE II BARRICADE OR VERTICAL PANEL OR DRUM (WITH STEADY BURNING LIGHT AT NIGHT ONLY)

PHASE III AREA OF WORK

TYPE B LIGHT FOR TCZ SIGNS

TYPE III BARRICADE (WITH FLASHING LIGHT)

ORANGE FLAG FOR TCZ SIGNS

LANE IDENTIFICATION AND DIRECTION OF TRAFFIC

FLAGGER

SIGN WITH 18" X 18" (MIN.) ORANGE FLAG AND TYPE B LIGHT

PHASE III

1. SIGN AND MARK PHASE II PAVEMENT IN ACCORDANCE WITH PHASE III DIAGRAM.
2. REROUTE THROUGH TRAFFIC TO PHASE II PAVEMENT.
3. CONSTRUCT FRICTION COURSE OVER PHASE I PAVEMENT.
   SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 504, 605, AND 615. WHEN WORK EXTENDS THROUGH AND INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO LANE TWO WAY CROSS STREETS AND ONE LANE ACROSS (MINIMUM) EACH DIRECTION. FOR FOUR-LANE TWO-WAY CROSS STREETS.
4. MAINTAIN ACCESS TO ALL DRIVEWAYS.

GENERAL NOTES:

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF THE RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING, OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

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FLA. REG. NO. 47384
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9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC PHASE III (FRICTION COURSE)

MANATEE COUNTY, FLORIDA

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MAINTENANCE OF TRAFFIC GENERAL NOTES

CONVERTING TWO LANES TO FOUR LANES

PHASE I

1. MAINTAIN TWO-LANE TWO-WAY TRAFFIC ALONG EXISTING FACILITY. INSTALL CONSTRUCTION SIGNING.
2. RE-MARK EXISTING PAVEMENT TO FACILITATE TEMPORARY PAVEMENT CONSTRUCTION. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
3. CONSTRUCT TEMPORARY PAVEMENT OF SUFFICIENT WIDTH TO ACCOMMODATE TWO-LANE TWO-WAY TRAFFIC ON THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT DURING PHASE I ROADWAY CONSTRUCTION. WHEN TWO-LANE TWO-WAY TRAFFIC CAN NOT BE MAINTAINED DURING TEMPORARY PAVEMENT CONSTRUCTION ONE-LANE OPERATIONS SHALL BE MAINTAINED IN ACCORDANCE WITH INDEX NO. 605. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO. 600.
4. MARK THE PAVEMENT IN ACCORDANCE WITH THE PHASE I DIAGRAM. REROUTE THROUGH TRAFFIC TO THE TEMPORARY PAVEMENT AND A PORTION OF THE EXISTING PAVEMENT. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
5. CONSTRUCT TWO LANES OF THE PROPOSED ROADWAY, EXCLUDING THE FRICTION COURSE. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605 AND 615. BARRICADING SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES', INDEX NO. 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE THE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO-LANE TWO-WAY CROSS STREETS AND ONE-LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR-LANE TWO-WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NO. 604, 605 AND 615.

PHASE II

1. SIGN AND MARK PHASE I PAVEMENT IN ACCORDANCE WITH THE PHASE II DIAGRAM. FOR LANE WIDTH REQUIREMENTS SEE INDEX NO. 600.
2. REROUTE THROUGH TRAFFIC TO PHASE I PAVEMENT.
3. COMPLETE ALL PHASE II CONSTRUCTION, INCLUDING THE FRICTION COURSE. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605 AND 615. CHANNELIZING DEVICES SHALL BE IN CONFORMANCE WITH 'DROPOFFS IN WORK ZONES' OF INDEX NO. 600. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO-LANE TWO-WAY CROSS STREETS AND ONE-LANE ACCESS (MINIMUM) EACH DIRECTION FOR FOUR-LANE TWO-WAY CROSS STREETS, IN ACCORDANCE WITH INDEX NOS. 604, 605 AND 615.

PHASE III

1. SIGN AND MARK PHASE II PAVEMENT IN ACCORDANCE WITH THE PHASE III DIAGRAM.
2. REROUTE THROUGH TRAFFIC TO PHASE II PAVEMENT.
3. CONSTRUCT FRICTION COURSE OVER PHASE I PAVEMENT. SIDE STREET TRAFFIC TO BE MAINTAINED. THROUGH AND CROSS TRAFFIC TO BE CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605 OR 615. WHEN WORK EXTENDS THROUGH AN INTERSECTION, TEMPORARILY REROUTE CROSS TRAFFIC TO OTHER CROSS STREETS. WHEN REROUTING IS NOT POSSIBLE, PROVIDE ONE-LANE ACCESS (MINIMUM) FOR TWO-LANE TWO-WAY CROSS STREETS AND ONE-LANE ACROSS (MINIMUM) EACH DIRECTION FOR FOUR-LANE TWO-WAY CROSS STREETS.

GENERAL NOTES

1. ALL SIGNING, PAVEMENT MARKING, BARRICADES AND WARNING LIGHTS NECESSARY FOR MAINTENANCE OF TRAFFIC SHALL CONFORM TO INDEX NO. 600.
2. LANE WIDTHS FOR MAINTENANCE OF TWO-WAY TRAFFIC SHOULD DESIRABLY BE EQUAL TO LANE WIDTHS OF THE EXISTING FACILITY, BUT LANES SHALL NOT BE LESS THAN 10' IN WIDTH. WHEN ONE-LANE ONE-WAY OPERATIONS ARE NECESSARY, A MINIMUM WIDTH OF 12' SHOULD BE MAINTAINED AND TRAFFIC CONTROLLED IN ACCORDANCE WITH INDEX NOS. 604, 605 OR 615.
3. AT SIGNALIZED INTERSECTIONS, SIGNALS SHALL BE DIRECTED OR RELOCATED AS REQUIRED TO THE CENTER OF RELOCATED LANES.
4. FOR REFLECTORIZED RAISED PAVEMENT MARKER APPLICATION SEE INDEX NOS. 600 AND 17352.
5. ADDITIONAL BARRICADES, SIGNING, LIGHTING OR OTHER TRAFFIC CONTROLS FOR LIMITED WORK AREAS SHALL BE PROVIDED IN ACCORDANCE WITH OTHER APPLICABLE TCZ INDEXES AS CONDITIONS WARRANT IN EACH PHASE.
6. PROVISIONS APPROVED BY THE ENGINEER SHALL BE MADE FOR THE REMOVAL OF STORM WATER FROM THE ROADWAY(S) DURING CONSTRUCTION.
7. FOR GENERAL TCZ REQUIREMENTS AND ADDITIONAL INFORMATION REFER TO INDEX NO. 600.
8. THE EXISTING SPEED LIMIT IS 30 MPH

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

TEMPORARY TRAFFIC CONTROL DEVICES

ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED. ARROW PANEL, PORTABLE CHANGEABLE MESSAGE SIGNS, RADAR SPEED DISPLAY TRAILERS, PORTABLE REGULATORY SIGNS, AND ANY OTHER NCHRP 350 CATEGORY 4 DEVICES SHALL BE DELINEATED WITH RETROREFLECTIVE TTC DEVICES WHEN IN USE AND SHALL BE MOVED OUTSIDE THE TRAVEL WAY AND CLEAR ZONE OR BE SHIELDED BY A BARRIER OR CRASH CUSHION WHEN NOT IN USE.

PEDESTRIAN AND BICYCLIST

WHEN AN EXISTING PEDESTRIAN WAY OR BICYCLE WAY IS LOCATED WITHIN A TRAFFIC CONTROL WORK ZONE, ACCOMMODATION MUST BE MAINTAINED AND PROVISION FOR THE DISABLED MUST BE PROVIDED.

ONLY APPROVED TEMPORARY TRAFFIC CONTROL DEVICES MAY BE USED TO DELINEATE A TEMPORARY TRAFFIC CONTROL ZONE PEDESTRIAN WALKWAY.

ADVANCED NOTIFICATION OF SIDEWALK CLOSURES AND MARKED DETOURS SHALL BE PROVIDED BY APPROPRIATE SIGNS.

OVERHEAD WORK

WORK IS ONLY ALLOWED OVER A TRAFFIC LANE WHEN ONE OF THE FOLLOWING OPTIONS IS USED:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)
OVERHEAD WORK USING A MODIFIED LANE CLOSURE IS ALLOWED IF ALL OF THE FOLLOWING CONDITIONS ARE MET:

A. WORK OPERATION IS LOCATED IN A SIGNALIZED INTERSECTION AND LIMITED TO SIGNALS, SIGNS, LIGHTING AND UTILITIES.
B. WORK OPERATIONS ARE 60 MINUTES OR LESS.
C. SPEED LIMIT IS 45 MPH OR LESS.
D. AERIAL LIFT EQUIPMENT IN THE WORK AREA HAS HIGH-INTENSITY, ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS OPERATING.
E. AERIAL LIFT EQUIPMENT IS PLACED DIRECTLY BELOW THE WORK AREA TO CLOSE THE LANE.
F. TRAFFIC CONTROL DEVICES ARE PLACED IN ADVANCE OF THE VEHICLE/EQUIPMENT CLOSING THE LANE USING A MINIMUM 100 FOOT TAPER.
G. VOLUME OR COMPLEXITY OF THE ROADWAY MAY DICTATE ADDITIONAL DEVICES, SIGNS, FLAGMEN AND/OR A TRAFFIC CONTROL OFFICER.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)
OVERHEAD WORK ABOVE A OPEN TRAFFIC LANE IS ALLOWED IF ALL OF THE FOLLOWING CONDITIONS ARE MET:

A. WORK OPERATION IS LOCATED ON A UTILITY POLE, LIGHT POLE, SIGNAL POLE, OR THEIR APPURTENANCES.
B. WORK OPERATIONS ARE 60 MINUTES OR LESS..
C. SPEED LIMIT IS 45 MPH OR LESS.
D. NO ENCROACHMENT BY ANY PART OF THE WORK ACTIVITIES AND EQUIPMENT WITHIN AN AREA BOUNDED BY 2 FEET OUTSIDE THE EDGE OF TRAVEL WAY AND 18 FEET HIGH.
E. AERIAL LIFT EQUIPMENT IN THE WORK AREA HAS HIGH-INTENSITY, ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS OPERATING.
F. VOLUME OR COMPLEXITY O THE ROADWAY MAY DICTATE ADDITIONAL DEVICES, SIGNS, FLAGMEN AND/OR A TRAFFIC CONTROL OFFICER.
G. ADEQUATE PRECAUTIONS ARE TAKEN TO PREVENT PARTS, TOOLS, EQUIPMENT AND OTHER OBJECTS FROM FALLING INTO OPEN LANES OF TRAFFIC.
H. OTHER GOVERNMENTAL AGENCIES, RAIL FACILITIES, OR CODES MAY REQUIRE A GREATER CLEARANCE. THE GREATER CLEARANCE REQUIRED PREVAILS AS THE RULE.

OPTION 3 (OVERHEAD WORK USING A STANDARD LANE CLOSURE)
THE LAND DIRECTLY BELOW THE OVERHEAD WORK IS CLOSED IN ACCORDANCE WITH THE APPROPRIATE STANDARD INDEX DRAWING OR DETAILED IN THE PLANS.

LANE WIDTHS

LANE WIDTHS OF THROUGH ROADWAYS SHOULD BE MAINTAINED THROUGH WORK ZONE TRAVEL WAYS WHEREVER PRACTICAL. THE MINIMUM WIDTHS FOR WORK ZONE TRAVEL LANES SHALL BE AS FOLLOWS: 11' FOR INTERSTATE WITH AT LEAST ONE 12' LANE PROVIDED IN EACH DIRECTION, UNLESS FORMALLY EXPECTED BY THE FEDERAL HIGHWAY ADMINISTRATION; 11' FOR FREEWAYS: AND 10' FOR ALL OTHER FACILITIES.

SIGHT DISTANCE

TAPERS: TRANSITION TAPERS SHOULD BE OBVIOUS TO DRIVERS. IF RESTRICTED SIGHT DISTANCE IS A PROBLEM (E.G., A SHARP VERTICAL OR HORIZONTAL CURVE), THE TAPER SHOULD BEGIN WELL IN ADVANCE OF THE VIEW OBSTRUCTION. THE BEGINNING OF TAPERS SHOULD NOT BE HIDDEN BEHIND CURVES.

INTERSECTIONS: TRAFFIC CONTROL DEVICES AT INTERSECTIONS MUST PROVIDE SIGHT DISTANCES FOR THE ROAD USER TO PERCEIVE POTENTIAL CONFLICTS AND TO TRAVERSE THE INTERSECTION SAFETY.

ABOVE GROUND HAZARD

ABOVE GROUND HAZARDS (SEE DEFINITIONS) ARE TO BE CONSIDERED WORK AREAS DURING WORKING HOURS AND TREATED WITH APPROPRIATE WORK ZONE TRAFFIC CONTROL PROCEDURES. DURING NON-WORKING HOURS, ALL OBJECTS, MATERIALS AND EQUIPMENT THAT CONSTITUTE AN ABOVE GROUND HAZARD MUST BE STORED/PLACED OUTSIDE THE TRAVEL WAY AND CLEAR ZONE OR BE SHIELDED BY A BARRIER OR CRASH CUSHION.

FOR ABOVE GROUND HAZARDS WITHIN A WORK ZONE THE CLEAR ZONE REQUIRED SHOULD BE BASED ON THE REGULATORY SPEED POSTED DURING CONSTRUCTION.

CLEAR ZONE WIDTHS FOR WORK ZONES

THE TERM 'CLEAR ZONE' DESCRIBES THE UNOBSTRUCTED RELATIVELY FLAT AREA, IMPACTED BY CONSTRUCTION, EXTENDING OUTWARD FROM THE EDGE OF THE TRAVEL LANE. THE TABLE BELOW GIVES CLEAR ZONE WIDTHS IN WORK ZONES FOR MEDIANS AND ROADSIDE CONDITIONS OTHER THAN FOR ROADSIDE CANALS; WHERE ROADSIDE CANALS ARE PRESENT, CLEAR ZONE WIDTHS ARE TO CONFORM WITH THE DISTANCES TO CANALS AS DESCRIBED IN VOLUME I, CHAPTER 4, SEC 4.2 AND EXHIBIT 4-A AND 4-B OF THE PLANS PREPARATION MANUAL.

HIGH-VISIBILITY SAFETY APPAREL

ALL HIGH-VISIBILITY SAFETY APPAREL SHALL MEET THE REQUIREMENTS OF THE INTERNATIONAL SAFETY EQUIPMENT ASSOCIATION (ISEA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) FOR HIGH-VISIBILITY SAFETY APPAREL", AND LABELED AS ANSI/ISEA 107-1999 OR ANSI/ISEA 107-2004. THE APPAREL BACKGROUND (OUTER) MATERIAL COLOR SHALL BE EITHER FLUORESCENT ORANGE-RED OR FLUORESCENT YELLOW-GREEN AS DEFINED BY THE STANDARD. THE RETROREFLECTIVE MATERIAL SHALL BE EITHER ORANGE, YELLOW, WHITE, SILVER, YELLOW-GREEN, OR A FLUORESCENT VERSION OF THESE COLORS, AND SHALL BE VISIBLE AT A MINIMUM DISTANCE OF 1,000 FEET. CLASS 3 APPAREL MAY BE SUBSTITUTED FOR CLASS 2 APPAREL. REPLACE APPAREL THAT IS NOT VISIBLE AT 1,000 FEET.

WORKERS: ALL WORKERS WITHIN 15 FEET OF THE EDGE OF TRAVEL WAY SHALL WEAR ANSI/ISEA CLASS 2 APPAREL. WORKERS OPERATING MACHINERY OR EQUIPMENT IN WHICH LOOSE CLOTHING COULD BECOME ENTANGLED DURING OPERATION SHALL WEAR FITTED HIGH-VISIBILITY SAFETY APPAREL.

UTILITIES: WHEN OTHER INDUSTRY APPAREL SAFETY STANDARDS REQUIRE UTILITY WORKERS TO WEAR APPAREL THAT IS INCONSISTENT WITH FDOT REQUIREMENTS SUCH AS NFPA, OSHA, ANSI, ETC., THE OTHER STANDARDS FOR APPAREL MAY PREVAIL.

FLAGGERS: FOR DAYTIME ACTIVITIES, FLAGGERS SHALL WEAR ANSI/ISEA CLASS 2 APPAREL. FOR NIGHTTIME ACTIVITIES, FLAGGERS SHALL WEAR ANSI/ISEA CLASS 3 APPAREL.

FLAGGER CONTROL

WHERE FLAGGERS ARE USED, A FLAGGER SYMBOL OR LEGEND SIGN MUST REPLACE THE WORKERS SYMBOL OR LEGEND SIGN.

THE FLAGGER MUST BE CLEARLY VISIBLE TO APPROACHING TRAFFIC FOR A DISTANCE SUFFICIENT TO PERMIT PROPER RESPONSE BY THE MOTORIST TO THE FLAGGING INSTRUCTIONS, AND TO PERMIT TRAFFIC TO REDUCE SPEED OR BE POSITIONED TO MAINTAIN MAXIMUM COLOR CONTRAST BETWEEN THE FLAGGERS SHALL BE POSITIONED TO MAINTAIN MAXIMUM COLOR CONTRAST BETWEEN THE FLAGGER'S HIGH-VISIBILITY SAFETY APPAREL AND EQUIPMENT AND THE WORK AREA BACKGROUND.

HAND-SIGNALING DEVICES

STOP/SLOW PADDLES ARE THE PRIMARY HAND-SIGNALING DEVICE. THE STOP/SLOW PADDLE SHALL HAVE AN OCTAGONAL SHAPE ON A RIGID HANDLE. STOP/SLOW PADDLES SHALL BE AT LEAST 24 INCHES WIDE WITH LETTERS AT LEAST 6 INCHES HIGH AND SHOULD BE FABRICATED FROM LIGHT SEMI-RIGID MATERIAL. THE BACKGROUND OF THE STOP FACE SHALL BE RED WITH WHITE LETTERS AND BORDER. THE BACKGROUND OF THE SLOW FACE SHALL BE ORANGE WITH BLACK LETTERS AND BORDER. WHEN USED AT NIGHT-TIME, THE STOP/SLOW PADDLE SHALL BE RETROREFLECTORIZED.

FLAG USE IS LIMITED TO IMMEDIATE EMERGENCIES, INTERSECTIONS, AND WHEN WORKING ON THE CENTERLINE OR SHARED LEFT TURN LANES WHERE TWO (2) FLAGGERS ARE REQUIRED AND THERE IS OPPOSING TRAFFIC IN THE ADJACENT LANES. FLAGS, WHEN USED, SHALL BE A MINIMUM OF 24 INCHES SQUARE, MADE OF A GOOD GRADE OF RED MATERIAL, AND SECURELY FASTENED TO A STAFF THAT IS APPROXIMATELY 36 INCHES IN LENGTH. WHEN USED AT NIGHTTIME, FLAGS SHALL BE RETROREFLECTORIZED RED.

FLASHLIGHT, LANTERN OR OTHER LIGHTED SIGNAL THAT WILL DISPLAY A RED WARNING LIGHT SHALL BE USED AT NIGHT.

FLAGGER STATIONS

FLAGGER STATIONS SHALL BE LOCATED FAR ENOUGH IN ADVANCE OF THE WORK SPACE SO THAT APPROACHING ROAD USERS WILL HAVE SUFFICIENT DISTANCE TO STOP BEFORE ENTERING THE WORK SPACE. WHEN USED AT NIGHTTIME, THE FLAGGER STATION SHALL BE ILLUMINATED.

REGULATORY SPEEDS IN WORK ZONES

REGULATORY SPEED SHOULD BE ESTABLISHED TO ROUTE VEHICLES SAFELY THROUGH THE WORK ZONE AS CLOSE AS TO NORMAL HIGHWAY SPEED AS POSSIBLE. THE REGULATORY SPEED SHOULD NOT BE REDUCED MORE THAN 10 MPH BELOW THE POSTED SPEED AND NEVER BELOW THE MINIMUM STATUTORY SPEED FOR THE CLASS OF FACILITY. WHEN A SPEED REDUCTION GREATER THAN 10 MPH IS IMPOSED, THE REDUCTION IS TO BE DONE IN 10 MPH PER 500' INCREMENTS.

TEMPORARY REGULATORY SPEED SIGNS SHALL BE REMOVED AS SOON AS THE CONDITIONS REQUIRING THE REDUCED SPEED NO LONGER EXIST. ONCE THE WORK ZONE REGULATORY SPEEDS ARE REMOVED, THE REGULATORY SPEED EXISTING PRIOR TO CONSTRUCTION WILL AUTOMATICALLY GO BACK INTO EFFECT UNLESS NEW SPEED LIMIT SIGNING IS PROVIDED FOR IN THE PLANS.

ON PROJECTS WITH INTER SPACED WORK ACTIVITIES, SPEED REDUCTIONS SHOULD BE LOCATED IN PROXIMITY TO THOSE ACTIVITIES WHICH MERIT A REDUCED SPEED, AND NOT "BLANKETED" FOR THE ENTIRE PROJECT. AT THE DEPARTURE OF SUCH ACTIVITIES, THE NORMAL HIGHWAY SPEED SHOULD BE POSTED TO GIVE THE MOTORIST NOTICE THAT NORMAL SPEED CAN BE RESUMED.

REVISIONS

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FLA. REG. NO. 72184
DATE 8/14/12

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MAINTENANCE OF TRAFFIC GENERAL NOTES
MANATEE COUNTY, FLORIDA

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MAINTENANCE OF TRAFFIC GENERAL NOTES (CONT'D)

IF THE EXISTING REGULATORY SPEED IS TO BE USED, CONSIDERATION SHOULD BE GIVEN TO SUPPLEMENTING THE EXISTING SIGNS WHEN THE CONSTRUCTION WORK ZONE IS BETWEEN EXISTING REGULATORY SPEED SIGNS. FOR PROJECTS WHERE THE REDUCED SPEED CONDITIONS EXIST FOR GREATER THAN 1 MILE IN RURAL AREAS (NON-INTERSTATE) AND ON RURAL OR URBAN INTERSTATE, ADDITIONAL REGULATORY SPEED SIGNS ARE TO BE PLACED AT NO MORE THAN 1 MILE INTERVALS. ENGINEERING JUDGEMENT SHOULD BE USED IN PLACEMENT OF THE ADDITIONAL SIGNS. LOCATING THESE SIGNS BEYOND RAMP ENTRANCES AND BEYOND MAJOR INTERSECTIONS ARE EXAMPLES OF PROPER PLACEMENT. FOR URBAN SITUATIONS (NON-INTERSTATE), ADDITIONAL SPEED SIGNS ARE TO BE PLACED AT A MAXIMUM OF 1000' APART.

WHEN FIELD CONDITIONS WARRANT SPEED REDUCTIONS DIFFERENT FROM THOSE SHOWN IN THE TCP THE CONTRACTOR MAY SUBMIT TO THE PROJECT ENGINEER FOR APPROVAL BY THE DEPARTMENT, A SIGNED AN SEALED STUDY TO JUSTIFY THE NEED FOR FURTHER REDUCING THE POSTED SPEED, OR, THE ENGINEER MAY REQUEST THE DISTRICT TRAFFIC OPERATIONS ENGINEER (DTOE) TO INVESTIGATE THE NEED. IT WILL NOT BE NECESSARY FOR THE DTOE TO ISSUE REGULATIONS FOR REGULATORY SPEEDS IN WORK ZONES DUE TO THE REVISED PROVISIONS OF F.S. 316.07451(2) (B). ADVISORY SPEED PLATES WILL BE USED AT THE OPTION OF THE FIELD ENGINEER FOR TEMPORARY USE WHILE PROCESSING A REQUEST TO CHANGE THE REGULATORY SPEED SPECIFIED IN THE PLANS WHEN DEEMED NECESSARY. ADVISORY SPEED PLATES CANNOT BE USED ALONE BUT MUST BE PLACED BELOW THE CONSTRUCTION WARNING SIGN FOR WHICH THE ADVISORY SPEED IS REQUIRED.

FOR ADDITION INFORMATION REFER TO THE FDOT ROADWAY PLANS PREPARATION MANUAL, VOLUME I, CHAPTER 10.

SIGN PLACEMENT

POST-MOUNTED SIGNS INSTALLED AT THE SIDE OF THE ROAD SHALL BE MOUNTED AT A HEIGHT AT LEAST 7 FEET MEASURED FROM THE BOTTOM OF THE SIGN TO A HORIZONTAL LINE EXTENDED FROM THE NEAR EDGE OF THE PAVEMENT. SIGNS MOUNTED ON BARRICADES, OR OTHER PORTABLE SUPPORTS SHALL BE NO LESS THAN 1 FOOT ABOVE THE TRAVELED WAY.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

ADJOINING WORK ZONES MAY NOT HAVE SUFFICIENT SPACING FOR STANDARD PLACEMENT OF SIGNS AND OTHER TRAFFIC CONTROL DEVICES IN THEIR ADVANCE WARNING AREAS OR IN SOME CASES OTHER AREAS WITHIN THEIR TRAFFIC CONTROL ZONES. WHERE SUCH RESTRAINTS OR CONFLICTS OCCUR OR ARE LIKELY TO OCCUR, ONE OF THE FOLLOWING METHODS WILL BE EMPLOYED TO AVOID CONFLICTS AND PREVENT CONDITIONS THAT COULD LEAD TO MISUNDERSTANDING ON THE PART OF THE TRAVELING PUBLIC AS TO THE INTENDED TRAVEL WAY BY THE TRAFFIC CONTROL PROCEDURE APPLIED:

(A) FOR SCHEDULED PROJECTS THE ENGINEER IN RESPONSIBLE CHARGE OF PROJECT DESIGN WILL RESOLVE ANTICIPATED WORK ZONE CONFLICTS DURING THE DEVELOPMENT OF THE PROJECT TRAFFIC CONTROL PLAN. THIS MAY ENTAIL REVISION OF PLANS ON PRECEDING PROJECTS AND COORDINATION OF PLANS ON CONCURRENT PROJECTS.

(B) UNANTICIPATED CONFLICTS ARISING BETWEEN ADJOINING IN PROGRESS HIGHWAY CONSTRUCTION PROJECTS WILL BE RESOLVED BY THE RESIDENT ENGINEER FOR PROJECTS UNDER HIS RESIDENCY, AND, BY THE DISTRICT CONSTRUCTION ENGINEER FOR IN PROGRESS PROJECTS UNDER ADJOINING RESIDENCIES.

(C) THE DISTRICT MAINTENANCE ENGINEER WILL RESOLVE ANTICIPATED AND OCCURRING CONFLICTS WITHIN SCHEDULED MAINTENANCE OPERATIONS.

(D) THE UNIT MAINTENANCE ENGINEER WILL RESOLVE CONFLICTS THAT OCCUR WITHIN ROUTINE MAINTENANCE WORKS; BETWEEN ROUTINE MAINTENANCE WORK, UNSCHEDULED WORK AND/OR PERMITTED WORK; AND, BETWEEN UNIT CONTROLLED MAINTENANCE WORKS AND HIGHWAY CONSTRUCTION PROJECTS.

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

EXISTING SIGNS THAT CONFLICT WITH TEMPORARY WORK ZONE SIGNING SHALL BE REMOVED OR COVERED AS APPROVED BY THE ENGINEER. TRAFFIC CONTROL SIGNS THAT REQUIRE COVERS WHEN NO WORK IS BEING PERFORMED IN A WORK AREA SHALL BE FULLY COVERED WITH A DURABLE OPAQUE SHEET MATERIAL.

PLASTIC FILM AND WOVEN FABRICS INCLUDING BURLAP WILL NOT BE PERMITTED. COVERING OF ONLY THE LEGEND OR SYMBOL WILL NOT BE PERMITTED. REFLECTIVE COVERINGS WILL NOT BE PERMITTED. HINGED SIGNS DESIGNED TO COVER WHEN FOLDED WILL BE PERMITTED.

COVERS, HINGED PANELS AND INTERMITTENT WORK STOPPAGE SHIELDS AND PLAQUES ARE INCIDENTAL TO WORK OPERATION SIGNS AND ARE NOT TO BE PAID FOR SEPARATELY.

SIGN MATERIALS

MESH SIGNS MAY BE USED ONLY FOR DAYLIGHT OPERATIONS AS NOTED IN THE STANDARDS. TYPE B LIGHTS AND ORANGE FLAGS ARE NOT REQUIRED EXCEPT FOR SURVEY WORK ZONES.

VINYL SIGNS MAY BE USED FOR DAY OR NIGHT OPERATIONS NOT TO EXCEED 1 DAY EXCEPT AS NOTED IN THE STANDARDS. TYPE B LIGHTS AND ORANGE FLAGS ARE NOT REQUIRED EXCEPT FOR SURVEY WORK ZONES.

WORK ZONE SIGN SUPPORTS

ALL SIGNS SHALL BE POST MOUNTED WHEN WORK OPERATIONS EXCEED 1 DAY EXCEPT AS NOTED IN THE STANDARDS.

SIGNS MOUNTED ON TEMPORARY SUPPORTS OR BARRICADES, AND BARRICADE/SIGN COMBINATION SHALL BE CRASHWORTHY IN ACCORDANCE WITH NCHRP 350 REQUIREMENTS AND INCLUDED ON THE QUALIFIED PRODUCTS LIST (QPL).

ALL POST MOUNTED WORK ZONE SIGNS SHALL BE INSTALLED ON EITHER ROUND ALUMINUM OR STEEL CHANNEL POST AS SPECIFIED IN THE TABLE BELOW.

SUPPORTS FOR MAINTENANCE OF TRAFFIC SIGNS					
SIGN SIZE	SIGN BRACKET	ROUND ALUMINUM	DEPTH IN GROUND	STEEL CHANNEL	DEPTH IN GROUND
24"X36"	2-I	NPS 2.0" X 1/8"	2'-0"	2.5 lb F/M*	3'-0"
48"X48" DIAMOND	2-I & I-II	NPS 3.5" X 3/16"	3'-4"	**	3'-0"
60"X48"	3-I	NPS 3.5" X 3/16"	3'-4"	**	3'-0"
24"X30"	2-I	NPS 2.0" X 1/8"	2'-0"	2.5 lb F/M*	3'-0"
48"X48"	2-II	NPS 3.0" X 1/8"	2'-6"	**	3'-0"
60"X24"	3-I	NPS 3.0" X 1/8"	2'-6"	3.0 lb F/M*	3'-0"
60"X36"	3-I	NPS 3.5" X 3/16"	3'-4"	4.0 lb F/M*	3'-0"

- *F/M INDICATES TYPE F OR TYPE M
- ** REQUIRES TWO 3 LB/FT STEEL CHANNEL (F/M) AT 2'-6" CENTER TO CENTER.
- ALL SIGN BRACKETS SHALL BE TYPE 1. THE TOTAL NUMBER OF BRACKETS SHALL BE PER POST AS TABULATED, EXCEPT THE "DIAMOND" SIGN WHICH SHALL USE TWO TYPE I BRACKETS PER POST.
- THE 4 LB/FT STEEL CHANNEL SHALL BE INSTALLED WITH APPROVED BREAKAWAY BASES.
- REFER TO INDEX NO. 11860, SHEET 3, FOR ROUND ALUMINUM SIGN BRACKET DETAILS, AND INDEX NO. 11865, SHEET 2, FOR STEEL CHANNEL BREAKAWAY BASES AND NOTES.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

DETOURS SHOULD BE SIGNED CLEARLY OVER THEIR ENTIRE LENGTH SO THAT MOTORIST CAN EASILY DETERMINE HOW TO RETURN TO THE ORIGINAL ROADWAY. THE REVERSE CURVE (W1-4) WARNING SIGN SHOULD BE USED FOR THE ADVANCED WARNING FOR A LANE SHIFT. A DIVERSION SHOULD BE SIGNED AS A LANE SHIFT.

INTERSECTING ROAD SIGNING

SIGNING FOR THE CONTROL OF TRAFFIC ENTERING AND LEAVING WORK ZONES BY WAY OF INTERSECTING HIGHWAYS, ROADS AND STREETS SHALL BE ADEQUATE TO MAKE DRIVERS AWARE OF WORK ZONE CONDITIONS. UNDER NO CONDITION WILL INTERSECTING LEG SIGNING BE LESS THAN A ROAD WORK AHEAD SIGN.

UTILITY WORK AHEAD SIGN

THE UTILITY WORK AHEAD (W21-7) SIGN MAY BE USED AS AN ALTERNATE TO THE ROAD WORK AHEAD OR THE ROAD WORK XX FT (W20-1) SIGN FOR UTILITY OPERATIONS ON OR ADJACENT TO A HIGHWAY.

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN

THE SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN SHOULD BE INSTALLED ON ALL PROJECTS, BUT MAY BE OMITTED IF THE WORK OPERATION IS LESS THAN 1 DAY. THE PLACEMENT SHOULD BE 500 FEET BEYOND THE ROAD WORK AHEAD SIGN OR MIDWAY TO THE NEXT SIGN WHICHEVER IS LESS.

GROOVED PAVEMENT AHEAD SIGN

THE GROOVED PAVEMENT AHEAD SIGN IS REQUIRED 500 FEET IN ADVANCE OF A MILLED OR GROOVED SURFACE OPEN TO TRAFFIC.

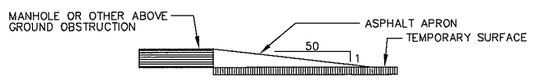
END ROAD WORK SIGN

THE END ROAD WORK SIGN (G20-2A) SHOULD BE INSTALLED ON ALL PROJECTS, BUT MAY BE OMITTED WHERE THE WORK OPERATION IS LESS THAN 1 DAY. THE SIGN SHOULD BE PLACED APPROXIMATELY 500 FEET BEYOND THE END OF A CONSTRUCTION OR MAINTENANCE PROJECT UNLESS OTHER DISTANCE IS CALLED FOR IN THE PLANS. WHEN OTHER CONSTRUCTION OR MAINTENANCE OPERATIONS OCCUR WITHIN 1 MILE THIS SIGN SHOULD BE OMITTED AND SIGNING COORDINATED IN ACCORDANCE WITH INDEX NO. 600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

MANHOLES/CROSSWALKS/JOINTS

MANHOLES EXTENDING 1" OR MORE ABOVE THE TRAVEL LANE AND CROSSWALKS HAVING AN UNEVEN SURFACE GREATER THAN L/4" SHALL HAVE A TEMPORARY ASPHALT APRON CONSTRUCTED AS SHOWN IN THE DIAGRAM BELOW.

ALL TRANSVERSE JOINTS THAT HAVE ANY DIFFERENCE IN ELEVATION SHALL HAVE A TEMPORARY ASPHALT APRON CONSTRUCTED AS SHOWN IN THE DIAGRAM BELOW.



THE APRON IS TO BE REMOVED PRIOR TO CONSTRUCTIING THE NEXT LIFT OF ASPHALT. THE COST OF THE TEMPORARY ASPHALT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR MAINTENANCE OF TRAFFIC, LS.

REMOVING PAVEMENT MARKINGS

EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH TEMPORARY WORK ZONE DELINEATION SHALL BE REMOVED BY ANY METHOD APPROVED BY THE ENGINEER, WHERE OPERATIONS EXCEED ONE DAYLIGHT PERIOD; HOWEVER, PAINTING OVER EXISTING PAVEMENT MARKINGS WILL NOT BE PERMITTED. FULL PAVEMENT WIDTH OVERLAYS OF EITHER A STRUCTURAL OR FRICTION COURSE ARE A POSITIVE MEANS TO ACHIEVE OBLITERATION.

SIGNALS

EXISTING TRAFFIC SIGNAL OPERATIONS THAT REQUIRE MODIFICATION IN ORDER TO CARRY OUT WORK ZONE TRAFFIC CONTROL SHALL BE INCLUDED IN THE TCP AND BE APPROVED BY THE DISTRICT TRAFFIC OPERATIONS ENGINEER.

MAINTAIN ALL EXISTING ACTUATED OR TRAFFIC RESPONSIVE MODE SIGNAL OPERATIONS FOR MAIN AND SIDE STREET MOVEMENTS FOR THE DURATION OF THE CONTRACT AND REQUIRE RESTORATION OF ANY LOSS OF DETECTION WITHIN 12 HOURS. THE CONTRACTOR SHALL SELECT ONLY DETECTION TECHNOLOGY LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) AND APPROVED BY THE ENGINEER TO RESTORE DETECTION CAPABILITIES. THE PLANS SHOULD IDENTIFY THE INTERSECTIONS WHERE TEMPORARY TRAFFIC DETECTION IS REQUIRED.

CHANNELIZING AND LIGHTING DEVICES

CHANNELIZING AND LIGHTING DEVICES FOR WORK ZONE TRAFFIC CONTROL SHALL BE AS PRESCRIBED IN PART VI OF THE MUTCD, SUBJECT TO SUPPLEMENTAL REVISIONS PROVIDED IN THE CONTRACT DOCUMENTS.

PRIMARY WORK ZONE TRAFFIC CONTROL DEVICES ARE SHOWN ON SHEET 8 FOR THE PURPOSE OF READY IDENTIFICATION. APPROVED DEVICES ARE LISTED ON THE DEPARTMENT'S QUALIFIED PRODUCT LIST.

CHANNELIZING AND LIGHTING DEVICE CONSISTENCY

BARRICADES, VERTICAL PANELS, CONES, TUBULAR MARKERS AND DRUMS SHALL NOT BE INTERMIXED WITHIN EITHER THE LATERAL TRANSITION OR WITHIN EITHER THE LATERAL TRANSITION OR WITHIN THE TANGENT ALIGNMENT.

WARNING LIGHTS

WARNING LIGHTS SHALL BE IN ACCORDANCE WITH SECTION 6F-78 OF THE MUTCD EXCEPT FOR THE APPLICATION LIMITATIONS STIPULATED BELOW:

FLASHING
TYPE A LOW INTENSITY FLASHING WARNING LIGHTS ARE TO BE MOUNTED ON BARRICADES, DRUMS, VERTICAL PANELS OR ADVANCE WARNING SIGNS (EXCEPT AS NOTED BELOW) AND ARE INTENDED TO CONTINUALLY WARN DRIVERS THAT THEY ARE APPROACHING OR PROCEEDING IN A HAZARDOUS AREA. FLASHING LIGHTS SHALL NOT BE USED TO DELINEATE THE INTENDED PATH OF TRAVEL, AND NOT PLACED WITH SPACINGS THAT WILL FORM A CONTINUOUS LINE TO THE DRIVERS EYE. THE TYPE A LIGHT WILL BE USED TO MARK OBSTRUCTIONS THAT ARE LOCATED ADJACENT TO OR IN THE INTENDED TRAVEL WAY. TYPE A LIGHTS SHALL NOT BE USED IN CONJUNCTION WITH THE FIRST ADVANCE WARNING SIGN NOR THE SECOND SUCH SIGN WHEN USED.

FOR POST-MOUNTED SIGNS, TYPE B HIGH INTENSITY FLASHING WARNING LIGHTS SHALL BE MOUNTED ON THE FIRST ADVANCE WARNING SIGN AND ON THE FIRST AND SECOND ADVANCE WARNING SIGN WHERE TWO OR MORE SIGNS ARE USED; THIS APPLIES TO ALL APPROACHES TO ANY WORK ZONE. THE LIGHT SHALL BE MOUNTED ON THE CHANNEL POST OR ON THE UPPER EDGE OF THE SIGN NEAREST THE TRAFFIC.

STEADY-BURN
TYPE C STEADY-BURN LIGHTS ARE TO BE MOUNTED ON BARRICADES, DRUMS, CONCRETE BARRIER WALLS OR VERTICAL PANELS AND USED IN COMBINATION WITH THOSE DEVICES TO DELINEATE THE TRAVEL WAY ON LANE CLOSURES, LANE CHANGES, DIVERSION CURVES AND OTHER SIMILAR CONDITIONS. STEADY-BURN LIGHTS ARE INTENDED TO BE PLACED IN A LINE TO DELINEATE THE TRAVELED WAY THROUGH AND AROUND OBSTRUCTIONS IN THE TRANSITION, BUFFER, WORK AND TERMINATION AREAS O THE TRAFFIC CONTROL ZONE. THEIR INTENDED PURPOSE IS NOT FOR WARNING DRIVERS THAT THEY ARE APPROACHING OR PROCEEDING THROUGH A HAZARDOUS AREA.

STANDARD ORANGE FLAG

FOR POST-MOUNTED SIGNS A STANDARD ORANGE FLAG 18" X 18" (MIN.) SHALL BE MOUNTED ON THE FIRST ADVANCED WARNING SIGN AND ON THE FIRST AND SECOND ADVANCED WARNING SIGN WHERE TWO OR MORE SIGNS ARE USED; THIS APPLIES TO ALL APPROACHES TO ANY WORK ZONE. THE FLAG SHALL BE MOUNTED ON THE CHANNEL POST OR ON THE UPPER EDGE OF THE SIGN FURTHEST FROM TRAFFIC.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FLA. REG. NO. 27934
DATE: 2/10/12

9TH ST E-4 LANE

MAINTENANCE OF TRAFFIC GENERAL NOTES

MANATEE COUNTY, FLORIDA

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MAINTENANCE OF TRAFFIC GENERAL NOTES (CONT'D)

DROPOFF CONDITION NOTES

1. A DROPOFF IS DEFINED AS A DROP IN ELEVATION, PARALLEL TO THE ADJACENT TRAVEL LANES, GREATER THAN 3" WITH SLOPES (A:B) STEEPER THAN 1:4. WHEN DROPOFFS OCCUR WITHIN THE CLEAR ZONE DUE TO CONSTRUCTION OR MAINTENANCE ACTIVITIES, PROTECTION DEVICES ARE REQUIRED. SEE CHART.
2. DISTANCE X IS TO BE THE MAXIMUM PRACTICAL UNDER PROJECT CONDITIONS.
3. DISTANCE FROM THE TRAVEL LANE TO BE BARRIER OR WARNING DEVICE SHOULD BE MAXIMUM PRACTICAL FOR PROJECT CONDITIONS.
4. ANY DROPOFF CONDITION THAT IS CREATED AND RESTORED WITHIN THE SAME WORK PERIOD WILL NOT BE SUBJECT TO THE USE OF BARRIERS; HOWEVER, WARNING DEVICES WILL BE REQUIRED.

5. WHEN PERMANENT CURB HEIGHTS ARE ≥ 6", NO WARNING DEVICE WILL BE REQUIRED. FOR CURB HEIGHTS < 6", SEE CHART.

DROPOFF NOTES

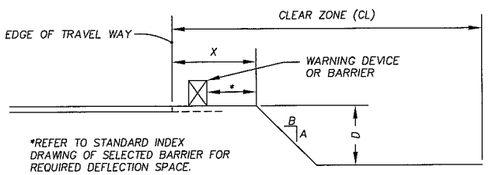
1. THESE CONDITIONS AND TREATMENT CAN BE APPLIED ONLY IN WORK AREAS THAT FALL WITHIN A PROPERLY SIGNED WORK ZONE.
2. THE FOLLOWING ARE DEFINED AS ACCEPTABLE WARNING DEVICES:
   A. VERTICAL PANEL
   B. TYPE I OR TYPE II BARRICADES
   C. DRUM
   D. CONE (WHERE ALLOWED)
   E. TUBULAR MARKER (WHERE ALLOWED)
3. WHERE A BARRIER IS SPECIFIED, ANY OF THE TYPES BELOW MAY BE USED IN ACCORDANCE WITH THE APPLICABLE INDEX:

INDEX NO.	DESCRIPTION
400	TEMPORARY GUARDRAIL AND END ANCHORAGE
412	TEMPORARY LOW PROFILE BARRIER
414	TYPE K TEMPORARY CONCRETE BARRIER
415	TEMPORARY CONCRETE BARRIER
416	TEMPORARY WATER FILLED BARRIER

4. WARNING DEVICE SPACING SHALL BE AS SHOWN IN TABLE I.

TABLE I
DEVICE SPACING

SPEED (MPH)	MAX. DISTANCE BETWEEN DEVICES (FT)			
	CONES OR TUBULAR MARKERS		TYPE I OR TYPE II BARRICADES OR VERTICAL PANELS OR DRUMS	
	TAPER	TANGENT	TAPER	TANGENT
25	25	50	25	50
30 TO 45	25	50	30	50
50 to 70	25	50	50	100



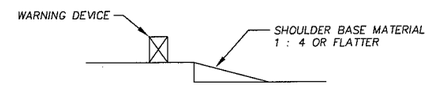
*REFER TO STANDARD INDEX DRAWING OF SELECTED BARRIER FOR REQUIRED DEFLECTION SPACE.

DROPOFF PROTECTION REQUIREMENTS
ALL SPEEDS
NO CURB AND GUTTER

X (FT)	D (IN)	DEVICE REQUIRED
0–CZ	≤3	SIGN W8–9A
0–12	>3	BARRIER
12–CZ	> 3 TO ≤ 5	WARNING DEVICE
0–CZ	>5	BARRIER

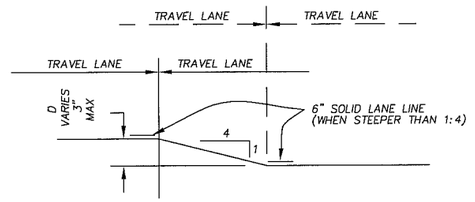
FOR CLEAR ZONE WIDTHS, SEE INDEX NO. 600 SHEET 2

SHOULDER TREATMENT



1. SHOULDER TREATMENT MAY BE USED IN LIEU OF BARRIER. WARNING DEVICES ARE REQUIRED.
2. DAILY INSPECTIONS SHALL BE CONDUCTED TO ASSURE THAT NO EROSION, EXCESSIVE SLOPES, RUTTING, OR OTHER ADVERSE CONDITIONS EXIST. ANY DEFICIENCIES SHALL BE REPAIRED IMMEDIATELY.
3. COMPENSATION FOR THE PLACEMENT AND REMOVAL OF THE MATERIAL REQUIRED FOR THE SHOULDER TREATMENT SHALL BE INCLUDED IN THE COST FOR MAINTENANCE OF TRAFFIC, LS. USE OF SHOULDER TREATMENT IN LIEU OF A BARRIER IS NOT ELIGIBLE FOR VECP CONSIDERATION.

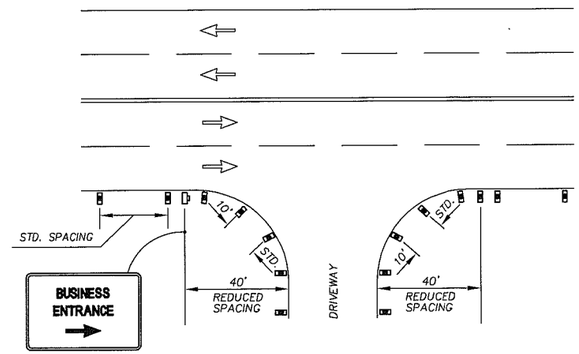
TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING



1. THIS TREATMENT APPLIES TO RESURFACING OR MILLING OPERATIONS BETWEEN ADJACENT TRAVEL LANES.
2. WHENEVER THERE IS A DIFFERENCE IN ELEVATION BETWEEN ADJACENT TRAVEL LANES, THE W8–11 SIGN WITH "UNEVEN LANES" IS REQUIRED AT INTERVALS OF L/2 MILE MAXIMUM.
3. IF D IS L L/2" OR LESS, NO TREATMENT IS REQUIRED.
4. TREATMENT ALLOWED ONLY WHEN D IS 3" OR LESS.
5. IF THE SLOPE IS STEEPER THAN 1:4 (NOT TO BE STEEPER THAN 1:1), THE R4–1 AND MOT–1–04 SIGNS SHALL BE USED AS A SUPPLEMENT TO THE W8–11; THIS CONDITION SHOULD NEVER EXCEED 3 MILES IN LENGTH.

PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE

1. SIGN HEIGHT SHALL BE 7' MINIMUM. SIGN OFFSET FROM EDGE OF TRAVEL WAY SHOULD BE BETWEEN 6' AND 10' AND RELATIVELY CONSISTENT THROUGH THE PROJECT PHASE.
2. SIGNS SHOULD SHOW SPECIFIC BUSINESS NAMES. LOGOS MAY BE PROVIDED BY BUSINESS OWNERS. BUSINESS ENTRANCE SIGN IN ACCORDANCE WITH INDEX 17355 MAY BE USED WHEN APPROVED BY THE ENGINEER.
3. PLACE ONE BUSINESS SIGN FOR EACH DRIVEWAY ENTRANCE AFFECTED. WHEN SEVERAL BUSINESSES SHARE A COMMON DRIVEWAY ENTRANCE, PLACE ONE SIGN PER COMMON DRIVEWAY ENTRANCE.
4. CHANNELIZING DEVICES SHOULD BE PLACED AT A REDUCED SPACING ON EACH SIDE OF THE DRIVEWAY ENTRANCE AS TO NOT TO INTERFERE WITH PROVIDING SIGHT DISTANCES FOR THE DRIVEWAY USER.



CHANNELIZING AND LIGHTING DEVICE NOTES

1. ONLY APPROVED TRAFFIC CONTROL DEVISES INCLUDED ON THE QUALIFIED PRODUCTS LIST (QPL) MAY BE USED.
2. THE FDOT APPROVAL NUMBER SHALL BE ENGRAVED ON THE DEVICE AT A CONVENIENT AND READILY VISIBLE LOCATION. WHERE ENGRAVING IS NOT PRACTICAL A WATER–RESISTANT TYPE LABEL MAY BE USED.
3. THE DETAILS SHOWN ON THIS SHEET ARE FOR THE FOLLOWING PURPOSES: (A) FOR EASE OF IDENTIFICATION AND (B) TO PROVIDE INFORMATION THAT SUPPLEMENTS OR SUPERSEDES THAT PROVIDED BY THE MUTCD.
4. THE TYPE III BARRICADE SHALL HAVE A UNIT LENGTH OF 6'–0" ONLY. WHEN BARRICADES OF GREATER LENGTHS ARE REQUIRED THOSE LENGTHS SHALL BE IN MULTIPLES OF THE 6'–0" UNIT. SIGNS USED IN CONJUNCTION WITH TYPE III BARRICADES MAY BE MOUNTED ON OR ABOVE THE BARRICADE. THESE SIGNS SHOULD NOT COVER MORE THAN 50 PERCENT OF THE TOP TWO RAILS OR 33 PERCENT OF THE TOTAL AREA OF THE THREE RAILS.
5. DURING HOURS OF DARKNESS, WARNING LIGHTS SHALL BE USED ON DRUMS, VERTICAL PANELS, TYPE I, TYPE II, TYPE III AND 'WARNING LIGHTS' IN INDEX NO. 600.
6. BALLAST SHALL NOT BE PLACED ON TOP RAILS OR ANY STRIPED RAILS OR HIGHER THAN 13" ABOVE THE DRIVING SURFACE.

7. THE DIRECTION INDICATOR BARRICADE MAY BE USED IN TAPERS AND TRANSITIONS WHERE SPECIFIC DIRECTIONAL GUIDANCE TO DRIVERS IS NECESSARY. IF USED, DIRECTION INDICATOR BARRICADES SHALL BE USED IN SERIES TO DIRECT THE DRIVER THROUGH THE TRANSITION AND INTO THE INTENDED TRAVEL LANE.
8. THE SPLICING OF SHEETING IS NOT PERMITTED ON EITHER CHANNELIZING DEVICES OR MOT SIGNS.
9. FOR RAILS LESS THAN 3'–0" LONG, 4" STRIPES SHALL BE USED.
10. CONES SHALL:
    A. BE USED ONLY IN ACTIVE WORK ZONES WHERE WORKERS ARE PRESENT.
    B. NOT EXCEED 2 MILES IN LENGTH OF USE AT ANY ONE TIME.
    C. HAVE AS A MINIMUM, ONE DESIGNATED PERSON FOR THE PURPOSE OF CONTINUOUS MONITORING AND MAINTENANCE OF CONES DURING LANE CLOSURES.
    D. BE REFLECTORIZED AS PER THE MUTCD WITH DEPARTMENT APPROVED REFLECTIVE COLLARS WHEN USED AT NIGHT.

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

NOTES:

1. THE SIZE OF DIAMOND SHAPED TEMPORARY TRAFFIC CONTROL (TTC) WARNING SIGNS SHALL BE MINIMUM OF 48" X 48".
2. FLUORESCENT ORANGE SHALL BE USED FOR ALL ORANGE COLORED WORK ZONE SIGNS.
3. WHEN STANDARD ORANGE FLAGS OR FLASHING WARNING LIGHTS ARE USED IN CONJUNCTION WITH SIGNS, THEY SHALL NOT BLOCK THE SIGN FACE.
4. THE SIGN SHIELDS, SYMBOLS AND MESSAGES CONTAINED ON THIS SHEET ARE PROVIDED FOR READY REFERENCE TO THOSE SIGNS USED IN THE DEVELOPMENT OF THE 600 SERIES DESIGN STANDARDS AND ARE COMMONLY USED IN THE DEVELOPMENT OF TRAFFIC CONTROL PLANS. FOR ADDITIONAL SIGNS AND SIGN DETAIL INFORMATION REFER TO THE STANDARD HIGHWAY SIGNS MANUAL AS SPECIFIED IN THE MUTCD. SPECIAL SIGNS FOR TRAFFIC CONTROL PLANS WILL BE AS APPROVED BY THE STATE TRAFFIC PLANS ENGINEER.
   THE SIGN CODES SHOW ON THIS SHEET ARE FOR THE PURPOSE OF IDENTIFYING CELL NAMES FOUND IN THE TRAFFIC CONTROL CELL LIBRARY (TCZ.CEL).
   THE STANDARD HIGHWAY SIGNS MANUAL SHOULD BE REFERENCE FOR THE OFFICIAL SIGN CODES FOR USE IN THE DEVELOPMENT OF TRAFFIC CONTROL PLANS. SEE INDEX NO. 17355 FOR MOT SIGN DETAILS.

USE OF RPMS IN LIEU OF PAINT OR REMOVABLE TYPE IN WORK ZONES

1. IN ALL TRANSITION AREAS PAINT OR REMOVABLE TAPE SHALL BE USED IN ADDITION TO RPMS.
2. THE COLOR O THE RPM BODY AND THE REFLECTIVE FACE SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SUBSTITUTE.
3. IN WORK ZONES, CLASS A, B OR D RPMS MAY BE USED TO FORM LANE LINES, EDGE LINES AND TEMPORARY GORE AREAS, IN LIEU OF PAINT OR REMOVABLE TAPE AT THE SPACING SHOWN ABOVE. WHERE THE RPMS WILL BE USED FOR FIVE (5) DAYS OR LESS, CLASS E RPMS MAY BE USED TO FORM LANE OR EDGE LINES.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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FLA. REG. NO. 27754
DATE: 6/10/12

9TH ST E–4 LANE
MAINTENANCE OF TRAFFIC GENERAL NOTES
MANATEE COUNTY, FLORIDA

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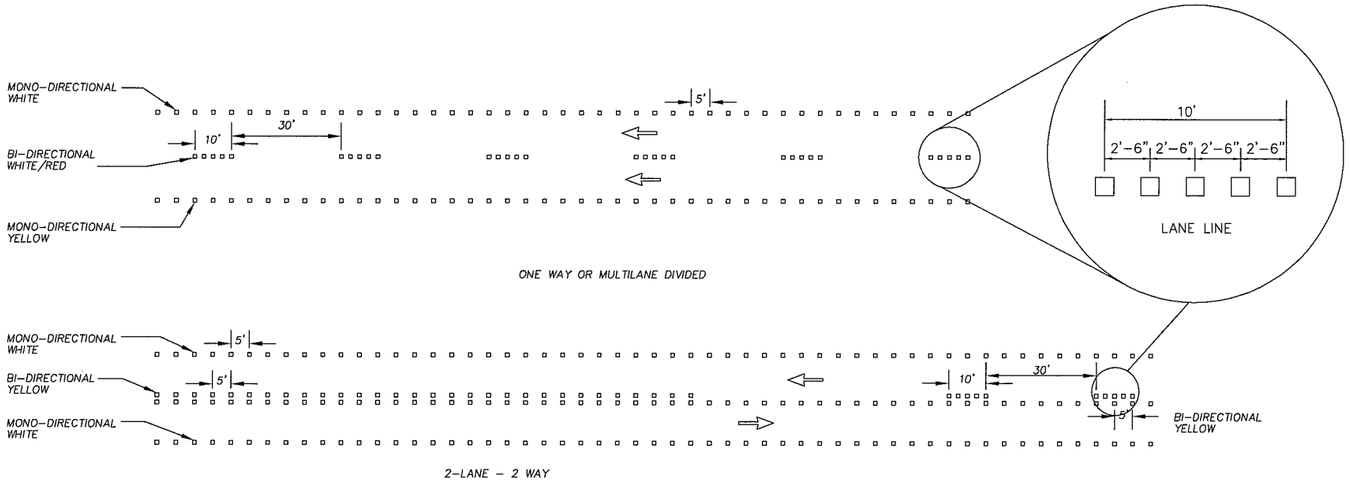
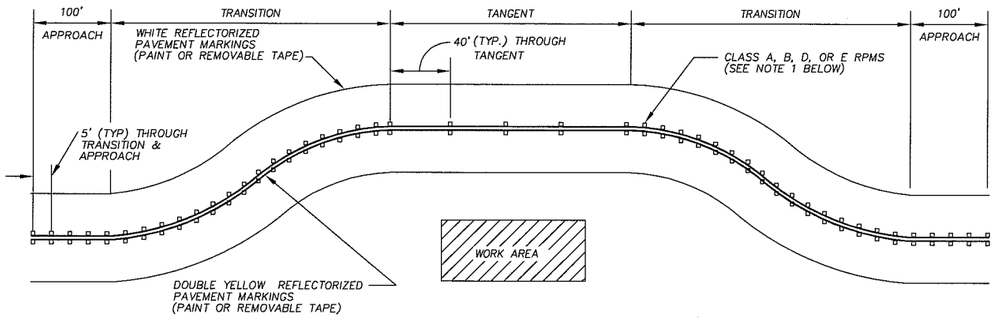
MAINTENANCE OF TRAFFIC GENERAL NOTES (CONT'D)



USE OF RPMS IN LIEU OF PAINT OR REMOVABLE TYPE IN WORK ZONES

1. IN ALL TRANSITION AREAS PAINT OR REMOVABLE TAPE SHALL BE USED IN ADDITION TO RPMS.
2. THE COLOR OF THE RPM BODY AND THE REFLECTIVE FACE SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SUBSTITUTE.
3. IN WORK ZONES, CLASS A, B OR D RPMS MAY BE USED TO FORM LANE LINES, EDGE LINES AND TEMPORARY GORE AREAS, IN LIEU OF PAINT OR REMOVABLE TAPE AT THE SPACING SHOWN ABOVE. WHERE THE RPMS WILL BE USED FOR FIVE (5) DAYS OR LESS, CLASS E RPMS MAY BE USED TO FORM LANE OR EDGE LINES.



USE OF RPMS TO SUPPLEMENT PAINT OR REMOVABLE TAPE IN WORK ZONES

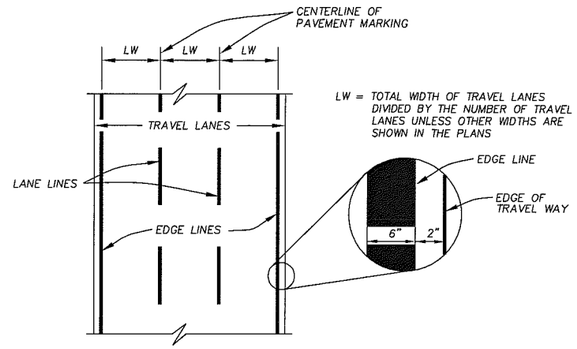
1. RPMS SHALL BE INSTALLED AS SUPPLEMENT TO ALL LANE LINES AND THE EDGE LINES OF GORE AREAS DURING CONSTRUCTION. PLACEMENT OF RPMS SHOULD BE AS SHOWN IN INDEX NO. 17352 WITH THE FOLLOWING EXCEPTIONS: RPMS SHALL BE PLACED AT 5 FEET CENTER TO CENTER IN APPROACH AND TRANSITION AREAS. CLASS D MARKERS BE PLACED A A MAXIMUM SPACING OF 5 FEET CENTER TO CENTER.

PLACEMENT OF PAVEMENT MARKINGS

RPM CLASS	APPLICATION FOR REFLECTIVE PAVEMENT MARKERS
A	PERMANENT APPLICATIONS IN NON–TRAFFIC AREAS OR CAN BE USED IN WORK ZONE APPLICATIONS FOR TRAFFIC AND NON–TRAFFIC AREAS.
B	PERMANENT APPLICATION IN TRAFFIC AND NON–TRAFFIC AREAS OR CAN BE USED IN WORK ZONE APPLICATIONS FOR TRAFFIC AND NON–TRAFFIC AREAS.
D	WORK ZONE APPLICATION ONLY, FOR TRAFFIC AND NON–TRAFFIC AREAS.
E	TEMPORARY WORK ZONE APPLICATION ONLY, NOT EXCEEDING FIVE (5) CONTINUOUS DAYS, FOR TRAFFIC AND NON–TRAFFIC AREAS.

NOTES FOR REFLECTIVE PAVEMENT MARKERS

1. THE COLOR OF THE RAISED PAVEMENT MARKER UNDER BOTH DAY AND NIGHT CONDITIONS SHALL CONFORM TO THE COLOR OF THE MARKING FOR WHICH THEY SERVE AS A POSITIONING GUIDE, OR FOR WHICH THEY SUPPLEMENT OR SUBSTITUTE.
2. TO PROVIDE CONTRAST ON CONCRETE PAVEMENT, OR LIGHT ASPHALT, THE FIVE (5) WHITE RPMS SHALL BE FOLLOWED BY FIVE BLACK RPMS. THE SPACING BETWEEN RPMS SHALL BE 2'–6". BLACK RPMS WILL NOT BE REQUIRED FOR CONTRAST WITH YELLOW RPMS.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPLACE DAMAGED OR MISSING RPMS.
4. RPMS USED TO SUPPLEMENT LANE LINES ARE TO BE PAID FOR AS REFLECTIVE PAVEMENT MARKER (TEMPORARY), EA. RPMS USED IN LIEU OF PAINT OR REMOVABLE TAPE ARE TO BE PAID FOR AS REFLECTIVE PAVEMENT MARKER (TEMPORARY), EA.



REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2505 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4271
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWELL P.E. FL REG. NO. 27884
DATE: 6/10/12

9TH ST E–4 LANE

MAINTENANCE OF TRAFFIC GENERAL NOTES

MANATEE COUNTY, FLORIDA

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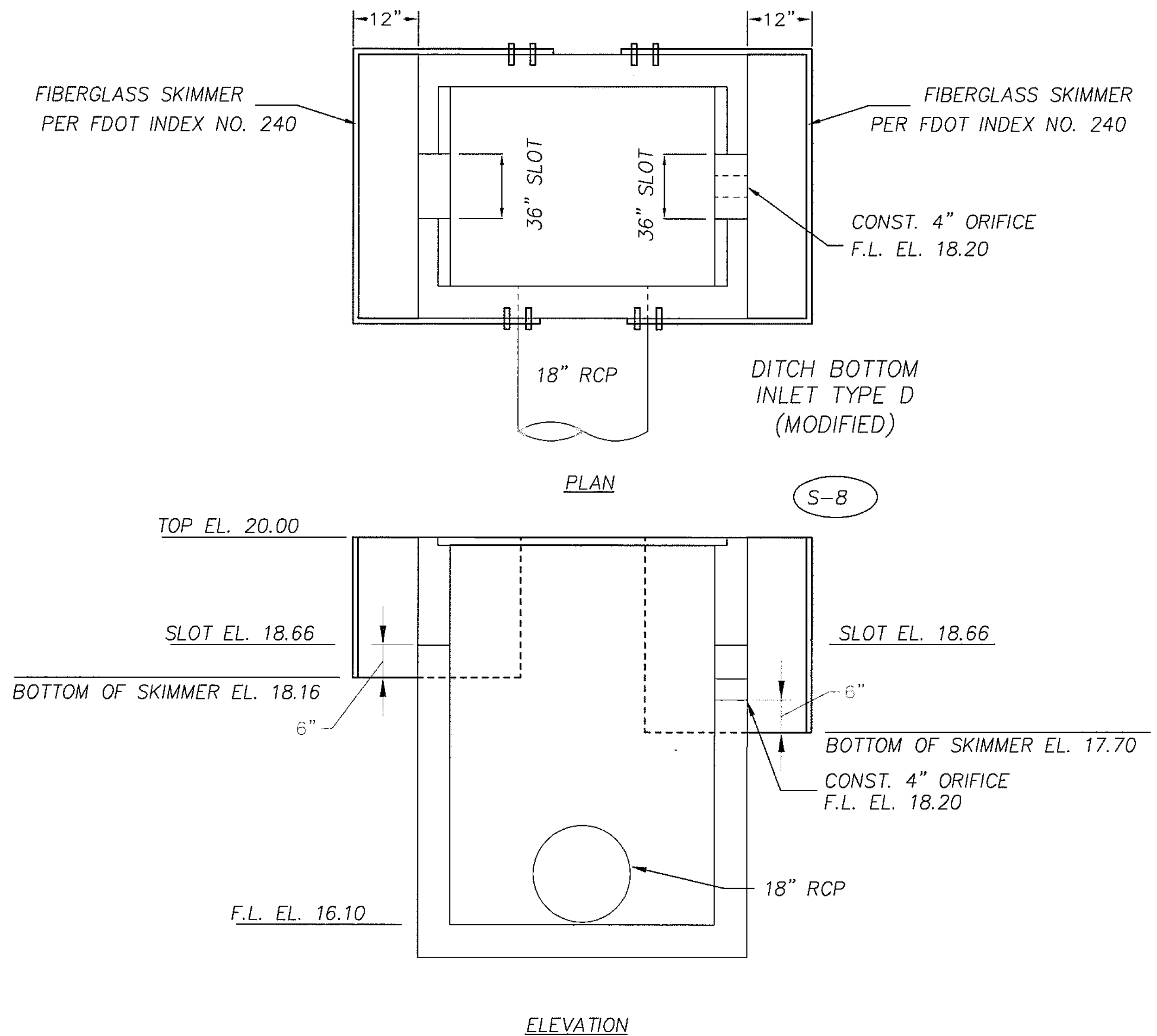
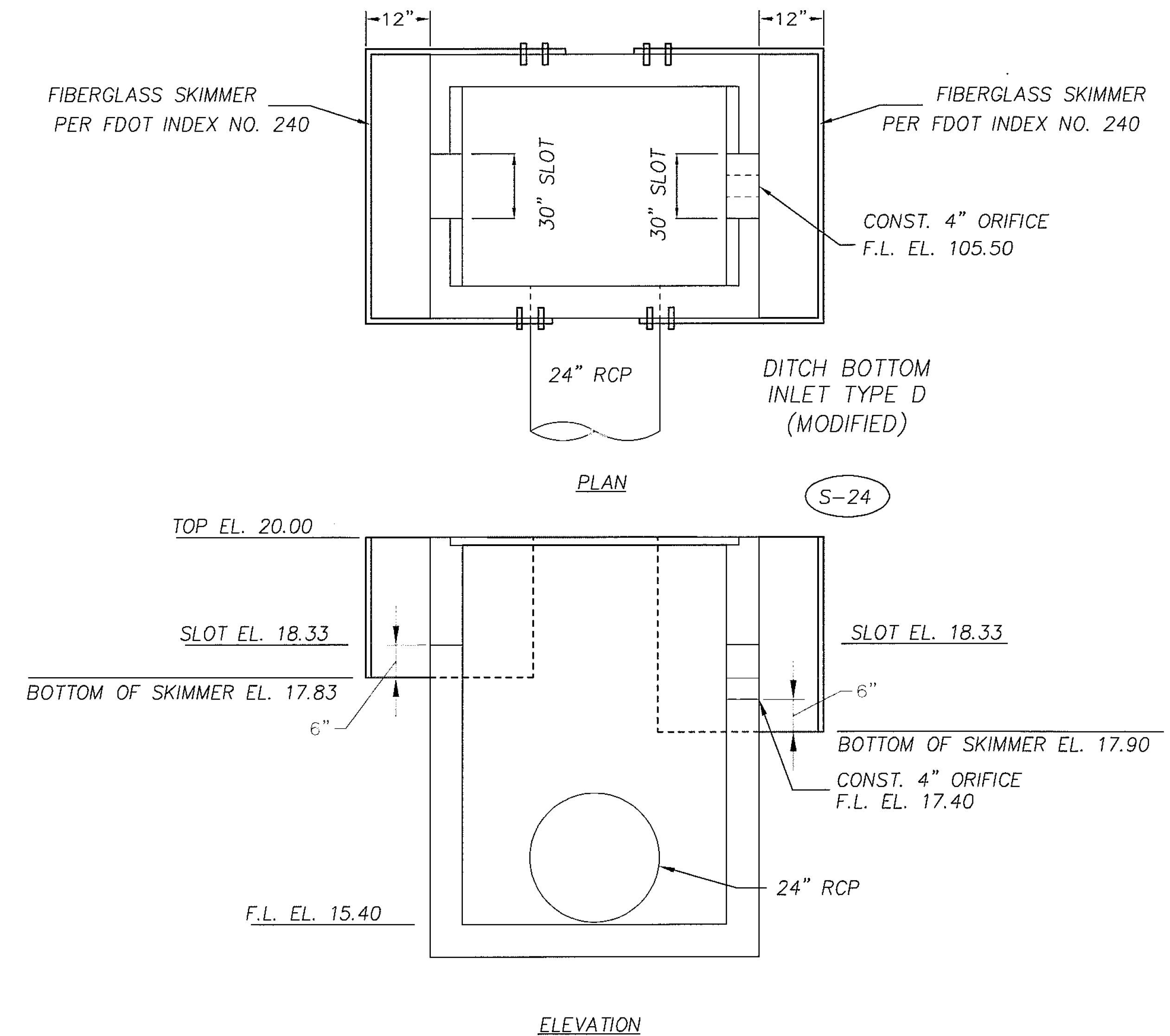


OUTFALL STRUCTURE S-8
POND A

N.T.S.



OUTFALL STRUCTURE S-24
POND B

N.T.S.

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

Certificate of Authorization No. 28088

	NAME	DATE
DESIGNED BY	KDL	8/06
DRAWN BY	EW	8/06
CHECKED BY	JEH	8/06

DATE 9/10/12

9TH ST E-4 LANE

OUTFALL STRUCTURES

MANATEE COUNTY, FLORIDA

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The following narrative of the Stormwater Pollution Prevention Plan contains references to the Standard Specifications for Road and Bridge Construction, the Design Standards, and other sheets of these construction plans. The first sheet of the construction plans (called the Key Sheet) contains an index to the other sheets. The complete Stormwater Pollution Prevention Plan includes several items: this narrative description, the documents referenced in this narrative, the contractor's approved Erosion Control Plan required by Specification Section 104, and reports of inspections made during construction.

1.0 SITE DESCRIPTION

The entire length of the improved area will be curbed and guttered and conveyed to two SWM systems. The stormwater management system will consist of a dry detention pond and a wet detention pond. The detention areas have been sized for a 100-yr 24-hour rainfall event. Length of the proposed improvement is approximatley 2,619 feet (0.50 miles).

1.a Nature of Construction Activity:

1.b Sequence of Major Soil Disturbing Activities:

In the Section 104 Erosion Control Plan, the Contractor shall provide a detailed sequence of construction for all construction activities. The contractor shall follow the sequence of major activities described below, unless the Contractor proposes a different sequence that is equal or better at controlling erosion and trapping sediment and is approved by the Engineer.

For each construction phase, install perimeter controls after clearing and grubbing necessary for installation of controls but before beginning other work for the construction phase. Remove perimeter controls only after all upstream areas are stabilized.

1. Clearing and grubbing, earthwork for additional lane
2. Earthwork associated with inlets and culverts.

1.c Area Estimates:

Total project area: 6.82 acres.
Total area to be disturbed: 4.87 acres.

1.d Runoff Data:

Curve #: Before: varies from 57 to 67
During: varies from 61 to 80.

After: varies from 61 to 80.

Soils Data: According to Manatee County SCS Soil Survey from 1979, the project is within soil type; Type #7 – Canova Fine Sand, Type #16 – Delray Fine Sand, Type #17 – Delray Fine Sand, Type #20 – EauGallie Fine Sand, and Type #38 – Palmetto Fine Sand. All soils are poorly drained and are classified as Hydrologic Group B/D.

1.e Site Map:

The construction plans are being used as the site maps. The location of the required information is described below. The sheet number for the plan sheets referenced are identified on the Key Sheet of these construction plans.

* Drainage Patterns: The drainage basin divides and flow directions are shown on the Drainage Maps. Figures A–B and Figures C–D, which show overland flow direction. The arrows above and below the profile represent the flow direction at the left and right property line, respectively. Arrows pointing to the profile indicate runoff coming to the site. Pointing away from the site indicate runoff leaving the site.

* Approximate Slopes: The slopes of the site can be seen in the Cross Section Sheets and the Plan–Profile Sheets.

* Areas of Soil Disturbance: The areas to be disturbed are indicated on the Construction Sheets.

* Areas Not To Be Disturbed: Refer to Construction Plans.

* Locations of Temporary Controls: These are shown on the Construction Plans.

* Areas To Be Stabilized: All areas of earthwork.

* Surface Waters: No surface water is within the site.

2.0 CONTROLS:

2.a Erosion And Sediment Controls:

In Section 104 Erosion Control Plan, the Contractor shall describe the proposed stabilization and structural practice. The following recommended guidelines based on Minimum Guidelines presented in The Florida Stormwater, Erosion, and Sedimentation Control Inspectors Manual.

2.a.1 Stabilization Practices:

In the Section 104 Erosion Control Plan, the Contractor shall describe the stabilization practices proposed to control erosion. The Contractor shall initiate all stabilization measures as soon as practical, but in no case more than 14 days, in portions of the site where construction activities have temporarily or permanently ceased. The stabilization practices shall include at least the following, unless otherwise approved by the Engineer.

Temporary:
* Artificial coverings in accordance with Specification Section 104.
* Seed and Mulch, and Sod in accordance with Specification Section 104.

Permanent:
* Asphalt or concrete surface.
* Sod in accordance with Specification Section 575.

2.a.2 Structural Practices:

In Section 104 Erosion Control Plan, the Contractor shall describe the proposed structural practices to control or trap sediment and otherwise prevent the discharge of pollutants from exposed areas of the site. Sediment controls shall be in place before disturbing soil upstream of the control. The structural practices shall include at least the following unless otherwise approved by the Engineer.

Temporary:
* Staked Silt Fence in accordance with Design Standard 102 and Specification Section 104.
* Baled Hay or Straw in accordance with Design Standard 102 and Specification Section 104.
* Inlet protection in accordance with Design Standard 102 and special details shown in the TCP.

Permanent:
* Swales.
* Sod.

2.b Stormwater Management:

Swales will be maintained to continue conveyance of stormwater. In areas where swales cannot be maintained, inlets and culverts will be extended or constructed to continue conveyance.

2.c Other Controls:

2.c.1 Waste Disposal:

In the Section 104 Erosion Control Plan, the Contractor shall describe the proposed methods to prevent the discharge of solid materials, including building materials, to waters of the United States. The proposed methods shall include at least the following, unless otherwise approved by the Engineer.

* Providing litter control and collection within the project during construction activities.
* Disposing of all fertilizer or other chemical containers according to EPA's standard practices as detailed by the manufacturer.
* Disposing of solid materials including building and construction materials off the project site but not in surface waters or wetlands.

2.c.2 Off–Site Vehicle Tracking & Dust Control:

In the Section 104 Erosion Control Plan, the Contractor shall describe the proposed methods for minimizing off site vehicle tracking of sediments and generating dust. The proposed methods shall include at least the following, unless otherwise approved by the Engineer.

* Covering loaded haul trucks with tarpaulins.
* Removing excess dirt from roads daily.
* Stabilizing construction entrances according to Design Standard 106.
* Using roadway sweepers during dust generating activities such as excavation and milling operations.

2.c.3 State and Local Regulations For Waste Disposal, Sanitary Sewer, Or Septic Tank Regulations:

In the Section 104 Erosion Control Plan, the Contractor shall describe the proposed procedures to comply with applicable state and local regulations for waste disposal, and sanitary sewer or septic systems.

2.c.4 Fertilizers and Pesticides:

In the Section 104 Erosion Control Plan, the Contractor shall describe the procedures for applying fertilizers and pesticides. The proposed procedures shall comply with applicable subsections of either Section 570 or 577 of the FDOT Specifications.

2.c.5 Toxic Substances:

In the Section 104 Erosion Control Plan, the Contractor shall provide a list of toxic substances that are likely to be used on the job and provide a plan addressing the generation, application, migration, storage, and disposal of these substances.

3.0 MAINTENANCE:

In the Section 104 Erosion Control Plan, the Contractor shall provide a plan for maintaining all erosion and sediment controls throughout construction. The maintenance plan shall at a minimum, comply with the following:

* Silt Fence:
  Maintain per Section 104. The Contractor should anticipate replacing silt fence on 12 month intervals.

* Baled Hay or Straw:
  Remove sediment when it reaches 1/2 height of bales or when water ponds in unacceptable amounts or areas. The Contractor should anticipate replacing hay bales on 3 month intervals.

* Pond:
  The ponds is a temporary sediment basin until the area that drains to it is stabilized, so until then, remove sediment from the pond when it becomes 1.0' deep at any point.

4.0 INSPECTIONS:

Qualified personnel shall inspect the following items at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.25 inches or greater. To comply, the Contractor shall install and maintain rain gauges and record daily rainfall. Where sites have been permanently stabilized, inspections shall be conducted at least once every month. The Contractor shall also inspect that controls installed in the field agree with the Latest Stormwater Pollution Prevention Plan. The following is a list of potential erosion control inspection areas, but not limited to:

* Points of discharge to waters of the United States.
* Points of discharge to municipal separate storm sewer systems.
* Disturbed areas of the site that have not been finally stabilized.
* Areas used for storage of materials that are exposed to precipitation.
* Structural controls.
* Stormwater management systems.
* Locations where vehicles enter or exit the site.

The Contractor shall initiate repairs within 24 hours of inspections that indicate items are not in good working order.

If inspections indicate that the installed stabilization and structural practices are not sufficient to minimize erosion, retain sediment, and prevent discharging pollutants, the Contractor shall provide additional measures immediately, as approved by the Engineer.

5.0 NON–STORMWATER DISCHARGES:

In the Section 104 Erosion Control Plan, the Contractor shall identify all anticipated non–stormwater discharges (except flows from fire fighting activities). The Contractor shall describe the proposed measures to prevent pollution of these non–stormwater discharges. THE CONTRACTOR SHALL PROVIDE the name and telephone number for the district hazardous materials and such person shall be available at all times (24–7).

EROSION and SEDIMENTATION CONTROL OWNER CERTIFICATION

I, _____, certify on _____,
(OWNER or OWNER REPRESENTATIVE) (DATE)
per SWFWMD BOR Section 2.8, that these plans present minimum EROSION and SEDIMENTATION CONTROL measures for the CONTRACTOR to enforce during all construction activities.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2525 Drane Field Rd.
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Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	7/06
DRAWN BY	EW	7/06
CHECKED BY	JEH	7/06

JOHN E. HOLLAND, P.E.
FLA. REG. NO. 27984
DATE: 6/10/12

9TH STREET EAST–4LANE BETWEEN 57TH AVENUE EAST AND 53RD STREET EAST

STORM WATER POLLUTION PREVENTION PLAN

MANATEE COUNTY, FLORIDA

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GENERAL

1. ALL CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH THE PROJECT MANAGEMENT DIVISION THE PROJECT MANAGER IS EYRA CASH AND CAN BE REACHED AT (941) 708-7450 X 7344
2. SITE VISITS ARE MANDATORY FOR ALL BIDDERS. THESE SITE VISITS CAN BE ARRANGED THROUGH THE PROJECT MANAGER.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF MANATEE COUNTY UTILITY AND TRANSPORTATION STANDARDS AND/OR FDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION."
4. COSTS FOR ALL FITTINGS AND RESTRAINTS IS INCLUDED IN THE COST OF THE PIPE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS AND ALL GOVERNING FEDERAL, STATE, AND LOCAL AGENCIES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS THAT ARE NOT PROVIDED IN THE BID DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.
6. THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATION THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT MAY BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.
7. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS ON THE PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
8. AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA AT 1-800-432-4770 OR THE NATIONAL 811 ONE CALL NUMBER WHEN APPLICABLE FOR UTILITY LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITIES FOR THE POSSIBLE RELOCATION OR THE TEMPORARY MOVEMENT OF ANY EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY.
9. NO WORK, EXCEPT FOR EMERGENCY TYPE, SHALL BE PERFORMED AFTER 7:00 PM AND BEFORE 7:00 AM AND ON SATURDAY, SUNDAY AND LEGAL HOLIDAYS OF THE COUNTY, UNLESS PROPER AND EFFICIENT PROSECUTION OF THE WORK REQUIRES OPERATIONS DURING THESE TIMES. WRITTEN NOTIFICATION FOR DOING UNTIMELY WORK SHALL BE PROVIDED TO THE COUNTY A MINIMUM OF 24 HOURS PRIOR TO COMMENCING SUCH WORK HOURS.
10. NO SCHEDULED WORK SHALL INTERRUPT CUSTOMER SERVICE WITHOUT PRIOR APPROVAL AND DIRECT COORDINATION WITH THE COUNTY. 96 HOURS PRIOR TO INTERRUPTION OF SERVICE, CONTRACTOR SHALL REQUEST IN WRITING PERMISSION FROM THE COUNTY AND SHALL NOTIFY ALL AFFECTED CUSTOMERS A MINIMUM OF 48 HOURS PRIOR TO COMMENCEMENT OF WORK. THE COUNTY CAN REINSTATE CUSTOMER SERVICE AT ANY TIME, IF APPROVED SCOPE OF WORK IS NOT ADHERED TO.
11. CHAPTER 77-153 OF THE FLORIDA STATUTES REQUIRES AN EXCAVATOR TO NOTIFY ALL GAS UTILITIES A MINIMUM OF TWO (2) DAYS PRIOR TO EXCAVATING. DRAWINGS SHOW ONLY APPROXIMATE LOCATION OF GAS MAINS AND DO NOT SHOW SERVICE LINES. THE ONLY SAFE AND PROPER WAY TO LOCATE EITHER MAINS OR SERVICE LINES IS BY AN ON-SITE INSPECTION BY RESPECTIVE GAS PERSONNEL.
12. IN THE EVENT OF DAMAGE TO EXISTING UTILITIES AS A RESULT OF WORK BEING PERFORMED BY THE CONTRACTOR OR ITS SUBCONTRACTORS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RESPONSIBLE OFFICIAL TO COORDINATE REPAIR. THE CONTRACTOR SHALL LEND ALL POSSIBLE ASSISTANCE IN RESTORING SERVICES AND IS RESPONSIBLE FOR ALL COSTS, CHARGES, OR CLAIMS RESULTING FROM THE DAMAGE AND REPAIR.

SAFETY

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FLORIDA TRENCH SAFETY ACT, 90-96, LAWS OF FLORIDA EFFECTIVE OCTOBER 1, 1990 AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION EXCAVATION SAFETY STANDARDS, 29 CRF 1926.650, SUBPART P, AS AMENDED. THE CONTRACTOR SHALL INCLUDE IN THE TOTAL BID PRICE ALL COSTS FOR COMPLIANCE WITH THESE REGULATIONS.
14. THE CONTRACTOR SHALL USE SHEET PILING, SHEETING, BRACING, ETC. AS REQUIRED IN ALL EXCAVATION AREAS AND CONFORM TO ALL OSHA REQUIREMENTS.
15. THE CONTRACTOR SHALL USE ALL NECESSARY SAFETY PRECAUTIONS TO AVOID CONTACT WITH OVERHEAD AND UNDERGROUND UTILITIES, POWER LINES, ETC.
16. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THIS EXCLUSION DOES NOT ALLEVIATE THE CONTRACTOR FOR PROVIDING A CONTINUOUS SAFE WORKPLACE.

ENVIRONMENTAL

17. WHEN A BENTONITE SPILL OR FRACK-OUT OCCURS, OR THERE IS A LOSS OF RETURN INDICATING EXCESSIVE SEEPAGE OR LOSS OF DRILLING FLUID, DRILLING MUST BE STOPPED UNTIL THE LOCATION OF THE SPILL IS IDENTIFIED. UNDER NO CIRCUMSTANCES WILL DRILLING CONTINUE WHEN A SPILL IS APPARENT.
18. ONCE LOCATED, THE BENTONITE SPILL MUST BE ISOLATED AND SEEPAGE INTO ANY NEARBY WATER BODIES WILL BE BLOCKED. DEPENDING ON THE DEGREE OF THE SPILL, THE ISOLATED BENTONITE MUST BE REMOVED MANUALLY OR MECHANICALLY AND DISPOSED OF BY APPROPRIATE MEANS OR REUSED.
19. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY STORM WATER, EROSION, AND SEDIMENTATION CONTROL MEASURERS IN ACCORDANCE WITH THE FDEP "FLORIDA STORM WATER, EROSION, AND SEDIMENTATION CONTROL INSPECTOR'S MANUAL." IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTROL AND PREVENT EROSION AND TRANSPORT OF SEDIMENT TO SURFACE DRAINS AND TO DITCHES DURING CONSTRUCTION.
20. STOCKPILES SHALL BE PROTECTED AT ALL TIMES BY ON-SITE DRAINAGE CONTROLS WHICH PREVENT EROSION OF THE STOCKPILED MATERIAL. CONTROL OF DUST FROM SUCH STOCKPILES IS REQUIRED, DEPENDING UPON THEIR LOCATION THE EXPECTED LENGTH OF TIME THE STOCKPILE WILL BE PRESENT, IN NO CASE SHALL ANY STOCKPILED MATERIAL REMAIN AFTER THIRTY (30) CALENDAR DAYS.
21. STORM WATER INLETS IN THE VICINITY OF THE PROJECT SHALL BE PROTECTED BY SEDIMENT TRAPS SUCH AS SECURED INLET PROTECTION SYSTEMS, SOD, STONE, ETC., WHICH SHALL BE MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS AND WHICH MUST BE APPROVED BY THE ENGINEER BEFORE INSTALLATION. THIS WILL BE MAINTAINED TO PREVENT DEGRADATION OF THE WATERS OF THE COUNTY AND STATE.
22. SEDIMENT BASINS AND TRAPS, PERIMETER BERMS, SEDIMENT BARRIERS, VEGETATIVE BUFFERS, AND OTHER MEASURERS INTENDED TO TRAP SEDIMENT AND/OR PREVENT THE TRANSPORT OF SEDIMENT ONTO ADJACENT PROPERTIES OR INTO EXISTING BODES OF WATER MUST BE INSTALLED, CONSTRUCTED, OR IN THE CASE OF VEGETATIVE BUFFERS PROTECTED FROM DISTURBANCE, AS A FIRST STEP IN THE LAND ALTERATION PROCESS. SUCH SYSTEMS SHALL BE FULLY OPERATIVE BEFORE ANY OTHER DISTURBANCE OF THE SITE BEGINS. EARTHEN STRUCTURES INCLUDING BUT NOT LIMITED TO BERMS, EARTH FILTERS, DAMS OR DIKES SHALL BE STABILIZED AND PROTECTED FROM DRAINAGE DAMAGE OR EROSION WITHIN ONE (1) WEEK OF INSTALLATION.
23. ALL SWALES, DITCHES, AND CHANNELS LEADING FROM THE SITE SHALL BE PROTECTED FROM SILTATION AND EROSION DURING CONSTRUCTION AND BE SODDED WITHIN THREE (3) DAYS OF EXCAVATION.
24. SOIL DISPLACED BY CONSTRUCTION WILL BE REMOVED. EROSION CONTROL SHALL BE IMPLEMENTED IN AREAS WHICH ARE CONSIDERED ENVIRONMENTALLY SENSITIVE. EROSION CONTROL SYSTEMS SHALL BE REQUIRED FOR ALL WORK WITHIN JURISDICTIONAL AREAS. THESE SYSTEMS MAY INCLUDE SEDIMENT BARRIER, FILTER FABRIC AND TURBIDITY SCREENS.
25. ALL EROSION AND POLLUTION CONTROL DEVICES SHALL BE CHECKED REGULARLY, ESPECIALLY AFTER EACH RAINFALL AND SHALL BE CLEANED OUT AND/OR REPAIRED AS REQUIRED.
26. THE CONTRACTOR SHALL NOT ENTER UPON OR IN ANY WAY ALTER WETLAND AREAS THAT MAY BE ON OR NEAR THE CONSTRUCTION SITE. ALL WORK IN THE VICINITY OF OPEN WATER AND/OR WETLANDS IS TO BE PERFORMED IN COMPLIANCE WITH THE ENVIRONMENTAL REGULATIONS AND/OR PERMITS FOR THE SITE. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY FINES RESULTING FROM HIS VIOLATION OF ANY REGULATIONS OR PERMIT CONDITIONS.
27. FOR MORE INFORMATION, SEE THE EROSION CONTROL, STORMWATER POLLUTION PREVENTION PLAN INCLUDE IN THE PLANS.

RIGHT-OF-WAY

28. ALL CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO WITHIN THE MANATEE COUNTY/FDOT RIGHT-OF-WAY AND/OR EASEMENTS SHOWN ON THE DRAWINGS.
29. THE CONTRACTOR SHALL EMPLOY A LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA TO REFERENCE AND RESTORE PROPERTY CORNER MONUMENTS, PINS, AND LANDMARKS THAT MAY BE DISTURBED BY CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
30. THE CONTRACTOR, PRIOR TO CONSTRUCTION AND RESTRICTING ANY TRAFFIC MST OBTAIN A RIGHTS-OF-WAY USE PERMIT AND A TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FORM OTHER GOVERNMENTAL AGENCIES HAVING RELEVANT JURISDICTION. ALL MAINTENANCE AND PROTECTION OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE CURRENT FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS INDEX 600 AND THE REQUIREMENTS OF THE NATIONAL "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).
31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL DAMAGED STORM WATER STRUCTURES, PIPING, DRIVEWAY PIPE, AND HEADWALLS WHETHER SHOWN ON THE PLANS OR NOT. THE HEADWALLS SHALL BE REPLACED IN ACCORDANCE WITH F.D.O.T. STANDARDS.
32. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH IN THE FIELD THE RIGHT-OF-WAY LINES, BASE LINES, BENCH MARKS (ELEV.), CENTER LINES, AND STATIONING AS REQUIRED TO CONSTRUCT THE PROJECT.
33. THE CONTRACTOR SHALL COORDINATE THE CUTTING OF DRIVEWAYS WITH THE PROPERTY OWNER PRIOR TO CUT. ALL DRIVEWAYS WILL BE IN PASSABLE CONDITION AT THE END OF THE WORK DAY AND FULLY RESTORED PER SECTION 02575.
34. A RIGHT OF ENTRY AGREEMENT SHALL BE OBTAINED BY THE PROJECT MANAGER FROM THE PROPERTY OWNER BEFORE ANY DRIVEWAY CONSTRUCTION WORK IS DONE OUTSIDE OF THE RIGHT-OF-WAY OR EASEMENT.

UTILITIES

35. LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES ARE SHOWN TO THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE PLANS BUT DO NOT PURPORT TO BE ABSOLUTELY CORRECT. THERE MAY BE OTHER IMPROVEMENT, UTILITIES, ETC. WHICH ARE WITHIN THE PROJECT AREA AND WHICH HAVE NOT BEEN LOCATED OR IDENTIFIED, MAY NOT BE IN THE EXACT LOCATION SHOWN OR RELOCATED SINCE THE PREPARATION OF THESE PLANS. THE CONTRACTOR SHALL VERIFY PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS AND DIMENSIONS OF ALL EXISTING UTILITIES, STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE PLANS) THAT MAY EFFECT HIS WORK. ALL EXISTING UTILITIES TO BE EXTENDED, CROSSED OR CONNECTION POINTS SHALL BE EXPOSED PRIOR TO CONSTRUCTION TO VERIFY LOCATION AND ELEVATION. ANY DISCREPANCIES OR CONFLICTS FOUND SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR RESOLUTION.
36. THE CONTRACTOR SHALL PROTECT ALL EXISTING STRUCTURES, WATER AND SEWER LINES, STORM DRAINS, UTILITIES, DRIVEWAYS, SIDEWALKS, SIGNS, MAIL BOXES, FENCES, TREES, LANDSCAPING, AND ANY OTHER IMPROVEMENT OR FACILITY IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DAMAGED ITEM DUE TO HIS CONSTRUCTION ACTIVITIES TO EQUAL OR BETTER THAN PRE-CONSTRUCTION CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.
37. THE CONTRACTOR SHALL USE APPROPRIATE TECHNIQUES, AS APPROVED, RECOMMENDED, OR OFFERED BY FLORIDA POWER AND LIGHT TO PREVENT UNDERMINING OF POWER POLES DURING CONSTRUCTION. IF HOLDING OF POWER POLES IS RECOMMENDED OR REQUIRED BY THE UTILITY, THE CONTRACTOR SHALL COORDINATE THIS ACTIVITY WITH THE UTILITY AND BEAR ALL RELATED COSTS.
38. ANY TEMPORARY SHUTDOWNS FOR MODIFICATIONS OF EXISTING UTILITY SYSTEMS THAT MUST REMAIN IN SERVICE DURING CONSTRUCTION SHALL BE KEPT TO A MINIMUM AND SHALL BE COORDINATED WITH AND APPROVED BY THE MANATEE COUNTY UTILITY OPERATIONS DEPARTMENT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. IT IS NOTED THAT TEMPORARY SHUTDOWNS MAY BE RESTRICTED TO CERTAIN HOURS AT ANY TIME OF THE DAY OR NIGHT AND WILL BE COMPLETED AT NO ADDITIONAL COST TO THE OWNER.
39. FOR WORK BEING DONE ON EXISTING SANITARY SEWER LINES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE FLOW OF ALL SEWAGE DURING CONSTRUCTION, WHICH MAY REQUIRE BY-PASS PUMPING AND/OR PUMPER TRUCKS. THE CONTRACTOR SHALL SUBMIT A DETAINED BY-PASS PUMPING PLAN PER SECTION 02720. ANY COSTS SHALL BE INCLUDED IN THE CONTRACT UNIT COSTS FOR THE SANITARY SEWER LINES.

CONSTRUCTION

40. THE EXHAUST SYSTEM OF ALL GASOLINE AND DIESEL ENGINES SHALL BE EQUIPPED WITH MUFFLERS THAT MEET THE EQUIPMENT MANUFACTURER'S REQUIREMENTS FOR NOISE SUPPRESSION. THE CONTRACTOR SHALL INSTALL NOISE ABATEMENT BAFFLES POSITIONED TO BREAK LINE-OF-SITE FROM THE NOISE SOURCE TO AFFECTED RESIDENCES, AS APPROVED BY THE ENGINEER.
41. NO MATERIAL SHALL BE STOCKPILED IN ROADWAYS. ALL DIRT AND DEBRIS SHALL BE REMOVED FROM THE JOB SITE DAILY. ROADS SHALL BE SWEPT DAILY AS PART OF DAILY CLEAN UP.
42. THE CONTRACTOR IS TO CONTROL ALL FUGITIVE DUST ORIGINATING ON THIS PROJECT BY WATERING OR OTHER METHODS AS REQUIRED.
43. INGRESS AND EGRESS TO ALL THE PROPERTIES IN THE CONSTRUCTION AREA SHALL BE MAINTAINED AT ALL TIMES.
44. PRIOR APPROVAL WILL BE REQUIRED FOR REMOVAL OF ANY TREE WITHIN THE CONSTRUCTION AREA UNLESS OTHERWISE NOTED ON THE PLAN.
45. THE CONTRACTOR SHALL PROVIDE ALL DEWATERING EQUIPMENT NECESSARY TO KEEP ALL EXCAVATING DRY. DEWATERING IS REQUIRED TO 18" BELOW TRENCH BOTTOM. COST FOR DEWATERING TO BE INCLUDED IN THE COST OF THE PIPE BEING INSTALLED.
46. ALL PIPING AND FITTINGS USED ON THIS PROJECT SHALL BE AS NOTED ON THE PLANS AND IN THE CONTRACT DOCUMENTS AND SHALL BE INSTALLED TO THE LINES AND GRADES SHOWN ON THE PLANS AND PROFILES.
47. ALL PIPE SHALL BE COLOR CODED TO CONFORM TO MANATEE COUNTY STANDARDS.
48. ALL PIPE AND FITTINGS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER AND ALL PIPE JOINTS SHALL BE RESTRAINED WHERE REQUIRED.
49. ALL FITTINGS FOR PRESSURE CLASS-RATED PIPE SHALL BE RESTRAINED DUCTILE IRON. RESTRAINED LENGTHS OF PIPE SHALL ADHERE TO THE REQUIREMENTS AS SHOWN ON THE DETAIL SHEETS.
50. WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE DEFLECTION SHALL NOT EXCEED 75% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE RECOMMENDED DEFLECTION.
51. ALL PIPE LENGTHS ARE PLUS OR MINUS AND MAY BE ADJUSTED IN THE FIELD AS REQUIRED. UTILITY PIPE LENGTH MEASUREMENTS ARE TO CENTER OF STRUCTURES OR FITTINGS.
52. ALL ROCKS OR STONES GREATER THAN 6 INCHES IN DIAMETER SHALL BE REMOVED FROM THE BACKFILL MATERIAL. BACKFILL MATERIAL PLACED WITHIN ONE FOOT OF PIPING AND APPURTENANCES SHALL NOT CONTAIN ANY STONE LARGER THAN 2 INCH DIAMETER.
53. ONLY MANATEE COUNTY UTILITY OPERATIONS STAFF ARE AUTHORIZED TO OPERATE VALVES ON COUNTY OWNED AND MAINTAINED UTILITY SYSTEMS.
54. ALL PENETRATION OF EXISTING STRUCTURES SHALL BE BY THE MECHANICAL ROTARY CORE BORING METHOD.
55. ALL CONCRETE PENETRATED OR DISTURBED SHALL BE COATED WITH TWO COATS OF EPOXY.
56. THE CONTRACTOR, PRIOR TO ANY TEMPORARY WATER SHUT-OFFS DURING WATER MAIN TIE-IN, ETC. SHALL NOTIFY THE AFFECTED RESIDENTS AND BUSINESSES BY POSTING INFORMATIONAL SIGNS IN THE NEIGHBORHOOD AT LEAST TWO DAYS (48 HOURS) PRIOR TO THE WATER SHUT-OFF. REFERENCE SECTION 01580, PARAGRAPH 1.03 OF THE SPECIFICATIONS. WHEN FEASIBLE, "DOOR HANGERS" SHALL BE DELIVERED TO AFFECTED RESIDENTS AT LEAST TWO DAYS (48 HRS) PRIOR TO WATER SHUT-OFF. FOR LARGE PROJECTS WITH HUNDREDS OF HOMES AFFECTED, THE CONTRACTOR SHALL ALSO MAKE EXTENSIVE USE OF THE MEDIA AND SHALL HAVE PRIOR CONTRACT WITH HOMEOWNER'S ASSOCIATIONS. WRITTEN NOTIFICATIONS SHALL ALSO BE FAXED TO THE TAMPA TRIBUNE, BRADENTON HERALD, SARASOTA HERALD TRIBUNE, WBRD RADIO, EMERGENCY COMMUNITY CENTERS, INSPECTIONS, WATER TREATMENT PLANT, WATER MANAGER, HELPLINE, CUSTOMER SERVICE, AND THE MANATEE COUNTY OPERATIONS DEPARTMENT.
57. ALL NEW PIPE LINES SHALL BE PIG CLEANED (4" AND LARGER), FLUSHED, PRESSURE TESTED, DISINFECTED, AND CERTIFIED PRIOR TO TIE-INS TO EXISTING FACILITIES. THE CONTRACTOR SHALL NOTIFY THE COUNTY'S INSPECTOR AT LEAST TWO DAYS (48 HOURS) PRIOR TO THE PIGGING AND TESTING AND SHALL PERFORM BOTH THE PIGGING AND TESTING WHILE THE COUNTY'S INSPECTOR IS PRESENT TO WITNESS THE OPERATIONS. THE CONTRACTOR WILL BE ALLOWED TO USE TEMPORARY PLUGS FOR PIG CLEANING AND PRESSURE TESTING.
58. ALL TEST POINT PIPING SHALL BE CUT LOOSE FROM THE CORPORATION STOP AND COMPLETELY REMOVED AND DISPOSED OF BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE. A CORPORATION STOP PLUG SHALL BE INSTALLED AND THE CORPORATION STOP SHALL REMAIN IN PLACE.
59. ALL EXISTING MAINS THAT ARE BEING REPLACED SHALL BE ABANDONED IN PLACE OR REMOVED (AS NOTED IN THE PLANS) AFTER ACCEPTANCE AND ACTIVATION OF THE NEW MAINS. ABANDONED MAINS SHALL BE CUT, FILLED WITH GROUT, AND CAPPED. REFER TO SECTION 02064 OF THE SPECIFICATIONS FOR GROUTING OF ABANDONED PIPE.
60. WATER MAINS CROSSING OVER OR UNDER SANITARY SEWERS, FORCE MAINS, AND RECLAIMED WATER LINES SHALL BE LAID PER CURRENT EDITION OF "RECOMMENDED STANDARDS FOR WATER WORKS" ("10 STATES STANDARDS") AND MANATEE COUNTY UTILITY STANDARDS UNLESS NOTED OTHERWISE ON THE PLANS.
61. FIELD CONDITIONS MAY NECESSITATE MINOR ADJUSTMENT AND GRADE DEVIATION OF THE PROPOSED UTILITIES TO AVOID OBSTACLES, AS ORDERED BY THE ENGINEER.
62. CONTRACTOR SHALL PROVIDE RECORD DRAWINGS IN ACCORDANCE WITH SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS AT NO COST TO THE OWNER. RECORD DRAWINGS SHALL BE SIGNED AND SEALED BY A SURVEYOR CURRENTLY LICENSED BY THE STATE OF FLORIDA. ALL RECORD DRAWINGS INFORMATION REQUIREMENTS IN SECTION 14 SHALL BE STRICTLY ENFORCED. A COPY OF SECTION 14 WILL BE PROVIDED UPON REQUEST.

RESTORATION

63. ALL RESTORATION WORK PERFORMED THROUGHOUT THE PROJECT SHALL CONFORM TO EXISTING LINES AND GRADES UNLESS SHOWN OTHERWISE.
64. ALL DISTURBED GRASSED AREAS SHALL BE SODDED OR SEEDED UNLESS OTHERWISE INDICATED. THE TYPE OF SOD USED TO REPLACE OWNER MAINTAINED AREAS IN RIGHT-OF-WAY SHALL BE COORDINATED WITH THE PROPERTY OWNER.
65. ALL CONCRETE THRUST BLOCKS INSTALLED FOR TESTING PURPOSED AND NOT REQUIRED FOR THE OPERATION OF THE PIPELINE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE AT NO ADDITIONAL COST TO THE OWNER.
66. ASPHALT DRIVES THAT ARE CUT SHALL BE RESTORED PER SECTION 02513.
67. CONCRETE DRIVEWAYS OR SIDEWALKS THAT ARE CUT SHALL BE RESTORED TO MATCH EXISTING ACCORDING TO THE CURRENT EDITIONS OF THE F.D.O.T. SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND SECTION 522 AND SECTION 310 OF THE F.D.O.T. DESIGN STANDARDS.
68. WHENEVER A PERMANENT ROADWAY SURFACE IS NOT PLACED IMMEDIATELY AFTER BACKFILLING AND COMPACTION OF THE NEWLY INSTALLED PIPE LINE IN AREAS WHERE TRAFFIC MUST PASS, THE CONTRACTOR SHALL INSTALL A TEMPORARY SURFACE CONSISTING OF NINE INCHES OF COMPACTED LIMEROCK BASE AND A COAT OF ASPHALT EMULSION. PERMANENT ROADWAY REPAIR SHALL BE PERFORMED A MINIMUM OF TWENTY-ONE CALENDAR DAYS AFTER THE INITIAL OPEN CUTTING.
69. RESTORATION OF CURBS, DRIVEWAYS, SIDEWALKS, AND PLACEMENT F SOD SHALL BE COMPLETED WITHIN FORTY-FIVE CALENDAR DAYS OF INITIAL DISTURBANCE OR TWNETY-ONE CALENDAR DAYS OF SUBSTANTIAL COMPLETION, WHICHEVER OCCURS FIRST.

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REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV A Tradition of Innovative Engineering
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Certificate of Authorization No. 28988

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JOHN E. HOWLE, P.E.
FLA. REG. NO. 37587
DATE: 3/16/12

9TH ST E-4LANE

WATER AND SEWER NOTES

MANATEE COUNTY, FLORIDA

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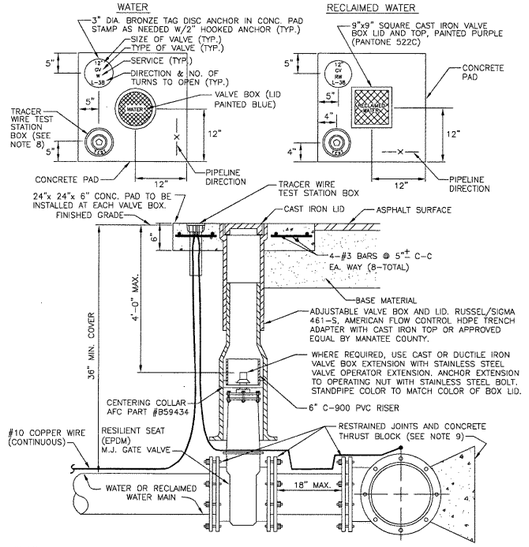
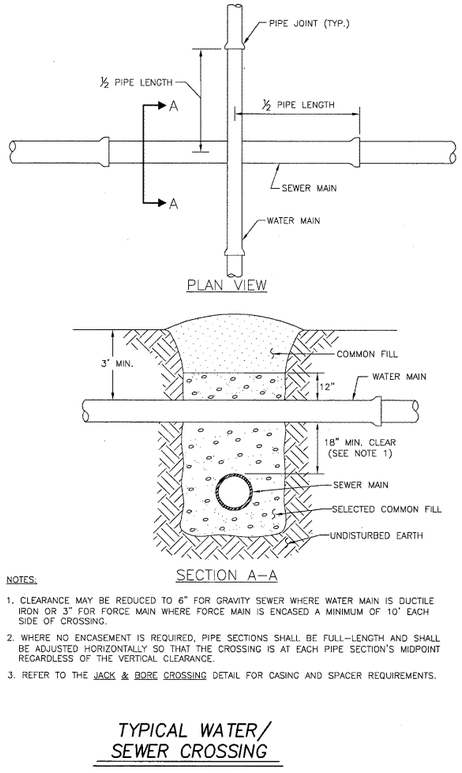


NOTES:

1. "WV" OR "RWV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A BLUE DISC WITH "WV" OR PURPLE DISC WITH "RWV" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE FOOTAGE FROM THE DISC TO THE VALVE.
2. ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS DETERMINED IN THE FIELD.
3. WATER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
4. PRECAST CONCRETE PADS & THRUST BLOCKS SHALL NOT BE USED.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
6. FOR VALVES 16" AND LARGER, USE BUTTERFLY VALVES.
7. PIPELINE DIRECTION TO BE IMPRESSED INTO NEWLY POURED CONCRETE PAD.
8. TRACER WIRE TEST STATION BOX IS NOT REQUIRED IN VALVE BOX PAD IF THE GATE VALVE IS LOCATED WITHIN 200 FEET OF A WATER SERVICE, BLOW-OFF, BACKFLOW PREVENTER OR FIRE HYDRANT THAT HAS A TRACER WIRE BOX.
9. WHERE THRUST BLOCK NOT USED, RESTRAINED JOINTS MUST THEN EXTEND FROM TEE FULL LENGTH SPECIFIED FOR "TEES."
10. BINGHAM & TAYLOR P200NFG FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR PARKING UNDER VEHICLE TRAFFIC, USE P525RD CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.

GATE VALVE, BOX, COVER AND TAG



NOTES:

1. CLEARANCE MAY BE REDUCED TO 6" FOR GRAVITY SEWER WHERE WATER MAIN IS DUCTILE IRON OR 3" FOR FORCE MAIN WHERE FORCE MAIN IS ENCASED A MINIMUM OF 10' EACH SIDE OF CROSSING.
2. WHERE NO ENCASEMENT IS REQUIRED, PIPE SECTIONS SHALL BE FULL-LENGTH AND SHALL BE ADJUSTED HORIZONTALLY SO THAT THE CROSSING IS AT EACH PIPE SECTION'S MIDPOINT REGARDLESS OF THE VERTICAL CLEARANCE.
3. REFER TO THE JACK & BORE CROSSING DETAIL FOR CASING AND SPACER REQUIREMENTS.

TYPICAL WATER/ SEWER CROSSING

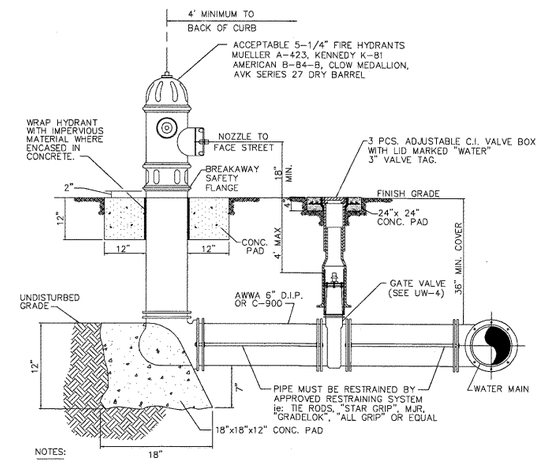
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES				REDUCERS			PLUGS & VALVES
				SIZE / LENGTH				SIZE / LENGTH			
24	90	38	18	X24 / 169	X20 / 132	X16 / 90	X12 / 38	X10 / 6	X20 / 64	X16 / 117	X12 / 158	214
20	78	32	16	X20 / 141	X16 / 101	X12 / 53	X10 / 24	X8 / 1	X16 / 65	X12 / 115	X10 / 149	184
16	66	27	13	X16 / 111	X12 / 67	X10 / 41	X8 / 12		X12 / 64	X10 / 107	X8 / 111	151
12	52	22	10	X12 / 80	X10 / 56	X8 / 31	X6 / 1		X10 / 58	X8 / 62	X6 / 86	118
10	44	18	9	X10 / 63	X8 / 40	X6 / 7			X8 / 33	X6 / 61	X4 / 81	100
8	37	15	7	X8 / 49	X6 / 18	X4 / 1			X6 / 35	X4 / 60		83
6	29	12	6	X6 / 29	X4 / 1				X4 / 33			63
4	21	8	4	X4 / 12								45

NOTES:

1. RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
2. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTINGSECTIONS OF PIPE.
3. ALL ISOLATIONVALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
4. PIPE SIZES ARE GIVEN IN INCHES.
5. RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
6. LENGTHS SHOWN ARE FOR A TEST PRESURE OF 180 PSI.
7. THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFTEY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
8. RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL RESTRAINED LENGTHS FOR PIPE.

RESTRAINED LENGTHS FOR PVC PIPE



NOTES:

1. WEEPHOLES TO BE PLUGGED WITH BRASS PLUGS.
2. FIRE HYDRANTS SHALL BE A MINIMUM OF 6'-0" OFF EDGE OF PAVEMENT AND 10'-0" MAX. FROM BACK OF CURB WHERE POSSIBLE AND WHERE SIDEWALK IS TO BE INSTALLED, SHALL BE LOCATED BETWEEN THE SIDEWALK AND EDGE OF ROAD.
3. HYDRANTS SHALL BE PAINTED SAFETY YELLOW. HYDRANT SHALL BE ALL CAST IRON CONSTRUCTION.
4. PAY ITEMS FOR FIRE HYDRANT ASSEMBLIES SHALL INCLUDE HYDRANT, VALVE, PIPING, MAINLINE TEE & HARNESSING, VALVE BOX & CONCRETE ENCASEMENTS.
5. FIRE HYDRANTS SHALL BE PREFERABLY PLACED SO THAT STORM WATER FLOWS AWAY FROM & NOT TOWARDS THE HYDRANT.
6. FIRE HYDRANTS SHALL BE CONSTRUCTED WITH "GROUND LINE" SET TO FINISHED GRADES AS ESTABLISHED IN THE FIELD. NORMAL BURY IS 3 FEET OF COVER FOR WATER LINES. IF EXTENSIONS ARE REQUIRED, THE COST SHALL BE INCLUDED IN THE PRICE BID.
7. FIRE HYDRANTS MAY BE CONSTRUCTED WITH "GRADELOK" OFFSET FITTING.
8. RAISED REFLECTIVE PAVEMENT MARKER (BLUE) SHALL BE INSTALLED AT CENTERLINE OF PAVEMENT ADJACENT TO EACH HYDRANT.
9. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE 1/2" CHAMFER.

TYPICAL FIRE HYDRANT ASSEMBLY

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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A Tradition of Innovative Engineering
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DRAWN BY	EW	3/07
CHECKED BY	JEH	3/07

JOHN E. HOWLE, P.E.
FLA. REG. NO. 47584
DATE: 2/10/12

9TH ST E-4 LANE

WATER AND SEWER DETAILS

MANATEE COUNTY, FLORIDA

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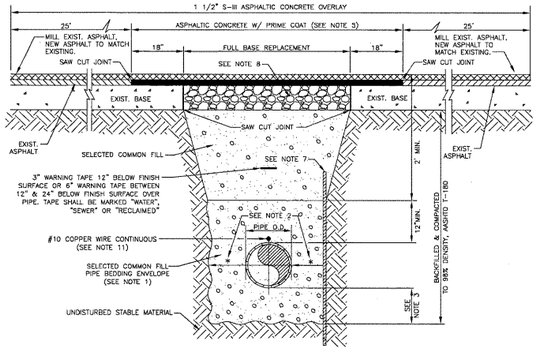
NOTES:

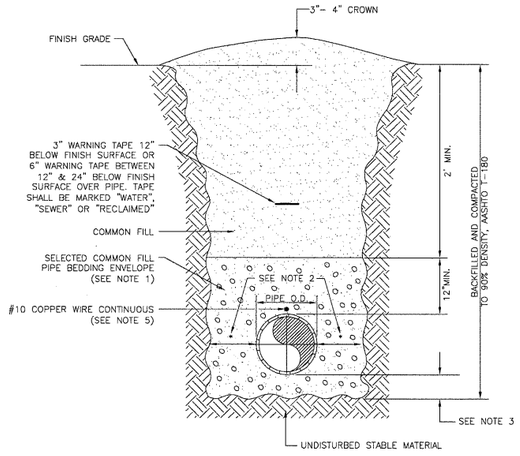
1. USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
3. TYPICALLY 4" TO 6".
4. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. ASPHALTIC CONCRETE STRUCTURE COURSE WITH PRIME COAT SHALL BE THE SAME DEPTH AND TYPE AS EXISTING OR A MINIMUM OF 1 1/4 INCH, WHICHEVER IS GREATER.
6. MILL 25' BACK FROM TRENCH SAW CUT. ADJUST MILLING PER INDIVIDUAL SITE TO NOT IMPACT BASE. BUTT JOINT TO EXIST ASPHALT. FINAL OVERLAY LIMITS ARE FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT. FINAL OVERLAY TO MATCH EXISTING WITH NO DISCERNABLE "BUMP" AT JOINT. MILLING LIMITS THAT IMPACT INTERSECTION SHALL BE ADDRESSED ON A CASE BY CASE BASIS AND APPROVED BY MANATEE COUNTY.
7. SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISHED GRADE OR 12" BELOW SUBGRADE.
8. BASE SHALL BE 8" MINIMUM THICKNESS CRUSHED CONCRETE.
9. TEMPORARY PATCHES WILL BE INSTALLED TO PROVIDE A SMOOTH ALL WEATHER SURFACE AT ALL TIMES. PERMANENT REPLACEMENT TO BE MADE AS SOON AS POSSIBLE.
10. RESTORE SIGNAGE & MARKING WITH THERMOPLASTIC PER FDOT STANDARDS, LATEST EDITION.
11. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.
12. NOTES 5. THRU 10. ARE MINIMUM REQUIREMENTS FOR A TRENCH IN A ROAD. REFER TO LATEST EDITION OF MANATEE COUNTY HIGHWAY AND TRAFFIC STANDARDS FOR ADDITIONAL REQUIREMENTS.



TYPICAL WATER/ ASPHALT PAVEMENT SURFACE

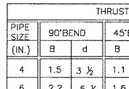
NOTES:

1. USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
3. TYPICALLY 4" TO 6".
4. PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
5. TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.

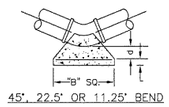


TYPICAL WATER/ UNIMPROVED SURFACE

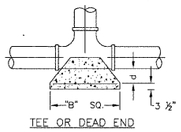
THRUST BLOCK DIMENSIONS B ft. x d inches												
PIPE SIZE	90°BEND		45°BEND		22.5°BEND		11.25°BEND		DEAD END & TEE		45° WYE	
(IN.)	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3 ½	1.1	3 ½	0.8	3 ½	0.6	3 ½	1.3	3 ½	1.1	3 ½
6	2.2	5 ¼	1.6	3 ¾	1.2	3 ½	0.8	3 ½	1.9	4 ½	1.6	3 ¾
8	2.9	7	2.1	5	1.5	3 ½	1.1	3 ½	2.4	5 ¾	2.0	4 ¾
10	3.5	8 ½	2.6	6 ¼	1.9	4 ½	1.3	3 ½	3.0	7 ¼	2.5	6
12	4.2	10	3.1	7 ½	2.2	5 ¼	1.6	3 ¾	3.5	8 ¾	3.0	7 ¼
14	4.9	11 ¾	3.6	8 ¾	2.6	6 ¼	1.8	4 ¼	4.1	9 ¾	3.4	8 ¼
16	5.5	13 ¼	4.1	9 ¾	2.9	7	2.1	5	4.7	11 ¼	3.9	9 ¼
18	6.2	15	4.6	11	3.3	8	2.3	5 ½	5.2	12 ½	4.4	10 ½
20	6.9	16 ½	5.0	12	3.6	8 ¾	2.6	6 ¼	5.8	14	4.9	11 ¾
24	8.2	19 ¾	6.0	14 ½	4.3	10 ¼	3.1	7 ½	6.9	16 ½	5.8	14
30	10.1	24 ¼	7.5	18	5.3	12 ¾	3.8	9	8.5	20 ½	7.2	17 ¼
36	12.1	29	8.9	21 ¼	6.4	15 ¼	4.5	10 ¾	10.2	24 ½	8.6	20 ¾



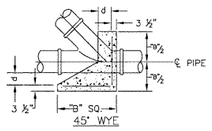
90° BEND



45°, 22.5° OR 11.25° BEND



TEE OR DEAD END



45° WYE

REINFORCEMENT MAT SCHEDULE
FOR DIM. "B" BETWEEN 5.75' & 12.5' USE #4 @ 8" EACH WAY
FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY

NOTES:

1. ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
2. THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF, CONCRETE STRENGTH f_c =3000 PSI, REINFORCEMENT f_y =60.0 KSI. THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
3. FOR LARGER "B" DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.
4. RESTRAINED JOINTS MAY BE USED IN LIEU OF THRUST BLOCKS TO SAVE SPACE. THRUST BLOCKS SHALL BE USED IN SITUATIONS WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE BOTH REQUIRED.

THRUST BLOCK DETAIL

STANDARD WATER AND SEWER SEPARATION STATEMENT FOR WATER MAIN PROJECTS WITH EXISTING SEWERS

NEW OR RELOCATED, UNDERGROUND WATER MAINS INCLUDED IN THIS PROJECT WILL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER, STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.; A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-TYPE SANITARY SEWER (OR A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY-TYPE SANITARY SEWER IF THE BOTTOM OF THE WATER MAIN WILL BE LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER); A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.; AND A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM." **[F.A.C. 62-555.314(1); EXCEPTIONS ALLOWED UNDER F.A.C. 62-555.314(5)]**

NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED GRAVITY- OR VACUUM-TYPE SANITARY SEWER OR STORM SEWER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES ABOVE THE OTHER PIPELINE OR AT LEAST 12 INCHES BELOW THE OTHER PIPELINE; AND NEW OR RELOCATED, UNDERGROUND WATER MAINS THAT ARE INCLUDED IN THIS PROJECT AND THAT WILL CROSS ANY EXISTING OR PROPOSED PRESSURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER WILL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OTHER PIPELINE. **[F.A.C. 62-555.314(2); EXCEPTIONS ALLOWED UNDER F.A.C. 62-555.314(5)]**

AT THE UTILITY CROSSINGS DESCRIBED ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE WILL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS WILL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE OR THE PIPES WILL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C. **[F.A.C. 62-555.314(2); EXCEPTIONS ALLOWED UNDER F.A.C. 62-555.314(5)]**

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REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
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	NAME	DATE
DESIGNED BY	JEH	3/07
DRAWN BY	EW	3/07
CHECKED BY	JEH	3/07

JOHN E. HOWLE, P.E.
FLA. REG. NO. 42584
DATE: 9/10/12

9TH ST E-4 LANE

WATER AND SEWER DETAILS

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	T-1

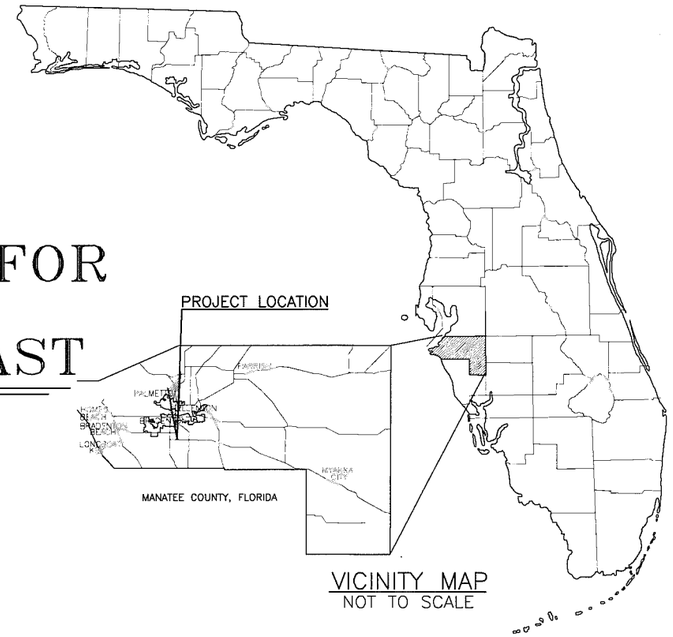
MANATEE COUNTY
BOARD OF COUNTY COMMISSIONERS
BRADENTON, FLORIDA

PLANS OF PROPOSED

SIGNALIZATION IMPROVEMENTS FOR 9TH STREET EAST BETWEEN 57TH AVE E AND 53RD AVE EAST

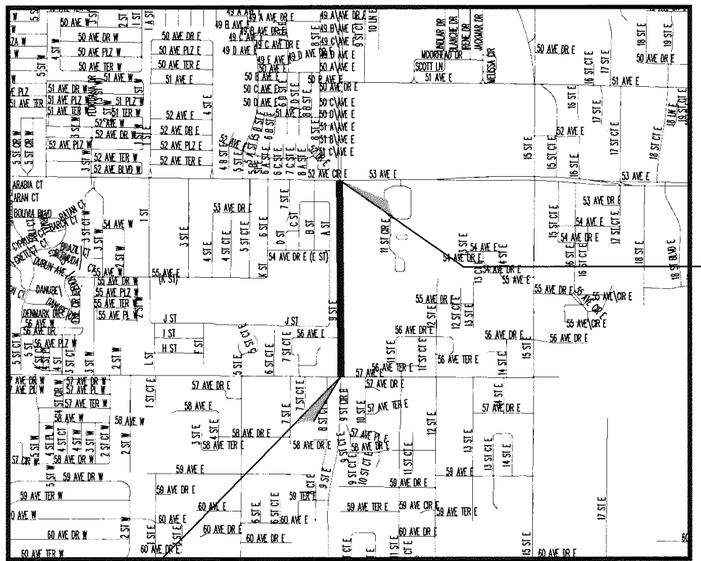
COUNTY PROJECT NO. 6040460
CSDG PROJECT NO. 024:001001
FDOT SECTION 13162000, M.P. 1.260
SR 70 SIGNAL ID# 541
MANATEE COUNTY, FLORIDA

INDEX OF PLANS



VICINITY MAP
NOT TO SCALE

S13 T35S R17E



LOCATION MAP

1. ALL INDEX REFERENCES IN THIS SET OF PLANS REFER TO F.D.O.T. "DESIGN STANDARDS" DATED 2010.
2. GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2010 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.
3. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

PLANS PREPARED BY:

CIVILSURV
A Tradition of Innovative Engineering

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Certificate of Authorization No. 28988

ENGINEER OF RECORD:
JOHN E. HOWLE, P.E.
P.E. NO. 27584

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ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK OPERATIONS.

FINAL PLANS
7/18/12

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

APPROVED BY: JOHN E. HOWLE, P.E. NO. 27584
DATE: 9/10/12

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CSDG PROJ. NO.	SHEET NO.
024:001001	T-2

SUMMARY OF SIGNALIZATION PAY ITEMS

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT	QUANTITY
455-142	CROSSHOLE SONIC LOGGING	EA	2
555- 1- 1	DIRECTIONAL BORE (< 6")	LF	96
555- 1- 2	DIRECTIONAL BORE (6" TO <12")	LF	325
604- 3- 2	TIMING IMPLEMENTATION, CONTROLLER & COORDINATION UNIT	PI	1
630- 1- 11	CONDUIT, SIGNAL (F&I) (ABOVE GROUND)	LF	36
630- 1- 12	CONDUIT, SIGNAL (F&I) (UNDERGROUND)	LF	3,793
632- 7- 1	CABLE, SIGNAL (F&I)	PI	1
634- 5- 1	FIBERGLASS INSULATOR (F&I)	LF	100
635- 1- 11	PULL AND JUNCTION BOXES (F&I) (PULL BOX)	EA	27
639- 1- 22	SIGNALS, ELEC POWER SERV (UNDERGROUND)(PURCHASED BY CONTRACTOR)	AS	1
639- 2- 1	SIGNALS, ELECTRICAL SERVICE WIRE (3 WIRE) (F&I)	LF	69
649- 31-202	MAST ARM ASSEM (F&I)(WS 130)(STEEL)(SINGLE ARM)(46')(BLACK)(W/O LUM)	EA	1
649- 31-204	MAST ARM ASSEM (F&I)(WS 130)(STEEL)(SINGLE ARM)(70.5)(BLACK)(W/O LUM)	EA	1
649- 31-208	MAST ARM ASSEM (F&I)(WS 130)(STEEL)(SINGLE ARM)(60')(BLACK)(W/ LUM)	EA	2
650- 51-311	TRAFFIC SIGNAL (F&I)(3 SECT.,1-WAY,STANDARD)(LED)	AS	12
653-191-	PEDESTRIAN SIGNALS (F&I)(COUNTDOWN, 1-WAY)	AS	8
659-107-	SIGNAL HEAD AUXILIARIES (F&I)(ALUMINUM PEDESTAL)	EA	8
663-74-15	VEHICLE DETECTOR ASSEMBLIES (F&I)(VIDEO)	EA	5
665- 11-	PED DETECTOR (F&I)(POLE OR CABINET MOUNTED DETECTOR STATION & SIGN)	EA	1
665- 13-	PED DETECTOR (F&I)(DETECTOR WITH SIGN ONLY)	EA	7
670- 5-310	ACTUATED SOLID ST. CONTROLLER AS (NEMA)	AS	1
690- 10-	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	EA	10
690- 20-	REMOVE PEDESTRIAN SIGNAL ASSEMBLY	EA	4
690- 31	SIGNAL PEDESTAL REMOVE	EA	2
690- 34- 2	POLE REMOVAL (DEEP) (BOLT ON ATTACHMENT)	EA	4
690- 50-	REMOVE CONTROLLER ASSEMBLY	EA	1
690- 80-	REMOVE SPAN WIRE ASSEMBLY	EA	4
690- 90-	REMOVE CABLING AND CONDUIT	PI	1
690-100-	REMOVAL MISCELLANEOUS SIGNAL EQUIPMENT	PI	1
699- 1- 1	SIGN, INTERNALLY ILLUMINATED (F&I)(STREET NAME)	EA	4
715- 5- 11	LUMINAIRE & BRACKET ARM	EA	2
780-1-12	ITS ELECTRICAL POWER, F&I, SERVICE WIRE	LF	36
783-4-112	ITS CONDUIT, F&I, UNDERGROUND	LF	12
783-7-1	ITS PULL & JUNCTION BOX, F&I	EA	1

PAY ITEM FOOTNOTES

PAY ITEM NO. — DESCRIPTION

ITEM 555-1-1
555-1-2 — USE A MINIMUM 2" DIA. PVC CONDUIT FOR ALL SIGNAL, PEDESTRIAN AND DETECTION FUNCTIONS. EXISTING CONDUIT (IF NOT DAMAGED) MAY BE RE-USED, AS DIRECTED BY THE PROJECT ENGINEER.

ITEM 604-3-2 — PROJECT ENGINEER TO REQUEST COORDINATION TIMINGS A MINIMUM OF FIVE WORKING DAYS PRIOR TO TIMING IMPLEMENTATION DATE. REQUESTS SHOULD BE MADE TO MR. RENJAN JOSEPH, P.E., SYSTEMS TIMING ENGINEER AT (863) 519-2746.

ITEMS 630-1-11 — USE ABOVE GROUND CONDUIT FOR VERTICAL RUNS ON EXISTING SERVICE POLE.

ITEMS 630-1-12 — INSTALL CONDUIT UNDER PROPOSED ROADWAY AND/OR SIDEWALK PRIOR TO INSTALLATION OF ROADWAY BASE AND SURFACE OR CONCRETE.

A SPARE 2" (5.08 cm) UNDERGROUND CONDUIT SHALL BE PROVIDED FOR EACH SIGNAL POLE. THE CONDUIT SHALL BE CAPPED IN A PULL BOX.

PAYMENT SHALL INCLUDE THE COST OF TRENCHING AND ALL CONDIUT IN TRENCH.

CONDUITS AND RACEWAYS SHALL BE FREE FROM ALL FOREIGN OBJECTS DEBRIS. SPARE EMPTY (EXCEPT PULL WIRE) CONDUITS SHALL HAVE A FORM FITTING REMOVABLE PLASTIC CAP INSTALLED, THREAD THE PULL WIRE THROUGH A PILOT HOLE IN THE CAP AND SECURE THE END. CONDUITS WITH CABLES OR CONDUCTORS WITHIN SHALL BE SEALED WITH DUCT SEAL OR OTHER APPROVED SEALING COMPOUND.

EXPANSION JOINTS SHALL BE INSTALLED IN ALL CONDUIT RUNS THAT MEET THE CONDITIONS OUTLINED IN THE 2007 FDOT ROAD AND BRIDGE SPECIFICATION AND/OR THE NEC.

CABLES WITH VISIBLE INSULATION AND OR CONDUCTOR DAMAGE WILL NOT BE ACCEPTED. ALL CIRCUIT CONDUCTORS INSTALLED ON A PROJECT SHALL PASS ISOLATION TESTING WITH A MEGOHMETER. CIRCUIT CONDUCTORS SHALL BE FREE FROM INSULATION DAMAGE REGARDLESS OF THE MEGOHMETER READING. READINGS OF 100 MEGA OHMS OR GREATER ARE REQUIRED ON ALL CONDUCTORS THAT HAVE INSULATION RATINGS OF 600 VOLTS OR GREATER. THE READINGS WILL APPLY TO INTER CONDUCTOR ISOLATION AS WELL AS CONDUCTOR TO GROUND ISOLATION. INTER CONDUCTOR ISOLATION APPLIES TO CONDUCTORS WITHIN CABLES, RACEWAYS, CONDUITS OR ANY OTHER LOCATION THAT CONTAINS CONDUCTORS WITHIN CLOSE PROXIMITY OF ONE ANOTHER.

14 XHHW PULL WIRE SHALL BE INSTALLED IN ALL CONDUITS. AT LEAST 2' (60.96 cm) OF PULL WIRE SHALL BE ACCESSIBLE AT EACH CONDUIT TERMINATION AND SECURED IN THE PULL BOX OR PLACE OF TERMINATION.

ITEM 632-7-1 — WHEN IT IS DISCOVERED THAT A SIGNAL CABLE HAS BEEN STRIPPED BACK EXPOSING THE INDIVIDUAL INNER INSULATED CIRCUIT CONDUCTORS TO THE ACTUAL, OR THE POTENTIAL FOR, SUSTAINED BOMBARDMENT BY ULTRA VIOLET RADIATION (SUNLIGHT). IT IS THE INSTALLING CONTRACTOR'S RESPONSIBILITY TO RECTIFY THIS UNACCEPTABLE CONDITION AT THE EARLIEST PRACTICAL OPPORTUNITY. THE PROJECT SHALL NOT BE ACCEPTED UNTIL ALL INSULATION DAMAGE HAS BEEN CORRECTED AND EXPOSURE CONDITION(S) ELIMINATED.

VERIFY THE COLOR CODE OF SIGNAL CABLE WITH THE MAINTAINING AGENCY PRIOR TO WIRING INTERSECTION. USE A MINIMUM 7-CONDUCTOR SIGNAL CABLE FOR SIGNAL HEADS AND PEDESTRIAN HEADS.

ITEM 635-1-11 — USE POLYMER CONCRETE CONSTRUCTION PULL BOX WITH A POLYMER CONCRETE COVER MARKED "TRAFFIC SIGNAL" FOR FIBER COMMUNICATION AND/OR INTERCONNECT CABLE. USE 24" X 36" PULL BOXES.

PULL BOXES ARE TO BE PLACED BEHIND CURB AND GUTTER. IF THERE IS NO CURB AND GUTTER, PULL BOXES SHALL BE PLACED A MINIMUM OF 7' FROM THE EDGE OF PAVEMENT.

PULL BOX FILL SHALL NOT EXCEED 40% OF THE VOLUME AVAILABLE AFTER THE SETTING PROCESS. A MINIMUM OF 16 INCHES OF CABLE SLACK SHALL BE PROVIDED FOR EACH CABLE AT EVERY PULL BOX A CABLE PASSES THROUGH. GROUNDING ELECTRODE CONDUCTORS ARE EXEMPT FROM THIS SLACK REQUIREMENT, EQUIPMENT GROUNDING CONDUCTORS ARE NOT. THE VOLUME CALCULATION SHALL BE BASED ON THE MANUFACTURERS PUBLISHED CABLE DIAMETER AND THE LENGTH OF THE INDIVIDUAL CABLE CONTAINED WITHIN THE PULL BOX FOR EACH CABLE (EQUIVALENT CYLINDER VOLUME), THESE VOLUMES WILL BE ADDED TOGETHER TO ARRIVE AT A TOTAL FOR "VOLUME USED". THE PULL BOX VOLUME "AS INSTALLED" WILL BE FIGURED FROM THE AVERAGE GRAVEL LEVEL TO 1 INCH BELOW THE PULL BOX LID RIM; THIS DIMENSION (HEIGHT) WILL BE MULTIPLIED BY THE LENGTH AND THE WIDTH TO ARRIVE AT THE "USABLE VOLUME". PULL BOX GRAVEL LEVEL SHALL BE MINIMUM OF 1 INCH AND A MAXIMUM OF 3 INCHES FROM THE BOTTOM RESTING EDGE OF THE PULL BOX ENCLOSURE. "VOLUME USED" WILL BE DIVIDED BY THE "USABLE VOLUME" TO ARRIVE AT THE FILL PERCENTAGE. PULL BOXES THAT LOOK "TOO FULL", MORE THAN LIKELY VIOLATE THIS REQUIREMENT AND WILL BE SCRUTINIZED. NOTE PULL BOXES AND ENCLOSURES THAT CONTAIN CABLES THAT HAVE SPECIFIC MANUFACTURERS RECOMMENDED MINIMUM BENDING RADII SHALL FIRST AND FOREMOST PROVIDE THE NECESSARY VOLUME TO AVOID A VIOLATION OF THIS IMPORTANT INSTALLATION REQUIREMENT.
IN LIEU OF THE INSTALLATION OF NEW PULL BOXES, EXISTING PULL BOXES (IF NOT DAMAGED) MAY BE RE-USED, AS DIRECTED BY THE ENGINEER.

PULL BOXES INSTALLATIONS REQUIRE A MINIMUM VOLUME OF PEA GRAVEL FOR DRAINAGE AT EACH INSTALLATION. THE VOLUME REQUIRED SHALL BE THE EQUIVALENT OF 1.5 TIMES THE VOLUME OF THE PULL BOX. THIS IS THE TOTAL UNINSTALLED PULL BOX VOLUME BASED ON THE HEIGHT (BOTTOM EDGE TO LID LIP) MULTIPLIED BY THE WIDTH MULTIPLIED BY THE LENGTH MULTIPLIED BY 1.5 (CONSTANT) OF THE PULL BOX BEING INSTALLED. IN NO CASE SHALL SUBTERRANEAN PULL BOXES HAVE CONCRETE INCIDENTALLY, ACCIDENTALLY OR PURPOSELY ACCUMULATED WITHIN THE ENCLOSURE OR CONDUITS INSTALLED WITHIN.

CONDUITS, CABLES AND OR CONDUCTORS WITHIN PULL BOXES SHALL BE INSTALLED IN A MANNER THAT PREVENTS THE LID FROM MAKING CONTACT WITH CABLES OR CONDUCTORS WHEN INSTALLED. THE CABLES AND CONDUCTORS SHOULD BE NEATLY COILED AND DRESSED IN A MANNER THAT WILL LIMIT THE POTENTIAL FOR "LID PINCHING".

ALL PULL BOXES USED FOR COMMUNICATION EQUIPMENT SHALL HAVE NON-METALLIC TRAFFIC BEARING LIDS, CLEARLY AND PERMANENTLY LABELED "COMMUNICATIONS". PRODUCT AVAILABILITY FOR UNIQUE INSTALLATION SITUATIONS WILL BE CONSIDERED ON A CASE BY CASE BASIS.

ITEM 639-1-22 — USE ALUMINUM RIGID ABOVEGROUND CONDUIT FOR ELECTRICAL POWER SERVICE.
ELECTRICAL SERVICE DISCONNECT IS 100 AMP COMPRISING OF A SIX (6) CIRCUIT DISCONNECT BOX WITH FOUR CIRCUIT BREAKERS - ONE 40 AMP/120 VOLT FOR CONTROLLER CABINET, ONE 15 AMP/120 VOLT FOR INTERNALLY ILLUMINATED STREET NAME SIGNS, ONE 15 AMP/120 VOLT FOR FUTURE USE AND ONE 15 AMP/240 VOLT FOR LIGHTING LUMINAIRES.

F.D.O.T. BID ITEM 639-1-XAB (ELECTRICAL POWER SERVICE) SHALL INCLUDE THE COST OF ALL SPECIAL IMPACT CONNECTION FEES CHARGED BY LOCAL POWER COMPANIES FOR ELECTRICAL SERVICE CONNECTION.

ITEM 639-2-1 — PAYMENT SHALL BE BASED ON THE LINEAR FOOT OF A SINGLE CONDUCTOR.

ITEM 649- 31-203
ITEM 649- 31-204
ITEM 649- 31-208
ITEM 649- 31-209 — KELLUM OR CABLE GRIPS SHALL BE USED ON EACH MAST ARM.

TWO SPARE 2" (5.08 cm) UNDERGROUND CONDUIT RUNS SHALL BE PROVIDED FOR EACH SIGNAL POLE. THE CONDUIT SHALL BE CAPPED IN A PULL BOX.

THE TYPE OF EQUIPMENT USED IN THE INSTALLATION OF MAST ARMS/FOUNDATIONS, OVERHEAD/CANTILEVER SIGNS/FOUNDATIONS, AND THE MOVEMENT/INSTALLATION OF STRAIN POLES SHALL MEET THE FOLLOWING REQUIREMENTS:

1) OVERHEAD LINES SHALL STAY IN PLACE BOTH VERTICALLY AND HORIZONTALLY.

2) CONTRACTOR SHALL MEET ALL APPLICABLE OSHA REQUIREMENTS (10' MINIMUM DISTANCE MAINTAINED BETWEEN THE EQUIPMENT AND THE ELECTRICAL OVERHEAD FACILITY).

USE THREE 2" AND ONE 3/4" CONDUITS STUBBED OUT THROUGH THE MAST ARM POLE FOUNDATION AND TEMPORARILY SEAL.

THE ELEVATION OF THE TOP MAST ARM BASE(S) SHALL BE SIX INCHES (15.24cm) ABOVE EXISTING GRADE. IF LOCATED DIRECTLY BEHIND SIDEWALK, AT SIDEWALK GRADE.

THE TYPE OF EQUIPMENT USED IN THE INSTALLATION OF MAST ARMS/FOUNDATIONS, OVERHEAD/CANTILEVER SIGNS/FOUNDATIONS, AND THE MOVEMENT/INSTALLATION OF STRAIN POLES SHALL MEET THE FOLLOWING REQUIREMENTS: 1) OVERHEAD LINES SHALL STAY IN PLACE BOTH VERTICALLY AND HORIZONTALLY 2) CONTRACTOR SHALL MEET ALL APPLICABLE OSHA REQUIREMENTS (10' MINIMUM DISTANCE MAINTAINED BETWEEN THE EQUIPMENT AND THE ELECTRICAL OVERHEAD FACILITY). ANY COST ASSOCIATED WITH THIS TYPE OF EQUIPMENT REQUIRED FOR THIS INSTALLATION IS INCLUDED IN THE RELATED PAY ITEMS.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWE, P.E.
FLA. REG. No. 37581
DATE: 9/2012

9TH ST E-4 LANE

SUMMARY OF PAY ITEMS

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	T-3

PAY ITEM FOOTNOTES CONT'D

ITEMS 650-51-311

DO NOT USE PLASTIC GARBAGE BAGS AS A COVERING FOR CONCEALING SIGNAL HEADS.

ALL SIGNAL HEADS INSTALLED ON MAST ARM POLES SHALL BE 12" L.E.D. RED, YELLOW AND GREEN BALLS AND RED, YELLOW AND GREEN ARROWS.

THE EXTERNAL COLOR OF SIGNAL HOUSING SHALL BE BLACK. ALL SIGNAL HEADS SHALL HAVE TUNNEL VISORS. ALL SIGNALS SHALL BE CAST ALUMINUM.

USE SIGNAL HEAD SUPPORTING TUBE THAT IS CAPABLE OF ADJUSTING VERTICALLY A MINIMUM OF 1.5 FEET.

USE B-CAP (NON-SILICONE FILLED) TWIST WIRE NUTS FOR ALL CONNECTIONS.

ITEM 653-191-

PEDESTRIAN SIGNAL HEADS TO BE 16" INTERNATIONAL SYMBOL, LED COUNTDOWN TYPE

ITEM 659-107

USE BREAKAWAY ALUMINUM SQUARE BASE ASSEMBLIES WITH ALUMINUM DOORS FOR PEDESTRIAN PEDESTALS. INSIDE DIAMETER OF PEDESTALS SHALL BE FOUR INCHES (4").

USE LOCKING COLLARS WHEN MOUNTING PEDESTRIAN SIGNAL HEADS TO PEDESTRIAN PEDESTALS.

USE LOCKING COLLARS WHEN MOUNTING ALUMINUM PEDESTRIAN POLES TO PEDESTRIAN PEDESTAL BASES.

ITEM 663-74-15

SEE PLAN SHEET FOR THE NUMBER OF VIDEO CAMERAS INCLUDED IN THE VIDEO DETECTION ASSEMBLY.

USE A 72" LONG GUSSET TUBE FOR VIDEO DETECTION CAMERA ATTACHMENT BRACKET. VIDEO DETECTION TO BE COMPATIBLE WITH MAINTAINING AGENCY'S EXISTING VIDEO DETECTION SYSTEM.

ITEM 665-11
665-13

USE PEDESTRIAN BUTTON SIGNAL SIGNS FTP-69B-06. STREET NAME SHALL BE IN ACCORDANCE WITH THE STREET NAMES SHOWN ON THE SIGNALIZATION PLAN SHEETS

BID ITEM NUMBER 665-11 (PEDESTRIAN DETECTOR), SHALL INCLUDE THE ADDITIONAL COST OF LABOR AND MATERIALS REQUIRED FOR INSTALLATION OF A PEDESTRIAN SIGNAL SIGN; FTP-69B-06.

ITEM 670-5-310

USE A TS2 TYPE 1 CONTROLLER WITH A TYPE V CABINET. ALL CONTROLLER EQUIPMENT TO BE COMPATIBLE WITH MANATEE COUNTY'S EXISTING STREETWISE CENTRAL SOFTWARE SYSTEM. CONTACT MAINTAINING AGENCY PRIOR TO ORDERING CONTROLLER ASSEMBLY TO CONFIRM EQUIPMENT COMPATIBILITY.

INCLUDES THE RELOCATION OF THE EMERGENCY GENERATOR CABINET AND EQUIPMENT. EXISTING TRAFFIC SIGNAL CONTROLLER TO REMAIN IN OPERATION UNTIL NEW CONTROLLER BASE AND CABINET ARE INSTALLED.

CONTRACTOR TO FURNISH AND INSTALL GENERATOR TRANSFER SWITCH AS PART OF THIS PAY ITEM.

THE CONTROLLER CABINET AND EMERGENCY GENERATOR BASES SHALL BE AT LEAST 2' HIGH AND THE SAME ELEVATION AS THE CENTER OF THE ROADWAY OR GREATER. THE CABINET DOOR SHALL OPEN TOWARDS OR PARALLEL TO THE RIGHT-OF-WAY LINE AND AWAY FROM TRAFFIC.

ITEM 670-5-ABC (ACTUATED SOLID STATE CONTROLLER ASSEMBLY), SHALL INCLUDE ADDITIONAL COST OF LABOR, CONCRETE AND OTHER MATERIALS FOR THE CONTROLLER AND EMERGENCY GENERATOR BASES, PADS, AND STEPS AS REQUIRED.

WHEN INSTALLING GROUND WIRE IN CONTROLLER CABINETS, THE COPPER GROUND WIRE SHALL NOT COME IN CONTACT WITH THE ALUMINUM CABINET, EXCEPT AT THE TERMINATION POINT.

THE CABINET SHALL BE INSTALLED WITH THREE 2" (5.08 cm) SPARE CONDUITS. THESE CONDUITS SHALL BE CAPPED IN THE PROPER PULL BOX.

THE SIGNAL CONTRACTOR SHALL SIZE THE ELECTRICAL SUPPLY WIRE TO PREVENT A VOLTAGE DROP AT THE SIGNAL HEADS AS SPECIFIED IN SECTION 210-19 OF THE N.E.C.

THE CABINET FIELD WIRING, INCLUDING SIGNAL HEAD WIRING AND LEAD-INS, (CABLES NEUTRALS AND SPARES) SHALL BE IDENTIFIED FOR DIRECTION AND OR PHASE WITH CLEARLY MARKED WEATHERPROOF TAGS. THE PROPOSED TAGGING SYSTEM SHALL BE IN ACCORDANCE WITH THE F.D.O.T.'S STANDARD SPECIFICATIONS. WHITE AND WHITE WITH BLACK WILL BE USED AS A NEUTRAL ONLY.

SURGE ARRESTORS FOR SERVICES SHALL BE INSTALLED ON THE "LOAD" SIDE OF THE SERVICE DISCONNECT. SURGE ARRESTORS SHALL BE MADE INACCESSIBLE TO UNQULAIFIED PERSONS, UNLESS LISTED FOR INSTALLATION IN ACCESSIBLE LOCATIONS (BE PREPARED TO PROVIDE DOCUMENTATION). THE CONDUCTORS USED TO CONNECT SURGE ARRESTORS TO THE LINE OR BUSS CONNECTIONS SHALL NO BE ANY LONGER THAN NECESSARY AND SHALL AVOID UNNECESSARY BENDS. ALL PROVISIONS OF NEC ARTICLE 280 AND ARTICLE 285 APPLY TO THE INSTALLATION OF SURGE ARRESTORS AND TRANSIENT SUPPRESSION DEVICES.

NEUTRAL CONDUCTORS SHALL NOT BE SWITCHED. THIS INCLUDES CIRCUIT BREAKERS, CONTACTORS OR ANY TYPE OF SWITCH, MECHANICAL OR OTHERWISE. NEUTRAL CONDUCTORS SHALL NOT BE FUSED.

THE NEUTRAL CONDUCTOR TERMINATIONS IN THE CABINET SHALL BE LEGIBLY AND PERMANENTLY IDENTIFIED TO INDICATE PHASE AND DIRECTION. IT MUST ALSO HAVE A PERMANENT TAG INDICATING "NEUTRAL", NO MORE THAN TWO PHASES PER INDIVIDUAL NEUTRAL CONDUCTOR WILL BE PERMITTED AND THEY MUST BE FOR THE SAME APPROACH. EACH NEUTRAL SHALL TERMINATE UNDER ITS OWN INDIVIDUAL PRESSURE SCREW TERMINATION AND SHALL NOT SHARE THAT CONNECTION POINT WITH ANY OTHER CONDUCTOR. THIS MEANS NO TWISTING TOGETHER OF NEUTRAL CONDUCTORS AND SHARING A SINGLE NEUTRAL BAR TERMINATION. IF NECESSARY ADDITIONAL NEUTRAL BAR (BUSS) ACCOMMODATIONS WILL BE ADDED AT THE CONTRACTOR'S EXPENSE.

CONDUCTORS TERMINATED AS "SPARES" SHALL BE PERMANENTLY AND LEGIBLY LABELED "SPARE". NO MORE THAN TWO INDIVIDUAL CONDUCTORS WILL SHARE A TERMINATION UNDER A SINGLE SCREW IN THE GROUNDING BUSS, IF ADDITIONAL BUSS ACCOMMODATIONS ARE NECESSARY THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDING THEM WITHIN THE CABINET.

ITEM 670-5-310
635-1-11

WHERE WIRES CABLES OR OTHER CONDUCTORS PASS THROUGH AN OPENING IN A ENCLOSURE, CONDUIT BOX, OR BARRIER, A BUSHING SHALL BE USED TO PROTECT THE CONDUCTORS FROM THE EDGES OF AN OPENING HAVING SHARP EDGES. THE BUSHING SHALL HAVE SMOOTH, WELL ROUNDED SURFACES WHERE IT MAY BE IN CONTACT WITH CONDUCTORS. IF USED WHERE OIL, GREASE OR OTHER CONTAMINANTS MAY BE PRESENT, THE BUSHINGS SHALL BE MADE OF MATERIALS NOT DELETERIOUSLY AFFECTED. (PARTICULARLY GENERATOR CABINETS)

ITEM 699-1-1

ALL INTERNALLY ILLUMINATED STREET NAME SIGNS TO BE RIGID MOUNTED TO THE MAST ARM.

CONNECT INTERNALLY ILLUMINATED STREET NAME SIGN CONDUCTORS TO PHOTOELECTRIC CELL LOCATED OUTSIDE THE ELECTRICAL SERVICE DISCONNECT BOX AND PHOTOELECTRIC CELL CONDUCTORS TO DEDICATED 15 AMP/120 VOLT CIRCUIT BREAKER LOCATED INSIDE THE ELECTRICAL SERVICE DISCONNECT BOX.

INSTALL PHOTOELECTRIC CELL FOR INTERNALLY ILLUMINATED STREET NAME SIGNS ON TRAFFIC SIGNAL ELECTRICAL SERVICE DISCONNECT. EACH SIGN SHALL HAVE INDIVIDUAL PHOTOELECTRIC CELL.

USE LED INTERNALLY ILLUMINATED STREET NAME SIGNS. ILLUMINATED STREET NAME SIGNS AND LIGHTING CIRCUIT MUST BE WIRED INDEPENDENT OF THE UPS.

PAY ITEM INCLUDES SIGN ASSEMBLY, MOUNTING HARDWARE, AND PHOTOELECTRIC CELLS. ALL SIGNS REQUIRE BLOCK NUMBERS.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CivilSurv Design Group, Inc.
4525 Orane Hard Rd.
Suite 7
Lakeland, FL 33811
Tel.: 863-646-6771
Certificate of Authorization No. 26488

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HEWITT, P.E.
P.E. NUMBER 72551
DATE: 9/10/12

9TH ST E-4 LANE

SUMMARY OF PAY ITEMS

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\Signals\SIGNAL PAYITEM.dwg, T-3, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	T-4

GENERAL NOTES

MAINTAINING AGENCY: MANATEE COUNTY
FOR PAVEMENT MARKINGS, SEE PAVEMENT MARKING PLANS.

1. CONTACT MANATEE COUNTY PROJECT MANAGEMENT DIVISION BEFORE STARTING WORK, CHECKING FOR UPDATES ON STANDARDS OR OTHER INFORMATION.

2. ONE WEEK PRIOR TO THE BEGINNING OF THE TRAFFIC SIGNAL INSTALLATION OR TURN ON OF A NEW SIGNAL, THE CONTRACTOR SHALL NOTIFY:

   MANATEE COUNTY TRAFFIC ENGINEERING DIVISION
   2101 47TH TERRACE EAST
   BRADENTON, FLORIDA 34203
   PHONE: (941) 749-3500

3. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR THE SIGNAL MAINTENANCE, TIMING AND OPERATION OF ANY AND ALL SIGNALS AND SIGNAGE FROM THE COMMENCEMENT TO THE ACCEPTANCE OF THE PROJECT (I.E.: EXISTING LOOP CUT, SYSTEM COMMUNICATION TERMINATED, LANE OR PAVEMENT MODIFICATIONS, PEDESTRIAN MODIFICATIONS). MANATEE COUNTY WILL ASSIST IN PROVIDING EXISTING SYSTEM TIMES WHEN POSSIBLE.

4. THE SIGNAL CONTRACTOR SHALL BE AVAILABLE TO RESPOND TO TROUBLE CALLS TWENTY-FOUR HOURS A DAY, SEVEN DAYS A WEEK FOR THE DURATION OF THE PROJECT. THE PRIME CONTRACTOR SHALL PROVIDE CONTACT NUMBERS OF THE SIGNAL CONTRACTOR TO THE TRAFFIC MANAGEMENT DIVISION AT COMMENCEMENT OF PROJECT. FURTHERMORE, WITHIN TWO HOURS OF NOTIFICATION OR DOCUMENTED ATTEMPTED NOTIFICATIONS, THE SIGNAL CONTRACTOR SHALL BE ON SITE MAKING NEEDED REPAIRS OR MODIFICATIONS. FAILURE TO MEET THE TIME REQUIREMENTS SHALL GIVE THE COUNTY, AT ITS DISCRETION, THE RIGHT TO REQUEST ASSISTANCE FROM THE MANATEE COUNTY SHERIFF'S DEPARTMENT TO CONTROL TRAFFIC FOR THE PERIOD OF TIME UNTIL THE CONTRACTOR RESPONDS AND MAKES THE NEEDED REPAIRS, THE COST FOR THE MANATEE COUNTY SHERIFF'S OFFICE SHALL BE THE RESPONSIBILITY OF THE PRIME CONTRACTOR.

5. PRIOR TO ORDERING MATERIALS, THE SIGNAL CONTRACTOR SHALL CONTACT THE TRAFFIC MANAGEMENT DIVISION THROUGH THE PROJECT MANAGEMENT DEPARTMENT AND VERIFY CURRENT COLOR CODES TO BE USED FOR SIGNAL AND INTERCONNECT CABLE.

6. WHEN A CONTRACTOR IS WORKING ON A SIGNAL IN AN INTERSECTION (INSTALLING CONDUIT IN THE STREET, REMOVING EXISTING SIGNAL EQUIPMENT, INSTALLING SIGNAL EQUIPMENT LOOPS, HOME RUNS OR TURNING ON OF NEW SIGNALS) WHERE A LANE CLOSED, THE PROJECT MANAGER MAY REQUIRE AN OFF DUTY LAW ENFORCEMENT OFFICER TO DIRECT. THE HOURLY RATE OF PAY FOR AN OFF-DUTY LAW ENFORCEMENT OFFICER CAN BE OBTAINED FROM THE LOCAL LAW ENFORCEMENT OFFICE.

7. PRODUCT DOCUMENTATION FOR ALL EQUIPMENT AND INCIDENTAL ITEMS INSTALLED OR DELIVERED AS PART OF THE PROJECT/CONTRACT IS REQUIRED. THESE DOCUMENTS SHALL BE DELIVERED A MINIMUM OF FIVE FULL WORKING DAYS PRIOR TO THE INITIAL INSPECTION. THE COUNTY AT ITS OWN DISCRETION MAY WAVE THIS REQUIREMENT ON AN INDIVIDUAL ITEM BY ITEM BASIS. THE BIDDING CONTRACTOR SHOULD CONTACT THE COUNTY SIGNAL OFFICE FOR GUIDANCE ON THIS ISSUE PRIOR TO BIDDING. PRODUCT DOCUMENTATION SHALL BE DELIVERED IN PORTABLE DOCUMENT FORMAT (PDF) ON CD ROM WHENEVER THIS FORMAT IS AVAILABLE BUT, A MINIMUM OF ONE HARD COPY FOR EACH ITEM IS REQUIRED WHEN ELECTRONIC COPIES ARE PROVIDED. WHEN AN INSTALLATION CONTAINS MULTIPLE INSTANCES OF THE SAME ITEM AND AN ELECTRONIC COPY IS NOT PROVIDED A MINIMUM OF THREE HARD COPIES OF EACH ITEM'S DOCUMENTATION IS REQUIRED.

8. ALL ITEMS SUPPLIED THAT ARE REQUIRED TO BE LISTED ON THE STATES QUALITY PRODUCT LISTING FOR FDOT PROJECTS SHALL COMPLY WITH THIS MANDATE ON COUNTY PROJECTS AS WELL. ALL ITEMS THAT REQUIRE LISTING BY INDEPENDENT LABORATORY OR OTHER TESTING AGENCIES ON FDOT PROJECTS SHALL ALSO COMPLY ON COUNTY PROJECTS.

9. FLORIDA POWER AND LIGHT TO ASSIST CONTRACTOR IN PERFORMING ALL NECESSARY WORK UNDER THEIR POWER LINES, SUCH AS THE INSTALLATION OF SPAN WIRE, SIGNAL CABLE, FIBERGLASS INSULATORS, MAST ARMS, AND SIGNAL POLES. CONTRACTOR SHALL NOTIFY THE POWER COMPANY AT LEAST THREE (3) FULL BUSINESS DAYS PRIOR TO INSTALLATION OF THIS EQUIPMENT.

10. THE CONTRACTOR IS RESPONSIBLE TO CONTACT THE MAINTAINING AGENCY MANATEE COUNTY, AT TELEPHONE NUMBER 941-708-7450??, FOR THE ASSIGNMENT OF THE PHYSICAL ADDRESS ONCE THE SERVICE DROP LOCATION HAS BEEN ESTABLISHED.

11. ALL TRAFFIC SIGNAL POLES SHALL BE LOCATED IN ACCORDANCE WITH PLANS PREPARATION MANUAL (LATEST EDITION), SECTION 2.11 AND TABLE 2.11.4 (CLEAR ZONE WIDTHS). IN THE EVENT R/W OR IRRESOLVABLE UTILITY CONFLICTS PROHIBIT POLE PLACEMENT ACCORDING TO SECTION 2.11.4, PERMITTEE SHALL CONTACT TRAFFIC OPERATIONS ENGINEER AND/OR DISTRICT DESIGN ENGINEER TO OBTAIN A DESIGN VARIATION.

12. MANATEE COUNTY TO COORDINATE UTILITY RELOCATIONS IF NECESSARY.

13. SIGNAL TO BE PLACED IN FULL OPERATION ON A MONDAY, TUESDAY OR WEDNESDAY, BUT SHALL NOT BE PLACED IN FULL OPERATION ON THE DAY PRECEDING A HOLIDAY.

14. THE CONTRACTOR TO PROVIDE A WARRANTY/MAINTENANCE BOND FOR SIGNAL INSTALLATIONS IN ACCORDANCE WITH F.D.O.T. SPECIFICATION SECTION 611-5.

    SECTION 611, TRAFFIC SIGNAL ACCEPTANCE:

    SCHEDULING OF THE PARTIAL AND FINAL ACCEPTANCE INSPECTIONS SHALL BE COORDINATED WITH F.D.O.T. TRAFFIC SIGNAL INSPECTOR/LIAISON A MINIMUM OF TWO FULL BUSINESS DAYS NOTICE.

    RESULTS OF FIELD TESTS (i.e., SECTION 614) SHALL BE MADE AVAILABLE TO THE PROJECT ENGINEER IN WRITTEN FORM. A QUALIFIED CONTRACTOR'S REPRESENTATIVE SHALL BE PRESENT AT THE CONDITIONAL ACCEPTANCE INSPECTION OF THE CONTROLLER ASSEMBLY. THE QUALIFICATIONS OF THE REPRESENTATIVE SHALL INCLUDE:

    (A) COMPLETE FAMILIARITY WITH ALL SYSTEM ELEMENTS INCLUDING CONTROLLERS, COORDINATING UNITS, SYSTEM CLOCKS AND SYSTEM COMMUNICATIONS ELEMENTS. THE REPRESENTATIVE SHALL BE QUALIFIED TO INPUT AND RECALL ALL CONTROLLER AND SYSTEM TIMING FUNCTIONS.

15. THE PERMITTEE TO SECURE, UPON PRIOR APPROVAL FROM THE DEPARTMENT, A QUALIFIED INSPECTOR IN ACCORDANCE TO CHAPTER 471, FLORIDA STATUTES, TO PERFORM CONSTRUCTION ENGINEERING & INSPECTION SERVICES FOR THE INSTALLATION OF THE TRAFFIC SIGNAL, AND TO CERTIFY THAT ALL WORK HAS BEEN DONE IN ACCORDANCE WITH THE DEPARTMENT'S STANDARDS, SPECIFICATIONS, PERMIT REQUIREMENTS, AND ALL APPLICABLE FEDERAL, STATE AND LOCAL STATUTES, RULES, AND REGULATIONS. IN ADDITION, THE ON-SITE INSPECTOR SHALL BE ISMA LEVEL II CERTIFIED.

16. TWO (2) FULL BUSINESS DAYS PRIOR TO BEGINNING CONSTRUCTION, CONTACT F.D.O.T. OPERATIONS CENTER IN SARASOTA, TELEPHONE 941-359-7353.

17. WHEN CONSTRUCTION IS COMPLETE, PROVIDE A SET OF "AS-BUILT" PLANS TO:

    MR. SAGE KAMIYA, P.E.
    TRAFFIC ENGINEERING DIVISION MANAGER
    2101 47TH TERRACE E
    BRADENTON, FL 34203

18. SUBMITTAL DATA FOR ALL PERMIT JOBS MUST BE DONE IN ACCORDANCE WITH F.D.O.T. SPECIFICATION SECTION 603.5.

19. WHEN CONSTRUCTION DEVIATES FROM APPROVED PERMIT PLANS, INCLUDING POSSIBLE EASEMENTS, PERMITTEE TO FURNISH THE DEPARTMENT OF TRANSPORTATION ONE SET OF "AS-BUILT" PLANS FOR THEIR RECORDS:

    DEPARTMENT OF TRANSPORTATION
    P.O. BOX 1249
    (STREET ADDRESS: 801 N. BROADWAY AVE.)
    BARTOW, FLORIDA 33831
    ATTN: TRAFFIC OPERATIONS - SIGNAL DIVISION

20. EXTREME CARE TO BE TAKEN TO INSURE THAT ALL SIGNAL EQUIPMENT IS INSTALLED AS SHOWN IN PLANS WITHIN EXISTING RIGHT-OF-WAY. IN THE EVENT THAT EXISTING UTILITIES OR OTHER PHYSICAL CONDITIONS NECESSITATE INSTALLATION OF ANY SIGNAL EQUIPMENT OUTSIDE OF RIGHT-OF-WAY, IT WILL BE THE RESPONSIBILITY OF THE PERMITTEE TO ACQUIRE ALL NECESSARY LEGAL, PERPETUAL EASEMENTS PRIOR TO INSTALLATION OF SAID EQUIPMENT.

    INFORMATION REQUIRED FOR ACQUISITION OF EASEMENTS CONSISTS OF:

    1. A SURVEY SKETCH OF THE AREA TO BE DONATED, WHICH IS PREPARED AND CERTIFIED BY A LICENSED PROFESSIONAL LAND SURVEYOR.

    2. A LEGAL DESCRIPTION WHICH CONFORMS TO THE SURVEYOR'S SKETCH OF THE AREA TO BE DONATED AND WHICH IS ADEQUATE FOR USE IN DEEDS OF CONVEYANCE.

    3. A TITLE SEARCH (LESS THAN SIX MONTHS OLD) CERTIFIED BY AN ABSTRACT COMPANY WHICH RELATES TO THE PARENT TRACT OF THE PARCEL TO BE DONATED TO THE DEPARTMENT.

    COPIES OF THESE EASEMENTS SHALL BE SENT TO:

    TRAFFIC SIGNAL DESIGN ENGINEER
    ASSISTANT DISTRICT TRAFFIC OPERATIONS ENGINEER
    FLORIDA DEPARTMENT OF TRANSPORATION
    P.O. BOX 1249
    801 N. BROADWAY
    BARTOW, FL. 33831

21. WORK ZONE TRAFFIC CONTROL (NEW SIGNAL)

    A. THE CRITERIA AS OUTLINED IN THE "MINIMUM SPECIFICATIONS FOR TRAFFIC CONTROL SIGNALS AND DEVICES", SHALL BE ADHEARED TO FOR SIGNAL WORK. MAINTAIN TRAFFIC BY USE OF TRAFFIC CONTROL INDEXES IN THE F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET DATED JANUARY 2010. NO LANE CLOSURES WILL BE ALLOWED BETWEEN 6:00 A.M. AND 9:00 A.M. AND BETWEEN 4:00 P.M. AND 7:00 P.M.

    B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING SAFE AND EFFICIENT OPERATION DURING SIGNAL INSTALLATION.

22. NO STEEL ENCLOSURES ARE PERMITTED TO HOUSE ELECTRICAL CONDUCTORS OR ASSOCIATED COMPONENTS. THIS INCLUDES SIGNAL CONTROLLER ASSEMBLIES AS WELL. THE PREFERENCE IS ALUMINUM THEN FIBERGLASS OR APPROVED COMPOSITE AND IF PRE APPROVED STAINLESS STEEL.

23. ARTICLE 110.26 OF THE NEC SHALL BE ADHERED TO FOR CLEAR SPACE AROUND ELECTRICAL EQUIPMENT. ALL THE APPLICABLE PROVISIONS OF THIS ARTICLE APPLY. DEVIATION FROM THIS SHOULD BE APPROVED IN WRITING BY THE PROJECT ENGINEER PRIOR TO PROCEEDING WITH AN INSTALLATION THAT VIOLATES THIS ARTICLE.

24. ARTICLE 110.12 OF THE NEC "MECHANICAL EXECUTION OF WORK" "ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMEN LIKE MANNER." THIS MANDATE AND THE REQUIRMENTS OF SUB ARTICLE (A) AND (C) APPLY AS WELL.

25. WHEN A PROJECT OFFICIALLY BEGINS THE SIGNAL CONTRACTOR IS SOLEY RESPONSIBLE FOR MAINTAINING THE LOCATE MARKS (CANDY CALL) FOR ALL INFRASTRUCTURE THAT IS BEING INSTALLED MODIFIED OR MAINTAINED AS PART OF THE CONTRACT. DAMAGES RESULTING FROM FAILURE TO COMPLY WITH THIS MANDATE WILL RESULT IN THE SIGNAL CONTRACTOR BEING LIABLE FOR THE REPAIRS.

26. ALL MATERIALS, SPECIAL EQUIPMENT, TECHNICAL ASSISTANCE AND ANY OTHER INCIDENTAL ITEMS NECESSARY TO SUCCESSFULLY FULFILL THE REQUIREMENTS OF THESE SPCIFICATIONS AS IT RELATES TO AN INDIVIDUAL PROJECT OR CONTRACT ARE THE BIDDING CONTRACTORS SOLE RESPONSIBLITY AND ALL ASSOCIATED COST RELATED TO THESE ITEMS SHALL BE FIGURED INTO THE SUBMITTED BID.

27. AT LEAST 5 FULL WORKING DAYS PRIOR TO THE TIME OF FINAL INSPECTION OF THE PROJECT THE CONTRACTOR SHALL FURNISH THE INSPECTOR TWO COMPLETE SETS OF AS-BUILTS AND THE PROJECT MANAGEMENT DEPARTMENT AND TRAFFIC MANAGEMENT DIVISION ONE COMPLETE SET EACH OF AS-BUILT PLANS. AS-BUILT PLANS SHALL CLEARLY INDICATE THE LOCATION OF THE INSTALLED POLES, CONDUIT, PULL BOXES, GROUND RODS, LOOP WINDOWS AND MEG READINGS FOR BOTH GROUND RODS AND LOOPS.

28. UPON PASSING THE FINAL INSPECTION THE CONTRACTOR SHALL SEND A WRITTEN REQUEST TO THE PROJECT MANAGEMENT DEPARTMENT AND TO THE TRANSPORATION DEPARTMENT TO TRANSFER MAINTENANCE FROM THE CONTRACTOR TO MANATEE COUNTY. MANATEE COUNTY SHALL RESPOND WITHIN 5 WORKING DAYS TO ESTABLISH A TIME TABLE FOR THE TRANSFER OF MAINTENANCE RESPONSIBILITY.

29. UNLESS OTHERWISE NOTED ALL REMOVED EQUIPMENT EXCEPT CONCRETE POLES SHALL BE TURNED OVER TO MANATEE COUNTY AND DELIVERED TO THE TRAFFIC MANAGEMENT DIVISION, LOCATED AT 2904 12TH STREET COURT EAST, BRADENTON, FLORIDA, 34208, AS DIRECTED BY THE ENGINEER. CONRETE POLES SHALL BE DISPOSED OF BY THE SIGNAL CONTRACTOR IN AREAS PROVIDED BY THE CONTRACTOR.

30. EFFECTIVE MARCH 1, 1995, IN CONFORMANCE WITH F.D.O.T. MAST ARM POLICY, ALL NEW SIGNALS INSTALLED IN MANATEE COUNTY WEST OF I-75 SHALL BE SUPPORTED BY MAST ARMS WITH THE SIGNAL HEAD(S) VERTICALLY INSTALLED AND RIGIDLY ATTACHED TO THE MAST ARM, UNLESS OTHERWISE APPROVED BY THE PROJECT ENGINEER. (BCC APPROVAL HAS BEEN GIVEN FOR THIS PROJECT)

31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE LOCAL POWER COMPANY PROVIDING ELECTRICAL POWER TO DETERMINE IF A SERVICE PROCESSING FEE IS REQUIRED. ANY FEE SHALL BE INCLUDED AS PART OF PAYMENT FOR ELECTRICAL POWER SERVICE ASSEMBLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS OF THE ELECTRICAL SERVICE.

32. F.D.O.T. BID ITEM 639-1-XAB (ELECTRICAL POWER SERVICE) SHALL INCLUDE THE COST OF ALL SPECIAL IMPACT CONNECTION FEES CHARGED BY LOCAL POWER COMPANIES FOR ELECTRICAL SERVICE CONNECTION.

33. THE LOCATION(S) OF UTILITIES SHOWN ON THE PLANS (INCLUDING THOSE DESIGNATED Vv Vh AND vVH) ARE BASED ON LIMITED INVESTIGATION TECHNIQUES AND SHOULD BE CONSIDERED APPROXIMATE ONLY. THE VERIFIED LOCATION/ELEVATIONS APPLY ONLY AT THE POINTS SHOWN. INTERPOLATIONS BETWEEN POINTS HAVE NOT BEEN VERIFIED.

34. THE CONTRACTOR TO NOTIFY UTILITY OWNERS OF ANY EXCAVATION OR DEMOLITION ACTIVITY THROUGH SUNSHINE ONE CALL OF FLORIDA INC. (1-800-432-4770) AND SHALL ALSO NOTIFY THOSE UTILITY OWNERS/AGENCIES LISTED WITHIN OR IMPACTED BY THESE PLANS, NOT LESS THAN TWO (2) FULL BUSINESS DAYS IN ADVANCE OF BEGINNING CONSTRUCTION ON THE JOB SITE.

35. AT LOCATIONS WHERE UNDERGROUND UTILITIES ARE IN CLOSE PROXIMITY TO THE SIGNAL POLE FOUNDATION OR CONDUIT RUN, AS DETERMINED BY THE ENGINEER, THE CONTRACTOR WILL HAND DIG THE FIRST 48 INCHES OF THE HOLE FOR THE POLE FOUNDATION OR THE CONDUIT RUN.

36. THE CONTRACTOR IS TO DE-WATER THE POLE FOUNDATION EXCAVATION IF THE ELEVATION OF WATER IS HIGHER THAN THE ELEVATION OF THE POLE BASE.

37. WHEN INSTALLING GROUND WIRE IN CONTROLLER CABINETS, THE COPPER GROUND WIRE SHALL NOT COME IN CONTACT WITH THE ALUMINUM CABINET, EXCEPT AT THE TERMINATION POINT.

38. THE SIGNAL CONTRACTOR SHALL SIZE THE ELECTRICAL SUPPLY WIRE TO PROVIDE A TOTAL VOLTAGE DROP OF LESS THAN 5% AT THE LOAD FARTHEST FROM THE POINT OF ELECTRICAL SERVICE SUPPLY. 3% BRANCH + 2% FEED = 5% TOTAL. SERVICE EQUIPMENT SHALL BE SUITABLE AND BREAKERS LABELED FOR WIRE SIZE TERMINATIONS.

39. NEUTRAL CONDUCTORS SHALL NOT BE SWITCHED. THIS INCLUDES CIRCUIT BREAKERS, CONTACTORS OR ANY TYPE OF SWITCH, MECHANICAL OR OTHERWISE. NEUTRAL CONDUCTORS SHALL NOT BE FUSED.

40. ONLY SINGLE CONDUCTOR SHALL BE TERMINATED IN A CRIMP STYLE CONNECTION AT EACH CRIMP POINT. AS AN EXAMPLE MULTIPLE 14 AWG CONDUCTORS ARE NOT ALLOWED TO TERMINATE WITHIN A YELLOW CRIMP FORK CONNECTOR. IF A CONTRACTOR CAN PROVIDE DOCUMENTATION THAT A CRIMP CONNECTOR BEING USED IS DESIGNED AND UL APPROVED FOR MULTIPLE CONDUCTOR TERMINATIONS, THIS INSTALLATION REQUIREMENT MAY BE WAIVED ON AN INDIVIDUAL CASE BY CASE BASIS. CALIBRATED RATCHET STYLE CRIMPING TOOLS ARE THE PREFERRED METHOD OF MAKING CRIMPS. CRIMPS DISCOVERED TO BE OVER OR UNDER CRIMPED WILL NOT BE ACCEPTED.

41. THE NEUTRAL CONDUCTOR TERMINATIONS IN THE CABINET SHALL BE LEGIBLY AND PERMANENTLY IDENTIFIED TO INDICATE PHASE AND DIRECTION. IT MUST ALSO HAVE A PERMANENT TAG INDICATING "NEUTRAL", NO MORE THAN TWO PHASES PER INDIVIDUAL NEUTRAL CONDUCTOR WILL BE PERMITTED AND THEY MUST BE FOR THE SAME APPROACH. EACH NEUTRAL SHALL TERMINATE UNDER ITS OWN INDIVIDUAL PRESSURE SCREW TERMINATION AND SHALL NOT SHARE THAT CONNECTION POINT WITH ANY OTHER CONDUCTOR. THIS MEANS NO TWISTING TOGETHER OF NEUTRAL CONDUCTORS AND SHARING A SINGLE NEUTRAL BAR TERMINATION. IF NECESSARY ADDITIONAL NEUTRAL BAR (BUSS) ACCOMMODATIONS WILL BE ADDED AT THE CONTRACTOR'S EXPENSE.

42. CONDUCTORS TERMINATED AS "SPARES" SHALL BE PERMANENTLY AND LEGIBLY LABELED "SPARE". NO MORE THAN TWO INDIVIDUAL CONDUCTORS WILL SHARE A TERMINATION UNDER A SINGLE SCREW IN THE GROUNDING BUSS, IF ADDITIONAL BUSS ACCOMMODATIONS ARE NECESSARY THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDING THEM WITHIN THE CABINET.

43. SPARES SHALL BE LABELED AND TERMINATED ON ISOLATED GROUNDING BUSS, THAT IS ISOLATED FROM THE CURRENT CARRYING NEUTRAL CONDUCTOR BUSS. SPARES SHALL BE INDIVIDUALLY CAPPED OR TAPED INSIDE SIGNAL HEADS.

44. CABLES WITH VISIBLE INSULATION AND OR CONDUCTOR DAMAGE WILL NOT BE ACCEPTED. ALL CIRCUIT CONDUCTORS INSTALLED ON A PROJECT SHALL PASS ISOLATION TESTING WITH A MEGOHMETER. CIRCUIT CONDUCTORS SHALL BE FREE FROM INSULATION DAMAGE REGARDLESS OF THE MEGOHMETER READING. READINGS OF 100 MEGA OHMS OR GREATER ARE REQUIRED ON ALL CONDUCTORS THAT HAVE INSULATION RATINGS OF 600 VOLTS OR GREATER. THE READINGS WILL APPLY TO INTER CONDUCTOR ISOLATION AS WELL AS CONDUCTOR TO GROUND ISOLATION. INTER CONDUCTOR ISOLATION APPLIES TO CONDUCTORS WITHIN CABLES, RACEWAYS, CONDUITS OR ANY OTHER LOCATION THAT CONTAINS CONDUCTORS WITHIN CLOSE PROXIMITY OF ONE ANOTHER.

45. A MANUAL PUSH BUTTON CORD AND CABINET KEYS SHALL BE FURNISHED IN ALL CONTROLLER CABINETS.

46. IT SHOULD BE NOTED THAT NO TEST BORINGS WERE MADE WHERE CONDUIT RUNS ARE TO BE INSTALLED BY JACKING OR BORING.

47. ALL ELECTRICAL WIRING, INCLUDING ROADWAY LOOP WIRE AND SHIELDING LEAD-IN CABLE, SHALL COMPLY WITH ALL APPROPRIATE PROVISIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION.

48. EXISTING UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED.

811 KNOW what's BELOW. CALL 811 BEFORE YOU DIG. It's not only the law. www.callsunshine.com

ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK OPERATIONS.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2735 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28888

	NAME	DATE
DESIGNED BY	JEH	4/07
DRAWN BY	EW	4/07
CHECKED BY	JEH	4/07

JOHN E. HOWELL, P.E.
FLA. REG. NO. 72284
DATE: 8/10/12

9TH ST E - 4 LANE

GENERAL NOTES

MANATEE COUNTY, FLORIDA

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GENERAL NOTES (CONT.)

49. THE CONTRACTOR SHALL HAVE AN I.M.S.A. CERTIFIED LEVEL II (ELECTRONICS OR ELECTRICAL) ON THE JOB SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. ALL SIGNAL INSTALLATION TECHNICIANS SHALL HAVE A MINIMUM OF I.M.S.A. LEVEL 1 CERTIFICATION.

50. ALL MATERIALS, EQUIPMENT, AND OTHER CONTRACTOR SUPPLIED ITEMS SHALL BE INSTALLED AND MAINTAINED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS, UNLESS SPECIFICALLY DIRECTED OTHERWISE BY MANATEE COUNTY.

51. ALL CINCH JONES CONNECTORS WILL BE REMOVED. SIGNALS WILL BE WIRED DIRECTLY TO TERMINAL IN DISCONNECT.

52. ALL FIBER INSTALLATION AND MODIFICATIONS SHALL COMPLY WITH SECTION 783 OF THE 2010 FDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.

53. CONDUCTORS OR CABLES THAT TRAVEL OVER 15 FEET VERTICALLY WITHOUT SUPPORT WITHIN MAST OR POLE ASSEMBLIES SHALL HAVE AN EFFECTIVE MEANS OF STRAIN RELIEF APPLIED. CONDUCTORS WITHIN VERTICAL RACEWAYS SHALL COMPLY WITH THE PROVISIONS OF NEC ARTICLE 300.19.

54. THE CONTRACTOR IS RESPONSIBLE FOR THE CABLE INSTALLATION DETAILS. IF THE CONDUIT, PULL BOXES OR ANY OTHER ESSENTIAL ITEMS FOR THE COMPLETE INSTALLATION, AS DETAILED IN THE PLANS OR PAY ITEMS LIST, ARE DEEMED TO BE INAPPROPRIATE FROM THE STAND POINT OF THE CABLE MANUFACTURES RECOMMENDATIONS. THE CONTRACTOR SHOULD IMMEDIATELY NOTIFY THE PROJECT ENGINEER TO RECIEVE THE ESSENTIAL CHANGE ORDER AUTHORIZATION, SO THAT THE CABLE INSTALLATION CAN BE COMPLETED IN AN ACCEPTABLE MANNER.

55. FOR REMOVED SIGNAL EQUIPMENT CLAIMED BY MAINTAINING AGENCY, CONTACT SAGE KAMIYA, P.E. AT 941-749-3500 x 7813.

56. AT LEAST TWO (2) FULL BUSINESS DAYS PRIOR TO BEGINNING THE TRAFFIC SIGNAL INSTALLATION, PERMITTEE TO CONTACT THE TRAFFIC SIGNAL INSPECTOR/LIAISON:

    MR. CARLOS CLBRERA PH 941-359-7317
    FLORIDA DEPARTMENT OF TRANSPORTATION
    SARASOTA OPERATIONS CENTER
    1840 61ST STREET
    SARASOTA, FL 34243

57. NO PACING OPERATIONS ARE ALLOWED BETWEEN 6:00 A.M. AND 12:00 A.M.

58. UNDERGROUND UTILITIES: THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS HAVE BEEN OBTAINED BY FIELD SURVEYS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THIS DATA IS ESSENTIALLY CORRECT. HOWEVER, THESE PLANS DO NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR WILL BE REQUIRED TO VERIFY THE EXACT LOCATION OF EACH FACILITY WITH THE UTILITY COMPANY WHEN THE POTENTIAL EXISTS FOR INVOLVEMENT AND SHALL TAKE DUE CARE IN ALL PHASES OF THE CONSTRUCTION TO PROTECT ANY SUCH FACILITIES WHICH MAYBE AFFECTED BY THE WORK. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

UTILITY OWNERS

MR. TOM WINGO
PEACE RIVER ELECTRIC COMPANY
P.O. BOX 1310
WAUCHULA, FL 33873

MR. GREG COKER
FLORIDA POWER & LIGHT
1253 12TH AVENUE EAST
PALMETTO, FL 34221

MR THOMAS L DARLING
VERIZON
1701 RINGLING BLVD.
SARASOTA, FL 34236

MR. DAN SHANAHAN
TECO PEOPLES GAS
8261 VICO CT.
SARASOTA, FL 34240

MR. WALTER KROL
BRIGHT HOUSE
P.O. BOX 25206
BRADENTON, FL 34206

GENERAL GROUND ROD INSTALLATION SPECIFICATION NOTES

1. ALL NON-CURRENT CARRYING METAL PARTS OF FIXED EQUIPMENT, ALL METAL CONDUITS, CONDUCTIVE ENCLOSURES AND ANY OTHER CONDUCTIVE ITEMS "LIKELY" TO BECOME ENERGIZED SHALL BE GROUNDED ACCORDING TO THE PROVISIONS OF NEC ARTICLE 250. THIS REQUIREMENT ELIMINATES THE EXCEPTIONS PERMITTED BY NEC 250.110. GROUNDING SHALL BE INCLUDED IN THE COST OF THE ITEM AND IS NOT A SEPARATE PAY ITEM.
2. NEC ARTICLE 250.4 (A) (5) SHOULD BE GIVEN SPECIAL CONSIDERATION WHEN PREPARING A BID OR PROCEEDING WITH AN ACTUAL INSTALLATION. "THE EARTH SHALL NOT BE USED AS THE SOLE EQUIPMENT GROUNDING CONDUCTOR OR EFFECTIVE GROUND FAULT CURRENT PATH." THIS STATEMENT MEANS THAT THE INSTALLING CONTRACTOR SHOULD PLAN FOR ADDITIONAL WIRE, LARGER CONDUIT, BOXES, FITTINGS, CONNECTIONS OR ANY OTHER INCIDENTAL ITEMS REQUIRED TO ACCOMPLISH THIS MANDATE.
3. ALL SIGNAL POLES, METAL PEDESTRIAN POLES, AND ELECTRICAL SERVICES MUST HAVE A MINIMUM OF 20' OF GROUND ROD. POLE-MOUNTED CABINETS MUST HAVE AT LEAST 50' OF GROUND ROD. ALL GROUNDS SHALL BE SUPPLEMENTED BY ADDITIONAL GROUND RODS AS NECESSARY TO REACH A MEASUREMENT OF LESS THAN 25 OHMS TO GROUND.
4. GROUND RODS FOR POLES, SERVICE, AND PAD SHALL BE PLACED A MINIMUM OF 6' APART.
5. BOND TOP AND BOTTOM SPANS TO THE BOND WIRE IN THE POLE AND TO THE POLE GROUND ROD. IF NO BOND WIRE IS AVAILABLE, USE A #6 THNN COPPER WIRE, RUN INSIDE THE POLE TO BOND SPANS TOGETHER.
6. ALL GROUND ROD ASSEMBLIES FOR POLES, SERVICES, CABINETS, AND OTHER RELATED EQUIPMENT SHALL BE BONDED TOGETHER TO FORM AN INTERSECTION GROUNDING SYSTEM USING #6 THHN BARE COPPER WIRE.
7. FINAL ELEVATION; THE UPPER END OF THE GROUND ROD SHALL BE 6" BELOW GROUND ELEVATION. MARK GROUND ROD LOCATION WITH PERMANENT MARKER SUCH AS AN EPOXIES STICKER LOCATED ON THE NEAREST CURB, OR PROVIDE AS-BUILT DRAWINGS WITH THE LOCATION OF GROUND RODS MARKED.

MATERIAL AND EQUIPMENT

1. GROUND ROD SHALL BE COPPER COATED STEEL 5/8" IN DIAMETER BY 10' IN LENGTH WITH THREADED ENDS.
2. COUPLINGS SHALL BE INSTALLED AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE THREADED WRENCH
3. GROUNDING CONDUCTOR MUST BE #6 OR LARGE THHN BARE COPPER.
4. CONNECTING DEVICES SHALL BE NON-CORROSIVE SPILT BOLTS, CLAMPS, PRESSURE CONNECTORS, OR OTHER APPROVED MEANS TO ENSURE A POSITIVE CONNECTION.
5. MEGGER, GROUND RESISTANCE TESTER, OR OTHER APPROVED MEANS WILL BE USED TO ACQUIRE THE GROUND ROD RESISTANCE. A MEMBER OF THE TRAFFIC MANAGEMENT DIVISION STAFF SHALL BE PRESENT DURING THE TEST READING.

PROCEDURES

1. CALL SUNSHINE STATE ONE CALL OF FLORIDA, INC., A MINIMUM OF 48 HOURS BEFORE GROUND ROD INSTALLATION BEGINS.
2. USE AN ADAPTER ON GROUND RODS WHEN DRIVING TO PREVENT DAMAGE TO THE THREADS.

GENERAL NOTES

1. KELLUM OR CABLE GRIPS SHALL BE USED ON EACH MAST ARM.
2. THE TYPE OF EQUIPMENT USED IN THE INSTALLATION OF MAST ARMS/FOUNDATIONS, OVERHEAD/CANTILEVER SIGNS/FOUNDATIONS, AND THE MOVEMENT/INSTALLATION OF STRAIN POLES SHALL MEET THE FOLLOWING REQUIREMENTS:
   1) OVERHEAD LINES SHALL STAY IN PLACE BOTH VERTICALLY AND HORIZONTALLY.
   2) CONTRACTOR SHALL MEET ALL APPLICABLE OSHA REQUIREMENTS (10' MINIMUM DISTANCE MAINTAINED BETWEEN THE EQUIPMENT AND THE ELECTRICAL OVERHEAD FACILITY).
3. ANY COST ASSOCIATED WITH THIS TYPE OF EQUIPMENT REQUIRED FOR THIS INSTALLATION IS INCLUDED IN THE RELATED PAY ITEMS.
4. DURING TRAFFIC SIGNAL FLASHING OPERATION, THE RED ARROW INDICATION OF ALL 3-SECTION LEFT-TURN HEADS SHALL BE THE FLASHING INDICATION DISPLAYED.

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REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV — A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28888

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DESIGNED BY	JEH	4/07
DRAWN BY	EW	4/07
CHECKED BY	JEH	4/07

JOHN E. HOWE, P.E.
P.E. REG. NO. 27...
DATE: 8/10/12

9TH ST E - 4 LANE

GENERAL NOTES

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	T-6

GENERAL NOTES (CONT.)

MAST ARM WIRING CODE

1. MAST ARM INTERSECTION 3 SECTION REQUIRES 7 CONDUCTOR (CABLES MUST BE IDENTIFIED IN CABINET.

TERMINAL BLOCK NUMBER	WIRE COLOR CODE	FIELD ASSIGNMENT
1	RED	RED
2	AMBER	AMBER
3	GREEN	GREEN
4	BLACK	SPARE
5	BLUE	SPARE
11	WHITE/BLACK	SIDE NEUTRAL
12	WHITE	MAIN NEUTRAL

2. MAST ARM INTERSECTION 5 SECTION REQUIRES 9 CONNECTOR (CABLES MUST BE IDENTIFIED IN CABINET).

TERMINAL BLOCK NUMBER	WIRE COLOR CODE	FIELD ASSIGNMENT
1	RED	RED
2	AMBER	AMBER
3	GREEN	GREEN
4	BLACK	AMBER ARROW
5	BLUE	GREEN ARROW
6	RED/BLACK	SPARE
7	GREEN/BLACK	SPARE
11	WHITE/BLACK	SIDE NEUTRAL
12	WHITE	MAIN NEUTRAL

PEDESTRIAN CROSSING WIRING CODE FOR MAST ARM

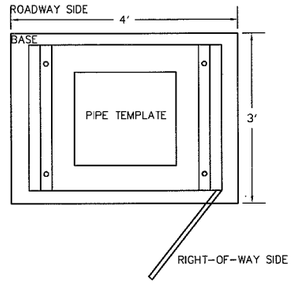
1. 5 CONDUCTOR ONE DIRECTION (PEDESTRIAN CALL BUTTON SHALL BE I.M.S.A. 50-2 OR EQUIVALENT USING THE BLACK AS CALL AND WHITE AS LOGIC GROUND). SPARES SHOULD BE WIRE NUTTED IN HEAD.

RED	DON'T WALK
AMBER	SPARE
GREEN	WALK
WHITE/BLACK	SIDE NEUTRAL
WHITE	MAIN NEUTRAL

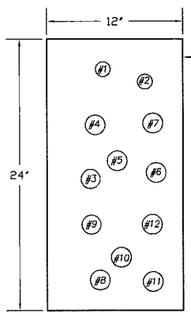
2. 12 CONDUCTOR TWO DIRECTION (PEDESTRIAN CALL BUTTON SHALL BE I.M.S.A. 50-2 OR EQUIVALENT USING THE BLACK AS CALL AND WHITE AS LOGIC GROUND). SPARES SHOULD BE WIRE NUTTED IN APPROPRIATE HEAD.

RED	DON'T WALK (MAIN)
AMBER	AMBER (MAIN)
GREEN	WALK (MAIN)
BLACK	SPARE (MAIN)
BLUE	SPARE (MAIN)
RED/BLACK	DON'T WALK (SIDE)
AMBER/BLACK	SPARE (SIDE)
GREEN/BLACK	WALK (SIDE)
BLACK/WHITE	SPARE (SIDE)
BLUE/BLACK	SPARE (SIDE)
WHITE/BLACK	SIDE NEUTRAL
WHITE	MAIN NEUTRAL

CONTROLLER CABINET
BASE (505.0)



CONTROLLER CABINET
BASE PIPE LAYOUT (506.0)

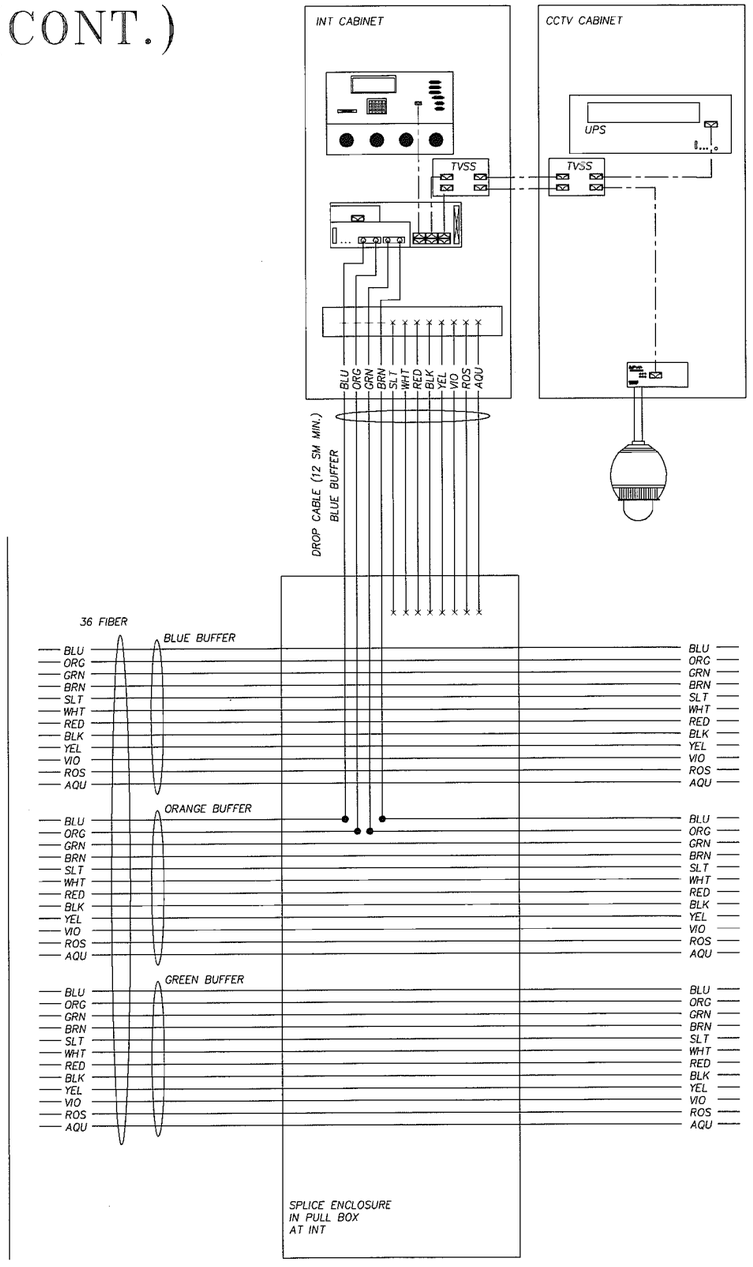


#1 – 1/2" PVC GROUND
#2 – 1" RIGID SERVICE
#3 – 2" SIGNAL
#4 – 2" SIGNAL
#5 – 2" SIGNAL
#6 – 2" SIGNAL
#7 – 2" SIGNAL (SPARE)
#8 – 2" LOOPS
#9 – 2" LOOPS
#10 – 2" LOOP (SPARE)
#11 – 2" INTERCONNECT
#12 –2" INTERCONNECT (SPARE)

SPARES ARE TO BE STUBBED INTO PROPER PULL BOX.

PULL BOXES:

1. USE F.D.O.T. APPROVED WATER TIGHT METHODS.
2. PULL BOXES MUST BE A MINIMUM OF 7' FROM EDGE OF PAVEMENT, IF NO CURB IS PRESENT. PULL BOX MAY BE LOCATED DIRECTLY BEHIND A RAISED CURB.
3. ALL CONDUIT SHALL BE BURIED A MINIMUM OF 36" BELOW GRADE, IF IN A TRAFFIC AREA OR UNDER A ROADWAY.



FIBER SPLICE DIAGRAM

KNOW WHAT'S BELOW. BEFORE YOU DIG CALL 811 811 It's free and it's the law www.callsunshine.com

ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK OPERATIONS

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

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JOHNIE HOBLE, P.E.
FLA. REG. NO. 57884
DATE: 8/7/12

9TH ST E – 4 LANE

GENERAL NOTES

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\Signal\GENERALNOTES.dwg, T-6, 1:2

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024:001001	T-7

GENERAL NOTES (CONT.)

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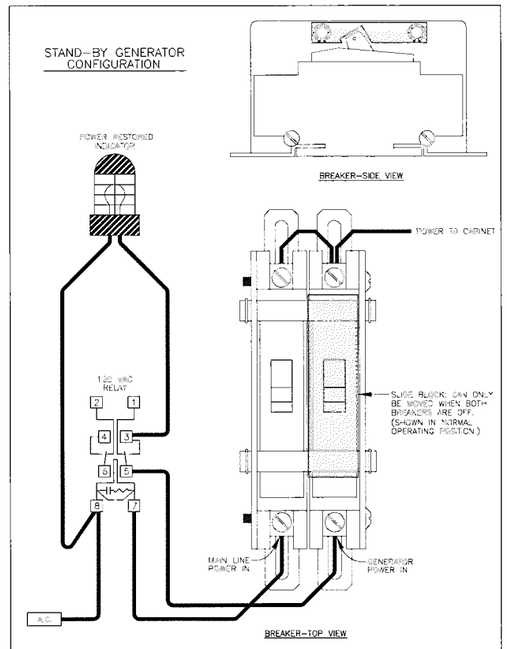
ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK CONCERNING

STAND-BY GENERATOR CONFIGURATION GENERAL NOTES

1. WHEN SPECIFIED, TRAFFIC CONTROLLER CABINETS SHALL BE WIRED FOR AUXILARY GENERATOR OPERATION FOR USE IN PERIODS OF LONG POWER OUTAGES.
2. THE CONTROLLER POWER PANEL SHALL CONTAIN A DUAL 40 AMP CIRCUIT BREAKER ASSEMBLY WITH A MECHANICAL DEVICE TO ALLOW ONLY ONE (1) CIRCUIT BREAKER TO BE SET AT ANY ONE TIME. THE MECHANICAL DEVICE SHALL REQUIRE THAT BOTH CIRCUIT BREAKERS BE PLACED IN THE OFF POSITION BEFORE A TRANSFER FROM ONE BREAKER TO THE OTHER CAN OCCUR.
3. THE CONTROLLER CABINET SHALL HAVE A POWER INPUT CONNECTOR LOCATED ON THE SIDE OF THE CABINET, CLOSEST TO THE CABINET POWER PANEL. THE CONNECTOR SHALL BE STAINLESS STEEL WITH A SCREW-ON PROTECTIVE DUST COVER; THE DUST COVER SHALL BE HINGED TO THE CONNECTOR.
4. FOR PURPOSES OF STANDARDIZATION, THE CABINET CONNECTOR SHALL BE A MARINCO 6371E1 MALE, RATED FOR 50 AMPS AT 125 VOLTS, 3 WIRE.
5. THE MATING FEMALE CONNECTOR SHALL BE A MARINCO 6360CRN WITH MARINCO 7715CRN DUST COVER AND LOCKING RING.
6. THE FEMALE HALF OF THE CONNECTOR NEED NOT BE FURNISHED UNLESS SPECIFICALLY REQUIRED BY THE PLANS AND SPECIFICATIONS.
7. A TAMPER RESTRAINT, RED INDICATOR LIGHT SHALL BE PLACED ON THE OUTSIDE OF THE CABINET AS SHOWN ON THE PLANS, THAT WILL ILLUMINATE WHEN THE NORMAL UTILITY POWER IS RESTORED, AND THE CABINET IS RUNNING ON THE STAND-BY GENERATOR.
8. THE UPS SUPPLIED SHALL BE ETHERNET READY AND SUPPORT SNMP V3 PROTOCOL.

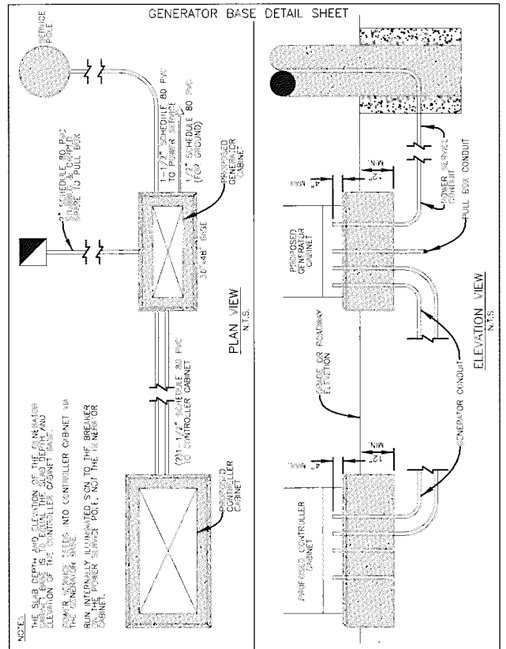
MANATEE COUNTY TRANSPORTATION DEPARTMENT			ALT. POWER SUPPLY REQUIREMENTS UPS/GENERATOR	522.0
REV. BY	DATE	6/12/07 DATE OF B.O.C.C. APPROVAL		

STAND-BY GENERATOR CONFIGURATION



MANATEE COUNTY TRANSPORTATION DEPARTMENT			ALT. POWER SUPPLY REQUIREMENTS UPS/GENERATOR	522.1
REV. BY	DATE	6/12/07 DATE OF B.O.C.C. APPROVAL		

GENERATOR BASE DETAIL SHEET



MANATEE COUNTY TRANSPORTATION DEPARTMENT			ALT. POWER SUPPLY REQUIREMENTS UPS/GENERATOR	522.2
REV. BY	DATE	6/12/07 DATE OF B.O.C.C. APPROVAL		

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MANATEE COUNTY GOVERNMENT

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JOHN E. THORLE, P.E. FLA. REG. NO. 71984 DATE: 8/10/11

9TH ST E – 4 LANE

GENERAL NOTES

MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
024:001001	T-8

CONTROLLER TIMING PANEL								
TIMING FUNCTION	1	2	3	4	5	6	7	8
MOVEMENT No.	1	2	3	4	5	6	7	8
MIN. GREEN (INITIAL)	8	20	9	12	9	20	9	12
EXTENSION (PASSAGE)	4	4	4	4	4	4	4	4
MAXIMUM GREEN I	20	60	15	25	20	60	20	30
MAXIMUM GREEN II	20	60	15	25	20	60	20	30
YELLOW CLEARANCE	4.0	4.3	4.0	4.6	4.0	4.3	4.0	4.6
ALL RED	2.5	2.5	2.3	2.3	2.5	2.5	2.3	2.3
PEDESTRIAN WALK	----	10	----	10	----	10	----	10
PEDESTRIAN CLEARANCE	----	31	----	25	----	25	----	28
RECALL	----	MAX	----	----	----	MAX	----	----
FLASHING	RED	YELLOW	RED	RED	RED	YELLOW	RED	RED

VIDEO DETECTION ZONE				
ZONE	VIDEO CAMERA NUMBER	COVERAGE AREA	DETECTOR OPERATION	DELAY TIME (SEC)
PDZ1	CD2	6' x 20'	DELAY	10.0
PDZ2	CD4	6' x 20'	NORMAL	–
PDZ3	CD3	6' x 20'	DELAY	10.0
PDZ4	CD1	6' x 20'	NORMAL	–
PDZ5	CD2	6' x 20'	DELAY	10.0
PDZ6	CD2	6' x 20'	NORMAL	–
PDZ7	CD1	6' x 20'	DELAY	10.0
PDZ8	CD1	6' x 20'	NORMAL	–

DELAY TIME IS INITIAL AND MAY REQUIRE FIELD ADJUSTING AS DIRECTED BY PROJECT ENGINEER

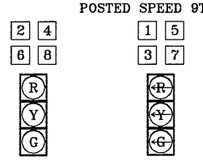
MAJOR STREET IS 53RD AVENUE E, PHASE 3 (MOVEMENTS 2 AND 6), AND MINOR STREET IS 9TH STREET E, PHASE 6 (MOVEMENTS 4 AND 8)
STANDARD SIGNAL OPERATION PLAN NO. 10 WITH THE FOLLOWING:
A. COORDINATION ON PHASES 3 & 6 (MOVEMENTS 2, 4, 6, & 8) WITH BACKUP TIME–BAS COORDINATION. SIGNAL IS COORDINATED WITH MANATEE COUNTY ATMS

B. CONCURRENT/ACTUATED PEDESTRIANS FOR MOVEMENTS 2 (P2), 4(P4), 6(P6), AND 8 (P8).

EXISTING EQUIPMENT OWNERS: MANATEE COUNTY
MAINTAINING AGENCY: MANATEE COUNTY
FOR PAVEMENT MARKINGS, SEE PAVEMENT MARKING PLANS

LUMINAIRES ON MAST ARMS 1–2 AND 1–3 SHALL BE GE M400 COBRAHEAD 120V, 400W HPS WITH FULL CUTOFF FIXTURES OR EQUAL

POSTED SPEED 53RD AVE. E – 40 MPH
POSTED SPEED 9TH ST. E – 30 MPH



TRAFFIC SIGNAL 3-SECT.,1-WAY STANDARD,LED
650-51-311
[8 AS]

TRAFFIC SIGNAL 3-SECT.,1-WAY STANDARD,LED
650-51-311
[4 AS]

SIGNAL HEAD DETAIL

PEDESTRIAN SIGNALS 1 WAY, LED
653-191
[8 AS]

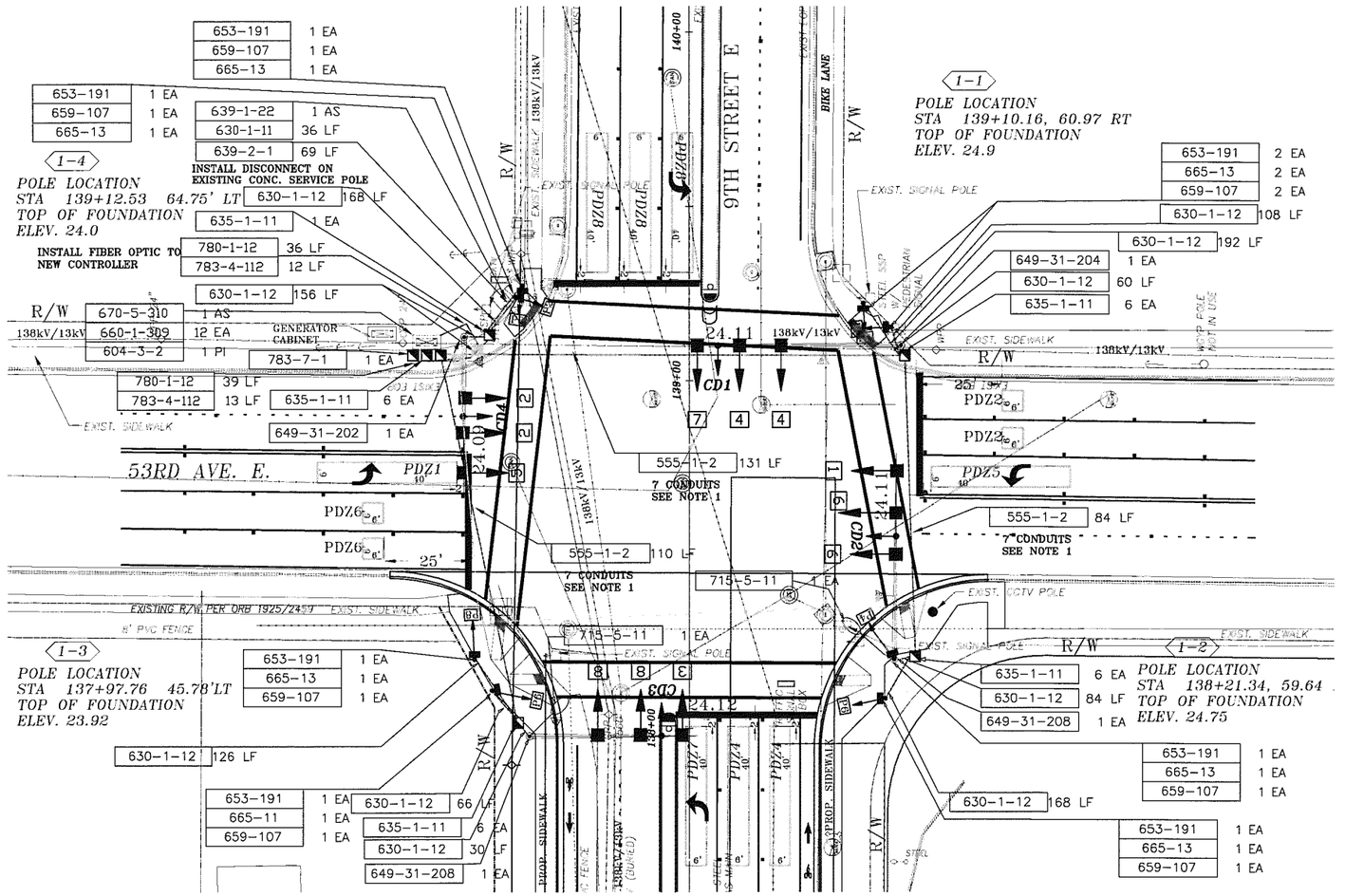
LUMINAIRE & BRACKET ARM
715-5-11
[2 EA]

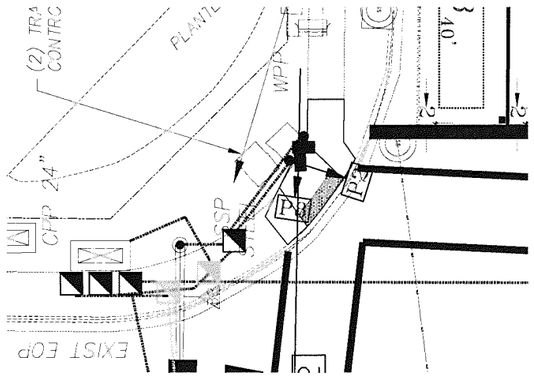
ILLUMINATED STREET SIGN
699-1-1
[4 EA]

FOR INTERNALLY ILLUMINATED STREET NAME SIGN DETAILS, SEE GUIDE SIGN WORK SHEET

ALL SIGNAL HEADS REQUIRE RETRO–REFLECTIVE LOUVERED METAL ALUMINUM BLACK PLATES W/ REFLECTIVE BORDER

PAY ITEM	DESCRIPTION	UNIT	QUANTITY
690-10	REMOVE TRAFFIC SIGNAL HEAD ASSEMBLY	10	EA
690-20	REMOVE PEDESTRIAN SIGNAL ASSEMBLY	4	EA
690-31	SIGNAL PEDESTAL REMOVE	2	EA
690-34-2	POLE REMOVAL (DEEP – BOLT ON ATTACHMENT)	4	EA
690-50	REMOVE CONTROLLER ASSEMBLY	1	EA
690-80	REMOVE SPAN WIRE ASSEMBLY	4	EA
690-90	REMOVE CABLING AND CONDUIT	1	PI
690-100	REMOVE MISCELLANEOUS SIGNAL EQUIPMENT	1	PI





ENLARGEMENT A (NW CORNER AT CONTROLLER): SCALE 1" = 10'

1) DIRECTIONAL BORE CONSISTS OF SEVEN 2" SCHEDULE 40 PVC CONDUITS. ONE FOR SIGNAL CABLE, ONE FOR PEDESTRIAN SIGNAL CABLE, ONE FOR SIGNS, ONE FOR VIDEO DETECTION, ONE FOR LIGHTING, AND TWO SPARES.

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- PROPOSED TRAFFIC SIGNAL POLE
- 3 SECTION TRAFFIC SIGNAL HEAD
- VIDEO DETECTION CAMERA
- CONTROLLER CABINET, BASE MOUNTED
- 000-0-0 PAY ITEM NUMBER
- CONDUIT UNDERGROUND
- CONDUIT UNDER PAVEMENT
- TRAFFIC SIGNAL PULL BOX
- 2 SIGNAL FACE NUMBER
- PEDESTRIAN SIGNAL HEAD (PEDESTAL MOUNTED)
- LUMINAIRE & BRACKET ARM

LEGEND

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

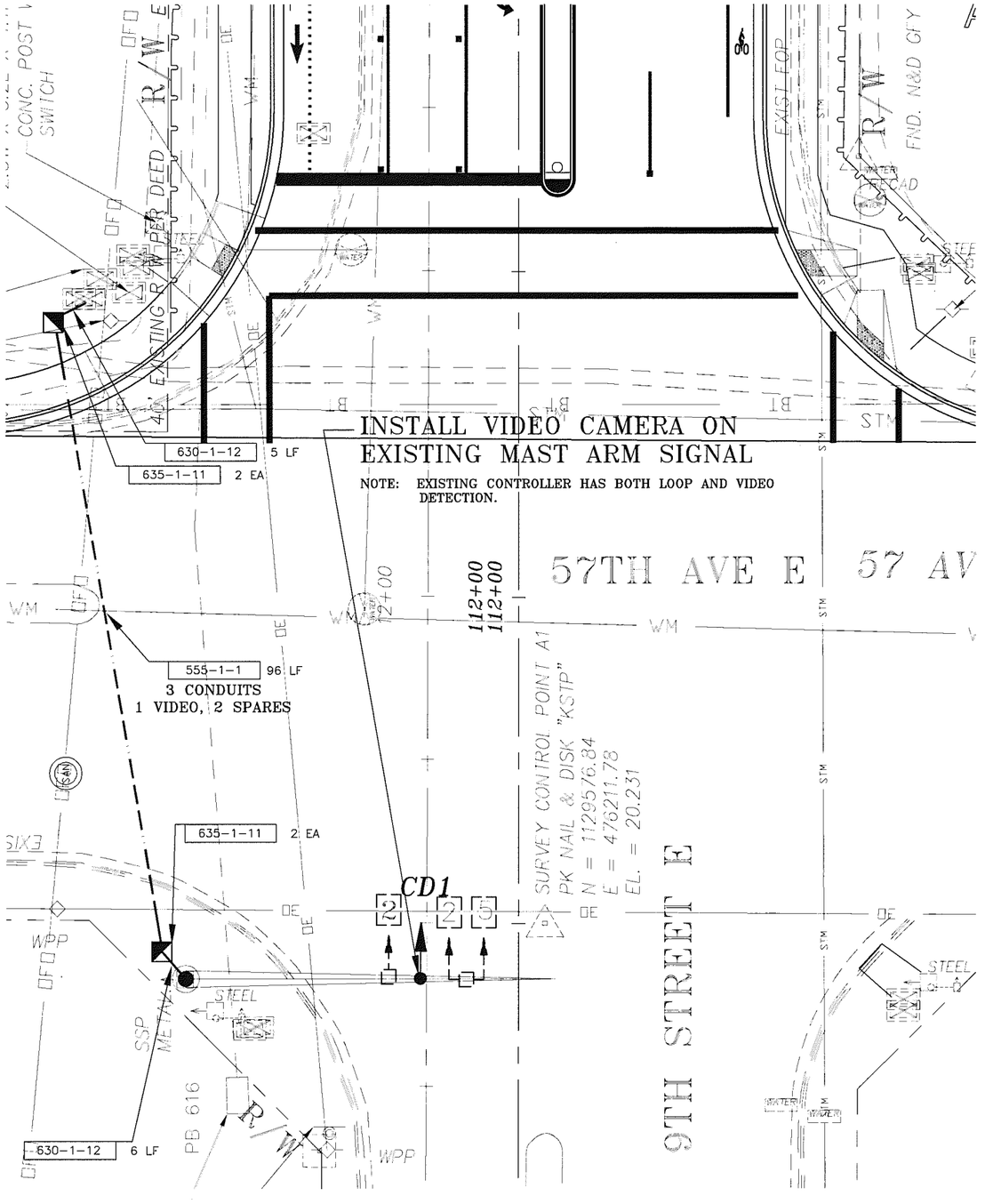
JOHN E. BOWLE, P.E.
FLA. REG. NO. 27584
DATE: 2/10/12

9TH ST E-4 LANE

PLAN SHEET

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	T-9



- EXISTING TRAFFIC SIGNAL POLE
- 3 SECTION TRAFFIC SIGNAL HEAD
- 5 SECTION TRAFFIC SIGNAL HEAD
- EXISTING CONTROLLER CABINET, BASE MOUNTED
- 000-0-0 PAY ITEM NUMBER
- CONDUIT UNDERGROUND
- CONDUIT UNDER PAVEMENT
- TRAFFIC SIGNAL PULL BOX
- 2 SIGNAL FACE NUMBER
- CD VIDEO DETECTION CAMERA

LEGEND

REVISIONS								
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FLA. REG. NO. 27584
DATE: 4/10/12

9TH ST E-4 LANE

PLAN SHEET

MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
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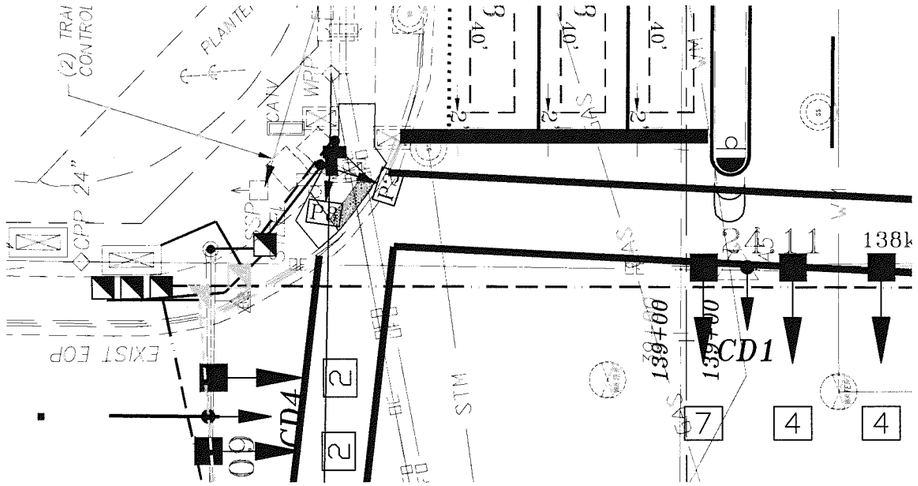
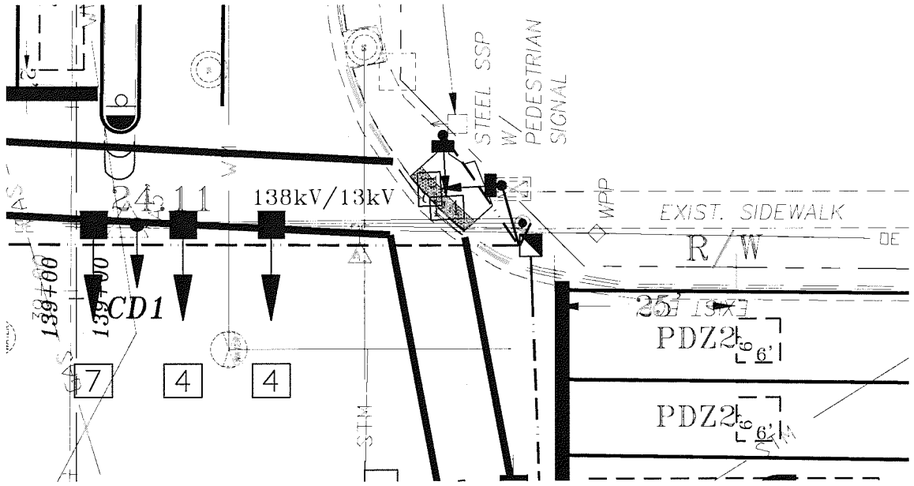
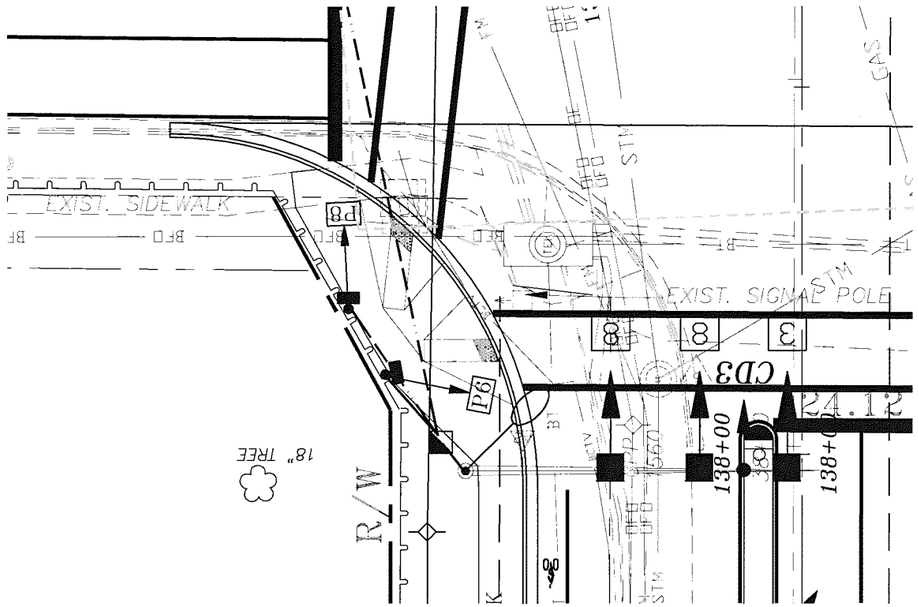


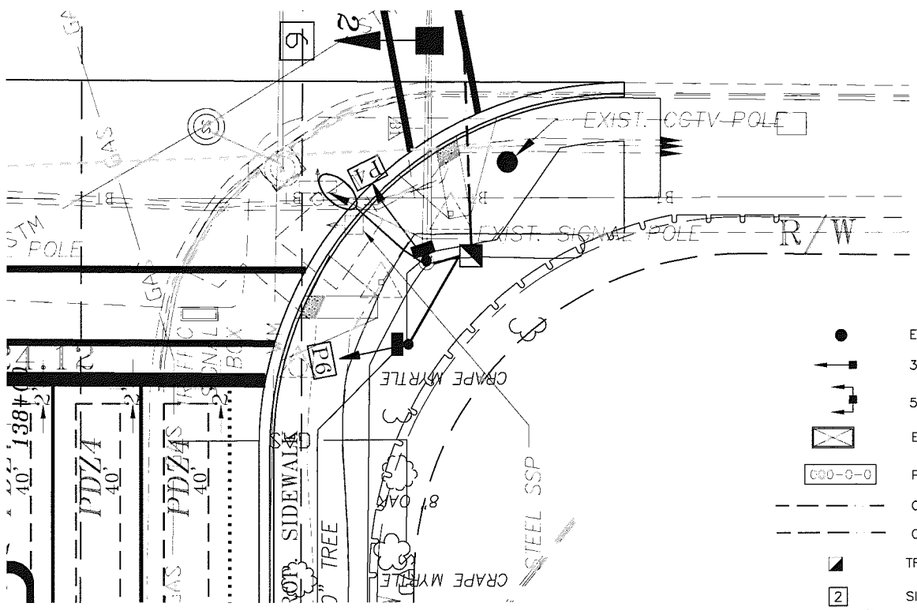
NORTHWEST CORNER
53RD AVE E & 9TH STREET E



NORTHEAST CORNER
53RD AVE E & 9TH STREET E



SOUTHWEST CORNER
53RD AVE E & 9TH STREET E



SOUTHEAST CORNER
53RD AVE E & 9TH STREET E

- EXISTING TRAFFIC SIGNAL POLE
- 3 SECTION TRAFFIC SIGNAL HEAD
- 5 SECTION TRAFFIC SIGNAL HEAD
- EXISTING CONTROLLER CABINET, BASE MOUNTED
- 000-0-0 — PAY ITEM NUMBER
- CONDUIT UNDERGROUND
- CONDUIT UNDER PAVEMENT
- TRAFFIC SIGNAL PULL BOX
- 2 — SIGNAL FACE NUMBER
- CD — VIDEO DETECTION CAMERA

LEGEND

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2515 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWIE, P.E.
FLA. REG. NO. 27564
DATE: 12/10/12

9TH ST E-4 LANE

PEDESTRIAN DETAIL

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\Signal\17156DISIGNAL.dwg, T-10, 12

CSDG PROJ. NO.	SHEET NO.
024:001001	T-11

** A POSITIVE ELEVATION DIFFERENTIAL INDICATES THE POLE LOCATION IS LOWER THAN THE CRITICAL ROADWAY ELEVATION. SEE ELEVATION DIFFERENTIAL DETIAL.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE ELEVATION DIFFERENTIAL PRIOR TO POLE MANUFACTURING.

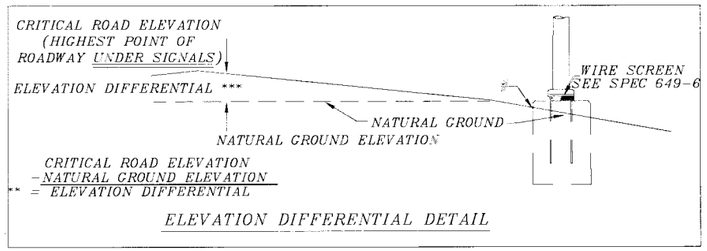
CONTRACTOR SHALL ALSO INSURE THAT TOP OF POLE FOUNDATION WILL NOT BE INSTALLED BELOW NATURAL GROUND LEVEL.

SIGNAL HEAD AND SIGN LOCATIONS SHOWN ON THIS SHEET REFLECT FUTURE SIGNAL REQUIREMENTS. SE APPROPRIATE PLAN SHEET FOR INITIAL SIGNAL HEAD AND SIGN CONFIGURATION AND LOCATION.

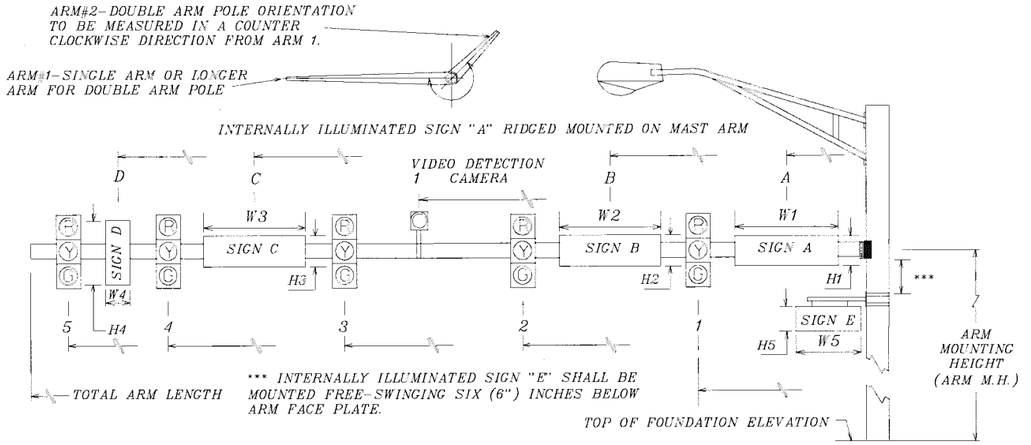
SPECIAL REQUIREMENTS:

A. EACH POLE AND MAST ARM SHALL BE IDENTIFIED WITH A PERMANENT ONE INCH (1") HIGH ENGRAVED OR IMPRESSED MARK WHICH BEARS THE IDENTIFICATION NUMBER SHOWN ON THE PLANS. ALL ADDITIONAL POLE HARDWARE SHALL BE TAGGED WITH THE SAME POLE IDENTIFICATION NUMBER.

B. ANCHOR BOLT COVERS (ORNAMENTAL, NON-ORNAMENTAL, AND/OR PAINTED) SHALL BE GALVANIZED STEEL OR CAST ALUMINUM AND SHALL BE SECURED BY A MINIMUM OF TWO (2) THREADED FASTENERS. THE BOLT COVERS SHALL BE OF SUFFICIENT SIZE SO THAT THERE IS NO GAP BETWEEN ITSELF AND THE POLE SHAFT.



ELEVATION DIFFERENTIAL DETAIL



* DENOTES NUMBER OF SECTIONS IN SIGNAL HEAD ASSEMBLY

NOTE - SIGNS B, C, AND E NOT USED. SIGN D IS FUTURE SIGN.

ID NO.	SHEET NO.	LOCATION BY STA.	# TOP OF FOUND. TO GROUND	RDWY ARM NO.	** ELEVATION DIFFERENTIAL	SIGNAL DATA: SIGNAL V/H	BACK PLATES Y/N	PED. SIGNAL Y/N	DISTANCE FROM POLE	TOTAL ARM LENGTH	ARM M.H.	∠ BETWEEN DUAL ARMS 90/270	SIGN DATA: DISTANCE FROM POLE / HEIGHT AND WIDTH OF SIGN	VIDEO DISTANCE FROM POLE	LUMINAIRE DATA	
															MOUNTING HEIGHT	ANGLE
1-1	T-3	139+10.16	0"	1	-0.79'	V	Y	Y	22.5 3F 34.5 3 46.5 3 58.5 3	65.0	20.0		A 22' H1 2' W1 8' D 49' H4 2.5' W4 2'	1 53'		
				2												
1-2	T-8	138+21.34	0"	1	-0.64'	V	Y	Y	18 3F 30.0 3 42.0 3 54.0 3	60.0	20.0		A 18' H1 2' W1 6' D 51' H4 2.5' W4 2'	1 36'	37.5'	45°
				2												
1-3	T-8	137+97.76	0"	1	0.20'	V	Y	Y	8 3F 20.0 3 32.0 3 44.0 3	52.0	20.0		A 7' H1 2' W1 8' D 41' H4 2.5' W4 2'	1 38'	37.5'	45°
				2												
1-4	T-8	139+12.53	6"	1	0.09'	V	Y	Y	3.5 3F 15.5 3 27.5 3 39.5 3	44.0	20.0		A 7' H1 2' W1 6' D 36' H4 2.5' W4 2'	1 23'		
				2												
2-4	T-9	112+52.00		1										1 36'		
				2												

NOTE: 1) POLE 2-4 - WORK INVOLVES INSTALLATION OF VIDEO CAMERA ON POLE TO REPLACE NORTH LOOP ON 9TH STREET E. TRAFFIC SIGNAL CURRENTLY HAS BOTH LOOP AND VIDEO DETECTION.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
2905 Drane Field Rd.
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Tel: 863-646-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	3/06
DRAWN BY	JEH	3/06
CHECKED BY	WM	11/11

JOHN E. HEEP, P.E. FLA. REG. NO. 71084 DATE 10/10/12

9TH STREET EAST

MAST ARM TABULATION

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\Signal\Mast Arm Tabulation Form.dwg, T-11, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	T-12

STANDARD MAST ARM ASSEMBLIES DESIGN TABLE																				
STRUCTURE ID NUMBERS	ASSEMBLY NUMBERS	FIRST ARM			SECOND ARM			UF (deg)	LL (deg)	POLE				SPECIAL DRILLED SHAFT DATA					
		ARM TYPE	FAA (ft.)	FBA (in.)	ARM TYPE	FAA (ft.)	FBA (in.)			POLE TYPE	UAA (ft.)	UB (ft.)	UCA (in.)	DA (ft.)	DB (ft.)	RA	RB	RC	RD (in.)
1 - 1	E6-T4	E6	33.9	7.40						T4	22.0	20.00	18.92						
1 - 2	E5-T23 LUM	E5	36.0	6.10						T23LUM		20.00							
1 - 3	E5-T23 LUM	E5	28.0	7.22						T23LUM		20.00							
1 - 4	E5-T3	E5	20.0	8.34						T3	22.0	20.00	15.92						

TABLE NOTES:

(1) Assembly Number Legend
Single Arm:
Arm Type - Pole Type = D# - S#
= E# - T#
= F# - W#
Double Arm:
First Arm Type - Second Arm Type - Pole Type = D# - D# - S#
= E# - E# - T#
= F# - F# - W#

(2) If an entry appears in columns "FAA" and "FBA", a shorter arm is required. This is obtained by removing length from the arm tip. For these cases the mast arm length shall be shortened from "FA" to "FAA" and the tip diameter shall be increased from "FB" to "FBA".

(3) If an entry appears in columns "UAA" and "UCA", a shorter pole is required. This is obtained by removing length from the pole tip. For these cases the pole height shall be shortened from "UA" to "UAA" and the pole tip diameter shall be increased from "UC" to "UCA".

(4) The foundations for Standard Mast Arm Assemblies are pre-designed and are based upon the following conservative soil criteria which covers the great majority of soil types found in Florida. Only complete the "Special Drilled Shaft Data" information if site conditions dictate drilled shafts in soils with lesser strength properties.

Classification = Cohesionless (Fine Sand)
Friction Angle = 30 Degrees (30°)
Unit Weight = 50 lbs./cu. ft. (assumed saturated)

Actual (non-standard) soil values used in design for these mast arms:
Classification = Cohesionless (Fine Sand)
Friction Angle = 29 Degrees (29°)
Unit Weight = 32.6 lbs./cu. ft. (assumed saturated)

GENERAL NOTES:

(1) Work this sheet with the Signal Designer's "Mast Arm Tabulation". See "Mast Arm Tabulation" for special instructions that include non-standard Handhole location, paint color, terminal compartment requirement, and pedestrian features.

(2) Work this sheet with Design Standards Index Nos. 17743 and 17745 as necessary.

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

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CivilSurv Design Group, Inc.
2525 Drane Field Rd.
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Tel: 863-646-4771
Certificate of Authorization No. 28988

	NAME	DATE
DESIGNED BY	JEH	3/06
DRAWN BY	JEH	3/06
CHECKED BY	WM	11/11

JOHN E. HOWLE P.E.
FLA. REG. NO. 37584
DATE: 8/10/12

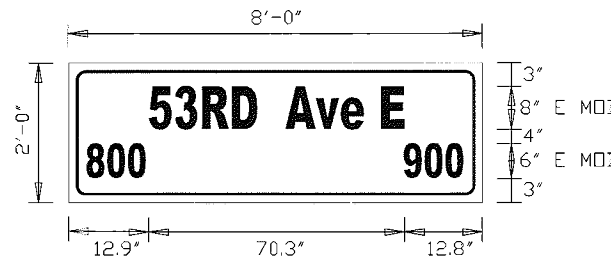
9th ST E-4LANE
TABLE OF VARIABLES FOR MAST ARM ASSEMBLIES
MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	T-13

SIGN PANEL	A1
QUANITY	1
WIDTH	8'-0"
HEIGHT	2'-0"
BORDER WIDTH	1"
BORDER RADII	3"
BACKGROUND COLOR	Green
LEGEND & BORDER COLOR	White
STATIONS(S)	none

SYMBOL(S)	X	Y	WID	HT

SIGN NUMBER	CLEARANCE EDGE OF LANE	COLUMN SIZE		AVERAGE LENGTH



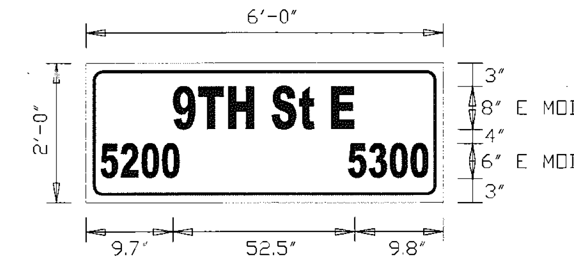
* ONE (1) SIGN PANEL IS REQUIRED FOR SIGN ASSEMBLY. SIGN ASSEMBLY SHALL BE A DOUBLE-PANEL, TWO-WAY, INTERNALLY ILLUMINATED STREET SIGN ASSEMBLY.

COPY		5	3	R	D		A	v	e		E	
SPACE	11.9	6.4	6.4	6.4	6.4	8.0	8.0	8.C	6.8	8.0	5.9	11.8
COPY		8	0	0		9	C	0				
SPACE	2.0	4.8	5.0	5.0	60.4	4.8	5.0	5.C	2.0			
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												

SIGN PANEL	B1
QUANITY	1
WIDTH	6'-0"
HEIGHT	2'-0"
BORDER WIDTH	1"
BORDER RADII	3"
BACKGROUND COLOR	Green
LEGEND & BORDER COLOR	White
STATIONS(S)	none

SYMBOL(S)	X	Y	WID	HT

SIGN NUMBER	CLEARANCE EDGE OF LANE	COLUMN SIZE		AVERAGE LENGTH



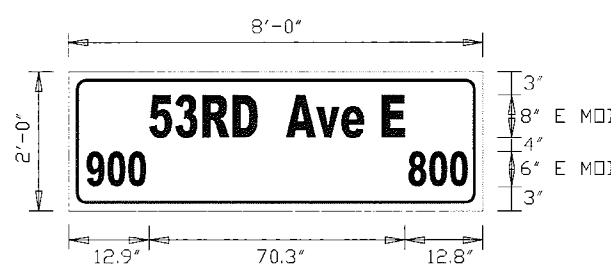
* SEE NOTE FOR SIGN A1.

COPY		9	T	H		S	t		E		
SPACE	8.7	6.4	5.9	6.5	8.0	6.4	5.4	8.0	5.9	8.8	
COPY		5	2	0	0		5	3	0	0	
SPACE	2.0	4.8	4.8	5.0	5.0	26.8	4.8	4.8	5.0	5.0	2.0
COPY											
SPACE											
COPY											
SPACE											
COPY											
SPACE											
COPY											
SPACE											

SIGN PANEL	A2
QUANITY	1
WIDTH	8'-0"
HEIGHT	2'-0"
BORDER WIDTH	1"
BORDER RADII	3"
BACKGROUND COLOR	Green
LEGEND & BORDER COLOR	White
STATIONS(S)	none

SYMBOL(S)	X	Y	WID	HT

SIGN NUMBER	CLEARANCE EDGE OF LANE	COLUMN SIZE		AVERAGE LENGTH



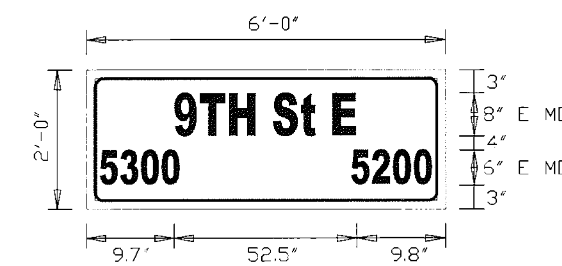
* SEE NOTE FOR SIGN A1.

COPY		5	3	R	D		A	v	e		E	
SPACE	11.9	6.4	6.4	6.4	6.4	8.0	8.0	8.0	6.8	8.C	5.9	11.8
COPY		9	0	0		8	0	C				
SPACE	2.0	4.8	5.0	5.0	60.4	4.8	5.0	5.0	2.0			
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												
COPY												
SPACE												

SIGN PANEL	B2
QUANITY	1
WIDTH	6'-0"
HEIGHT	2'-0"
BORDER WIDTH	1"
BORDER RADII	3"
BACKGROUND COLOR	Green
LEGEND & BORDER COLOR	White
STATIONS(S)	none

SYMBOL(S)	X	Y	WID	HT

SIGN NUMBER	CLEARANCE EDGE OF LANE	COLUMN SIZE		AVERAGE LENGTH



* SEE NOTE FOR SIGN A1.

COPY		9	T	H		S	t		E		
SPACE	8.7	6.4	5.9	6.5	8.0	6.4	5.4	8.C	5.9	8.8	
COPY		5	3	0	0		5	2	0	0	
SPACE	2.0	4.8	4.8	5.0	5.0	26.8	4.8	4.8	5.0	5.0	2.0
COPY											
SPACE											
COPY											
SPACE											
COPY											
SPACE											
COPY											
SPACE											

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

Civilsurv Design Group, Inc. 2525 Drane Field Rd. Suite 7 Lakeland, FL 33811 Tel: 863-646-4771
Certificate of Authorization No. 28959

	NAME	DATE
DESIGNED BY	JEH	10/06
DRAWN BY	JEH	10/06
CHECKED BY	WM	11/11

JOHN E. HOWLE, P.E. FLA. REG. NO.
DATE: 2/10/12

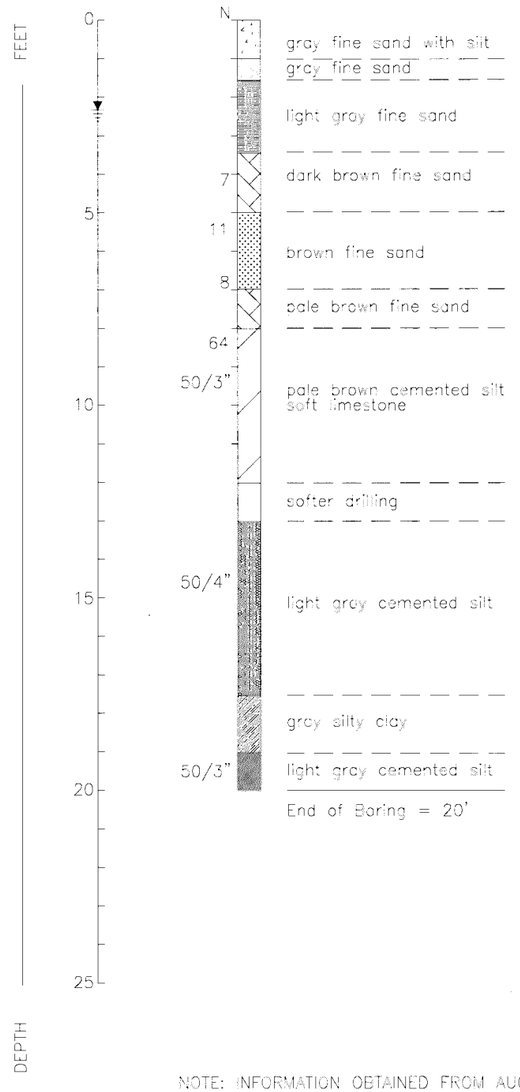
9TH ST E – 4 LANE

GUIDE SIGN WORK SHEET

MANATEE COUNTY, FLORIDA

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\Signal\signs.dwg, T-13, 1:2

CSDG PROJ. NO.	SHEET NO.
024:001001	T-14



NOTE: INFORMATION OBTAINED FROM AUGUST 16, 2005 SUBSURFACE SOIL EXPLORATION REPORT PREPARED BY ARDAMAN & ASSOCIATES, INC.

SOIL PROPERTIES FOR STP-2

Depth (feet)	Dry Unit Weight (pcf)	Total Unit Weight (pcf)	Saturated Unit Weight (pcf)	Angle of Internal Friction (degrees)	Cohesion (psf)
0 - 1	-	95	-	29	-
1 - 1.5	-	95	-	29	-
1.5 - 3	-	95	-	29	-
3 - 5	-	100	100	29	-
5 - 7	-	105	105	30	-
7 - 8	-	100	100	29	-
8 - 12	-	135	135	35	-
12 - 13	-	-	-	-	-
13 - 17.5	-	136	136	35	-
17.5 - 19	-	110	110	-	0.5
19 - 20	-	135	135	35	-

ENGINEERING CLASSIFICATION
COHESIONLESS

DESCRIPTION	BLOW COUNT "N"
VERY LOOSE	0 TO 4
LOOSE	4 TO 10
MEDIUM DENSE	10 TO 30
DENSE	30 TO 50
VERY DENSE	ABOVE 50

COHESIVE

DESCRIPTION	UNIFIED COMPRESSIVE STRENGTH T.S.F.	BLOW COUNT "N"
VERY SOFT	BELOW .25	0 TO 2
SOFT	.25 TO .50	2 TO 4
MEDIUM STIFF	.50 TO 1.0	4 TO 8
STIFF	1 TO 2	8 TO 15
VERY STIFF	2 TO 4	15 TO 30
HARD	ABOVE 4	ABOVE 30

WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLERS LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE ELEVATIONS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR. ABSENCE OF WATER DATA ON CERTAIN BORINGS IMPLIES THAT NO GROUNDWATER DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THESE LOCATIONS OR WITHIN THE VERTICAL REACHES OF THESE BORINGS IN THE FUTURE.

DATE DRILLED: 7/28/05

REVISIONS

Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT
PUBLIC WORKS DEPT

CSDG Field Book No.:

CIVILSURV
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CivilSurv Design Group, Inc.
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	NAME	DATE
DESIGNED BY	JEH	12/11
DRAWN BY	JEH	12/11
CHECKED BY	WM	12/11

JOHN E. HOOD, P.E.
FLA. REG. NO. 41958
DATE 12/10/11

9th ST E-4LANE
CORE BORING
MANATEE COUNTY, FLORIDA

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CSDG PROJ. NO.	SHEET NO.
024:001001	L1

MANATEE COUNTY
BOARD OF COUNTY COMMISSIONERS
BRADENTON, FLORIDA

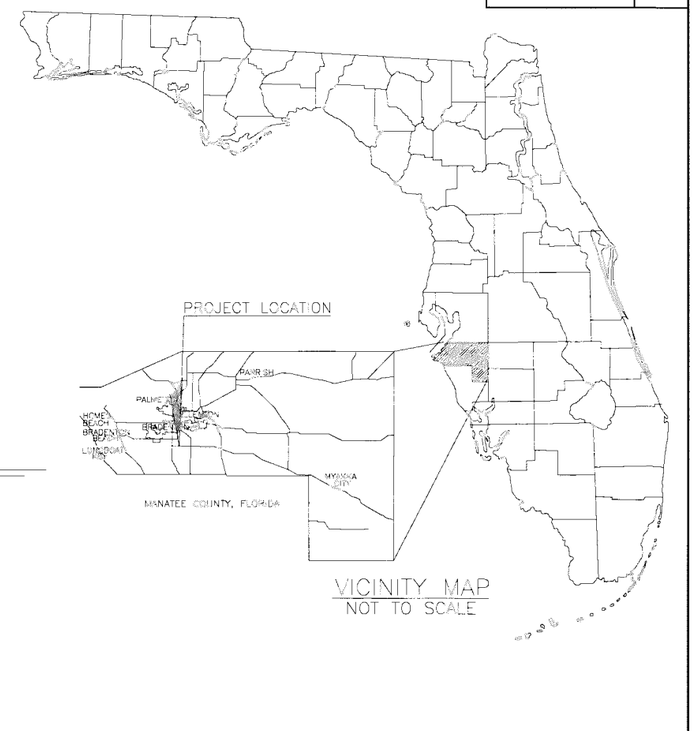
INDEX OF PLANS

SHEET NO.	SHEET DESCRIPTION
L1	KEY SHEET
L2-L4	LIGHTING PLAN SHEETS

PROPOSED LIGHTING PLANS FOR

9TH STREET EAST – 4 LANE BETWEEN 57TH AVENUE EAST AND 53RD STREET EAST

COUNTY PROJECT NO. 6040460
CSDG PROJECT NO. 024:001001
MANATEE COUNTY, FLORIDA



VICINITY MAP
NOT TO SCALE

1. ALL INDEX REFERENCES IN THIS SET OF PLANS REFER TO F.D.O.T. "DESIGN STANDARDS" DATED 2010.
2. GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED 2010 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.
3. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY BEEN REDUCED IN SIZE BY REPRODUCTION THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.
4. UNDERGROUND UTILITIES: THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS HAVE BEEN OBTAINED BY FIELD SURVEYS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THIS DATA IS ESSENTIALLY CORRECT. HOWEVER, THESE PLANS DO NOT GUARANTEE THEIR ACCURACY OR COMPLETENESS. THE CONTRACTOR WILL BE REQUIRED TO VERIFY THE EXACT LOCATION OF EACH FACILITY WITH THE UTILITY COMPANY WHEN THE POTENTIAL EXISTS FOR INVOLVEMENT AND SHALL TAKE DUE CARE IN ALL PHASES OF THE CONSTRUCTION TO PROTECT ANY SUCH FACILITIES WHICH MAYBE AFFECTED BY THE WORK. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

FINAL PLAN SUBMITTAL
7/18/12

LIGHTING PLANS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY, LIGHTING TO BE INSTALLED BY FLORIDA POWER AND LIGHT.

KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

811 KNOW WHAT'S BELOW. ALWAYS CALL 811 BEFORE YOU DIG
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www.callsunshine.com

ALL EXISTING UTILITIES SHOWN ON THESE PLANS ARE TO BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF WORK OPERATIONS.

ENGINEER OF RECORD:
JOHN E. HOWLE, P.E.
P.E. NO. 27584

PLANS PREPARED BY:

CIVILSURV
A Tradition of Innovative Engineering
CivilSurv Design Group, Inc.
3825 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4771
Certificate of Authorization No. 28988

ENGINEER OF RECORD: _____
JOHN E. HOWLE, P.E. NO. 27584
DATE: 9/10/12

V:\Projects\17156.20 - Manatee - 9th St. E-4 lane\Transportation\Drawings\17156201GHTNGCOVER.dwg, L1, 12

CSDG PROJ. NO.	SHEET NO.
024:001001	L2

1"=40'

57 AVE E

56 AVE. E.

(ASPHALT)

9TH ST E

AERIAL COAX

815

5626

5620

5616

5606

5608

10' EXISTING UTILITY EASEMENT PER PLAT

40' EXISTING R/W PER DEED

EXIST ROW

40' EXISTING R/W PER PLAT

FND. 5/8" IRC NO CAP

FND. 4x4 CM W/ NAIL

EXIST CONC. DRWY.

24"

12+00 | 13+00 | 14+00 | 15+00 | 16+00 | 17+00 | 18+00

112+00 | 113+00 | 114+00 | 115+00 | 116+00 | 117+00 | 118+00

CONST. ℄

SURVEY ℄

POINT A1 "KSTP"

PT = 113+70.75

PT = 115+70.75

2.5W X 2.3L X 5.0H

2.3W X 3.2L X 4.1H

CONC. POST W/ ELEC. SWITCH

FND. %&D CFY LB0021

CPD W/ X-WALK

905

5627

EXIST CONCRETE DRIVEWAY

N = 112,969.76
EL. = 20.076
E = 476215.62
PK NAIL & DISK
"KSTP" SURVEY CONTROL POINT A2

66' EXISTING R/W PER DEED 1699/2632

12"

15" PALM

15" TRE

15' EXISTING BUFFER PER CONDO PLAT BOOK 11 PAGE 106

SURVEY CONTROL POINT A3
PK NAIL & DISK "KSTP"
N = 113,435.45
E = 476192.75
EL. = 20.206

8' PVC FENCE

Power Lines (Aerial)

GAS PIPELINE MARKER

18+00 | 19+00 | 20+00 | 21+00 | 22+00 | 23+00 | 24+00

118+00 | 119+00 | 120+00 | 121+00 | 122+00 | 123+00 | 124+00

"KSTP"

N 0°11'42" E

PT = 122+81.10

STA. 118+63.27

STA. 120+33.36

STA. 121+82.77

PT = 119+32.14

PRC = 120+96.82

25' EXISTING R/W PER DEED

6" WATER MAIN

BURIED CABLE (TYP)

BURIED ELECTRIC

ASPHALT DRIVEWAY

PROP RIGHT-OF-WAY

PROP ROW

36" OAK

6" HOLLY

15" PALM

18" PALM

30" PALM

24" PALM

5531

V:\Projects\171562.20 - Manatee - 9th St. E-4 lane Transportation\Drawings\171562.20LIGHTING PLAN.dwg, L2, 12

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
A Tradition of Innovative Engineering

CivilSurv Design Group, Inc.
2525 Drane Field Rd.
Suite 7
Lakeland, FL 33811
Tel: 863-646-4011
Certificate of Authorization No. 28698

	NAME	DATE
DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOBLE, P.E.
FLA. REG. NO. 47584
DATE: 9/10/12

9TH ST E-4 LANE

LIGHTING PLAN

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	L3

9TH ST E

CONST. ℄

25' EXISTING R/W PER DEED

40' EXISTING R/W PER DEED

EXISTING R/W 33.5' DEED

PROP 20" DRAINAGE EASEMENT

PROP 15' UTILITY EASEMENT DRAINAGE EASEMENT

EXIST. GAS LINE EASEMENT

PROP R/W

TEMPORARY CONSTRUCTION EASEMENT

PERMANENT EASEMENT

EXIST. FENCE (TO REMAIN)

8' PVC FENCE

3' PICKET

EXIST. 60" RCP

EXIST. 90" RCP

EXIST. MH RIM EL. 19.33 FL EL. 10.83

E = 476169.68
N = 1131683.87
PK NAIL & DISK "KSTP"
EL. = 20.007
SURVEY CONTROL POINT #4

"KSTP"

WSP W/ TRANSFORMER & LIGHT

WSP W/ TRANSFORMER

WSP W/ GUARD

BELOW GROUND VAULT (JR) PS 617

8" WOOD P.C.

B' PVC GATE

FND. 5/8" IR NO CAP

FND. 5/8" IRC "PLS 4861"

STA 134+15 END PICKET RAILING

15' EXIST BUFFER PER CONDO PLAT BOOK 11 PAGE 106

EXIST. BUS SHELTER TO BE REMOVED BY MANATEE COUNTY AREA TRANSIT

CONST. CONC. COLLAR PER FDOT INDEX NO. 280

CATV POWER SUPPLY

6" CONC. POST W/ METER

WPP NOT IN USE

ASPHALT DRIVEWAY

DIRT DRIVEWAY

CONCRETE DRIVEWAY

1"=40'

1"=40'

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REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATEE COUNTY GOVERNMENT

CSDG Field Book No.:

CIVILSURV
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CivilSurv Design Group, Inc.
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DESIGNED BY	JEH	9/05
DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

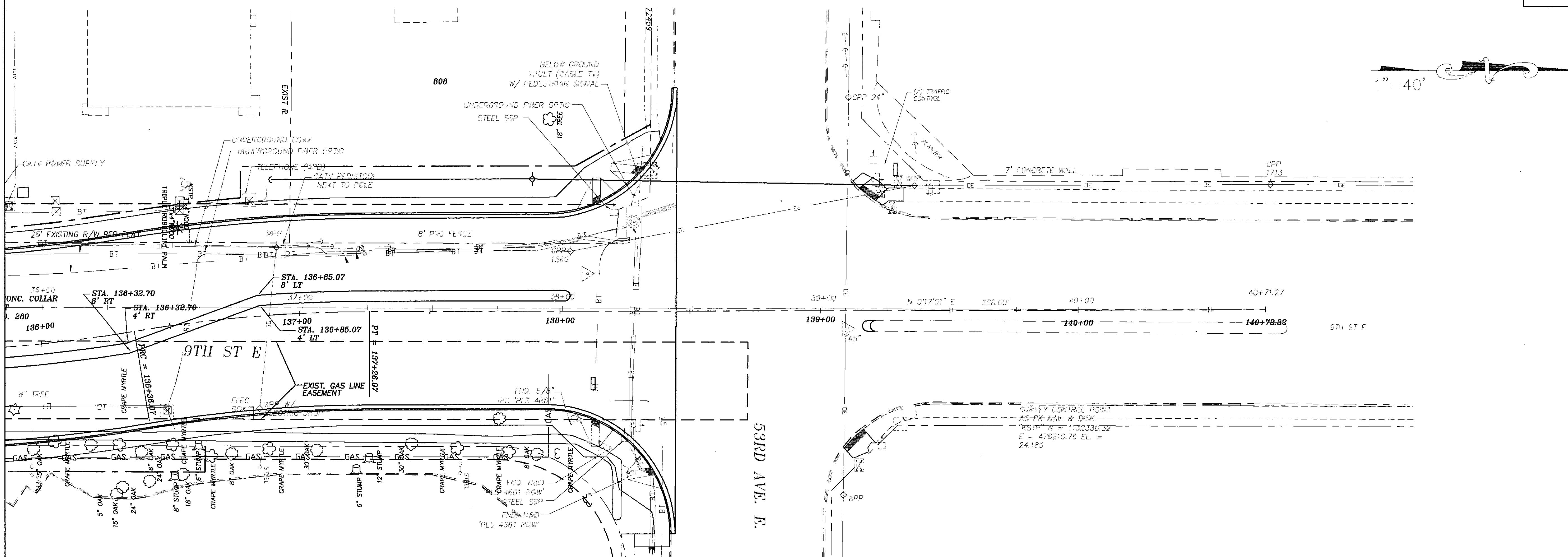
JOHN E. HOWELTON
FLA. REG. NO. 38[illegible]
DATE: 9/10/12

9TH ST E-4 LANE

LIGHTING PLAN

MANATEE COUNTY, FLORIDA

CSDG PROJ. NO.	SHEET NO.
024:001001	L4



1"=40'
BELOW GROUND VAULT (CABLE TV) W/ PEDESTRIAN SIGNAL
UNDERGROUND FIBER OPTIC
STEEL SSP
18" TREE
808
EXIST R/W
UNDERGROUND COAX
UNDERGROUND FIBER OPTIC
CATV POWER SUPPLY
TELEPHONE (WPB)
CATV PEDISTOO NEXT TO POLE
TRIPLE ROBELLINI PALM
25' EXISTING R/W PER PLAT
8' PVC FENCE
CPP 1560
(2) TRAFFIC CONTROL
CPP 24"
7' CONCRETE WALL
CPP 1713
STA. 136+85.07 8' LT
STA. 136+32.70 8' RT
STA. 136+32.70 4' RT
STA. 136+85.07 4' LT
CONC. COLLAR
36+00
37+00
38+00
39+00
40+00
40+71.27
N 0°17'01" E 300.00'
136+00
137+00
138+00
139+00
140+00
140+72.32
9TH ST E
PT = 137+26.97
PRC = 136+36.07
EXIST. GAS LINE EASEMENT
8" TREE
CRAPE MYRTLE
ELEC. BOX
FND. 5/8" IRC "PLS 4661"
53RD AVE. E.
SURVEY CONTROL POINT AS FK NAIL & DISK "KSTP" N = 1133336.32 E = 476210.76 EL. = 24.180
GAS
FND. N&D "4661 ROW"
STEEL SSP
FND. N&D "PLS 4661 ROW"

REVISIONS								
Date	By	Description	Date	By	Description	Date	By	Description

MANATE COUNTY GOVERNMENT

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DRAWN BY	EW	9/05
CHECKED BY	JEH	9/05

JOHN E. HOWLE, P.E. FLA. REG. NO. 57584
DATE: 8/10/12

9TH ST E-4 LANE

LIGHTING PLAN

MANATEE COUNTY, FLORIDA

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