

“If a cluttered desk is a sign of a cluttered mind,
of what, then, is an empty desk a sign?”

Albert Einstein-1939

Design Expo 2013

Lessons Learned

A short vid on the importance of CPR.

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Purpose – What we do

Quality Assurance (QA)

Tasked with conducting regular evaluation of the processes under the oversight of the Office of Design.

We strive to ensure consistent application of statewide policies, procedures and standards among District offices, all in an effort to support the FDOT's Work Program.

**Plans Preparation Manual (PPM)
Vol. 1-18.2
Quality Assurance**

Quality Assurance is the planned, coordinated and continued activities performed to measure processes against predetermined critical requirements.

**Quality Control
(QC)**

PPM Vol. 1-18.3 Each District shall have a District Quality Control Plan for Roadway Design and the other production units, which addresses broad overall quality initiative.

Quality Control (QC)

PPM Vol. 18.3 Quality Control

Quality Control is the process performed to ensure conformance with valid requirements. This process includes quality planning, training, providing clear decisions and directions, constant supervision, immediate review of completed activities for accuracy and completeness, and documenting all decisions, assumptions and recommendations.

Plans Preparation Manual Vol. 1-18.3

In-house and consultant designers and reviewers must recognize quality is the result of several processes.

PPM Vol. 1-18.2.1

Section 20.23(4)(a) Florida Statutes (F.S.) requires a Quality Assurance Process.

Quality Assurance Reviews

Project Reviews

Process Reviews

Project Reviews

Pre Letting

Post Letting

Pre-Let Review ("Can It Be Let")

**Performed on every Central Office let
construction contract**

Post-Let Review

Performed on every Central Office let construction contract.

Distributed to District Director of Transportation Development down.

Quality Assurance Review (QAR)

Process Review

Performed on four Districts annually.

Project specific, one Central Office (CO) let and one District let chosen.

Distributed to District Secretary down.

PPM Vol. 1-18.2 Quality Assurance

The objective of Quality Assurance is the continual improvement of the total delivery process to enhance quality, productivity and user satisfaction.

Quality Control is the process performed to ensure conformance with valid requirements. This process includes quality planning, training, providing clear decisions and directions, constant supervision, immediate review of completed activities for accuracy and completeness, and documenting all decisions, assumptions and recommendations.

Quality Control (QC)

Each District shall have a District Quality Control Plan for Roadway Design and the other production units, which addresses broad overall quality initiative. The District Quality Control Plan shall identify the organization, responsibility, and accountability used to perform and document overall quality control, including the requirement for a Project Quality Control Plan on all projects. All Project Quality Control Plans must address any project specific scope of service needs and be approved by the Project Manager or District Design Engineer as appropriate.

The Plans Preparation Manual Vol. 1-18.2.2

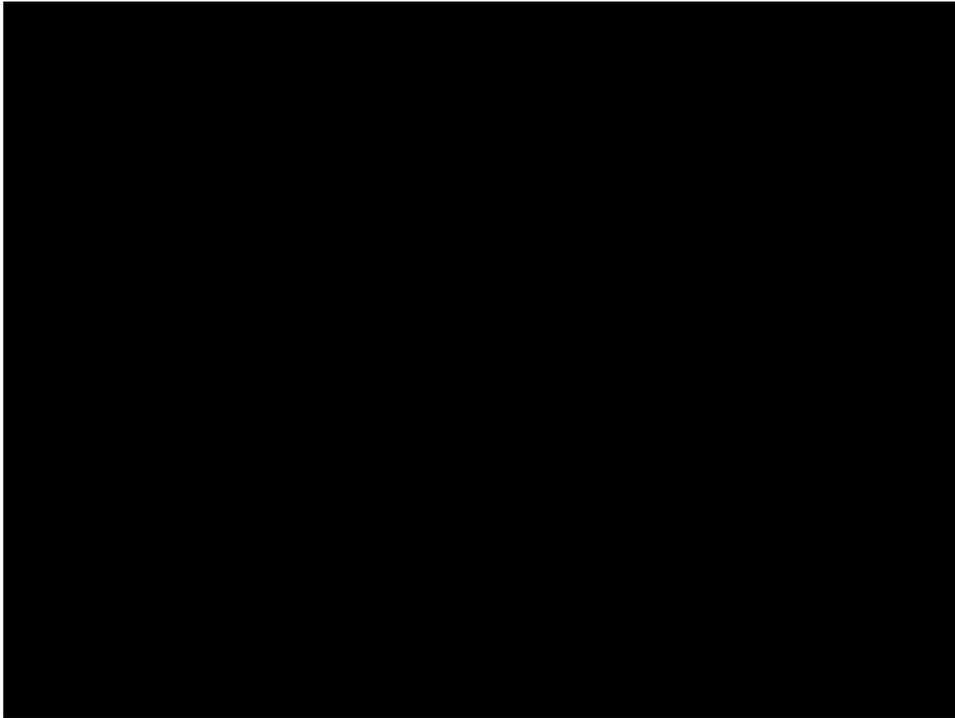
The Central Office shall review each design process and its associated components for assurance that the Districts have adequate control measures in place and are complying with policy, procedures, standards, guidelines and processes. It will also be used for identifying any areas of excellence, noncompliance and need.

A short activity

Enjoy a brief musical interlude by Tommy Guerrero called "Insomniac"



A short vid on the importance of plan notes.



FDOT Policy, Procedure, Manuals and Handbooks

Plans Preparation Manual

FDOT Specifications and applicable Workbooks

FDOT Design Standards

Basis of Estimates

CADD Manual

CADD Production Criteria Handbook

Specifications Handbook

Structures Detail Manual

Drainage Manual and Handbooks

Applicable Memorandum

Post-Let Review

- Pre-Let Items
- Specifications
- Plans
- Other Items of Interest

Post-Let Review – Pre-Let Items

- Submittal Errors (noting items fixed and resubmitted).
- FTP for Utility Work Schedules/Permits not in compliance reported.
- Late Items.
- Revision submittal errors (noting items fixed and resubmitted).
- Non-compliance of Mandatory Revisions.
- Non-compliance of other issues put out via Bulletin.

Specifications

Specifications are checked against the corresponding workbook found on the Specifications Website.
Checking both Special Provisions and Supplemental Specifications.

Post-Let Review – Specifications

Specifications are checked against the corresponding workbook found on the Specifications Website.

SPECIAL PROVISIONS	SP0000001	All Jobs
EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK (REV 12-9-10) (FA 1-27-11) (7-11) Insert Information Required. Change(s) to: 2-4.	SP0020400	All Jobs. (add a phone number or e-mail address)
PREPARATION OF PROPOSALS (REV 6-22-04) (FA 7-13-04) (1-05) Change(s) to: 2-5.1.	SP0020501AB	A+B Bidding (Use with proper authority). Use with SP0030100AB, SP0030203AB, SP0081300AB and SP0080701AB
PREPARATION OF PROPOSALS (REV 2-21-05) (FA 3-31-05) (1-06) Insert Information Required. Change(s) to: 2-5.1.	SP0020501LB	Lane Rental (Use with proper authority). Use with SP0030100LR, SP0081300LR and SP0081300LRCR

SPECIAL PROVISIONS	6
EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK	7
SCOPE OF WORK – INTENT OF CONTRACT	7
UNFORESEEABLE WORK	8
REQUIREMENTS FOR FEDERAL JOBS – COMPLIANCE WITH FHWA 1273	8
UTILITY SCHEDULES	9
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – WAGE RATES FOR FEDERAL-AID PROJECTS	9
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – VERIFY	10
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – SCRUTINIZED COMPANIES	10
PROSECUTION OF WORK – REGIONAL DISPUTES REVIEW BOARD	11
PROSECUTION OF WORK – STATEWIDE DISPUTES REVIEW BOARD	14
COMPUTATION OF CONTRACT TIME	17
DAMAGE RECOVERY	18
MILLING OF EXISTING ASPHALT PAVEMENT	18
SUPPLEMENTAL SPECIFICATIONS	19
001 DEFINITIONS AND TERMS – DEFINITIONS	20
002 PROPOSAL REQUIREMENTS AND CONDITIONS – PREQUALIFICATION OF BIDDERS	21
003 EXECUTION OF CONTRACT BOND	22
004 SCOPE OF THE WORK	22
005 CONTROL OF THE WORK	27
006 CONTROL OF MATERIALS	30

When a new workbook is released this is done prior to Acceptance.

Post-Let Review – Specifications

Checking both Special Provisions and Supplemental Specifications.

Supplemental Specifications	SS000001	All Jobs
001 DEFINITIONS AND TERMS - DEFINITIONS (6-9-10) (FA 7-29-10) (1-11) Change(s) to: 1-3	SS0010200	All Jobs
002 PREQUALIFICATION OF BIDDERS (12-28-10) (FA 1-4-11) (7-11) Change(s) to: 2-1	SS0020100	All Jobs
003 EXECUTION OF CONTRACT BOND (REV 8-10-09) (FA 8-13-09) (1-10) Change(s) to: 3-5.1, 3.6, 3.7	SS0030600	All Jobs

SPECIAL PROVISIONS	6
EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK	7
SCOPE OF WORK - INTENT OF CONTRACT	7
UNFORESEEABLE WORK	8
REQUIREMENTS FOR FEDERAL JOBS - COMPLIANCE WITH FHWA 1273	8
UTILITY SCHEDULES	9
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC - WAGE RATES FOR FEDERAL-AID PROJECTS	9
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC - E-VERIFY	10
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC - SCRUTINIZED COMPANIES	10
PROSECUTION OF WORK - REGIONAL DISPUTES REVIEW BOARD	11
PROSECUTION OF WORK - STATEWIDE DISPUTES REVIEW BOARD	14
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004 SCOPE OF THE WORK	22
005 CONTROL OF THE WORK	27
006 CONTROL OF MATERIALS	30

Specifications

* Pay item 523 Patterned pavement

Per the PPM Vol. 1-2.1.6.2

Prior to the installation of patterned pavement crosswalks in intersections on the State Highway System, a Maintenance Memorandum of Agreement **shall** be entered into with the local government agency requesting this aesthetic enhancement to the project.

Post Let Review - Plans

- Plans format
- Missing required information
- Redundant notes
- Notes that change specifications
- Prescriptive notes

A short vid on naming convention.



Key Sheet

Index of Sheets out of order.

Roadway plans sheets shall be assembled per the
PPM Vol. 2-3.6

Length of Project

Length of project computed incorrectly due to:
using begin/end construction

or

rounding incorrectly

or

math errors

The PPM Vol.2 -3.2.3

Missing Required Information

Key Sheet

Basis of horizontal alignment (if other than
Baseline of Survey) not defined.

Governing Standards and Specifications

The required note: The scale of these plans may
have changed due to reproduction.

Missing Required Information

Typical Sections

Cross slopes - Some plans have “match existing”

According to the PPM Vol. 2-6.2.3 Mandatory Information. Cross slopes of roadway pavement, shoulder surfaces, sidewalks and bridge decks shall be expressed as a decimal part of a foot vertical per foot horizontal. These cross slopes shall be rounded to two decimal places, i.e., 0.02, 0.06. (See **Volume 1, Chapter 2**).

Missing Required Information

Typical Sections

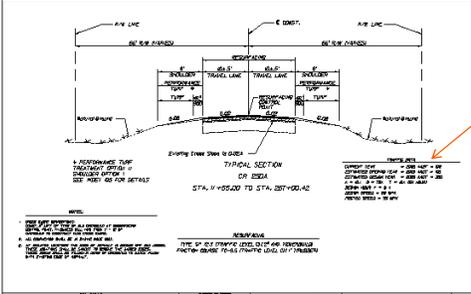
Missing required information on widening. Per the PPM Vol. 2 Ch. 6 Exhibit 6-1.3 (On widening projects): Actual width of base widening may vary due to actual existing pavement width. Contractor may elect to place uniform width base widening strip at no additional cost to the Department.

Per the PPM Vol. 2 Ch. 6 Exhibit 6-1 .2 (Under paved shoulders): At the contractor's option, this area may be constructed of base material at no additional compensation.

Template dimensions: For widening projects, the existing pavement width shall be shown as a +/- dimension, and the base widening width shall be shown with an asterisk. Note 3, of **Standard Notes for Typical Section Sheets (Exhibit 6-1)**, **shall be shown as near to this noted asterisk as possible.**

NOTE: For typical sections with varying dimensions, the dimensions shall be clearly indicated on the plan-profile sheets.

Post-Let Review – Incorrect or Missing Mandatory Information



TYPICAL SECTION OF ROADWAY
STA. 11+05.00 TO STA. 121+00.00

TRAFFIC DATA

CURRENT YEAR = 2005 AADT = 100
 ESTIMATED OPENING YEAR = 2009 AADT = 100
 ESTIMATED DESIGN YEAR = 2029 AADT = 300
 K = 10% D = 75% T = 16% (24 HOUR)
 DESIGN HOUR T = 8 %
 DESIGN SPEED = 60 MPH
 POSTED SPEED = 55 MPH

Topic #625-000-008 Plans Preparation Manual, Volume 2 - English January 1, 2009

6.2 Mandatory Information

Typical sections for all projects shall include the following data:

1. Design speed for each typical section
2. Traffic data (description, date and 2-way AADT)
 - a. Current Year
 - b. Estimated Opening Year
 - c. Estimated Design Year
 - d. K, D and T factors. Distinguish between T(peak hour) and T(24 hour)

For skid hazard projects, only the current year or estimated opening year for traffic data (AADT) is required to be noted.
All traffic data shown shall be consistent with the data used for pavement design.
3. Cross Slopes
 - a. Cross slopes of roadway pavement, shoulder surfaces, sidewalks and bridge decks shall be expressed as a decimal part of a foot vertical per foot horizontal. These cross slopes shall be rounded to two decimal places, i.e. 0.02, 0.06. (See **Volume 1, Chapter 2**)
 - b. Median and outer slopes shall be shown by ratio, vertical to horizontal, i.e. 1:4, 1:2. (See **Volume 1, Chapter 2**)

Missing Required Information

Plan Sheets

R/W not dimensioned. Per the PPM Vol. 2-10.2.7.1. Right of way lines shall be shown. Right of way shall be dimensioned only if the applicable typical section shows a varying dimension from the baseline or centerline. **Dimensions of the R/W line shall be from the centerline or baseline, if survey and construction lines are parallel; otherwise it shall be dimensioned from the construction centerline.**

Missing Required Information

Plan Sheets

Travel way not dimensioned. Per the PPM Vol. 2-10.2.7.3. At locations along the alignment where traveled way dimensions change, or begin to change, the station and dimensions of the traveled way shall be shown.

Missing Required Information

Plan Sheets

Curve data - Per PPM Vol. 2 Chapter 10.2.2 In cases where the curve extends over more than one sheet, the curve data shall be repeated on each sheet showing the curve.

Missing Required Notes

PPM Vol. 2-10.4 General Notes for Roadway Plan and Roadway Plan-Profile Sheets

General notes are intended to be used to clarify design detail, construction practices or method for payment. General notes should be kept to a minimum. Only those notes that are job specific should be used. General notes should only be used to detail uniqueness and not to broaden or curtail requirements in the specifications. Notes that restate the standard specifications or standard indexes shall not be used. This will help to place proper emphasis on those notes that are job specific and avoid discrepancy of documents.

See *Exhibit 10-1* for a list of standard General Notes required.

Missing Required Notes

Exhibit 10-1 General Notes for Roadway Plan and Roadway Plan-Profile Sheets

1. (The bench mark datum used for the plans (NAVD 88 or other) shall be noted in the first General Note.)
2. Buildings to be removed by others, unless otherwise noted.
3. Existing drainage structures within construction limits shall (be removed/remain) unless otherwise noted.
4. (When there are no utility adjustment sheets in the plans, the notes shown in *Exhibit 20-1* shall be included here as part of the general notes).

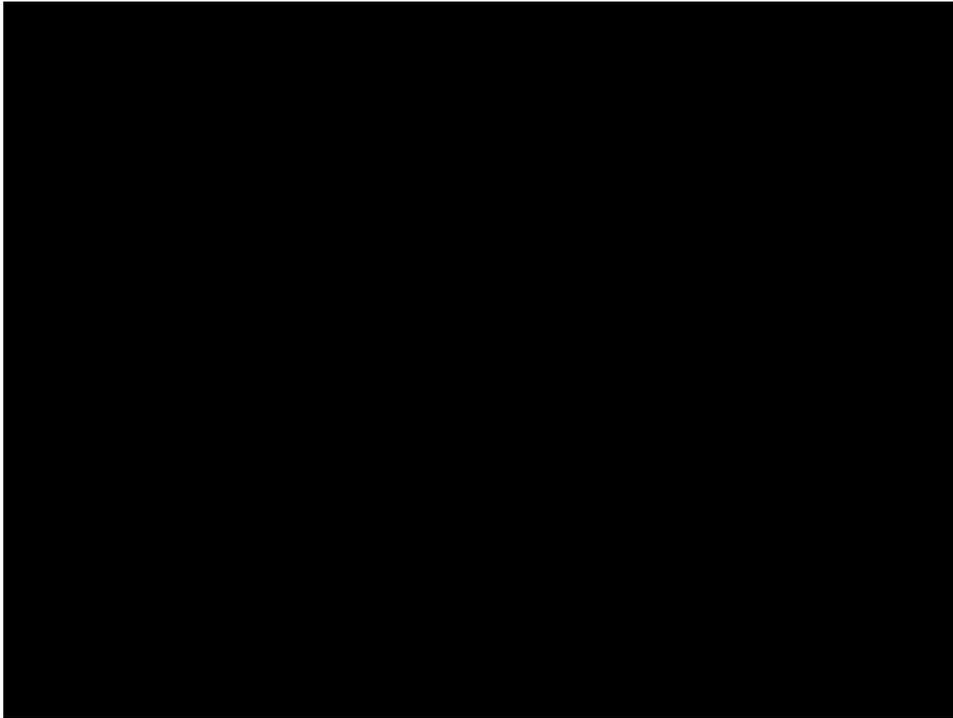
Missing Required Notes

An actual note taken from plans.

Utility contact information can be located on the individual utility schedules as shown in section 7-11.6.3 of the FDOT specifications.

Per the PPM Vol. 2 Exhibit 9. Utility owners should have been listed.

A short vid on the importance of CPR.



Redundant Notes

Maintain existing street name signs for 9-1-1 purposes. Cost for all relocations during MOT phases shall be included in pay item 102-1. This note is redundant to FDOT Specifications 102-1, 7-11.4, etc.

Redundant Notes

The contractor shall place retro-reflective pavement markers at all locations where new paint is applied. Placement of retro-reflective pavement markers shall be in accordance with index 17352. This note is redundant to FDOT Design Standards index 17352 and index 600 13 of 13 and FDOT Specifications 706-4.

Redundant Notes

102-1 All costs to maintain traffic not included specifically as a bid item shall be included in the lump sum price for maintenance of traffic. This note is redundant to FDOT Specifications 102.

Redundant Notes

Sheet 13 note 3. The minimum temporary lane width allowed shall be 10 feet. This note is redundant to FDOT Design Standards index 600 3 of 13.

Redundant Notes

At no time shall the contractor close any two consecutive side streets or median openings. This note is redundant to FDOT Specifications 102 and 8-3.4, 8-4.3, etc.

Redundant Notes

The contractor shall maintain pedestrian traffic on at least one side of SRxxx at all times. Refer to index 660 for pedestrian control for closure of sidewalks. This note is redundant to FDOT Specifications 102-1, 102-5.5, 8-3.4, and FDOT Design Standards 660 and 600.

Redundant Notes

The contractor shall immediately repair all potholes that develop within the project limits. This note is redundant to FDOT Specifications 102-5.2.

Redundant Notes

The contractor shall take all necessary precautions to prevent milled material from entering the drainage system. The contractor is responsible for keeping inlets clean of paving materials, silts, limerock, and debris during construction at no additional cost to the department. This note is redundant to FDOT Specifications 8-4.5, 102-5.2, et al.

Redundant Notes

The contractor shall not bring any hazardous materials onto the project. Should the contractor require such for performing the contracted work, the contractor shall request, in writing, written permission from the engineer. The contractor shall provide a copy of the request to the District Contamination Impact Coordinator (DCIC). The contractor shall provide the DCIC with a copy of the material safety data sheet (MSDS) for each hazardous material proposed for use, and provide a description of the specific manner in which the material be used. The project engineer shall coordinate with the DCIC prior to issuing written approval to the contractor. Because state law does not treat petroleum products that are properly containerized as hazardous materials, such products do not require an MSDS submittal. All bulk petroleum products stored on site shall require proper storage which includes secondary containment. Per PPM Vol. 2-1.5 Notes that restate the FDOT Specifications or FDOT Design Standards shall not be used. FDOT Specifications 6-5.3.

Redundant Notes

If suspected contaminated or hazardous materials are found on the project, or encountered during construction, the contractor shall cease operations in that area, immediately notify the district contamination impact coordinator (DCIC) and protect the immediate area of suspected contaminated or hazardous material from further access. The DCIC will arrange for the investigation, identification and/or removal/remediation of the material in question as needed. Per the PPM Vol. 2-1.5 Notes that restate the FDOT Specifications or FDOT Design Standards shall not be used. * This note changes FDOT Specifications 8-4.9 which states “notify the Engineer”

Redundant Notes

At the discretion of the engineer, if a lane closure causes extended congestion or delay, the contractor shall be directed to reopen the closed lane(s) until such time that the traffic flow has returned to an acceptable level. Per PPM Vol. 2-1.5 Notes that restate the FDOT Specifications or FDOT Design Standards shall not be used. That note is covered in FDOT Standard Specifications 102-1 paragraph 1 & 2 and 8-4.3.

Redundant Notes

Existing loops to remain that are damaged during construction shall be replaced by the contractor at no additional cost.

Temporary detection will be required whenever repairs cannot be made in a timely fashion. This note is redundant to FDOT Specifications. 7-11.1, 7-11.4, 102-1, 102-5.4, et al.

Redundant Notes

As determined by the engineer, the contractor shall cover work zone signs when conditions no longer warrant their use. Cost of covering and uncovering the signs shall be included in pay item 102-1, maintenance of traffic. This note is redundant to FDOT Design Standards index 600 5 of 13.

Redundant Notes

The saw-cutting, removal, and replacement of concrete, asphalt, and rap drives during side-drain replacement **has not been designated in the plans. Additional compensation will not be awarded for the replacement of concrete. Asphalt, rap, or base required for drive restoration. Repair area shall extend to the limits of disturbance.** This note is redundant to FDOT Specification 430-12.



Specifications Changing

Includes the cost of proposed swing gate and gate for walkway. Includes the cost of removal of existing fence. Gates are a separate pay item. See 550-5 and is redundant to FDOT Specification 550

Specifications Changing

The Conflicting Pay Item Note – the example shown below is trying to include a swing gate and gate which are items, according to the BOE (Basis of Estimates), paid for under item 550-60-ABC.

550-10-210 **FENCE:**
INCLUDES THE COST OF PROPOSED SWING GATE AND GATE FOR WALKWAY. INCLUDES THE COST OF REMOVAL OF EXISTING FENCE.

BOE (Basis of Estimates)

550- 10-ABC	FENCING			
	Unit	LF; M1	Accuracy	Linear Foot; 1/10 Meter
			PlanQuantity?	yes
Notes				
Details	Includes all fence, posts, and incidental materials. Gates to be paid under 550-60-ABC.			
550- 60-ABC	FENCE GATE			
	Unit	EA	Accuracy	Each
			PlanQuantity?	yes

Specifications Changing

Summary of Litter Removal and Mowing -
 “The above quantities include one litter removal and mowing during a 5 day period preceding the final date. The Engineer may waive the requirement for this final litter removal and mowing.” This extra cycle (calculation) is not in accordance with the PPM. Per the BOE: Use a minimum of 1 cycle per phase; after dividing the phase duration by the frequency, round to the nearest cycle.

Specifications Changing

The landscape contractor shall be properly registered with the Florida Department Of Agriculture and Consumer Services Division Of Plant Industry and be a certified landscape contractor by The Florida Nursery, Growers, And Landscape Association and be a certified arborist by The International Society Of Arboriculture. Submit certifications prior to the pre-construction meeting. FDOT Specification 580. These certifications may limit which contractors could bid on the job. Contractor’s are pre-qualified in specific work classes and the specifications and plans are performance based to direct what is expected. These requirements may have been better suited in a MSP and it is unclear if they were included in the Advertisement.

Specifications Changing

Sod option to be used for this project is Bahia. Quantities may be increased, decreased or omitted as directed by the engineer in the field. Quantity for this item is not "plan quantity". *This note contradicts FDOT Specification 570-8 and the B.O.E. Also, see Estimates Bulletin 11-06 & Roadway Design Bulletin 11-08.

Specifications Changing

Concrete curb and gutter type F, includes 120 lf as contingency to replace the curb and gutter to the nearest flag joint. Quantities could be increased, decreased or omitted as determined by the engineer. This pay item includes the cost of saw cutting, excavation and embankment for the construction of the new curb and gutters and curb pad, as well as the cost of the curb pad (includes cost of removal and disposal of existing curb and gutter). This pay item is not a plan quantity item. Per the FDOT Specifications, curb and gutter removal (when there is no pay item) will be included in clearing and grubbing FDOT Specification 110-7. Curb and gutter installation is a Plan Quantity concept per the B.O.E. and FDOT Specification 520-11. Also, see Estimates Bulletin 11-06 & Roadway Design Bulletin 11-08.



Prescriptive Notes

Sheet LD-2 note 2. The final plant location may be adjusted, as directed by the engineer, to accommodate utilities compliance with underground utility safety setback criteria excavations exceeding 18" shall be done by hand within 5' of known utilities. This note is redundant to FDOT Specifications 7-11.6, 7-11.1 and is prescriptive.

Prescriptive Notes

Sheet LD-2 note 6. Contractor shall place pre and post emergent herbicide on all proposed plant beds. Contractor shall provide herbicide submittal for approval. **This note is prescriptive.**

Prescriptive Notes

...mix of 80% sand and 20% muck... **This note is prescriptive.**

Prescriptive Notes

FERTILIZATION: In order to maintain Florida Department of Agriculture's Grades and Standards for Nursery Plants Florida Number 1 or better, the following is recommended: Provide at a minimum, one (1) application at time of planting and two (2) applications per year. A schedule of fertilization based upon the Manufacturer's recommended rates shall be submitted by the Contractor at the pre-construction meeting. This note is prescriptive.

Prescriptive Notes

Conduit under reconstruction of sidewalk shall be placed prior to placing pavement. This note is prescriptive.

Technical Special Provisions

Technical Special Provisions (TSPs):

Specifications of a technical nature that are signed and sealed by an engineer, architect or landscape architect, registered in the State of Florida.

TSPs describe work that is not covered by the Standard Specifications, Special Provisions or Supplemental Specifications and are included as appendices in a specifications package.

TSPs

Per the Specs. Handbook 3-1 Development and Format. Provide a "T" preceding the section, article or sub-article number when the TSP supplements an existing implemented specification.

TSPs

References to other Standards (non FDOT) such as municipalities, that conflict with FDOT Specifications and Design Standards (example excavation, earthwork) that “trump” FDOT Specifications

Restates FDOT Specifications

References outdated Specifications (2007)

TSPs

Outdated/invalid ASTM references

Material requirements not adequately defined (performance based).

Conflict of Method and Measurement and Basis of Payment between plans and other TSP's (paid for twice in multiple items or payment for work not included in Contract Docs)

TSPs

Proprietary call outs such as “ACME Widget or approved equal”. Justification is required for proprietary products.

Portions of TSP repeated in plan notes or vice versa

Conflicts between plans and TSP

Not following the **Specifications Handbook for preparation of TSP

Recently updated on March 9, 2012

go to

http://www.dot.state.fl.us/specificationsoffice/PackagePreparation/Handbooks/SpecsHandbook_021312.pdf

Reference Materials

CADD Production Criteria Handbook (CPCH)

<http://www.dot.state.fl.us/ecso/downloads/publications/CriteriaHandBook/>

Plans Preparation Manual Vol. 1

<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>

Plans Preparation Manual Vol. 2

<http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>

Handbook for the Preparation of Specification Packages (Specifications Handbook)

http://www.dot.state.fl.us/specificationsoffice/PackagePreparation/Handbooks/SpecsHandbook_2012.pdf

Reference Materials

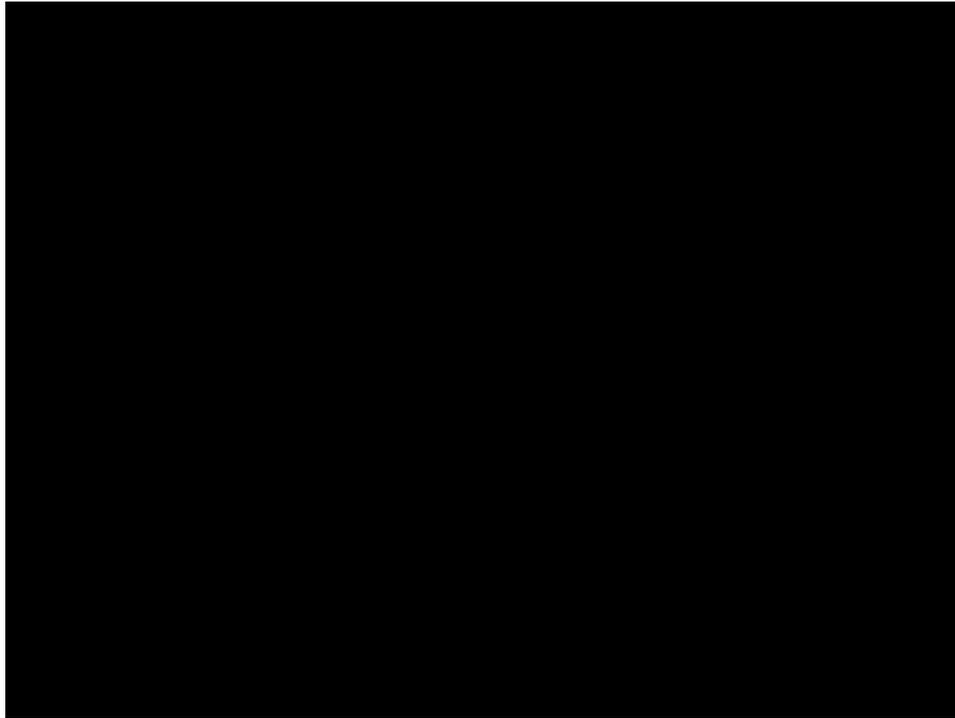
Basis of Estimates

[http://www.dot.state.fl.us/specificationsoffice/Estimates/
BasisofEstimates/BOEManual/BOEOnline.shtm](http://www.dot.state.fl.us/specificationsoffice/Estimates/BasisofEstimates/BOEManual/BOEOnline.shtm)

FDOT Standard Specifications for Road and Bridge Construction

<http://www.dot.state.fl.us/specificationsoffice/Specs.shtm>

The final short vid on the importance of
CPR



An old Irish proverb

Live long and prosper

What questions do you have?