



Florida Department of Transportation

District 4 Design Newsletter

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From the Editor's Desk

By: Howard Webb, P.E., District Design Engineer

We have recently completed another fiscal year and our report has mixed results. We did an excellent job of meeting 100% of our letting plan and of timely responding to more than 95% of various external customers issues. We have also greatly improved the quality of plans as indicated by the reduction in time & cost overruns on construction projects and by improvement in our quality delivery indicator scores. Another area in which we improved was timely submittal of project estimates for the development of the work program. This is contributed mainly to hard work and devotion of our designers, project managers, support staff, and our consultants on our continual journey to achieve the department goal.

However, our performance on meeting production dates fell short of our target (80%) for the year. Our actual achievement of 70% (31 of 44) was also below the previous year's 80%. This indicate that we need greater focus on eliminating the pit falls that contributed to being late on 30% of our projects this past year.

We always strive for continuous improvement and with assistance from our staff and consulting partners I am sure we will again succeed with meeting the goals of our business plan. Once again, I would like to thank all for such a good year in plans production.



District 4 Quarterly Design Newsletter

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Appropriate Comments and Responses in the ERC

By: L. Wetherell, P.E., Consultant Management

Comments are generated every time a set of plans is looked at. District 4 currently has three formal phase submittals that generate comments in the Electronic Review Comments System (ERC). These three submittals are Initial Engineering, Final Constructibility and Biddability. Additionally, Final Plans has a Total Concerns memo (generated at the Production Complete submittal), which, although not in the ERC, is a formal comment & response phase review.

Each department within the District (or an approved delegate) reviews the plans and enters their comments into the ERC. It is then the project manager's responsibility to review all the comments and respond appropriately.

Please see below for examples of appropriate (or inappropriate) responses:

Comment	Appropriate Response	Inappropriate Response	Remarks
At station 103+50, sheet 17, modify P-5 inlet to P-6 inlet.	The P-5 inlet at station 103+50 has been modified to a P-6 inlet. This is reflected on sheet 19.	<ul style="list-style-type: none"> Ok. Noted. Changed. The P-5 inlet will be modified. The P-5 inlet has been modified on what was sheet 17 in the old submittal. 	<p>Ok, Noted, Changed (etc...) are not appropriate responses.</p> <p>BE SPECIFIC about what was done (or not done). Many times the response will need to restate the comment.</p> <p>Someone reviewing the comments and responses should be able to read the response and know what the comment was without having to read the comment.</p> <p>Responses shall be in past tense. (The comments and responses are reviewed at the next submittal, so if the response is in future tense, it implies that it has not been addressed.)</p> <p>If you utilize sheet numbers/note numbers in the response, ensure the current sheet number/note number is used.</p>
Did you coordinate with construction in the field to verify the location of the mast arm at station 800+60 on the NE corner?	Yes. We met in the field with construction prior to the initial engineering submittal and reviewed the location of the proposed mast arm at station 800+60 at the NE corner and determined that it is a feasible location and will remain as shown in the plans.	<ul style="list-style-type: none"> Yes. The location of the mast arm is at station 800+60. No. Coordination with construction wasn't required. 	<p>Answer the question fully.</p> <p>Follow-up may be required with the reviewer.</p>



Comment	Appropriate Response	Inappropriate Response	Remarks
Plans were very well done.	<ul style="list-style-type: none"> • Thank you. • No response necessary (written out). 	<ul style="list-style-type: none"> • (nothing) 	Always put a response in even if no response is necessary.
We can't read sheet 19.	After speaking with Joe Smith, a new sheet 19 was provided. Upon further review by Joe, he determined that no comments were necessary on this sheet.	<ul style="list-style-type: none"> • Sorry. • (nothing) • Do you have the correct plans? • We will provide the plans if you call us at (954) 555-9999. • I don't understand this comment. 	<p>If the comment requires a follow-up with the reviewer, contact them via phone or email and determine what their comment is, or what additional information they are looking for and provide the requested information to them.</p> <p>It is the PM's responsibility to do the follow-up and ensure the reviewer has all the information they need to accurately review the plans.</p>
On Sheet S-6, add a speed limit sign.	A speed limit sign is already provided at station 200+00 and at station 700+00. An additional speed limit sign at station 450+00, as the comment suggests, would be spaced too closely to the other two already provided. In addition, I verified that this is appropriate with Bernard Freeman, the District Traffic Plans and Standards Administrator.	<ul style="list-style-type: none"> • No. • Not necessary. • Why? • Per the FDOT PM, this is not in the scope of services. 	<p>All comments do not necessarily have to be implemented.</p> <p>However, when saying "No" to a comment, you must justify why you are not implementing the comment.</p> <p>Any "major" comment from a reviewer which is not incorporated into the plans should be discussed with the reviewer in advance of the next submittal.</p> <p>All responses shall be answered as if coming from the FDOT PM.</p> <p>The phrase "not in the project scope" or "not in the scope of services" is not appropriate.</p>

If you are in doubt as to the response, **ASK YOUR PROJECT MANAGER**. Remember, Richard Creed, Morteza Alian, and/or Howard Webb actually review all these comments and responses and ultimately approve them.

Additionally, this article specifically addresses formal reviews, such as Initial Engineering, Final Constructibility, Biddability and Production Complete (Total Concerns). However, please keep in mind that any comment made throughout the life of the project should be taken as seriously as these comments, and appropriately responded to.

Common sense and engineering judgment apply when responding to the comments that are made. You should review the responses and ask yourself, "Would I understand this response if I wasn't familiar with this set of plans?".

With everyone's continued work and communication, we can address all the comments with appropriate responses in a timely fashion to ensure a successful project.

Digital Terrain Model of Existing Ponds

By: William Arata, Survey Design

A problem recently came to light during the construction of a bridge. While driving piles for bridge piers it was discovered that the conditions in the field did not match the cross sections in the construction plans.

About three years ago the Survey Office was requested to deliver a Digital Terrain Model (DTM) covering the existing roads, natural ground and the two ponds within the project limits.

Low level aerial photogrammetry was used to acquire roadway, traditional field survey methods were used to acquire the ground and a hydrographic survey provided points of the pond bottoms. Two problems occurred; one was in the field acquiring a full and complete survey of the pond. The other was the merging of the data.

The field survey was done by the prime survey consultant. The hydrographic survey was performed by their sub-consultant. The prime located all ground features down to the pond's edge of water. The hydrographic survey was performed using single beam fathometer coupled with a Global Positioning System (GPS) satellite receiver mounted to the side of a small boat. The boat basically performed cross sections, points taken at about 2 to 3 feet intervals along each cross section. The cross sections were about 50 feet apart. The boat would typically get to within 5 to 20 feet of the edge of water. This is where the problem starts.

The ponds are old rock pits. They have a gradually sloping shelf that extends 5 to 20 feet from the edge of water to a shear drop of about 15 feet. Another aggravating condition was the geology. There is a dense limestone cap rock overhang in some areas. The hydrographic survey failed to catch the shear drop or overhang. This happened for several reasons.

1. The lack of experience by all parties in dealing with rock pits.
2. The vegetation and/or shallow water impeded the boat from getting closer the edge of water.
3. A single beam fathometer can only shoot the pond bottom directly below the boat.
4. The original database of the hydrographic survey was very large. In an attempt to reduce the size, the sub-consultant culled out most of the points to about 1 point every 25 feet. In the middle of the pond this may have been acceptable, but only further limited the ability to catch the breaklines near the edge of the pond.

In the future when performing hydrographic surveys all parties need to be aware of the initial conditions. All possible information should be gathered such as previous construction plans and as-builts. The use of a multibeam, side scanning fathometer would acquire shots to the side and should locate the wall or show the recessed areas under the overhang. An independent check of the final data must be performed, much like how cross sections are run to check typical roadway DTMs. Divers should physically inspect the pond to verify that the survey resembles the site.

The initial cost of the hydrographic survey was about \$4000. The above mentioned items would have added a minimal cost. This error has significantly affected the project in terms of redesign of the piles and construction delays.

Traffic Signal Agency Coordination Guidelines

By: Morteza Alian, P.E., District Consultant Project Management Engineer

District 4 has nine signal maintaining agencies and those are: Broward County, Palm Beach County, City of Boca Raton, Town of Palm Beach, Martin County, St Lucie County, City of Fort Pierce, City of Port St Lucie, and Indian River County.

The District, in close coordination with each maintaining agency, has finalized a detailed Signalization Matrix for each focusing on equipment requirements and general design features for State Road Signalization Projects. The intent of this Signalization matrix is to ensure our signalization designs reflect a mutually agreed set of requirements. You could find these guidelines on District 4 Knowledge Base (KB) website with the exception of the City of Port St Lucie.

The main emphasis of these guidelines is to develop and maintain a matrix on agency requirements which could be utilized by both the utility companies and the FDOT Designers and reviewers. These guidelines would allow all parties the ability to reference how each item would be identified, detailed and paid for in the contract documents.

These guidelines are updated on annual basis and designers are encouraged to visit our website prior to coordination with these signal agencies.

Designers' Corner



Fred Ochoa

Fred Ochoa was born in Havana, Cuba. He was a fat baby weighing 9 lbs. 11 oz. at birth! He emigrated to the US as an infant and grew up in Miami. He graduated from Miami Senior High. He received his Bachelor of Science degree from the University of Pennsylvania. Fred has worked in the private sector, primarily in the consulting field, prior to joining FDOT. He earned his first Professional Engineer's license in North Carolina and is also licensed in Florida. While working as a consultant he was responsible for structures design, concentrating on bridge structures. Fred was on the team responsible for the design of the longest bridge in North Carolina (5.2 miles long) and has designed and inspected numerous bridge structures throughout Florida and other states. In his spare time Fred enjoys attending his oldest daughter's gymnastics meets, reading with his youngest daughter, downhill skiing, and traveling. He is happily married to Rosa Naranjo, a fellow Cuban, Miami native, and University of Pennsylvania alumna.



Daniel Gonzalez

Daniel Gonzalez received his Bachelor of Science degree from the University of Miami and a Masters in Structural Engineering from Georgia Institute of Technology. He is also currently a PE Trainee. In his spare time, Daniel enjoys playing sports, outdoor activities, and traveling.



Tim Brock

I enjoy boating, fishing and scuba diving. I have two dogs, and enjoy creating backyard habitats for many other creatures such as iguanas, owl houses, woodpecker houses, and butterfly gardens. I believe in plan for tomorrow, however play for today.



Scott Thurman

I have recently graduated with a BS in Civil Engineering from Florida Atlantic University. I was born in Chicago IL, but have lived in South Florida since the fall of 1980. My military enlistment with the Marine Corps allowed me to travel and meet new people from many different cultures. My ports of call included Japan, Korea, China, Australia and Bali, but my main duty station was located in Kaneohe, Hawaii. My experiences in the Marine Corps have had a profound influence on me, and the way I view the world today. My hobbies and interests include sports, outdoor activities, and travel as well as spending time with my family and friends. I have recently become engaged to my long-time girlfriend and I have also become the proud parent of a beautiful black Labrador.



Jim Hughes

Born in Hollywood, FL. Graduated FIU with BSCE in 1995. At FDOT for 11 years. In Design Department since 1998. Have 2 year old son. Love Sports. In particular, the Miami Dolphins and have been a season ticket holder since 1992.



Omar Nunez

Graduated in 2006 with a BSCE from the Dominican Republic. Began working with FDOT in May 2006 in Final Plans. Currently working with the Structures Department.



Precious Lewis

Hello my name is Precious A. Lewis. I am 24 years old. I was born here in Fort Lauderdale, FL. I went to Nova High School class of 2000. Most of my employment history has been Customer Service and Retail throughout high school. I have a daughter named Paris. She is 1 years old. She will be terrible 2 on September 1st. (Wish me luck!!) My hobbies are reading, writing, going to movies and plays, shopping and skating.



Mercedes Baccinelli

Hi, I am Mercedes Baccinelli. I graduated with a BS in Civil Engineering from Florida Atlantic University in August 2006. I was born and raised in Nicaragua and moved to the US in 1998. I've lived in Atlanta, Washington D.C. and now I live in Boca Raton. I have a teenage son, Mitchel who is getting ready to drive (me crazy). One of my biggest interests is to meet and get to know people of different cultures. I also enjoy entertaining family and friends with home prepared meals as long as my husband does the cooking.



Matthew Gisondi

Matt Gisondi and his twin brother were born and raised in Albany, New York. Matt is a recent graduate of the University of Buffalo, with a Bachelor of Science Degree in Civil Engineering. Matt happily traded the cold weather of New York for the tropical paradise of Florida. He enjoys traveling, going to baseball games (Go METS!) and trying new things!



Danny Vargas

20 years of IT experience with 10 years in IT operations; Devry Tech Degree of Computer Science and Computer Repair; A+, Network + and Web design certify. Major Player contributor technology and software support for University of Virginia and companies like Barnes & Noble and Reuters News. Specializing in applications integrative solutions and support technology. Specialize to committed competitive advantage edge with technology and service delivery processes.



John-Mark Palacios

John-Mark Palacios joined Design Section 1 in February after graduating from the University of Florida in December 2006 with a BS in Civil Engineering. His prior experience includes an internship for the South Carolina Department of Transportation as an inspector (CEI); testing FDOT software being developed at UF, LOSPLAN; and helping graduate students with traffic engineering research projects. John-Mark is proud to be of Mexican-American descent, though he wishes he could spend more time in Mexico. John-Mark spent his early years in Texas but most of his life in South Florida. He is about to celebrate one happy year of marriage to his wife Paula. John-Mark enjoys messing around with computers (as long as they are not running Windows-then it becomes annoying) and is currently taking a programming class to indulge that interest. His only pet is his Roomba, who still hasn't been officially named. John-Mark likes to play around with live sound systems and claims the title of "sound engineer" in addition to civil engineer. Being the son of a college language professor, he also picked up a passion for writing. John-Mark primarily enjoys writing short stories and is working, rather intermittently, on writing a novel. He also dabbles in poetry when the need arises. If you haven't seen or heard the Jar-Jar Binks figure in his office, you don't know that he is a big Star Wars fan. May the force be with you.



Yveins Jean-Pierre

My name is Yveins Jean-Pierre; I was born and raised in a beautiful country once named "Perle des Antilles" which is now known as Haiti. I came from a very strong family where high moral values and expectations were always expected from my three siblings and I. I graduated college 3 months ago at Florida International University. I am very easy to get along with and I love music and basketball. I am a very hard working individual who hates to give up on anything; I am very persistent in all that I do. My favorite line is "treat others always as you would like to be treated". I love to treat people with respect so that in return I could be treated likewise.



Humberto Arrieta

My name is Humberto Arrieta, I attended high school in New Orleans. I graduated from FIU, and I enjoy outdoor activities and photography.



Pedro Santiesteban

I was born in Cuba. Finished my education in Russia, graduated from Moscow Transporting University, have a B.S and M.S. degrees. Came with my wife and my two lovely daughters to this land of opportunities back in 1999. In 2002 started working for District 6 with Surveying and Mapping Department. Since last Nov. I'm part of internal design Section 1 team here in D4 as a Project Engineer. I love my family and my job. I love music and movies.

Lessons Learned - Traffic Signal Utilities Conflicts

By: Morteza Alian, P.E., District Consultant Project Management Engineer

Over the past 6 months, one of the major items I have seen during the review of the construction supplemental agreements has been the utilities conflicts with traffic signal mast arms. These issues range from the traffic signals in six different projects.

The topic of Traffic Signal Utility Conflicts. I'm sure you'll have to get input from other sections like traffic operations on these recommendations but these reflect what we discussed in our recent meeting.

Identification of existing utilities: Every effort should be made to identify all existing utilities within the limits of the proposed Mast Arm Shaft, during the design phase. This may require multiple test holes around the proposed mast arm shaft location, to ensure that it is indeed "clear" of existing utilities. Then the proposed mast arm shaft can be located on the plans in the clear area.

Thickness of existing utilities: For larger utilities, especially those within close proximity to the proposed Mast Arm Shaft location, the full thickness of the utility (diameter or width) should be shown as two lines (representing the outer extent of the utility). The center of the two lines would be the center of the utility as located by the Utility Test Hole surveyor.

Mast Arm Length: Providing extra mast arm length (5' or more) beyond what is required for the loading tree designed will give the contractor and CEI flexibility to avoid unforeseen utilities uncovered during construction, by shifting the pole away from the roadway without necessitating a new mast arm.

To insure all utilities lines are identified during the design phase, District 4 Survey office has established the following guidelines for locating underground utilities for traffic signal mast arms:

1. Designate the entire quadrant
2. The surveyor will provide all designations to the engineer of record (EOR) in a Microstation design file.
3. The EOR will determine the center of the mast arm with station & offset.
4. The surveyor will re-designate a 9-foot diameter area (for a 5 foot diameter shaft) to make certain there are not any utilities in this area. Any additional utility information will be given to the EOR in Microstation design file.
5. The EOR will review the additional information and request test holes if needed.
6. Test holes will be surveyed and added to the Microstation design file.

We hope that these steps will reduce the likelihood of utilities conflicts during construction.

Did you know?

The National Electrical Code (NEC) requires a grounding wire in every conduit. This applies to traffic signal, street lighting, pumps for irrigation systems and basically any circuits with current-carrying conductors. This is good information to be shared with inspectors and field personnel.



Lessons Learned - Traffic Signal Equipment

By: Morteza Alian, P.E., District Consultant Project Management Engineer

Traffic signal controllers are proprietary items and all state and federal aide contracts do not allow the procurement of such equipments. However, each signal maintaining agency uses a specific traffic controller in order to maintain compatibility with their current system. In order to satisfy both, contract and maintaining agency requirements, the signal plans typically include a general note that requires the contractor to get approval of system communication equipments prior to procurement.

Recently, an issue arose during the construction of one of our reconstruction projects regarding traffic signal equipments. The construction plans had a general plan note requiring the contractor to get approval of signal controller prior to purchase. However, the contractor did not check with the signal agency and assumed an inferior and cheaper product. As a result, this has become a cost issue for both the contractor and the department.

The Construction Engineering and Inspection (CEI) needs to be aware of such requirements and communicate accordingly to minimize costs to all parties (Design, CEI, and contractor). Such item may need to be part of Preconstruction meeting for early consideration.

As a side note, it was also thought that the department needs to acquire a permit from the maintaining agency for this signalization work. Traffic Operations has confirmed that the department does not need to get permit for signal work on all state projects.