

# District Three Design Newsletter



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## *From the Editor's Desk*

**Larry Kelley, P.E., District Design Engineer**



The first article I wrote for this newsletter three years ago focused on change. At that time we were preparing for the first wave of DROP employees to leave in June 2003. We knew we would lose many years of experience, so the challenge was to develop

properly trained successors and new processes to make up for the loss. We did our best to accomplish this without any impact to our services or products for the public. FDOT will probably continue to get smaller and therefore will always be consolidating in-house resources and developing more efficient processes.

We at DOT may gradually place more design responsibility on consultants, but the overall responsibility for quality remains here at DOT. One of my key responsibilities and concerns is the overall quality of design in District 3.

The first articles I wrote were about "change". Now that we've changed, I have now shifted my emphasis to "quality". The last few articles I've written are a mixture of specific and general quality issues. I continue to review, observe and question to try to determine what qualities, measures or processes produce a quality product.

To date I've developed a few key areas that I believe are essential to a quality product.

**Organizational Skills** is a must in my opinion. Develop whatever measures are necessary to know what tasks must be done and when. Then make sure they get done. Keep track of things in an organized manner. A good quality control plan is a start as it will identify the areas of concern.

**Attention to details** is another must for a quality product. All projects start with a concept and gradually proceed to detailed construction plans. Construction plans are detailed, not conceptual. A good quality control plan will dictate how details are checked and rechecked for accuracy. You can talk quality all day long, but the proof is in the details.

**Ownership** is essential. A project may be owned by the company or a design group, but for a quality product an individual somewhere must assume ownership. Ownership must be with a person with a proven quality record. This person must be loyal, stable and also concerned with his personal reputation.

**Character** is a quality that must be one the owner possesses and hopefully one which all members of the team possess. Character is what you do when no one else is watching. Character is caring if its done right even if you are not responsible. We should all try to select employees with character. This is probably the key ingredient in order that all the other areas of quality have a chance. To determine character, watch what a person does with little issues. Watch whether they pick up a piece of paper or straighten a picture at the office. Observe if they are concerned with the company's reputation by the way they dress, act or talk. Watch their personal life and see what their emphasis is on. Watch the little

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things, and you'll know how they'll handle the big things.

A friend of mine recently spoke about the level of "quality" as a "reflection of what one thinks about himself". I think that is a pretty good observation. I ask the managers in Design to give me a report each year on the quality of design in District 3. Although there is not a specific measuring stick, the report is that the quality of design is "good". All sectors of DOT, contractors and consultants may not agree; and I welcome their input. But for now I consider it "good" and I congratulate all involved.

## ***Near Side Signal Indication Requirements***

**Clyde Green, Traffic Plans Coordinator**

Our Nation's Roadways have increased in width due to the construction of additional through lanes, dual turn lanes, etc. With this increased width, the maximum distance of 150 feet from the Stop Line to Signal Indication was being exceeded more often than not.

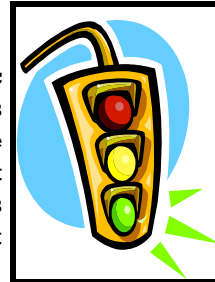
The Federal Highway Administration's Steering Committee on Signalization was asked to study these occurrences

and as a result the maximum distance has been increased to 180 feet, as published in the newest edition (2003) of the Manual on Uniform Traffic Control Devices (MUTCD).

The Central Traffic Engineering Office has consulted with Central Office Design Engineers and District Traffic Operation Engineers and the decision has been left

to the Engineer of Record, who is responsible for the engineering design decision, as to the utilization of near side signals when the head placement falls between the 150 to 180 foot range.

This decision supports the guidelines set forth in section 4D.15 of the 2003 MUTCD.



## **QC Sometimes? Everytime?**

**Jason Peters, P.E., Assistant District Design Engineer**

In the April-June 2002 Design Newsletter, I wrote an article entitled, "First Impressions". Please take the opportunity to read this article. The article talked about meeting the public for the first time and how a community develops an impression of the Department. The community develops an impression of the Department through our attitude at public meetings and the quality of our public information notices (mail outs, letter to public officials, driveway closure letters, etc.). "First Impressions" mentioned some problems that the Department has seen with letters to public officials but these problems apply to all of our public notices. The Department has seen wrong project descriptions, wrong meeting times, wrong street names, letters to individuals no longer in office, misspelled names, etc.

I want to re-iterate this concern because the problem still exists. The inaccuracy in our public information notices, regardless of the type, continues to alarm the Department.

Unfortunately, it is very rare that the Department receives a package that is correct. Therefore, please stress to your employees to ensure that all public notices undergo the proper QC checks prior to being submitted to the Department.

## ***FDOT Partnering with Local Law Enforcement***

**Mary Ann Koos, District Bicycle and Pedestrian Coordinator**



The Okaloosa County Sheriff's Department and Fort Walton Beach Police Dept., in conjunction with The University of Florida Technology Transfer Center and FDOT held a Pedestrian and Bicycle Safety Enforcement Workshop last month in Shalimar, Florida. The workshop, offered at no cost to police agencies, was held to assist them with the enforcement of pedestrian and bicycle safety regulations. Many drivers are not aware that under Florida law, they must yield to a pedestrian crossing in a crosswalk at uncontrolled locations (F. S. 316.130 (7)), and yield to any pedestrian crossing with a white cane or guide dog, regardless of whether they are in a crosswalk (F.S. 316.1301(2)). Over 140 warnings were

*(Continued from page 2)*

issued to drivers in Destin and Fort Walton Beach who failed to yield to our "decoy" pedestrians. Driver response was generally positive after being informed of the nature of their violations. On our second visit to a high pedestrian location near Hurlburt Field, we received 100% compliance in yielding, and drew a crowd of enthusiastic observers.

## ***Quality Assurance Review (QAR) Update***

**Scott Golden, P.E., Assistant District Design Engineer**



The Department is slowly but surely making visits to the Consultants working on District 3 design projects. As of today, Russell Armstrong has completed about 12 QAR's. Russell and I are trying to visit four or five firms on each trip. We recently completed a whirlwind tour with some of the Orlando area Consultants. Russell is finishing those QAR's and we are in the process of scheduling a visit to a city near you. District 3, for the most part, is satisfied with the QC efforts of our Consultants. However, our reviews have found that the majority of the Consultants do not follow their QC Plans as they are written or have omitted essential components of the QC plan. As this process moves forward, we will look for correlations between the QAR's, Bid Team Reviews, Transmittal Packages, required plan revisions and Construction Grades/performance. For example, a recent project had problems with the Specifications Package. The firm also failed to address all of the valid FDOT comments. As it turned out, we had completed a QAR on that project and the QAR was not a favorable review.

Each Consultant working on District Three design projects should take the time to review their Quality Control Plan (QCP) for improvements. Does your QCP include all of the required components for a plan set? Does your QCP add value to your design or is it something that you have to do? We all make mistakes and are going to miss something occasionally. However, are we learning from those mistakes? Are we modifying our processes to avoid similar mistakes in the future? Are we, as designers, going to the field and talking with the construction personnel? Are we asking construction: "What could I have done different to make this project better or easier to build?" How could I improve access to businesses and residences within the project limits, etc.? In other words, we should be evaluating our own work and modifying each process to improve our products. A well written and up-to-date QCP, if followed, works. The QCP may be a great way to apply the lessons learned from one design project to the next.

## ***Utility Work By Highway Contractor Agreements***

**Bobby Ellis, P.E., District Utility Engineer**

The District Utilities Office is constantly looking for ways to improve FDOT projects from inception in the Work Program to construction. One of the ways that we have found to improve our process and lessen impact to utility companies and contractors is the use of Utility Work By Highway Contractor Agreements (UWHC) (Formerly known as JPAs). This type of agreement allows a utility company to pay the FDOT to have the Department's contractor do utility work associated with a particular project.

There are explanations of the different types of UWHCs that can be found in the FDOT's new Utility User's Guide located on the Department's website. The guide goes through various types of UWHCs and the forms that must be used. The one that most of you will be dealing with is the UWHC Lump Sum at the Utility Owner's (UAOs) expense (Form # 710-010-57). This agreement allows utility work to be performed by the FDOT's contractor as part of FDOT's contract instead of being performed separately by the UAO. This form is used when the work will be done at the UAO's expense, with the amount being established as a one-time lump sum payment.

In most cases, the lump sum type of UWHC agreement will be used when manholes and valve boxes have to be adjusted (lowered and then raised) during the milling and resurfacing operation. By using this agreement, it puts the responsibility of

*If you hire only those people you understand, the company will never get people better than you are. Always remember that you often find outstanding people among those you don't particularly like.*

Soichiro Honda (1906-1991) Japanese industrialist

this work on the contractor which eliminates a chance for a delay claim and reduces utility days during construction on the Utility Work Schedule. Full Service Contract firms must coordinate with District Estimates and/or the District Utility Office for the price per manhole/valve box. A ten percent contingency is added to the individual price per Florida Statute (this is in case the contractor's bid comes in higher than expected), and from this, a grand total (lump sum) will be acquired.

Even though the UAO has to make a lump sum payment to the Comptroller, funds still have to be programmed through the District Programming Office. Full Service firms are **not** allowed to do this, only the FDOT District Utility Office is permitted to program funds. It is imperative that the FDOT District Utility Office be informed when pursuing a UWHC of any kind. As with any Area Utility Manager, our office expects the Full Service firm to perform all of the leg work and have all of the proper documentation so that we may approve the UWHC and forward it to the District Programming Office. The UAO will forward their check directly to the Comptroller when they get our approval.

Our office strongly encourages the pursuit of UWHCs for manhole and valve box adjustments. It saves time, money, and will eliminate another avenue for claims in the long run. If anyone has any questions about the process, please call the FDOT's Local Area Utility Manager for additional information and clarification.

For Liberty, Franklin, Gadsden, Wakulla Leon and Jefferson Counties contact Traci Adkison (850) 575-1800, PBS&J

For Bay, Washington, Holmes, Gulf, Calhoun, and Jackson Counties contact Don Boutwell (850) 638-0250 Ext. 421

For Okaloosa and Walton Counties contact Charles Andrews (850) 638-2288, PBS&J.

For Santa Rosa and Escambia Counties contact Terry Osien (850)478-9844, PBS&J.

*"Early bird gets the worm, but the second mouse gets the cheese."*

Unknown

## ***Design Standard Revisions***

Please be advised of significant revisions to curb ramp widths and walkaround widths in the 2004 Design Standards as follows:

1. **Index 304 Curb Ramps:** In the 2004 booklet, many ramp widths previously shown to be 3' minimum were revised to 4'. In addition, for those still shown to be 3', the July 2004 Specifications Workbook (for July 2004 lettings) includes special provision language changing these to 4'. Additional special provision language allows for the 4' width to be reduced to 3' minimum "in restricted conditions when approved by the Engineer" for certain curb ramp configurations.
2. **Index 310 Concrete Sidewalk:** The July 2004 Specifications Workbook includes special provision language to revise the 3' minimum width for the driveway walkaround shown in the booklet, to 4' standard with a note allowing a reduction to 3' minimum in restricted conditions when approved by the Engineer.
3. **Index 515 Turnouts:** In the 2004 booklet, walkaround widths at driveways previously shown to be 3' minimum were revised to 4'. The July 2004 Specifications Workbook includes special provision language allowing for the 4' width to be reduced to 3' minimum in restricted conditions when approved by the Engineer.

The change to 4' is based on proposed ADA regulations scheduled to begin rulemaking later this year. FDOT language allowing for 3' minimum in restricted conditions is based on current ADA regulations. Therefore, for now, it is not necessary to make a determination of infeasibility to use 3' minimum. If the proposed ADA regulations are adopted as currently written, the FDOT's allowance for 3' minimum in restricted conditions will be modified according to the final rule.

## ***Eliminating Duplicate Elements***

**Jimmy Smith, E.I., Roadway Design**

As we approach a full “electronic delivery era”, beginning with the July 2005 letting, there is a tool available that will eliminate many of the problems our construction personnel is having with our CADD files. When construction / CEI staff attempts to create a \*.GEN file while running the Multi-line software to verify earthwork quantities, errors occur when the software encounters duplicate elements. The DELDUP command is a useful tool that can be used to eliminate duplicate elements in a design file. On the FDOT Engineering Sitemenu the DELDUP command can be found by selecting the Utilities pull down menu, then Cleanup and QC Utilities and from this



with a Duplicate Elements Utility dialog box. Make the desired field selections then click the apply button. The DELDUP utility compares each graphical group element in a MicroStation design file to successive elements, looking for duplicates. The ranges, properties, symbology, text node numbers, and graphic groups numbers are NOT included in the comparison. Sometimes, if the file is too large, the DELDUP command will

menu the Delete Duplicate Elements (DEL DUP) command can be selected. The DELDUP command will prompt the user

cause the file to crash with an MDL abort message. One way to prevent this from happening is to compress the design file before using this command. Another way to prevent the file from crashing is to leave the Delete Duplicates box turned off in the Delete Duplicates Utility dialog box. This will mark all the duplicate items by having their properties set to “Not Modified”. The user can then use the Selection By Attributes tool to select the duplicate lines in a file and delete them. Once all the duplicate elements are deleted the Multi-Line software can be applied. Therefore, the use of the DELDUP command will provide a more usable set of CADD files for our customer, construction.

## ***Design Spotlight—Brian Little***

**Larry Kelley, P.E., District Design Engineer**

I have always been impressed by a steady performer. Brian Little is that kind of employee. Through thick and thin, Brian is there delivering in a professional manner. As most of you probably already know, there's not much out there in the world that is going to slow Brian down. Brian is always there for you with good work and loyalty.

Brian was born in Ft. Walton Beach, Florida in 1973. Brian now lives in Dothan, Alabama with wife Noelle. Brian's parents still live in Ft. Walton. Brian received his Bachelor's Degree in Civil Engineering from Auburn University in 1995. He also holds a Master's Degree in Civil Engineering from Auburn.

Brian started his FDOT career in District 5 in Deland, but a year later transferred to Chipley and District 3. He completed DOT's Professional Engineering Training Program and accepted a position in the Design Department in October 1998. Brian has learned roadway design quickly and now heads up the in-house roadway design section. This job also involves supervision of traffic design and some project management duties. Brian is very valuable to the District 3 Design Team and I have complete confidence in Brian's approach to Design. Brian's roots are definitely “southern” as he enjoys Auburn Football, deer hunting, NASCAR and golf. He enjoys many of these things with his wife, Noelle, who is also a Professional Engineer with PBS&J.

Brian has also turned his hobbies into a service to the public. Brian is founder of the Panhandle Transportation Golf Association which is responsible for putting on the District 3 Charity Golf Tournament each year. 2004 will be the 4th year for the tournament which has raised over \$93,000.00 over this 4 year period. The tournament is structured so that FDOT employees are paired with consultants from different firms, increasing the lines of communication between the two entities. This years tournament will be held at Southwood Golf Club in Tallahassee, on April 23. Funds raised are contributed to the District 3 Florida State Employee Charitable Campaign. I am pleased to have the opportunity to work with someone of the caliber of Brian Little. He is a “class act”.



## ***Supplemental Agreement Reports—November and December***

**Larry Kelley, P.E., District Design Engineer**

This is the Supplemental Agreement Report for the months of November and December 2003. The two (2) categories of supplemental agreements that are included in this monthly report are codes 019 and 128. This report is included in the Quarterly Design Newsletter as a tool to inform designers of errors and omissions that can lead to Supplemental Agreements and unnecessary costs to the public.

Below is a description of those areas and our responses:

**Description Code 019: Conflicts between Contractors resulting from overlapping projects, work limits, pay items, activities, etc.**

**Reason:** Improvements under this contract consist of bridge construction, drainage improvements and signing and pavement markings.

Subsequent to the construction of this project the roadway section on the south end of this project was over-laid and re-striped as part of another FDOT construction project. This striping changed the lane configuration and also included a large gore area that was not depicted in the project plans.

To correct these conflicts it was necessary for the contractor to remove the striping for the gore area and apply the MOT configuration for this project. Also temporary curb was to be used as a median separator, but there was no means to pay for the painting and delineation of the curb as outlined in Standard Index 614.

**Increase = \$6,680.01**

**Response:** This supplemental agreement is being

attributed to a design error with no estimated premium cost.

**Description Code 128: Inaccurate or inadequate survey information used in plans preparation.**

**Reason:** Improvements under this contract consist of milling and resurfacing a two-lane roadway, drainage and safety improvements and signing and pavement markings.

This field supplemental agreement was for the purpose of providing for the additional cost associated with modifying structure S-9 (station 78+93.156 Rt.) to accept water from the roadway and the right-of-way.

The project plans indicated placement of structure S-9 with a grate elevation of 81.45 meters and the structure was pre-cast based on the information provided in the contract plans. During installation it was determined that placement per the design would not allow the ditch bottom inlet to receive water. The structure was then placed at its lowest elevation possible (pre-cast structure limited adjustment) and it would still not work. Therefore, it was determined that the structure would have to be modified to prevent storm water from standing in the roadway and to receive water through the back of inlet from the right-of-way.

**Increase = \$851.16**

**Response:** This supplemental agreement is being attributed to a design error with an estimated premium cost of \$851.16. This amount is well below the threshold for pursuit for a single occurrence. Therefore, all previous and future supplemental agreements on the project will be reviewed to determine if there is additional premium cost that would bring the aggregate premium cost up to the amount necessary for pursuance.

## ***Supplemental Agreement Report—January***

**Larry Kelley, P.E., District Design Engineer**

This is the Supplemental Agreement Report for the month of January 2004. The two (2) categories of supplemental agreements that are included in this monthly report are codes 001 and 101. This report is included in the Quarterly Design Newsletter as a tool to inform designers of errors and omissions that can lead to Supplemental Agreements and unnecessary costs to the public.

Below is a description of those areas and our responses:

**Description Code 001: Subsurface material or feature encountered not shown in plans – assuming reasonable engineering judgment/processes used in plans preparation (i.e. muck, old piling, boulders, artesian springs, abandoned utility lines, etc.).**



**Reason:** Improvements under this contract consist of milling and resurfacing and turn lane construction of an existing multi-lane roadway in Escambia County.

Subsequent to beginning work the Contractor encountered difficulty in construction from Station 195+48 to Station 196+12 on the right. Work in this area consisted of the relocation of multiple utility lines and turn lane construction. The poor existing soils in this isolated location combined with frequent rains resulted in an area of unstable sub-grade which would not support compaction equipment or the proposed construction.

To alleviate this problem the Contractor proposed removal of 450 MM of the existing sub-grade and backfilling the area with Graded Aggregate Base utilizing restrictive compaction equipment.

After review of the Contractor's proposal which required a lot of hand work and the use of small equipment, the Department agreed with the construction method. This method will ensure adequate drainage, provide a firm sub-grade and unyielding base which will help ensure the asphalt pavement will not fail.

**Increase = \$25,491.00**

**Response:** This supplemental agreement is not the result of a design error.

**Description Code 101: Necessary pay item(s) not included.**

**Reason:** Improvements under this contract consist of milling and resurfacing a two-lane roadway, replacing a box culvert, drainage and safety improvements, signalization and signing and pavement markings.

Prior to construction, a review of the contract plans revealed that the Designer called for: (A) Type III Barricades to be used at the detour where the box culvert was being replaced and (B) the use of Type B-12.5 Asphalt Base at the removal and reconstruction of several drainage structures throughout the project. However, the Designer failed to provide a method of payment for either of these items.

**Increase = \$74,110.50**

**Response:** This supplemental agreement is being attributed to a design error with an estimated premium cost of \$15,864.55. This amount is above the threshold for pursuit for a single occurrence. Therefore, a review of the supplemental agreement will be made by the Project Manager and other appropriate persons to determine if the designer is at fault and the premium is correct.

## ***New Faces— Jonathan Harris***

**Larry Kelley, P.E., District Design Engineer**

Jonathan comes to Design to assist with Quality Control/Quality Assurance issues. The Design Department developed a revised QC Plan recently and Jonathan will help ensure that plan is adhered to as well as work in the area of CADD and "electronic deliverables" conformance.



Jonathan's past experience and knowledge will be an asset to Design as the future approaches with new requirements and challenges.

## ***Design Department Changes***

**Larry Kelley, P.E., District Design Engineer**

Ed Chadwell has left Design and accepted a position as District Railroad Coordinator. We will miss Ed, but look forward to receiving assistance from him as we encounter railroads in projects.

Mr. Eric Rosnick, P.E., will assume most of Ed's project management duties and projects. Eric comes out of the Design Structures Section to the new role.

## ***ASCII Data for Electronic Delivery***

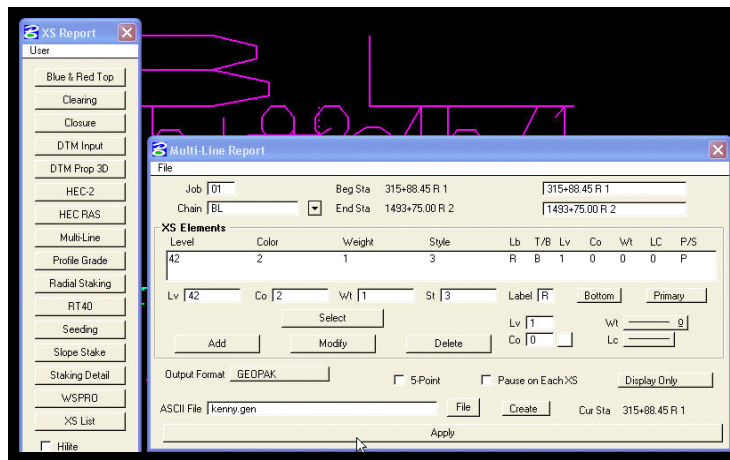
**Kenny Rudd, CADD Support Specialist**

As you are aware, every project with a design scope written after June 2000 requires certain file formats. Among these file formats is the ASCII data for alignments, profiles and cross sections.

**Chapter 8.3.3 of the *Cadd Production Handbook* states:**

"In addition to the delivery of all files used or produced during the course of the project, the **FDOT CADD Manual** requires the inclusion of *engineering data files* for critical geometrics in the design of the transportation facility. These include the alignments, profiles, cross section, and quantity details for such items as the centerline of the proposed mainline roadway, side streets, special ditches, utilities, etc. The geometric files delivered must contain sufficient data for the Department, or any customer to reconstruct these critical geometrics in any design package in the future. The engineering data files delivered with the project will comply with the standards defined herein. This is applicable for all CADD projects produced by and for the Department, regardless of the software packages used to develop the project."

There are many ways to prepare cross sections. We will look at the most common way of producing cross sections. When GEOPAK is used correctly on a project to produce the proposed cross sections the user will use a dialog box in the cross section file that contains the GEOPAK cross section cell.



For more information about how to extract cross section data to an ASCII file, click on:

<http://www.dot.state.fl.us/ecso/support/coregraphics/geopak/default.htm>

To get the ASCII data for alignments, Profiles, Points use the command line key-in for GEOPAK COGO with the following syntax: MAKE INPUT FILE *filename* ALL

An example might be: **MAKE INPUT FILE SR53.inp ALL**. This command dumps the GEOPAK geometry database into an ASCII file which helps meet the requirements mentioned earlier. Place the newly generated file in the \ENG\_DATA sub-directory under where the .GPK can be found.

Once the data has been generated it is easy for other packages to read and use it for downstream customers.

The Engineering/CADD Systems Office in conjunction with IMAGINIT Technologies has developed training which will be available very soon. FDOT employees wishing to take the one day course should contact the CADD Manager. Consultants may contact Rick Seguin, IMAGINIT Technologies at (407) 648-9148 for dates and prices. This training was developed so that the instructor can go as fast or as slow as needed depending on the participants.

For questions you may contact me at:

Kenny Rudd  
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 Engineering/CADD Systems Office  
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*"A friend of mine once sent me a post card  
 with a picture of the entire planet Earth  
 taken from space. On the back it said,  
 'WISH YOU WERE HERE.'"*

*~ Steven Wright ~*