

DISTRICT THREE DESIGN NEWSLETTER



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October—December, 2011

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New USGS Equations

Jim Kapinos, P.E., District Drainage Engineer

New USGS Regression Equations are now available, start using them now. Us Drainage folks who 'grew up' with the 1982 vintage Regression Equations need to make the change to the newly published equations (<http://pubs.usgs.gov/sir/2011/5034/pdf/sir2011-5034.pdf>). The complete discussion including limitations and application is available on the USGS web site. The equations can be found in the Drainage section of the FDOT web site (<http://www.dot.state.fl.us/rddesign/dr/files/Final-USGS-Interpolation.pdf>).



The new revised data for gauged stations is can also be found on both web sites. Some of the gauged site discharge information differs from the old 1982 data significantly, often by 15 or 20%. Both increased and decreased discharge rates have occurred with the new flood data analysis.

For the revised USGS Regression Equations there is no more slope calculation and storage is now used instead of just lake area. Storage includes lakes, ponds and swamps, and in Northwest Florida the equations are valid for storage ranging from 0 to 44.29 % of the total area which can be as small as 0.14 square miles. Northwest Florida is now Region 1 of 4 Regions statewide.

The USGS web site has the full explanation of the data analysis rationale and limitations. The report is titled Magnitude and Frequency of Floods for Rural Streams in Florida, 2006, published in 2011.



District III Quarterly Design Newsletter

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Top Ten Quality Control Comments Oct. – Dec., 2011

1. Please include the following note as a Typical Section Note for all resurfacing projects or resurfacing projects with minor widening. "Static compaction only." Do not include this note for resurfacing projects on the interstate and new construction projects, unless otherwise directed by the District Materials Office.
2. Label all overhead electric utilities with their line voltage.
3. Please ensure that a 5-foot wide sidewalk connects transit stops or facilities with existing sidewalk or shared use path. (ADA accessibility standards).
4. Ensure earthwork adjustment factor being utilized is 45% Shrinkage and 25% for Bulkage unless within 10 miles of the coast.
5. Make sure that the Fiscal Year on the Key Sheet agrees with the proposed letting date.
6. Coordinate with the Project Manager to have the FM System updated when there are changes to the project limits or proposed work on the project.
7. Input and coordination between the Operation Center and Project Manager is very important in deciding when and how much Traffic Control Officers are needed on a project.
8. Please ensure that for Pay Item 0102-1, the Number of Days for the Secondary Unit of Measure matches the Number of Days which is approved by F.D.O.T Construction in a Construction Memorandum for Contract Time.
9. Update the Notes in the Storm water Pollution Prevention Plan using information from the Reference Roadway Design Bulletin 11-05 for Design Standards Modification, July 01,2010 And "Florida Erosion and Sediment Control Control Manual".
10. As requested by District Construction, use a 30 Day Cycle for calculating the Mowing and Litter Removal Pay Item.

Design Spotlight— Tim Smith, P.E. District Consultant Project Mgt. Engineer Scott Golden, P.E., District Design Engineer



Tim has been employed with the Department since 2009 as the District Utilities and Specifications Engineer. Prior to joining the Department, Tim worked with PBS&J (Atkins) in Roadway Design and served 5 years as a GEC Project Manager. Tim graduated from Cottondale High School in 1991, attended Chipola College and Florida State University, where he earned his Bachelor of Science in Civil Engineering.

Tim's experience and willingness to accept new challenges will ensure the District's continued success as he leads our Project Management team.

Please join me in congratulating Tim and wishing him much success as he moves into his new role as the District Consultant Management Engineer.

In Flood Time you can see how some trees bend, and because they bend, even their twigs are safe, while stubborn trees are torn up roots and all. ~ Sophocles (496-406 B.C.) Dramatist

Supplemental Agreement Report – October – December, 2011

Miranda Glass, P.E., District Roadway Design Engineer

Following is a sample of Supplemental Agreements for the third quarter of 2011 (October through December). The five (5) categories of Supplemental Agreements that are included in this summary are 126, 015, 012, and 115. This summary 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 cost to the public. Below are brief descriptions of those errors or omissions and the department's responses.

Description Code: 126 – Overruns to existing contract pay items.

Reason: During installation of bedding stone for slope protection for an existing pond, located within the project, it was determined that the Contract Plans Cross Section was not representative of the pond depth. Further review revealed that the pond depth is considerably greater than indicated by cross section. Subsequently, the plans have been revised and the quantities for Bedding Stone have been increased to ensure adequate slope protection for this project. The quantities have been recalculated to insure sufficient quantities to complete the Geosynthetic Reinforced Foundation work as originally intended.

Granted Time: 0 Days

Increase: \$371, 056.80

Response: Avoidable (Production Consultant)/No action recommended.

Description Code: 126 – Add Pay Items and increase quantities.

Reason: It was necessary to revise a project to accommodate existing utility lines in the area and harmonize with a future F.D.O.T. Project at the intersection. A quantity for 6" Concrete Sidewalk was necessary because existing concrete driveways were identified in the field that would require reconstruction as a result of drainage work and shoulder excavation/widening. A quantity of 3" Non-Reinforced Concrete Ditch Pavement was necessary because existing power pole will likely conflict with storm water flow from the new mitered end section and has the potential to be scoured by the effects of flowing water. To eliminate this potential future maintenance concern, it was necessary to construct the proposed ditch pavement to direct storm water around the existing power pole. A quantity of 18" Stormwater/Cross Drain Pipe Culvert was necessary as a result of an unforeseen utility conflict and impending storm event that would have washed out the road if the pipe had not been installed.

Granted Time: 15 Days

Increase: \$11, 055.95

Response: Unavoidable: No remedial action required.

Description Code: 015 - Installation of new manhole in lieu of Adjusting Existing.

Reason: The Contractor removed all of the City of Tallahassee (COT) Electrical Manhole ring and covers. After observation of the condition of the rings, it was determined by the COT that the deteriorated and broken condition of the flanges, etc; on the rings would require new rings to be installed. The old rings were a 12" deep ring and are no longer manufactured. The new rings ordered by the COT are only 6". As a result, additional 4" or 6" concrete risers were required in order for the new ring and covers to work. This Supplemental Agreement amended the contract to provide additional compensation to the contractor for the installation of the precast concrete risers and new manhole ring and covers in lieu of using existing ring and covers.

Granted Time: 0 Days

Increase: \$10, 000

Response: Unavoidable: No remedial action required.

Description Code: 012 - Add additional Pay Item and increase quantities.

Reason: Accordingly to the original plan sheets, riprap rubble was to be place from the end of the end bent cap to ten feet into the creek bed. After reviewing in the field the existing slope protection extends fifteen feet into the creek bed from the end bent cap. The riprap rubble limits were extended to fifteen feet from the end of the end bent on all proposed areas in the plans to sufficiently protect the structure as designed. A scour area was identified at the east end of the bridges. The Engineer of Record recommended this area be filled with borrow material and the limits of the rubble riprap was extended to include this area to preserve the area around the pilings. Plastic filter fabric is to be placed on any fill and beneath the rubble. The pay item for borrow material was added to the project and the quantities for the riprap rubble and the plastic filter fabric were increased. **Granted Time:** 20 Days

Increase: \$30, 199.30

Response: Unavoidable: No remedial action required. Extend Project Limits.

Description Code: 115 - Drainage modifications required due to a design error.

Reason: Subsequent to substantial completion of this project, the project experienced heavy rains revealing the storm water drainage system design did not function as the designer intended. The Designer determined the control structure design restricted the flow to the retention pond resulting in system overflow and failure. The Design Engineer designed a remedy that includes additional structures and pipe parallel to the original system, thereby supplement the system's function.

Granted Time: 38 Days

Increase: \$164, 050.00

Response: Avoidable (Production Consultant)/Action recommended.

CADD TRICKS , TIPS, UPDATES

PEDDS VS Microstation/GEOPAK

Kenny Rudd, Senior Roadway Design CADD Specialist

Let's start with some basics. When it comes to PEDDS, entering a secured file is harmless as long as you don't modify the file when opening it, right? Wrong! Even though that statement used to be true, it is not true with the latest version of Microstation, V8i sp 1.

Each and every time a design file ".dgn" is opened, some elements get modified by some of the Bentley Civil DLL's. This breaks the security of the file's hash code. Even if the user deactivates GEOPAK, the result is still the same. PEDDS will point out this truth the next time that a project security authentication is run.

```

31 .\data\edi_keysheet.pltclg          identical
32 .\data\edi_keysheet.tbl           identical
33 .\data\edicfg.pltclg              identical
34 .\data\edipdf.pltclg              identical
35 .\data\filterlist.xls              different (D:\42359125201 is more recent)
36 .\estimates\constructioncostestimate.pdf identical
37 .\estimates\c3j67.txt              identical
38 .\estimates\compbook\42359125201_compbook580167.pdf identical
39 .\estimates\compbook\42359125201_compbook580168.pdf identical
40 .\estimates\compbook\42359125201_rd_compbook.pdf identical
41 .\permits\permittransmittalmemo.pdf identical
42 .\specs\42359125201.pdf            identical
43 .\specs\42359125201_wb.pdf         identical
44 .\specs\d3qcchecklist.pdf          identical
45 .\struct\bconstseq01.dgn           identical
46 .\struct\bexistingplans.pdf         identical
47 .\struct\bgeneralnotes01.dgn       identical
48 .\struct\bkeysheet01.dgn           different (P:\Projects_Class_7\42359125201 is more recent)
49 .\struct\bmiscdet01.dgn            identical
50 .\struct\bplanelev01.dgn           identical
51 .\struct\bplanelev02.dgn           identical
52 .\struct\btrafctrldet01.dgn        identical
53 .\struct\btransportstructures01.dgn identical
54 .\struct\btypicalsection01.dgn     identical
55 .\struct\qcstruct.txt              identical
56 .\struct\strborder.dgn             identical
57 .\struct\eng_data\08_b-01_bkeysheet01.ps identical

```

At a minimum, there are two locations that are broken in this process—the design file that was opened and shut and the filter list. The filter list is compilation in spreadsheet form of every design file stored in the project. The results from opening the keysheet file, for example, and closing it are shown in the example to the left. The program, WinDiff UI, compared every file in the electronic copy of the secured project with the delivered CD of the secured project. As we are now able to expect, two files are shown to have been modified.

PROFESSIONALS' ELECTRONIC DATA DELIVERY SYSTEM

Delivery Authentication Error Report

12/14/2011 8:32:38 AM

PROJECT SUMMARY

Project Id: 423591-2-52-01
Project Manager: Brian Lemieux - Senior Project Manager
Delivery Description: Sign and Sealed Deliverables for the SR 8 (I-10) Over Blackwater River Bridge Painting Project

DELIVERY SUMMARY

Project Key: C2053D94-0F13-446A-B6B4-2D7F53463D6D
Project Root Folder: P:\Projects_Class_7\42359125201
Date: 12/7/2011 **Time:** 11:7:15.574
Total number of Project files: 55
Total number of Signature files: 5

PEDDS Delivery Authentication Test Performed on: 12/14/2011 8:32:39 AM

DELIVERY MANIFEST FILE AUTHENTICATION ERRORS

Project Manager: Brian Lemieux - Senior Project Manager
Purpose of Delivery: Sign and Sealed Deliverables for the SR 8 (I-10) Over Blackwater River Bridge Painting Project
Manifest File URL: _META_INFO\manifest.xml
Manifest File Hash Code (Delivery Key):
 DBC4235A-32DB74A1-EC96BE17-577305D6-ACB758BD
 DBC4235A-32DB74A1-EC96BE17-577305D6-ACB758BD
 DBC4235A-32DB74A1-EC96BE17-577305D6-ACB758BD

Project Key Authentication: Success: Project Keys Match!
 Manifest.xml File Project Key: C2053D94-0F13-446A-B6B4-2D7F53463D6D
 ProjectId.xml File Project Key: C2053D94-0F13-446A-B6B4-2D7F53463D6D

Project File Authentication: Failure: Project Files Do Not Match!

This Project has failed file Authentication . One or more of the file's SHA-1 hash codes stored in this Project does Not Match with a freshly computed SHA-1 hash code of the file itself. This indicates that the file has been changed since the last time the Project was Secured. Please review the Authentication Errors listed below, and then Re-Secure the Project and try again.

In the meantime, we have contacted the folks at Bentley about this and are working on some solutions. We will try and keep everyone informed once this issue has been resolved. The only way to avoid this for now, however, is to secure a project AFTER all Microstation work is complete or to open the file from a CD which cannot be modified. Don't let this happen to you!

PROJECT FILE AUTHENTICATION ERRORS

- Project File Error**
File Name: FILTERLIST.XLS
File URL: _DATA\FILTERLIST.XLS
Stored Hash Code: 5A08D9D3-02A6363D-15F76CBE-4E9DABA2-E0921BEC
Computed Hash Code: 232AB946-53924C7F-329E2AE2-5A75A505-CE992890
Error Description: Manifest.XML Project file Hash Code <> Calculated file Hash Code!!!
This File has Changed since last being Signed and Sealed by this Signatory. To resolve this issue, select the appropriate Signatory and Re-Signed and Seal.
- Project File Error**
File Name: BKEYSHEET01.DGN
File URL: _STRUCT\BKEYSHEET01.DGN
Stored Hash Code: 5E30D0E4-0883C211-1C5029EE-85271E35-B1714F1D
Computed Hash Code: 2392EB1C-6758E7F9-DCCE1C0D-3AF80591-5039BE58
Error Description: Manifest.XML Project file Hash Code <> Calculated file Hash Code!!!
This File has Changed since last being Signed and Sealed by this Signatory. To resolve this issue, select the appropriate Signatory and Re-Signed and Seal.
- Project File Error**
File Name: FILTERLIST.XLS
File URL: _DATA\FILTERLIST.XLS
Stored Hash Code: N/A
Computed Hash Code: 232AB946-53924C7F-329E2AE2-5A75A505-CE992890
Error Description: Added Project File Found!!!
This File had been Added since the Project was last Secured. To resolve this issue, go to the Project directory and Delete this file.
- Project File Error**
File Name: BKEYSHEET01.DGN
File URL: _STRUCT\BKEYSHEET01.DGN
Stored Hash Code: N/A
Computed Hash Code: 2392EB1C-6758E7F9-DCCE1C0D-3AF80591-5039BE58
Error Description: Added Project File Found!!!
This File had been Added since the Project was last Secured. To resolve this issue, go to the Project directory and Delete this file.

SIGNATURE FILE AUTHENTICATION ERRORS

