APRIL - JUNE 1999

DISTRICT THREE

Design QUARTERLY NEWSLETTER

(Internet Address - http://www..dot.state.fl.us/rddesign/D-3/files/d-3.htm)

{Vol. 4 No. 2}

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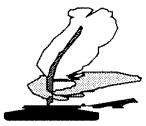
From the Editors Desk



BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

On April 26, 1999 we held another successful District Design Conference with favorable feedback. We are already planning for next year's conference based on a 1 ½ day format. This will make available one entire day for design and technical related issues.

We encourage *all* readers to check the FDOT web page on a regular basis. The newsletter will appear at the end of each quarter starting on the fifteenth of the following month (April 15, July 15, October 15, and January 15). Please mark your calenders since important design issues and supplemental agreement information are provided for the designer's benefit. ✔

Small County Bridges on Unpaved(Dirt) & Paved Roads

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

We have numerous wooden bridges (approximately 15) in our work program on county roads. Some of these structures are on dirt roads and others are on paved roads. It will be necessary to deviate from the Florida Green Book for design criteria on these projects.

The following is recommended:

1)Bridge hydraulics criteria for county bridge replacements:

a) For paved roads: meet the requirements of the FDOT Drainage Manual.

DISTRICT THREE DESIGN
FLORIDA DEPARTMENT OF TRANSPORTATION

If you are interested in obtaining a copy of this free newsletter, contact Brian Blanchard, District Design Engineer.
(850) 638-0250) X - 425
or fax (850) 638-6148

b) For unpaved (dirt) roads with very low traffic volumes:

1) Design Storm - 10 year minimum, based on a risk analysis (10 year minimum), structure cost, environmental impacts/costs, ADT.

2) Check all storm events for backwater - do not increase flood stages.

3) Foundations should be designed for 100 year and checked for 500 year (per Drainage Manual).

2) The bridge typical section for bridges on dirt roads will consist of two-ten foot lanes and two foot shoulders (AASHTO minimum). This will be wide enough to accommodate farm equipment.

3) For bridges on paved roads, we recommend two twelve foot lanes as the desired lane width as many of these roads could be widened within the 75 years of the structure's design life. The shoulder widths should comply with the Florida Green Book (6 feet minimum; 8 feet for heavy truck traffic or ADT>750)

4) A load rating will be necessary for each of the bridges.

5) Concrete approach slabs are required for the bridges.

6) Designers should provide for asphalt pavement 100' each side of the bridge or to the limits of the guardrail, whichever is greater.

7) The 10 foot maintenance berm at the abutments will not be necessary for the county bridges.

8) The designers should investigate a temporary road closure, on-site detours and possible precast box structures. Effort should be made to avoid R/W by closing the road if the county concurs. ✔

Florida Green Book

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

I continue to see designers referencing the Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Fla. Green Book). These standards were intended for new construction projects off the state highway and federal aid systems. I have seen designers inappropriately reference these standards in P.D.& E. reports, detours for bridge projects and etc. on the state highway system. These standards only apply to the county road and city street systems as explained in FLA. Statute 334.044 and 336.045.
New and reconstruction projects should follow criteria in chapter 2 of the Plans Preparation Manual (P.P.M.). 3-R type projects should follow criteria in chapter 25 of the P.P.M. ✔

Bridges/Driveways on 3R Projects

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

Even though a bridge is being excepted from a project, a design exception may be needed for the bridge rails. An exception or variation may be needed for the width. They can be included in the same exception letter.
Variations are needed for driveways when cross slope of 0.02 to meet the Americans with Disabilities Act is not provided. ✔

Process Exceptions / Variations

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

A new activity has been added to the Department's schedules to evaluate and process exceptions and variations during the 30% plans preparation phase. We have added A/E 294010 - Process

Exceptions/Variances on all projects in which the A/E 301010 - Review 30% Plans has not started. In order to allow time to research alternatives and begin the analysis and documentation activities, it is critical that design exceptions be identified as early in the process as possible. ✔

Superelevation Corrections

RONNIE PEEL,
QUALITY ASSURANCE ENGINEER

Roadways with horizontal curves often require a superelevation correction. A superelevation table should be provided. The information required is as follows:

Begin Transition Sta.
End Transition Sta.
P.C. Sta.
P.T. Sta.
Radius(Metric); Radius or Degree(English)
Existing e rate
Proposed e rate
Amount of Tonnage of overbuild required to correct.

The transition will have to be modified to take into account the lower edge of existing roadway that can not be lowered (except for minor amounts of milling). Basically the correction will be by overbuilding to the high side.
The same rate does not always exist on both sides of the roadway. To correct it may require more overbuild on a particular side. A superelevation correction detail(s) should be included in the plans. Cross sections through the curves should also be included in the plans, if all of the cross sections are not being included. ✔

Roadway Signs

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

It's been brought to my attention on resurfacing projects that signs are being replaced and installed based on outdated information. After the project is constructed our maintenance sign crews are having to relocate the signs (longitudinally). The designer should conduct a field inventory of existing signs prior to developing plans.
Signs should be located based on the MUTCD unless there are specific locations where we must deviate due to curves, other signs etc. ✔

Supplemental Agreement Report - April

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

This is the Supplemental Agreement Report for the month of April, 1999. The three (3) categories of supplemental agreements that are included in this month's report are codes 003, 019 and 113. This report is included in this Quarterly Design Newsletter as a tool to inform designers (anyone that receives it) 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 003: Harmonize project with adjacent projects, features or adjacent R/W after plans have been completed.

S.P. No. 52040-3517, FPID: 219150-1-52-01 (Holmes County)

Reason: The contract plans provided for clearing and grubbing to the FDOT R/W line at specified locations along the project. A field review of the project subsequent to the letting revealed existing fencing encroaching onto the R/W at random

locations where clearing and grubbing was to be performed. In order to correct this condition, the Department had the Contractor remove and replace the fencing at the R/W line.

Increase = $25,360.00

Response: This supplemental agreement was not the result of a design error. However, it is recommended that when such conditions as this are discovered and it is determined that the fence will be relocated, the R/W Department should be contacted. They can then contact the property owner/owners and advise them of the situation and negotiate a more diplomatic relocation of the fence. The necessary pay items and notes can then be included in the plans if necessary.

Note: The Department does not usually relocate fences that are encroaching onto the R/W by minor amounts if they do not interfere with the required construction.

S.P. No. 49010-3553, FPID: 218769-1-52-01 (Franklin County)

Reason: During construction of the project the decision was made by the project engineer to extend the limits of the project easterly to the Apalachicola River Bridge and westerly past the county school. The easterly extension was to resurface the roadway that showed signs of rutting and deterioration of the existing asphalt and the westerly extension was to repair the sidewalk and provide ADA ramps within the school pedestrian zone.

Increase = $40,832.90

Response: This supplemental agreement was not the result of a design error. The project was constructed within the limits called for by the scope. The supplemental agreement was essentially a change resulting from an engineering decision (code 503), however code 003 described the reason for the supplemental better.

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

S.P. No. 99000-3400, FPID: 222389-1-52-01 (Escambia, Santa Rosa, Okaloosa, Walton and Holmes Counties)

Reason: Improvements to this contract provided for concrete slab replacement on SR 8 (I-10) District wide. Subsequent to this work, the Contractor's work forces mobilized to site locations in Walton and Okaloosa Counties to replace striping which was removed during the slab replacement process. However, upon arrival at these sites the proposed work was being performed by others under a FDOT re-striping maintenance contract. The Department advised the Contractor that the striping for this work would be eliminated from the contract in these counties. The contractor then filed a claim for cost incurred for mobilization and demobilization to the job site.

Increase = $420.00

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

Description Code 113: Modification to pavement design required.

S.P. No. 48080-3536, FPID: 218637-1-52-01 (Escambia County)

Reason: Improvements to this project provided for grinding the existing concrete roadway, construction of paved shoulders, milling the existing asphalt median crossovers and tapers and resurfacing the milled areas with friction course.

During the milling operation, site conditions revealed insufficient asphalt thickness in the median areas whereby exposing the existing base. In order to extend the service life of the median locations and eliminate future maintenance problems, the Department decided to remove and replace the existing base and surface with structural asphalt and friction course.

Construction made a determination that the plans

did not adequately provide for connections to turnouts, side streets and existing businesses along the project. This condition was attributed to the grade differential between the proposed paved shoulder and the existing connections. They determined that additional structural asphalt was needed to provide a proper connection to allow ingress and egress between the roadway and side road and turnout connections.

Increase = $141,482.75

Response: This supplemental agreement was not the result of a design error. The Department requested that the median be milled and resurfaced with friction course. Cores were not taken or an insufficient number of cores were taken to determine if sufficient asphalt existed.

The second part of the supplemental would seem to be a design error, but could be attributed to several different causes.

1. Too great of a distance between survey cross sections.

2. The plans appear to have covered the side roads and existing paved connections sufficiently. The area is basically flat with very little grade difference between the roadway elevations and the adjacent side roads and business connections. The project engineer could have determined that the connections needed resurfacing farther from the edge of pavement than was shown in the plans (engineering decision, code 503).

3. The project had an enormous amount of existing paved driveways along the uncurbed section. Enough that about 50% of the total uncurbed length was bounded by paved driveways on a slope flatter than a normal 0.06 shoulder slope. The plans tried to incorporate this existing paving into the paved shoulders by milling and resurfacing with FC if the existing slope was within the allowed 0.03 to 0.08 range given in the PPM. The existing through lanes (concrete) were to be ground about 10 mm with the turnouts and side road connections (asphalt) milled 25 mm and repaved with friction course transitioning from the 25 mm at the outside to 15 mm at the edge of the existing concrete. There would not appear to be any reason for there to be a grade differential if the plans were followed (this would replicate the existing slope). If the engineer decided to remove the existing paving and construct new paved shoulder through the existing paved driveways on the standard 0.06 slope, a grade differential would be created in many locations (engineering decision, code 503).

S.P. No. 48110-3508, FPID: 218626-1-52-01 (Escambia County)

Reason: The typical section in the contract plans provided for construction of stabilization in areas of pavement widening and paved shoulder construction. Subsequent to project letting, the Contractor requested the substitution of the stabilizing with an increased thickness of the Optional Base and the use of ABC-3. The request addressed the fact that the optional base courses allowed for bid purposes in the plans were limited to Limerock, Coquina and Shell and did not include materials more readily available, such as ABC-3 or graded aggregrate. Further investigation revealed the plans did not address the possible conflict with the subgrade mixing operation and an existing water main located adjacent to the existing roadway owned by the Escambia County Utilities Authority (ECUA). Subsequently, ECUA expressed concerns over the possibility of damage to the water main and also requested the stabilizing be eliminated.

Decrease = $0.68

Response: This supplemental agreement was not the result of a design error. The substitution of stabilizing with an increased thickness of base is an option provided by the Material's Department that can be used when requested by the Contractor.

The pavement design provided did not specify the optional base courses to allow. The Consultant was from another part of the state and specified the options used in that area. The Department should have caught and corrected the error.

The water line was clearly shown on the plan sheets from about 1' to 3' from the edge of the existing roadway running parallel with the roadway. The designer probably figured the line was about 2.5' below the surface and should be about a foot below the roadway construction. ECUA should have expressed concern over the location of the water main when provided copies of the plans for review. ✔

Supplemental Agreement Report - May

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

This is the Supplemental Agreement Report for the month of May, 1999. The two (2) categories of supplemental agreements that are included in this month's report are codes 007 and 010. This report is also included in this Quarterly Design Newsletter as a tool to inform designers (anyone that receives it) 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 007: Work added or deleted resulting from agreements with other parties (non-DOT) to address concerns within project limits not in original scope (not permit related).

S.P. No. 51020-3500, FPID: 219044-1-52-01 (Gulf County)

Reason: Subsequent to project letting, the Gulf County Commission requested the construction of a north bound center left turn lane at Stone Mill Creek Road to accommodate the heavy traffic that is anticipated to occur with the future opening of an additional unit at the Gulf Correctional Institute.

Increase = $58,157.75

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

S.P. No. 48130-3514, FPID: 218613-1-52-01 (Escambia County)

Reason: An adjacent property owner requested that a ditch and berm be constructed to prevent roadway fill from eroding onto private property and to contain the storm-water runoff on FDOT right-of-way.

Increase = $7,983.35

Response: This supplemental agreement was not the result of a design error. This location was in an existing fill section (approx. 1.5 meters high above natural ground) that did not have an existing ditch, but sheet flow drained onto private property. The proposed slope ran parallel to the existing slope and tied to the natural ground about a half meter from the existing toe of slope as is normally done on 3-R projects.

Description Code 010: Additional items, overruns, or plans modifications due to weather causes (ex.repair of damage caused by hurricane, such as excessive erosion or wind damage).

S.P. No. 48020-3557, FPID: 218525-1-52-01 (Escambia County)

Reason: Hurricane Georges caused extensive damage to the new bridge embankment supporting the end bents and approach slabs. Rising flood waters caused by a 24 inch rain storm eroded the slope embankment and caused voids under the end bents and approach slabs.

Increase = $34,127.23

Response: This supplemental agreement was not the result of a design error. ✔

Supplemental Agreement Report - June

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

This is the Supplemental Agreement Report for the month of June, 1999. The three (3) categories of

supplemental agreements that are included in this month's report are codes 001, 105 and 107. This report is included in the Quarterly Design Newsletter as a tool to inform designers (anyone that receives it) 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 judgement/processes used in plans preparation (i.e..muck, old piling, boulders, artesian springs, abandoned utility lines, etc.).

S.P. No. 53002-3412, FPID: 222636-1-52-01 (Jackson County)

Reason: During the excavation operation for the proposed edgedrain draincrete installation, a conflict was encountered with the existing edgedrain system. An on-site investigation of this condition by the Department revealed when excavating the trench this material was "sloughing off" causing voids to form under the existing shoulders.

In order to correct this condition, the Department determined to utilize AdvanEdge Panel Pipe in lieu of the edgedrain draincrete for this project only. This action alleviated the voids forming under the existing shoulder surface without impairing any essential function of the drain or altering the designer's intent for the project.

Increase = $106,816.00

Response: This supplemental agreement was not the result of a design error. However, on other similar projects where this condition might occur the Designer is encouraged to contact the District Materials Office and discuss the problem. A solution can be decided upon or at least the existing conditions can be further evaluated to determine if a solution needs to be addressed.

Description Code 105: Conflicts resulting from discrepancies, inconsistencies, etc. between plans notes, details, pay items, activities, etc.

S.P. No. 50001-3514, FPID: 222535-1-52-01 (Gadsden County)

Reason: Improvements under this contract provided for milling and resurfacing and guardrail updating to meet current standards on I-10 in Gadsden county. The contract provided for installation of (Slotted Rail Terminals) SRT End Anchorage Assemblies on existing guardrail in numerous locations throughout the project. The designer's intent was to reset the existing guardrail for the standard flare and attach the SRT end terminals. However, the Standards for the SRT end treatment requires that the panels within the standard flare be slotted and the existing panels were therefore unusable. New panels had to be used and the existing panels were removed and delivered to the FDOT Maintenance Yard at Greensboro.

Increase = $27,144.70

Response: This supplemental agreement was the result of a design error. The Designer apparently did not look at the Standards for the SRT End Anchorage Assemblies very carefully, because if he had he would have realized that the existing guardrail was not slotted and therefore needed replacing rather than resetting.

Description Code 107: Modification of approved MOT plan to accommodate various modes of transportation (i.e..peds, boats, cars, bikes, etc.).

S.P. No. 48525-3602, FPID: 221287-1-52-01 (Escambia County)

Reason: Work under this project included multi-lane reconstruction, bridge widening, drainage improvements and JPA's for relocation of water and sanitary sewer facilities.

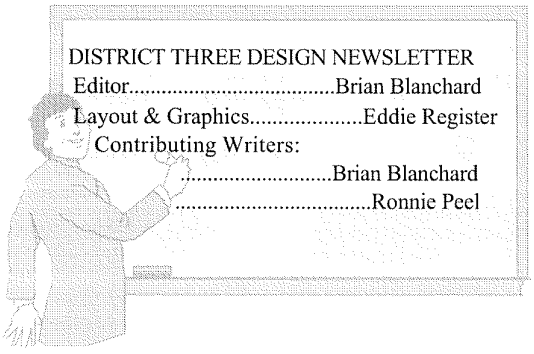
This project is located on a highly congested corridor with numerous businesses and residences

adjacent to the roadway. The high volume of traffic resulted in the Department reevaluating the MOT plan designed for the project. The Department determined that additional measures were needed to minimize disruption to the traffic flow and to provide adequate safety for project personnel and the traveling public. Additional temporary pavement was constructed in order to minimize lane closures. The necessary clear zone between the temporary travel lanes and the work zones during various construction operations was also provided as well as access to adjacent businesses and residences was also enhanced.

Increase = $138,120.00

Response: This supplemental agreement was not the result of a design error. Apparently the Department believed the MOT plan that was included in the plans was sufficient at the time of review. This change will provide increased safety and minimize disruptions to the traveling public by reducing the number of lane closures.

Designers should focus on MOT plans that can shorten the contract time and minimize lane closures and impacts to businesses. ✔



"There are no secrets to success: Don't waste time looking for them. Success is the result of perfection, hard work, learning from failure, loyalty to those for whom you work, and persistence."

General Colin Powell
U. S. Army (retired)