

JANUARY - MARCH 1999

DISTRICT THREE

Design QUARTERLY NEWSLETTER

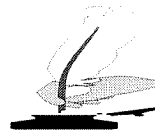
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{Vol. 4 No. 1}

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From the Editors Desk



**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

Welcome to our first newsletter for this year. 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). We welcome any feedback to continuously improve the content of this newsletter.

On April 26, 1999, a Design Conference will be held to provide consultants with information on the Department's work program and plans preparation. If you did not receive a notification letter about the conference, please give Judy Cook a call for reservation information at (850) 638-0250 ext. 422. ☐

(PPM) and the Standard Indexes will be revised to provide increased protection to motorists/pedestrians at drop-off locations. The specific locations are at retaining walls behind curb and gutter and in rural conditions. The Department desires to improve the safety conditions with concrete barrier wall in roadway fill sections. Designers should protect drop-offs of five feet or greater in fill sections even when curb and gutter is present.

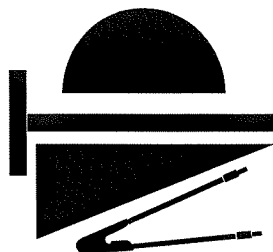
The two-pipe handrail should be considered minimal (30" or less). Greater drop-offs should provide a site-specific handrail design capable of retaining a six-inch sphere or providing a fence (vinyl coated if aesthetics are important).

Further guidance will be forthcoming from Central Office. I will keep you updated. If you need further clarification, please give me a call at the phone number and extension provided below. ☐

**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**



Protection of Vertical Drop-offs

**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

The Plans Preparation Manual

Constructing Paved Shoulders

FRANK KREIS,
DISTRICT BITUMINOUS ENGINEER

There have been numerous complaints from contractors and project personnel alike, regarding the placement of structural course in a separate pass on the shoulder. Based on discussion and feedback from Design and Construction Engineers, the following actions will be taken.

1.) The Pavement Design Engineer will continue to evaluate each milling and resurfacing project separately and calculate the required overlay thickness according to the required structural number. Minimizing lane costs per mile is still a major factor in the determination of pavement thicknesses.

2.) District 3 desires to place a structural layer, minimum 44Kg/m², on the paved shoulders where FC-3 is specified. When FC-6 (88Kg/m²) is specified, there may be some projects where the FC-6 Friction Course is the only layer placed on the paved shoulders.

3.) If the pavement design specifies that the shoulder structural course be paved separate from the roadway, then the Design Consultant should include a general item note stating this.

4.) There are currently some pavement designs which specify 110Kg/m² Type "S" to be placed over the ARMI. Design consultants should review the typical sections on their projects and determine if this amount should be increased to 132Kg/m² and placed in two layers: 88Kg/m² over the ARMI and the second layer of 44Kg/m² over the roadway and adjacent shoulder. Notify the District Pavement Design Engineer or District Bituminous Engineer to approve this change and revise the Pavement Design. ■

Utilities on Plans

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

I have instructed our project managers not to pay consultant invoices if existing utilities (approximate

horizontal and vertical location) are not shown on phase I plans submittals. Our scope of services require that phase I plans show existing utilities. Specifically, we should gather topographical information on above ground utilities within the construction limits or clear zone and sub-surface utilities that may interfere with any construction activity. *You must use engineering judgement!* If in doubt, have it surveyed. It is the design consultant's responsibility to communicate this to the surveyor. If a design surveyor has difficulty contacting a utility representative, get assistance from the department's Area Utility Manager.

I have instructed project managers to *refuse* payment if the minimum design requirements are not included for each phase review. Please refer to Chapter 16, figure B.1-Summary of Phase Submittals, in the Plans Preparation Manual, Volume I. For example, a phase I submittal should include a layout sheet, existing cross sections, existing intersection layouts, typical sections, etc. This will assist the utility company in verifying their existing utility locations. On RRR projects that may not include cross sections in the plans, the first submittal should include the drainage structures where work is to be performed with the utilities shown. ■

I-10 Criteria for Rubblizing and Reconstruction Projects

BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER

The question has come up about what criteria to use on the Rubblizing and Reconstruction projects on I-10, such as whether to use new construction criteria or RRR criteria as given in chapter 25 of the PPM.

The following excerpt is from page 25-1 of the PPM and is the basis for part of the criteria that we are following. "Interstate and freeway RRR projects are designed using new construction criteria except that the standards used for horizontal alignment, vertical alignment, widths of median, traveled way and shoulders may be the AASHTO interstate standards that were in effect at the time of original construction or inclusion into the interstate system."

The majority of the I-10 projects across the third district were designed using the 1967 Roadway Design Manual. The basic criteria found in section 3 of that manual (design criteria) was taken from the AASHTO Manual entitled "A Policy on Geometric Design of Rural Highways, 1965." We now refer to the book as the AASHTO green book. There may have been a later edition in the early 70's that was used, but the criteria probably did not change or very little. The majority of the I-10 projects were designed prior to 1975. There were a few projects that were designed in the early 60's (Escambia Co.).

The following approach is what we are using:

1. If the horizontal alignment, vertical alignment, widths of median, traveled way and shoulders meet the criteria that were shown in the 1967 Roadway Design Manual, the 1965 AASHTO book or an edition of AASHTO prior to 1975, nothing needs to be done to these elements. A Design Exception or Design Variation is not required. Those done prior to 1965 should be evaluated accordingly.

2. If the existing design elements listed above does not meet the above criteria a Design Exception is required. Consideration will be given to the horizontal and vertical alignment when it is marginally below the criteria given for surveying errors or similar discrepancies.

New Construction criteria will be used for the remaining design elements for determining the need for a Design Variation. However, there are stipulations to actual design of plans.

1. The existing 9.0 or 9.1 meter (30') clear zone will be maintained for the front slopes where there are existing paved and grassed ditches. Outside the 9.0 meter clear zone the front slope will tie to the front edge of the grassed ditch or will tie to the top of the existing ditch paving. This slope should fall between a 1:3 to a 1:4 slope. A Design Variance will be required for being below the 11.0 meter clear zone.

2. Fill slopes should be: 1:6 for fills to 1.5 meter

☞ 1:6 to the 11.0 meter clear zone and 1:4 for fills 1.5 to 3.0 meters

☞ 1:6 to the 11.0 meter clear zone and 1:3 for fills 3.0 to 6.0 meters

☞ 1:2 (with guardrail) fills over 6.0 meters

In areas where the front slope would extend into a wetland if the above criteria is followed, the following criteria can be used:

☞ 1:6 to the 11.0 meter clear zone and tie the second slope at the existing toe of slope. This slope should not exceed a 1:2.

☞ 1:6 to the 9.0 meter clear zone and tie the second slope at the existing toe of slope. This slope should not exceed a 1:2. A Design Variance will be required for being below the 11.0 meter clear zone.

3. The cross drains will not be extended if they are not more than 0.6 meter within the 9.0 meter clear zone (except, unless there is crash data to warrant extending or shielding). A design variance will be required for all the endwalls that are within the 11.0 meter clear zone (excluding those shielded by guardrail). Those that are more than 0.6 meter within the 9.0 meter clear zone should be extended or shielded by guardrail if it is a large structure.

4. A Design variance will be required for the bridge piers that are within the 11.0 meter clear zone. If they are 9.0 meters or more from the edge of thru lanes they will not have to be shielded (except, unless there is crash data indicating that they have been struck twice or more within any 3 year period for the last 5 years of crash data available). If they are within the 9.0 meter clear zone by as much as 0.1 meter, they should be shielded.

5. The clear zone will not be extended on the outside of the horizontal curves (except, unless there is crash data indicating a problem exist or a specific site investigation shows definitive accident potential).

6. Trees, underbrush, etc. will be removed if within the 11.0 meter clear zone (unless shielded by guardrail). ■

"Significant improvements in safety are *not* automatic by-products of RRR projects; safety must be systematically designed into each project."

Designing Safer Roads: Practices for Resurfacing, Restoration, and Rehabilitation. TRB, National Research Council, Wash. D.C., 1987

Supplemental Agreement Report-December

**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

This is the Supplemental Agreement Report for the month of December, 1998. The two (2) categories of supplemental agreements that are included in this month's report are codes 005 and 108.

Below is a description of those areas and our responses:

Description Code 005: Utility adjustments delaying contract work schedules caused by Utility Companies with no JPA involved (should be all Premium and 3 rd party charged)

S.P. No. 57080-3507, FPN: 220205-1-52-01 (Okaloosa County)

Reason: The city of Baker began relocating their water main, but was unable to relocate it in a timely manner to avoid delays to the roadway improvements. Subsequently, the Department and Contractor negotiated to incorporate installation of the water main into this contract and agreed on compensation due the Contractor for delays and impacts associated with the water main relocation.

Increase = \$698,407.83

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

Description Code 108: Plans do not adequately describe the scope of work (use a specific reason code if possible)

S.P. No. 57040-3503, FPN: 220232-1-52-01 (Okaloosa County)

Reason: This was a milling and resurfacing project on SR 189 in Okaloosa County. The typical section did not provide for any type of shoulder work even though the final resurfacing height was about 67 mm above the

existing. Construction personnel determined that this dropoff was unacceptable and added sodding and topsoil to the shoulders per Index No. 105.

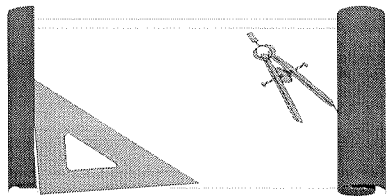
Increase = \$21,694.80

Response: This supplemental agreement was the result of a design error. Comments had been provided to the designer by District Design Personnel to consider the finished grade difference above the existing and provide shoulder treatment in accordance with the Type R-1 method of Index No. 105.



1. Comments made by others should not be taken lightly.
2. When there are differing comments made on the same subject, the comments should be discussed with all parties and the solution resolved unless some of the comments can be determined to not have any merit.
3. Follow comments only after deciding that they are valid. In other words research the validity of the comments if possible. Everyone provides comments or opinions occasionally that are not correct or based on all the facts.

Note: Occasionally there will be a project with flush type shoulders where the proposed pavement design thickness will match or almost match (less than 25 mm difference) what is being milled from the roadway. On these type projects the Type R-3 shoulder treatment method, Index No. 105 should be used. This is based on the fact that even though it does not appear that any shoulder treatment will be necessary because of the paving, the shoulder dropoff prior to construction may already exceed the 25 mm normal requirement. This may only be in isolated sections along the roadway and there could be areas where the shoulder is buildup above the pavement that will require grading off and resodding to provide the 25 mm dropoff. Unless you are absolutely sure that neither of these 2 conditions exist on the project, provide the R-3 shoulder treatment as an absolute minimum on the project.

Note: District 3 requires that the sod strip adjacent to the roadway projects wide in 0 . 4 that is 3 given by  on all be 0.8 meter lieu of the meter width shown for all treatments Index No.

105 or by the example typicals in the Plans Preparation Manual. ■

Supplemental Agreement Report-January

**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

This is the Supplemental Agreement Report for the month of January, 1999. The four (4) categories of supplemental agreements that are included in this month's report are codes 001, 007, 113 and 300.

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. 52010-3529, FPID: 219143-1-52-01 (Holmes County)

Reason: Improvements under this contract consist of replacing a low level bridge over Buckhead Slough on SR 10 in Holmes County. During construction of drilled shafts, unforeseen subsurface conditions were encountered. Subsequently, it was determined by the Department that it was not feasible to construct drilled shafts to the depth required to reach rock formation. Therefore, it was concluded by the Design Geotechnical Engineer and the Department that a 20" steel pipe piling configuration shall be incorporated into the project as an alternate to drilled shaft numbers 8, 9, 16 and 17 as authorized by the Engineer.

Increase = \$263,632.24

Response: This supplemental agreement was not the result of a design error. Reasonable engineering judgement was used by the Designer and the unforeseen condition was not encountered in the borings that were performed to establish the piling requirements.

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. 55003-3518, FPID: 219717-1-52-01 (Leon County)

Reason: Improvements under this contract provides for installing aluminum handrail on retaining wall number 2 located at station 642+89.79 to station 646+80 Rt. on SR 261 (Capital Circle) Leon County.

Subsequent to contract being let, the Chairman of the Board of Trustees for Tallahassee Heights United Methodist Church requested that the Department and Contractor install 6' chain link fence with (black pvc coated fabric) in lieu of proposed aluminum handrail. The Department agreed to this change in an effort to work with the public and businesses adjacent to it's roads when the request is feasible and reasonable in cost.

Decrease = \$1,473.12

Response: This supplemental agreement was not the result of a design error. The 1994 and later editions of Standard Index No. 520 allowed the use of either handrail or fence when the dropoff from a retaining wall is greater than 10" (250 mm). The designer considered the use of fence on top of the cantilever wall in this location, however he reasoned that the handrail would have a more aesthetic appearance in front of a church. He was afraid that the fence would present a negative appearance (prison look) of trying to keep people in or out as well as impeding the view of the church from the roadway.

Description Code 113: Modification to pavement design required.

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

Reason: Improvements for this project include slab replacement, grinding existing cement pavement travel lanes and resurfacing the adjacent asphalt paved shoulders. The milling details in the plans indicated the paved shoulders were to be milled an average depth of 22 mm. Milling of the paved shoulders at the specified depth resulted in intrusion of the base material. Subsequently, milling operations were discontinued to allow for evaluation of the shoulder pavement structure. Coring the pavement revealed that the shoulder base was deficient in thickness. Therefore, the Department made a decision to remove and reconstruct the base and pavement for the paved shoulders in accordance with current design

standards.

Increase = \$136,413.03

Response: This supplemental agreement was not the result of a design error. However, designers should consider that most driveways, parking areas and local and county roads that tie to the roadway will have a minimum amount of asphalt on them and should keep the milling depths to a minimum or not at all.

Description Code 300: Value Engineering Change Proposal (VECP)

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

Reason: Improvements for this project includes construction of a storm sewer system within urban construction limits along Airport Boulevard. Subsequent to letting and awarding of this project, the contractor proposed the substitution of aluminized corrugated steel pipe in lieu of reinforced concrete pipe for the storm sewer construction.

The Department reviewed and approved the contractor's VECP to use the aluminized corrugated steel pipe. The construction advantages were a substantial reduction in material cost as well as a reduction in contract time.

Decrease = \$26,278.63

Response: This supplemental agreement was not the result of a design error. However, the designer should consider the use of optional pipe materials on all projects. Adequate soil and corrosion tests are essential to making a determination on optional pipe materials that are allowed to be used on a project. ■

Supplemental Agreement Report-February

**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

This is the Supplemental Agreement Report for the month of February, 1999. The three (3) categories of supplemental agreements that are included in this month's report are codes 012, 130 and 503.

Below is a description of those areas and our responses:

Description Code 012: Deterioration/damage (not weather related) sustained on project subsequent to design.

S.P. No. 47010-3519, FPID: 218046-1-52-01 (Calhoun & Liberty Counties)

Reason: Improvements under this contract include rehabilitation of the Apalachicola River Bridge on SR 20 located in Calhoun County.

A field review conducted subsequent to commencement of work revealed corrosion and deterioration in the webs of the vertical support members adjacent to the bearing pads. Further evaluation revealed the structural integrity of the bridge was in jeopardy due to the deterioration and corrective action was required. No corrective work was included in the plans to correct this condition, therefore the designer had to develop a method of repair. The repairs included bearing stiffener assemblies at numerous locations and also included miscellaneous repairs to the structural steel.

Increase = \$74,400.73

Response: This supplemental agreement is not being attributed to a design error. However, it possibly could be the result of inadequate inspection of the structural members prior to and during design of the plans.

Description Code 130: Indecision or delayed response causing contract delay.

S.P. No. 48050-3536, FPID: 218479-1-52-01 (Escambia County)

Reason: Subsequent to the contractor starting construction on the proposed gravity wall to be constructed from station 36+30 to 37+10, it became apparent the height of the wall was not clearly shown in the plans. The contractor was directed to postpone construction on the wall until the height could be resolved.

Also during the installation of a proposed 24" storm sewer the contractor encountered a 4" sewer line and a 4" electrical conduit that were in conflict with the storm sewer pipe. The contractor's work effort was delayed while the utilities were relocated.

Increase = \$19,048.58

Response: This supplemental agreement was the result of a design error.

This supplemental report serves as a reminder to designers to make sure that adequate details and information are included in the plans for components/structures that are not covered in the Standard Indexes.

Description Code 503: Change resulting from engineering decision.

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

Reason: The typical sections in the plans provided for construction of Type B Stabilization in the widening areas. After the project was let the contractor requested to eliminate the stabilizing and increase the Option for one base from Optional Base Group 6 to 7 and another from Optional Base Group 9 to 10. The Department reviewed the contractor's request and determined the proposed substitution was permissible at no additional cost to the Department.

Increase = \$0.00

Response: This supplemental agreement was not the result of a design error. This is an option that the Material's Department has determined will be allowed when requested by the contractor with certain stipulations to apply.

This recommendation (because of the narrow widening) was also made by the in-house review team as a way to facilitate and expedite the construction process as well as the MOT necessary for construction, but was not accepted at that point.

S.P. No. 55100-3507, FPID: 219838-1-52-01 (Leon County)

Reason: The typical section in the plans specified Type SP Traffic level 4 Superpave Asphalt for resurfacing and as the structural course on the widening and paved shoulders. Due to the sequence of construction necessary for the widening and shoulder pavement construction and the compactive efforts needed to meet compaction requirements, the contractor requested to use Type S asphalt in lieu of the Superpave Mix.

The Department reviewed the contractor's request and determined using the Type S on the shoulders would eliminate displacement of the underlying material that may occur during the compaction process that would be required to achieve density in the Superpave Asphalt.

Decrease = \$158.60

Response: This supplemental agreement was not the result of a design error. However, the sequence of construction could have been altered a little and Type ABC-3 specified for the paved shoulder base and this problem would have been eliminated. ■

Supplemental Agreement Report-March

**BRIAN BLANCHARD,
DISTRICT DESIGN ENGINEER**

This is the Supplemental Agreement Report for the month of March, 1999. The four (4) categories of supplemental agreements that are included in this month's report are codes 007, 101, 107 and 112.

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. 46160-3517, FPID: 217984-1-52-01 (Bay County)

Reason: Improvements to the project provided for milling and resurfacing of the existing road with turn lane and intersection improvements. Subsequent to construction, it was requested by the City of Panama City Beach to allow for incorporation and installation of three additional turn lanes. One at North Glades Trail, Lantana Street and North Gulf Boulevard along SR 30A (US 98). The Department concurred with the City of Panama City Beach that the construction of these turn lanes would enhance the traffic flow and safety along the US 98 corridor.



Increase = \$168,276.29

Response: This supplemental agreement was not the result of a design error. These 3 locations were not identified in the scope for turn lane construction.



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

S.P. No. 55090-3535, FPID: 219814-1-52-01 (Leon County)

Reason: The contract provided for improvements to SR 366 (St. Augustine St.) located in the City of Tallahassee. The Department determined because of the location of the project and the high volume of traffic using the facility, that an Off Duty Law Enforcement Officer was needed to enhance safety for the traveling public and construction personnel on the project.

Increase = \$24,000.00

Response: This supplemental agreement was the result of a design error.

This supplemental report serves as a reminder to designers to include the item for Off Duty Law Enforcement when the project meets the criteria given on page 10-38 (section 10.16.2) of the Volume I, Plans Preparation Manual.

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

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

Reason: Provide one off duty law enforcement officer with a marked law enforcement vehicle. A substantial number of motorists were not obeying the speed limit restriction near the paving operation, creating an unsafe environment for workers around the paving machine.

Increase = \$12,120.00 (2 work orders)

Response: This supplemental agreement was not the result of a design error. This project did not meet the criteria given in section 10.16.2 of the PPM describing the conditions to consider for use of Off Duty Law Enforcement, however this list does not preclude the use

of this item for other circumstances. Section 10.16 does say "Off-duty law enforcement services shall not include patrolling or speed enforcement and it should never be assumed that the presence of Off-duty law enforcement will deter speeding".

Description Code 112: Project phasing or plans components not constructable as shown.



S.P. No. 55003-3518/3527, FPID: 219717-1-52-01 (Leon County)

Reason: The design of this project (Miccosukee Rd.) has near balanced earthwork between cut areas and fill areas. However, phase II was mostly fill areas and phase V mostly cut areas. The project phasing resulted in the excavated material from phase V not being available as needed for phase II. The borrow item had to be overrun to supply the necessary fill in phase II.

Increase = \$301,221.50

Response: This supplemental agreement was the result of a design error. The designer should have taken the phasing of the roadway into consideration when calculating the earthwork.

This report serves as instructions to the designer that if a project is being done in phases and it has been made mandatory that the phasing be followed on the project. Consideration will have to be given to what effect the phasing will have on the earthwork and adjustments or special instructions will have to be provided in the plans. MOT phasing and detour construction should also be considered and coordinated with earthwork construction.

S.P. No. 55070-3515, FPID: 219822-1-52-01 (Leon County)

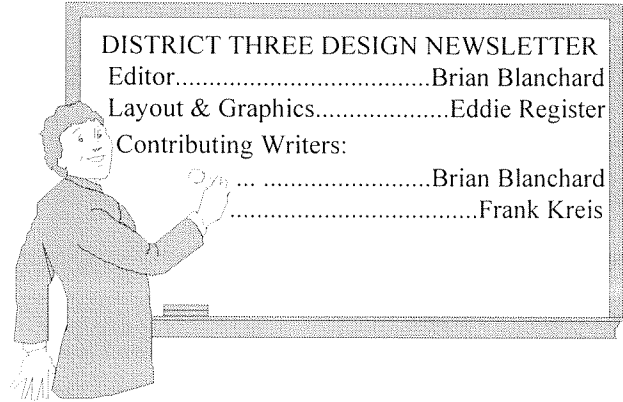
Reason: Improvements to this contract included the installation of a concrete box culvert, structure S-7 & S-8 on SR 20. The plans called for the structure to be phase constructed with two one lane detours. Existing overhead power lines on both sides of the roadway obstructed the contractor's ability to install the temporary sheet piling necessary for lateral support of the detour fill section. Subsequently, the contractor requested to construct a two lane detour on adjacent property outside the right of way limits and avoid conflicts with the existing utilities. He secured the necessary right of way from the property

owner.

Increase = \$23,497.40

Response: This supplemental agreement was the result of a design error. The designer should have field reviewed the project to ensure the detour was constructable as proposed.

This report serves as a reminder to the designer that when designing detours it is imperative that a field review be performed to determine the best options to use. Consideration should be made for utilities when selecting which side or sides of roadway will be used as well as fill and cut and wetland considerations. The designer should also keep in mind that construction of temporary sheet piling is an expensive operation that should be minimized or eliminated if possible. The acquiring of a temporary easement may be a cheaper alternative to sheet piling if the project already involves the acquisition of right of way.



Design Conference

April 26, 1999

Bay Point Marriot , Panama City, FL

For the convenience of those planning to attend the Design Conference, we have included below a location map showing directions to the Bay Point Marriot Resort. To register for the conference, please call Judy Cook at (850) 638-0250 ext. 422.

