CHAPTER 3 – DESIGN PROJECT MANAGEMENT

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Topic

Introduction

The term Project Manager (PM) is a general term used throughout this chapter for the Florida Department of Transportation (FDOT) employee responsible for managing the design of a project. Unless specifically indicated otherwise, PM refers to the FDOT Design PM.

This chapter provides references and guidance for PMs responsible for designing projects and preparing plans, specifications and estimates. This covers the knowledge areas needed to manage the design and completion of contract documents for the construction letting of a project in addition to the basic project management knowledge areas included in **Part 1** of this handbook.

The complete design process is explained in **Procedure No. 625-000-007**, ***Plans Preparation Manual (PPM), Volume 1***, and Chapter 2 of **Procedure No. 625-000-008**, ***PPM, Volume 2***. A design Project Manager (PM) should be familiar with these references. Other useful references include:

- ***Design Standards*** (**Procedure 625-010-003**)
- ***Drainage Manual*** (**Procedure 625-040-002**)
- ***Utility Accommodation Manual (UAM)*** (**Procedure No. 710-020-001**)
- ***Basis of Estimates Manual*** (**Procedure No. 600-000-002**)
- ***Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (Florida Greenbook)*** (**Procedure No. 625-000-015**)
- ***Florida Intersection Design Guide***
- ***The Median Handbook***
- ***Driveway Information Guide***
- ***Roadway Design Bulletins***
- ***Structures Manual***
- ***Structures Design Bulletins***
- ***Public Involvement Handbook***
- ***Standard Specifications for Road and Bridge Construction***
- ***AASHTO Policy for Geometric Design of Highways and Streets (Green Book)***
- ***AASHTO Roadside Design Guide***

Design Objectives and Criteria

The ***Plans Preparation Manual, Volume 1*** sets forth geometric and other design criteria, as well as procedures, for Florida Department of Transportation (FDOT) projects. The information contained applies to the preparation of contract plans for roadways and structures. The PM must be familiar with criteria and procedures contained in this manual and understand how they apply to the project. The PM may depend on the discipline designer or specialist to be responsible for the selection and application of the appropriate design criteria; however, the PM is responsible for ensuring that all disciplines and project activities come together in a set of contract plans for the project.

Many of the activities necessary to define a design project scope and its parameters are outlined in Chapter 13 of the **PPM, Volume 1**. This chapter, the Initial Engineering Design Process, describes the expectation in the initial engineering phase, discusses initial data sources and the establishment of the project scope, objectives, budget, and schedule. The PM should review the information in this chapter before finalizing the scope of work for the project, or prior to preparing a scope of services for any consultant services on the project.

Initial Data Collection

Required data collection should be specifically tailored for each individual project. Defining data necessary to support the design processes established by the project scope is the first step. Sources may vary, including any or all of the following:

- As-built plans and existing right of way maps
- Straight line diagrams
- Project Development & Environmental (PD&E) Reports and environmental documentation
- Planning Studies
- Efficient Transportation Decision Making (ETDM) Program Screen
- Project Concept Report
- Interchange Justification and Modification Reports
- Surveys (ground and/or aerial)
- Geotechnical reports
- Maintenance records for current maintenance rating data
- Field reviews
- Previous studies by others
- Preliminary engineering plans
- Traffic data

- Crash records
- Utility plans and other records
- Local agencies

A good practice before finalizing the scope is to conduct a field review with all the disciplines that might be involved in the project.

When available data have been collected, the additional project data collection requirements should be developed, to include a timeline and deliverables. The PM should collect all the above information that is available and record it electronically, if possible. Assembled background information can then be presented to the consultant at the Notice to Proceed, meeting to allow a much faster start on the design work. Data collection is best done by a consultant and should be included in the scope of services. Coordination with appropriate disciplines and/or sub consultants should take place early in the process so that all interested parties have a clear understanding of their roles and responsibilities during the data collection phase.

The Design Process

The FDOT design process includes a number of important steps. Key parts to this process are discussed in this section. The PM must know this process and be able to use it effectively.

Verification of PD&E

An important early step is to verify commitments affecting design, made during the PD&E phase as documented in the PD&E and the Preliminary Engineering Reports. Many of these commitments (i.e. landscaping and other aesthetic enhancements) require local agencies to fund them in whole or in part and also usually written maintenance agreements. The Design Project Manager is responsible for following through with these commitments during the Design Phase.

The design phase may overlap the PD&E phase, which can result in a decrease in production time, efficiencies in data collection, public involvement, engineering design, and better overall project consistency. When overlapping these phases, both the PM and the PD&E PM must work closely to ensure commitments and issues are addressed.

When the Design Phase overlaps the PD&E Phase, the PM must verify the Federal Highway Administration's concurrence with the Location Design Concept Acceptance (LDCA) prior to advancing the project beyond the Phase II (60%) submittal. Work beyond the Phase II submittal is considered Final Design, and Federal Regulations prohibit advancing into Final Design prior to LDCA receipt.

The PM must coordinate with the PD&E PM, or the District Environmental Management Office to ensure the project has received LDCA. The PM will need

to convey this information to the District Federal Aid staff in the District Work Program Office if there are federal funds in the design phase. This verification can take place at any point during the design process prior to acceptance of the Phase II submittal.

Phase Submittals and Reviews

Many of the activities necessary to complete the design of a project are outlined in Chapter 14 of the **PPM, Volume 1**. This chapter, the Final Engineering Design Process, describes the activities to prepare contract plans and specifications that can be used to bid and construct the project with a minimum of field changes, delays, and cost overruns. The PM must be familiar with the activities described in this chapter to ensure the proper completion and assembly of a contract plans package.

The PM is usually the person responsible for determining the plan phase reviews required for a project and ensuring that the reviews are completed. The PM is responsible for the adequacy of the design submittals and for the coordination of reviews between the Department and the consultant. *Design Submittals,* Chapter 16 of the **PPM, Volume 1**, provides an overview of most of the various items of information which may be required from different sections or departments during the design process. Projects may not require submittals at all phases to meet project objectives. The PM should determine the appropriate phase submittals for each project. Some reasons to adjust phase reviews on a project include project complexity, production schedules, political commitments, and the availability of information within the specific stage of the project.

The **Plans Preparation Manual, Volume 2** sets forth requirements for the preparation and assembly of contract plans for FDOT projects. The information applies to the preparation of contract plans for both roadways and structures design projects. The consultant, or Engineer of Record (EOR), is responsible for the design plans. However, as already noted, the PM is usually responsible for coordinating the plan phase submittal reviews. *Sequence of Plans Preparation*, Chapter 2 of the **PPM, Volume 1** provides a systematic design process for preparing plans and performing the required phases of review and revision to ensure technically correct and clear plans. The PM should be familiar with the information provided in this chapter.

Some simple projects may need only a 15% and a 90% phase submittal. Sometimes, additional or intermediate submittals may be required to ensure the progress of a project. Examples would be a 15% submittal, usually defined as horizontal and vertical alignment, and a 45% submittal, usually defined as addition of drainage details and design approaches to the maintenance of traffic. Coordination with all potential reviewers for intermediate submittals is important so they understand the purpose and intent of the intermediate phase submittals.

The initial phase submittal should identify need for Design Exceptions and Design Variations, and this information should be updated with each subsequent

submittal. Please see the Plans Preparation Manual, Chapter 23 for more information on these important documents.

Submittal requirements should be determined early and included in the consultant scope of services. The Quality Control (QC) plan and sufficiency checklists can be used to ensure the completeness of any particular phase submittal. Refer to Part I, Chapter 16 of the ***Project Management Handbook*** for more information on the QC process.

All reviewers do not need to see all phase submittals. A Plans Review Matrix, included in Section 2 of the project Scope of Services, is helpful for managing who should participate in each specific phase review. The Scope of Services should also indicate whether the Department or the consultant is responsible for distribution of plan sets for review. To bring conclusion to any submittal, review comments must be addressed and final resolution of any issues achieved.

> The FDOT PM should manage the review process and ensure that the consultant is not delayed because of late reviews. Likewise, it is the consultant project manager's responsibility to ensure that the project's scheduled review times are not compromised by late or incomplete submittals.

Coordination with all reviewers can expedite the process. Decisions reached should be documented and communicated to the review team.

All review comments should go to the PM, who is responsible for transmittal to the consultant. The PM should identify conflicting comments and resolve them as necessary. A comment resolution meeting may be held to deal with comments and responses that require resolution. The consultant PM should work to resolve all engineering-related issues by Phase II (60%) submittal, especially if the project requires new right of way. NOTE: Districts all use a Web-based Electronic Review Comment (ERC) system to facilitate and manage the review and comment process.

Plans Processing

The PM's objective in a design project is to complete the plans, specifications and estimate (PS&E) so that a contract can be advertised and awarded for the construction of the project. The *Plans Processing and Revisions,* Chapter 20 of the **PPM, Volume 1**, describes in general terms the critical activities required to process the PS&E for letting. It identifies the transmittal forms, certifications and other documents prepared by the District and the various offices involved in processing a PS&E package. This chapter also outlines the revision process and the steps to resubmit a project that has been withdrawn from letting. It is also the PM's responsibility to ensure any electronic submittals are checked and comply with the Department's CADD requirements for electronic deliverables.

Specifications: As with other major aspects of a project, the preparation of the project specifications package is an important step. An understanding of the

governing order of contract documents will aid in understanding the process. This information can be found in Section 5.2, Division I of the **FDOT Standard Specifications for Road and Bridge Construction**. The rule of thumb is that the most project-specific documents take precedence over the least project-specific documents. Coordination with the District Specifications Department will aid in the production of this document.

Certain pay items trigger the need for Technical Special Provisions (TSPs) to be generated. TSPs need to be identified as early as possible during the design to allow for proper review prior to final submittal. The TSPs, signed and sealed by the engineer who developed them, are included in the Specifications Package.

Some projects require the use of Developmental Specifications. Developmental Specifications are specifications developed around a new process, procedure, or material approved for limited use by the State Specifications and Estimates Office. These specifications are signed and sealed by the FDOT's professional engineer responsible for authorizing their use and monitoring their performance in the field. The PM is responsible for obtaining this authorization.

The current specifications workbook should be obtained from the District Specifications Department prior to beginning the process. Since the development of these workbooks is a continuing process, it is important to have the most recent edition.

The ***Specifications Handbook*** provides additional information.

Estimates: The estimated cost of construction must be completed at each phase to ensure compliance with the Work Program. The engineering design estimate process is discussed in Chapter 17 of the **PPM, Volume 1**. The engineer's estimate of construction cost and contract time is one of the last activities performed on a design project. To do a quality estimate, the engineer must have the following material available:

- Complete plans, including all components
- Complete specifications, including supplemental specifications and special provisions
- Design Standards, referenced to the key sheet of the contract plans
- Utility work schedules
- Basis of Estimates Manual

The specifications establish the method of measurement, basis of payment, and pay items for work specified. The Master Pay Item List contains design aids, notes, and computation information to aid the engineer in preparing the cost estimate.

Engineer's Report: The engineer's report, often called the Project Design Documentation, should be included with all phase submittals on major projects. It should include information from any project development stages that occurred

prior to the design phase along with the backup information and calculations for the project design, correspondence, certifications and overall cost estimate for the project. It should be well organized and referenced so that anyone seeking information from it can find it quickly and easily.

Specific Design Project Issues and Coordination

Variations and Exceptions

Design Variations are necessary when deviations from FDOT criteria occur. Design Exceptions are necessary when neither the FDOT criteria nor those of the American Association of State Highway and Transportation Officials (AASHTO) can be met for any one of the following critical design elements, which are typically safety-related:

- Design speed
- Lane widths
- Shoulder widths
- Bridge widths
- Structural capacity
- Vertical clearance
- Grades
- Cross slope
- Super-elevation
- Horizontal alignment
- Vertical alignment
- Stopping sight distance
- Horizontal clearance

Refer to Chapter 23 of the **PPM, Volume 1** for guidance on Design Exceptions and Variations. Chapter 13 of the **UAM** provides guidance on Utility Exceptions.

It is of paramount importance to determine, as early as possible during the design phase of a project, if any additional Design/Utility exceptions or Design Variations will be required that have not been previously processed and approved. These must be submitted and approved early in the design phase in order to avoid possible rework and schedule delays.

If Exceptions involve utilities, refer to the criteria and process described in the UAM rather than the PPM.

Resurfacing, Restoration, and Rehabilitation (RRR) Projects

RRR is defined as work undertaken to extend the service life of an existing highway and/or enhance highway safety. RRR and other smaller projects are generally limited by the scope of work to be completed, physical constraints, or economic feasibility, and are geared toward rectifying specific deficiencies within a project corridor. Design criteria for RRR projects are in Chapter 25 of the **PPM, Volume 1**.

Structures Design

Many design projects include structures such as bridges, culverts, sign and signal supports, retaining walls, noise walls or perimeter walls. Additional structures design information and references can be found in Chapters 26 through 33 of the **PPM Volume 1**, and on the ***Structures Design Office*** website.

The PM is responsible for the adequacy of all design submittals and for the coordination of reviews between the Department and the consultant. *Bridge Project Development*, Chapter 26 of the **PPM, Volume 1**, provides an overview of the structures design process, including the classification of structure, office responsibilities, the development process, phase submittals, and the assembly of the plans.

Projects Involving Bridge Demolition: Projects involving the demolition of a bridge require a notification to other agencies of the availability of the resulting debris, if the material is not used by FDOT. This requirement and the reason for the notification are provided in Chapter 13, Section 13.5.2.3 of ***PPM, Volume 1***. The PM must coordinate the notification to Federal, State and local governments of availability of bridge demolition debris for use as shore erosion control or stabilization, ecosystem restoration, and marine habitat restoration. This notification will take place after the completion of the BDR, or 30% plans. The notification will identify the quantity of debris and when the debris will be available (general time estimate, e.g., fall, 2009). The Federal, State, or local government agency must reply within a reasonable time frame to allow for the development of a Joint Project Agreement (JPA).

The following contacts may be used to meet the requirements of this notification:

- Artificial Reef Program in the Fish and Wildlife Conservation Commission at this email address: artificialreefdeployments@myfwc.com
- The Environmental Technical Advisory Team (ETAT) members established within each District to work with FDOT as part of the Efficient Transportation Decision Making (ETDM) process using the following e-mail distribution lists:

  District 1: d1_etat@fla-etat.org District 2: d2_etat@fla-etat.org

District 3: d3_etat@fla-etat.org District 4: d4_etat@fla-etat.org

District 5: d5_etat@fla-etat.org District 6: d6_etat@fla-etat.org

District 7: d7_etat@fla-etat.org Turnpike: turnpike_etat@fla-etat.org

An example e-mail notification is provided at the end of this chapter. When the ETAT distribution list is used, the sender will receive a copy of the sent e-mail with all of the recipients shown. If no agency expresses an interest in the material, the disposal of bridge debris will be addressed in the plans in accordance with current guidelines and specifications.

If an agency wants the bridge debris, the PM must coordinate with the receiving agency and the District Construction Engineer to develop a JPA. The receiving agency will be responsible for all additional costs associated with the processing, delivery, placement, and use of the material. A draft Bridge Debris Use Agreement is provided at the end of this chapter. The PM should not modify this agreement or its covenants. The conditions contained in the agreement must be included in the construction contract documents.

Maintenance of Traffic

All highway design plans must include provisions for the maintenance of vehicular, bicycle and pedestrian traffic through construction work zones. The Traffic Control Plan (TCP) addresses this issue. The TCP is part of the project design. Chapter 10 of the **PPM, Volume 1** provides guidance for the design and phase submittals for the project's traffic control plans. **Procedure No. 625-010-010**, ***Maintenance of Traffic Training***, requires individuals responsible for developing the TCP to have a current Advanced Work Zone Traffic Control Training certification. A current list of Maintenance of Traffic Providers is available at ***Approved MOT Training Providers***. The preparation of the TCP should begin early in the project. In many cases, maintenance of traffic issues may directly influence the final geometrics and materials specified in the final design. Preparation of the TCP should be a multi-disciplined effort and involve individuals with expertise in traffic engineering, including traffic planning, highway design, drainage, and construction. Maintenance of traffic policies and standards are contained in Index 600 of the ***Design Standards***. Anticipated Levels of complexity for traffic control plans are in Chapter 19 of the ***PPM, Volume 2***.

Value Engineering

Value Engineering (VE) is the process in which specific major projects are evaluated to determine if changes to the project concept can result in significant cost savings or an increase to the overall value of the project to the public. Project Managers should review **Procedure No. 625-030-002**, ***Value Engineering Program***, for a detailed explanation of the value engineering process. Not all projects are selected to undergo a VE review. The District Value Engineering Coordinator should be contacted to determine if a project has been selected as a candidate for a VE review.

Normally, if a project has been selected for VE during the design phase, it takes place between the Phase I and Phase II submittals. In order for the VE team to provide the best input, they will need the full background and supporting documentation for the project. This information includes all preliminary work that was done on the project prior to the commencement of the design phase. In addition, all back-up information on which the proposed design is based should be made available. The most effective VE takes place when a comprehensive cost estimate has been prepared for the VE team. Therefore, a concerted effort to prepare a detailed cost estimate should be made and completed before the start of the VE process.

The consultant PM is usually responsible for clearly explaining to the VE team the scope of the project and all constraints and commitments. The PM should also be aware that the VE process often generates many questions that need to be answered during the course of the process. As a result, the PM and the project discipline leaders should be available to provide answers or additional information as necessary. Cooperation among the PM, design team, and the VE team is imperative in order to take full advantage of the VE process.

Regardless of whether or not a project is selected for a formal VE review, VE principles should be applied continuously to all design projects.

Right of Way Acquisition

Right of Way (R/W) requirements should be identified as early as feasible in the project. The District Right of Way Office can provide valuable insight to many issues, including maintenance of property access. The awareness they can bring to the design process can save a considerable amount of redesign work and acquisition cost. The R/W office should be consulted from the early stages of design through completion. On many projects R/W acquisition costs exceed the cost of construction. Early involvement of R/W staff will help achieve a proper balance of project objectives and total cost. R/W may be required for utilities as part of the project. Early establishment of utility property rights and R/W requirements is essential to keep the project on track.

Preliminary R/W requirements should be identified at the completion of Phase I (30%). Final R/W requirements should be submitted after completion of Phase II (60%) plans. At this point a field review should be held with the PM, the consultant PM, and R/W staff to ensure:

- Mainline R/W requirements are complete.
- Pond R/W requirements are complete.
- Mitigation R/W requirements are complete.
- Phase II plans are complete.
- Possible parcel modifications have been investigated and resolved.
- Utility easements or R/W requiring subordination are identified.

- Necessary easements are identified.

It should also be noted that the R/W acquisition process usually drives the project schedule, once the R/W requirements have been defined. Therefore, the sooner these requirements are set, the sooner the entire project can be completed. The participation of the District R/W Office is particularly important on a design project with a compressed schedule. The R/W phase can be delayed if the PM does not identify the R/W requirements on schedule. R/W maps and documents also will be delayed. The R/W process is described in Part 2, Chapter 4, of this handbook.

The R/W Office sometimes makes commitments (preservation of trees, driveway modifications) to property owners during the R/W process. The PM must know about these commitments, and they must be reflected in the plans if appropriate.

Traffic Design

Traffic control devices and intelligent transportation system (ITS) deployments are necessary to help ensure highway safety by providing the orderly and predictable movement of all traffic, motorized and non-motorized, throughout the highway transportation system, and to provide such guidance and warnings as are needed to ensure the safe and informed operation of individual elements of the traffic stream. The design and layout of signs, signals, pavement marking and lighting should complement the basic highway design. Design requirements for signs, markings, lighting, and signals are explained in Chapter 7 of the **PPM, Volume 1**. Turn lane requirements and lengths are usually established prior to the design phase of a project. Any changes need to be verified by performing a capacity analysis to determine if there is an adverse effect on traffic flow. The ***State Traffic Engineering and Operations Office*** website provides additional information.

Utility Coordination

Utility Agencies/Owners (UAOs) are major stakeholders on a majority of transportation projects. Proper location and identification of all utilities on the project and coordination with all utility companies involved is an important aspect on every project. Chapter 5 of the **PPM, Volume 1** provides guidance and references for coordinating with UAO's and accommodating utilities during the design of projects.

The PM should be sensitive to utilities' interests and should take time to understand how utilities do business and build relationships. Face-to-face dealings with utility personnel are a very effective means of coordination. When possible, the project should be designed around the utility. If a utility relocation can be avoided, cost to the taxpayers (who are also utility customers) can be avoided. The PM should evaluate the cost of designing around a utility versus the cost of relocation. Constructability must also be considered. Such good-faith efforts will reap benefits when relocations are truly necessary.

Close coordination with the District Utilities Office is essential, as knowledge and experience of its staff can be a major help throughout the process. The **UAM** is established to regulate the location, manner, installation, and adjustment of utility facilities along, across, or on any transportation facility under the jurisdiction of the FDOT. The PM should be familiar with this manual and work closely with the District Utilities Office during each phase of the design project.

The PM should also be aware that FDOT also owns and operates utilities that are not documented within the ***Sunshine 811*** system. These include water, sanitary sewer, power, and communications facilities. Their location can only be determined by contacting the various FDOT offices responsible for maintaining or contracting maintenance of these facilities. Examples of these facilities include rest area (water, sanitary), lighting, traffic counters, fiber optic, and signalization.

Utilities are one of the most frequent sources of both project delays and claims. It is essential that utility conflicts be properly identified and resolved early.

Railroad Coordination

Coordination with railroad companies is similar to utility coordination with respect to how and when the coordination process takes place. A few other important aspects must be considered when dealing with the railroads. While only some utilities hold compensable interests for the properties they occupy, all railroads own the R/W that they occupy. Any encroachment on railroad R/W will require a permit from the railroad company. Any permanent use of railroad R/W will require a Use Agreement. Both will normally require compensation and will often involve lengthy reviews by the railroad company.

Refer to the **UAM**, and Chapter 6 of the **PPM, Volume 1** for additional general railroad criteria information.

Railroad coordination and permitting is a very lengthy process that should be initiated as early in the project as possible. Discussions with the District Railroad Coordinator should be held prior to any direct communication with the railroad in question. Railroads usually allow only their own forces or contractors to perform any adjustments to their facilities. Therefore, the maintenance of traffic plan for the project should include appropriate information for railroad contact personnel and any special considerations that the department's contractor needs to consider for the bidding process or during the actual construction of the project.

Public Transportation Coordination

Coordination with the District Public Transportation Office (PTO) (also known as the Office of Modal Development in some districts) is necessary on any urban design project. Early coordination can avert design problems such as special Americans with Disabilities Act (ADA) requirements and unique MOT problems associated with bus stops. Usually the PTO is also involved with airport

coordination. Any project that is in the vicinity of an airport should be reviewed early. Potential problems are locations and elevations of structures, signs and lighting. The height of construction equipment can also be a problem.

Local Government Coordination

Local governments are often key stakeholders on any given project. Therefore, they need to be kept informed of progress of the project throughout its life. At the beginning of the project, the PM should learn if any commitments have been made to any local agencies during any previous planning and project development phases. When this information has been obtained, a coordination meeting should be scheduled so that project objectives can be relayed to appropriate personnel. Since local agencies have a vested interest in the project, they should be afforded an opportunity to provide input to the design process. This opportunity can be easily provided through the standard phase reviews and effective coordination on the project. Since elected officials and local agency personnel can change during the course of a project, the PM should keep abreast of such changes and ensure that appropriate lines of communication are maintained. Being proactive with this process can create many allies.

Some coordination issues with local governments to keep in mind include:

- All required agreements should be identified as early as possible. Lighting, landscaping, and others frequently are overlooked and result in project delays.
- Local government-owned utilities sometimes are very small and not as experienced in dealing with FDOT as privately owned companies, so they may require some additional effort.
- Many local agencies do not have the engineering resources needed for in-depth technical coordination of major projects. The PM must be sensitive to the technical capabilities of the local agencies and tailor requests for reviews and other input accordingly.
- Required Agreements must be coordinated early and managed well to avoid delays.
- Any agreement that requires board approval by the local government must be reviewed by the local agency staff and then placed on the advertised agenda. This process is usually time consuming and must be anticipated in the project schedule.
- Maintenance agreements must be coordinated early to ensure that they are completed prior to production.
- Perimeter Wall requests and agreements: The initial assessment for the use of a perimeter wall should typically be performed during the Project Development and Environment (PD&E) process and only when such a wall is requested by a local municipality or a substantial group

of affected residents/property owners. The final decision for the use of a perimeter wall should be made during the Design Phase when the final conditions and cost are available for consideration. If a perimeter wall is proposed, the Department will approach the local government during the Design Phase of the project to seek concurrence on the incorporation of the perimeter wall into the project. The local government will be responsible for obtaining support from the majority (simple majority) of the adjacent residents/property owners prior to construction of a perimeter wall. FDOT will work closely with the local municipality to determine final wall locations, color, texture, etc. For walls located on non-FDOT owned lands, the local government or land owner assumes the responsibility for all maintenance, including structural repairs. The local government or land owner will provide formal concurrence with the recommendation (resolution or letter) and a Maintenance Agreement for the perimeter wall, if applicable. To assure that the use and costs of perimeter walls are consistent across the state, guidelines containing the process and design methodologies to be used when considering the use of perimeter walls can be found in Chapter 32 of the **PPM, Volume 1**.

Project Agreements

During the design of a project, it is often necessary to enter into written agreements with local governments, utilities, or other entities regarding some aspect of the project. Many agreements involve design and construction phases, but agreements are also used in planning, PD&E, and R/W way phases of work. The PM is commonly responsible for preparing the agreement, obtaining the signatures, and encumbering any funds if necessary. Formats and local requirements vary widely, so the PM should coordinate closely with the District staff responsible for the activities included in the agreement. Because agreements are needed for critical activities such as utility relocation and drainage work or are specific maintenance agreements required for letting the project, they frequently are on the critical path of a project. The PM should recognize that execution of an agreement may not have the same urgency for the other agency as for FDOT, so the process should begin early. A reasonable objective is to have agreements executed prior to completion of Phase 2 (60%) plans. Appendix C of this handbook contains definitions of various types of agreements commonly used by FDOT.

The following are some of the agreements that may be necessary during design:

- Utility relocation or construction in FDOT right of way
- Work on railroad crossing or within railroad right of way
- Local advance or partial funding of all or a portion of the work in the projects
- Combining a local project to be bid with the FDOT project

- Joint use of drainage ponds and other facilities
- Maintenance agreements for the entire project, or for elements such as lighting, landscaping, signals or aesthetic enhancements.
- Access or temporary use agreements
- Road closure agreements

Community Awareness Plans

Public participation is an important element of all FDOT projects, from planning and PD&E through design and construction. During planning and PD&E, the emphasis is on participation in the decision-making process concerning the need for a project and its basic concepts. In the design phase, the emphasis changes to one of informing the public of the project. People are much more likely to tolerate the inconvenience of a construction project if they understand the need for the work and have good information about the project. Therefore, emphasis during the design and construction phases is on communicating with the community. During design there are also opportunities to work out details of the project to minimize negative impacts.

Figure 1
Community Awareness Plan

Each design project should have a Community Awareness Plan (CAP) which will carry forward into the construction phase. The CAP can be developed by the PM, or it can be made part of the consultant scope of services. The CAP should explain the activities which will take place to keep the community informed of the project and to minimize negative impacts. The scope and complexity of a CAP will vary according to the expected community concern about a project. Projects can be categorized into one of four levels of public concern they are likely to generate, as illustrated by Figure 1. Phase I of plan development is the most important for CAP activities. Decisions affecting access management, maintenance of traffic (MOT), possible interruptions of utility service, and

drainage, are almost always of concern to the public. The PM must have a good understanding of the impacts on the community and the concerns and needs of the public. Changes in vertical alignment are likely to create access problems during construction. Drainage during construction can also be affected.

Also, legislation enacted in 2010, 335.199 F.S., requires a public hearing for any project on the State Highway System which will divide a state highway, erect median barriers modifying currently available vehicle turning movements, or have the effect of closing or modifying an existing access to an abutting property owner. Property owners, municipalities and counties must be notified at least 180 days before the design of the project is finalized, providing a written explanation of need to modify access and informed they will be given an opportunity to provide comments to the FDOT regarding potential impacts. At least one public hearing in the jurisdiction where the project is located shall be held to receive public input on how the project will affect access to businesses and the potential economic impact of the project on the local business community.

A CAP should, as a minimum, include the following:

- Date of the plan and each revision.
- Name of person initiating the plan.
- A description of the project and anticipated level of public concern.
- Identification of city, county, and other local officials that may be involved in the project and how they will be kept informed of project activities.
- A summary of expected traffic impacts during construction.
- A description of the community and properties affected by the project.
- A description of any access changes including median construction or revisions and any driveway drive closures or modifications affecting property access.
- A discussion of removal of street parking (if any) and how it will affect adjacent properties and businesses.
- Special features and amenities that will be part of the project, including landscaping and esthetic treatments.
- Construction schedule, contract time and consideration for alternative contracting methods.
- A list of known community concerns and a strategy for addressing each of them. The PD&E Report will be a good place to begin this list.
- A list of all PD&E and right of way commitments made to the public and how they are to be addressed.

- A plan for news media relations (for Level 4 and possibly Level 3 projects), developed in cooperation with the District Public Information Office. A public information campaign may be appropriate for very large projects.
- A summary of planned public information meetings and/or required public hearings.

The media can be of great assistance to FDOT in encouraging citizen input and keeping the public informed about a project. The PM should work with their District Public Information Office (PIO) to develop and implement the CAP.

The PM should be aware of any unique CAP requirements of the District. The **Public Involvement Handbook** is an excellent resource to use in developing a CAP. The CAP should be updated throughout the design process and then passed to the construction PM for use during the construction phase.

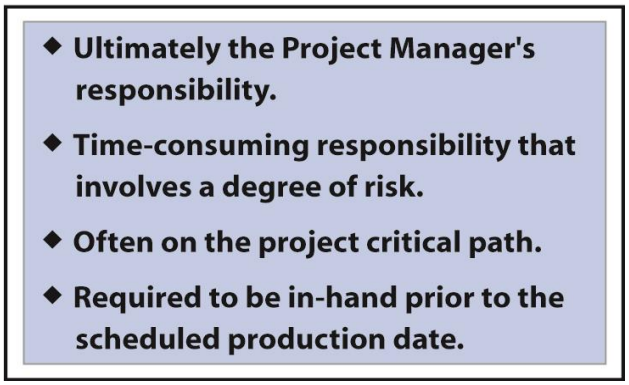
Permits

Environmental permits are intended to minimize adverse environmental, water quality or water quantity impacts of construction and operations. Permitting requirements enacted by legislation are administered by regulatory agencies. These agencies have established distinct thresholds, exemptions, and permit conditions specific to their agencies.

Environmental permits are required from one or more regulatory agencies for most land alterations including: (1) addition of impervious surface; (2) construction, alteration or abandonment of stormwater management facilities; (3) bridge reconstruction and repair; (4) major shoreline stabilization projects; and (5) wetlands or surface water impacts. Limited types of construction activities may be exempt from permitting requirements of regulatory agencies. These limited construction activities may include milling and resurfacing, culvert extensions or replacement with no wetlands or surface water impacts, and minor maintenance and repairs. FDOT has committed to include utility work in environmental permits if the utility has completed the necessary work on time and the Department of Environmental Protection (DEP) has no objections. Separate review fees may be required by DEP. Permit applications are reviewed by the permitting agencies for engineering soundness and effects of the project on flood protection, water quality, and the environment.

The PM must coordinate permitting needs through the District Permits Coordinator, who is responsible for identifying all permitting involvement for a project. The PM must include time in the project schedule for all the required permitting activities, including wetland identification and mitigation, pond sitting, the bridge hydraulics report and no-rise certification. Permitting is a time-consuming task that involves a degree of risk. Permitting tasks often are on the project critical path. The PM is responsible for ensuring all necessary permits have been acquired for the project. If the permits requiring signatures are not

Figure 2
Permits Are...



executed by the scheduled production date, the project will not be let on schedule. Figure 2 summarizes the key points of permits.

Efficient Transportation Decision Making (ETDM) Process

One benefit of the ETDM process, described in Part 2, Chapter 2 of the ***Project Management Handbook***, is early identification of potential project permits. In the Programming Screening process of the ETDM, the ETDM coordinator prepares a Programming Screen Notice that supplies the review agencies project and environmental information. Input received from Programming Screen will allow the PM to pursue the necessary environmental permits and approvals. By providing this information to the permit agencies early in the process, the PM may be able to request and receive state and federal permits as well as other authorizations and approvals at the end of the Project Development phase.

Permitting Authorities

Permitting authorities most often involved with projects include:

- United States Environmental Protection Agency (EPA): EPA is currently responsible for reviewing federal-aid highway projects located in areas of the Volusia-Floridian and Biscayne aquifers, which have been designated by EPA as Sole Source Aquifers.
- United States Army Corps of Engineers (ACOE): ACOE has authority to issues permits for activities involving the discharge of dredge and fill materials into waters of the U.S. including wetlands.
- United States Coast Guard (USCG): USCG issues permits for bridges or causeways in or over navigable waters of the U.S. and for causeway construction in all tidal waters of the U.S. The Federal Highway Administration (FHWA) is responsible for determining if a project will require a USCG permit.
- Florida Department of Environmental Protection (DEP): DEP is the state's permitting authority for the National Pollution Discharge

Elimination System (NPDES) program. An NPDES permit is required for storm-water discharge from large and small construction activities that disturb equal to or greater than one acre up to less than five acres of total land area. DEP also issues leases and easements to use sovereign submerged lands. DEP is the authority for wetlands and storm-water permitting in most of the panhandle of Florida in areas west of the Aucilla River in Jefferson County.

- Florida Water Management District (WMD): Five WMDs have been delegated authority by DEP to administer the state's Environmental Resource Permit (ERP) program in most areas east of the Aucilla River. The ERP program regulates activities in wetlands, treatment of stormwater, and certain issues pertaining to the use of sovereign submerged lands. The WMDs are: Northwest Florida, Suwannee River, St. Johns River, South Florida and Southwest Florida.

Permit Coordination

The District Permits Coordinator is responsible for acquiring all the necessary FDOT permits for a project. Coordination activities include the following:

- Conducting meetings and field reviews.
- Identifying potential permit involvement.
- Preparing and submitting permit applications, with all supporting documentation.
- Verifying permit compliance.
- Requesting permit extensions.

The Permits Coordinator will make all the permitting agency contacts for the FDOT and acquire the permits by the defined time in the project schedule. The PM must work closely with the Permits Coordinator to provide support, attend meetings when necessary, assist with timely issue resolution, make necessary plan changes, and report any schedule changes. The PM must monitor progress throughout the permitting process. During the process, the PM must work closely with the Permit Coordinator to provide support, attend meetings when necessary, assist with timely issue resolution, make necessary plan changes, and report any schedule changes. The PM must monitor progress throughout the permitting process.

Permitting Process

The permitting process begins in the PD&E stage of the project with the environmental documentation and the development of a Permit Coordination Package, all of which serve to give regulatory agencies advance notification of the project and potential environmental impacts. The PM should hold pre-application meetings and field reviews with permitting agencies early to define requirements prior to committing significant design effort. The PM should design

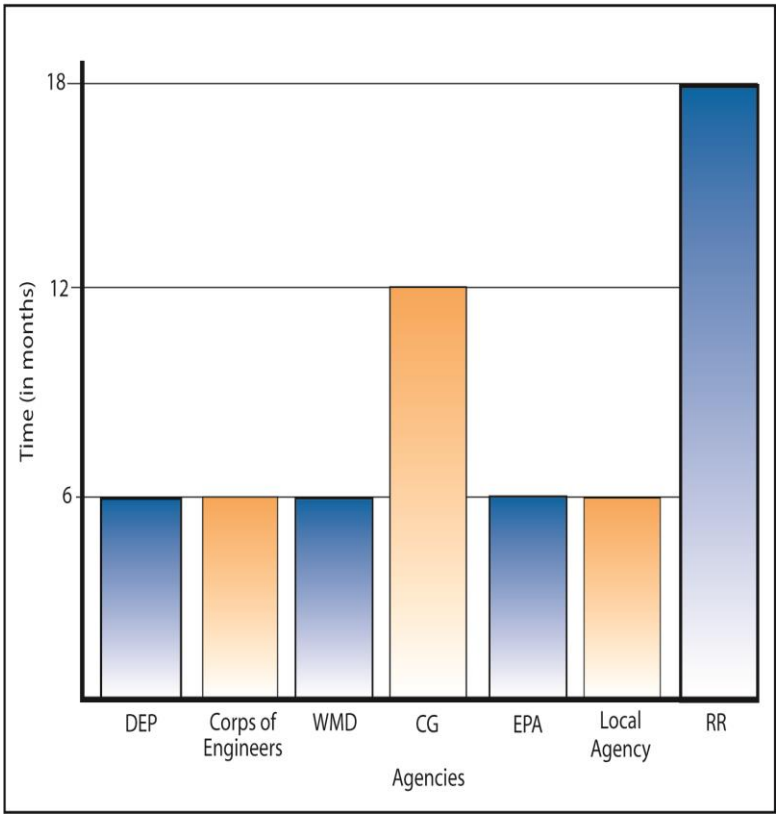
the project to minimize identified impacts and to fulfill all commitments made during the PD&E stage.

When design reaches Phase II (60%) completion, the Permit Coordinator will begin preparing permit applications. The PM should review and discuss the permit application with the Permit Coordinator prior to submittal. The Permit Coordinator will submit the permit applications when the plans are at approximately 70-80% complete, or 8-12 months prior to the District production date. Permitting agencies usually do not want to see the full plan set. The PM must coordinate any reduction in the plan set with the agency before submittal.

The Permit Coordinator will monitor the progress of the application, provide any additional information requested, and address and resolve any adverse comments or objections raised by the regulatory agencies. The PM must assist the Permit Coordinator in this process. Once the permits have been issued, they must be carefully reviewed. Particular attention should be paid to "Special Conditions" to ensure that all conditions can be accommodated. The Permit Coordinator will distribute the executed permit to the appropriate offices.

During each step of the process, the PM needs to monitor progress to ensure that all required permits are acquired on a timely basis. Meetings and field visits should be considered to clarify permitting agencies' concerns. The PM must notify the Permit Coordinator of any modifications in the project design that will affect permits. Changes in stormwater facility locations late in a project can substantially delay permits and adversely impact the project schedule.

Figure 3
Average Permitting Time by Agency



Permit Processing Time

Almost all state environmental permits must be issued within 90 days of agency receipt of a complete application, as defined by the permitting agency. Agencies frequently find applications incomplete and require additional information, extending the processing time. Thorough preparation and checking will reduce this risk but not eliminate it. Responding to all comments when an application is returned with a

request for more information is essential. Figure 3 offers a quick reference for permitting time requirements.

Post-Design Activities

Post-Design Services

The scope of services normally should include post-design services so that the Engineer of Record (EOR) is readily available when needed during construction. Both the PM and the consultant PM should retain a sense of ownership of the project all the way through construction. A good idea is for the EOR to attend the pre-construction conference and weekly construction meetings at least for the first 25% of the construction project. Responsibilities for updating plans and as-builts should be established. Anticipated requirements for EOR involvement should be coordinated with the Construction PM prior to scoping and negotiating Post-Design Services. Construction delays can be very expensive, so responsiveness is extremely important. The EOR contract is managed by the FDOT PM, so a communication procedure must be agreed to prior to beginning construction. All communications between the construction staff and the EOR can be routed through the PM. Alternatively, direct communication between the construction staff and the EOR may be the preferred procedure with the understanding that the PM will be informed of any cost commitments.

Errors and Omissions

Professional Engineers are accountable for the technical accuracy and quality of their work. FDOT and design consultant PMs attempt to minimize errors and omissions through quality control. However, mistakes do occur, and construction plans and contract documents may contain errors and omissions. Mistakes caused by a lack of due care or professional negligence can result in substantial construction cost overruns. Florida statute obligates the Department to pursue recovery of certain added costs and to incorporate corrective measures to prevent recurrence. The process is explained in **Procedure No. 375-020-010**, Errors, Omissions, and Contractual Breaches by Professional Engineers on Department Contracts.

Many steps in the design process are developed to avoid errors and omissions in contract documents. These include the project Quality Control plan (see Part I, Chapter 16, of this handbook), and constructability and bidability reviews. Exercising due care in the preparation of plans and construction documents is expected of all professional engineers.

If an error is found during the construction process, the construction engineer will determine the origin of the error. If the error is design-related, it will then be determined whether a premium cost has been incurred because of the design error. Premium cost is the difference that the Department has to pay above and beyond the price of the required work if the error had not occurred. The process allows the design consultant an opportunity to respond to any claim of error or omission. It is up to the district's management staff to decide if they wish to recoup these costs from the consultant in question.

Project Close-out

The main aspect of project close-out is to ensure that there are no outstanding administrative or financial issues and to ensure that all appropriate information is passed along to personnel who will be handling the construction phase of the project. It is important for the design consultant PM to submit the final invoice as soon as possible, clearly marked as "final."

> Any funds remaining in the design phase need to be un-encumbered so that they can be recycled back into the work program. Additionally, the design phase of the project must be completely closed out on federally funded projects before the post design services can be initiated.

The PM must submit final evaluations for the consultant on a timely basis. At this time, it is a good practice to review the project files to make sure they are in order and complete. A well-organized project file will pay dividends later if questions arise.

Another good practice is to set up a meeting with the construction personnel so that important information regarding the project can be passed along to those who are responsible for the construction aspect of the project. Issues such as R/W and access agreements need to be covered. Sometimes in the design process, issues arise that may require special attention during construction. It is important to notify construction personnel of these issues before construction begins.

Example Bridge Debris Notification

(Letter or e-mail)

(Date)

Agency Name and Mailing Address

or

E-mail address

SUBJECT: Use of Debris from Demolished Bridges and Overpasses

Financial Project Number 123456-1-52-01

Project Location: State Road XX Bridge over the Big River

Any County, Florida

This notice is required by Public Law 109-59, Section 1805, Safe Accountable Flexible Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which directs the Florida Department of Transportation (FDOT) to make debris from demolished bridges available for beneficial use by a local, State or Federal agency. Beneficial use is defined as the use of the debris for shore erosion control and stabilization, ecosystem restoration, and marine habitat creation. This notice is sent to you as the Environmental Technical Advisory Team representative for you agency to coordinate within your respective agencies.

The bridge to be demolished is the *State Road XX Bridge over the Big River in Any County*. The demolition will result in *XXX* cubic yards of steel reinforced concrete debris. The project is scheduled for construction to begin in *December, 2009*. The demolition of the existing bridge should begin in the *Fall of 2010*. A detailed construction schedule will be developed once the contractor is named.

If your agency has an interest in the beneficial use of this material please contact *Mr. John Smith, FDOT Project Manager, at (District Mailing Address and/or e-mail) by (2 months after the date of notice).* The FDOT will negotiate a Joint Project Agreement (JPA) with your agency that will describe the responsibilities of each party. The agency receiving the bridge debris will be responsible for transportation, storage and processing costs. Be advised that the FDOT will not accept any liability, nor any additional cost associated with your agency's use of this material.

If you need additional information, please (*contact me at the above address or reply to this e-mail*), or call me at *(555)123-4567*.

Sincerely,

John Smith

FDOT Project Manager

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

BRIDGE DEBRIS USE AGREEMENT

This Agreement has been entered into this _____ day of _____, _____, by and between the State of Florida Department of Transportation, hereinafter called the Department, and _____, hereinafter called the Agency.

WHEREAS, the Department through its Contractor will be demolishing the _____bridge at _____ (Project) resulting in approximately _____cubic yards of debris; and

WHEREAS, the Agency desires to use the bridge debris for shore erosion control and stabilization, ecosystem management, and / or marine habitat creation; and

WHEREAS, this Agreement has been entered into prior to the letting of the Department's Contract for the bridge work and this Agreement will be reflected in the Department's Contract and Specifications Package so that the Contractor's bid reflects knowledge of this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the State of Florida Department of Transportation (Department) and _____ (Agency) agree as follows:

(1) General:

(a) The recitals hereinbefore set forth are true and correct.

(b) The Agency will provide a storage area or staging area (hereinafter the "storage area") of sufficient size to accommodate the delivery of all the bridge debris (Debris). The storage area must be outside the limits of the Project, and must not interfere with access to the Project or the work of the Department's Contractor.

(c) The Department will deliver the unprocessed bridge debris to the Agency's storage area The Agency will be responsible for all off-loading of the Debris at the storage area. The Agency may enter into a separate agreement with the Department's Contractor to perform this work.

(d) The Agency will be responsible for transporting the Debris from the storage area to the final location where the Debris will be used (final location).

(e) The Agency will be responsible for any and all processing, cleaning, environmental approvals, de-contamination, permitting, application fees, and for compliance with all applicable laws necessary to use the Debris, transport the Debris to the final location where the Debris will be used, and/or store the Debris at the storage area.

(f) The Agency will be responsible for all claims of the Department's Contractor related to or concerning delay claims, inefficiency claims, and/or claims for extra work incurred in off-loading and/or storing the Debris at the Agency's storage area. The Agency will defend, and hold harmless FDOT from all such claims.

(g) The Agency shall comply with all applicable Federal, State, County, and Municipal laws in the performance of this Agreement, including those laws applicable to the transportation, storage, and/or use of the Debris.

(2) Indemnification and Insurance:

(a) To the extent provided by law, the Agency shall indemnify, defend, and hold harmless the Department and all of its officers, agents, and employees from any claim, loss, damage, cost, charge, or expense arising out of any act, error, omission, or negligent act by the Agency, its agents, or employees related to the use of the Debris, transport of the Debris to the final location, storage of the Debris at the storage area, and loading and off-loading of the Debris after arrival of the Debris at the storage area. When the Department receives a notice of claim for damages that may have been caused by the Agency or an agent or employee of the Agency, the Department will promptly forward the claim to the Agency. The Agency and the Department will evaluate the claim and report their findings to each other within fourteen (14) working days. The Agency agrees to provide independent counsel to the Department, at the Agency's expense, to defend such claims. The Department's failure to promptly notify the Agency of a claim shall not release the Agency of the above duty to indemnify, defend, and hold harmless.

(b) The Agency shall carry or cause its contractor/consultant to carry and keep in force for the duration of this Agreement, or until the Debris has been used as contemplated under this Agreement, or properly disposed of, whichever is later, public liability insurance protecting the Department and its agents and employees against any and all claims for injury and/or damage to persons and/or property, and for the loss of life or property occurring in, on, or about the storage area for the Debris, and the Debris arising out of the act, negligence, omission, nonfeasance, or malfeasance of the Agency, its agents, and/or employees occurring during or after off-loading of the Debris at the storage area. Such insurance shall be for a limit of not less than $5,000,000 for all damages arising out of bodily injuries to, or death of, one person and, subject to that limit for each person, a total limit of $10,000,000 for all damages arising out of bodily injuries to, or death of, two or more persons in any one occurrence, and not less than $500,000 for all damages arising out of injury to, or destruction of, property in any one occurrence. All such insurance policies shall be issued by companies licensed to do business in the State of Florida and all such policies shall contain a provision whereby the insurance policy cannot be canceled or modified unless the Department is given at least sixty (60) days prior written notice of such cancellation or modification. The Agency shall provide the Department with certificates showing such insurance to be in place and showing the Department as an additional named insured under the policy.

(3) Miscellaneous:

(a) This Agreement may be terminated immediately by the Department upon default by the Agency.

(b) This Agreement contains the complete understanding of the Department and the Agency with respect to the subject matter hereof. All prior understandings and agreements, oral or written, heretofore made between the Department and the Agency are merged into this Agreement, which alone, fully and completely expresses the intent and agreement between the Department and the Agency with respect to the subject matter hereof. No modification, waiver, or amendment of this Agreement or any of its conditions or provisions shall be binding upon either the Department or the Agency unless in writing and signed by both parties. Nothing in this Agreement is intended nor shall it be construed to give any person or entity, other than the Department and the Agency any right, remedy, or claim under or by reason of this Agreement. Nothing in this Agreement is intended nor shall it be construed to give any member or members of the public any right, remedy, or claim under or by reason of this Agreement.

(c) This Agreement shall be governed by the laws of the State of Florida.

(d) All notices to the Department shall be sent to:

_____.

(e) All notices to the Agency shall be sent to:

_____.

(f) If any part of this Agreement is determined to be invalid in any court of law, the remaining provisions of this Agreement shall remain in full force and effect and may be enforced in accordance with the provisions hereof.

(g) This Agreement was jointly negotiated and drafted by the undersigned and shall not be construed by a court of law against either the Department or the Agency as the drafter thereof.

(h) The prevailing party in any litigation arising out of this Agreement shall be entitled to reasonable attorney's fees and expenses incurred in such litigation.

(i) The undersigned hereby acknowledge that they have read each page of this Agreement, they fully understand them, they agree to them, and voluntarily sign them.

IN WITNESS WHEREOF, the Department and the Agency have caused these presents to be executed, the day and year first above written.

Agency: _____	State of Florida, Department of Transportation
By: _____ Authorized Agent	By: _____ Authorized Agent
_____ Print Name	_____ Print Name
Title: _____	Title: _____
Attest: _____ (SEAL)	Legal Review:
_____ Print Name	_____
Title: _____	