A REPORT BY

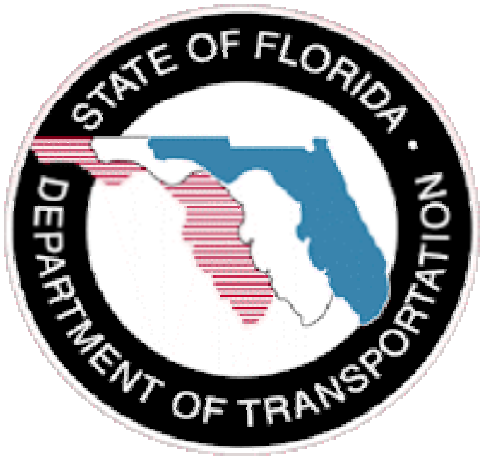
THE FLORIDA DEPARTMENT OF TRANSPORTATION

IN PARTNERSHIP WITH

THE FEDERAL HIGHWAY ADMINISTRATION

PROJECT MANAGEMENT

A BENCHMARKING STUDY



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BACKGROUND

As a specialized discipline, Project Management (PM) is a relatively new field. Taking "project" to mean a time-limited endeavor composed of a series of tasks needed to produce a desired product or service, however, it is clear that project management, per se, is as old as civilization itself. Agricultural innovations (e.g., irrigation) in southern Mesopotamia gave rise to the world's first civilization (Sumer, circa 3,500 BCE) and attendant agricultural, political, and social projects. When the Egyptians began pyramid-building projects some 900 years later, they embarked on a course that would culminate with the great pyramids, massive architectural marvels that continue to symbolize Egypt and awe spectators the world over. These ancient civilizations and those that followed engaged in project management, some with remarkable and enduring results. Whether they consciously employed project management strategies, as such, in a systematic manner and according to carefully determined principles is quite another matter. As a particular branch of knowledge, Project Management has a much shorter history than the management of projects generally. The determinants of modern Project Management date from the late-19th century. Among the more significant developments in the movement towards modern practice was Henry Gantt's development in 1917 of the Gantt Chart, a powerful tool that graphically represents the various tasks of a project along a timeline encompassing the entire project.

There is, more or less, general agreement in the literature that Project Management, as a modern methodology with developed techniques and tools, emerged in the middle of the last century. The Navy's effort to expedite the Polaris submarine missile program in the 1950s is an oft-cited example of a point of separation between initial attempts to render project management into a scientific process and Project Management as a distinct, modern discipline. The Navy developed a strategy known as Project Evaluation Review Technique (PERT). At about the same time, a similar method, known as the Critical Path Method (CPM), was developed in private industry. These techniques both employ network-graphical models with nodes to indicate milestones and were similar enough to be regarded synonymously. Other tools, techniques, methods, and theories have since been advanced, including the Critical Chain Project Management (CCPM) method and the Theory of Constraints, on which CCPM is based.

In 1969, the Project Management Institute (PMI) was established in Philadelphia, PA, by five volunteers and has since grown into the premier not-for-profit project management professional association with over 125,000 members. In 1987, PMI published *A Guide to the Project Management Body of Knowledge* (PMBOK), which was updated in 1996 and is generally regarded as the standard resource document on the subject. One of its many useful features is a discussion of organizational cultures and systems. PMBOK examines organizational types as well as strategies for managing projects. By examining organizational structures and cultures, it provides context for the utilization of project management approaches.

PMBOK describes three primary organization types: **functional**, **matrix**, and **projectized**. Functional organizations typify the classic model for organizational structures. They are hierarchical in nature: staffs are organized by specialty or function and within a clear vertical chain of command. In this type of organization, the involvement of a functional area in a given project is typically limited to the particular part it must play in the process (i.e., there tends to be little horizontal communication between the functional areas, producing a silo effect). At the other end of the continuum is the projectized organization, which is built around the projects performed. With this type of structure, Project Managers oversee projects from beginning to end, and they exercise a great deal of authority over those projects. Staffs are not given work assignments according to their location within the organization (i.e., assignment to a functional area, department or section). Rather, staff activity is determined by projects. Staff assigned to work on a project report to the Project Manager, not a functional manager; communication is horizontal and ongoing among the team members, and Project Managers report to managers of Project Managers rather than to functional area managers.

Between the well-defined function-oriented structure and the dynamic project-oriented structure is the matrix structure. In fact, there are several models within the matrix category. Each employs, to a greater or lesser degree, features of both functional and projectized structures. Matrix options include the weak matrix, the balanced matrix, and the strong matrix—"weak" and "strong" do not connote bias, as in "bad" and "good," but rather orientation to the projectized style of managing projects. Thus, a weak matrix more closely resembles a functional structure than a projectized structure: in a weak matrix, the employee overseeing the project functions as a coordinator and spends a limited amount of time on the project, as do the team members. All participants continue to report to their functional managers. In a balanced matrix, coordination is performed by a full-time Project Manager, who, like the team members, reports to a functional manager. Team members may spend a moderate amount of time on the project. In a strong matrix, a full-time Project Manager, who reports to a manager of project managers, exercises a greater degree of authority over the project. Team members spend much or most of their time working on the assigned project, and full-time project management administrative staff are assigned to the project. There are pros and cons for using any of these approaches, and determining which is most appropriate for an organization will depend on a variety of factors, such as the types of projects performed and the existing organizational structure and culture.

In order to operate with maximum effectiveness and efficiency, an organization should be aware of its structural constitution in light of its approach or approaches to managing projects, the strengths and weaknesses of existing organizational conditions, and available options that might be employed to improve the organization's health. This is as true for state transportation agencies as it is for private sector firms. When at the turn of the 20th century the federal government sought to improve the post roads throughout the country, it examined various means for providing federal aid towards that purpose. With the passage of the Federal Aid Road Act of 1916, provision for such federal aid was made with stipulations, among which were the requirement that funds would be distributed only to the States (rather than to the over 3,000 counties) and that, after 1920, in order to receive funds, a State must have a highway department. At the time, not all states had established such departments. Logan W. Page, Director of the Office of Public Roads, provided a model for State highway

departments around the time of the passage of the 1916 Road Act. The model was simple in scope, which is not surprising given the size of State highway departments at the time. It was hierarchical, its structure suggestive that organizational growth would develop as vertical chains of command through functional areas. Almost 90 years later, most State transportation agencies continue to utilize this model which is function-oriented (silo-structured) with vertical chains of command. This system has served DOTs well in the past.

In Florida, more than ever, the business and cultural climate of state agencies is changing. Agencies are expected to do more with less and to keep pace with both the needs and the times. State agencies are expected to operate more like a private business, which is to say, more accountable for their operations to the public and how they spend their funds. The Florida Department of Transportation (FDOT) is certainly no exception. In the past 20 years, FDOT has shifted some 80% of its Construction Management (i.e., CEI) and Design work to consultants. Similarly, Planning and Maintenance has moved a large portion of their work to consultants so that the FDOT staff in all of these offices who oversee the contracts have become, *ipso facto*, project managers. Toll Operations and Personnel have largely been outsourced, and the Turnpike District is now the Turnpike Enterprise, which is designed to operate as a private entity (the Turnpike Enterprise now also oversees Toll Operations). FDOT's long-range plan now includes a Strategic Intermodal System that provides a new way for planning and managing Florida's transportation system—a system now acknowledged and approached as being considerably more comprehensive and inclusive than it was 25 years ago. FDOT is driven by its projects (i.e., the Work Program), and the way that they are performed is changing (e.g., use of Design-Build).

FDOT strives to be innovative and forward thinking, continually improving the way they do business. As a major tourist destination and with nine deep-water seaports, Florida relies heavily on its transportation system, which is why FDOT must keep pace with the State's needs: the State's prosperity relies upon it. As a project-driven organization, FDOT must diligently explore ways to improve project management processes and performance, efficiently and effectively. In a climate of rapid change, the ability to do so becomes increasingly challenging. In a telling generalization, Process Quality Associates closes a brief article on the history of Project Management with the observation that the 1980's were about quality, the 1990's were about globalization, and the 2000's are about velocity ("History of Project Management and CCPM"). If FDOT has to do more with less, it also has to do it more quickly.

OBJECTIVES

PURPOSE

In an effort to place a broader focus on project management, FDOT management established in the summer of 2001 the Project Management Office (PMO). FDOT management wanted the PMO to identify Project Management improvement opportunities which would result in consistent application throughout the life of a project, from planning to maintenance. Initially, the direction for the new office was not well defined. In seeking to carve out the best possible role for PMO, upper management and PMO determined that a study of the best practices of other organizations, especially other State DOTs, would be beneficial to the development of the office. Consequently, PMO, working with FHWA, undertook a national study of best practices in Project Management. The ultimate objectives of the study were to educate FDOT in Project Management practices and to identify those Project Management practices that FDOT might consider evaluating for implementation. A practical consequence of the study would be to improve Project Management Office operations and level of knowledge.

APPROACH

PMO initiated this study by forming a Survey Partner Team (review team), which consisted of six FDOT members and three Federal Highway Administration, Florida Division (FHWA-FL) members:

Florida Department of Transportation

- Terry Cappellini
  Manager, Procurement Office

- John T. Davis, P.E., PSM
  State Project Management Engineer

- Bob Greer, P.E.
  Director, Office of Design

- Jim Knight, P.E.
  District Consultant Project Management Engineer

- Ken Leuderalbert, P.E.
  Manager, Project Management, Research and Development Office

- Kathy D. Thomas, P.E.
  District Consultant Design Engineer

Federal Highway Administration – Florida Division

- Lori Susan Byrd
  Director, Office of Finance & Administration

- Manu Chacko
  District Transportation Engineer

- Andrew D. DeTizio
  Major Projects Engineer

This team devised an approach to the benchmarking study that included the following tasks:

1. Develop an initial screening survey to be distributed nationwide to the state DOTs, federal and other transportation agencies, and private firms.
2. Distribute a more detailed survey to a smaller group selected from the initial survey responses.
3. Select a group of respondents to interview through site visits.
4. Use the results of the surveys and site visits to develop a set of best practices, lessons learned, and trends related to Project Management.
5. Conduct a Knowledge Transfer Session to share the best practices with interested transportation agencies throughout the nation.
6. Prepare a report documenting the study and recommending best practices for consideration and implementation by FDOT.

The following surveys were administered according to the guidelines and ethical standards for benchmarking set by the American Productivity & Quality Center in "The Benchmarking Code of Conduct" as seen in Appendix A.

Initial Screening Survey

In April 2003, a Screening Survey questionnaire containing 13 questions on Project Management practices was sent to some 200 organizations, including all 50 state transportation agencies, the District of Columbia and Puerto Rico Departments of Transportation, Federal Highway Administration Offices, transportation agencies in foreign countries, and private sector firms. Surveys were returned by fifty-seven organizations, representing 47 state transportation agencies, the District of Columbia, three federal transportation agencies, five private organizations, and one foreign transportation agency. The response data was assembled into a blind matrix to conceal the identities of the respondents and thereby allow for objective evaluation of the results, with the goal of identifying those practicing progressive, project-oriented project management styles. In May

2003, the review team identified 12 respondents for a second, in-depth survey. A copy of the survey questions can be seen in Appendix B.

Site Visit Data Survey

In June 2003, the second survey questionnaire was sent to the 12 organizations (6 state transportation agencies, 4 private organizations, 1 federal transportation agency, and 1 foreign transportation agency). The questions associated with this second survey are contained in Appendix C. The detailed survey consisted of 43 questions categorized by the following topics:

A. General (Project) Information
B. Organizational Options (Structure)
C. Communications
D. Project Planning
E. Project Requirements
F. Project Control
G. Project Leadership
H. Quality of Project Management
I. Contractual Relations/Outsourcing

Survey responses were returned by 10 organizations, (six state transportation agencies, 3 private organizations, and 1 federal transportation agency). The survey responses were evaluated by members of the review team to identify possible best practices for each of the categories listed. In August, the review team selected the following organizations for site visits:

Arizona Department of Transportation
New Jersey Department of Transportation
Oregon Department of Transportation
Raytheon Missile Systems
Virginia Department of Transportation
Western Federal Lands Highway Division

A minimum of six Survey Partner Team members attended each site visit.

Site Visits

The Survey Partner Team scheduled the site visits to take place between September 2003 and February 2004, and they held pre-visit teleconferences to gather additional information and clarification of survey responses. The Team also identified topics of interest (specific to the selected agency) to be presented and discussed during the site visits. The agencies provided materials on their organizational structures, philosophies, and processes for the Team members to review in advance.

The site visits generally consisted of 1-day sessions with the visited agency's Subject Matter Experts (SME) presenting the topics of interest to the team, responding to questions, and providing detailed reference material for later review. Team members sought to identify Best

Practices and Lessons Learned (what did and did not work in their journeys to improvement) of the agencies. Afterwards, Team Members would meet to summarize information gathered and identify these Best Practices and Lessons Learned.

All visited organizations were exceptional hosts, spending significant amounts of time and effort gathering information and materials, preparing and giving presentations, and responding to questions, often staying after hours to cover all areas to the Team's satisfaction. The Chief Executives of the visited organizations made time in their schedules to welcome the Team and to respond to questions.

Knowledge Transfer Session

Following the site visits, the Survey Partner Team scheduled a Knowledge Transfer Session to share the study results. The Project Management National Study Results Conference was held in Miami, Florida on April 27-28, 2004, where over 200 attendees representing 30 states participated. All site visit organizations were invited to attend, and presented their organization's best practices identified during the study. The Project Management National Study Results Conference Agenda is contained in Appendix E. A Strategic Planning Session was held during the conference where various ideas surfaced to address Project Management issues on a national level. The Strategic Planning Session notes are contained in Appendix F.

FINDINGS AND CONCLUSIONS

The findings and conclusions of this report are based on the data collected from the Initial Screening Survey, the Site Visit Data Survey, and the six site visits. The context for discussing the findings, however, also considers current state of practice (generally) and theory of project management and current FDOT practice. This section is divided into three sections: Best Practices, Lessons Learned, and Trends.

State of the Nation

Forty-seven states (including Florida) and the District of Columbia responded to the initial screening survey. With regard to project management styles, the answers did not immediately suggest that there was a dominant approach (per Question 3.a., "Does your organization manage by Program or Project?"). In fact, 17 organizations answered that they managed by project, 16 that they managed by Program, and 15 that they manage by both. Phone interviews revealed that for some organizations, the size of the project is a determining factor. For example, some organizations handle major projects with a strong-matrix approach, while employing a traditional, functional approach for smaller projects. Other organizations manage major projects with a strong-matrix approach using single Project Managers (rather than Project Manager-led teams) to manage smaller projects.

At about the same time as FDOT was conducting its survey, AASHTO's Task Force on Preconstruction Engineering Management was conducting a survey that included a section

on the Project Management styles of state DOTs. The AASHTO survey broke the management styles into five categories: Strong Matrix, Weak Matrix, Functional, Projectized, and Other. The results indicated that the matrix approaches, particularly the Strong-Matrix approach, are widely applied. That is, of the 46 AASHTO Member Departments (which includes Puerto Rico and the District of Columbia) that responded, 22 indicated that the basic organizational structure of their agency was Strong-Matrix. Of the remainder, 9 were Functional, 12 were Weak-Matrix, and 3 were Projectized.

Based on the site visits and phone interviews conducted during the FDOT study, the trend seems to be towards Strong-Matrix or Projectized approaches and away from Functional approaches.

BEST PRACTICES

This section attempts to capture the best project management practices as presented by the site survey partners. In some cases the best practices from several organizations can be combined into one overall best practice approach, while others are stand alone concepts. These partners included four state agencies, one federal agency, and one private firm. The findings are grouped by major category.

1. Project Management Structures

    a. Projectized (cross-functional) structures
    b. Overall cradle-to-grave Project Manager
    c. Cross-Functional Project Delivery Teams
    d. Phased Project Manager/Team Approach

    Commentary: Any discussion of project management structures should be read against the continuum of possible structures current in the literature and endorsed by PMI. At one end is function-orientation, and at the other is project-orientation (projectized). In between are matrix structures, which borrow from both of the aforementioned structures, with a greater or lesser degree of emphasis on one or the other (for a more complete discussion of the various structure types, see pages 1-2).

    a. Projectized Cross Functional Structures

    Only one organization among the six site survey partners operated in a projectized environment. That is, once a project was identified, a project manager was selected to manage the project throughout all phases of the job. Disciplines were selected based on the unique characteristics of the project and team members identified to meet those discipline needs. The project manager then manages the project budget, schedule, quality and issues along with management of the project team. The advantage of the projectized model is the close coordination of issues and communication throughout the life of the project, and a seamless flow of the project through the various project phases.

    b. Overall Cradle-to-Grave Project Manager

One of the challenges of employing a single project manager for the entire duration of a project (cradle-to-grave) is that transportation projects often span many years. One best practice was the use of a single project manager to control the schedule and budget for major projects, especially those that cross functional or geographical boundaries. Major projects frequently consist of several segmental projects, which have project managers managing the daily activities of the project segments. These segmental project managers report to their geographic supervisors on daily activities and to the overall Project Manager on project budget and schedule activities. The single-manager approach relies on the concept of a dedicated project manager assigned to the project. The goal is to provide continuous lead-management for the life of a project; the drawback is the learning curve attendant upon position vacancy-reappointment. The benefit is the organization of continuous lead-management (i.e., position, documentation, structure), even in the event of position vacancy and reappointment.

c. Cross-Functional Project Delivery Team

Two types of project delivery teams were reviewed during the site visits. The first, the Cross-Functional Project Delivery Team, is aligned more towards the projectized end of the structure continuum (i.e., balanced or strong matrix, projectized). It is, however, a variation of the matrix/projectized structure. Unlike the standard model that envisions a single project manager with team members representing different functional areas or different areas of expertise, depending on the degree of projectization, the Cross-Functional Project Delivery Team concept rotates project managers, based on the phase of the project. The team, established for the life of the project, is comprised of members representing the different areas involved in the project. The project team meets on a periodic basis to discuss project issues, schedule, budget and scope. As the project progresses, each member serves as project manager when the phase of the project corresponds to the functional/expertise area of the member (e.g., when the project is in the planning phase, the member with planning expertise is the project manager).

d. Phased Project Manager/Team Approach

The Phased Project Manager/Team Approach (the Survey Partner Team observed on different visits both options for this approach; i.e., project manager and team) employs two or more project managers or project management teams that act sequentially to perform the major phases of the project. In one case, the structure consisted of two teams: a Project Development Phase Team and a Construction Phase Team. To provide continuity between the phases and among the teams, the Project Development Phase Team provided a representative to sit on the Construction Phase Team. FDOT employs a similar approach, but often with the disadvantage of not providing a formal transitional strategy. Such a cold hand-off method of moving a project from one team to another lacks the benefits of inter-team communication. However, employing a transitional strategy such as that employed by the site survey partner does not necessarily remedy the problems of the approach. First, a representative of the Development Team was carried forward into the Construction Phase Team's portion of the project, but a Construction Phase Team member was not involved in project development, so the communication process was not complete. Also, the representative

may be disenfranchised when participating on the other team, which mitigates and may negate the benefit of the strategy altogether.

Conclusion: Existing organizational structures seam to cause the greatest roadblock to implementing more efficient project management approaches. The cross-functional project delivery teams and the phased project manager, while not the most efficient, impacts the existing organizational structure the least, and therefore most likely to be utilized. The cradle-to-grave and projectized structures provide a more efficient approach with fluid transition of a project through functional phases. These, however, require an organization to implement organizational changes. Making organizational changes is a hard sell to those that have no compelling reason to change. Therefore, a more efficient organizational structure may be discarded for fear of upsetting what has been successful.

2. Web-based Project Management Information Portals

   a. Data Warehouse with webpage templates for viewing project information for the full project life cycle
   b. Drill-down capabilities for more detail
   c. Project Information Retrieval Tools for query of data warehouses/legacy system databases
   d. Use of internet web-based collaborative software programs
   e. Traffic Light Status technique

   Commentary: Web-based Project Management Information Portals provide a host of benefits. Of the site survey partners, all had some type of project management information system. Two had systems in place, and another was in the process of developing an enhanced system utilizing collaborative software. The in-place systems had drill-down capabilities that allowed a user to access increasing levels of detailed information, but they did not feature the enhanced functionality offered by collaborative software. The types of information that can be accessed through such a system ranges from summary information to almost all information, including plans, documents, and video links to mileposts. Such systems can be further developed by the use of collaborative software, which enhances basic functionality and facilitates communication during all phases of a project and between all involved parties (e.g., different offices and contractors). For example, an enhanced system can be used to collect documents, solicit comments on them, store them, and retrieve them.

   Another best practice reviewed is the Traffic Light Status technique. This technique identifies the budget/schedule status of a project by using color indicators analogous to traffic signal lights. Green indicates that a project is on schedule and within budget. Amber indicates that a project is in danger of missing a target (e.g., budget, schedule) unless corrective action is taken. Red indicates that a project has gone off schedule or over budget and that corrective action will not bring the project back on-schedule or within budget. A key value of this technique is that it allows an organization to prioritize the use of its resources effectively. For example, priority attention should be given to amber projects, so that they can be corrected to achieve their major target(s). Directing

extra attention to red status projects, especially when there are amber projects that might be brought back into line with their targets, risks increasing the overall number of red status projects.

3. Scope and Budget Creep

    a. Feasibility assessment at 10% design to reassess management support for project and confirm project budget and schedule Involves periodic review early in the overall process to ensure good scope development (involves detailed information early in process); Go/No Go process
    b. Formal review of changes above identified threshold by standing committee of senior management
    c. Monitor total project costs continuously from cradle to grave

    Commentary: The feasibility assessment approach requires a good deal of front-end effort, including periodic review early in project development to ensure good scope development. This type of review requires detailed information early in the process. It inserts useful controls into the process, and it provides management with go/no go option well before resources have been heavily levied against the project. The formal review of changes method employs thresholds as controls. Formal review of changes according to set thresholds provides project managers with latitude to manage a project so long as it remains within agreed time or budget limits. With this approach, a standing committee of senior management is established to review changes defined by the process; the project budget and schedule cannot be modified beyond the set thresholds without committee review and approval—this practice was utilized by more than one of the site survey partners. The third identified best practice was strictly a budget control process, whose benefit was continuous oversight of project costs from the cradle to the grave. This last method is currently FDOT practice.

4. Scheduling

    a. Scheduling templates
    b. Pipelines (1 – 4 separate pipelines with major tasks and allowable time frames)
    c. Critical Chain Process Scheduling
    d. Detailed Project Concept/Scope Report at project initiation
    e. Streamlining the permitting process
    f. Continuous project phasing from project initiation
    g. Overlapping of phases

    Commentary: Effective scheduling and schedule reduction strategies are indispensable to the most successful project management strategies. The site visits revealed a host of scheduling approaches and schedule reduction methodologies. Scheduling templates graphically represent the interactions of generic activities common to the projects or types of projects for which they are designed. The pipeline method utilizes a graduated set of scheduling templates that help to define the scope of the project. Under this approach, parts of the scope can be eliminated but none can be added. More than one of the site survey partners utilized this approach. One survey partner employed the Critical Chain Project Management (CCPM) method. Among scheduling approaches,

CCPM is among the more progressive. The benefits of this process are in the scheduling methodology and in the management of float or buffer time. The schedule is approached from end to beginning rather than from beginning to end. Any of the tasks that affect the initiation of sequential tasks are critical in the chain and are called dependencies; resources that are limited or that otherwise might affect the execution of a task are similarly treated as dependencies. Effort is exerted towards the effective and efficient completion of critical tasks and utilization of resources. In addition, buffer time is not built into the tasks or phases of a project; rather, the tasks are allotted only the amount of time realistically expected to complete them. Buffer time is placed at the end of the critical chain but within the overall project schedule, and it is allocated by the Project Manager when absolutely needed. The goal is to use as little of the buffer time as possible and, thereby, to reduce project delivery time.

In addition to the general scheduling methods mentioned above, the site survey team reviewed several schedule reduction approaches. The first of these is the Detailed Concept/Scope Report. The purpose of the report is to clearly identify the scope of the project and to establish a realistic budget and schedule. It should be created within the first three to four months of project initiation by cross-functional team of senior engineers. The employment of experienced personnel, constituting a cross-functional team, for this approach is vital to its success. It is common practice to exert a much less intensive effort at this stage of a project (as is the case in Florida). Florida is, however, at the vanguard with regard to streamlining the permitting process, which is an approach that seeks agreement, on major permitting conditions, with permitting agencies at the completion of the environmental report.

Another best practice is continuous project phasing. This approach involves several premises. For example, the number of projects undertaken should not exceed the capacity to make reasonable progress. By reviewing the number of projects undertaken in the previous fiscal year and analyzing the amount of progress made, an organization can adjust its program to better utilize its resources. Scheduling gaps should be minimized if not eliminated. The goal is to undertake as many projects as can effectively be executed, but not so many that available resources cannot effectively respond to the demands of the projects. Continuous progress should occur from the point of a project's initiation. An approach geared to similar results is the overlapping of project phases. The object here, again, is to ensure that there are no gaps in scheduling and to expedite project completion by initiating a phase prior to completion of the prior phase (e.g., beginning the right-of-way phase at 60% design). The underlying idea is that a certain amount of work on successive phases can begin prior to the completion of prior phases of work.

5. Consultant Contracts

   a. Strict time-frame for completion of contract negotiations
   b. Periodic meetings with consultant industry to discuss issues and expectations
   c. Percent fee at risk
   d. Continuing Services consultant contracts for assignment of multiple projects

Commentary: The best practices reviewed under this category were fairly straightforward. In the first, the site survey partner has established a timeline/deadline for contract negotiation, at the conclusion of which negotiations are terminated with the first-ranked firm and begun with the second-ranked firm (and so on). The second listed best practice, which is practiced by some FDOT Districts, affirms the benefits of regular communication. The goal of the meetings with the consultants is to review expectations and to provide training in areas of concern. The third best practice is designed to improve the performance of the consultant. For example, one site survey partner's policy was to reduce the Design consultant's fee by up to one-third if the construction bid is not within budget. Another example might include an incentive based on the time of completion (e.g., beating the scheduled completion date by a given amount of time).

6. Project Management Training

   a. Formalized Training Courses
   b. Training that utilizes real project scenarios, interjecting real problems as class teams develop project and solve problems encountered
   c. Project Management Handbooks/Guidelines

   Commentary: All of these practices can advance the state of project management within an organization. Project Managers should be aware of the performance expected of them, and they should have and be aware of the resources available to them. Project Management Handbooks can provide ready access to necessary information and training courses increase knowledge and enhance the skills required to be an effective Project Manager. FDOT's Project Management Office recently completed its *Project Management Handbook* and currently conducts its project management training courses in-house. Training, that utilizes actual projects for instructional purposes, enhances the learning experience by providing realistic and organization specific materials from which to work.

7. Program Assessments

   a. Project assessments based on project personnel perceptions
   b. Interval project assessments

   Commentary: Project assessment is a valuable tool for adding value to future projects. These best practices allow for the improvement of project processes, both for the project being assessed and for future projects. The first listed best practice focuses on the gaining the feedback of the personnel involved in the process. The second listed best practice is more project-oriented. Using this approach, assessments are conducted at intervals, from the latter stages of construction to up to three years following the completion of the project. This practice is enhanced by the use of a team whose sole purpose is to assess projects that are 95% or more complete. The value of performing assessments just prior to completion is that the contractor is still available to make corrections. FDOT does a version of this practice.

LESSONS LEARNED

Based on the surveys and site visits generally, and on the best practices listed in the previous section, the site survey partners and/or the reviewers of the information have developed the following as some of the lessons learned in the area of project management. When appropriate, an item will cross reference the section of the best practices from which it was derived.

1. Moving away from functional structures towards more project-oriented structures best occurs as an evolutionary process.

2. Team development approaches, whether cold hand-off or with transitional representatives, are not as effective as cross-functional project delivery teams; cold hand-offs lack continuity and teams that utilize representative participation fail to capture full-team input and often experience dysfunction when such representatives are treated as unwelcome. (Sec. 1)

3. Front-end schedule reduction efforts defined by the Detailed Project Concept/Scope Report approach will help to reduce lags between PD&E and project construction. (Sec. 4d)

4. Reducing the number of projects undertaken to a reasonable level will prevent overtaxing resources, which tends to lengthen project lengths across the board. One site survey partner allowed federal funds to lapse as a result of ineffective project management. Subsequently, that organization examined the number of projects that it could effectively execute. By examining the number of projects undertaken in the previous year and by analyzing the gaps that were occurring in scheduling, an executive decision was made to reduce the number of projects. The result is an increased ability to effectively manage projects and a consequent reduction in the length of projects. (Sec. 4f)

5. Project assessment teams can identify problems in an existing project before it is completed and so have the contractor address them (rather than Maintenance or some other section inheriting them). These teams can also identify problem trends so that they may be addressed for future projects (e.g., be studied to develop remedies). Project assessment can be used as a process and program improvement tool. (Sec. 7)

6. When Primavera is used for scheduling, dedicated schedulers are necessary, due to the complexity and numerous capabilities of the system. They should be trained to effectively use the system.

7. It is important to develop a good, valid project scope initially. The effort exerted up-front not only demonstrates better planning and organization—it also stands to provide substantial time and cost savings over the course of the project. (Sec. 3a, 4d)

TRENDS

The following are among activities and practices that have been observed through the surveys and visits to be trends in Project Management practice.

1. *Benchmark/Best Practice studies to identify industry best practices.* Organizations are examining their own practices in light of the practices of peer organizations. Organizations appear to be increasingly interested in the best practices of non-peer organizations, as well, to observe and adapt practices as appropriate.

2. *Major change requires top leadership commitment.* It unfortunately appears that crises precipitate significant change in project management practices rather than planned improvement strategies. For example, two site survey partners made significant changes to their project management practices only following such issues as funding shortfalls, lengthy project delays, missed schedules, and adverse audit reports. Another site survey partner contracted a consultant to perform an organizational analysis of its project management practices. The report recommended several changes generally in line with current Project Management theory and state-of-the-practice. The senior management of that organization, which was operating without any perceived problems, rejected implementation of the recommendations. Changes to practice are occurring on a limited basis.

3. *Development of Lessons Learned/Best Practices databases.* Organizations are increasingly becoming aware of the benefits of staying abreast of current and peer practices as a means of informing organizational improvement.

4. *Project Management of in-house projects like consultant projects*

5. *Web-based Project Management Information Portals*

6. *Formalized Training Courses*

7. *Project Management Handbooks/Guidelines*

8. *Knowledge (Lessons Learned) Databases*

NEXT STEPS

In addition to the findings and conclusions of this study, the following "Next Steps" were highlighted for Project Management nationally by the strategic planning session.

- Define PM at every level
- Define role of PM
- Raising awareness of CEO's with pros and cons of models.
- Understand definition of successful PM
- Keep open communication between states
- Seeing how other states do PM

- Focus on development of management skills
- Pick a model
- Full organizational awareness of purpose and value of PM
- Sharing of Best Practices
- Train PM's and share with the rest of the organization
- Understand role of PM to be a success
- Determine PM responsibility in each model
- Define role of PM and also organizational structure
- Organizations can change successfully. Look at the processes.

RECOMMENDATIONS

This study provided a great deal of information regarding the state-of-the-practice in Project Management, particularly with regard to FDOT's peer State DOTs. Many valuable insights were gained, both from the initial survey responses and, more especially, from the second survey responses and subsequent site visits. The Project Management Office was particularly interested in studying the more progressive practices of its peers as well as of other engineering organizations. The idea was to investigate project management practices generally and then, using the results of the screening survey, to investigate in greater detail the practices of particular organizations. The information gained would be used to raise within FDOT the level of awareness of best project management practices and to draw from them potential practices that FDOT might consider implementing or adapting for implementation.

This study should be regarded as the first of several steps to be taken to develop and improve FDOT's project management practices. In order to follow through with the findings of this study the Project Management Office proposed that an FDOT Project Management Advisory Committee be organized and chartered. Within the charter, the purpose of the Project Management Office is defined: "To preserve and improve the Florida Transportation System through consistent and efficient use of Project Management Tools and Practices." In order to facilitate this purpose, the proposed Steering Committee will function at a leadership level within the Department. Primary functions of the Committee will be to assist in the review, development, and implementation of Project Management strategies and to facilitate communications regarding project management within and between the functional areas within the Department. A copy of this charter is found in Appendix G.

The next steps would include (1) benchmarking the tools, principles, and practices of transportation engineering firms, and (2) benchmarking best practices already in place within FDOT (e.g., explore best scoping practices used in Districts).

The following recommendations are not presented in priority order. While certain recommendations warrant greater consideration than others (e.g., suggestions for the improvement of the scheduling process), it is the position of PMO that FDOT's

Project Management Steering Committee review them and develop task teams, when appropriate, to further investigate their potential for FDOT applications.

1. *Evaluate different project management structures.* The structures presented in the report range from functional to projectized. As has been observed, the more progressive DOTs only shifted to more project-oriented structures (i.e., matrix structures) in the face of crisis. In examining the effectiveness of their organizations with regard to project management, it is clear that these once troubled organizations are, following restructured approaches to project management, are experiencing dramatic improvements and demonstrating excellence. As a leader among transportation agencies, FDOT should establish a task team to proactively explore alternative approaches to managing projects and establish short- and long-term goals with phased milestones for what is, under optimal circumstances (i.e., in the absence of crisis), a long-term process towards improvement.

2. *Explore use of other features of Primavera.* Primavera is a robust program, and it is certainly much more than a scheduling tool. Its collaborative functionality offers the opportunity to draw together the legacy systems and to enhance FDOT's ability to conduct business. A task team should be formed to explore the possibilities for using the enhanced features of the software and for overcoming current concerns regarding security issues.

3. *Develop a web-based project management portal.* District Six has developed a program (ProFile) that can be used to display and report project information. ProFile was developed for construction application, and the District Construction Engineers have agreed to use the program statewide. This program could be expanded to provide the same features for other phases of project management. District Four has also developed a program to access project information. However, this program interfaces Primavera Enterprise with the Electronic Review Commenting system, and with legacy programs (i.e., Contracts, Financial Management System, Site Manager). The Turnpike Enterprise has recently acquired Primavera Enterprise and is planning to utilize District Four's developed software. The Steering Committee should develop a task team to explore the potential of these programs for statewide application.

4. *Provide formal training for Primavera.* If Primavera is used primarily as a scheduling tool, then schedulers should be given appropriate training for using this robust program as a scheduling tool. If Primavera is used also as collaborative software, then an appropriate training regimen should be developed and offered as a standard course for anyone that will use the program. Levels of training courses might be offered (Beginner, Intermediate, Advanced, Special Applications).

5. *Explore a more effective scheduling methodology.* A task team should be established to explore the development of a scheduling and programming methodology that, like the critical path or critical chain methodologies, more effectively manages buffer time and resources. Such an approach might consider a more rigorous project selection and initiation process, in which, for example, resources are not

allocated and projects are not initiated until the projects may realistically be expected to be conducted without gaps (i.e., continuous phasing). The goal is to prevent repeating PD&E and making major updates to the design plans, and to shorten the life of projects and decrease their ultimate cost.

6. *Explore reducing the number of projects undertaken.* In addition to the continuous project phasing strategies suggested in the previous recommendation, a complementary process might be developed to assess the number of projects that may effectively be undertaken—to maximize resources. Screening strategies might be explored or developed to select the projects whose life-cycles are least likely to be interrupted or experience foreseeable gaps.

7. *Reevaluate entire project phase schedule the point of entry into the five-year work program.* Like the previous two recommendations, this one may reduce the overall length of a project's schedule. It also serves as a quality assurance measure, whereby necessary adjustments may more time- and cost-effectively be made early in the process rather than later in the process (and less time- and cost-effectively).

8. *Evaluate incentive program for design and other applicable contracts.* Explore concept of using incentives or at-risk percentages to encourage contractors to meet or beat established completion deadlines (e.g., provide a bonus for early completion or place a percentage of the profit-base of the fee at-risk for performing beyond the set completion end date).

9. *Use Project Management Handbook as basis for FDOT Project Management Training.*

10. *Use actual projects or case studies for training events.*

APPENDIX

Appendix A	"The Benchmarking Code of Conduct"
Appendix B	Screening Survey Questionnaire
Appendix C	Second Survey Questionnaire
Appendix D	Compendium
Appendix E	Project Management National Study Results Conference Agenda
Appendix F	Project Management Conference – Strategic Planning Session Notes
Appendix G	Project Management Steering Committee Charter

APPENDIX A

GUIDELINES AND ETHICS FOR BENCHMARKERS

The Benchmarking Code of Conduct

AMERICAN PRODUCTIVITY
& QUALITY CENTER

INTERNATIONAL BENCHMARKING CLEARINGHOUSE

BENCHMARKING CODE OF CONDUCT

Preamble

Benchmarking—the process of identifying and learning from best practices anywhere in the world—is a powerful tool in the quest for continuous improvement and breakthroughs.

To guide benchmarking encounters, to advance the professionalism and effectiveness of benchmarking, and to help protect its members from harm, the International Benchmarking Clearinghouse, a service of the American Productivity & Quality Center, has adopted this Code of Conduct. Adherence to this Code will contribute to efficient, effective and ethical benchmarking.

AMERICAN PRODUCTIVITY & QUALITY CENTER

About APQC

The American Productivity & Quality Center (APQC) is a business-oriented non-profit source for performance improvement and decision support—information and knowledge, networking, research, training, and advisory services. Organizations of all sizes and industries—business, government, education, and health care—partner with APQC to discover global best practices and grow into learning organizations.

For more information about APQC's services, including the International Benchmarking Clearinghouse and the Institute for Education Best Practices, call 800-776-9676 (713-681-4020 outside the US), email to apqcinfo@apqc.org, or visit our website at http://www.apqc.org.

Code of Conduct:

1.0 Principle of Legality

1.1 If there is any potential question on the legality of an activity, consult with your corporate counsel.

1.2 Avoid discussions or actions that could lead to or imply an interest in restraint of trade, market and/or customer allocation schemes, price fixing, dealing arrangements, bid rigging, or bribery. Don't discuss costs with competitors if costs are an element of pricing.

1.3 Refrain from the acquisition of trade secrets from another by any means that could be interpreted as improper including the breach or inducement of a breach of any duty to maintain secrecy. Do not disclose or use any trade secret that may have been obtained through improper means or that was disclosed by another in violation of duty to maintain its secrecy or limit its use.

1.4 Do not, as a consultant or client, extend benchmarking study findings to another company without first ensuring that the data is appropriately blinded and anonymous so that the participants' identities are protected.

2.0 Principle of Exchange

2.1 Be willing to provide the same type and level of information that you request from your benchmarking partner to your benchmarking partner.

2.2 Communicate fully and early in the relationship to clarify expectations, avoid misunderstanding, and establish mutual interest in the benchmarking exchange.

2.3 Be honest and complete.

3.0 Principle of Confidentiality

3.1 Treat benchmarking interchange as confidential to the individuals and companies involved. Information must not be communicated outside the partnering organizations without the prior consent of the benchmarking partner who shared the information.

3.2 A company's participation in a study is confidential and should not be communicated externally without their prior permission.

4.0 Principle of Use

4.1 Use information obtained through benchmarking only for purposes stated to the benchmarking partner.

4.2 The use or communication of a benchmarking partner's name with the data obtained or practices observed requires the prior permission of that partner.

4.3 Contact lists or other contact information provided by the International Benchmarking Clearinghouse in any form may not be used for purposes other than benchmarking and networking.

5.0 Principle of Contact

5.1 Respect the corporate culture of partner companies and work within mutually agreed procedures.

5.2 Use benchmarking contacts, designated by the partner company if that is their preferred procedure.

5.3 Obtain mutual agreement with the designated benchmarking contact on any hand-off of communication or responsibility to other parties.

5.4 Obtain an individual's permission before providing his or her name in response to a contact request.

5.5 Avoid communicating a contact's name in an open forum without the contact's prior permission.

6.0 Principle of Preparation

6.1 Demonstrate commitment to the efficiency and effectiveness of benchmarking by being prepared prior to making an initial benchmarking contact.

6.2 Make the most of your benchmarking partner's time by being fully prepared for each exchange.

6.3 Help your benchmarking partners prepare by providing them with a questionnaire and agenda prior to benchmarking visits.

BENCHMARKING PROTOCOL

Benchmarkers:

- Know and abide by the Benchmarking Code of Conduct.
- Have basic knowledge of benchmarking and follow a benchmarking process.
- Prior to initiating contact with potential benchmarking partners, have determined what to benchmark, identified key performance variables to study, recognized superior performing companies, and completed a rigorous self-assessment.
- Have a questionnaire and interview guide developed, and share these in advance if requested.
- Possess the authority to share and are willing to share information with benchmarking partners.
- Work through a specified host and mutually agreed upon scheduling and meeting arrangements.

When the benchmarking process proceeds to a face-to-face site visit, the following behaviors are encouraged:

- Provide meeting agenda in advance.
- Be professional, honest, courteous, and prompt.
- Introduce all attendees and explain why they are present.
- Adhere to the agenda.
- Use language that is universal, not one's own jargon.
- Be sure that neither party is sharing proprietary information unless prior approval has been obtained by both parties, from the proper authority.
- Share information about your own process, and, if asked, consider sharing study results.
- Offer to facilitate a future reciprocal visit.
- Conclude meetings and visits on schedule.
- Thank your benchmarking partner for sharing their process.

BENCHMARKING CODE OF CONDUCT

The following guidelines apply to both partners in a benchmarking encounter with competitors or potential competitors:

- In benchmarking with competitors, establish specific ground rules up-front, e.g. "We don't want to talk about things that will give either of us a competitive advantage, but rather we want to see where we both can mutually improve or gain benefit."
- Benchmarkers should check with legal counsel if any information gathering procedure is in doubt, e.g., before contacting a direct competitor. If uncomfortable, do not proceed, or sign a security/non-disclosure agreement. Negotiated a specific non-disclosure agreement that will satisfy the attorneys from both companies.
- Do not ask competitors for sensitive data or cause the benchmarking partner to feel they must provide data to keep the process going.
- Use an ethical third party to assemble and "blind" competitive data, with inputs from legal counsel in direct competitor sharing. (Note: When cost is closely linked to price, sharing cost data can be considered to be the same as price sharing.)
- Any information obtained from a benchmarking partner should be treated as internal, privileged communications. If "confidential" or proprietary material is to be exchanged, then a specific agreement should be executed to indicate the content of the material that needs to be protected, the duration of the period of protection, the conditions for permitting access to the material, and the specific handling requirements that are necessary for that material.

7.0 Principle of Completion

7.1 Follow through with each commitment made to your benchmarking partner in a timely manner.

7.2 Complete each benchmarking study to the satisfaction of all benchmarking partners as mutually agreed.

8.0 Principle of Understanding and Action

8.1 Understand how your benchmarking partner would like to be treated.

8.2 Treat your benchmarking partner in the way that your benchmarking partner would want to be treated.

8.3 Understand how your benchmarking partner would like to have the information he or she provides handled and used, and handle and use it in that manner.

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Email: **apqcinfo@apqc.org**
Web: **www.apqc.org**

APPENDIX B

Best Practices in Project Management
Screening Survey

Name: _____ Phone: (_____) _____

Job Title: _____ Fax: (_____) _____

Organization: _____

Full Address: _____

City/State/Zip: _____

E-mail: _____

We have concluded our secondary research and respectfully invite you to participate in this best practices benchmarking study by completing this screening survey. We follow the Benchmarking Code of Conduct and 4-phase benchmarking process, as defined by the International Benchmarking Clearinghouse (for more information please see www.apqc.org). Data collected by this screening survey will be "blinded" and shared with all organizations that FAX BACK this screening survey.

General Instructions

Please complete and return this document by either reply email or fax to Ms. Lori S. Byrd at 850-942-9691 on or before MARCH 19, 2003. This is a joint Florida Department of Transportation/Federal Highway Administration, Florida Division Project Management Best Practices Study. According to the Project Management Institute, the discipline of project management can be defined as follows:

> Project management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participation satisfaction. [1]

Of particular interest are those project management practices used that produce capitol (major or mega) projects. Those organizations identified through secondary research will be contacted for further information. Selected best practice organizations will be asked to host a site visit and participated in the Knowledge Transfer Session tentatively scheduled to occur before September 30, 2003 in Florida. All screening survey participants will receive a copy of the published report and an invitation to attend the Knowledge Transfer Session at the conclusion of the study. This document should take less than 20 minutes to complete. Please return your completed survey to Ms. Lori S. Byrd no later than March 19, 2003. If sending by fax, please use the enclosed fax cover sheet and send your document to 850-942-9691.

[1] See R. M. Wideman, "The PMBOK Report -- PMI Body of Knowledge Standard," *Project Management Journal*, Vol. 17, No. 3, August 1986, pp. 15-24.

General Information

1. This document is being completed for:

   ☐ Total Organization ☐ Business Unit or Department

2. On a scale of 1 to 5, is your organization a Level 5 - highly centralized (all important decisions about projects are made at the central office or headquarters level) or closer to a 1 which represents a highly decentralized (decisions are made by remote or field office level).

   ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Management

3. a. Does your organization manage by ☐ **Program** or ☐ **Project**?
   b. How many years have you managed this way?_____

4. Generally, identify your 4 key project phases?
   (For transportation related projects our 4 key project phases are: Environment, Design, Construction, and Maintenance)

   1. _____
   2. _____
   3. _____
   4. _____

5. Are your projects managed by a single project manager? ☐ **Yes** ☐ **No**

6. Briefly describe how your organization determines the success or efficiency of your project management process?

   _____

7. Does our organization have data that demonstrates improvements in meeting budget estimates? ☐ **Yes** ☐ **No**

8. Does your organization have data that demonstrates improvements in meeting deadlines (schedule, milestones, etc.) ? ☐ **Yes** ☐ **No**

9. Does your organization have data that shows improved quality of products and/or services? ☐ **Yes** ☐ **No**

10. Does your organization have a Project Management Office? ☐ **Yes** ☐ **No**

11. Does your organization have a Project Management Website? ☐ **Yes** ☐ **No**
    If so, and if the website is accessible to anyone outside the organization, what is the web address: _____

12. Does your organization have written procedures for Project Management? ?
    ☐ **Yes** ☐ **No**

13. Briefly describe the type of system your organization utilizes to plan, schedule and track project progress.
    _____

All screening survey participants will receive a copy of the published report at the conclusion of the study.

We look forward to working with you and your organization!

Best Practices in Project Management

Benchmarking Study –Screening Survey

FAX BACK

SCREENING SURVEY

TO: Lori Susan Byrd FAX TO: 850-942-9691
Or return this document electronically to:
lori.byrd@fhwa.dot.gov

FROM:
NAME:_____
ORGANIZATION:_____
Date:_____

Key Benchmarking Study Activities:

Screening Survey FAX BACK Due Date	**March 19, 2003**
Site Visits will be requested before	April 30, 2003
Bios and Detailed Site Visit Questionnaires Agenda and other information forwarded to Site Visit Best Practice Organizations before	April 30, 2003
Site Visits complete before	July 30, 2003
Benchmarking Report released before	August 30, 2003

Knowledge Transfer Session tentative date - September 16,2003

Questions call Lori Byrd (ext. 3018) at 850-942-9650

APPENDIX C

U.S. Department of Transportation
Federal Highway Administration, Florida Division
In cooperation with the
Florida Department of Transportation

"Project Management" Benchmarking Study

Site Visit Data Collection Tool

Name: _____

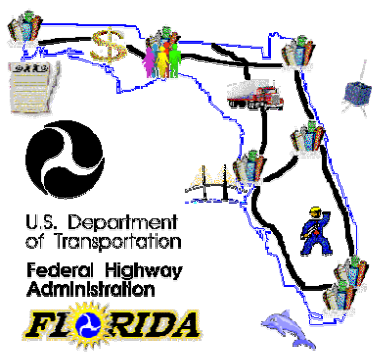
Organization: _____

Instructions:
Each best practice organization (Benchmarking Partner) and each participating organization should complete this document on or before July 23, 2003. This site visit data collection tool should be completed and returned to:

Lori Susan Byrd
FHWA, Florida Division
227 N. Bronough Street #2015
Tallahassee, FL. 32301
Or
Lori.byrd@fhwa.dot.gov

Phone: 850-942-9650 extension 3018
FAX: 850-942-9691

Please contact Lori with any questions you may have with the contents of this survey.



Survey Contents:

A. General Information

B. Organizational Options

C. Communications

D. Project Planning

E. Project Requirements

F. Project Control

G. Project Leadership

H. Quality of Project Management

I. Contractual Relations/Outsourcing

A. General Information

1. What kinds of projects do you undertake?

B. Organizational Options

1. What is the structure of your organization?

2. How is your project management organized (by function or by project)?

3. If you have a project management office, what is its relationship to the various functional offices?

4. What factors were considered in deciding to manage projects through a project management office or by functional office?

5. How do you ensure consistent project management practices throughout the organization?

6. Does project size or project visibility affect your project management process? How?

C. Communications

1. What is your process to communicate internally throughout the life of a project?

2. Do you have a specific mythology for communicating with external customers/stakeholders?

D. Project Planning

1. What is your process to determine which projects will be pursued?

2. How do you involve stakeholders/customers in this decision?

3. How is the project management office involved in this decision?

E. Project Requirements

1. How do you develop a project scope?

2. How do you develop a project schedule?

3. How do you develop project costs by phase of work?

4. What functional units are involved in the development of the scope, schedule, and costs?

5. How do you involve external customers in the development of the scope, schedule, and costs?

6. How is the project manager involved in the development of scope, schedule, and costs?

F. Project Control

1. How do you control and track scope changes.

2. How do you control and track schedule changes?

3. How do you control and track project cost by phase of work?

4. What involvement or authority does the project manager have for changes to the scope, schedule, and project costs?

G. Project Management Approach

1. What knowledge, skill, traits, and experience are considered when selecting a project manager?

2. How do you establish how many projects are under the purview of each project manager?

3. Are there separate project managers for each phase of a project (i.e. planning, design, construction) or is there one project manager that covers all phases?

4. If there are multiple project managers during the course of a project, how do you handle the hand-off from one manager to the next?

5. How do you measure project manager's performance?

6. How does employee turnover affect project management?

H. Quality

1. How do you measure the quality of project management?

2. What kind of quality assurance/quality control plan do you use to manage projects?

3. How do you identify problems and initiate corrective actions?

4. How do you identify and share internal “lesson’s learned “ and “individual successes” throughout the entire organization?

5. Do you utilize external “Best Practices”? Is there a systematic process to review processes and make improvements?

I. Contractual Relations/Outsourcing

1. What resource management tools do you use to predict and control workload for functional offices to prevent peaks and valleys?

2. How do you determine which projects (activities) will be performed in house and which will be performed by consultants (outsourced)?

3. How is the Project Manager involved in this decision?

4. What kind of contractual relations do you have with consultants?

5. How much time does the acquisition process take for consultant services?

6. What initiatives have you taken to reduce acquisition time?

7. What level of decision-making is delegated to consultants?

8. How do you ensure consultant accountability?

9. Do you ever have consultants manage consultants?

10. What initiatives have been undertaken to reduce overall project delivery time, costs (concept to completion) and/or quality?

Thank you for completing this questionnaire.

APPENDIX D

Best Practices in Project Management
For Construction
Screening Survey Compendium

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
1. This document is being completed for:																																																													
Total Organization	X	X	X				X			X					X	X			X							X		X	X		X		X	X	X	X	X	X	X	X			X	X	X	X	X	X		X	X	X		X	X	X	X	X		
Business Unit or Department				X	X	X		X	X		X		X	X			X	X		X	X	X	X	X	X		X			X		X										X							X				X						X	X
2. On a scale of 1 to 5 is your organization a Level 5 – highly centralized or closer to a 1 highly decentralized?	5	5	5	3	1	2	3	4	5	3	2		3	3	3	3	3	2	2	2	2	2	4	5	1	2	4	3	4	4	3	3	3	4	4	4	1	5	4	3		1	5	5	3	3	2	2	3	3	3	3	2	2	4	1	2	5	3	2
3.a. Does your organization manage by:																																																												
Program		X	X	X	X	X	X						X	X		X			X	X				X	X	X		X	X	X		X	X	X				X			X		X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Project	X	X	X				X	X	X	X	X	X			X	X	X	X	X		X	X	X	X			X		X		X	X			X	X	X		X	X	X	X		X			X	X	X	X		X				X	X	X	X	X
3.b. How many years have you managed this way?																																																												
1-5 Years								X									X												X											X		X				X						X			X					
6-10 Years	X										X	X								X																		X									X							X			X			X
Over 10 years			X	X	X	X	X		X				X	X	X	X		X	X			X	X	X	X	X		X		X	X	X	X			X	X		X		X		X	X	X			X	X		X		X					X		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
4. Generally, identify your four (4) ke project phases																																																												
Scoping	X					X	X	X				X						X			X	X		X				X				X	X																											
Environmental Permitting	X				X		X				X		X					X	X		X					X	X		X		X		X	X	X		X		X			X	X				X						X				X	X		
Design	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		X	X	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X		X	X	X	X
Construction/Production	X		X		X		X		X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Planning		X	X	X	X		X				X		X	X	X	X	X						X		X					X	X		X	X	X	X		X																		X			X	
Maintenance		X	X	X												X		X						X	X	X	X		X	X			X		X	X	X		X	X	X			X	X	X		X	X	X	X	X	X		X	X	X	X	X	
Implement				X													X				X																																							
Investigation/Testing						X		X														X																							X															X
Determination						X					X									X			X																																					
Pre-contract administration/Letting projects to contract						X	X				X												X	X																																				
Roll out								X												X																																								
Programming/Cost Estimating/ Funding Availability									X						X				X	X			X																																					
Preliminary Engineering										X		X				X			X	X																																X								
Right of Way Plans Certification											X								X								X	X			X													X			X							X						
Support/End of Life/Project Completion/Debug/Accreditation																				X		X																																						
Inventory																												X																																
Operations																																											X																	
Utilities																																																						X						
Use																																																								X				
Manage																																																								X				
5. Are your projects managed by a single project manager?																																																												
Yes	X			X		X	X		X		X	X	X						X	X				X					X		X	X		X			X	X		X	X	X					X	X	X	X		X	X	X	X	X	X	X	X	X
No		X			X			X		X				X	X	X	X	X				X	X		X	X		X		X			X		X	X			X					X	X	X		X			X									
One Manager Pre-letting and one post-letting			X																																																									
156 Project managed by 16 Project Managers																											X																																	

6. Describe how your organization determines the success or efficiency of your project management process	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
Track costs	X		X		X	X	X		X			X	X			X	X	X		X	X	X		X						X													X				X	X				X	X	X	X					X
Track time to complete	X				X		X	X	X				X			X	X	X		X	X	X	X	X		X	X	X		X								X					X	X		X							X							
Track project activity schedules			X										X				X				X	X																X								X	X	X						X						X
Meeting measurable goals				X	X												X				X	X							X																	X			X									X		
Meeting measurable metrics				X	X											X	X			X		X																												X										
Track resources					X																	X																																						
Customer Satisfaction/ Extensive system of partner surveys					X												X				X	X		X			X																																X	X
Design on time measure						X																																																						
Contract change orders as a percentage of construction measure						X																												X																										
Web based project management system							X																																																					
High Quality								X												X																																X			X					
No formal process									X		X																			X																												X		
Preliminary Engineering to Construction completion time										X																																																		
Adherence to planned advertisement for bid date and bid award date												X						X						X																	X						X													
Annual report to the state legislature														X																																														
Formal post construction review process/Project Audit															X							X																																						
Project Matrix developed early in the planning phase																	X																																											
Limited number of design related changes																		X										X																												X				
Low cost maintenance for the design life																		X																																										
Formal evaluation by a third party																			X																																									
Independent Project Analysis																						X																																						
Approved Work Program																									X																																			
Improved communication & coordination																											X																																	
Increased emphasis on public involvement																											X							X																										
Meet purpose and need on time & w/in budget.																															X			X			X								X											X			X	
Deliver on the date committed to the legislature and for the cost in program proposal based on 30% design.																																X																												
If projects get let and built on time																																	X																		X									
Project advertised w/in schedule and all funding obligated																																			X												X													
Number of projects that make the 1 & 5 year plan																																				X																								

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
Projects completed on time																																				X																		X	X						
Periodic reviews																																							X																										
Delivery in accordance w/ the managed scope, schedule and budget																																								X																								X		
"Critical Issue" data collection activity; once common themes are identified, improvements are attempted																																										X																										
Measured by feedback from Project Managers																																																																					
Meeting contract letting dates																																																																					
Achieving executive support for projects																																																																					
Receiving no negative feedback from stakeholders following construction																																																																					

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
7. Does your organization have data that demonstrates improvements in meeting budget estimates?																										
Yes					X		X			X				X	X	X	X		X	X	X	X	X		X	
No	X		X	X		X		X	X		X	X	X				X	X						X		X
8. does your organization have data that demonstrates improvements in meeting deadlines (schedule, milestones, etc.)																										
Yes				X	X		X	X		X		X			X	X	X		X	X	X	X		X	X	
No	X		X			X			X		X		X	X				X					X			X
9. Does your organization have data that shows improved quality of products and/or services?																										
Yes				X	X	X	X	X		X			X		X	X	X		X	X		X	X	X	X	
No	X		X						X		X	X		X				X			X					X
10. Does your organization have a Project Management Office?																										
Yes			X	X		X	X			X		X								X	X	X	X		X	X
No	X	X			X			X	X		X		X	X	X	X	X	X	X					X		
11. Does your organization have a Project Management Website?																										
Yes				X		X	X	X		X	X	X					X		X		X	X	X			
No	X	X	X		X				X				X	X	X	X		X		X				X	X	X
12. Does your organization have written procedures for Project Management?																										
Yes				X			X	X	X	X		X	X		X	X	X		X	X	X	X	X			X
No	X	X	X		X	X					X			X				X						X	X	

	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
7. Does your organization have data that demonstrates improvements in meeting budget estimates?																																		
Yes					X			X		X		X		X			X	X	X	X	X	X		X		X	X		X	X		X	X	X
No	X	X	X	X		X	X		X		X		X		X	X							X		X			X			X			
8. does your organization have data that demonstrates improvements in meeting deadlines (schedule, milestones, etc.)																																		
Yes	X	X	X		X	X	X	X		X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X	X
No				X					X		X		X															X				X		
9. Does your organization have data that shows improved quality of products and/or services?																																		
Yes		X										X			X					X	X			X		X			X	X	X		X	X
No			X	X	X		X	X	X	X	X		X	X		X	X	X	X			X	X		X		X	X				X		
10. Does your organization have a Project Management Office?																																		
Yes	X				X			X	X	X		X		X			X				X	X	X	X		X	X	X	X	X	X			X
No		X	X	X		X	X				X		X		X	X		X	X	X					X							X	X	
11. Does your organization have a Project Management Website?																																		
Yes	X		X		X							X			X					X			X			X	X	X		X				X
No		X		X		X	X	X	X	X	X		X	X		X	X	X	X		X	X		X	X				X		X	X	X	
12. Does your organization have written procedures for Project Management?																																		
Yes					X	X		X	X	X	X	X		X	X		X	X			X	X	X	X		X	X	X	X	X	X			X
No		X	X	X			X						X			X			X	X					X							X	X	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
13. Briefly describe the type of system your organization utilizes to plan, schedule and track project progress.																																																												
Artemis software to track project schedules	X																																																											
Varied systems used		X																																																					X	X				
Comprehensive Program Management System (CPMS)			X																																											X														
IT System (IBM's AS)			X																																																									
MS Excel				X													X																								X																			
MS Project				X		X								X		X	X					X		X										X						X																				
"Plan of Record" tracks key programs for management review				X																																																								
Modified "Open Plan"					X																																																							
Enterprise database for project mgmt						X																																																						
Monthly reports on the Intranet						X																																																						
Program Project Management System							X																													X														X	X									
Primavera							X					X													X		X			X															X															
Other web based tracking/change control system								X																																														X						
Monthly reports									X																													X																						
Monthly meetings/updates									X											X						X																															X			
Weekly lead project mgr meetings									X																																																			
Bi-Monthly project status reports to the Legislature									X																																																			
Quarterly status reports to the Governor									X																																																			
SAP Module										X																																																		
In-house developed web based system											X			X																																														
Project Scheduling System software													X		X																																													
Modified Lotus Notes																	X																																											
Aimware																	X																																											
Project Management Process																					X																																							
Off the shelf scheduling system																					X																																							
In-house designed project tracking/status system																								X		X	X													X			X					X												

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	HH	II	JJ	KK	LL	MM	NN	OO	PP	QQ	RR	SS	TT	UU	VV	WW	XX	YY	ZZ	A1	A2	A3	A4	A5	A6	A7	A8
Financial Management System																							X																																										
"PSM"																									X																																								
OPX2 plus rules based PM system																												X																																					
Process of Purchasing a PM System																													X																													X		X							
Two pass critical path schedule																															X																																		
PS 8 Software Package by Sitor																																X																																	
Use Preconstruction Engineering Mgmt System (PCMS)																																	X																													X						
Process of developing a management system																																			X		X																											X		
Activity manager responsible for completing work on time																																				X																														
Total Development Process Manual																																																				X			X												
Welcom-Open Plan Version 2.6																																																					X														
Projecx System																																																									X											
Project goes through STIP																																																											X								
SPMS																																																																X				
Project teams																																																																		X			
Integrated Product Development System (IPDS)																																																																			X
Integrated Management Plan / Integrated Master Plan & Schedule (IMP/IMS)																																																																			X
Earned Value Management System (EVMS)																																																																			X

13.

A. We use the Artemis software to track project schedules. We just transitioned to this system.
B. No one system is used; varies by program and project.
C. Comprehensive Program Management System (CPMS). IT system developed in early 1990s based on IBM's AS
D. We don't have a standard system, but use MS Excel or MS Project. We utilize a "Plan of Record" which tracks key programs for management review.
E. We use a 1991 version of "Open Plan" that has been heavily modified to meet our needs. It is a time-constrained, multiproject scheduling system which uses projected resource hours and actual "to date" obligations to produce costs and budgets.
F. We use project templates with Microsoft Project. Text extracts are loaded nightly to our enterprise database for project management, stored on DB2 tables. Reports are generated from the project management office and placed on our intranet site on a monthly basis, used for district production meetings.
G. We have a Program Project Management System which is used on most projects. This system tracks activity and milestone completions as well as design, right of way, and construction budgets; but is not a resource loaded tracking system. For major projects, Primavera is being used.
H. Written procedures for Project Management and Development, and web based tracking/change control system.

I. Monthly ad schedule reports and meetings; weekly lead project manager meetings; bi-monthly project status reports to Legislature; quarterly status reports to Governor.
J. Under transition to SAP module.
K. We have a web based system that was developed in-house which tracks the scheduled and completion dates for 12 project milestones.
L. Customized Primavera schedules are prepared for each project in design phase. Generic schedules are used for projects in scoping phase.
M. Project Scheduling System software that schedules and tracks projects from the planning stage to completion of construction and the final as-built plans are completed.
N. The Office of Planning & Programming has a computer system they developed to track some of the milestones of project completion.
O. Projects are identified in the Statewide Transportation Improvement Program (STIP); Milestones are established through the Project Milestone process; and the project is tracked through our Project Development Schedule process. Many of our project managers use Microsoft Project software to help them manage their projects.
P. Project Managers use a variety of databases. MS Project is the support tool that supports our project management system.
Q. A home-grown architecture of lotus notes dBs are utilized to support an approved project methodology. Defined roles are established and committees are in place to manage templates driving consistent PM deliverables. Planning is achieved largely by selecting deliverable templates that logically apply to the project. Tools for scheduling and tracking are primarily MS Project, Aimware, and customized Excel spreadsheets. Project reviews follow a Phases & Gates approach in which key project sponsors "pass" the project through critical stop signs after sufficient confidence that controls and directions are business appropriate.
R. Our organization currently uses the highway program as our tracking document. If the project is delivered ready to bid within the program year it is considered a success.
S. Planning is done internally and we have years of experience. The project progression is typically managed via emails, project meetings and monthly meetings.
T. We have a Product Management Process (PMP) that defines the entry and exit criteria by organizational responsibilities with time lines which is used throughout all the phases of the project. The baseline of the PMP is the Marketing Statement of Requirements.
U. Off the shelf scheduling system; in-house designed project tracking/status systems...green/yellow/red.
V. 1. Front End Loading methodology that utilizes a 266 step approach. There are phases and gate reviews (1 through 6) 2. A review process prior to funding called the Capital Investment Review process where all projects greater than $100,000 are reviewed via phone with a committee at headquarters (central office). Up to 20 documents are submitted via electronic mail one week prior to review and judged for quality and completeness. Review takes approximately 20 minutes. 3. CIR Topics: FEL Index Score, Project Cost Estimate (formal estimator used over $250,000), Project Cost Control, Project Schedule (using MS Project software that integrates cost, schedule and resources) - called the Capital Planning Process Tool (CPP), Value Improving Practices (Value Engineering, Six Sigma etc), Resource Planning, Health Safety and Environmental Reviews, Risk Issues, Permits and Codes, Purchasing Strategy, Long Lead Items, General Engineering and Design Issues, Standard Design Issues (Worldwide Kodak Design Standards), Info. Systems and Info. Technology, Metrification, Asset Utilization Review, Reliability Impact Checklist and Reliability Project Plan, Formal Commissioning Plans 4. Team consists of Project Manager, Engineering Manager, Construction Manager, Client Representative, Client Sponsor, Fabrication Manager, Project Controls Engineer, Maintenance Representative, Operations Representative, Design and Drafting, Materials Manager and Commissioning Manager. 5. Regular Team meetings are held with meeting notes frequently written. 6. Formal documentation generated and passed onto operating department after project closure 7. Formal Project review and closure. 8. Earned Value methodology sometimes used. 9. Celebration of successes!!
W. Our financial management system allows the functionality to track all phases of our projects.
X. Program establishment and revision every 2 years. Number of internal databases to track target-actual milestones and key phase dates. Project specific use of MS Project.
Y. PSM is a statewide scheduling and reporting system. One office uses the Primavera scheduling system.
Z. Customized project management system software. Monthly schedule meetings for pre-construction projects.
AA. A customized web based Program Project and Resource Management System that utilizes Primavera P3e as a scheduling tool.
BB. Old legacy system being updated currently to OPX2 plus rules based PM system.
CC. Process of purchasing a PM system.
DD. No official system. Some trained and use Primavera Suretrak to plan schedule projects.
EE. A two-pass critical path scheduling system using our standard Work Breakdown structure.
FF. PS 8 Software Package by Sitor.
GG. Use Preconstruction Engineering Management System. Process of looking at new systems.
HH. Use Microsoft Project and Protrack, an inhouse developed program.
II. Trial and error, in process of developing a management system.
JJ. Use project management system software, and each activity manager is responsible for completing work on time.
KK. Has a project scheduling system, but are in the process of developing a fully electronic project tracking system.
LL. Publish a monthly status report.
MM. Regular meetings
NN. Microsoft Project and a customized internal database.

OO. PPMS – recently upgraded to EPMS
PP. We have a very limited Excel spreadsheet file system that keeps track of milestones on some projects.
QQ. Maintains an in-house tracking system containing all projects. All projects are tracked from the time a project is programmed until it has been completed. The system has milestones for various activities and phases of work. They system also tracks expenditures for various phases of work and is updated daily. The system is able to generate multiple reports on past, present, and future projects or programs.
RR. Plan development process, TPRO (Preconstruction Computer System), TRANSPORT (Construction System)
SS. Use a PCS (Project Management System) software using Primavera
TT. We have several customized computer applications. The Program/Project Management System (P/PMS) is a scheduling tool used for Early Preliminary Engineering and Preliminary Engineering projects. The Construction Scheduling System (CSS) and FieldManager are used for Construction projects. The Maintenance Activity Reporting System (MARS) is used for Highway Maintenance projects. The Administrative Customizable Reporting System (ACRS) is a reporting tool that queries our corporate capital project database. In combination, these applications allow us to plan, schedule, measure, report costs, and report the accomplishments of our programs.
UU. ODOT has reconstituted its Total Development Process manual such that, depending on a project's size, cost, and complexity, prescribes a disciplined multi-step process for moving the project from initial planning on through completion of construction. The TDP requires that all relevant interests and development disciplines become involved in project decision-making as early in the process as practicable to ensure that such considerations are accounted for before they get out of control and redundant engineering and analysis becomes needed. Preliminary engineering and environmental review and analysis proceed together to ensure well-reasoned and economic engineering solutions are being pursued. All activities are pushed forward in accordance with a critical path, all-inclusive gantt chart for the project. Project budgets are revisited at regular intervals to ensure that undesirable scope creep is being avoided as much as possible. All relevant data about each project is now maintained in one consistent database and it is used to develop all project and program management reports.
VV. Homegrown computer system.
WW. Welcom-Open Plan version 2.6: Project schedules for many projects are monitored electronically using this software
XX. During planning and design projects are tracked through a "Project and Program Management System (PPMS)". During Construction projects are tracked and managed through Site Manager.
YY. We use a Preconstruction Engineering Management System (PCEMS) that establishes milestones for project tasks. It is an old mainframe system that is coordinated by our Project Development Office. We are in the process of looking at new PC systems to allow more interaction with all project participants. We are also in the process of implementing Project Identification Coordinators to improve our planning, scooping and programming processes. We intend to maintain program oriented on projects except a more team approach will be used by using new scheduling software.
ZZ. Projecx System is used. This is a software package that is used to track different aspects of projects, project status, reports, do budgets, schedules, etc.
A1. Have a system to track the start and end of projects, but looking at alternatives and improvements.
A2. Project goes through STIP which is listed by year, type of funds, type of projects, etc; these then go to the Regions and pre-construction and mangers in the field oversees these up to construction and then hands them on to Construction Project Manager.
A3. Program Development Management System (PDMS) that includes the Executive Reporting System, FMSP, Primavera P3e, Site Manager and PPMS.
A4. A variety of systems are used based on the function, design, construction, maintenance, etc.
A5. A computerized system called SPMS is used to track projects from inception to letting. It has benchmarks that tracks different milestones. Monthly updates are done and status of projects reviewed regularly.
A6. When a project is initiated, it is added to the Department's Preconstruction Management System (PCMS). PCMS includes information such as a project description, location, estimated cost and schedule. Project managers update PCMS as required during the development of the project. Additionally, on a monthly basis, each project schedule and cost is updated at the Project Status Review Meeting that is typically attended by all project managers and upper management. Decisions on proposed schedule changes and cost updates are made at or immediately following this meeting.
A7. In the process of developing a Project Management function. Currently use project teams and an engineer managing the project.
A8. Integrated Product Development System (IPDS) – process tailoring, IPDS provides the structure within which our common processes are integrated and deployed. IPDS processes define how Integrated Product Teams (IPTs) propose solutions, execute projects, and produce products for our customers. The processes communicate "the way we do business" to our project teams and our customers. IPDS provides a structured framework to integrate our core business and enterprise-enabling processes thereby providing a common method for Raytheon project planning and execution. It supplies the consistent format, content, and terminology necessary to flow down common objectives and metrics, and to roll up the results of implementing and managing through processes. IMP/IMS (Integrated Management Plan / Integrated Master Plan & Schedule) - the IMP consists of high-level direction for managing the project, identifying top-level criteria, milestone entrance/exit criteria, and the Integrated Master Schedule (IMS). Roles and responsibilities are also provided in the IMP. Earned Value Management System (EVMS).

Organizations Submitting
Screening Surveys

Alabama DOT
Alaska DOT
Arizona DOT
Arkansas State Highway & Transportation Department
California DOT
Colorado DOT
Connecticut DOT
Eastman Kodak Co.
FHWA – Massachusetts Division
FHWA – Minnesota Division
Finnish Road Administration
Florida DOT
Georgia DOT
Hawaii DOT
Hewlett Packard
Idaho Transportation Department
Illinois DOT
Indiana DOT
Iowa DOT
Kansas DOT
Kentucky Transportation Cabinet
Louisiana DOT
Lucent Technology
Maine DOT
Maryland State Highway Administration
Michigan DOT
Missouri DOT
Nevada DOT
New Hampshire DOT
New Mexico DOT
New York State DOT
North Carolina DOT
North Dakota DOT
Ohio DOT
Oklahoma DOT
Oregon DOT
Pennsylvania DOT
Raytheon Missile Systems
South Carolina DOT
South Dakota DOT
Tennessee DOT
Texas DOT
Unisys Corporation
Utah DOT
Vermont Agency of Transportation
Virginia DOT
Washington DOT
Washington DC DOT
West Virginia DOT
Western Federal Lands Highway
Wisconsin DOT
Wyoming DOT

Note: Some organizations submitted 2 surveys representing two different units within their organization.

APPENDIX E

Project Management National Study Results Conference

Sofitel Hotel Miami - April 27 & 28, 2004

Monday, April 26, 2004

3:00 – 6:00 PM	Registration	

Tuesday, April 27, 2004

7:00 - 8:00 AM	BUFFET BREAKFAST Registration	
8:00 - 8:30 AM	Welcome/Opening Remarks	Mr. Freddie Simmons, P.E. State Highway Engineer, FDOT Mr. Rick Capka, Deputy Administrator, FHWA Mr. Tony Kane, Director, Engineering and Technology Services, AASHTO
8:30 - 9:10 AM	FHWA-FDOT Benchmark Report	Ms. Lori Byrd FHWA-FL Mr. Ken Leuderalbert, P.E. Manager, Project Management Research & Development Office FDOT
9:10 - 10:00 AM	Project Management Organizational Structures:	Team Presentation
	PMI Models	Mr. Ken Leuderalbert, P.E.
	Weak Model	Ms. Kathy Thomas, P.E. Dist. Project Management Engineer FDOT
	Strong Model	
	Matrix Model	Mr. Richard Gramlich, Director, Project Management New Jersey DOT
10:00 - 10:20 AM	BREAK	
10:20 - 11:10 AM	Project Development Website Virginia DOT	Sam Hayes, Asst. State Location & Design Eng. Virginia DOT
11:10 – Noon	Project Delivery Pipeline System	Mr. Richard Gramlich,

Project Management National Study Results Conference
Sofitel Hotel Miami - April 27 & 28, 2004

Tuesday, April 27, 2004 (Continued)

Noon - 1:30 PM	LUNCH & Presentation by Project management (PMI)	Ms. Laurie Cook, Director, Prof. Programs PMI
1:30 - 2:10 PM	Continuous Project Delivery Process Oregon DOT	Mr. Mike Wolfe, Director, Office of Project Delivery Oregon DOT
2:10 - 2:50 PM	Project Management Best Practices	
2:50 - 3:10 PM	BREAK	
3:10 - 4:30 PM	Benchmark Studies	
4:30 - 5:00 PM	Project Management Guidelines Florida DOT	John Davis, P.E. State Project Management Engr. Florida DOT
5:00 - 7:00 PM	RECEPTION	

Wednesday, April 28, 2004

7:00 - 8:00 AM	BUFFET BREAKFAST	
8:00 - 9:30 AM	Miami Intermodal Center (MIC) Presentation	Mr. Kouroche Mohandes, FDOT Mr. Steven Thompson Earthtech
9:30 - 9:50 AM	BREAK	
9:50 - 11:20 AM	Panel Discussion on Selected PM Topics PM Organizational Structures Scheduling Methods Estimating Methods Controlling Scope and Cost Creep Reporting Methods Developing Project Managers Controlling Quality of Project Delivery In Design & Construction Role of AASHTO and FHWA in Project Management Innovative Consult. Acquisition Practices	Site Visit Organizations with Mr. Ken Leuderalbert as MC
11:20 - Noon	Recognition	Ms. Lori Byrd Mr. Ken Leuderalbert
1:30 - 5:00 PM	National Project Management Strategic Planning Session	All Conference Attendees

APPENDIX F

PM Conference – Strategic Planning Session Notes

Beatriz
A need for training and a need for Florida to complete the Handbook, and publicize it.

Rich
Use PMI resources to create a PM section specific to transportation and state agencies.

Mike
Partner with PMI and other state agencies to create a clear professional career path at the state level. Create a state classification to be used by agencies that utilize project managers.

Ron
What level of Administrative support is considered standard for program. (I think he was saying this because he has no admin person.)

Mike
PM is a philosophy that should be adopted by all DOT's because it works. Just pick a model.

James (AASHTO)
AASHTO potentially partnering with PMI to provide basic training. Develop an award competition for Project Management.

Jim (PENDOT)
Share common measurements from state to state. Possible establishment of agreed common points. (i.e.: How long to being consultant on board?)

Ken
National; Program to bring together PMs to share ideas and what is working (conference like this to continue). How much energy $ used in procurement compared to managing projects.

Rich
Share knowledge by attending other states' training. (P.S. Don't charge N.J.)

James (AASHTO)
At what level should information be distributed to affect change. (Political vs. Institutional)
Raise awareness of PM.

Ken
How can you effectively operate under each different model?

Morteza (FDOT)
Define roles of PM. How can we make PMs' job easier? Processes? Improve our own.

Pete (P.R.)
Contact Administration as "Billable hours" for PM.

Rich
Fully integrate PM & RE's communications. (PM signs, RE changes)

What Next?

A way to share PM Best Practices. A PM Handbook. Identify what organization wants to accomplish then "Reverse Engineer" for PM.

Define "Vision" of PM. Explain the different models.

Identify measurable performance. (Now that we've benchmarked.)

Differences between regular PM and those skills needed for MEGA Projects.

Develop national forum to share and discuss PM issues.

Commitment to share information learned here with other in our organization.

Knowledge sharing and CEO buy-in (especially topics covered) during panel discussions.

- Network!

Understand roles and goals of PM.

Emphasis on core knowledge.

Find dynamic model to "tack onto" i.e.: could be PM or other. This should be at a bigger level. (Reminder – D/B Inst.)

Get together and exchange ideas – (Network) share best practices.

Teresa
~~Seeing if universities offer a PM degree.~~

Tim
Incorporate PM concepts in AASHTO CEO briefings.

Mario
Establish a PM Academy for the basic skills (writing – media).

Kathleen
How do you make these resources attainable for a small organization?

Rich
Info awareness for CEO's on different PM approaches and ways of organizing.

Ken
Don't re-invent the wheel – need a system for sharing info from state to state. (Community of practice).

John D.
A Subsail Community of practice.

Mike
PM process improvements shared.

Ken
Research initiative to discover models being used by state DOT's. (20-24)

Rich
Consider Bench Marking project management tools nationwide. Also strategies and approaches.

Pete
Type of project influences style of PM.

Robert
Understanding the definition of success and measure used.

Pete
Clean definition of the role of PM Manager.

James
Consistency in terminology

Mike (ODOT)
Consider selling PM as core competency rather than a tool or idea.

Tim
Awareness of PM needs to reach supervisor level.

Rich
Model role of PM in constitution Cradle to Grave Model vs. Silo Model.

Issue of Next Step

- Define PM at every level
- Define role of PM
- Raising awareness of CEO's with pros and cons of models
- Understand definition of successful PM
- Keep open communication between states
- Seeing how other states do PM
- Focus on development of management skills
- Pick a model
- Full organizational awareness of purpose and value of PM
- Sharing of Best Practices
- Train PM's and share with the rest of the organization.
- Understand role of PM to be a success.
- Determine PM responsibility in each model
- Define role of PM and also organizational structure
- Organizations can change successfully. Look at the processes.

APPENDIX G

PROJECT MANAGEMENT ADVISORY COMMITTEE CHARTER

The Project Management Office was organized and is charged with the responsibility:

To preserve and improve the Florida Transportation System though consistent and efficient use of Project Management Tools and Practices.

In order to accomplish this charge, they are to work with Offices within the Department, District, and Turnpike that are directly involved in the Department's core processes of:

Plan	Deliver
Produce	Maintain & Operate

The intent of the Project Management Office is to improve processes so Department Project Mangers are able to perform their duties more efficiently and effectively, resulting in higher quality transportation projects developed and delivered in a timely manner and at a reasonable cost to the public.

To assist in this endeavor, a Project Management Advisory Committee will be established consisting of two representatives from each major project management function, one from the Central Office and one from a District. The District representatives will be responsible for two way communications between the Committee and the districts for their respective functions. The Central Office representatives will be responsible for the policy, procedure and training aspects for their functions. It is anticipated that the members serving on the Committee function at a leadership level within the Department. The purpose of the Advisory Committee is to assist in the review, development and implementation of Project Management Strategies. It is also intended that this Committee will serve to improve communications among the various functions within the Department.