

Environmental Schedule Management

Schedule Management and Project Delivery
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Plan Development Process Overview

SCHEDULE MANAGEMENT AND PROJECT DELIVERY

GDOT projects are budgeted within specific fiscal years and are balanced across congressional districts. Unexpected impacts to these budgets are a challenge to correct. Therefore, falling behind schedule for any reason, including the environmental process, can have major negative implications on project funding. For this reason, to ensure successful project delivery, the project team must take responsibility for environmental schedule management.

Even in the case of a local government-sponsored project, adhering to GDOT's schedules are important. For example, a locally-designed project could engage a consultant to combine environmental studies and a complete design scope on an accelerated schedule. However, without coordinating with the Office of Environmental Services (OES) or minimizing or avoiding impacts to environmental resources, the sponsor could experience severe project delays.

Staying on schedule requires effective coordination to meet all environmental requirements. Teamwork must be established early in the project. This way, environmental resources can be considered *before* the design process instead of after when avoiding impacts becomes more time consuming and difficult. Late consideration of avoidance and minimization often results in redesigning portions of the project. Managing teamwork effectively in an environmental schedule helps the success of the overall project delivery.

Another important consideration for the schedule is how the project is funded. Funding distinctions are defined below:

- > Federal-aid projects must consider the requirements described by Federal Highway Administration (FHWA) policies and the National Environmental Policy Act (NEPA) document approval, including projects with blended funding (such as partial Transportation Investment Act and partial federal funding).

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- > State-funded projects with a federal nexus (e.g., Clean Water Act Section 404 permitting through the US Army Corps of Engineers) must consider environmental impacts, particularly those to cultural resources protected under Section 106 and species protected under the Endangered Species Act for the portion of the project involving the federal nexus, the Georgia Environmental Policy Act (GEPA) policies, and GDOT's policies for state-funded projects.
- > State-funded projects without a federal nexus must consider GEPA and GDOT's policies for state-funded projects as well as a determination that no prohibited actions as defined under Section 9 of the Endangered Species Act will occur.
- > State-funded projects where project costs (Preliminary Engineering, right of way, utility, and construction) exceed \$100 million must consider GEPA and GDOT's policies for state-funded projects and include the preparation of a GEPA document.

KEYS TO ENVIRONMENTAL SCHEDULE MANAGEMENT

Any transportation improvement project can be challenging to keep on schedule, especially with the complexities of the project size and the conditions of its location. Just as the design process requires focus across several phases and many details, the environmental process requires attention to many tasks, regulations, public involvement, and development milestones. It is also interdependent with the design process. A change to design can result in environmental process changes that require adapting the schedule. Other changes, such as boundary changes resulting from the right of way process, can also require changes to the environmental process. Throughout development, the process must adapt to project-area conditions, the complexity of the project, and the type of funding.

Each project has unique conditions, requirements, and management needs. Effective environmental project management is critical to timely project delivery. Keys to successful project management include:

- > Understanding the fundamentals of analysis, documentation, and agency consultation required across all technical studies and environmental disciplines: No individual is an expert in every environmental issue that could arise on a project. The Environmental Analyst works with the Environmental Subject Matter Experts (SMEs), the design team, and the project manager to manage the environmental components of project delivery. The role of the Environmental Analyst is to understand enough about the project's environmental needs to coordinate with the project team effectively and provide guidance to keep the project on schedule. Failure to address environmental requirements and identify potential environmental issues could lead to lengthy project delays and added costs. For example, neglecting to consider timing and plan development needs for Clean Water Act Section 404 permit acquisition can lead to serious delays.

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- > Knowing the relationship of design phases to environmental tasks and regulations: An understanding of GDOT's project delivery phases gives the Environmental Analyst the perspective needed to address the relevant tasks within each phase. This allows the project to progress successfully. State and federal regulations need to be applied to unique conditions of each project and the proposed design. For example, neglecting to inform designers about potential environmental concerns before design plans are finalized can delay the project schedule and result in wasted effort on the part of design.
- > Creating and tracking an environmental schedule in relationship to the GDOT design schedule: Along with understanding the design phases and relevant environmental issues, the Environmental Analyst must be able to place them into context. While many design tasks are in chronological order (i.e., linear), much of the environmental schedule depends on what is discovered by the technical studies. If technical studies reveal unexpected resources and/or impacts that throw the schedule off, the project team will need to come up with a recovery strategy. This will likely involve taking advantage of overlapping and iterative tasks to keep the project moving as close to its original schedule as possible. Understanding the relationship between the design and the environmental schedule will make it easier to develop recovery schedules.
- > Staying current with changing regulations and how they could affect environmental resources and design decisions on specific projects: The environmental regulatory picture is changing constantly, often in response to new research or changes in technology. Changes implemented at a federal level could include new policy by FHWA in response to other agency actions or new coordination procedures by resource agencies such as the US Fish and Wildlife Service (USFWS). The environmental team members need to be aware of current or pending changes and how they might apply to a current project. Consultant team members must coordinate with OES staff when considering unique approaches for specific projects, while longer-term procedural changes are being considered.
- > Taking responsibility for quality: Among the most important roles for all project team members is to assure that quality procedures are followed for all environmental reports and documents. Quality management is an important and shared responsibility. Quality control procedures should be used throughout data collection, analysis, and documentation, followed by effective reviews prior to submittal to GDOT or regulatory agencies. All team members (GDOT and consultant) share the mutual goal for quality control and quality assurance. They are always open to coordinate with project team members to reach this goal.
- > Working as a team: To stay on schedule, environmental concerns, regulations, and procedures must be addressed. Managing the process effectively allows team members to focus on priorities, improve coordination and consensus, meet critical milestones, and maintain consistent quality levels.

- > **Using the tools:** GDOT uses several tools to keep track of its projects. *TPRO* is a project management tool that allows a large volume of qualitative project information—staff and consultant comments—to be conveyed with reasonable effort. *Primavera P6*, or simply P6, is a more quantitative schedule management tool, based on dates and durations, that allows GDOT to track baseline schedules and resource utilization. Both tools should be updated regularly, usually every two weeks. GDOT OES personnel and consultants with permission are responsible for updating the environmental information tracked by these tools. This information feeds into the *Preconstruction Status Sheet*, which is a summary of project management and schedule information. Access to these tools is available to outside consultants by request.

PLAN DEVELOPMENT PROCESS OVERVIEW

The Plan Development Process (PDP) is GDOT’s comprehensive procedural guide for preparation and approval of design plans. It outlines the current process for project development, from project identification through construction award and final acceptance. As such, it serves as an important reference for environmental schedule management. A thorough review of the PDP is required for all environmental team members, particularly when a change in procedures could affect scheduling relationships.

Plan Development Process Manual

Georgia Department of Transportation

The three major phases of the PDP relevant to environmental schedule management are Concept Stage, Preliminary Design, and Final Design. The PDP details the engineering, project management tasks, and policy procedures within each of these scheduling phases. The overall process for each project, including environmental procedures, must be followed according to the PDP for each phase. As the project develops, environmental findings inform project designers, while the design provides the basis for determining impacts, mitigation, environmental documentation considerations, and permitting requirements.

Note that the process described here is for the typical “design-bid-build” project, not “design-build projects”. These project types are defined below:

- > Design-bid-build projects are projects that follow a project delivery method where design and construction are sequential and separate steps in the project development process.

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- > Design-build projects combine design engineering, right of way, utilities, and construction phases into a single contract.

Concept Stage

The Concept Stage begins with the development of a Project Justification Statement (PJS) and ends with the production of the project's Concept Report. The PJS is a brief statement identifying and explaining the major issues that the project is intended to address.

During the Concept Stage, decisions must be sensitive to environmental resources. Doing so requires:

- > Surveys for environmental resources (particularly National Register-eligible historic properties, cemeteries, publicly-owned resources, Waters of the US, buffered state waters, and designated habitat for protected species);
- > Early coordination and public involvement as warranted by project specific conditions;
- > Coordination with design staff to provide and confirm environmental resources/constraints that must be considered as part of the design;
- > Pre-permit activities, such as the Practicable Alternatives Review (PAR), if required; and
- > Coordination with the FHWA (for federally-funded projects) and consulting agencies.

According to the PDP, wherever possible, environmental resources must be avoided. When avoidance is not possible, impacts must be minimized and mitigated. Concept decisions must also consider compatibility with adjacent land use, address community issues, satisfy the PJS, be consistent with the State Transportation Improvement Program (STIP), and provide for logical termini.

Preliminary Design

Once the Concept Report is approved, Preliminary Design activities can begin. Many activities are automatically set in motion with the creation of the project schedule. Some preliminary design and environmental activities may have been initiated during the concept stage.

The main goal of Preliminary Design is to reach the Preliminary Field Plan Review (PFPR) and ROW authorization. The focus of this review is to ensure:

1. The design satisfies the project justification of the programmed project;
2. The project can be built and maintained; and
3. The preliminary ROW identified provides area to build and maintain the project.

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During Preliminary Design, environmental activities include:

- > Surveys for environmental resources not conducted during the Concept Stage;
- > Avoidance and minimization activities, such as the Avoidance and Minimization Measures Meeting (A3M), if needed;
- > Impact analysis;
- > Additional public involvement as warranted;
- > Agency coordination to reach consensus on resource impacts and mitigation;
- > Approval of the NEPA document or the GEPA document, if the project is state-funded and will cost over \$100 million;
- > Preparation of draft Environmental Commitments Table (ECT), a.k.a “green sheet”;
- > Environmental Analyst attendance and participation at PFPR, which is:
 - Held prior to final environmental approval, ideally when design impacts to environmental resources have been avoided, minimized, and documented by effects assessments,
 - Review of plan set to confirm resources are shown correctly with boundaries labeled as environmentally sensitive areas (ESAs),
 - Review of anticipated environmental commitments and ensure relevant information is included in the plans (e.g., noise abatement),
 - Initial discussion of constructability,
 - Review of draft special provisions,
 - Review of potential conflicts with environmental resources (e.g., utilities),
 - Revisions to technical studies as warranted to address impacts of the design changes from the PFPR; and
- > For projects with federal-aid for Right-of-Way (ROW) acquisition, Environmental Certification for ROW, which requires:
 - Confirm approved environmental document matches ROW plans; and
 - Review and update of commitments in the current ECT.

As the plans are developed, bridging the gap between the environmental process and the contractor is critical for success. The ECT, also referred to as the “green sheet,” catalogues each commitment made during the environmental process and ensures that the commitments are included in project plan sets. Since GDOT is legally bound to fulfill all commitments, the general notes section of construction documents includes an

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Environmental Resources Impact Table (ERIT), making these commitments a contractual obligation of the contractor.

After preliminary plans have been updated to address any changes to ROW or easements from the PFPR, the ROW plans should be completed in accordance with current ROW Office guidelines.

Final Design

With NEPA document approval and Environmental Certification for ROW, federal-aid projects with required ROW need approval of the Location and Design (L&D) Report and the Notice of L&D to begin ROW acquisition activities. If ROW acquisition and Final Design advance prior to this approval, federal funds may be forfeited, unless conditions are met for early ROW acquisition. Final Design takes place concurrent with ROW acquisition activities.

For state-funded projects with required ROW, Notice of L&D approval is granted by the Chief Engineer with certification that GDOT has completed the public involvement process (if required), has the GEPA documentation (if required), has selected an appropriate location, and has committed to a specific design for the proposed project. Per project baseline schedules, environmental technical studies should be completed prior to ROW authorization.

During Final Design, environmental activities include:

- > Public involvement activities as needed to continue to engage stakeholders, including public involvement for feasible noise barriers;
- > Update of ECT and ERIT information with specific actions to meet commitments prior to and during construction;
- > Coordinate with design prior to final design plans “lock down” to review environmental issues due to changes in existing conditions or design since environmental approval and prepare reevaluations and addendums as needed;
- > Participate in Final Field Plan Review (FFPR), which includes:
 - Review of final plan set to confirm that environmentally sensitive area (ESA) boundaries are shown correctly,
 - Review of environmental commitments,
 - Review of Special Provisions,
 - Confirmation that constructability issues have been addressed,
 - Confirmation that potential conflicts have been addressed,
 - Environmental Analyst attendance and participation to review plan set and (typically) project area conditions,

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- Revisions as warranted to address impacts of the potential design changes from the FFPR;
- > Review the final alignment to confirm that environmental resource impacts match environmental documentation;
- > Preparation, coordination, and approval of the environmental reevaluation (for federal-aid projects, if needed);
- > Preparation, coordination, and approval of permits (most commonly a Section 404 permit and buffer variance);
- > Purchase of mitigation credits for impacts such as Waters of the US, and state water buffers (rare conditions may require other types of mitigation); and
- > Environmental Certification for Let is completed per the baseline schedule. If the baseline certification date cannot be achieved, the deadline for certification is 11 weeks before the Management Let date. This allows the project to advance to construction bidding, award, and authorization. A conditional certification process exists if the certification prior to 11 weeks is not possible, but the project team should strive to keep to the schedule and avoid conditional certification. Note that for federal-aid projects, a NEPA reevaluation must be approved prior to conditionally certifying the project.

The Final Design phase concludes when the project is let and construction is authorized. This leads to the last phase described by the PDP: Construction. The environmental project management schedule is not a factor in this phase. If during construction there are revisions requiring environmental activities, these are addressed as soon as possible to ensure that the project can be constructed in a timely manner.