

# General Baseline Schedules

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## APPLICABILITY

Baseline Schedules play a critical role in the successful development and on-time delivery of transportation projects. The Baseline Schedule is a fixed schedule that establishes the goals and expectations for delivering a project. It provides the basis for measuring and reporting project schedule performance and includes the planned start and finish dates (based on confirmed assignments and required resources) for each detail activity necessary for completion of the PDP. Baseline Schedules are used to track project status, review project history, pinpoint and understand reasons for delay, and evaluate how well proposed schedules are met through assessment of performance metrics established for each activity or milestone on the Baseline Schedule. All GDOT offices involved in the Plan Development Process (PDP) contribute to the development and subsequent tracking of project Baseline Schedules. For environmental studies on federal-aid projects, Baseline Schedules are established for seven major milestones in the environmental process. These milestones are:

1. Environmental Resource Identification,
2. Avoidance and Minimization Measures Meeting (A3M),
3. Environmental Technical Studies,
4. Environmental (NEPA) Document Approval,
5. Environmental Certification for Right-of-way (ROW) Authorization,
6. Environmental Permits and Variances (Lockdown), and
7. Environmental Certification for Let.

For state-funded projects, the Environmental Document Approval and Environmental Certification for ROW Authorization milestones (items #3 and 4 above) are generally not

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applicable to the environmental process. Therefore, baseline schedules are not established for these two environmental milestones on state-funded projects. Regardless of a project's funding mechanism, the complexity of project development and the number of people involved in the process make coordination and anticipation essential to keep project deliverables and milestones on schedule.

### LEADING INDICATORS

Leading Indicators are project activities that must be completed before other activities can begin. The timely completion of Leading Indicators is critical to ensuring that Baseline Schedules remain on track throughout a project's duration. For transportation projects, there are many Leading Indicators that demonstrate the interdependence between environmental and design activities. It is therefore essential for environmental activities to remain on schedule to allow other, non-environmental activities to also remain on schedule, and vice versa. Examples of these Leading Indicators are provided in the subsequent discussions of Baseline Schedules for each environmental milestone.

### HOT BUTTON CHANGES

Hot Button changes are any design changes made after Environmental Resource Identification that have the potential to delay subsequent milestones in the Baseline Schedule. Examples include but are not limited to:

- > Changes to the amount of required ROW, easement, or cut-and-fill lines either inside or outside the boundary of an Environmentally Sensitive Area (ESA);
- > Horizontal or vertical alignment shifts;
- > Extension of project limits beyond the previously surveyed Environmental Survey Boundary (ESB);
- > New displacements; and
- > Access modifications.

These changes can result in the need to reopen or reevaluate previous milestones in the environmental process. If not timed appropriately, delays to a project's Baseline Schedule can result. While such changes might not necessitate revisiting Resource Identification efforts for all environmental disciplines, Baseline Schedule delays are still possible even if only one environmental discipline is affected by Hot Button changes. In the event these types of design changes cannot be avoided, it is important for environmental specialists and project designers to communicate closely with one another when Hot Button changes are proposed in order to determine how these changes could affect the Baseline Schedule.

## BASELINE SCHEDULES FOR ENVIRONMENTAL MILESTONES

### Baseline Schedule for Environmental Resource Identification

Environmental Resource Identification marks the beginning of environmental studies at which point the project Environmental Analyst, Historian, Archaeologist, and Ecologist undertake efforts to identify and document environmental resources in the project area. This milestone is generally allotted six months for completion in the Baseline Schedule. During this six-month window, environmental specialists must initiate agency coordination efforts, conduct field surveys, and prepare resource survey reports for agency review and approval. Agency review time is also included in this timeframe. This milestone is considered complete upon resource agency approval of the survey reports (if required) and transmittal of boundary delineations to Design for any identified environmentally sensitive areas (ESAs).

Leading Indicator(s): Receipt (by the environmental specialists) of the Environmental Survey Boundary (ESB) from Design.

Reasons for Potential Delays to Baseline Schedule Completion Date: Late receipt of the ESB; late NTP to environmental subconsultants; late start of environmental tasks by specialists; unanticipated survey efforts such as a Phase II archaeology survey or seasonal ecology survey that cannot be undertaken within the six-month window for completion of Resource Identification

Potential Risk to Subsequent Activity on Baseline Schedule: Delay of A3M

### Baseline Schedule for A3M

The A3M's purpose is to bring a project's environmental team, design team, and Project Manager together to discuss measures for avoiding and minimizing impacts to ESAs along a project corridor. An A3M should be held for any project where environmental resources are identified. Two things must happen before an A3M can be held:

1. The Environmental Resource Identification milestone must be complete; and
2. A first-run of design cross sections should be prepared that can serve as the baseline condition for discussions of resource avoidance and minimization.

These preliminary plans should be provided to the environmental specialists for review at least twenty days prior to holding the A3M.

Leading Indicator(s): Completion of Environmental Resource Identification; development of first-run of cross sections; review of preliminary plans by environmental specialists.

Reasons for Potential Delays to Baseline Schedule Completion Date: late completion of Environmental Resource Identification; late receipt of preliminary plans for specialists' review.

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Potential Risk to Subsequent Activity on Baseline Schedule: Delay of Environmental Technical Studies.

### Baseline Schedule for Environmental Technical Studies

Environmental Technical Studies marks the point in the environmental process where project impacts to resources identified during the Resource Identification milestone are evaluated. Whereas the Resource Identification milestone requires survey efforts from NEPA, History, Archaeology, and Ecology, the Environmental Technical Studies milestone requires impact evaluations from these four disciplines as well as Air and Noise. The Environmental Technical Studies milestone is generally allotted seven months for completion in the project Baseline Schedule. During this seven-month window, environmental specialists must review preliminary design plans (which should reflect any design changes resulting from the A3M), calculate impacts to identified resources, and prepare and submit impact assessment reports for agency review and approval. The Environmental Analyst should also begin preparation of the environmental document during this time. This milestone is considered complete upon agency approval of the impact assessment reports.

Leading Indicator(s): Holding of A3M; receipt of preliminary plans from Design (Preliminary Plans are not completed until after the A3M.)

Reasons for Potential Delays to Baseline Schedule Completion Date: Late receipt of Hot Button design changes; Formal Section 7; Section 4(f); Public Controversy; Essential Fish Habitat Coordination with National Marine Fisheries Service (NOAA Fisheries); Informal Section 7 with NOAA Fisheries

Potential Risk to Subsequent Activity on Baseline Schedule: Delay of Preliminary Field Plan Review (PFPR). Ideally, all Assessment of Effects (AOE) reports prepared during the Environmental Technical Studies milestone should be approved, or at least under review, by the relevant regulatory agencies prior to holding PFPR. In the event agency approval is not received within the timeframe of the Baseline Schedule, GDOT must determine whether or not a waiver can be authorized to proceed to PFPR at-risk. While waivers are occasionally granted, this should be considered the exception and not the rule.

### Baseline Schedule for Environmental (NEPA) Approval

The Baseline Schedule for Environmental Approval varies depending on the level of environmental document required under NEPA. Generally eight months is allotted for completion of the milestone in the project Baseline Schedule, assuming that the level of documentation is a Categorical Exclusion (CE), and increases substantially when an Environmental Assessment/Finding of No Significant Impact (EA/FONSI) or Environmental Impact Statement (EIS) is required. Preparation of the environmental document begins during the Technical Studies milestone prior to holding PFPR. During this time, the Environmental Analyst should review the environmental technical studies, prepare the Environmental Commitments Table (ECT), and route the ECT for review and approval. The

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environmental document should be in review approximately one month after PFPR is held. This milestone is considered complete upon approval of the environmental document by the Federal Highway Administration (FHWA).

Leading Indicator(s): Agency approval of environmental technical studies.

Reasons for Potential Delays to Baseline Schedule Completion Date: Hot Button changes made during PFPR could result in the need to reopen Environmental Resource Identification and/or Environmental Technical Studies.

Potential Risk to Subsequent Activity on Baseline Schedule: Late submittal of the environmental document could result in delayed commencement of Final Design activities and ROW authorization.

### Baseline Schedule for Environmental Certification (ROW Authorization)

The Baseline Schedule for Environmental Certification for ROW authorization occurs two weeks after approval of the environmental document.

Leading Indicator(s): Agency approval of the environmental document; approval of ROW plans, which occurs after approval of the environmental document.

Reasons for Potential Delays to Baseline Schedule Completion Date: Hot Button changes to ROW plans could result in the need to reopen Environmental Resource Identification and/or Environmental Technical Studies.

Potential Risk to Subsequent Activity on Baseline Schedule: Late Environmental Certification could delay ROW authorization.

### Baseline Schedule for Environmental Permits and Variances (Lockdown Plans)

To meet a project's scheduled let date, impacts to protected waters and buffers cannot change once the permit and buffer variance applications are being prepared. For projects requiring a Section 404 Permit or Buffer Variance, the applications for these permits are based on Environmental Lockdown Plans. Lockdown occurs before Final Field Plan Review (FFPR), so any design changes made to impacted waters or buffers will affect the Baseline Schedule for Let. Any design changes, including Hot Button changes affecting the Let date that are made after the Lockdown date must be reviewed and approved by the Director of Engineering. Any Hot Button changes made to the project design must be received four weeks prior to the Lockdown date to allow for necessary evaluation of potential impacts to environmental resources and agency coordination.

The schedule for completing the Environmental Lockdown Plans and submitting the permit and/or buffer variance applications varies depending on the level of permit required, as follows:

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### Individual Section 404 Permit

Environmental Lockdown Plans shall be completed 38 weeks prior to the Baseline Schedule Let Date for projects requiring an Individual Section 404 Permit. Individual Permits must be applied for five months prior to Environmental Certification for Let, which is seven to eight months prior to the Baseline Schedule Let date. This allows for six to eight weeks between the impact Lockdown date and submittal of the Individual Permit application to the U.S. Army Corps of Engineers (USACE).

### General (i.e., Nationwide or Regional) Section 404 Permit

Environmental Lockdown Plans shall be completed 31 weeks prior to the Baseline Schedule Let Date for projects requiring a General Section 404 Permit. Applications for these permit types should be submitted to the USACE three months prior to Environmental Certification for Let, which is six months prior to the Baseline Schedule Let date. This allows for five to six weeks between the Lockdown date and submittal of the permit application to the agency.

### Buffer Variances

Buffer variance applications should be submitted to the Environmental Protection Division (EPD) within the same timeframe referenced above for the General and Regional Section 404 Permits. This allows for five to six weeks between the Lockdown date and submittal of the applications to the agency.

Reasons for Potential Delays to Baseline Schedule Completion Date: Hot Button design changes made post-Lockdown, if more substantive than a minor change, could result in reopening Environmental Resource Identification and/or Environmental Technical Studies, reevaluation of the approved environmental document, as well as revisions to the permit and buffer variance applications. All Hot Button minor changes must be received four weeks prior to the Lockdown date to allow environmental specialists sufficient time to update their respective studies and undertake necessary agency coordination efforts. For any design changes requiring completion of environmental studies beyond a minor change memo, the Baseline Schedule Let Date will be delayed as the four-week time frame is not sufficient for completion of the necessary studies and agency coordination.

Potential Risk to Subsequent Activity on Baseline Schedule: Delay in Environmental Certification for Let.

### Baseline Schedule for Environmental Certification For Let

Environmental Certification for Let occurs thirteen weeks after FFPR is held and eleven weeks prior to the Baseline Schedule let date for both federal and state-funded projects. Environmental document reevaluations should be submitted to FHWA five months prior to the Baseline let date. All required permits and variances must be acquired and necessary mitigation completed prior to Environmental Certification.

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Reasons for Potential Delays to Baseline Schedule Completion Date: Late receipt of permits; late completion of mitigation requirements; Hot Button design changes made at FFPR, if more substantive than a minor change, could result in reopening Environmental Resource Identification and/or Environmental Technical Studies, reevaluation of the approved environmental document, as well as revisions to the permit and buffer variance applications. All Hot Button minor changes must be received four weeks prior to the Lockdown date to allow environmental specialists sufficient time to update their respective studies and undertake necessary agency coordination efforts. For any design changes requiring completion of environmental studies beyond a minor change memo, the Baseline Schedule Let Date will be delayed as the four-week time frame is not sufficient for completion of the necessary studies and agency coordination.

Potential Risk to Subsequent Activity on Baseline Schedule: Delay in Project Let date.

### **BASELINE SCHEDULES FOR STATE-FUNDED PROJECTS**

As previously noted, two of the milestones required for the environmental process on federal-aid projects are not applicable to state-funded projects. These milestones are completion/approval of a NEPA document and Environmental Certification for ROW Authorization. Therefore, baseline schedules are not established for these two milestones on state-funded projects. Aside from that difference, the activity sequence and timelines used in establishing Baseline Schedules for federal and state-funded projects are the same.

### **UNANTICIPATED RISKS TO BASELINE SCHEDULES**

Early identification of risks can result in a greater likelihood of maintaining project baseline schedules and meeting performance metrics established by each office. Sometimes, however, baseline schedules can encounter potential threats that were not, and could not be, taken into account during the schedule's initial development. Many of these risks are not encountered until environmental specialists begin their field survey efforts. Examples of these types of risks include:

- > Inclement weather that delays environmental survey efforts;
- > Uncooperative landowners that deny environmental specialists access to their property; and
- > Safety issues.

Other unanticipated risks are not encountered until Resource Identification is complete and technical studies and public involvement efforts are underway. These risks include:

- > Formal or Informal Section 7;
- > Section 4(f);
- > Public Controversy;

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- > NOAA Fisheries coordination; and
- > Unanticipated survey efforts such as a Phase II archaeology survey or seasonal ecology survey.

Because these types of risks are often unforeseen and difficult to quantify, they are generally not considered during the initial development of baseline schedules. When environmental team members encounter them, however, the risks should be communicated immediately to the Project Manager and design team to determine their potential effect on the Baseline Schedule. If a consultant team is completing a project's environmental activities, unforeseen activities must be evaluated against the contract scope. The need for additional procurement activities can affect the Baseline Schedule.

If the project team determines the actual performance of activities is falling behind the Baseline Schedule, the team should analyze the problems causing the delay and document a specific course of action to get the schedule back on track. Projects where these risks are present may ultimately require changes to their original Baseline Schedule in the event that maintaining or recovering the project schedule is not possible. Changing a project's Baseline Schedule can only be done if risks are missed and result in any of the following conditions not being met:

1. Baseline Schedule will not make approved Fiscal Year for ROW funds authorization;
2. Location & Design (L&D) approval;
3. ROW Plan approval;
4. Project schedule will not make approved Fiscal Year for construction (CST) funds authorization; and
5. Project schedule is 12 months behind the Baseline Schedule and recovery is not possible.

If a project schedule must be delayed, the State Scheduling Administrator will request the Project Manager to submit a Project Change Request Form.

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### *Guidebook Revision History*

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