AASHTO
PRACTITIONER'S HANDBOOK

18

09 June 2017

STRATEGIES FOR EXPEDITING PROJECT DELIVERY

This handbook is intended to introduce transportation planning practitioners to constraints and strategies for expediting project delivery, with the benefit of improving project performance as well as reducing costs.

Issues Covered in this Handbook Include:

- Recognizing constraints to project delivery
- Identifying the phase of project delivery when the constraint occurs
- Evaluating the severity of the constraint
- Linking constraints to expediting project delivery strategies
- Concepts for implementing strategies in the project development process

Center for Environmental Excellence

SHRP2 SOLUTIONS
STRATEGIC HIGHWAY RESEARCH PROGRAM

American Association of State Highway and Transportation Officials

Overview

Expediting Project Delivery is a product developed by the Transportation Research Board under Task C19 of the second Strategic Highway Research Program (SHRP2), in collaboration with the FHWA and the American Association of State Highway and Transportation Officials (AASHTO). In authorizing SHRP2, Congress charged the SHRP 2 "Capacity" focus area (C19 is included) to produce "approaches and tools for systematically integrating environmental, economic, and community requirements into the analysis, planning, and design of new highway capacity" (TRB, 2001).

This document is intended to introduce concepts and methods of expediting project delivery, and to provide the user with concepts to help them diagnose sources of delay in project delivery process and connect to potential strategies and practices to address the delay. Users of this Practitioner's Handbook are expected to include members of organizations that are responsible for transportation planning, programming, interagency coordination, and NEPA compliance and permitting of transportation projects:

- State DOTs
- Metropolitan planning organizations (MPOs)
- County and local transportation agencies
- Resource and regulatory agencies
- Consultants who assist public organizations in preparing planning documents.

While regulatory compliance is an important consideration in expediting projects, as far as developing a task list and a realistic project schedule, this handbook does not address the regulatory requirements for specific activities such as funding, environmental analysis or permitting or specific measures to streamline compliance with those regulations.

Background Briefing

Beginning in the late 1990s, several federal guidance documents, directives, and regulations have been issued to address expediting project delivery, particularly environmental review and permitting. In recognition of the need and value of expediting projects, the last four federal transportation authorization bills (1998, 2005, 2012, and 2015) have included specifications aimed at reducing project delays.

The 2011 Presidential Memorandum *Speeding Infrastructure Development through More Efficient and Effective Permitting and Environmental Review*[1] summarizes the scope of expediting federal

---

[1] https://www.whitehouse.gov/the-press-office/2011/08/31/presidential-memorandum-speeding-infrastructure-

environmental reviews:

"In the current economic climate it is critical that agencies take steps to expedite permitting and review, through such strategies as integrating planning and environmental reviews; coordinating multi-agency or multi-governmental reviews and approvals to run concurrently; setting clear schedules for completing steps in the environmental review and permitting process; and utilizing information technologies to inform the public about the progress of environmental reviews as well as the progress of Federal permitting and review processes."

Executive Order 13604 *Improving Performance of Federal Permitting and Review of Infrastructure Projects* (2012)[2] expands upon and directs federal agencies to implement the principles laid out in the 2011 memorandum. The EO calls for a Federal Plan to significantly reduce the aggregate time required to make Federal permitting and review decisions on infrastructure projects while improving outcomes for communities and the environment. Among other actions, the Federal Plan must include:

- Institutionalizing best practices for: enhancing Federal, State, local, and tribal government coordination on permitting and review processes (such as conducting reviews concurrently rather than sequentially to the extent practicable); avoiding duplicative reviews; and engaging with stakeholders early in the permitting process;

- Developing mechanisms to better communicate priorities and resolve disputes among agencies at the national and regional levels.

The EO requires each member agency (including the USDOT) to develop an Agency Plan identifying those permitting and review processes the agency views as most critical to significantly reducing the aggregate time required to make permitting and review decisions on infrastructure projects while improving outcomes for communities and the environment, and describing specific and measurable actions the agency will take to improve these processes,

In 2013, the US Department of Transportation published their *Project Delivery Plan*[3] for implementing the directives of EO 13604 that "…is part of a broader, ongoing Department-wide effort that builds on recent successful DOT initiatives, including government-wide teams to examine permitting and review practices and track specific transportation infrastructure projects of national and regional significance." The DOT Project Delivery Plan organizes their efforts according to these topics, which are common themes expressed in the Presidential Memo and EO 13604:

- **Coordination within the USDOT**, including DOT-wide interagency agreements, internal communication and information sharing; DOT NEPA workgroup; enhanced training and guidance to regional staff; and additional Categorical Exclusions.
- **Federal Interagency Coordination**, including the use of mergers, MOUs, agreements, and programmatic agreements; collaboration and transparency for complex projects; electronic collaboration tools; and the Every Day Counts (EDC) Initiative; and establishing a Transportation Rapid Response Team.
- **Collaboration with State and Local Government**, including training for integrated

---

development-through-more

[2] https://www.whitehouse.gov/the-press-office/2012/03/22/executive-order-improving-performance-federal-permitting-and-review-infr

[3] https://www.transportation.gov/sites/dot.gov/files/docs/DOT%20Agency%20Plan%20-%202013.pdf

approach and technical assistance with implementation.

- **Conflict Resolution**, to include tools to support conflict resolution and conflict resolution guidance.
- **Share in Cost & Funded Positions**, that is, DOT-funded liaison positions at State DOTs and Federal resource agencies.
- **Mitigation Measures**, to include the Eco-Logical approach, Section 404 and NEPA synchronization, and programmatic agreements.
- **Information Technology**, to include information sharing, tracking environmental reviews, and using geo-spatial data for environmental reviews.
- **Public Outreach**, establishing a Transportation Liaison Community of Practice, and using the Federal Infrastructure Dashboard[4] (online project tracking system) to promote public transparency.

The Plan also establishes goals for environmental (NEPA) document review and approval for DOT projects, including these for FHWA projects:

- EIS: 48 months (post-SAFETEA-LU) – 60 months (pre-SAFETEA-LU)
- EA: 16-48 months
- CE: up to 6 months

While these documents loosely infer the causes of delay in the environmental review and permitting process, they specify or imply several approaches to enhance interagency collaboration, public involvement and transparency with the intent to make the process more efficient.

The responsibility for selecting and implementing the appropriate strategies falls on State DOTs. The foremost research report that details the causes of delay and links the appropriate strategies to address them is the 2012 SHRP2 Report S2-C19-RR-1, *Expedited Planning and Environmental Review of Highway Projects* (Parametrix, Inc., et al., 2012). The report collects previous experience from a cross section of projects (including transportation and other publically funded infrastructure projects, such as energy projects) to identify planning and environmental compliance problems that frequently delay projects or substantially increase project costs, and successful offsetting strategies. The report expands the analysis and strategies to the entire project development and delivery process. The result is a methodology designed to help State and local transportation agencies recognize constraints that delay project delivery in advance, and to apply strategies for avoiding them or lessening their impact.

The research included an analysis of projects from the FHWA environmental document tracking system, which tracks the timeline of each Environmental Impact Statement (EIS) that the agency publishes, and a review of American Recovery and Reinvestment Act Recipient Projects. The research also referenced the AASHTO's Center for Environmental Excellence database, which includes programs and strategies that have been developed to address emerging issues in transportation project delivery, such as congestion relief, public-private partnerships, innovative financing, and tolling pricing programs.

Case studies provided a start-to-finish analysis of constraints and illustration of specific strategies employed to avoid or minimize delay for at least some part of the project development. The selected cases favored larger projects that required an EIS. The research for case studies included interviews with project proponents related to challenges in project delivery, specific streamlining

---

[4] https://www.permits.performance.gov/

activities that were used, and the transferability of the streamlining activities to future projects and general operational procedures in their agency.

The case studies were selected from across the country that were recent (addressing current regulations and understanding of human impacts on the environment); represented each of the basic functions involved in project delivery, including internal and external communication, analysis, commitments, and decision making; and examined techniques that were either effective or detrimental to project schedule, cost, risk, and were applicable to other projects (the "what to do" and the "what not to do").

The report combines causes, symptoms or indicators of delay under the common term of "constraint." Constraints were initially identified from project-specific experience and then grouped into a list of 16 general constraints (Table A-1, Appendix A). This list is intended to be used to diagnose problems and identify associated strategies.

The report describes 24 strategies for expediting project delivery, and are central to the FHWA expediting project delivery initiative and diagnostics in the FHWA PlanWorks decision guides.[5] Most of the strategies are linked to existing FHWA programs (see Table A-2 in Appendix A), and relate closely to the scope of the USDOT *Project Delivery Plan* discussed above. The strategies include those that are applied comprehensively to projects or programs to result in an overall expedited program or project, as well as strategies that are successfully applied to a single phase of a project. The report links each strategy to specific constraint(s). Most strategies address more than one constraint.

Other Practitioner's Handbooks that incorporate project expediting strategies:

- PH 07 Defining Purpose and Need and Determining the Range of Alternatives for Transportation Projects
- PH 10 Using the Transportation Planning Process to Support the NEPA Process
- PH 15 Preparing High-Quality NEPA Documents for Transportation PROJECTS
- PH 16 Implementing Eco-Logical: Integrating Transportation Planning and Ecological Decision Making.

The 2015 Red Book[6], published by the FHWA in cooperation with the US Army Corps of Engineers, the US Coast Guard, the US EPA, the US Fish and Wildlife Service, and National Oceanographic and Atmospheric Agency (NOAA), is another good source of information for interagency coordination and elaborates on several practices and tools discussed in this document.

In the continuing effort to promote project expediting methods, State DOT participants in peer exchange seminars and surveys have shared practices/strategies that are being used. A number of these practices are referenced in this handbook.

---

[5] https://fhwaapps.fhwa.dot.gov/planworkst/
[6] *2015 Red Book: Synchronizing Environmental Reviews for Transportation and Other Infrastructure Projects*, September 2015, Publication No. FHWA-HEP-15-047

Key Issues to Consider

Below are a number of questions to consider when dissecting the project delivery process to identify existing or potential delays.

General Considerations

a) Is the focus of the analysis on the agency's typical project delivery process, or a specific project?
b) When in the project development process does the delay originate or become critical?
c) Who is involved in the delay?
d) What is the potential severity of the delay?

Are there causes for slow decision making?

a. Does the project lack a clear champion?
b. Does the project have multiple sponsors or multiple signatories, lead or cooperating agencies?
c. Is there a lack of a compelling purpose and need that fits the proposed project?
d. Is the project unusually large in scope or cost for the agency/sponsor?
e. Are decision makers continually requesting updated analysis for a single issue based on more recent data or a more recent analysis tool?
f. Are decision makers requesting additional detailed analysis to solve a broader policy problem?
g. Is there a lack of a specified/enforceable schedule with milestones?

Does the project appear to have a lack of real commitment?

a. Is there a lack of support from the project sponsors?
b. Is there a change in staff over the life of a project?
c. Has the transportation agency program recently expanded, changed priorities, or experienced reduced funding, which has affected project staffing?
d. Has the project scope expanded, requiring a greater number or diversity of staff?
e. Is there a disincentive or lack of incentive to complete a task/review/decision?

Are there delays due to inefficient internal communication and coordination?

a. Is the project the first of its type?
b. Are project teams sized inappropriately?
c. Does the team lack access to necessary resources?
d. Are there team members from multiple organizations/locations?
e. Are roles and responsibilities understood by each team member?
f. Is there an agreed-upon communication protocol? Does the project team fail to follow the protocol?
g. Are there consistent delays in communications?
h. Are there problems with document version control?

Is there a lack of integration across all phases of project delivery?

    a. Does the project scope change through the development process?

    b. Do team members change, or do new team members enter over the life of the project?

    c. Is there a lack of consistent technical expertise over the life of a project?

    d. Are decisions and agreements not properly documented or too general?

    e. Are projects delayed by questioning or re-evaluating prior decisions?

    f. Does the long-term nature of the schedule result in decisions being delayed?

    g.

Are there barriers to resource agency involvement and collaboration?

    a. Is there a disagreement between the resource agencies and the DOT on the resources that must be evaluated or scope of analysis or the quality of the data used in analysis? When does this disagreement become known?

    b. Do resource agencies disagree on resource habitat requirements?

    c. Do resource agencies question the validity of the resource locations used for analysis?

    d. Do resource agencies disagree on resource protection and mitigation requirements? Are there new regulatory requirements for mitigation?

    e. Are agency staff unable to respond in a timely fashion?

    f. Are review agencies inadequately funded/staffed for their workload?

    g. Are concurrent reviews prohibited by agency policies?

    h. Is there difficulty consolidating and resolving comments between agencies?

    i. Are there pre-project plans or agreements that conflict with the project?

    j. Will the project introduce significant or unknown changes?

Are there delays due to insufficient public involvement and support?

    a. Do stakeholders or other outside groups disagree on impacts and mitigation requirements?

    b. Does a single stakeholder dominate the analysis?

    c. Does resolution of a single, high-profile issue dominate the analysis while other issues are postponed?

    d. Are stakeholders disengaged because of a lack of interest?

    e. Is the lack of public input delaying the project?

    f. Does the public not engage because the project has a distant horizon year?

    g. Are stakeholders entering the process in later stages, or raising new issues or new alternatives late in the process?

    h. Has project planning failed to identify issues that are important/controversial to the affected community?

    i. Is the media misinterpreting project information?

    j. Is there controversy over an important issue without stakeholder support?

    k. Are there indications that owners and tenants are resistant to relocation?

    l. Does the project over-reach, addressing issues that are not considered locally important for project success?

    m. Do stakeholders oppose particular aspects of the project?

    n. Are there stakeholders with potential to oppose the project regardless of the alternative?

Practical Tips

Evaluating constraints to project delivery is a form of risk assessment. In other words, it is making the attempt to foresee risks (sources) of delay. Such forethought comes from experience, knowing the context, and knowing the people involved.

To evaluate the risk, a reasonable mix of managers and experienced practitioners in the transportation agency from all phases of project delivery, as well as frequently involved regulators, should take a systematic look at the planned approach to the project delivery process to identify potential constraints, the phase of the project when they are likely to occur, and the potential severity of the delay(s). This includes identifying the resources that would be affected, the role of external coordination for each resource, when external permitting/approvals would occur, avoidance/minimization/mitigation requirements, and the ideal times for public involvement to meet not only NEPA requirements but also other regulatory requirements (such as CWA permitting). For individual projects, this first step ideally occurs at the beginning of the project, before issues become controversial.

In identifying effective expediting strategies, the primary focus should be on when delays occur in the project delivery schedule, who is involved, and how best to obtain not only their cooperation, but their commitment.

Is the constraint recurrent in the transportation program, or unique to a project?

There are two approaches to assessing constraints to project delivery:

1. Assessing the program holistically for practices that implement each of the strategies, and identifying where the program might be improved. What strategies can be reasonably implemented program wide that will help to expedite numerous projects?

   For a particularly large or complex project, the user might be assessing the process from the beginning to identify those strategies that would be most useful to address the expected constraints. Many "unique" constraints are not without precedent and may have an analogue with another constraint that is defined in Table A-1 (Appendix A).

2. Assessing the program or a specific project for the single worst constraint(s), and address that constraint with the most cost-effective strategy to improve performance. This approach may be part of a step-wise process of addressing the worst issues of project delay and moving on to progressively less problematic issues over time.

The obvious benefit of addressing program-wide (recurrent) issues is that it will have the greatest positive impact on delays affecting numerous projects. Addressing program-wide delays programmatically also frees staff to focus on the less-frequent or "unique" project-specific problems.

When in the project development process does the delay originate or become critical?

It is important to identify when the constraint becomes critical in project development to identify effective strategies. Strategies are linked to certain phases of project development where they are effective (Table A-3 in Appendix A). As delays arise in later phases, the transportation agency has less flexibility to address them in a reasonable manner. The Phases of project development as defined in the RR-1 document are:

Early Planning Phase – Working with stakeholders, prepare initial assessment of the transportation needs: Define the study area and logical termini, conduct traffic/safety studies, prepare draft purpose and need statement, collect environmental information from secondary (published) sources, project design concept and scope, identify potential funding sources and schedule for the near term transportation improvement plan (5-year) or long range transportation plan.

Corridor Planning Phase – Determine project corridor, initial public and regulatory agency involvement, perform environmental studies, develop and analyze conceptual/feasible alternatives, revise purpose and need statement.

NEPA Phase – Perform additional field environmental studies as needed for feasible alternatives that are carried forward to the environmental document, prepare environmental document, additional public and agency coordination, additional design analysis per public and agency comments, constructability and value engineering review, select final alternative, document environmental commitments.

Design/ROW Permitting Phase – Detailed design of selected alternative, value engineering and constructability review, environmental permitting, right-of-way plans and acquisition, initialize environmental mitigation.

Construction Phase – Final design package, bid and award project, construct project, complete environmental mitigation/commitments and reporting.

Most of the strategies are applicable to the project phases where decisions and commitments are made (Corridor Planning, NEPA, and permitting). Those that apply to Early Planning largely run their course by the end of the NEPA phase. Few strategies relate to Construction, mostly those related to follow-through on commitments and keeping the traveling public and permitting agencies informed of project progress.

What is the potential severity of the delay?

Constraint severity is related to the length of delay that is caused in project delivery, but is difficult to measure. Largely, the severity is characterized by measures such as the amount of stakeholder opposition, or the number of issues raised in opposition. The severity of the delay will determine the level of effort and cost that is justified to address it. Some type of cost/benefit analysis is prudent to weigh the level of investment in any strategy against the potential severity of the delay, or the frequency of the problem in the program.

For a particular project, severity may also be related to the level of political pressure or the financial cost of delay, such as payment to a contractor if construction is delayed. The evaluation is intended to prevent acute and contentious issues such as these, particularly those that arise in the later phases.

Who is involved in the delay?

Simply stated, the persons or organizations who may be involved in the delay can be divided into internal (the DOT or planning organization) and external (everyone else). This division is important, in that internal delays are within the purview of DOT policies that can directly address them, while external organizations are not.

- Internal – Examine the various administrations within the organization, such as the central office versus a district office, and sub-organizations such as administration, planning, design, environmental, construction, etc. Does the project team include the right mix of staff to address the issues, and involve them early enough in the process? On the other hand, is the project team too large?

- External – Clearly this category covers a wide array of potential organizations, including resource/regulatory agencies, local government/stakeholders, special interest groups, affected landowners, and the general public. Some may be decision makers, and each may require a specific communication protocol.

Finding the right strategy

The strategies are not set up as a stepwise progression. They are intended to be used as stand-alone solutions to address specific constraints, but it is not a one-for-one relationship. This list of strategies is also not intended to be exhaustive.

Some considerations for identifying a possible strategy:

a. What strategies are aligned with the identified constraint or theme?
   The questions above under Key Issues to Consider are arranged according to six themes identified in the RR-1 report to categorize the 24 strategies (Table A-4 in Appendix A). The questions relate to the 16 constraints in the report which have been categorized in the handbook to align with the themes based on the connections between the constraints and the strategies. Identifying a theme of the delay can lead to a shortlist of strategies that may be applicable. Additional analysis of the delay may identify a specific constraint that may further limit the strategy short list.

   Streamline decision making: Strategies to support effective and timely decision making that maintains project timeframes and avoids later re-evaluations. This theme includes strategies to address the internal transportation agency decision-making process as well as external information sharing to support those decisions.

   Demonstrate real commitment to the project: Strategies to garner support among stakeholders through demonstrations of financial, political, and staffing commitments. A high-profile demonstration, including a commitment to do what is necessary to expedite delivery, can be a major factor in overcoming challenges and achieving success.

   Improve internal communication and coordination: Strategies that address a lack of communication, unclear protocols, and unclear roles and responsibilities. This strategy group addresses internal processes at the transportation agency.

   Integrate work across all phases of project delivery: Strategies to ensure that data, decisions, documentation, and findings from earlier phases are advanced into later phases in order to avoid redundant analysis and decision making. The basic concept of this theme is to set in place the right reviews (objectives) so that at the end there is a constructible project that meets the goals of the agreements.

   Improve resource agency involvement and collaboration: Strategies that provide ways to build trust and constructive collaboration among transportation and resource and

regulatory agencies in order to avoid or minimize unforeseen impacts. It is not necessarily the intent of resource agencies to delay project reviews and approvals. From a staffing and funding perspective, they also have a vested interest in expediting projects. But conflicts of mission between the transportation agency and resource agencies pose a serious risk to collaboration on a project.

Improve public involvement and support: Strategies to address the potential for public opposition or controversy, which commonly delay projects.

b. What methods/strategies have your organization previously attempted to address delays?
c. What is the lowest level of staff with the ability/authority to address the problem?
d. What level of effort would be needed to implement the strategy?
e. Is the cost of implementation (resources, staffing, time) commensurate with the severity of delay?
f. Who will be involved in/oversee/decide its implementation? Will the involved parties cooperate?

*How would success of the strategy be measured?***Strategies in Practice**

The transportation agency, in cooperation with the regulatory and review agencies, should develop an Action Plan to guide their actions for strengthening and expediting their project development/delivery processes. In essence, the Action Plan will list the priority constraints and match them to solution strategies. Roles, responsibilities, and schedules for developing particular actions (such as programmatic agreements) should be established, as for an individual project.

DOTs often adopt practices that provide them greater autonomy of the process, and therefore greater control over expediting it.

Common themes in the practices that are being implemented by DOTs:

- Reducing the number of external approvals needed, at least for lower impact projects, through programmatic agreements with resource agencies.
- Reducing time of approval through the use of electronic document sharing/approval and dedicated staffing at resource agencies (liaisons).
- Overlapping planning and design activities.
- Design and construction contracting to involve construction managers earlier in the design process.

The following discussion is intended to provide additional explanation and guidance for exercising each of the 24 strategies.

1. Change-control practices

Changing project design after the environmental review can cause a significant delay, and is avoidable provided the environmental review begins early in planning, is inclusive of stakeholders, and is transparent. Involving stakeholders in the environmental process is important; clearly communicating to the stakeholders the decision-making process and who has the decision-making authority is critical. Early involvement could cause some project delay in itself, but that delay could be minimal compared to the delay caused by a poor decision that must be revisited because of a lack of information.

Some useful practices toward implementing this strategy are:

- Multi-disciplinary teams. At an appropriate level, involve technical and administrative staff from all phases of project delivery from the outset, to remove or reduce delays inherent in a sequential review process, where concerns that arise later in project delivery (such as design and construction) are not addressed early enough in project development. Assuming a consistent project membership through project delivery, each member will be introduced to the project and prepared for it as it develops, and not be caught unaware in mid-cycle.
- Team meetings throughout project development, including scoping at project initiation, planning/NEPA, and constructability/specification review meetings during design.
- Project managers that choreograph project delivery from initiation through construction. Committed leadership can be a major force in keeping the project moving, particularly during times when progress is slow or unforeseen circumstances arise, and the team can become discouraged and distracted. The team leader will have the right interpersonal skills to communicate well with the other team members. The strong leader will provide the team with a clear purpose, focusing the team on agreed-upon delivery goals and targets.

While input from multi-disciplinary or interagency teams is useful, the inherent risk in this practice is poor communication – in either setting, the members may not be in the same location, and the team members may be distracted by more visible concerns at their location. There is a risk of "too much information" too early in the process, which would have to be balanced by the project manager. The other practices listed above are essential to the multi-disciplinary team practice and the success of this strategy.

2. Consolidated decision council

An efficient project delivery process involves not only timely decision making, but prudent decision making to reduce the likelihood that decisions will need to be revisited. To that end, a decision council, particularly if several sponsoring agencies are involved or if the context is complex, can help to work through difficult decisions.

A consolidated decision council will help in the event of extreme controversy or stalemate. However, the authority and procedures of the decision council must necessarily be specified in formal agreement before the process begins and before any controversy arises. The need for a decision council should be established through the risk analysis of the project.

3. Context-sensitive design and solutions

In early phases of project development, decisions are made to be sensitive to context, and to minimize or avoid impacts. The public and agencies are involved to identify sensitive resources, develop avoidance and minimization measures. Mitigation may be specified for unavoidable impacts. In the interest of expediting the project, planners may agree to mitigation commitments, based on a high level-understanding and an approach of "we will work out the details later." It is a careful balance to establish reasonable goals and commitments without getting too detailed too early, which could delay the decision-making process. However, there is the risk that the avoidance/minimization/mitigation proposal may not actually be constructible. Integration across all phases of the project is a two-way street, so that commitments match reality.

Some useful practices toward implementing this strategy are:

- Multi-disciplinary teams.
- Early coordination meetings with the involved resource/regulatory agencies and other stakeholders.

Interagency concurrence checkpoints beginning with Purpose and Need through the NEPA process.4. Coordinated and responsive agency involvement

The DOT should communicate the project purpose and needs, evaluation criteria, and information sharing protocols to avoid late consideration of issues that are important to the resource agencies. Engaging the resource or regulatory agencies early in the planning process will help to minimize re-evaluating alternatives that have been eliminated based on environmental impacts and/or reasonableness. This strategy is related to Strategies 9, 14 and 15.

Concurrence is one possible approach, but the decision on whether to seek concurrence (as opposed to something softer, like coordination/comment) is a strategic decision – where there is no legal requirement to obtain concurrence (such as for a CWA permit),concurrence is not always the best way to expedite the review process.

Most DOTs implement practices in this strategy:

- Early Coordination meetings.
- Interagency concurrence checkpoints beginning with Purpose and Need through the NEPA process.
- NEPA/404 Merger.
- Programmatic Agreements (PA) or Memorandums of Agreement (MOA) with agencies to expedite reviews, delegation of some authority, tiered reviews. DOTs have widely addressed repetitive constraints using some form of programmatic agreement with other State or federal agencies. However, setting up these agreements requires an investment that may only be justified if the issue is raised frequently enough to cause substantial delay for numerous projects. As part of analyzing the transportation project delivery process, the practitioners should take inventory of programmatic agreements already in place. It may be time to re-evaluate previous programmatic agreements relative to organizational or regulatory changes, or to assess how well they work.
- NEPA or other document templates to facilitate consistent, efficient review by agencies (and public), such as a standard "Permit Plan Set" to be used in permit applications.

A central repository for current project information for the transportation agency team (see Strategy 8) could also be made accessible for external review agencies. This information sharing could include GIS mapping, project plans, and coordination documentation.

5.   Interagency dispute-resolution process

An interagency dispute-resolution process can avoid protracted or stalled debate. A dispute-resolution process can define how to take policy questions out of the technical realm and resolve them at the appropriate management level. A formal approach for resolving disagreements with resource agencies may be helpful if disputes between agencies regarding data or analysis cannot be readily resolved among the working parties.

An agreement among the agencies involved would establish the criteria to define when an impasse occurs, the resolution process and decision-making hierarchy. A dispute-resolution agreement will

typically:

- Describe a process for identifying when dispute elevation is the appropriate next step;
- Describe how to initiate the dispute-resolution process;
- Identify two, three, or more levels of elevation to cover the range of issues that could arise and provide options at a variety of organizational levels for resolving them (e.g., some disputes can be resolved at the senior staff level, while others may need to be elevated to the agency executive);
- Identify the individual people or positions to which disputes will be elevated; and
- Describe a process for reviewing and modifying the resolution procedure as needed.

In practice, this strategy is often implemented as a part of a Programmatic Agreement.

6. DOT-funded resource agency liaisons

Certain permitting or regulatory issues that affect numerous projects, for example, Section 404 CWA permits, may cause repeated delays because of staffing at the regulatory agency. In this case, a DOT-funded liaison at the regulatory office can help to expedite reviews. While this dedicated staff person would focus primarily on DOT projects, and would review them in accordance with the standard regulatory process, they could also establish efficient communication protocols and relationships specific to DOT projects that will help to expedite the reviews. Besides bolstering the staff at the review agency, the liaison becomes the continuous representative of the agency in the multi-agency team.

Funding liaisons at regulatory/resource agencies is a widely used strategy. Given the frequency of approvals and/or permits, DOTs most often fund liaisons at the state historic preservation office (SHPO), US Army Corps of Engineers (USACE), US Fish and Wildlife Service (USFWS), and state water quality control agency (CWA Section 401 and NPDES permits).

Funded liaisons may also provide technical assistance for certain compliance issues, for example, a special use permit with USFWS to fund staff at USDA/APHIS to deter birds or remove eggs/nestlings to insure compliance with the Migratory Bird Treaty Act, and funded utility coordinators embedded in the DOT.

7. Early commitment of construction funding

Financial, political, staffing, and other commitments are needed for a project to succeed. Funding a project through construction is a reflection of the priority of a project. Further, the availability of funds often has a deadline for commitment, which helps to focus staff on completion to keep funding during tight budget periods. A fully funded project will also inspire stakeholders.

The lack of funding throughout the entirety of a project will delay the schedule as the project is placed on hold periodically to secure funding. Such delays may also cause staff to lose interest, focusing on those projects that are fully funded, which also tend to be the more politically important. Even when funding is secured, the project will have "lost its place in line," and restarting may take more time to re-familiarize the staff. Depending on the length of the delay, there is a possibility that certain studies must be re-done due to land use or regulation changes.

Performance Based Project Design (PBPD), as discussed below, could contribute to this strategy by reducing numerous individual project costs, making more construction funding available across

the program.

8. Expedited internal review and decision making

C19 workshop participants have noted the following needs for improving internal project review:

- Establish clear, well documented workflow process for the internal team, with assigned roles and responsibilities and key entry points.
- Use of management/tracking systems so that all involved know where the project delivery stands.
- Integration of staff on a project.
- Central repository for project information.

Important requirements for effective communication are clear protocols, roles, and responsibilities and formal commitments. A standard workflow process should be established, designating when various groups enter the review process, timeline for their review/comment, who should receive their communication, and the form of that communication. Communication should also be efficient. While cross-communication between groups is important for all to monitor the progress of the project, not all members of the team need to be copied on all communications.

The more exactly that this process is detailed, the more routine it will become, and the more easily it can be documented and tracked. As the project is handed off from one organization (for example, planning) to the next (NEPA group or construction), the decisions and commitments are properly communicated, understood, and implemented.

The team needs to have enough staff and time to focus on the project. The assigned staff need to be the right people, those with decision-making authority and pertinent technical understanding. Expediting project delivery is not a place for training new staff. While it may be an opportunity for apprenticeship and delegation of tasks, involving too many staff in the decision making will complicate the delivery of the project. A focused team of the right staff will be most expedient.

Decision making is not the only place where clear roles and responsibilities must be defined. Commitment and carry-through are equally as important. Most DOTs use some sort of system for tracking scope, schedule, budget, and quality reviews. However, to make a true difference in expediting project delivery, it is not enough to track it—it requires accountability of managers to see that the project advances. Coordinating the right people (internal and external) at the right times will keep the project on schedule. This can only happen where the responsibility for completing a commitment (be it project-specific or as a part of a programmatic agreement) is assigned as a specific job duty to a specific staff position in each affected organization, and not fall under the category of miscellaneous duties, and deadlines are enforced. It is important to assign a responsible party to take ownership of the project from start to finish and to see that the process is completed.

The team should establish a central repository for project documents, plans, and other documents and files. As needed, a file-naming convention for digital files may be useful so that team members may easily find the current version. The FHWA developed the eNEPA[7] tool for this purpose.

Staffing changes happen. The better the individual roles are defined, the easier it will be for the

---

[7] https://fhwaapps.fhwa.dot.gov/enepap/home/main

replacement to understand his/her role and responsibilities, and where they fit into the schedule. A list of leaders for each technical aspect of the project is also needed for continuity.

As internal processes are largely within their control, many DOTs have implemented some practice of this strategy. There is a broad array of practices employed to improve internal processes, including:

- Electronic document sharing system.
- Electronic signature/approval system.
- Software to coordinate project schedules, allocate staff.
- Training - internal to perform additional environmental tasks, internal staff cross-training, and external agency/consultant training.
- Reassigning staff to meet project needs, adding staff via contract.
- Overlapping project development processes.
- Pre-project data/project needs analysis.
- Decentralizing some project decision-making to districts/divisions.
- Multi-disciplinary teams.
- "Tiered" approach - right sized activities & documentation based on project complexity.
- Centralized Project Management/Delivery Office to monitor project schedules/delivery, staffed by project management professionals vs. engineering professionals.
- Project managers that choreograph project development from initiation through construction.
- Periodic collaboration meetings.
- Project prioritization standard.
- Value Analysis process studies and Lean Six Sigma studies to improve various processes.

There are different approaches to project management: delegate at least some project management and decisions to district offices, versus consolidated project management at a centralized location with dedicated project management professionals (instead of engineering staff) who oversee the project "from cradle to grave" instead of handing off between planning, design and construction. Except in the most critical cases, it is inadvisable to engage agency executives for decisions. This is not a sustainable strategy for dealing with delays. Delegating responsibilities to the lowest competent staff level is intuitively more expeditious, provided the staff are competent and there are protocols establishing when to consult higher level staff.

9. Facilitation to align expectations up front

This strategy involves early coordination among the agencies and stakeholders to share expectations at the beginning of the project. This strategy not only supports early data needs analysis, but also supports the development of a well-founded purpose and need, alternatives analysis criteria, and gain political support. The project development process can also be communicated to all parties, and establish realistic schedule expectations.

10. Highly responsive public engagement

As in motivating partner agencies (Strategy 4), inviting the public to participate beginning with long-range planning through NEPA could encourage an interested public to participate positively in the process, particularly if they can see how they influence the process and receive feedback on their input.

Early and often public involvement is important to communicate the project purpose and need, develop context sensitive solutions (Strategy 3), and maintain continuity of the project in the public's eye. In this way, issues can be addressed before they become controversial, and opposition due to lack of information reduced.

The public should also be informed of the agencies involved, the decision makers, and the decision process. It is incumbent on DOT to provide timely responses to public comment. Project sponsors must be united in the presentation of the project. Often, a transportation improvement originates from local sponsors (such as a MPO). Because they are local, these sponsors may also have a better position to address public concerns.

Some useful practices toward implementing this strategy are:

- Create a public involvement plan for projects that follows the project through all stages of the project development process.

Developed reader friendly document format to facilitate more efficient review by agencies and better understanding by the public. 11.   Incentive payments to expedite relocations

Offering incrementally more than the fair appraisal of a parcel is one approach to expediting relocations, in addition to the required relocation assistance. Relocations to more desirable locations may also act as an incentive.12.   Media relations manager

For an individual program/project level, a media relations manager is only necessary for, and a justifiable cost for, the most contentious and high profile projects, or for a program that ordinarily brings large public response.

A media relations manager at a central office or division office may be useful to address media coordination for all projects in the service area. DOTs often employ public information officers to communicate with the media. In theory, a dedicated public information officer would be more responsive to public inquiries and be acquainted with media outlets and stakeholder organizations who could most efficiently engage the public.

13. Performance standards

An outcome-based performance standard is essentially a term or condition inserted into a permit or approval that describes a specific, measurable, environmental outcome from a project activity. For instance, the standard may measure compliance by limits of total solids in receiving waters rather than requiring certain methods for sediment and erosion control. Clearly, the performance standard would need to be established with the regulatory agency, and the methods for measurement of compliance. This approach keeps the focus on the result/desired outcome, and not a discussion about the best methods to achieve it.14.   Planning   and   environmental linkages

From the beginning, planning incorporates consideration of the environmental impacts, NEPA and permitting. The concept is closely linked to context sensitive solutions. Engaging the resource or regulatory agencies early in the planning process will help to minimize re-evaluating alternatives that have been eliminated based on environmental impacts and/or reasonableness during the planning process, provided the coordination is well documented. The early coordination can also help to scope the NEPA documents, establish the level of detail expected in the NEPA documents,

prioritize resources/impacts for the evaluation of alternatives, and establish mitigation goals and opportunities. Additional information on linking planning to NEPA can be found in the AASHTO Practitioner's Handbook 10 *Using the Transportation Planning Process to Support the NEPA Process* (AASHTO, 2008).

Some useful practices toward implementing this strategy are:

- Pre-NEPA corridor planning and improved analysis of need at planning level before initiating project design.
- Corridor planning study standard procedure.
- Project initiation form/Data Needs Analysis with input from regulatory agencies prior to initiating design and NEPA.
- Training to facilitate better coordination between planning staff and environmental staff and learning advanced NEPA evaluation skills.
- Early Coordination meetings.
- Interagency concurrence point process through project development.
- Internal project electronic tracking system

15. Planning-level environmental screening criteria

Early environmental analysis at the planning level is widely recognized as an important tool for streamlining subsequent project development. Agreement between the DOT and resource and regulatory agencies about the resources to be analyzed, and the sources and resolution of that data. Early consultation on resources and mitigation provides an opportunity to identify criteria and develop tools and understandings for project delivery. Section 6001 requires transportation planning to consult on land use and environmental, natural, and cultural resources issues. Planning level coordination can also identify in advance potential mitigation options.

Some useful practices toward implementing this strategy are:

- GIS-based tools for project planning/environmental scoping.
- Internal process for early identification of environmental issues and permit types.
- Initial environmental constraints to begin earlier in the project.
- Standard checklist for environmental clearances.
- Corridor planning study standard procedure.
- Project initiation form/Data Needs Analysis with input from regulatory agencies prior to initiating design and NEPA.

16. Programmatic agreement for Section 106

DOT gets authority to review certain activities that do not affect any resources, or that have minimal effect on resources, and remove an additional decision point by SHPO.

Programmatic Agreements for Section 106 coordination are frequent among DOTs allowing them to self-certify at least some Section 106 investigations/compliance approvals (such as, *de minimis* impacts), and/or specify standard coordination procedures/templates.

PAs are most effective if they can include two elements:

1. The programmatic agreement can delegate some authority to the state DOT to conduct Section 106 reviews on behalf of FHWA. The delegation of Section 106 authority can include determinations of eligibility, findings of effects, and resolution of any effects.

2. The identification of certain classes of projects or types of activities that do not need to go through the traditional individual consultation process with SHPO.

17. Programmatic or batched permitting

This strategy comprises coordination of numerous small projects for concurrent review by regulatory agencies.

Two basic approaches include:

1. A batched permit or approval, which typically covers a set of specific actions that are identified in advance of the permit. An example of a batched approval is a biological opinion that covers multiple, specified actions subject to consultation under ESA Section 7.
2. A programmatic permit, which typically covers a collection of future actions that may or may not be specifically identified in advance of the permit. This approach is directly comparable to the CWA Section 404 Nationwide Permit program. Section 7 consultation does not typically grant programmatic approvals but can allow batched approvals.

Some useful practices toward implementing this strategy are:

- Programmatic agreement w/ USFWS/NMFS regarding minor impacts to species.
- Using PAs or MOUs, obtain authority from water quality agency to self-certify stormwater and erosion sediment control (NPDES) permits.
- MOA specifying mitigation requirements for a range of impacts.
- Advanced DOT-responsible mitigation sites.
- Section 401 MOA for Nationwide Permit actions (where the NWPs are not certified by the state water quality agency to meet state water quality standards).
- Floodplain MOA allowing the DOT to self-certify floodplain compliance.

18. Real-time collaborative interagency reviews

This strategy is specifically aimed at drafting environmental documents, such as NEPA documents. It allows for drafting and reviewing the document iteratively in sections, and concurrent reviews of some sections (perhaps by more than one external agency) while others are being drafted. While there could be conflicting comments, all comments can be addressed and resolved at the same time rather than through a sequential review/response cycle.

An important element to forward this strategy includes electronic document sharing system that allows concurrent access to the environmental documents (e.g., FHWA's eNEPA).

19. Regional environmental analysis framework

A regional environmental analysis framework establishes a standardized approach for evaluating impacts to resource types and is especially useful at streamlining cumulative impact analyses and project-related mitigation agreements. This approach typically identifies common data formats, analytical techniques, issues specific to certain resource types, important past actions, and any other considerations that may help to standardize impact assessments, and facilitates a uniform approach for evaluating cumulative effects.

A prime example of this strategy is the Eco-Logical approach for natural resource avoidance and minimization during transportation program planning (FHWA, 2015e and Crist, 2014). The Eco-

Logical approach is a stepwise process built on the early establishment of relationships with resource agencies for natural-resource-information sharing and analysis. The analysis is tiered, evaluating transportation improvements first at a program-wide level. Overlaying the transportation plan on a shared GIS-mapping platform that includes natural resources promotes avoidance and minimization of impacts to high-priority habitats, and helps to identify potential high-quality restoration (for example, mitigation) sites. Documentation of this early planning can directly support NEPA analysis at the project level. Programmatic agreements are developed in later steps to establish protocols for impact analysis, permitting, and mitigation specifications to apply to individual projects. There will still be specific considerations that must be worked out for each project, but the programmatic agreements provide predictability to the process and guidance for mitigation, so that the transportation agency can pursue/develop mitigation sites for foreseeable projects in advance of permitting.

A similar approach can and has been used for cultural resources. Of course, not all Section 106 resources (particularly archaeological sites) can be mapped in advance. But, agreements can be established with the SHPO, FHWA, American Council on Historic Places, and others that can streamline the review of certain projects with little or no impact to Section 106 resources, and delegate some authority to the transportation agency.

Some useful practices that are facilitated by this strategy are:

- Endangered species/Natural Heritage data sharing.
- Advanced DOT-responsible mitigation.
- Programmatic Biological Opinions.
- PAs regarding minor impacts to species.
- A species-specific in lieu fee program to expedite Section 7 processes.

20. Risk management

Risk management is the practice of actively dealing with project risk, including planning for risk, assessing risk, developing risk-response strategies, and monitoring risk throughout the project life cycle. If there is an overarching concept to expediting project delivery, it is risk management. Risk management is the one strategy identified in the C19 document that spans all constraints, and all phases of project delivery. Risk management is clearly a part of design engineering and establishing design standards to address foreseeable circumstances such as traffic congestion, vehicle performance, driver behavior, and poor drainage. The risk management strategy for planning is to identify potentially controversial issues based on early planning information, and align expectations between the stakeholders.

Some useful practices toward implementing this strategy are:

- Dedicated Project Managers that choreograph project delivery from initiation through construction.
- Associated General Contractors (AGC) & ACEC relationships for current/preferred construction methods/materials.
- Performance Based Practical Design (PBPD) strategies to minimize impacts and expedite delivery.
- Executive Partnering in planning, design and construction phases.

21. Strategic oversight and readiness assessment

This strategy largely addresses establishing protocols for communication, roles and responsibilities in advance for multi-agency endeavors. The goal is for each agency to be aware of the staffing needs, funding commitments, review timeframes and methods so that they stand ready to proceed as the project develops. Such arrangements may be established using a Memorandum of Understanding between the agencies.

Some useful practices toward implementing this strategy are:

- Agreements with agency administrations and partner agencies.
- MOA with regulatory agencies for environmental document templates and review

22. Team co-location

Co-location of a team at a single location makes project communication almost instantaneous. Impromptu and informal meetings can be swiftly arranged, documents quickly shared and discussed without lengthy written communiques, and there is no delay due to travel. This arrangement also helps the team members to avoid distractions. An example of employment of this strategy is when consulting design staff, contractor and DOT staff are co-located to react quickly to project progress and unforeseen circumstances for a mega-project, e.g., a design build project.

This strategy could also apply to internal DOT staff. Co-location of staff from planning, environmental, design or construction (or at least periodic meetings) will help to keep all staff apprised of project progress, and provide a forum for communication between members to avoid working in isolation or "stove piping".

23. Tiered NEPA process

This strategy targets the analysis of a particularly large project (such as the upgrade to a macro-corridor) using an umbrella NEPA document to evaluate and select a single corridor and/or design type/criteria to address the larger, macro-corridor needs and environmental issues. Analysis and conclusions from the umbrella (Tier 1) document is then used with higher resolution data analysis to analyze more detailed alternatives along subsets of the program/corridor with independent utility and constructability in targeted NEPA (Tier 2) documents. The tiered approach helps to expedite project delivery by gauging the level of analysis detail needed to make the macro-corridor decisions.

24. Up-front environmental commitments

Early commitments to improve resources can allow transportation agencies to avoid the protracted debate and negotiations that can delay environmental documentation, permitting, and project design. Early coordination is a key part of this strategy. This strategy integrates with the efforts under several other strategies, such as 3, 4, 14, 15 and 19.

To be most effective, the DOT should make a commitment to exceed environmental compliance requirements, so that there is no debate over whether mitigation requirements have been met.

Some useful practices toward implementing this strategy are:

- Programmatic agreements for minor impacts to protected species.

- Advanced DOT-responsible mitigation sites.

Conflict Resolution

Particularly controversial projects may require advanced techniques to resolve conflicts with agencies, interest groups or the public. This handbook focuses on applying strategies in advance or ad hoc to move a project from stalemate. It does not address conflict resolution beyond the use of these strategies. The user is invited to review resources for conflict resolution on the FHWA Environmental Review Toolkit website.[8]

Other Initiatives that support project expediting

Performance Based Practical Design (PBPD)

Performance Based Practical Design (PBPD) is an approach to project design that provides cost savings by way of flexibility in design. PBPD is described by FHWA as, "…modifying a traditional design approach to a 'design up' approach where transportation decision makers exercise engineering judgment to build up the improvements from existing conditions to meet both project and system objectives. PBPD uses appropriate performance-analysis tools, considers both short and long term project and system goals while addressing project purpose and need."

In essence, this approach is intended to reduce improvements to those that address the priority needs in order to meet program funding constraints. It includes an analysis and prioritization of current and future corridor needs, and allows for flexibility in design to meet those needs rather than designing and building each project to full standard design. While all projects would still be designed to be safe, they will not necessarily be built to be in complete accordance with the current DOT design manual. The emphasis is on system performance and context. Certain design elements may be waived if they are not critical to meeting the priority needs without the need for design exceptions.

While reducing costs by reducing non-essential elements, this approach also potentially expedites project delivery by reducing the project footprint, and therefore right-of-way and environmental impacts, permitting requirements, and the potential for controversy.

In general, it scales down the project to meet priority needs. It is not an emphasis on short term, low cost solutions that do not address the project purpose and need. Rather, it is a consideration of the project context, and allows flexibility in the design in improving overall system performance, otherwise known as "designing up," but not necessarily defaulting to designing each project to full compliance with current design standards as laid out in a DOT design manual.

NEPA Assignment

NEPA assignment provides a State DOT the authority to carry out review and approval functions that otherwise would be performed by FHWA.[9]

A number of DOTs have assumed some level of NEPA assignment. That is, through PA's or MOA's the DOTs assumed NEPA compliance authority for projects of some size and complexity if not for

---

[8] https://www.environment.fhwa.dot.gov/strmlng/es2conflict.asp
[9] AASHTO, 2002, *Delegation of Federal Environmental Responsibilities for Highway Projects*, https://www.environment.fhwa.dot.gov/strmlng/delreport.asp

their entire program. AASHTO reports that as of January 2016, three states (Ohio, California and Texas) have signed agreements with FHWA to assume control of FHWA responsibilities under NEPA for their entire programs[10]. A number of other states have assumed assignment for CE-level documents.

NEPA assignment provides the DOT autonomy and control of the NEPA compliance process. The DOT can therefore expedite projects by removing one external review process, as well as managing their own staff workload.

Contracting Strategies

There are also a number of contracting methods that help to expedite construction with a peripheral benefit to the review and permitting process. Table 6 lists 16 expediting contract practices. These contracting approaches provide financial incentives to complete construction, as well as flexibility in design/construction methods, advanced contracting, and incorporating construction managers earlier in the design process to foresee construction issues.

Special Experimental Project No. 14 (SEP14), formerly Innovative Contracting, is an over-arching FHWA program to encourage the use of a variety of innovative, non-traditional contracting techniques, such as design-build and cost-plus-time bidding[11].

There are some potential overlaps between expediting contract practices and the 24 strategies. Notably, design-build, CM/GC and CMAR could implement elements of Strategy 1, change-control practices, Strategy 3, context-sensitive solutions, Strategy 5, dispute resolution process, Strategy 20, risk management, or Strategy 22, team co-location. The applicability of these contracting practices to these strategies depends on the point in the project delivery process when the CM/GC becomes involved.

IDIQ construction contracts might be considered an application of Strategy 7, early commitment of construction funding. However, as described in the C19 publication, this strategy seems more directed at larger, time-intensive, controversial projects that require extra commitment to maintain agency and public attention to expedite them than the smaller projects that would likely be the subject of IDIQ contracts.

Some contracting practices that do not necessarily have an environmental focus may have collateral environmental benefits that could speed environmental approval and compliance. For example, accelerated bridge construction (ABC) could be a "standard" approach that standardizes bridge design, construction methods and construction period that could lead to a general Section 404 permit negotiated with the USACE. As noted above, involving a Construction Manager/General Contractor earlier in planning or NEPA could provide a more realistic estimate of the construction footprint, and possibly innovative methods to avoid some impacts, so that permitting requirements are more predictable for the DOT as well as the agencies.

.

---

[10] http://www.aashtojournal.org/Pages/012216nepa.aspx
[11] http://www.fhwa.dot.gov/programadmin/contracts/sep_a.cfm#s1

Definitions

CSS = context-sensitive solutions

CWA = Clean Water Act

DOT = U.S. Department of Transportation

EA = environmental assessment

EDC = Every Day Counts

EIS = environmental impact statement

FHWA = Federal Highway Administration

FTA = Federal Transit Administration

MPO = Metropolitan Planning Organization

NEPA = National Environmental Policy Act

PEL = Planning and Environment Linkages

SHPO = State Historic Preservation Office

SHRP2 = second Strategic Highway Research Program

TMDL = total maximum daily loads

USFWS = U.S. Fish and Wildlife Service

Council on Environmental Quality (CEQ). 2010. *Compendium of Useful Practices*.
https://ceq.doe.gov/ntf/compendium/toc.html. Accessed 10/1/2015

Federal Highway Administration, the American Association of State Highway and Transportation
Officials, and the Transportation Research Board (FHWA et al.). 2013. SHRP2 Implementation Plan:
Expediting Essentials (C19). September.

Federal Highway Administration and Federal Transit Administration (FHWA and FTA). 2013.
*Interim Guidance on MAP-21 Section 1319 Accelerated Decision-making in Environmental
Reviews*. Memorandum, January 14.
http://www.fhwa.dot.gov/map21/guidance/guideaccdecer.cfm.

Federal Highway Administration and Federal Transit Administration (FHWA and FTA). 2015. *Draft
Environmental Review Process Guidance*. Proposed Revised Guidance for Public Comment.
http://www.fhwa.dot.gov/map21/guidance/12mar_prop_env_proc_review_pc.cfm. Accessed
August 4, 2015.

Federal Highway Administration (FHWA). 2015a. *Environmental Review Toolkit, Accelerating
Project Delivery, Program Overview*.
https://www.environment.fhwa.dot.gov/strmlng/index.asp#map21. Accessed on 10/1/2015.

Federal Highway Administration (FHWA). 2015b. *Environmental Review Toolkit, Planning and
Environment Linkages, Program Overview*.
https://www.environment.fhwa.dot.gov/integ/index.asp. Accessed on 10/1/2015.

Federal Highway Administration (FHWA). 2015c. *Center for Accelerating Innovation, Every Day
Counts*. https://www.fhwa.dot.gov/innovation/everydaycounts/. Accessed on 10/1/2015

Federal Highway Administration (FHWA). 2015d. *PlanWorks*.
https://fhwaapps.fhwa.dot.gov/planworkst/. Accessed on 10/1/2015.

Federal Highway Administration (FHWA). 2015e. *Environmental Review Toolkit, Accelerating
Project Delivery, Eco-Logical*. https://www.environment.fhwa.dot.gov/ecological/eco_entry.asp.
Accessed on 10/1/2015.

P. Crist, S. Howie, M. Venner, J. Kagan, and L. Gaines. 2014. Manager's Guide to the Integrated
Ecological Framework. SHRP2 Report S2-C06-RW-4. Transportation Research Board,
Washington, D.C.

Parametrix, Inc., Venner Consulting, and Institute for Natural Resources, Oregon State University
(Parametrix et al.). 2012. *Expedited Planning and Environmental Review of Highway Projects*. The
Second Strategic Highway Research Program (SHRP2) Report S2-C19-RR-1. Transportation
Research Board, Washington, D.C.

Transportation Research Board. 2001. "Strategic Highway Research: Saving Lives, Reducing
Congestion, Improving Quality of Life." Special Report 260. The National Academies Press,
Washington, D.C.

Statues, regulations, and guidance documents cited in this handbook, along with additional materials and sample documents, are available on the Center for Environmental Excellence by AASHTO website: http://environment.transportation.org

Email: environment@aashto.org
Website: http://environment.transportation.org