

Utility Relocation Workshop and Risk Analysis

RESULTS OF A SPR FUNDED STUDY FOR EXPEDITING AND STREAMLINING UTILITY RELOCATIONS

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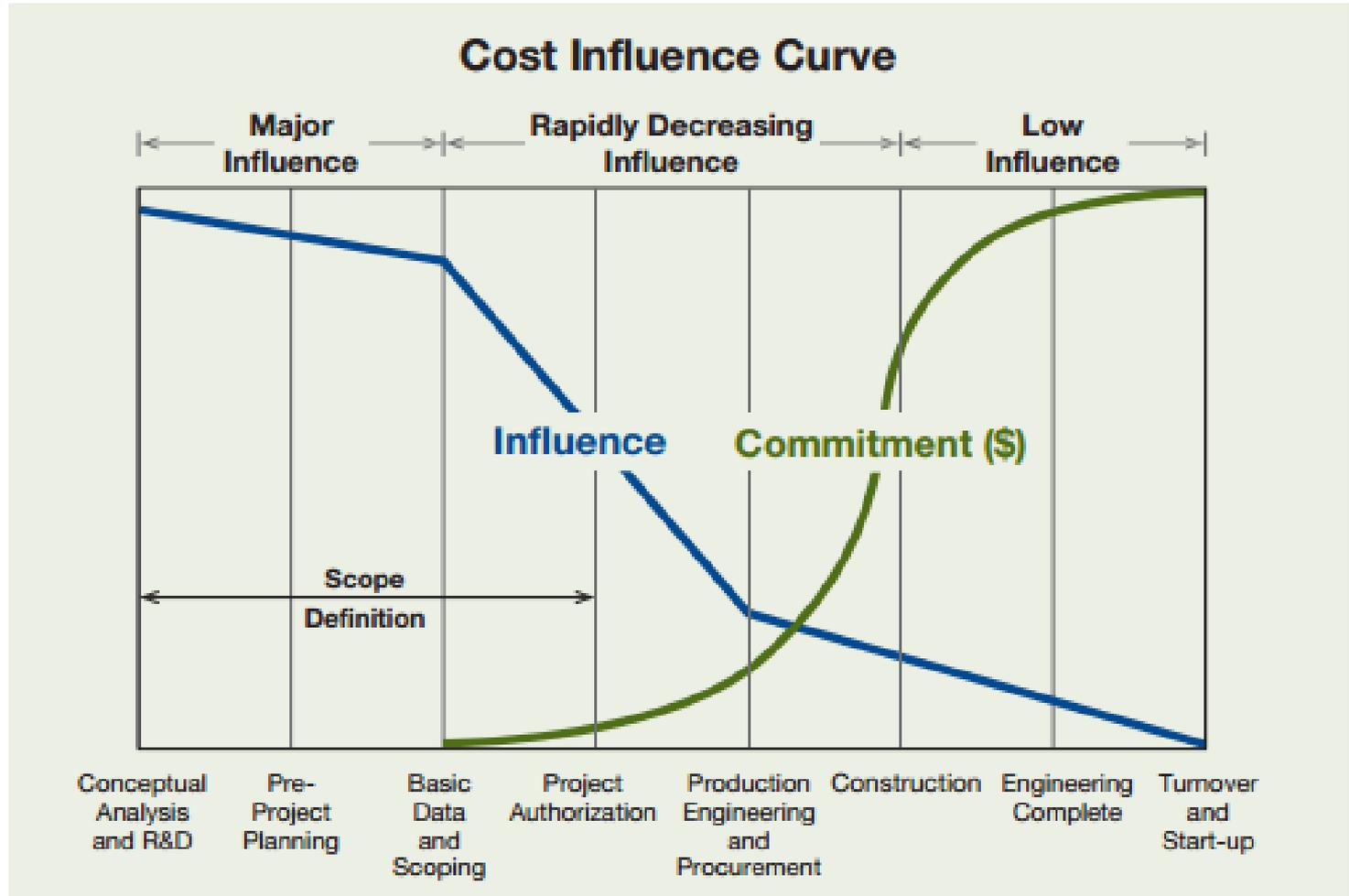
Utility Relocation Workshop and Risk Analysis

Agenda

- Why?
 - Why is utility relocation important in all stages of design and planning?
- How?
 - How can one best mitigate utility impact risks during design?
- An Example



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Source: Construction Industry Institute, Building on 25 Years

Why?



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Why...was KYTC interested?

- Utility Relocation Causing Project Letting Delays or Construction Impacts
 - Increases construction costs; either through inflation or utility impacts
 - Division of Right of Way and Utilities Interested in a Synthesis of Best Practices and Strategies with Associated Guidance
 - Concurrent Interest by Cabinet Leadership to Pose Solutions
 - Creation of a Task Force for Utility Relocations



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Why...do we feel we have anything to offer on the subject?

~Resources Reviewed & Best Practices Collected

- 30 STA Utility Manuals
- Various Organization Guidance Resources
 - FHWA, AASHTO, NCHRP
- Legislation & Regulations

~Participated in KYTC Task Force on Utility Relocation

~Interviews of Professionals (Utility Companies & Design Professionals)

~Surveys & Polls on the Topic along with Data



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What did we do?

Research Project Activities

- Task 1: Review of current Cabinet Processes for Planning and Executing Utility Relocations
- Task 2: Review Utility Relocation Practices of Other Agencies
- Task 3: Interview Stakeholders and Identify Successful Practices
- Task 4: Develop New and Recommend Revisions to Current Cabinet Processes for Improved Utility Relocations
- Task 5: Develop and identify resources to support implementation of the research findings
- Task 6: Prepare final report



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Interview & Survey Assessments

- Conducted Interviews of KYTC and Utility Company Personnel
- Conducted Surveys Inclusive of KYTC, Consultant, and Utility Personnel
 - Highlighted areas of agreement and concerns on instituting best practices
 - Collected guidance on best practice use



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Guidance Development for Best

Practices

- SWOT Analysis
- Issue Resolution
- Risk Alignment

**Available soon

Project Issue	Helpful Tools	Potential Benefits & Concerns
Overhead Utility Relocations & Associated Delays	Early Involvement & Communication	Engineering and relocation begins as soon as possible and parties are able to plan or apply other tools accordingly
	Investigate temporary relocations	May simply push delays back; may incur additional costs
	Establish a Utility Corridor	Could ease the engineering process if done appropriately; may not satisfy all needs
	Separate or Service Contract for Clearing & Grubbing	Could speed the relocation process; could entail erosions concerns
	Utility Impact Notes	Allows the project to go to letting and work to begin; if the dates noted slip, could result in delay charges to the KYTC
	Incentives for Non-Reimbursable Utilities	Could incentivize utilities to relocate; some companies will not view the incentive as prosperous; use with caution
	KYTC design of Utility Facilities	This could speed engineering; may be difficult finding qualified designers and utility companies may not allow it



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Central Point to Success in Utility Relocation:

Early Utility Company & KYTC Utility Staff Involvement

- Times have changed...
 - You cannot bully (nor buy, according to our research) expediency from utility companies
 - It is counterproductive and costly to merely push it into construction



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Caution!!! This is a Paradigm Shift



Source: AutoSpies.com, *Just Following Directions Boss*



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Top Ten Considerations for Expediting Utility Relocations

1. Early Utility Involvement
2. Communicate & Coordinate Actively (multiple areas)
3. Put a Utility Expert on the Team
4. Use SUE (requires thorough understanding)
5. Training (utilities in highway design & vice versa)
6. Electronic Utility Tracking *See KURTS
7. Use Utility Corridors/Duct Banks (when appropriate)
8. Consider Utilities in ROW Acquisition
9. Avoidance (have to know where they are!)

10. Reimbursement for early relocation (use with care)



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Added Emphasis this involves a big change...

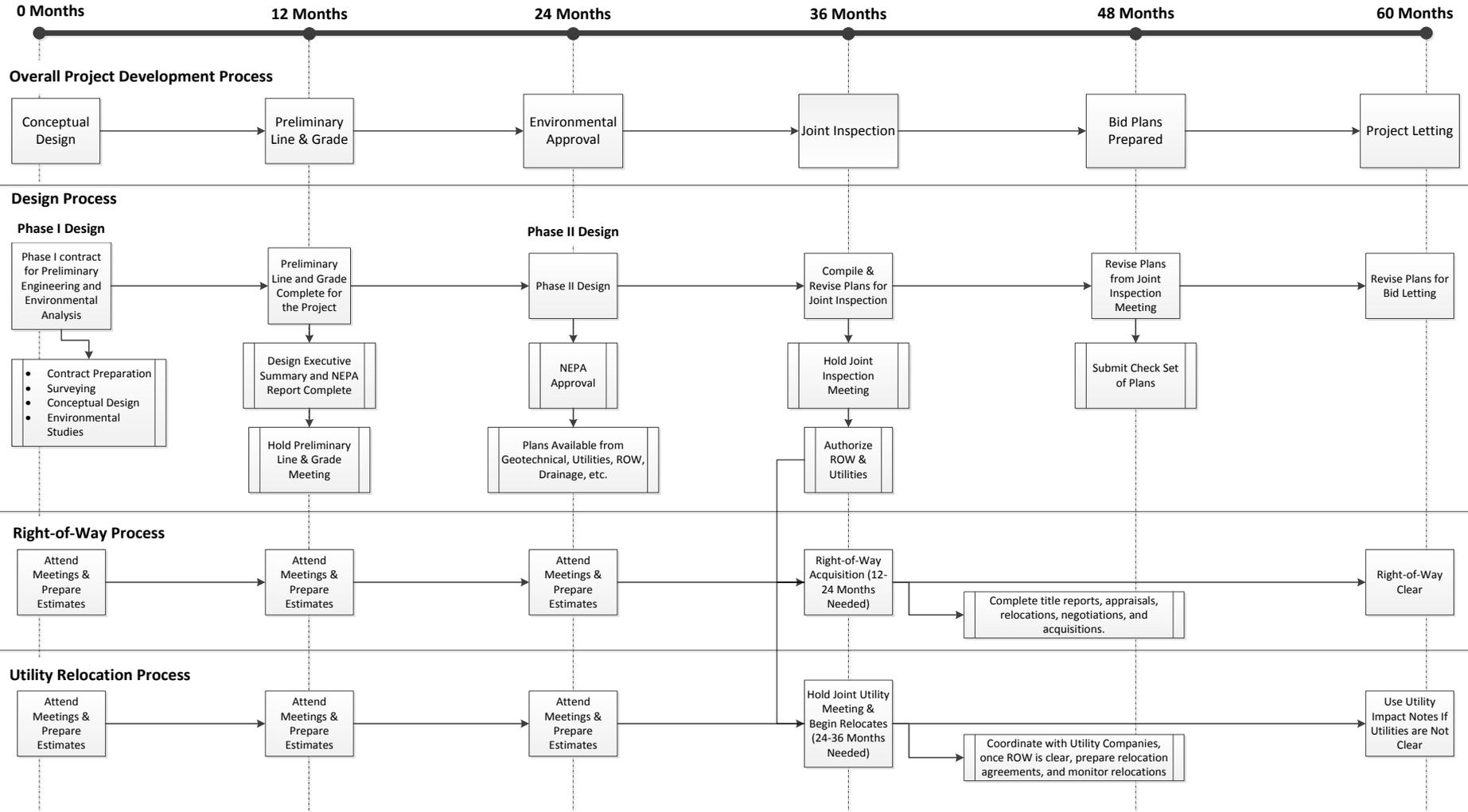


A Process Change



KYTC Project Development Process

Timeline for a Typical One-Mile, Federally Funded, Categorical Exclusion 3 Project with 30 Right-of-Way Parcels, and 6-8 Utilities



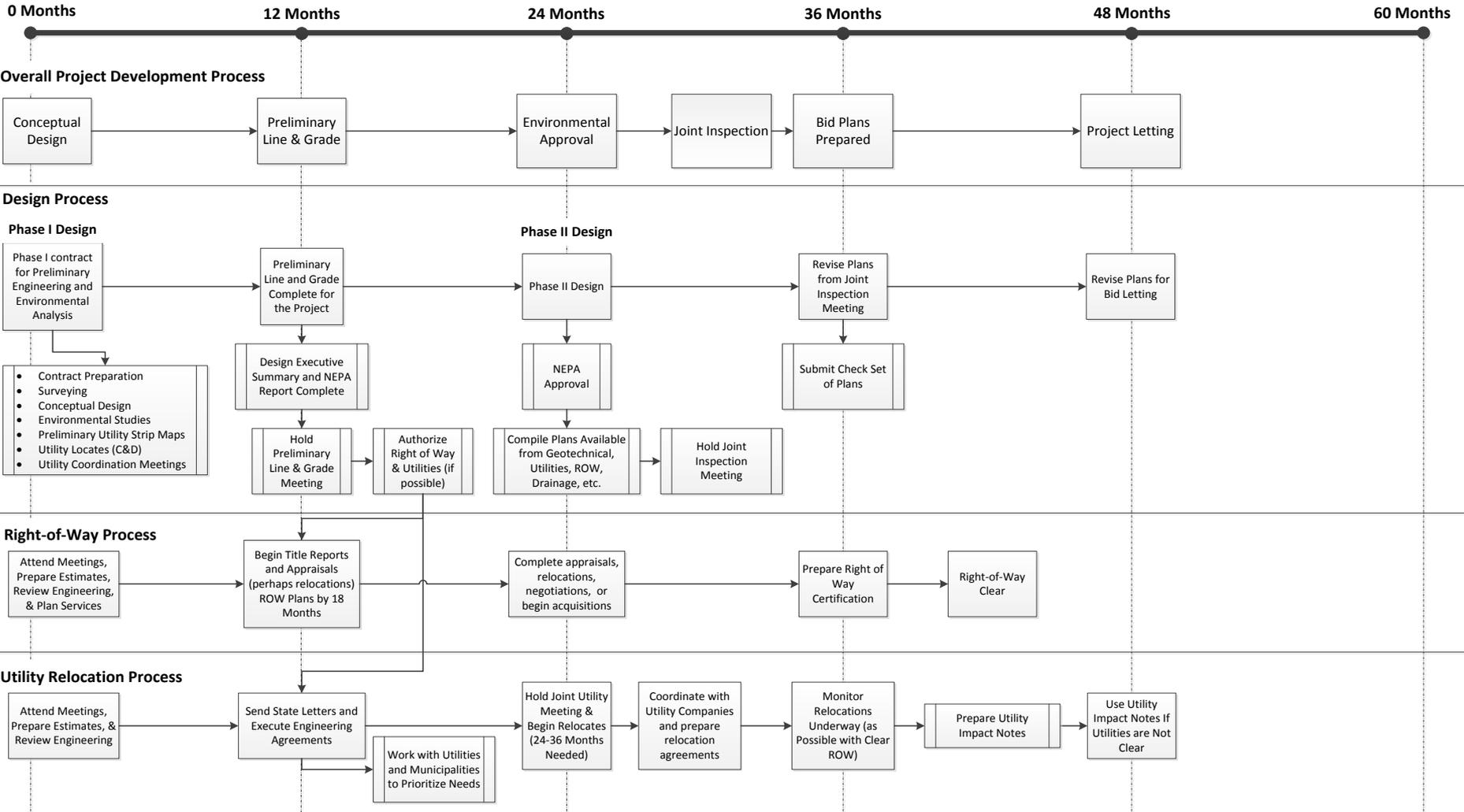
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Revised KYTC Project Development Process

Timeline for a Typical One-Mile, Federally Funded, Categorical Exclusion 3 Project with 30 Right-of-Way Parcels, and 6-8 Utilities



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A Procedure Change



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Risk Analysis Model

- Estimate “Utility Risk” of a project through project characteristics
- Regression Analysis with Assigned Risk from Preconstruction Database (R-Squared Value 0.84)

$$\begin{aligned} \text{Risk} = & 1.14 - 0.02 * \text{District} - 0.00 * \text{Type Bridge Replacement (1 or 0)} + 0.45 \\ & * \text{Type Design Engineering(1 or 0)} - 0.09 * \text{Type I} \\ & - \text{Change Reconst(1 or 0)} + 0.13 * \text{Type Major Widening (1 or 0)} + 0.68 \\ & * \text{Type Minor Widening (1 or 0)} - 0.11 * \text{Type New Interchange(1 or 0)} \\ & + 0.58 * \text{Type Reconstruction (1 or 0)} + 0.07 * \text{Type Safety(1 or 0)} \\ & + 0.36 \text{Type Safety} - \text{Hazard Elim(1 or 0)} + 0.00 \\ & * \text{Type Spot Improvements(1 or 0)} + 0.02 \\ & * \text{Phase Authorization (in \$100,000)} + 0.13 \\ & * \text{Number of Utilities Involved} \end{aligned}$$



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Best Practice & Risk Alignment

Tool	Appropriate Risk Level	Strengths	Weaknesses	Opportunities	Threats
Early Utility Involvement in Design	1,2,3	<ul style="list-style-type: none"> • Early Incorporate utility knowledge in design process • Early identification of potential utility issues • Better coordinated 	<ul style="list-style-type: none"> • Level of effort increases for utility staff early in project 	<ul style="list-style-type: none"> • Time savings from better coordination • Money savings from avoiding potential issues 	<ul style="list-style-type: none"> • More involvement could slow early design
Training project managers and other design personnel on utility issues	1,2,3	<ul style="list-style-type: none"> • Sufficient knowledge with regards to utility relocation. • Better and early identification of potential utility issue 	<ul style="list-style-type: none"> • Level of effort increases for manager and design personnel 	<ul style="list-style-type: none"> • Time and cost saving from better design • Time and cost saving from better management • Better coordination from more knowledge 	<ul style="list-style-type: none"> • Spending more cost and time for training



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Added Emphasis this involves a big change...



A Mindset Change



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Offering Utilities a Seat at the



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- An Example:
The Highway Design
Manual

GENERAL INFORMATION—Highway Design Philosophy

HD-103

PHILOSOPHY

(cont.):

During the early project development or conceptual design process, there are key decision points where the PDT must come together and make decisions that will help determine the outcome of a project. These key decision points are in line with the NEPA decision-making process. The PDT must realize that the product of the conceptual phase is a transportation decision with an approved environmental document based on an alternate and not just the preliminary line and grade plans. There is only one product: the transportation decision documented in the

- **Range of Alternatives:** The next key decision in the shared transportation decision-making process is to determine an area of study within which a range of alternatives that meet the purpose and need can be developed. At this point in the process, the design team (consultant or in-house) presents a range of alternatives that meet the purpose and need of the project. Alternatives/corridors previously evaluated during the development studies conducted by the Division of Planning should be the beginning point. Alternatives/corridors that were eliminated during the development studies should not require further investigation and should not be reconsidered unless new data or conditions warrant such study. Key environmental features within the corridor should be identified and mapped before alignment studies commence. The project team may eliminate alternatives from further consideration with adequate supporting documentation. While a preferred alternative may stand out, the project team should resist making a recommendation until they understand all relevant impacts and issues.



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GENERAL INFORMATION—Highway Design Philosophy

HD-103

KEY DECISION POINTS (cont.):

Following the review of the alternatives, the subject-matter experts (SMEs) would then proceed with an evaluation of those alternatives left for consideration. SMEs are those professionals who have specific expertise available to the project team within the Cabinet's various divisions and through consultant contracts. For example, the environmental SMEs are the functional professionals responsible for

- An Example:
The Highway Design
Manual

➤ **Scope of Impacts:** This is the next key decision point in the progression of alternative analysis and shared transportation decision-making. The SMEs should present to the project team the results of their investigations, including the baseline studies and the corresponding impacts of each of the alternatives on the study area. They would also offer suggestions on the risk associated with moving forward with each alternative and the time frame involved in resolving identified impact issues—i.e., 4(f) involvement that could take an additional 12 months to resolve, stream mitigation that would cost \$450,000, or a 10-inch gas main that will require relocation. Right-of-way professionals and utility agents would also present their findings during this meeting so that the project team can fully consider the possible impacts that property acquisition and utility location (both public and private) might have on the transportation decision.

team and project manager to identify and request these services.



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CONCEPTUAL DESIGN:

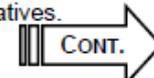
- An Example:
The Highway Design Manual

Once a project is in the Six-Year Highway Plan, the project team is responsible for moving the project through the design process. The first step in the design process is the conceptual design. The product of the conceptual design phase is a transportation decision with an approved environmental document based on an alternate and includes the preliminary line and grade plans. There is only one product: the transportation decision documented in the environmental document and reflected in the engineering plans. Design is only one component of the conceptual design phase. The project team must work together with other disciplines such as Environmental Analysis to deliver the conceptual design phase.

In the first chapter of this manual, we discussed the transportation decision-making process, which includes the key decision points and the NEPA process. The key decision points include the purpose and need, range of alternates, scope of impacts, and selected alternative. The descriptions of these are included in the first chapter. The following write-up provides a general overview of the conceptual design process for a typical capacity improvement project that requires a finding of no significant impact (FONSI). For a flow chart of the conceptual design process, see Exhibit 200-14. A chart is also included in Exhibit 200-15 to show the number of weeks to allow central office and/or FHWA to review key decisions of a project.

FLOW CHART:

1. Purpose & Need - The first key decision point involves the purpose and need. This is a meeting where the project team discusses the purpose and need for the project, determines the resources needed to complete the project, and begins developing a public information plan. For consultant projects, this would be the initiation of the consultant contract and would include the pre-design conference.
2. Public Meeting #1 - The first public meeting would typically be informal and act as a kickoff for the design of the project. The purpose of this meeting is to gather information, determine community support of the project, and understand community issues and desires. The project team can use this information to finalize the purpose and need and help determine the possible range of alternatives.



Environmental,
environmental,
environmental...



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ADMINISTRATIVE PROCEDURES—Conceptual Design

HD-203

FLOW CHART
(cont.):

3. Range of Alternatives - The range of alternatives is another project team meeting where the project team reviews the different alternatives provided by the design team. The design team develops a range of alternatives that meet the purpose and need of the project. Alternatives/corridors previously evaluated during the development studies conducted by the Division of Planning should be the beginning point. An environmental footprint should also be available before

- An Example:
The Highway Design Manual

4. Scope of Impacts - After the SMEs have studied the range of alternatives, the project team should come together to discuss the scope of impacts. The SMEs should present to the project team the results of their investigations, including the baseline studies and the corresponding impacts of each of the alternatives on the study area. They would also offer suggestions on the risk associated with moving forward with each alternative and the time frame involved in resolving identified impact issues. Right-of-way professionals and utility agents would also present their findings during this meeting so that the project team could fully consider the possible impacts that property acquisition and utility location might have on the transportation decision.

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An Example



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An Example



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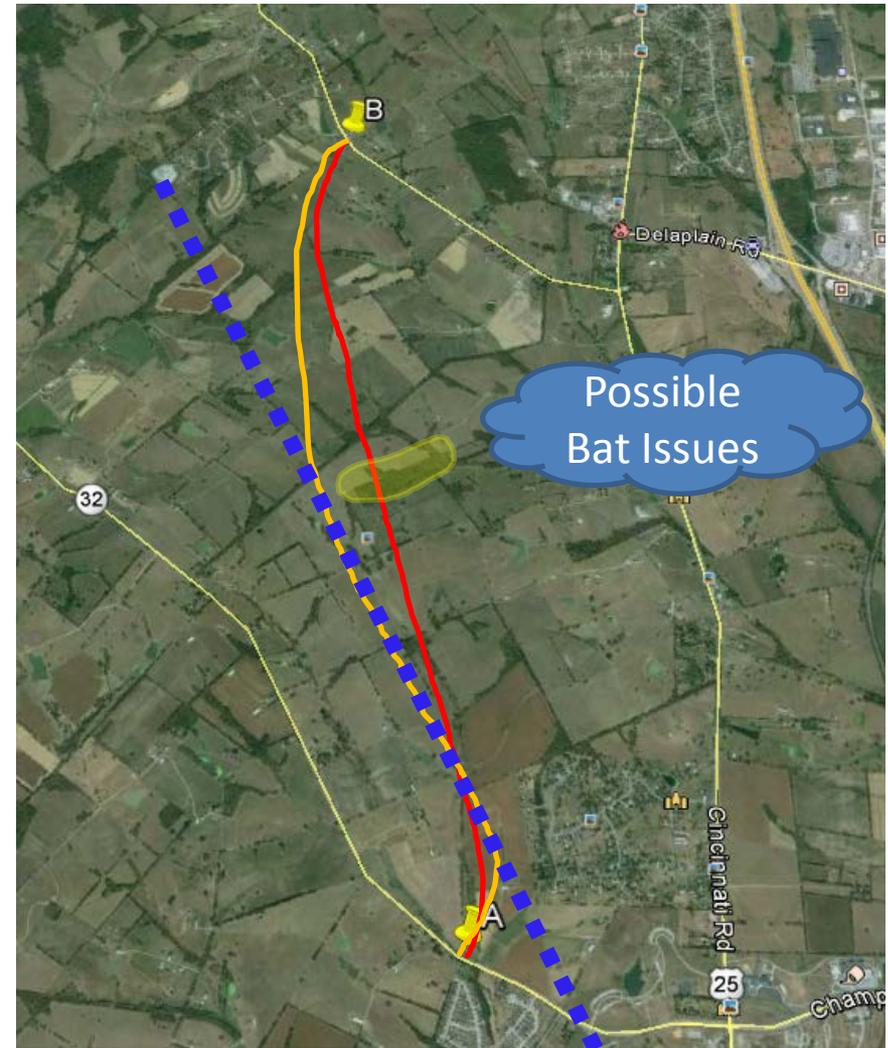


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An Example

- Let's assume it is HV overhead, steel poles taking three months to procure...do you shift alignment?—the bats may only mean tree cutting restrictions.
- Would you have this information? What if it was an underground utility? What if it was a fiber optic line whose disruption cost \$1000's/minute?
- Letting utilities in gives you their side of the story...it is merely more information, it is still your project.



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- Questions & Comments



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