FEASIBILITY STUDIES AND ALTERNATIVE EVALUATION REPORTS

DOCUMENTING DECISION-MAKING IN ODOT’S PROJECT DEVELOPMENT PROCESS

OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENTAL SERVICES
OCTOBER 2017
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OVERVIEW

This guidance is intended to help project managers and environmental specialists develop high-quality reports that effectively document ODOT’s decision-making process for a given project. This guidance focuses on the Feasibility Study (FS) and the Alternative Evaluation Report (AER) during the Project Development Process (PDP).

In general, high-quality FS and AER reports:

- Clearly explain the information used to narrow the range of alternatives and/or to identify the preferred alternative;
- Focus on relevant data and avoid unnecessary length;
- Include supporting technical information by reference; and
- Use “reader friendly” principles as appropriate.

This guidance is accompanied by a separate document, Example of Quality PDP Documents in Ohio (2015), which contains graphics, text and tables adapted from recent documents prepared under ODOT’s PDP. The examples illustrate the techniques discussed in this guidance.

PROCESS

The Ohio Department of Transportation (ODOT) Project Development Process (PDP) consists of five phases, shown in the graphic below. All capital projects go through these five phases, with varying degrees of detail in each phase. An overview of the process is available here:


The preferred alternative is determined during Preliminary Engineering (PE) Phase. The FS and AER are critical components of this phase, because they document the decisions relied upon in future approvals, such as the NEPA document.

What is a NEPA document?

A NEPA document demonstrates ODOT’s compliance with the National Environmental Policy Act (NEPA) and related regulations. Over 98% of ODOT’s program fits within the thresholds of a Categorical Exclusion (CE) – actions that do not individually or cumulatively have a significant environmental impact.
For every project, the project manager must establish the project’s description, method and footprint to choose the preferred alternative:

- **Description** - What will my project involve? Where will it be located?
- **Method** – What design standards will apply? How will we build it? How will traffic be maintained?
- **Footprint** - What are the limits that should be used for environmental clearance? Will there be temporary impacts?

There are three milestones where enough detail may be available to define the preferred alternative: at Project Initiation, in the Feasibility Study (FS), or in the Alternative Evaluation Report (AER). An AER is only prepared when the preferred alternative cannot be defined based upon the level of detail investigated for the FS. The project’s path under the PDP indicates whether a FS and an AER are necessary.

<table>
<thead>
<tr>
<th>Project Milestone</th>
<th>When is information prepared to define the Preferred Alternative?</th>
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<tr>
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<td>Alternative Evaluation Report</td>
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*In cases where a feasibility study is needed for a Path 2 project.

**FEASIBILITY STUDY VS. ALTERNATIVE EVALUATION REPORT**

For Path 1 and many Path 2 projects, enough information is available to define the preferred alternative at Project Initiation. Some Path 2 projects and non-complex Path 3 projects require a FS to define the preferred alternative. Complex Path 3, Path 4 and Path 5 projects use the FS to narrow the range of alternatives and then use an AER to define the preferred alternative.

The discussion below explains how each key decision occurs based upon the project path.

**Path 1** - These projects include maintenance activities occurring within the existing roadway footprint. For these, the description, design details and footprint are known at project initiation. These decisions are made when the project is chosen for funding and included in ODOT’s program. The only alternatives include Build and No Build. There is no potential for significant social, economic or environmental impacts, and the environmental approval is
typically a low-level Categorical Exclusion (CE). For these projects, the FS and AER are not prepared.

Path 2 - These projects include simple transportation improvements with non-complex property acquisition and few environmental impacts. Common project types include culvert and in-kind bridge replacements, stand-alone bike and pedestrian projects, intersection improvements and minor widening projects with no added lanes, i.e. no additional capacity. The environmental approval is typically a low-level CE. For most Path 2 projects, a FS is not required to identify the preferred alternative. An AER is never required.

Many Path 2 projects will require some level of investigation before moving into design, such as a structure type study, safety study, MOT considerations, etc. These studies assist in defining the parameters of the preferred alternative, but there are no “NEPA alternatives” other than Build and No Build. There are only design alternatives where the impacts do not substantially differ. Therefore, there is no need for a FS to compare alternatives.

In rare cases, a Path 2 project may need a FS, but the effort focuses on the specific information needed to identify the preferred alternative. The FS will most likely be in the form of meeting minutes or a note to file to document the decision making process.

An example of a Path 2 project that may require a FS is an intersection improvement with left-turn lane additions on opposing approaches at an intersection. On one corner of the intersection there is a gas station with access on two approaches. On the other corner is a utility. In order to install the turn lanes, either the utility will need to be relocated or one of the gas station’s accesses will need to be removed. A site visit and meeting could be held with all necessary District personnel and consultant, if one is being used. A decision on the preferred alternative could be made after weighing the pros and cons. (Refer to Sample Outline #1 in Appendix A.)

Path 3 - These projects are less predictable, such as interchange reconstructions or modifications, widening projects to add capacity, roundabouts and minor roadway realignments. Path 3 projects follow a different trajectory through Preliminary Engineering, depending on the complexity of the issues. The need to identify a path 3 project as non-}

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1 A “low level” CE is one that is of the lowest risk for environmental impacts (C1 and C2 actions). A “high level” CE is one that requires additional documentation per 23 CFR in order to confirm that it meets the requirements of a CE (D1, D2 or D3 Actions). For more information on classifications of NEPA documents, refer to ODOT NEPA Assignment CE Guidance:

2 ODOT does not typically consider the following to be added capacity for the purposes of PDP classifications: widening by less than a full a lane (i.e. widening 10-foot lanes to meet standards for 12-foot lanes); adding a center two-way left turn lane; adding or lengthening turning lanes; adding or improving shoulders; or converting a traditional intersection to a roundabout.

3 A roadway realignment is a project where the centerline of the roadway is moved, such as to straighten out a curve or to move the roadway farther away from a stream.
complex versus complex merely assists the project manager (PM) in identifying the correct scope and the appropriate level of public involvement activities.

For non-complex Path 3 projects, some environmental issues or design challenges exist and must be weighed against each other before choosing a preferred alternative. The project description may be known at project initiation or it may need to be refined. The design strategy and footprint may also be uncertain. In a project such as this, there may be separate and distinct alternatives, or there may be a series of analyses that build upon each other until the preferred alternative is established. The FS provides enough detail to choose a preferred alternative. (Refer to Sample Outline #2 in Appendix A.) No AER is necessary. The NEPA approval is typically a lower level Categorical Exclusion (CE).

For complex Path 3 projects, several competing issues must be balanced, and two or more alternatives must be evaluated against each other to identify the preferred alternative. The FS will narrow the range of alternatives before proceeding to additional studies in an AER. (Refer to Sample Outline #2 in Appendix A.) The PM makes the decision on the intent of the FS and AER based upon the best available information, including advice from relevant subject matter experts. Involving subject matter experts is valuable for all projects, but is critical for Complex Path 3 and higher where there is a greater likelihood of impacts and design challenges. Complex Path 3 projects are those where the type of project fits the definition of a Path 3 but there exist multiple competing engineering considerations, a higher potential for impacts to sensitive resources or a high level of public controversy. The environmental approval is likely a higher level CE and the FS and AER are made available and shared with the public during public involvement activities. Complex Path 3 projects are the exception, not the rule.

To further differentiate between a non-complex and complex Path 3 project, consider the following examples of the same type of project – mainline widening within the median. A non-complex Path 3 version of this project is one where no new right-of-way is necessary, the structure types lend themselves to widening and the disruption to the travelling public will be minimal.
A complex Path 3 version of the same project may encounter one or more of the following components: extended closure of overpasses or interchanges during construction thus requiring a higher level of public involvement; a structure type that requires a higher level of investigation for the widening; the mainline includes a crossing of a state scenic river requiring a higher level of agency coordination and a higher level of engineering to accommodate any agency concerns regarding the crossing.

Another example of a Path 3 project is a new interchange on existing alignment, i.e., placing an interchange where an overpass currently exists. Typically, this would be a non-complex Path 3 project. Some examples of potential project considerations which may encourage classifying this project as a complex Path 3 are potential impacts to historic landmarks, the need for a higher level of investigation of existing structure conditions possibly requiring complete replacement, and/or a high level of public controversy.

Path 4 and Path 5 - These projects involve potential for major changes in access, substantial right-of-way acquisition, impacts to high quality environmental features or a high level of public controversy. Path 4 projects occur in rural or suburban areas. They may involve major realignments or new alignments with the potential for evaluating multiple corridors. Path 5 projects occur in urban areas and may include substantial utility issues and complex right-of-way acquisition. Because of their setting, Path 4 (rural) projects typically include a heavier consideration of environmental studies during the development of alternatives to adequately identify environmental impacts. Path 5 (urban) projects typically necessitate a higher level of engineering investigation to identify impacts to right-of-way, utilities and cultural resources. Both project types may require resource and regulatory agency coordination at decision points. They typically involve an Environmental Assessment (EA), an Environmental Impact Statement (EIS) or a high level CE document.

For Path 4 and 5 projects, the Preliminary Engineering phase uses two steps to identify the preferred alternative. The FS narrows the field of alternatives to two or three. The AER evaluates the remaining two or three alternatives in greater detail in order to identify the preferred alternative. (Refer to Sample Outline #2 in Appendix A.) The FS and AER are made available and shared with the public during public involvement activities.

On projects where the alternatives have the potential for a high level of environmental impacts, ODOT’s Office of Environmental Services (OES) will provide the report to
regulatory agencies for review and comment. This coordination occurs in advance of the formal coordination on the NEPA document, providing the agencies an early opportunity to review the alternatives and their associated impacts.

RELATED ODOT MANUALS AND GUIDANCE

ODOT manuals and guidance documents provide information related to the FS and AER. Links to key resources are included below:

PDP Page:
http://www.dot.state.oh.us/projects/pdp/Pages/default.aspx

PDP Manual:
http://www.dot.state.oh.us/projects/pdp/Pages/Manual.aspx

PDP Training materials:
http://www.dot.state.oh.us/projects/pdp/Pages/training.aspx

PDP task list and notes within the Scope and Fee system (SAFe):
http://pdp.dot.state.oh.us/General/TaskTemplateReader.aspx

PLANNING THE REPORT

Many individuals review FS and AER documents, including technical experts, government officials, stakeholder groups and the general public. Effectively communicating with such a wide range of stakeholders requires high-quality, “reader-friendly” reports. Because of this, ODOT is expecting the FS and AER’s to be in a reader-friendly format. In general, a reader-friendly report is one that:

- Is readily understandable by all audiences, including those without technical expertise.
- Provides key information in an easy-to-navigate format.
- Focuses on pertinent information and avoids unnecessary bulk.
- Includes supporting technical information in appendices, or by reference, as appropriate.
- Meets all legal requirements.

REPORT EXPECTATIONS

During project start-up, the team determines the expectations for the report. While all reports incorporate reader-friendly concepts, the degree to which different techniques are used varies based on the individual project. Key considerations include:

**Audience** – Consider expectations of those reviewing the report. Will other offices and/or agencies see the report? Will the general public read the report?

**Review Team** – Consider which offices are required to review the report (based on the PDP Manual) and identify which individuals will be included on the review team. Do any members of the review team have specific expectations

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for the report? What content must be included in the report to meet these expectations?

**Writing Quality and Style** – Consider the strategy for drafting the document. Who will be the lead editor? What involvement will subject matter experts have in drafting the text? How will the team address writing quality?

The report tells the story of the project much in the way one would explain the project decision-making process to a spouse or a friend. Clear writing allows all readers to easily understand the project’s purpose and need, the impacts and benefits of each alternative and the reasons for each decision. Writing clearly requires careful planning and editing. Crafting the text to use short, basic sentences, active voice and consistent verb tenses and terminology makes a document more readable. Incorporating everyday language in place of jargon and highly technical terms promotes understanding. This is important for all reports – even those not likely to be read by the public. Different reviewers do not always have a clear understanding of the terminology used by other disciplines and benefit from using everyday language.

Refer to Appendix D: Writing Quality and Style for tips.

**Data** – Consider the key topics covered in the report. What information will appear in the report? What data will the appendices include? What stand-alone documents will be incorporated by reference? Will simple tables, charts and graphs help to summarize data?

Refer to Appendix C: Tips for Presenting Data for suggestions.

Items that were used as primary elements for decision-making may require more discussion in the body of the document. Detailed technical information that is required to supplement the discussion in the body of the report may be included in the appendices. Technical data that is not required for most reviewers may be referenced and may remain in the project file.

One example is traffic count data. The certified traffic plates or planning level traffic and operational analyses contain relevant information required to review the alternatives evaluation. Therefore, the report briefly summarizes the traffic items that influence the decision using graphs, charts and tables as appropriate. The report’s appendices contain the supporting traffic plates and operational analyses. The traffic counts and other raw data are not necessary to review the report and are retained in the project file.

Refer to Appendix B: Guidance on Appendices and Technical Reports for direction on what to include.

**Graphics** – Consider the graphics needed to communicate key concepts. Which concepts are best represented visually? What staff will support this work?

A reader-friendly report provides key information using a range of techniques. Text boxes and graphics are excellent tools to help readers understand complex or technical information. Simple drawings and charts are more understandable to all readers than engineering plans and lengthy, detailed tables.

**NEPA Compliance** – Consider which purpose and need elements are critical to understanding the project and comparing the alternatives. Consider what environmental issues may affect the preferred alternative decision. How will the report incorporate these items? What technical
Regulatory Issues and Permitting Processes – Consider which regulations affect the preferred alternative decision. Are there any requirements that play an important role in comparing the alternatives and require explanation?

Often, a report requires specific information to meet regulations or satisfy interagency agreements. This information often conflicts with the goals of a reader-friendly document. To address this, technical documents geared toward technical reviewers may be written and circulated separately, such as a safety study or an Ecological Survey Report. The document should incorporate these reports by reference.

Agency responses often include lengthy legal terminology for specific findings and references to agreements. Footnotes are an excellent tool to move these phrases out of the body of the report. The report also explains important terminology needed to understand agency coordination, findings and actions.

DEVELOPING THE REPORT

Once the report expectations and preparation strategy are determined, the project team begins to develop the report. Every report must cover the same general concepts. However, each report will vary in how it presents the general concepts, depending on the size and complexity of the project.

GENERAL CONCEPTS

For every project, the project team must establish the answers to key questions to evaluate alternatives and select the preferred alternative.

Project Description - How can the project be described? What will it involve? Where will it be located?

Define the major features of the project. (e.g. Will the project add lanes or just reconstruct the existing pavement?) If alternatives in several locations will be considered, how will the location be determined?

Design Details and Construction Strategies – What standards will be used? How will the project be built? Are there features that will impact the decision on the preferred alternative?

Consider what environmental, design, or construction issues will impact how the project will look. The preferred alternative may be influenced by design standards, maintenance of traffic, or constructability. (e.g. What structure type will be most cost effective? Will it be part-width, require temporary roadways or use a detour? Will there be any design exceptions?)

Project Footprint - What is information is needed to establish the area of impact for the alternatives? Will there be temporary impacts?

The project’s description, design standards, and construction strategy dictate the project’s footprint (i.e. temporary and permanent impact limits). The project team develops the footprint based upon a conservative estimate of the temporary and permanent impact limits, including consideration of access for construction activities. The team develops the footprint based upon the applicable design standards with consideration for minimizing utility involvement, right-of-way impacts or environmental issues. The footprint must be
carefully established for future environmental studies.

**SPECIFIC CONTENT**

For most projects, the FS is the only documentation explaining how the preferred alternative was chosen. For complex projects, the FS narrows the alternatives to be refined in the AER. **An AER is prepared only if a FS has already been prepared and identified the need for further alternatives evaluation.**

Based upon the number of alternatives and complexity of the issues, consider the most appropriate report outline. The project team should review the outlines provided in this guidance, choose one, and adapt it to fit the needs of the project. A report does not need to cover every item in the sample outline. It focuses on the issues that matter most so the reader understands the decision-making process. Please refer to Appendix A: Sample Outlines.

Example outlines are provided in Appendix A. Not every FS or AER will include every item from the example outlines. The report only includes sections relevant to the decisions for that particular project. However, the following items are required for every project:

**Introduction** – The introduction explains what the report does and does not include. It explains what studies were conducted and why. The introduction specifies which studies have a bearing on the preferred alternative decision and which ones were done only to obtain an understanding of the impacts. The introduction explains the project’s context to reviewers. This is particularly important for specialized reviewers, allowing them to understand which issues will be weighed against their particular topic of interest. Subject matter experts are encouraged to read the introduction in addition to their own area of expertise if they do not have time to review the entire report.

Please note that if a specific study would typically occur for a project of that type or setting, and the PM chooses not to do it, the report briefly explains why it was not included.

**Purpose and Need** – The report includes a summary of the purpose and need (P&N) so reviewers understand the origin of the alternatives. The P&N section helps the reviewer understand the need for the project and allows the reader to evaluate the alternatives against it. All reviewers are encouraged to read the P&N summary.

The P&N section should be short and to the point. It is not the intent for reviewers to comment on the adequacy of the P&N within the document. However, the Draft P&N is required to be reviewed and accepted ahead of drafting the FS; the identification of needs drives the range of alternatives.

Refer to ODOT OES Purpose and Need training and toolkit page for references to assist with proper preparation of a purpose and need statement.5

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5 Purpose and Need toolkit: [http://www.dot.state.oh.us/Divisions/Planning/Environment/training/Pages/PurposeNeedToolkit.aspx](http://www.dot.state.oh.us/Divisions/Planning/Environment/training/Pages/PurposeNeedToolkit.aspx)
Alternatives Considered – The report provides a brief description of the alternatives studied. The purpose of this section is not to provide in-depth alternatives evaluation. Rather, it introduces the alternatives to provide context for the key issues and set the stage for the comparison of alternatives. Note that discussion and evaluation of the No Build alternative is required for all projects.

Key Issues – The report explains the issues important to the decision-making process and summarizes the findings for those issues. The order presented in the example outline is only a starting point; the report shall present topics in the order best suited to explain the process – in the order that the studies occurred or in order of relevance to the decision-making process. The report briefly mentions what other tasks are occurring or have been completed, but does not provide extensive detail if they do not weigh on the selection of the preferred alternative.

The report summarizes the key findings from separate stand-alone studies that bear upon the decision-making process. These studies may include safety studies, structure type studies, maintenance of traffic alternatives analysis, environmental studies, etc. The report references the study by title and date. Text from technical studies is not included verbatim in the body of the report nor are the reports included in the report’s appendices. As a general rule, any individual study which is scoped for a specific purpose, such as named above, will be distributed for review and approval as necessary. These studies are part of the project file and including them in the FS or AER appendices is unnecessary. The project manager will need to be able to readily provide a copy of any stand-alone reports to anyone requesting to see it as part of the FS or AER review process.

Comparison of Alternatives – The report summarizes the findings of key topics by alternative and provides a comparison in an easy to understand format. If there are many competing issues, a matrix is very effective and is recommended. The matrix includes each factor evaluated to determine the preferred alternative, such as property impacts, environmental issues, design issues, maintenance of traffic, etc. The matrix must include P&N factors if the alternatives meet the P&N elements to differing degrees. Please note, ODOT does not endorse or accept using a numerical scoring system (weighting, etc.) to compare alternatives.

Conclusion – The report ends with a conclusion. (The report does not use terminology such as “recommendations.”) This section explains the determination of the preferred alternative or the reasons for carrying a narrowed range of alternatives forward. The purpose of the report is to document the process used to reach the conclusion.

The selection of the range of alternatives or preferred alternative will be confirmed upon review of the report and documented in the approval coordination. In cases where a decision on the preferred alternative has not been made and is not included, the report will note that a decision will be made following review by subject matter experts. In those cases, the revised report will identify the preferred alternative. The selection of the preferred alternative will be further documented in the approval coordination.

For projects where an AER is necessary, two approvals will be issued. The first approval will
occur for the FS and will confirm the range of alternatives to be carried forward into the AER. The second approval will take place when the preferred alternative is identified upon completion of the AER. Note that the preferred alternative will continue to be further refined and confirmed thru the NEPA process.

FORMALIZING THE CONCLUSION (REPORT APPROVAL)

The report is complete when the approval is issued. For projects where an AER is necessary, the FS needs to be approved before starting the AER to clearly establish the decision on the narrowed set of alternatives being carried forward. The approval will cite the title and date of the referenced report to make clear which version was approved.

The approval of the FS and AER will be based upon the project’s environmental document level. Those projects where the environmental document is approved by the District (C2 or D1), the District PM shall approve the FS. ODOT OES will approve the FS and AER for projects requiring OES approval of the environmental document (D2, D3, EA or EIS). OES’s review will be based solely on the report’s ability to adequately provide a reasonable and defensible summary of the decision making process on the identification of the preferred alternative. Subject matter experts and District staff should be providing concurrent reviews to ensure that all engineering, right of way and other critical decision making has occurred appropriately. Please note that it is the duty of the ODOT PM to ensure that all comments by various offices and stakeholders are addressed before approving the report or submitting the report to OES for approval. (See PDP Manual, Appendix B, for a table of required reviewers.)

More than one review may be necessary based upon the extent of comments. To minimize the timeframe for reviews, the District PM should coordinate early with subject matter experts who possess approval authority over specific project elements.

For those projects requiring an EA or EIS, resource and regulatory agency coordination will occur during the FS and AER. OES will provide a copy of the FS and AER to the resource agencies for a 30 day review period. Note that for Path 4 and 5 projects the FS, although not recommending a singular alternative, does require resource agency reviews before being approved by OES. Upon completion of the agency coordination, including any public comment period, an approval of the document will be issued by OES. The Project Manager shall not announce the recommendation of the preferred alternative until the agencies are provided the opportunity to comment on the document.

Once approved, the District PM is responsible for notifying all who reviewed the report that a decision was reached.

For all projects, once approved, outdated versions of the report (those that were not accepted) are deleted from the project file per ODOT’s document retention policy. Only the final version of the report is kept. The date of the report which is being approved will be identified in the approval of the FS and AER.
IN CLOSING

The FS and AER are extremely important to ODOT’s PDP. These documents outline the issues ODOT considered in making decisions. This information is vital to the public and to the defensibility of ODOT’s decisions.

The FS and AER can be as short or as long as needed to accurately capture ODOT’s decision-making process for a given project. Ensuring that these documents are written in a reader friendly format, regardless of the document’s size, will ensure that our customers can quickly understand ODOT’s decision-making process.

The purpose of these reports is to summarize the issues such that a lay person (or a court of law) can understand how the preferred alternative, or narrowed range of alternatives, was developed. The reader does not have to agree with the decision, but he/she should be able to clearly understand the issues considered and how they were balanced to make the choice.

Report Resources

Links to key resources for preparing high-quality, reader-friendly documents are included below.

AASHTO Practitioner’s Handbook: Preparing High Quality NEPA Documents for Transportation Projects:

http://www.environment.transportation.org/center/products_programs/practitioners_handbooks.aspx#14

Examples of Effective Techniques for Improving the Quality of Environmental Documents:
SAMPLE OUTLINE #1: PATH 2 MEETING MINUTES AS FEASIBILITY STUDY

Meeting minutes for ABC-##-##.## PID #######

Date

Attendees:
District P&E/Staff
District Traffic Engineer
District HMA/Construction Engineer/Staff
District Safety Engineer/Liaison
District Project Manager
Consultant

Purpose
The purpose of the meeting is to review the design alternatives for the project and confirm the preferred alternative.

Discussion
- Existing conditions
- Discussion of issues and constraints
- Considerations for defining the Preferred Alternative

Conclusion
SAMPLE OUTLINE #2: PATH 3, PATH 4 AND PATH 5 FEASIBILITY STUDY

**Cover** – Provides the project name (county-route-section), PID number, descriptive name for the project (e.g. “State Route 94/Granger Road Roundabout, Medina County”), title and date of the report, and the name/logo of the firm or office preparing the document. (The consulting firm’s logo should not appear within the body of the report. It may appear on drawings or plans.)

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I. **Introduction**

II. **Purpose & Need Summary**

III. **Alternatives Considered**

IV. **Key Issues** – Briefly summarize and reference technical studies by name and date. **Examples may include:**
   a. **Traffic Analysis** - Includes traffic volumes, capacity analysis, signal warrant, safety study – as applicable.
   b. **Roadway Design Issues** - Includes design speed, functional classification, typical section(s), bicycle/pedestrian facilities, property access, horizontal geometry – as applicable.
   c. **Structural Design Issues** – Bridge and culvert locations, structure type studies, retaining wall justifications, constructability – as appropriate to the project.
   d. **Maintenance of Traffic** – Proposed MOT strategy, detour route – as applicable.
   e. **Right-of-Way Requirements** - Preliminary right-of-way (permanent and temporary) by parcel, right-of-way costs, relocations (by type), known relocation challenges – best available data.
   f. **Utility Issues** – Impacts and coordination, if available.
   g. **Environmental Analysis** – Summarize only issues that are relevant to the decision on preferred alternative. If no issues, provide a summary of what studies are in progress or are planned.
   h. **Public Involvement** – Provide a summary of what public involvement has occurred and what is planned.

V. **Comparison of Alternatives**

VI. **Conclusion**

VII. **Next Steps** – Summary of next steps, schedule.

**Exhibits**

- Study Area Map
- Alternatives Exhibits
- Graphics for Key Issues – If there are specific challenges discussed in the FS, provide graphics to aid in understanding those issues.

**Appendices** – The FS shall not include stand-alone technical studies within the appendices. These should be referenced by name and date in the text of the FS and stored in the project file. The appendices should contain any important reference materials that are not available within a stand-alone study.
SAMPLE OUTLINE #3: COMPLEX PATH 3/PATH 4/PATH 5 AER

Cover – Provides the project name (county-route-section), PID number, descriptive name for the project (e.g. “State Route 94/Granger Road Roundabout, Medina County”), title and date of the report, and the name/logo of the firm or office preparing the document. (The consulting firm’s logo should not appear within the body of the report. It may appear on drawings or plans.)

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Executive Summary – Includes a brief summary of the alternatives considered and conclusions.

I. Introduction – This section must also summarize the findings of the FS. Include the approval date of the FS.

II. Purpose & Need Summary

III. Alternatives
   a. Alternatives Considered and Dismissed – Explanation of alternatives that were considered and eliminated prior to detailed consideration. These alternatives will not be discussed further in the report.
   b. Feasible Alternatives – Description and key features of alternatives to be compared in the report.

IV. Key Issues – Only include level of detail relevant to the decision-making process. Briefly summarize and reference technical studies by name and date. For complex Path 3, Path 4, and Path 5 projects, it is likely that a few key issues will be used in the FS to narrow the range of alternatives; most or all of these topics may be included in the AER. Examples may include:
   a. Traffic Analysis – Includes discussion of capacity, safety, travel time, interchange considerations, access management, and signal warrants – as appropriate to the requirements of the project.
   b. Roadway Design Issues – Includes design speed, functional classification, pavement selection, typical section(s), bicycle/pedestrian facilities, property access, service roads, horizontal geometry, conceptual cross-sections, profiles showing constraints (clearances/cover), constructability – as appropriate to the requirements of the project. Refer to sample provided in Appendix B.
   c. Structural Design Issues – Bridge and culvert locations, structure type studies, retaining wall justifications, constructability – as appropriate to the project.
   d. Maintenance of Traffic – Proposed MOT scheme, MOTAA, detours – as appropriate to the project.
   e. Preliminary Geotechnical Assessment – Preliminary exploration results/mapping, summary of findings
   f. Right-of-Way Requirements – Preliminary right-of-way (permanent and temporary) by parcel, right-of-way costs, relocations (by type), known relocation challenges – best available data.
   g. Utility/Railroad Issues – Impacts and coordination
   h. Environmental Analysis – Discussion of resources, impacts, mitigation or avoidance
i. Aesthetics – if applicable
j. Public Involvement and Regulatory and Resource Agency Coordination - Includes discussion of activities, summary of comments/responses, table of agency coordination.
k. Construction Cost Estimates

V. Comparison of Alternatives – Includes comparison matrix and summary of key pros/cons of each alternative.

VI. Conclusion - FS summarizes decision of which alternatives will be carried forward and why. AER summarizes decision of preferred alternative.

VII. Next Steps – Include discussion of next steps, schedule, funding status. Include the phasing plan, if applicable.

Exhibits
• Study Area Map
• Land Use Map
• Typical Sections
• Level of Service graphics (No Build and Build Alternatives)
• Environmental Resources Mapping
• Alternatives Exhibits – Exhibits should be appropriate to the level of detail available, but may include aerial photography overlaid with environmental resources, alternative alignments with curve data, bridge and culvert locations, major utilities, existing property lines, ownership information, buildings, construction limits and preliminary right-of-way, relocations, retaining wall locations, noise wall locations.
• Exhibit of preferred alternative
• Graphics for Key Issues – Provide graphics to aid in understanding of critical issues.

Appendices – The appendices should contain any important reference materials that are relevant to the identification of the preferred alternative (or decision on alternatives carried forward to AER) that are not captured in other stand-alone documents. For example, capacity analyses completed for the FS and AER that are not captured in a stand-alone report are included. Stand-alone reports shall be made available in the project file and are not included in the appendices.
• Traffic Data
• Capacity Analyses
• Plan and Profile (This level of detail may not be necessary for the FS and AER. A separate review of plans may be conducted and included by reference.)
• Cost Estimate Details
• Photolog
• Public Involvement Materials
• Regulatory and Resource Agency Coordination
# APPENDIX B: GUIDANCE ON APPENDICES AND TECHNICAL REPORTS

**General:**
- Provide a detailed list of appendices in the table of contents.
- Include a title sheet for each appendix. Voluminous appendices should include a separate table of contents on the cover sheet.
- Include page numbers for appendices. Consider using a prefix that is unique for each appendix (i.e. Page A-1 for Appendix A).
- Include cross references to appendices in the main body of the document.
- Choose which items to include in the appendices based upon the table below.

## Information Location in a Feasibility Study or Alternative Evaluation Report

<table>
<thead>
<tr>
<th>Supporting Data</th>
<th>Path 2 and Non-complex Path 3</th>
<th>Complex Path 3, Path 4 and Path 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summarize in Text and Reference</td>
<td>Include in Appendix</td>
</tr>
<tr>
<td>Certified traffic</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Traffic count data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic analyses</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>HCS/Syncro/Vissim</td>
<td></td>
<td></td>
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<tr>
<td>Safety study</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Safety analysis of alternatives</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>(HSM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternatives mapping</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Evaluation matrix</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Key issues mapping</td>
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<tr>
<td>Key issues mapping</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Structure Type Study</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Geotechnical reports</td>
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<td></td>
</tr>
<tr>
<td>Utility information</td>
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<td></td>
</tr>
<tr>
<td>Conceptual MOT or MOTAA</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cost estimates</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Environmental resource reports</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Preliminary plans</td>
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<td></td>
</tr>
<tr>
<td>Photolog</td>
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<td></td>
</tr>
<tr>
<td>Public involvement materials</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. May include simplified graphics in text. Full page exhibits could be included in appendices or in body.
2. Include in appendix if separate technical report not prepared.
APPENDIX C: TIPS FOR PRESENTING DATA

Figures
- Simplify content to the minimum required to convey the message.
- Consider overlaying plan elements on aerial photographs.
- Make important elements stand out against the background.
- Label key aspects of alternatives and/or key issues described in the text.
- Include a descriptive title.
- Include a clear legend, north arrow and scale.
- Locate close to corresponding text and provide a clear cross reference.
- Include citations when appropriate.

Tables
- Limit the amount of information conveyed (avoid data dumps).
- Move complex tables to appendices.
- Incorporate colors and borders appropriately and consistently throughout the document.
- Include a descriptive title.
- Accompany with simple text that explains the key conclusions.
- Locate tables close to corresponding text and provide a clear cross reference.
- Provide citations when necessary.

Charts
- Consider using pie and bar charts in lieu of tables.
- Use charts to convey the relative magnitude of data (i.e. most common crash types or number of relocations for each alternative).
- Include a descriptive title.
- Include a clear legend and label data sets.
- Use color appropriately (data sets should be easy to distinguish).
- Assure the conclusions are evident with little text explanation required.
- Locate charts close to corresponding text and provide a clear cross reference.
- Provide citations when necessary.

Evaluation Matrices
- Include purpose and need elements and key issues.
- Do not select an alternative based on a mathematical formula (i.e. don’t assign points).
- Consider using symbols or colors to illustrate differences between alternatives.
- Be quantitative where possible. (i.e. Alternative 1 impacts 16 utility poles. Alternative 2 impacts 2 utility poles.)
- The reasons for selecting the preferred alternative should be apparent when reviewing the data in the evaluation matrix.
### APPENDIX D: GUIDANCE FOR WRITING QUALITY AND STYLE

**Tips:**
- Write clearly
- Draw conclusions, don’t hide behind analysis
- Be specific
- Define technical terms and acronyms

- Use active voice
  - Before:
    
    It was recommended by the Steering Committee that Alternative 2 should be the preferred alternative.
  
  - After:
    
    The Steering Committee recommended Alternative 2 as the preferred alternative.

- Use consistent verb tense
  - Before:
    
    Alternative A will not meet the project’s purpose and need. It corrects the sight distance problem. However, it could not provide acceptable levels of service. So, Alternative A has been removed from further study.
  
  - After:
    
    Alternative A failed to meet the project’s purpose and need. It corrected the sight distance problem. However, the intersections operated at unacceptable levels of service. So, the project team removed Alternative A from further study.

- Eliminate unnecessary words
  - Before:
    
    In order to address the public’s concerns about the project, several elements were added to help pedestrians in the study area. The features that were added to the project included treelawns, sidewalks, marked crosswalks, pedestrian lighting and benches.
  
  - After:
    
    The project team added treelawns, sidewalks, painted crosswalks, pedestrian lighting and benches to help pedestrians.

- Eliminate unnecessary sections
  - The amount of text should reflect the amount of impact.
  - Sample outlines are only guides. The project’s specific requirements ultimately determine content.
Use short, basic sentences

Before:
There will continue to be opportunities for public involvement and outreach while the project is under final design. ODOT will reach out to the Advisory Committee and ask if they are interested in sending a note to their members letting the individuals know the proposed meeting and outreach dates during final design. If the advisory committee agrees to help distribute information, ODOT will develop a letter that they can use.

After:
Public involvement will continue into the project’s final design. ODOT will coordinate future outreach with the project Advisory Committee. As appropriate, the Advisory Committee will distribute meeting information to their constituencies.

Use bullets

Before:
The Preferred Alternative includes changes to local streets. Francis Avenue will be closed between E. 55th Street and E. 57th Street. Cul-de-sacs will be built on Berwick Road, Colfax Road, E. 73rd Street and Rawlings Avenue. Rawlings Avenue will also be closed between E. 75th Street and E. 79th Street. Lisbon Road will have a new cul-de-sac and a new connection with Grand Avenue near Evarts Road. Tennyson Road will be closed between Evarts Road and Buckeye Road.

After:
The preferred alternative also will change some local streets:
- **Francis Avenue** – closure between East 55th Street and East 57th Street;
- **Berwick Road, Colfax Road and East 73rd Street** – cul-de-sacs;
- **Rawlings Avenue** – cul-de-sac; closure between East 75th Street and East 79th Street;
- **Lisbon Road** – cul-de-sac; connection with Grand Avenue near Evarts Road; and
- **Tennyson Road** – closure between Evarts and Buckeye roads.

Incorporate white space onto the page
- In the margins
- Between sections
- Between paragraphs
- Between columns
- Around figures and tables

Make it visual
- Simplified illustrations
- Simplified plans overlaid on aerial mapping
- Graphs
- Charts
- Tables
- Photographs with captions