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Title: <b>Conceptual Alternatives Analysis</b>		

**1.0 PURPOSE:**

The purpose of this procedure is to define the requirements for developing multiple conceptual alignments in order to determine the preferred alignment for schematic development, environmental documentation, and subsequent corridor development.

All conceptual alternatives analyses for NTTA projects shall comply with NTTA Design Standards and these procedures herein to ensure consistency, quality, and timely delivery.

**2.0 RESPONSIBILITIES:**

- 2.1 NTTA Design Manager –The NTTA Design Manager shall be responsible to provide CM/Project Managers with NTTA design criteria standards, and shall be responsible for approving all final geometric design criteria.
- 2.2 Corridor Manger (CM)/Project Manager – The CM/Project Manager shall be responsible for coordinating the initial conceptual alternatives analysis, approving final conceptual evaluation criteria, and coordinating the project design criteria workshop.
- 2.3 Design Section Engineer (DSE) – The DSE shall be responsible for developing project specific geometric design criteria, developing and evaluating conceptual alternative alignments, participating in the project design criteria workshop, and preparing the conceptual alternatives evaluation report.

**3.0 SCOPE/APPLICABILITY:**

This procedure shall apply to all NTTA projects and corridors within the Project Delivery Department.

**4.0 REFERENCES:**

- TxDOT Roadway Design Manual
  - AASHTO A Policy on Geometric Design of Highways and Streets
  - NTTA Design Standards and Specifications
  - [PC-02-F1\(A1\)](#) NTTA Project Estimating Template
  - [PC-02-F1\(A2\)](#) NTTA Project Estimating Template (Widening)
  - [NTTA Design Guidelines](#)
  - Highway Capacity Manual
  - [The MTP for the Dallas-Fort Worth Area \(NCTCOG\)](#)
  - TxDOT Access Management Manual
  - TxDOT Project Development Process Manual
  - TxDOT Transportation Planning Process Manual
  - [NTTA Environmental Manual](#)
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**5.0 DEFINITIONS & ACRONYMS:**

**6.0 PROCEDURES:**

- 6.1 Initiate Conceptual Alternatives Analysis** – The conceptual alternatives analysis shall be initiated after the following actions have been taken in the corridor development process:
- 6.1.1** Project/Corridor need and purpose have been established:
    - 6.1.1.1** The NTTA has identified the project or corridor.
    - 6.1.1.2** Corridors listed in the MTP may have identified the NTTA as the lead agency for project development.
  - 6.1.2** Initial project/corridor development tasks have been initiated:
    - 6.1.2.1** Public outreach initiatives have begun, agency corridor development partners have been contacted, project stakeholders have been identified and initial stakeholder coordination is underway.
    - 6.1.2.2** All required data for development and evaluation of conceptual alternatives has been obtained, including transportation system data, previous study documentation, identification of environmental constraints, aerial photogrammetry, development of ROW constraints, and a property owner database.
    - 6.1.2.3** Regional coordination efforts have been initiated for the project/corridor with agency partners, including NCTCOG, TxDOT, and affected local government and resource agencies.
- 6.2 Develop Concept Evaluation Criteria** – Criteria shall be established to evaluate the conceptual alternatives alignments. The major evaluation factors shall include environmental, engineering, cost, and public input measures to be used for the confirmation of the preferred alignment in comparison to a no-build alternative. The criteria shall be filtered through a public outreach process to include the input of partnering agencies and project stakeholders. Final evaluation criteria shall be approved by the CM/Project Manager.
- 6.3 Develop Geometric Design Criteria** – Geometric design criteria shall be developed for the horizontal and vertical alignments of corridor alternatives for all roadway classifications required and shall incorporate the following local, state, and federal design guidance:
- 6.3.1** TxDOT *Roadway Design Manual* (current version at the time NTP is given)
  - 6.3.2** AASHTO *A Policy on Geometric Design of Highways and Streets* (current version at the time NTP is given)
  - 6.3.3** NTTA Design Guidelines
  - 6.3.4** *Highway Capacity Manual*
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6.4 Final geometric design criteria shall be approved by the NTTA Design Manager.

6.5 **Conduct a Project Design Criteria Workshop** – After concept evaluation criteria and geometric design criteria are developed, a project design criteria workshop shall be conducted to serve as a brainstorming session in which decision makers, stakeholders, and technical staff shall discuss and agree on the following design issues: roadway and drainage design parameters; engineering and environmental constraints; and project/corridor development schedule.

6.5.1 Staff from NTTA, PD and other agencies, as required, shall attend and participate in the workshop. Final concept evaluation and geometric design criteria for corridor conceptual alternatives development shall be approved at the workshop.

6.6 **Develop and Evaluate Conceptual Alternatives Alignments** – Conceptual alternatives alignments shall be developed for viable alignments identified during the workshop for the minimum number of alignments specified in the scope of services. Conceptual alternatives shall be developed horizontally and vertically to a level of detail necessary to determine evaluation measures resulting from the approved evaluation criteria and to satisfy the approved geometric criteria.

6.6.1 The conceptual alternatives shall be developed to a point where the following factors can be measured and evaluated:

- Preliminary ROW impacts
- Number of parcels impacted
- Impacts to existing and proposed developments
- Impacts to environmental features
- Locations and configurations for major interchanges
- Preliminary access locations
- Identification of existing access disruptions
- Location of grade separation structures
- Potential frontage road requirements
- Impacts to existing utilities
- Preliminary corridor development costs

6.6.2 The conceptual alternatives alignments shall be prepared electronically to the specifications in the scope of services. The conceptual alternatives alignment evaluation shall consist of a comparative evaluation using a matrix format to be provided by Project Delivery. The evaluation matrix shall document the specific characteristics of each conceptual alternative while using an unbiased ranking system to rate each alternative. In order to make a recommendation for the technically preferred alternative, key parameters shall be used to evaluate each conceptual alternative and consist of, but are not limited to:

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- Environmental
- Engineering
- Cost
- Public input
- Compatibility with the appropriate agencies

**6.7 Prepare Conceptual Alternatives Evaluation Report** – This report shall be prepared in order to document the comparative measures of each conceptual alternative, the comparative alternatives evaluation, the reasoning for alternatives elimination, and the technically preferred alternative recommendation. It shall include project history, the evaluation matrices – with supporting detailed information and a list of sources with appropriate references, and colorized maps of the alternatives. This report shall be submitted to the Director of Project Delivery.

**7.0 REGULATORY REQUIREMENTS:**

N/A

**8.0 RELATED BOARD POLICY:**

N/A

**9.0 COMPONENT DOCUMENTS:**

- [SD-01-A1](#) Sample Conceptual Alternatives Evaluation Report

**10.0 REVISION HISTORY:**

Revision	Revised by:	Date Issued	DRN NO.	Reason for Revision
0	Dave Clarke	06/05/2008		Original Issue
0	Edie Adams	5/29/2009	<a href="#">10007</a>	Admin Change – Correct manual title
1	Darla Payberah	04/28/2011	<a href="#">10286</a>	Updated roles new/replaced roles and provided minor revisions for clarity

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**11.0 FLOWCHART: Conceptual Alternatives Submittal Process**(Adjust zoom to enlarge)

