Product 0-4661-P1

CDA PROCUREMENT PROCESS MODEL

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Abstract:	**Keywords:**	**No. of Pages:**
This paper describes a systematic approach to CDA procurement, including a discussion of the CDA procurement process flowchart, its phase durations and duration drivers, and lessons learned to date regarding CDA procurement.	Procurement, Comprehensive Development Agreement, CDA	56

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1. Introduction

This report provides a process model for procuring an Exclusive Development Agreement (EDA). Supportive information is provided related to task breakdown, targeted durations, and associated lessons learned. This document includes findings primarily from the State Highway 130 (SH 130) project, but it also incorporates some findings from the State Highway 45 Southeast (SH 45 SE) project, currently underway within the Austin District.

Since the SH 130 project agreement was signed, legislative changes substituted the term CDA (Comprehensive Development Agreement) for EDA. Thus, *CDA* is used within this report to take into consideration this change in nomenclature.

To analyze the CDA process, the research team first documented essential steps in the SH 130 EDA procurement, the key inputs to each step and outputs upon completion, and responsibilities. As a starting point in drawing the process flowchart, the research team used the process model developed by the Texas Department of Transportation (TxDOT) for evaluating SH 130 proposals and expanded it. The research team also conducted interviews with those TxDOT personnel accountable for key procurement tasks in order to determine optimum time requirements and to identify opportunities for streamlining.

2. Research Methodology

In order to achieve the established Product No. 1 (P1) objective, the research team followed the methodology represented in Figure 2.1. Initially, we conducted a literature review on the procurement of Design–Build (D–B) transportation projects in other states and on industry practices for D–B procurement to help in identifying commonalities and differences between Comprehensive Development Agreement (CDA) projects and conventional Design-Bid-Build (D–B–B) projects. We conducted a concurrent thorough analysis of CDA procurement documentation, project newsletters, and project presentations, which allowed the researchers to identify a set of activities needed to procure a CDA project. The verification of these activities with findings to date resulting from Research Task No. 3 ("Define essential elements of EDA master contract") and Research Task No. 6 ("Consolidate and synthesize lessons learned") allowed the researchers to outline a first draft of the procurement process at the phase level.

That draft was tested and submitted for feedback through a first round of interviews with SH 130 project personnel, SH 45 SE project personnel, and Texas Department of Transportation (TxDOT) legal consultants. The activities that were conducted to develop this approach are given in Table 2.1. A detailed draft of the CDA procurement process was developed with schedules of actions, responsibilities, and duration targets. In addition, through interviews with SH 130 and SH 45 SE personnel, the researchers identified some lessons learned related to CDA procurement. Lessons learned that are helpful for expediting the procurement process have been subdivided into two categories (activity-related and process-related), which are grouped by task and included in Appendix B. Process-related lessons learned were used in structuring the CDA procurement process. Lessons learned not directly pertaining to any task, but related to CDA procurement, are included in Appendix C. Figure 2.1 explains the structure of Product No. 1 that includes the following: (1) the CDA procurement process flowchart (Appendix A), (2) a table listing CDA task durations and duration drivers (Section 3.2), (3) a set of suggestions for expediting the CDA procurement process (Appendix B), and (4) a set of other lessons learned pertaining to the procurement phase (Appendix C).

Figure 2.1 Research Methodology

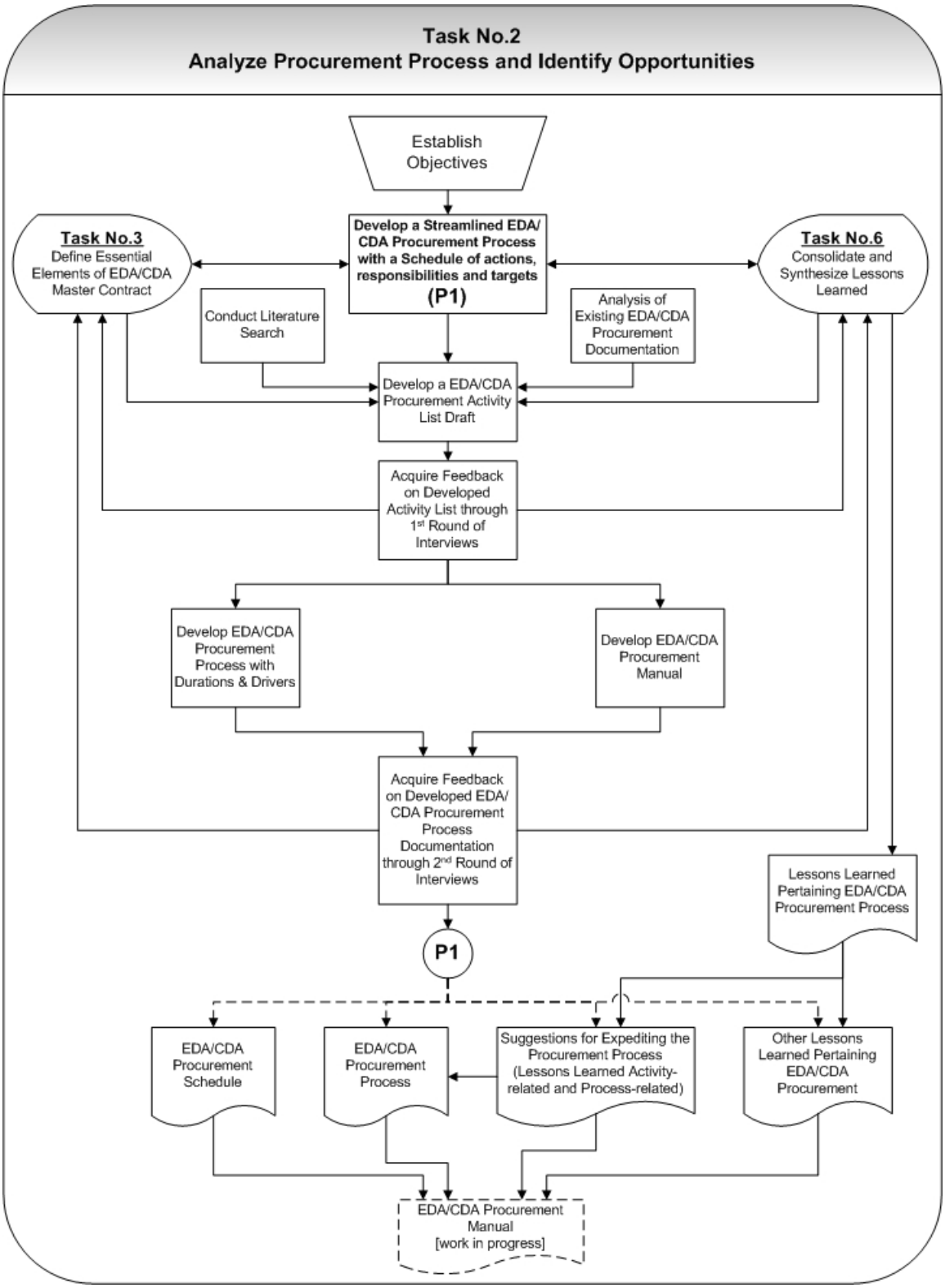

Table 2.1 List of Attended Meetings and Events

Date	Type	Place	Topic
09/23/2003	Kick-off meeting	Turnpike Office, Pflugerville	*General presentation of the project; decision on what documents can be made available for research* SH 130 Program Manager
10/15/2003	Training Conference	College Station, Texas A&M	*77th Annual Transportation Short courses. Session 18: Toll Roads*
11/4/2003	Interview	Turnpike Office, Pflugerville	*General discussion on project management perspective and collection of lessons learned* TxDOT Turnpike Director of Construction, SH 130 Program Manager
11/21/2003	Interview	UT, 4th floor ECJ	*General discussion on contractor perspective* SW Account Manager – Fluor Daniel
12/15/2003	Interview	Turnpike Office, Pflugerville	*General discussion on ROW and utility adjustments and collection of lessons learned* TxDOT Turnpike Right-of-Way (ROW) Manager, TxDOT Turnpike Utility Adjustments Coordinator, TxDOT Turnpike ROW Coordinator
12/17/2003	Interview	Turnpike Office, Pflugerville	*General discussion on ROW and utility adjustments and collection of lessons learned* SH 130 ROW Coordinator
12/18/2003	Open Forum Public meeting	High School – Del Valle	*Public forum on modifications to schematic ROW - Speakers* TxDOT Turnpike Director of Construction, TxDOT Turnpike ROW Manager, LSI SH 130 Environmental Manager
01/12/2004	Interview	Turnpike Office, Pflugerville	*Discussion on utility adjustments and collection of lessons learned* TxDOT Turnpike Utility Adjustments
01/14/2004	Interview	Turnpike Office, Pflugerville	*Discussion on utility adjustments and collection of lessons learned* SH130 Utility Adjustments Specialist, TxDOT SH 130 ROW Specialist
01/22/2004	Interview	Turnpike Office, Pflugerville	*General discussion on environmental aspects and collection of lessons learned* TxDOT Turnpike Environmental Manager, SH 130 Environmental Coordinator
03/25/2004	Interview	Turnpike Office, Pflugerville	*Discussion on CDA procurement process* TxDOT Turnpike Director of Construction
04/27/2004	Phone Interview	UT office, Austin to Turnpike Office, Pflugerville	*Discussion on CDA procurement process* TxDOT legal counselor
05/10/2004	Interview	Turnpike Office, Pflugerville	*Discussion on CDA contract provisions* TxDOT legal counselor
05/21/2004	Interview	Austin district offices	*Discussion on CDA procurement process* TxDOT Deputy District Engineer — Austin District
07/06/2004	Interview	Turnpike Office, Pflugerville	*Discussion on CDA procurement process* SH 130 Program Manager
07/15/2004	Interview	Austin district offices	*Discussion on CDA procurement process* TxDOT Deputy District Engineer — Austin District

3. Findings

Comprehensive Development Agreement Procurement Process Model

This section includes a simplified version of the Comprehensive Development Agreement (CDA) procurement process flowchart, including a break down of phases, subphases and tasks. A complete flowchart with subtasks and subprocesses is included in Appendix A. The breakdown of phases and subphases is driven by the major milestones and deliverables achieved throughout the process. These major milestones are represented in the overview of the process (Figure 3.1 and Figure A-1).

The procurement process is subdivided into four phases.

1. Toll viability study
2. Prequalification (Figure A-2)
3. Bid preparation and evaluation (Figures A-3, A-4, and A-5)
4. Contract finalization (Figure A-6)

To associate tasks into groups and show sequencing between task groups, the following organizational system is used in Appendix A.

- Phase
  - Example: Phase 2: Prequalification
- Subphase
  - Example: Subphase 2.1: Prepare Request For Proposals and Qualifications (RFPQ)
- Task
  - Example: Task 2.1.2: Develop Proposal Qualification Submittals (PQSs) evaluation process

Therefore, the first number represents the phase, the second number represents the subphase, and the third represents the task. Activities with more than three digits represent subtasks.

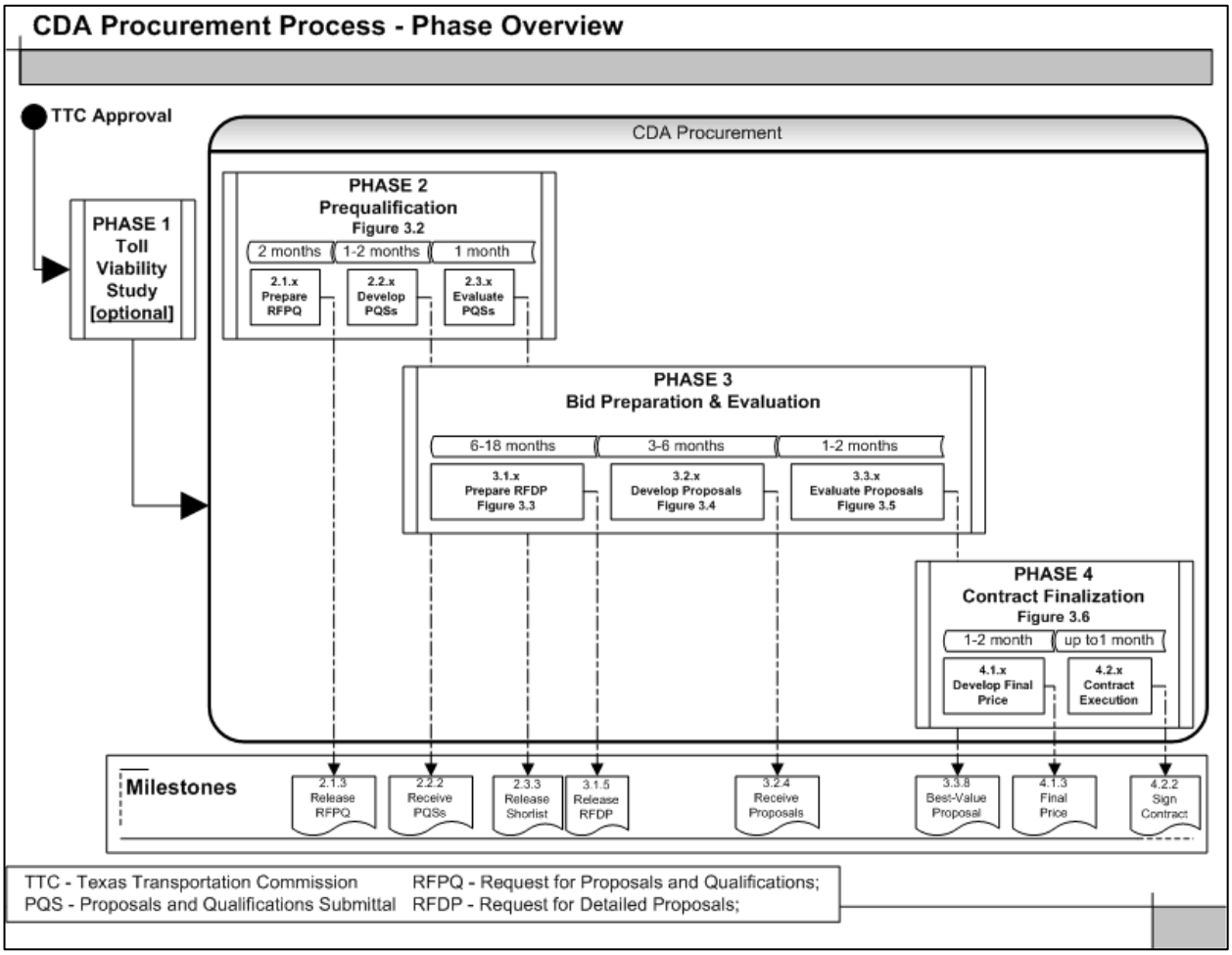

Figure 3.1 Overview of Comprehensive Development Agreement Procurement Process with Schedule and Milestones

Figure 3.1 (and Figure A-1) represents an overview of the whole process at phase/subphase level with recommended durations at subphase level and milestones adopted for the breakdown.

The first phase, the toll viability study (if applicable), happens before the procurement starts and is often performed by outside consultants. When performed, it is critical to the procurement schedule because some information developed within this phase constitutes the starting point for one of the most critical and time-consuming subphases, Subphase 3.1, Prepare Request for Detailed Proposals (RFDP).

Figure 3.2 (and Figure A-2) includes the tasks relating to Phase 2, Prequalification, and its three subphases. Figure 3.3 (and Figure A-3) includes Subphase 3.1, Prepare RFDP. During this subphase, a master CDA contract is developed (see Product 2 for more details regarding

CDA contracting). Figure 3.4 (and Figure A-4) includes Subphase 3.2, Develop Proposals. Figure 3.5 (and Figure A-5) includes Subphase 3.3, Evaluate Proposals. Figure 3.6 (and Figure A-6) includes the tasks relating to Phase 4, Contract Finalization, and its two subphases.

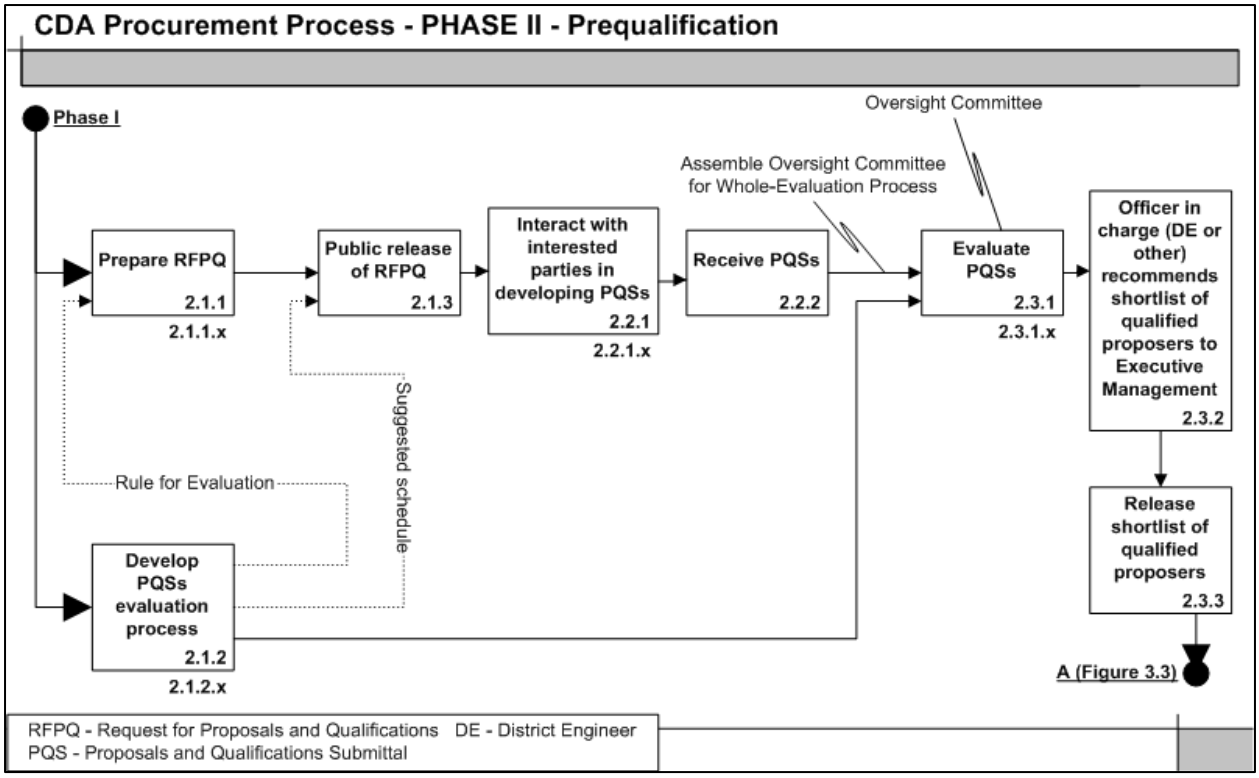

Figure 3.2 Prequalification

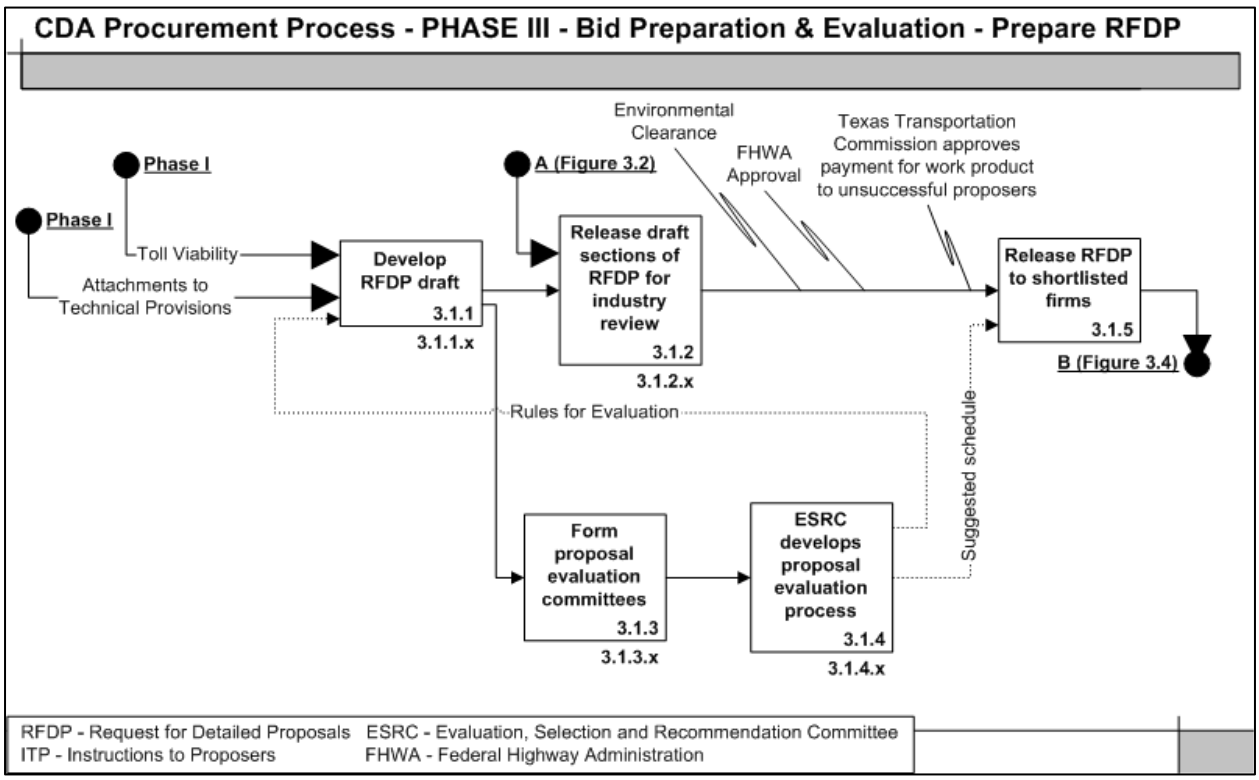

Figure 3.3 Prepare Request for Detailed Proposals

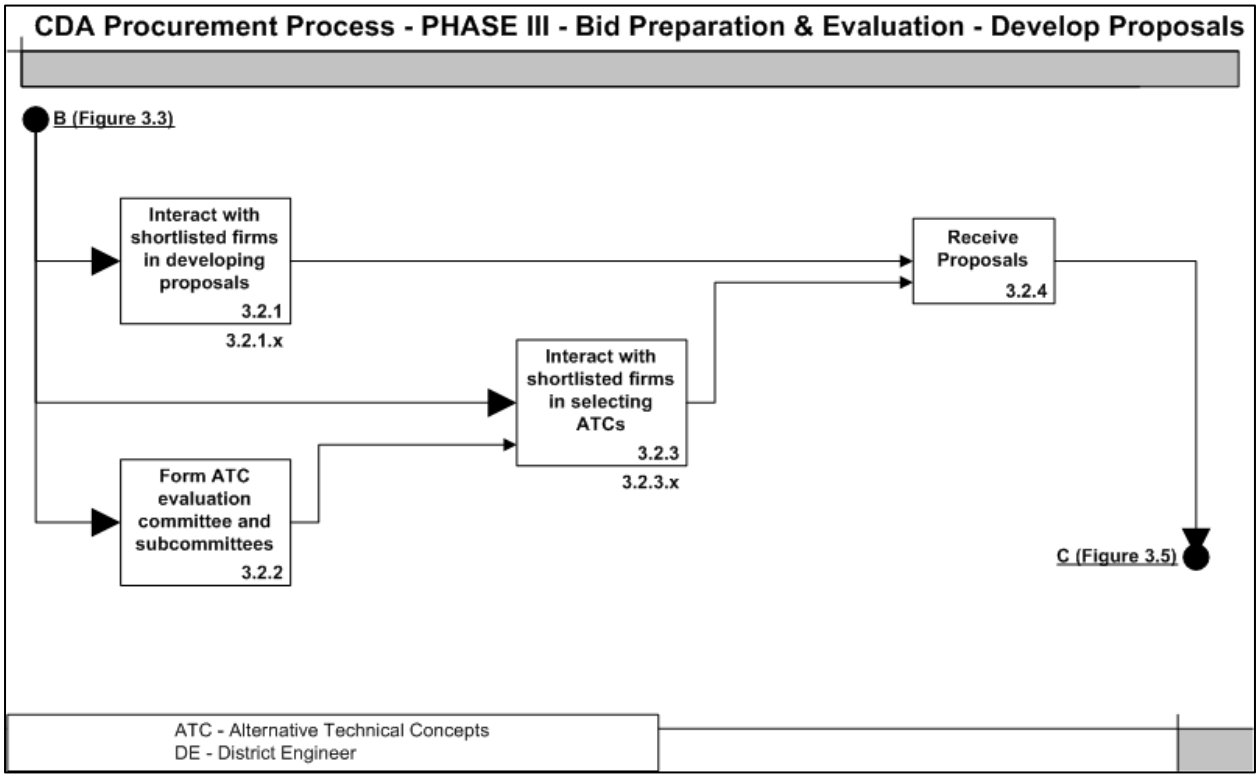

Figure 3.4 Develop Proposals

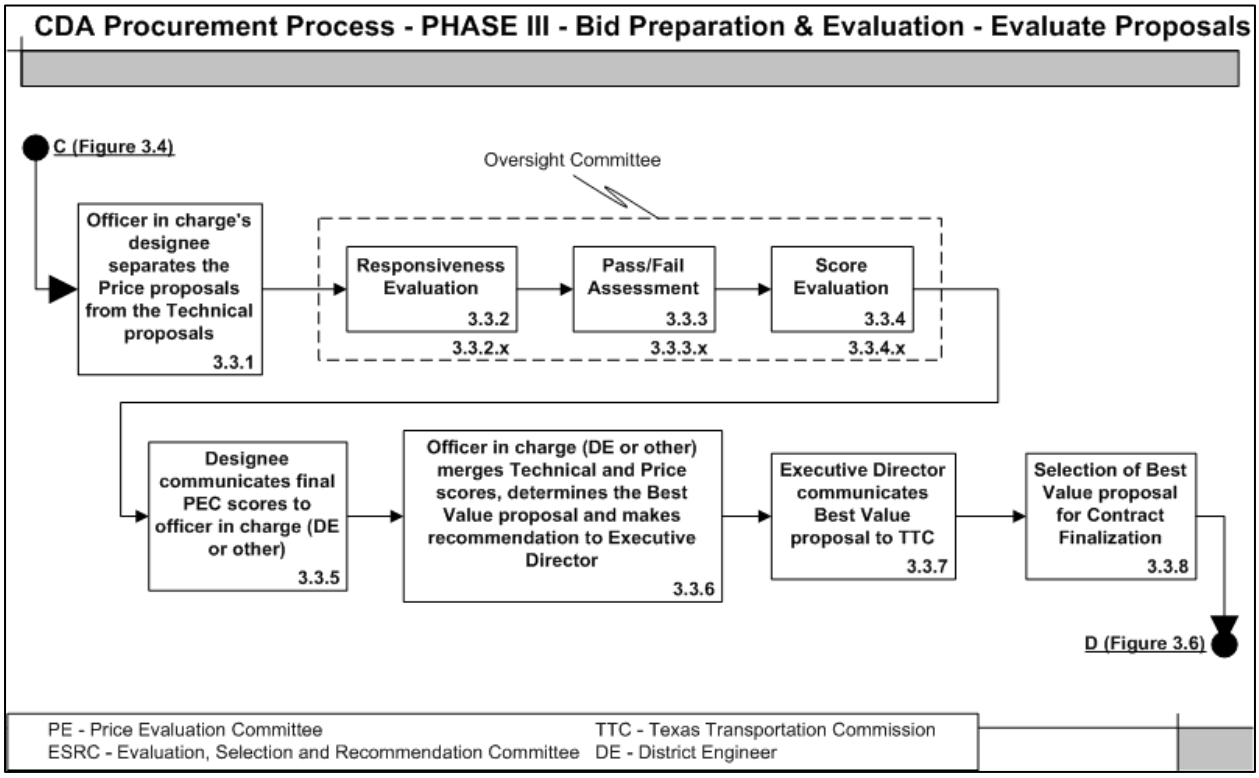

Figure 3.5 Evaluate Proposals

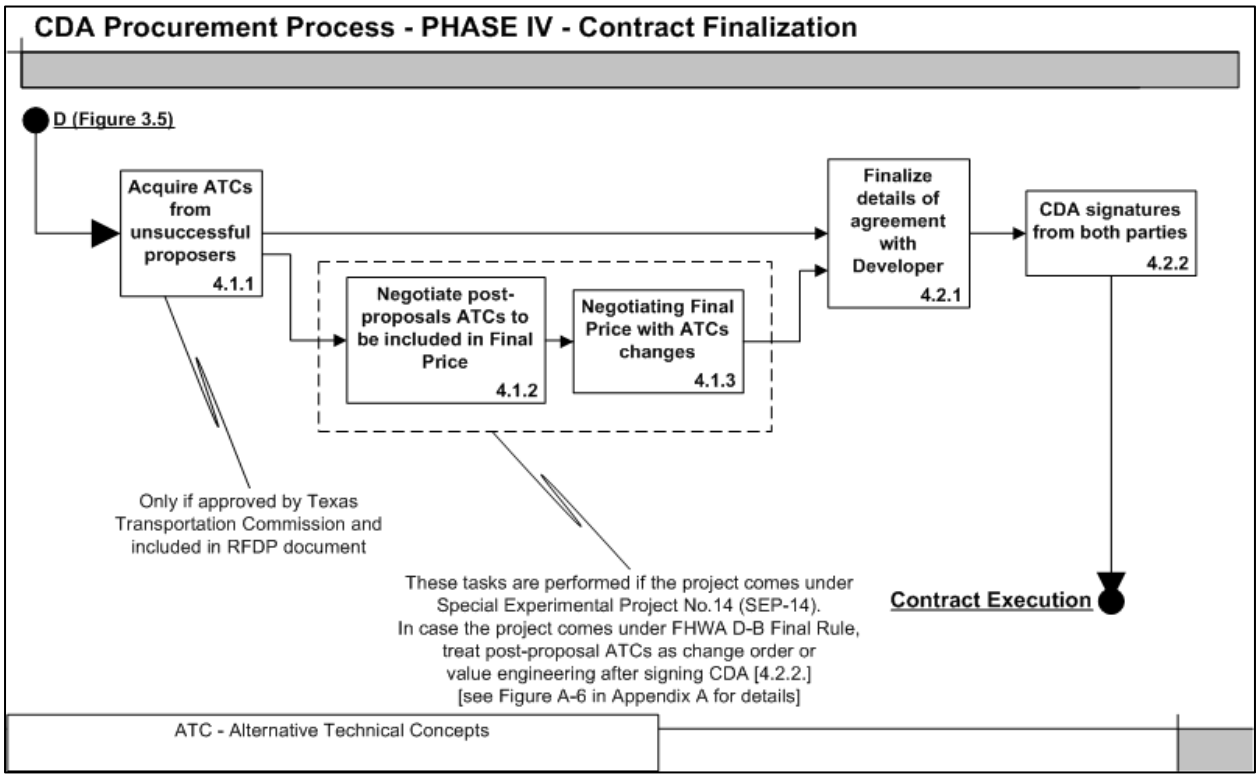

Figure 3.6 Contract Finalization

CDA Durations and Duration Drivers

The following table represents durations and duration drivers at the phase/subphase levels for CDA procurement.

Table 3.1 Size and Complexity of Case Studies

	SH 130 (segments 1-4)	SH 45 SE
Length (miles)	49	7.4
Lane-miles	49×4=196	7.4×4=29.6
State Road Intersections / Major Interchanges	12	5
Number of Bridges	119	9 (on schematic design)

Table 3.2 Phase Durations and Duration Drivers

Item	Phase	SH 130 Duration	SH 45 SE Duration	Recommended Duration	Comments / Key Duration Drivers
1	Toll viability study	NA	NA	NA	Conduct an initial analysis on toll viability. Procurement process for non-toll viable projects would be slightly different. Regional Mobility Authorities can conduct this phase in conjunction with TxDOT.
2	Prequalification	14 months	4 months	3–6 months	
2.1	Prepare RFQP	6 months	2 months	2 months	The purpose of this subphase is to define details for evaluating qualifications and preparing the RFPQ. Outputs are the RFPQ documentation and a detailed evaluation process.
2.2	Develop PQSs	8 months	6 weeks	1–2 months	The purpose of this subphase is to facilitate submittal of PQSs. If the scope includes developer financing, this subphase can take as long as 2–3 months.
2.3	Evaluate PQSs		2–3 weeks	1 month	The purpose of this subphase is to evaluate PQSs and release shortlist of qualified proposers.

Table 3.1 Phase Durations and Duration Drivers (continued)

Item	Phase	SH 130 Duration	SH 45 SE Duration	Recommended Duration	Comments / Key Duration Drivers
3	Bid preparation and evaluation	23 months		16–26 months	
3.1	Prepare RFDP	15 months	6 months	6–18 months	The purpose of this subphase is to collect as much information to put on the table and to reduce the risk. It includes the following: (1) developing schematic design and other preliminary engineering, (2) defining details for evaluating proposals, and (3) preparing RFDP documentation. The part related the preliminary engineering is difficult to perform at this stage because TxDOT personnel do not have the right of entry yet. The review phase is also critical because it includes the development of a risk allocation table as a tradeoff with the proposers. This phase does not have big opportunities for streamlining at activity level. Its duration is driven from two main activities: (1) development of the schematic design (6 months) and (2) the environmental process (12 months). However, starting to produce some reference documentation (mapping, subsurface utility engineering studies, etc.) early in the process can give opportunities for early completion. *Key duration drivers for RFDP release are as follows:* • geometric design criteria • Right-of-way (ROW) and utilities • qualifications for developer key personnel • QA/QC role (very critical)
3.2	Develop proposals	6 months	9 weeks	3–6 months	The purpose of this subphase is to facilitate the submittal of proposals. The process of submittal, negotiation, and evaluation of Alternative Technical Concepts (ATCs) need attention. Be careful to manage value additive ATCs differently from cost deductive ATCs. Only deductive ATCs, if approved, are included in the proposal price. Because evaluation of ATCs is onerous, TxDOT needs to streamline this activity. Members of ATC evaluating committee cannot belong to qualification committee.

Table 3.2 Phase Durations and Duration Drivers (continued)

Item	Phase	SH 130 Duration	SH 45 SE Duration	Recommended Duration	Comments / Key Duration Drivers
3.3	Evaluate proposals	2 months	1 month	1–2 months	The purpose of this subphase is to conduct evaluation of proposals to individuate the best value for the state. The evaluation takes as long as 2 weeks, but the bureaucracy makes longer this phase (waiting meeting with Executive Management, waiting TTC session, etc.) Main duration driver for this phase is the schedule of the Texas Transportation Commission (TTC).
4	Contract finalization	3 months	1 month	1–3 months	
4.1	Developing final price	2 months	2 weeks	1–2 months	This subphase is performed only if the following conditions are met. ◆ The TTC allows TxDOT to make payments for work product to unsuccessful proposers. ◆ The project is under SEP-14 (→ SH 130); otherwise, its activities are performed as change orders or value engineering after CDA signature (i.e., SH 45 SE). [see p. 27 for information on SEP-14]
4.2	Contract execution	1 month	2 weeks	Up to 1 month	The duration of this subphase is mostly related to timing of transmittal. Its first activity is performed concurrently to last activities of previous subphase.

Suggestions for Expediting the Procurement Process

Appendix B includes a set of suggestions by task for expediting the CDA procurement process. These suggestions are subdivided into two categories: activity-related lessons learned and critical sequencing (process-related lessons learned). The first category includes lessons learned in performing the given task. The second category includes any available information pertaining the critical sequencing of tasks.

Overview of Lessons Learned Pertaining to the Procurement Process

Lessons learned not directly pertaining to any task, but related to CDA procurement, are included in Appendix C. These were acquired through interviews with SH 130 and SH 45 SE personnel.

4. Conclusions

This study documents a detailed Comprehensive Development Agreement (CDA) procurement process. Lessons learned, helpful in performing the procurement more efficiently, can be found in Appendix B. Lessons learned not directly pertaining to any task but related to CDA procurement can be found in Appendix C.

In this report, researchers have (1) identified areas for improving the speed of the CDA procurement process, (2) produced a CDA process map that can be used for developing future CDAs, and (3) collected a set of lessons learned that will help eliminate some problems in early implementation of CDAs.

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Appendix A:
Streamlined Comprehensive Development Agreement Procurement Process

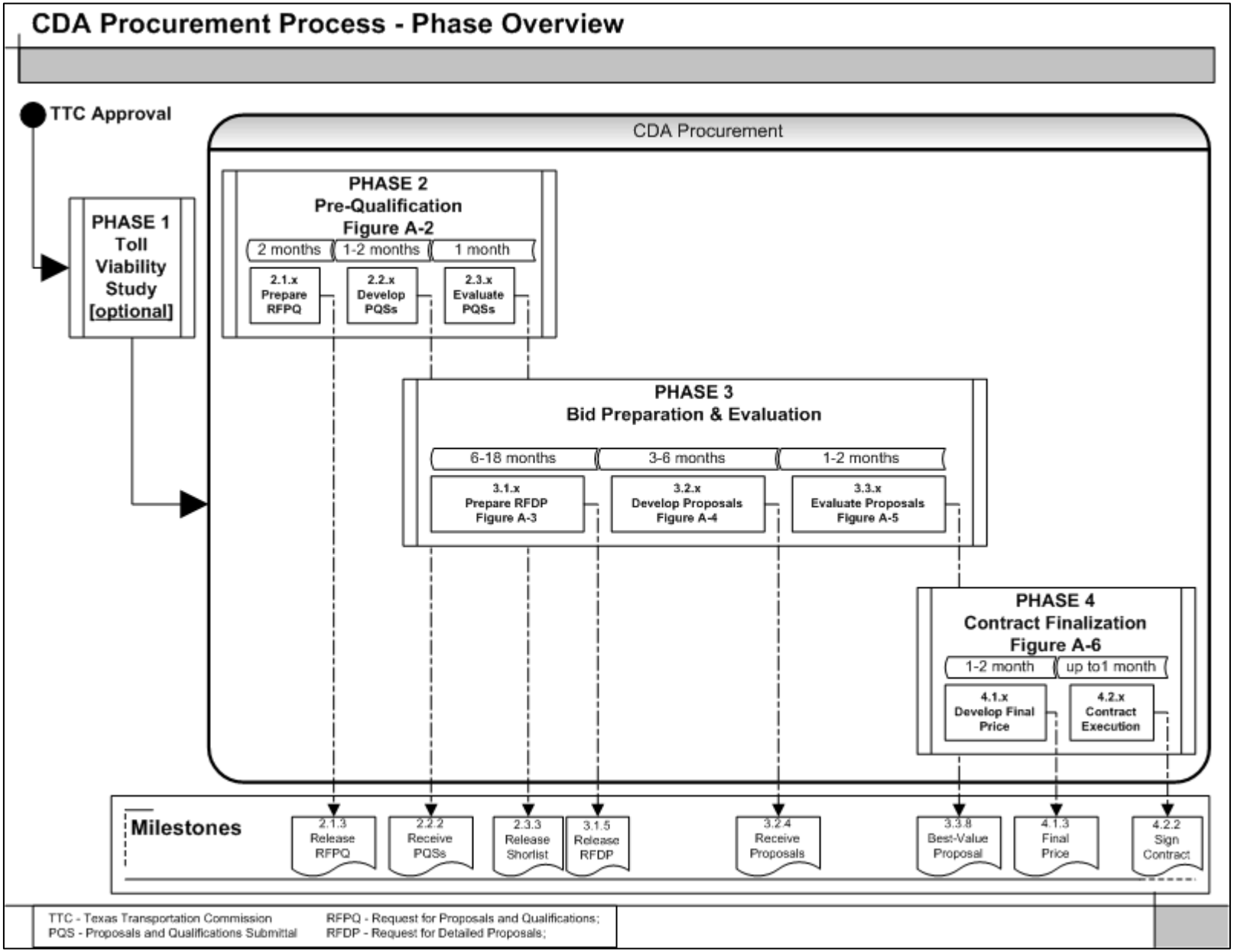

Figure A.1 Overview of Comprehensive Development Agreement Procurement Process with Schedule and Milestones

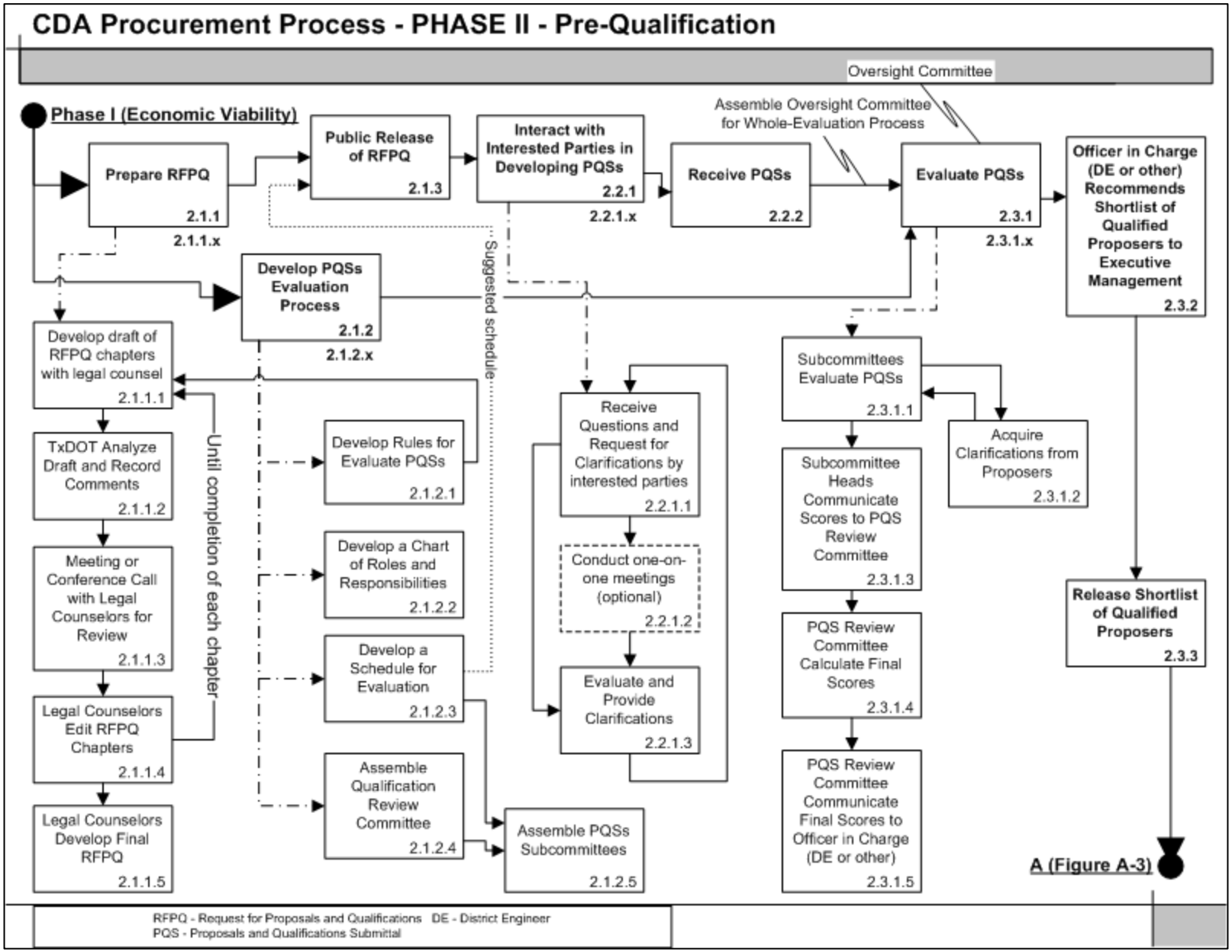

Figure A.2 Activities in Phase 2: Prequalification

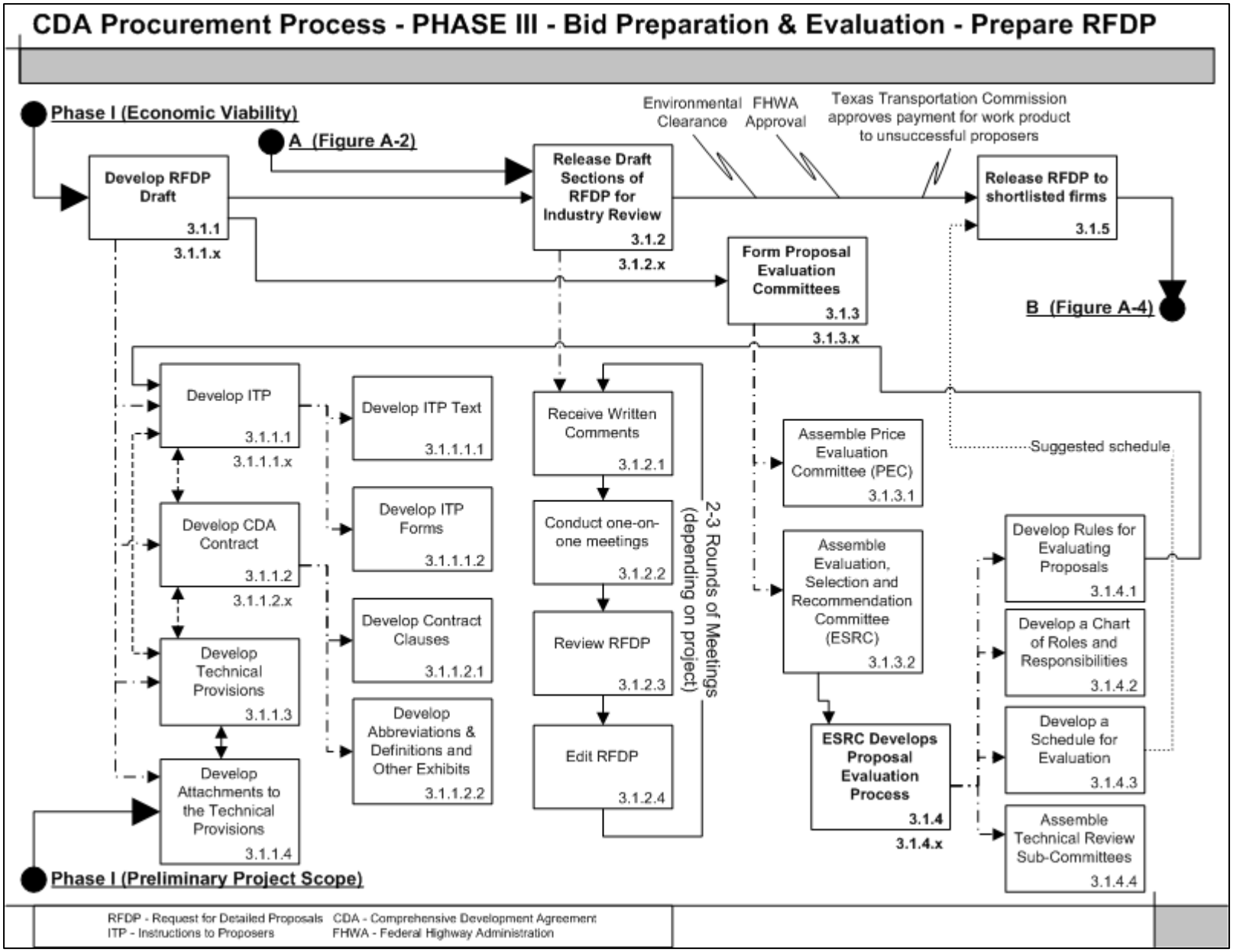

Figure A.3 Activities in Subphase 3.1: Prepare RFDP

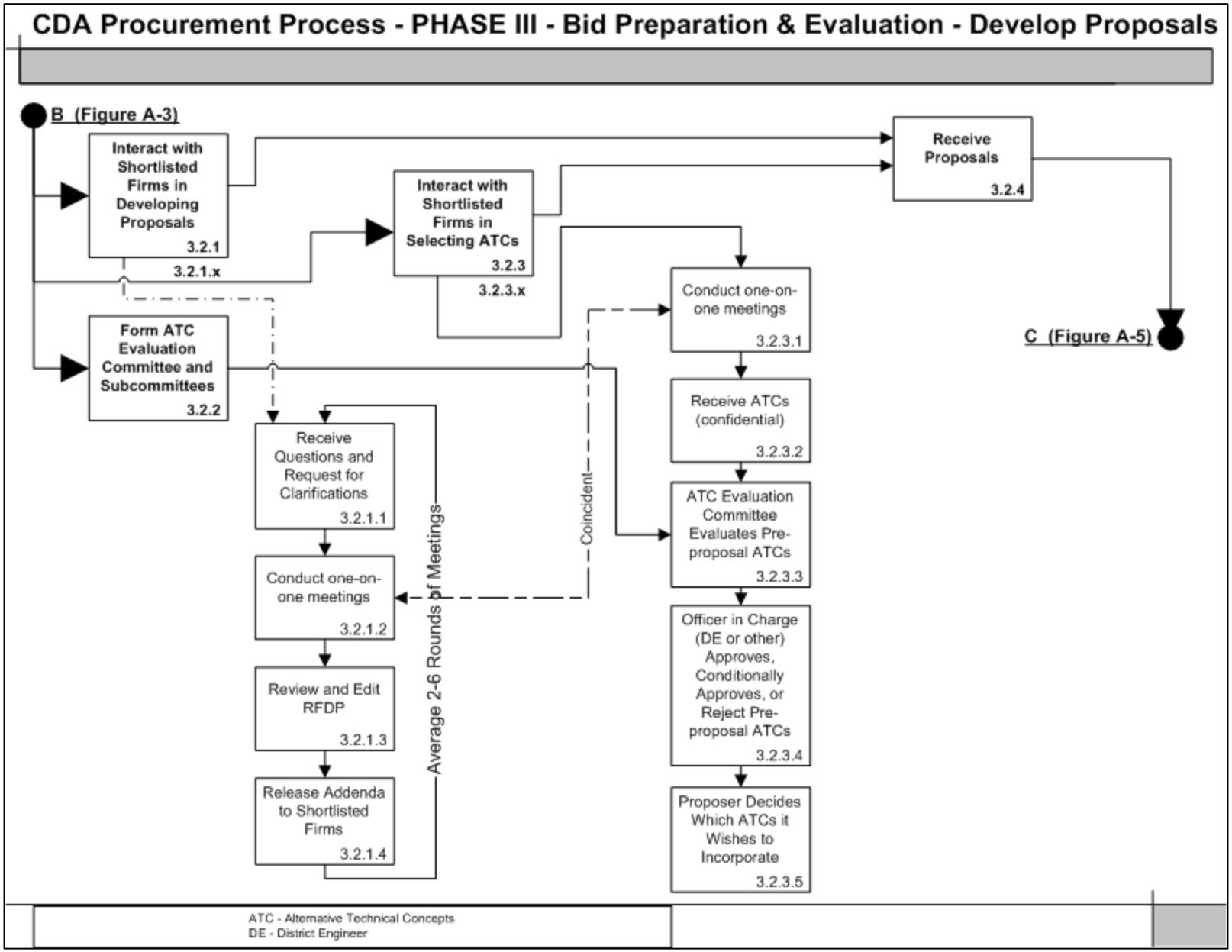

Figure A.4 Activities in Subphase 3.2: Develop Proposals

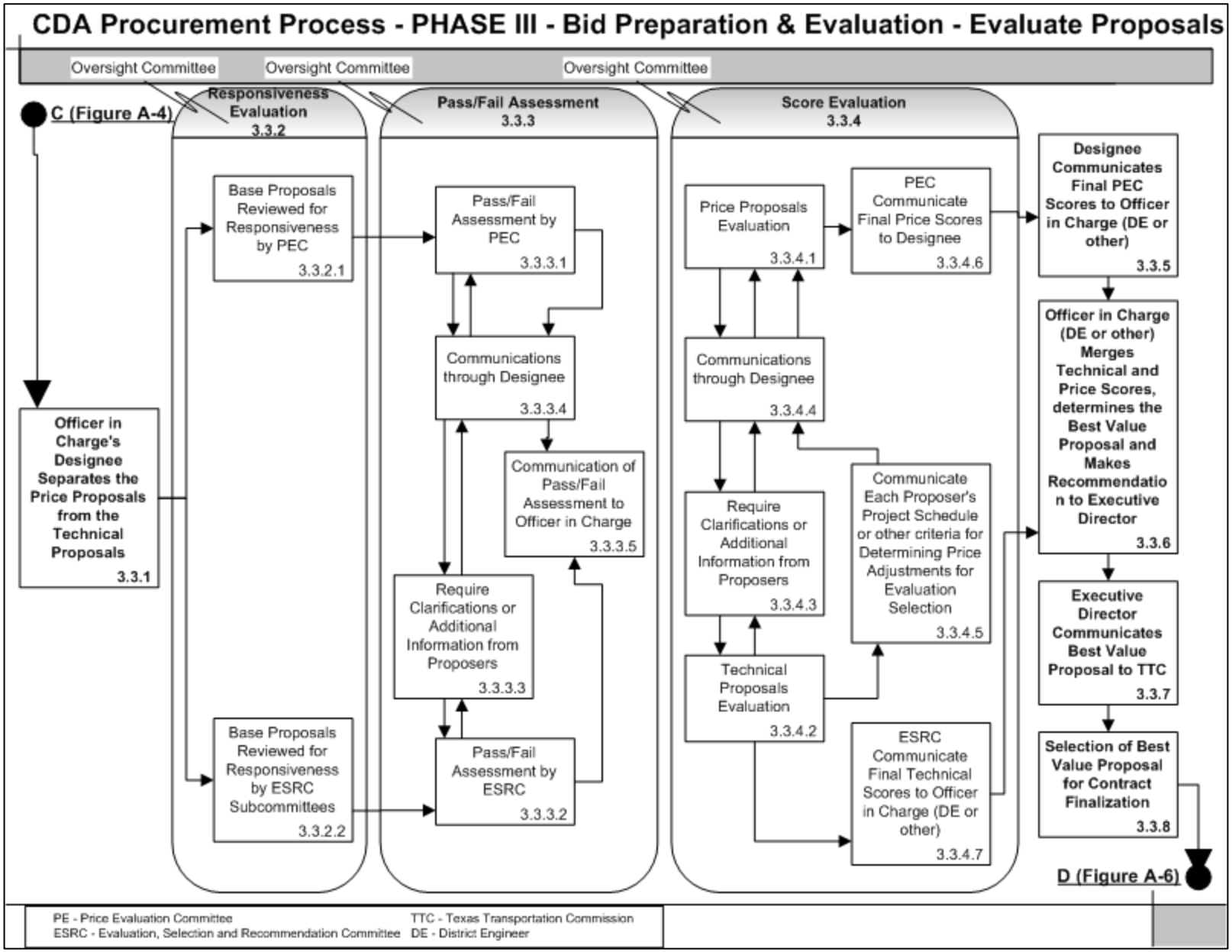

Figure A.5 Activities in Subphase 3.3: Evaluate Proposals

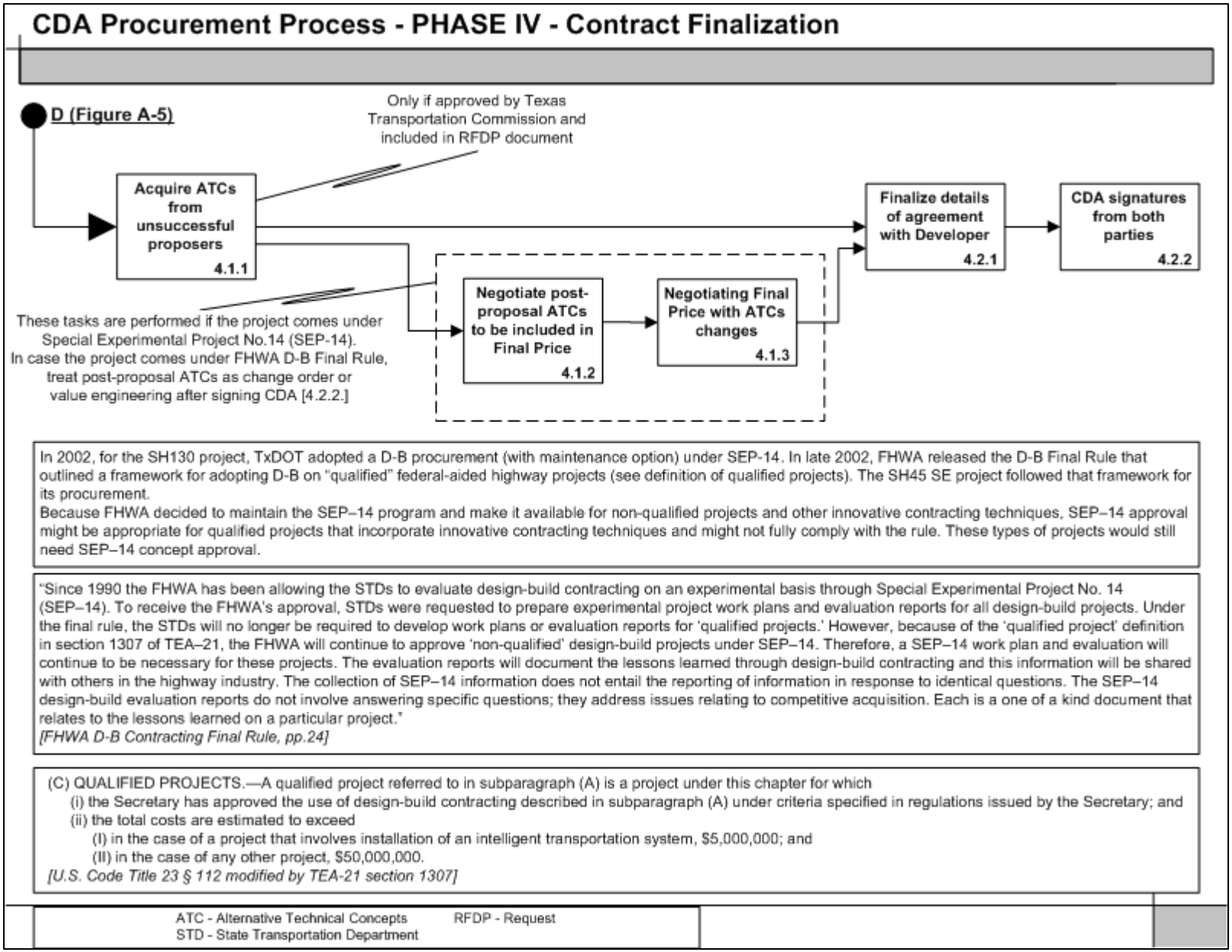

Figure A.6 Activities in Phase 4: Contract Finalization

Appendix B:

Suggestions for Expediting the Procurement Process

Task 2.1.1: Prepare RFPQ

Activity-Related Lessons Learned

- Achieve a basic understanding of the project description in terms of location, characteristics, scope of work, and risk allocation before performing this task.
- Release to legal counselors a status report on the project's development and on the environmental clearance process, as well as the amount of preliminary engineering to include in the RFPQ.
- Consult RFPQ documentation from other CDA projects.

Critical Sequencing

- Subtask 2.1.2.1 (included in *Develop PQSs evaluation process*) has to be completed before completing this task. In fact, Subtask 2.1.1.1 needs information related to criteria for evaluation before to draft the corresponding chapter (i.e., SH 45 SE RFPQ, Chapter V, pp. 18-21.

Task 2.1.2: Develop PQSs Evaluation Process

Activity-Related Lessons Learned

- In order to streamline the evaluation process, the PQS review committee should adequately assemble each subcommittee (2.1.2.5) in terms of number and qualifications. Therefore, TxDOT needs to develop a schedule for evaluation (2.1.2.3) before sizing the subcommittees (2.1.2.5). Understaffing a subcommittee can slow down the evaluation process dramatically because the process has to wait as the understaffed subcommittee completes its evaluation (e.g., reference checking committee in the SH 45 SE project).

Critical Sequencing

- This task happens concurrently to 2.1.1.

Task 2.1.3: Public Release of RFPQ

Critical Sequencing

- For projects with a compressed schedule, Subtask 2.1.2.3 (included in *Develop PQSs evaluation process*) may be completed before performing this task in order to attach a suggested schedule for evaluation to the RFPQ. (i.e., I-35 High Priority Trans Texas Corridor RFPQ, Draft Schedule Goals for Procurement, August 20, 2003)

Task 2.2.1: Interact with Interested Parties in Developing PQSs

Activity-Related Lessons Learned

- Depending on the complexity of the project financing, the TxDOT project team can decide to conduct Subtask 2.2.1.2. For instance, the process for the SH 45 SE was straightforward because it did not include financing issues (TxDOT self-financed the project). However, for projects including bonds or developer financing, having one-on-one meetings allows TxDOT team to probe the reactions of the interested parties in terms of the requirements and to make any necessary corrective action.

Critical Sequencing

- Task 2.1.3 (*Public release of RFPQ*) has to be completed before performing this task.

Task 2.2.2: Receive PQSs

Critical Sequencing

- Task 2.1.2 (*Develop PQSs evaluation process*) has to be completed before performing this task.

Task 2.3.1: Evaluate PQSs

Critical Sequencing

- Task 2.1.2 (*Develop PQSs evaluation process*) has to be completed before performing this task.
- Obviously, Task 2.2.2 (*Receive PQSs*) has to be completed before performing this task.
- External task (Assemble evaluation oversight committee) has to be completed before performing this task. This committee is in charge of oversight to the whole evaluation process (PQS and Detailed proposals). SH 130 and SH 45 SE ITP documents mention this committee with the name of "Advisory Committee." In the SH 130 project, it was composed of an attorney general representative, a FHWA representative (essential for validate processes related to federally funded projects), a TxDOT internal counselor representative (who usually chairs the committee), and a State comptroller representative. Using external consultants (e.g., external counselor representative Nossaman for SH 45 SE) is allowed under the confidentiality.

  > The TTA director will invite observers from other state and federal agencies with specific interests and responsibilities associated with the Project to form an advisory committee. Outside consultants and observers will be required to endorse confidentiality statements and offer their opinions to the ESRC in advance of the ESRC's final deliberations.

[Source: SH130 ITP pp.44]

In addition, observers from other state and federal agencies with specific interests and responsibilities associated with the Project may be invited to oversee aspects of the evaluation process. All evaluators and outside consultants and observers will be required to endorse confidentiality statements.

[Source: SH45 SE ITP pp.34; TTC-35 ITP pp.45]

Task 2.3.2: Officer in charge (District Engineer or other) recommends shortlist of qualified proposers to executive management

Critical Sequencing

- Task 2.3.1 (*Evaluate PQSs*) has to be completed before performing this task.

Task 2.3.3: Release Shortlist of Qualified Proposers

Critical Sequencing

- Task 2.3.2 (*Officer in charge (District Engineer or other) recommends shortlist of qualified proposers to executive management*) has to be completed before performing this task.

Task 3.1.1: Develop RFDP Draft

Activity-Related Lessons Learned

- To decrease process duration, start developing technical attachments earlier in the process (starting after Subphase 1.3)
- Have interactive sessions between lawyers, engineering consultants, and the client early in the development of all the documents so that the lawyers' understanding of what is entailed in the technical provisions can help integrate the documents. These sessions will help decrease the risk of overlapping or missing information by identifying what needs to go in the contract and what needs to go in the technical provisions.

Critical Sequencing

- Task 1.5 has to be completed before performing this task.

Task 3.1.2: Release draft sections of RFDP for Industry Review

Activity-Related Lessons Learned

- The duration of this activity is related to other critical path activities. Therefore, identify and monitor the status of these other activities in order to find the optimal tradeoff between schedule and benefit from the industry review process.
- The number of one-on-one meetings depends on the project complexity, as well as the procurement schedule pressure.

Critical Sequencing

- Task 3.1.1 (*Develop RFDP draft*) has to be completed before performing this task.
- Task 2.3.3 (*Release shortlist of qualified proposers*) has to be completed before performing this task.

Task 3.1.4: ESRC Develops Proposals Evaluation Process

Activity-Related Lessons Learned

- Prepare a suggested schedule for evaluation, and contact suggested subcommittee members to confirm their availability before suggesting them to the officer in charge

Task 3.1.5: Release RFDP to Shortlisted Firms

Critical Sequencing

- Part 635.112 of the FHWA Design–Build Final Rule prescribes that the FHWA division administrator approval is required before issuing a request for proposals.
- Part 636.109 of the FHWA Design–Build Final Rule prescribes that the request for proposals cannot be issued prior to the conclusion of the NEPA process.

Task 3.2.1: Interact with shortlisted firms in developing proposals

Activity-Related Lessons Learned

- Allocate enough time between issuing the RFDP and the first round of meetings
- Schedule two different set of one-on-one meetings considering an interval that includes the time needed by the legal counselor to revise the document, distribute it to the proposers in the form of addenda, and, finally, the time needed by the proposers to analyze it

Critical Sequencing

- Task 3.1.5 (*Release RFDP to short-listed firms*) has to be completed before performing this task.

Task 3.2.2: Form ATC evaluation committee and subcommittees

Activity-Related Lessons Learned

- In order to streamline the evaluation process, these committees should be adequately assembled in terms of number and qualifications. In fact, the ATC evaluation has to be fast in order to allow proposers to decide to include specific ATC's in the final proposal.

Critical Sequencing

- A definition of allowed ATCs must be defined beforehand to decide the categories of subcommittees. In fact, the number and specialties of these subcommittees would change according the categories of allowed ATCs. For instance, if TxDOT clarified in the ITP that it will not accept any ATC on structural redesign, that means that ATC committees will not need structural expertise or structural subcommittees. This definition is usually included in the ITP document. Therefore, Subtask 3.1.1.1 (*Develop ITP*) has to be completed before performing this activity.

Task 3.2.3: Interact with shortlisted firms in selecting ATCs

Activity-Related Lessons Learned

- Performing this task can be time consuming. A suggestion for streamlining this task is to limit the number of ATCs that each proposer can submit, so only the most cost effective will be evaluated.

Critical Sequencing

- Task 3.1.5 (*Release RFDP to shortlisted firms*) has to be completed before performing this task.
- Task 3.2.2 (*Form ATC evaluation committee and subcommittees*) has to be completed before performing this task.

Task 3.2.4: Receive proposals

Critical Sequencing

- Task 2.1.2 (*Develop PQSs evaluation process*) has to be completed before performing this task.

Task 3.3.1: Officer in charge's designee separates the price proposals from the technical proposals

Critical Sequencing

- Task 3.2.4 (*Proposers submit proposals*) has to be done before performing this activity.

Task 3.3.2: Responsiveness Evaluation

Critical Sequencing

- Task 3.3.1 has to be completed before performing this task.

Task 3.3.3: Pass/Fail Assessment

Critical Sequencing

- Task 3.3.2 (*Responsiveness Evaluation*) has to be completed before performing this task.

Task 3.3.4: Score Evaluation

Critical Sequencing

- Task 3.3.3 (*Pass/Fail Assessment*) has to be completed before performing this task.

Task 4.1.1: Acquire ATCs from unsuccessful proposers

Critical Sequencing

- Task 3.3.8 (*Selection of best value proposal for contract finaliz*ation) has to be completed before performing this task.
- In case TxDOT has decided to acquire only proposals with a minimal evaluation score, Task 3.3.6 has to communicate the final scores before performing this task.

Task 4.1.2: Negotiate post-proposals ATCs to be included in Final Price

Critical Sequencing

- Task 4.1.1 (*Acquire ATCs from unsuccessful proposers*) has to be completed before performing this task.

Task 4.1.3: Negotiating Final Price with ATCs changes

Critical Sequencing

- Task 4.1.2 (*Negotiate post-proposals ATCs to be included in Final Price*) has to be completed before performing this task.

Task 4.2.1: Finalize details of agreement with Developer

Critical Sequencing

- Subphase 4.1 (*Developing Final Price*) (if present) has to be completed before performing this activity.

Task 4.2.2: CDA signatures from both parties

Critical Sequencing

- Task 4.2.1 (*Finalize details of agreement with Developer*) has to be completed before performing this task.

Appendix C:

Additional Lessons Learned Pertaining to the Procurement Process

Item(s)	Category	Subcategory	Context / Lessons learned
3.1	ROW Design	ROW mapping	*Context:* Complexity and legal requirements of ROW documentation require that a certain amount of design has to be done before the start of drawing the ROW map. *Lesson Learned:* CDA process requires more interaction between design and ROW activities. Specify a level of phase of the design that triggers beginning the ROW mapping. *Comment:* These changes will expedite the process by facilitating surveyors in drawing a ROW map from which is possible to make some rough description, and drawing the parcel plats. Large portions of ROW mapping section were rewritten for the SH45 SE CDA in order to include these changes.
3.3	Utility Adjustment	Utility Maps	*Context:* The level of detail of the utility strip maps in the SH130 proposal package on existing utilities did not represent the number of utilities located in the same trench. This issue has affected procurement process speed. Proposers had to verify information included in the utility strip maps before bidding because SH130 contract did not allow change orders for utilities not drawn in the map, but easily identifiable during surveying (see the EDA/CDA contract definition for identified utilities for deeper understanding). *Lesson Learned:* Inadequate level of detail of proposal documentation slows down the procurement process. Increase level of detail of pre-proposal surveying activities. *Comment:* SH45 SE CDA will have a higher level of detail for utility strip maps. This change will expedite procurement process because proposers will not need accurate surveys for verifying information.
3.4	ROW	Proposal Requirement	*Context:* In SH130 proposal phase, proposers were required to identify (at least) one ROW acquisition firm. *Lesson Learned:* Mega projects need more resources on the ground. Increase number of required ROW acquisition firms commensurate with the scale of the project (SH130 scale = at least two firms). *Comment:* This change will expedite schedule and improve quality by providing additional resources and creating competition. Competition between firms will come in a way that those firms will compete for the next section.

Item(s)	Category	Subcategory	Context / Lessons learned
3.5	ROW	External Consultants	*Context:* TxDOT is using external consultants (HDR) in the SH130 project for supporting the existing staff. *Lesson Learned:* Use of external consultants provide TxDOT with more resources for ROW problem solution. Assemble ROW project teams under CDA including external human resources. *Comment:* External consultants facilitate the incorporation of experiences acquired in other states after evaluation and verification with state laws, regulations, and local methods.
3.6	ROW	Contract Accuracy	*Context:* SH130 contract presented many minor interpretation issues. Especially, the scope of work did not include a chart for responsibility for minor costs. It created many minor issues like "who pays for the court report?" *Lesson Learned:* Minor interpretation issues can slow down the process by activating a question-answer loop between contract parties. Be accurate in defining repetitive pecuniary responsibilities even though of minor concern. *Comment:* SH45 SE CDA will be more accurate in defining developer responsibilities.
4.2	ROW Design Environmental Construction	Communication	*Context:* Some turnpike personnel noticed that fragmentation within the Developer organization made it more difficult to communicate between different teams. *Lesson Learned:* Selection criteria are critical in evaluating different proposers. Expertise of the team leader in addressing communication issues should constitute a component of the best value analysis because Developer key personnel are critical in achieving a partnering environment. "Be more specific on qualification of key personnel", "Something has to be developed in the partnering sense" {this issue needs further investigation. An interpretation is to facilitate a partnering process within LSI groups versus improving the existing partnering process between LSI and TTA} *Comment:* Including "best team players" evaluation in selection process will facilitate communication in project team.
4.3	ROW	External Consultants Role	*Context:* "the way how I heard TxDOT personnel say is that HDR is an extension of their staff. But in certain activities you cannot perform as a TxDOT employee". The extended-staff nature of HDR consultants makes it difficult to distinguish activities that have to be performed by consultants versus activities that have to be performed by state employees. *Lesson Learned:* The research team suggests a cross-matching analysis of responsibilities (who can do what versus who need to do what) in order to revise the activity flowchart and organizational structure.{suggestion more than LL} *Comment:*

Item(s)	Category	Subcategory	Context / Lessons learned
4.4	ROW	Right of Early Access	*Context:* SH130 EDA/CDA included a clause named "Right of early access agreement". This clause allowed Developer to negotiate with property owners or occupant for early access or temporary use of land. Using this option in the early stages of SH130 project, Developer increased parcels available for construction by 60% (6 parcels early obtained, against 9 acquired with traditional methods). This clause gave to the Developer a freedom in approaching special situations like when the Developer has used it to lend money to property owners for relocate a special business, or when it has met owner's expectations that TxDOT could not. *Lesson Learned:* Use of "right of early access agreement" increased parcels available for construction. Enhance this tool by creating a list of case studies for its applicability. *Comment:* Collecting a list of case studies on this agreement will help to speed up ROW acquisition in future CDA projects.
4.5	ROW Construction Design	Sequencing Activities	*Context:* In the EDA/CDA, Design/ROW/Construction activities are not sequential. Conflicting or complementary priorities can drive each other's schedule. Sentences like "sometimes the construction may drive work because you go get ROW where you want to start to work, but ROW may drive work too" came out from the interview. *Lesson Learned:* The design-build nature of EDA/CDA projects involves adoption of concurrent engineering methods. Identify a list of concurrent engineering methods exploitable in EDA/CDA projects. *Comment:* Having a selection of methods for improving EDA/CDA can help TxDOT in creating a customizable contract master which exploit concurrent engineering methods and expedite the process by improving predictability accordingly with specific situations.

Item(s)	Category	Subcategory	Context / Lessons learned
5.1	Utility Adjustments	Contract Interpretation Issues, Utility Strip Maps, Pre-RFP activities	*Context:* SH130 EDA/CDA allows Developer to ask a Change Order for unidentified utilities; however, the contract documentation defines an unidentified utility for exclusion from identified and new utilities. (***Unidentified Utility*** *shall mean any Utility impacted by the Project [other than a Service Line] which is neither an Identified Utility nor a New Utility, including any Utility which would be a New Utility but for the fact that it is an extension of an Identified Utility.*) Furthermore, the definition of "identified" utilities is confusing because clauses (d) and (e) define some utilities as "identified" when common sense classify those as "unidentified". (***Identified Utility*** *shall mean any Utility impacted by the Project to which any one or more of the following applies:* ***(a)*** *Its owner is accurately stated on the Existing Utility Information, and, as determined by the TTA, the location and extent of such Utility as shown on the Existing Utility Information (whether as existing or proposed) is a reasonable representation of the location and extent of such Utility, given the quality level of investigation performed in developing the Existing Utility Information (as described in Scope of Work Section 5.12);* ***(b)*** *Its type (e.g., gas, water, electric) is accurately stated on the Existing Utility Information (differences in material, e.g., clay vs. plastic, shall not be considered a difference in type), and, as determined by the TTA, the location and extent of such Utility as shown on the Existing Utility Information (whether as existing or proposed) is a reasonable representation of the location and extent of such Utility, given the quality level of investigation performed in developing the Existing Utility Information (as described in Scope of Work Section 5.12);* ***(c)*** *It is an overhead Utility existing as of the Proposal Date or which commenced installation prior to the Proposal Date;* ***(d)*** *A surface inspection of the area in which the Utility is located on the Proposal Date would have shown the Utility's existence or the likelihood of its existence by reason of above-ground facilities such as buildings, meters, manholes or markers; provided, however, that if Developer has not been granted access to the parcel on which a Utility is located prior to the Proposal Date, then for purposes of determining whether a surface inspection would have shown the Utility's existence or likelihood of its existence, such surface inspection shall be deemed to have been made from the nearest parcel to which Developer has been granted access prior to the Proposal Date, or from the nearest public right of way, whichever is closer; or* ***(e)*** *It is located in the same trench as an Identified Utility, and is of the same type or ownership as the Identified Utility.*) This uncertainty has created some interpretation issues between Developer and turnpike team. *Lesson Learned:* Existing utility documentation with a better level of definition allows contract clarity which will avoid contract parties from adopting an adversarial approach. TxDOT should better identify existing utilities; spend more money upfront in identifying the utilities; give more maps on what is out there; do some subsurface engineering work; eliminate distinction on identified/unidentified utilities. *Comments:* This strategy will avoid discussion between contract parties on which utility is identified and which is not.

Item(s)	Category	Subcategory	Context / Lessons learned
5.2	Utility Adjustments	Request for Permit for New Utility	*Context:* In the SH130 project, a large number of utilities companies have asked for permits for the installation of new utilities after the proposal phase. The existing process does not allow the Developer to answer directly to those companies; TxDOT makes the decision with the Developer based on highway design, and communicates it to utility companies. In the long-term, this situation can create some disagreement between TxDOT and some of those companies. *Lesson Learned:* Implementation of a new highway increases the number of request for permits from utilities. CDA contract documentation needs a specific process to manage those new utility requests and minimize their impact on infrastructure implementation. The Developer must be actively involved in this process in order to avoid long-term disagreements between TxDOT and utility companies. TxDOT should outline a process on requests for permits of new utilities making Developer responsible for decisions and terms of agreement. *Comments:* In order to avoid these issues and better coordinate with the Developer, a new process was outlined for SH45 SE CDA. In that process, still in a draft version, "the Developer has someone that signs off if TxDOT approves these new permits, and they will provide the design to make the new crossing compatible".
5.3	Utility Adjustments	Communication Issues	*Context:* Communication with Utility Owners is critical in establishing successful relationships. In the SH130 project, contract parties and major utility companies have frequent meetings; these meetings involve communication of design changes and construction schedule in order to help the utility owner in managing the change and in decreasing needed time for looking the new easement. *Lesson Learned:* Utility owner needs time and information to plan their activities adequately. Make sure that everyone works with the utility owners; partner and get buy-in from them with frequent meetings; do not blindside them; give them more information" *Comments:* TxDOT has to manage good long-term relationship with utilities in the area. High involvement and communication helps to keep the project on track without compromising those relationships.

Item(s)	Category	Subcategory	Context / Lessons learned
5.4	Utility Adjustments, Design	Design Review Milestones	*Context:* Coordination of priorities between design and utility adjustment activities is critical in expediting the process of facilitating acquisition of new easements by utility owners. Late design review milestones hurt the utility adjustment process. *Lesson Learned:* Design review milestones should be set in order to facilitate communication of information to utility owners. Expedite highway design, specifically the features in conflict with Utility Adjustments; Set design review milestones earlier in the process(No longer 65% or 80% PS&E) *Comments:* Expediting design features in conflict with utility adjustment and improving communication will facilitate search for easement by utility owners.
6.1	Utility Adjustments	Contract interpretation issue, Level of Detail of RFP documents	*Context:* In the SH130 proposal phase, TxDOT gave to the proposers a set of Utility Strip Maps developed by external engineering firms, which identified utilities, their typology, the utility owner, and the jurisdiction. The amount of surveying, subsurface utility engineering activities and map scale were inadequate to represent all the utilities clearly. As a consequence, some lines often represented more than one utility, or some utilities were missing (total number to date= 11). Although, definition of identified utilities addressed those issues in clauses (d) and (e), the contract parties differed in interpreting the contract. (***Identified Utility*** *shall mean any Utility impacted by the Project to which any one or more of the following applies: [….].* ***(d)*** *A surface inspection of the area in which the Utility is located on the Proposal Date would have shown the Utility's existence or the likelihood of its existence by reason of above-ground facilities such as buildings, meters, manholes or markers; provided, however, that if Developer has not been granted access to the parcel on which a Utility is located prior to the Proposal Date, then for purposes of determining whether a surface inspection would have shown the Utility's existence or likelihood of its existence, such surface inspection shall be deemed to have been made from the nearest parcel to which Developer has been granted access prior to the Proposal Date, or from the nearest public right of way, whichever is closer; or* ***(e)*** *It is located in the same trench as an Identified Utility, and is of the same type or ownership as the Identified Utility.*) The Developer claimed (without filing a claim or change order request) that those 11 utilities as unidentified, but TTA officers refused this classification according clauses (d) and (e). *Lesson Learned:* Evaluation of utility relocation cost by proposers based on the uncertainty in utility proposal documentation delays the procurement phase and increases the amount of utility costs. Better identify existing utilities (more SUE, level B of utility strip maps with higher scale of detail); simplify contract definition by taking off the identified versus unidentified difference; *Comments:* Higher certainty in proposal documentation should decrease bid amount for utility relocation and shorten the procurement phase by eliminating the proposers surveying phase (to verify given utility strip maps accuracy). Clarity in contract clauses will avoid adversarial approach between contract parties.

Item(s)	Category	Subcategory	Context / Lessons learned
6.2	Utility Adjustments	QA	*Context:* In the SH130 project, utility adjustment activities revolved around the Assembly that is a three-piece documentation package. It is composed of **(a)** an agreement between utility owner and Developer, **(b)** plans for implementing adjustments, if needed (310 on 437 to date), otherwise for verifying the compliance with the project, and finally **(c)** a set of estimates for needed adjustments; it includes also **(d)** a set of forms. In SH130 process, approval of the Assembly takes up to one month. A third party QA company (Bridgefarmer) reviews assembly packages. This step takes as long as 10 days. *Lesson Learned:* Benefits from Assembly QA may be minimal or marginal if compared with the time delay. Evaluate for each specific situation pros versus cons; eventually, expedite the review process by eliminating or modifying the third party external quality assurance step. However, TxDOT should monitor possible effects of elimination of QA step on the final product. *Comments:* The draft of SH45 SE CDA implements this measure by eliminating QA for utility. The goal is to decrease process time length. An alternative approach is to eliminate the first QA review step for drafts and keep the second on the reviewed packages, or vice versa.
6.3	Utility Adjustments	Definition	*Context:* The SH130 definition of utility has created some issues. The Developer interpreted some adjustments as "business" activity while turnpike team staff identified the same as "utility". With the current SH130 contract, this issue is critical because it affects cost allocation. Relocation of "businesses" goes in ROW competence, and TxDOT pays for that relocation, while relocation of "utilities" is included in the total lump sum. Adjustments affected by this misinterpretation were a telecommunication tower owned by a company that "rent" it for antenna positioning, and few water towers owned by private water companies. *Lesson Learned:* Contract definitions are one of the elements that affect contract management, and need to be evaluated carefully against the risk of ambiguity and/or the generality. Eliminate ambiguity in interpreting what a utility is by a more prescriptive definition. *Comments:* TTA staff has included in the SH45 SE CDA a broader, more inclusive definition of utility.

Item(s)	Category	Subcategory	Context / Lessons learned
6.4	Utility Adjustments	Coordination between developer, utility owner, and TxDOT	*Context:* The SH130 contract defined "New utility", as any utility impacted by the project within the schematic ROW commenced installation after the Proposal Date and is not an "Identified Utility". The first phase of the project has shown that every request for permit for new utilities hurts the project schedule. Furthermore, keeping good relationship with utility owners is fundamental to TxDOT in order to manage other outgoing projects. The initial process did not address specifically these issues; it did not minimize negative effects of Developer interaction with utility owners and did not have a specific process for new utilities. *Lesson Learned:* In design-build projects, new utilities should be addressed directly in order to keep good relationships with utility owners and coordinate actions of Developer. Develop a specific process to manage request of permits for new utilities. *Comments:* Turnpike team has developed a process detailing how handle to new utility issues. This process will be included in SH45 SE CDA.
6.5	Utility Adjustments	Coordination between developer, utility owner, and TxDOT	*Context:* Major utilities hurt the project schedule. Major utilities definition will be included in the SH45 SE CDA as "everything that is outside TxDOT control". Examples are permits for crossing county roads (utility owner does not need TxDOT permit), and existing private easement (TxDOT cannot control private owner to give easement on affected parcels). *Lesson Learned:* The turnpike team developed a process detailing how to handle major utilities issues and coordinate with Developer. The latter must "be responsive, meet with the utility owners, and be entitled of the coordination process". Some turnpike staff member suggested paying the Developer (out the lump sum?) for these major utilities in order to address good relationship issues. *Comments:*

Item(s)	Category	Subcategory	Context / Lessons learned
6.6	Utility Adjustments	Process for adjustments	*Context:* In SH130 project, Developer had some trouble in managing relationships with some utility owner (TXU-ONCOR) because they wanted to treat the Developer differently from how they treat TxDOT. They want to adopt an "Owner-Managed" process (owner designs and implements adjustment) and be prepaid from the Developer for all the activities related to the adjustment instead of adopting a "Developer Managed" process (Developer designs and implements adjustment in agreement with utility owner) like most other companies (i.e., SBC). The latter process is working pretty well and is accepted from utility companies because it does not require their anticipation of money. *Lesson Learned:* The Developer-managed process has shown to shorten the process and to decrease schedule uncertainty. Explore ways to increase utilization of Developer-managed process (i.e., incentives to utility owners, different level of reimbursement, better easements, etc.) *Comments:* This measure should decrease bid amounts for utility relocation and shorten the adjustment phase.