

Design Build (DB)

Alternative Delivery Guidance

For Communities Seeking “C” Construction Financing
Through the Texas Water Development Board

Utilizing the PAD/C Rules for SRF Financing

To Be Used With the Program Guidance Manual for the Appropriate Funding Program
With Appendix for PDFO and Other Programs

DB Guidance

In 2007 the Texas Local Government Code was amended to allow the use of alternative project delivery methods for water and sewer projects. The 82nd legislature placed this material in the Government Code (Texas Gov't Code) under Chapter 2267. Texas Gov't Code § 2267 Subchapter H describes "Design-Build (DB) Procedures for Certain Civil Works" for alternative project delivery. This guidance mirrors the requirements set forth in Texas Gov't Code § 2267. This document is created to provide clear guidance for communities seeking "C" or Construction funding in the Drinking Water State Revolving Fund (DWSRF) or Clean Water State Revolving Fund (CWSRF) programs under Planning Acquisition and Design funding followed by Construction funding (PAD/C) provisions in the SRF rules. This document assumes that the Owner is moving quickly and will not seek a separate PAD commitment; however, nothing would preclude an Owner from requesting a PAD to fund upfront work. Critical to the process is the definition of "Ready to Proceed" and thereby able to seek a commitment for "C" or Construction funding. Note: PAD expenses can be requested for reimbursement with the "C" funding.

Limitations – The Texas Gov't Code limits the use of the DB Process. Communities with less than 100,000 population are not allowed to utilize Design-Build (Texas Gov't Code § 2267.352). Also Communities are limited in the number of DB projects they can attempt in one year (Texas Gov't Code § 2267.354).

Process Diagram – Attached to this guidance is a process flow chart or process diagram showing the activities of the Owner, Design-Build Firm (DB Firm), and the TWDB as the project progresses. It is hoped that the picture assists in understanding the flow of the work from the beginning of the project to completion.

Notes: This guidance does not repeat all of the requirements detailed in the state statute. Owners must carefully comply with the requirements in the Texas Gov't Code § 2267 with regard to hiring and implementing any alternative delivery project. This guidance is not intended to be a "how to" guide, rather it provides discussion of the typical processes needed to clearly communicate the procedures for delivery of TWDB funding. The TWDB has found material available in "The Municipal Water and Wastewater Design-Build Handbook (DB Handbook), Second Edition, Expanded to include Construction Manager at Risk", helpful in understanding and implementing the alternative delivery guidance. This was created by the Water Design-Build Council. The DB Handbook would be more of a "how to" guide for Owners. The DB Handbook is available on-line at <http://waterdesignbuild.org/resources.htm>. Please be aware that this DB Handbook while helpful for the general understanding and implementation of alternative delivery may not reflect the requirements of Texas law or how a project needs to be procured and implemented under Texas law. The requirements for Texas law must be complied with first and foremost.

1. 'Owner Defines a Project

Define Project – Owner evaluates needs and defines a project that requires engineering and construction services along with capital expenditure.

IUP – Owner is considering TWDB funding and places project on the CWSRF or DWSRF Intended Use Plan (IUP). Projects to be funded on the CWSRF or DWSRF IUP must submit a "Project Information Form" in the January of each year in order to be ranked and available for funding in the fall of that year. See TWDB web-page for details.

2. Owner Considers Alternative Delivery

Owner begins to plan his project delivery and financing. The Owner chooses DB project delivery.

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2.1. Owner Creates Implementation Team

The TWDB suggests that an Owner choosing to utilize alternative delivery organize an "implementation team" to guide the project delivery due to the unique aspects of the DB process (changing roles, risk assignment, negotiated price, and quality control issues). In selecting an implementation team the Owner should choose representatives from different departments such as engineering, operations, finance, and legal. Each team member should have sufficient knowledge and experience to be able to offer constructive input to their counterparts on the design-build team. The implementation team may all be in-house staff. If the required functional skills are not available in-house, the Owner may need to hire an outside consultant(s) to support the implementation team.

In particular with DB alternative delivery, the Owner shall "select or designate an engineer who is Independent of the DB Firm to act as its representative for the procurement process and for the duration of the work on the civil works project. The selected or designated engineer has full responsibility for complying with Chapter 1001, Occupation Code." (Texas Gov't Code § 2267.355)

It would be expected that this Independent Engineer (IE) will act as the contract manager and guide the work of the implementation team as they implement the DB project. Again, the IE could be in-house staff or a hired consultant. **In this document "Owner" refers to this implementation team as lead by the IE.**

At some point prior to hiring the DB firm, the Owner will make the formal finding required in the Texas Gov't Code § 2267.353 with regard to management capability for DB project delivery.

2.2. Owner Meets with TWDB to Discuss Alternative Delivery

The Owner requests a meeting with TWDB in order to discuss the project along with his desire to use DB for the project delivery method. Many of the members of the implementation team may want to attend this meeting.

In this meeting the TWDB will ask the Owner to discuss the project as well as his ideas for alternative delivery. The project schedule is often critical in an alternative delivery project. TWDB and Owner will discuss the Owner's needs and how these needs can be met within the SRF funding program. In some cases other TWDB funding programs with greater flexibility may need to be discussed. The relative size of the project may require multiple DB contracts or Guaranteed Maximum Prices (GMPs) within the contract. The TWDB will want to discuss issues such as the following:

- 1) PAD Financing – TWDB will discuss with the Owner his schedule and financial needs. Does the Owner have the financial resources to proceed with much of the PAD work through funds on hand and then receive reimbursement of these funds at closing?
 - a. This guidance is written assuming that an alternative delivery project is very time sensitive and the Owner has resources to fund the early PAD work and will apply for the "C" funding when "ready to proceed". The application will include PAD work completed for reimbursement.
 - b. If financial resources for the Owner are limited and the PAD work must be financed upfront, the TWDB will discuss with the Owner funding of PAD work in an initial commitment and loan. Any planning and design costs for the DB Firm could be included in a PAD loan. At such time as the PAD work reached "Ready to Proceed" as described in Item # 3, the Owner could apply for "C" or construction funding and follow this guidance.
- 2) Timing of certain project milestones in particular

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- a. Timing for commitment and closing on funds as it relates to the Intended Use Plan (IUP). If the project is not yet on the IUP, a "Project Information Form" will need to be completed for the following years IUP.
 - b. Definition of "Ready to Proceed" and able to receive "C" or construction funding.
 - i. Environmental review requirements and status
 - ii. Status of major permits
 - iii. Status of property acquisitions
 - iv. Status of design
 - c. Timing of reviews and release of funds.
 - d. DBE requirements in hiring.
- 3) Number of different construction packages expected and any need to develop a self-certification procedure.
 - 4) Review limits on incentives as described in Step 15.2
 - 5) Management of Alternative Delivery
 - a. Implementation Team, Qualifications/Experience in project delivery.
 - b. Project Management Plan – The TWDB will suggest the implementation team consider creating a Project Management Plan (PM Plan) as described in the attached Appendix I."

Note: The above management issues (Item 4 above) are matters an Owner should consider. In cases where in review of a particular applicant's application, there exists concern that the applicant shows particular signs of weak project management skills and/or experience, the TWDB may require the submittal of a PM Plan to document steps being taken to supplement and improve management systems.

2.3. Owner Begins Detailed Planning

Owner initiates Detailed Project Planning

Adequate engineering analysis of the Owner's needs is required to define the project to a level in which a competitive process can be initiated to hire a DB Firm. . The TWDB acknowledges that the Owner will have a number of options available to develop the early project planning.

- 1) In-house engineering staff could develop the project to the point that sufficient detail exists to hire a DB firm.
- 2) A consulting firm could be hired to develop the project through planning and early design. If the Owner has hired a consultant to act as the IE, that firm could perform this work.

This guidance envisions the Owner utilizing (1) and/or (2) above to progress the work through early planning to "Ready to Proceed" as defined in Step 3. The flow chart shows the Owner hiring the DB firm after funding is secured for construction.

Note: The Owner can choose to hire the DB firm prior to application if this is required to meet project schedules and achieve certain tasks. The Owner may want to hire the DB firm early allowing for more creative input in the alternatives considered. In such a case the DB firm would provide the preliminary design work needed to achieve "Ready to Proceed".

For the TWDB construction loan under "PAD/C" the Owner will need to be able to show that the requirements in the "Ready to Proceed" definition (Step 3) have been achieved prior to applying for "C" funding.

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It should be emphasized that in hiring:

- 1) Owner complies with Texas Gov't Code § 2254 for engineering consultants.
- 2) If the project is to be funded with TWDB federal funds (CWSRF III, DWSRF) and the Owner intends to seek reimbursement of these expenses as part of project funding, the Owner must follow TWDB Disadvantaged Business Enterprise (DBE) guidance during procurement.

3. Project "Ready to Proceed"

The Owner will need to present documentation that the project is "Ready to Proceed" in order to apply for "C" funding.

Note: The TWDB has developed the PAD/C method of funding in order to direct financing toward projects that are "ready to proceed" with construction in a timely manner. For DB projects, the hiring of the construction contractor is the hiring of the DB firm. The TWDB seeks a balance in defining "ready to proceed" to allow communities to utilize the method; however, with an assurance that projects will proceed in a timely manner. The further a project has proceeded in the steps of planning and design the more that is known and the less that is unknown. The further a project has progressed, the less the risk that a problem will surface that delays or halts progress on the work. The "ready to proceed" criteria allows the use of the DB method with assurance to the TWDB that the project will proceed in a timely manner to completion. It is possible that an Owner has progressed beyond this "ready to proceed" definition (i.e. already hired DB Firm).

3.1. Gov Body Resolution

The Owner at application will provide the TWDB the Governing Body Resolution (Texas Gov't Code § 2267.353) and name of the Independent Engineer (Texas Gov't Code § 2267.355) as discussed in Item 2.1 above. Owner will also describe the implementation team for the project and provide the TWDB with team members, organization, their qualifications/experience, time (budget) to be devoted to oversight.

3.2. Planning (Engineering and Environmental) complete

The Owner completes the planning phase and the below documents.

- 1) Engineering Feasibility Report - ED-002 guidance.
- 2) Environmental Document - ED-001 guidance (coordination letters with agencies and any public hearing steps completed).

3.3. Prelim Design Complete

Preliminary design documents are complete consisting of:

- 1) Design criteria, preliminary drawings, outline of specifications, written descriptions of the project, and updated opinion of probable cost.
- 2) Project Sites - the project layout on site maps, site has been surveyed, geotechnical analysis of site completed, facility sizing, and process schematics.

3.4. Critical Sites Obtained

Critical sites and easements have been obtained (Texas Gov't Code § 2267.363 (2)). Any critical land purchases that are required for the project to succeed have been obtained (i.e. if sites "x, y and z" are not obtained, entire project cannot be utilized). Less critical sites must be obtained prior to constructing that portion of the project (if site "a, b and c" are not obtained, 10% of the project cannot be built).

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3.5. Major Permits Obtained

- 1) Major permits are in place which may include the TCEQ wastewater discharge permit, COE 404 permit and any other planning level permit.
- 2) TCEQ Coordination on Water Projects - Applicable pilot studies are completed. This includes the submittal of any necessary plans to the TCEQ for review. The Owner must produce a plan for coordination of Plans and Specifications (P&S) review with the TCEQ for WTP projects, Surface Water Intakes, and Water Wells.
- 3) For projects developing water resources, water rights have been obtained.
- 4) Innovation - Alternative Delivery at times encourages innovative approaches. Where a process or system is proposed that does not fit within existing design criteria, the application should discuss any such process or system. Discuss coordination with TCEQ regarding the approach and whether a special bond for the process is needed. Note: These issues may develop during design and be reviewed at that time.

4. Application for C Funding

This procedure is written for projects accessing Construction financing under the TWDB PAD/C requirements in the CWSRF and DWSRF rules. In this case the project must be "Ready to Proceed" at the time that the Owner submits an application for "C" funding.

4.1. TWDB Invites Owner to Apply

- 1) TWDB issues invitation to apply utilizing a funding list in the CWSRF and DWSRF programs. The funding list or "Intended Use Plan" is developed from "Project Information Forms" submitted by communities that want their projects considered for funding (see TWDB web page).
- 2) The Owner has 90 days to submit its application.

4.2. Owner Submits Application for Funding

Owner submits application in accordance with application procedures found on the TWDB web-page. Application includes:

- 1) Required Engineering information.
- 2) Required Environmental information.
- 3) Required Legal information.
- 4) Required Financial Information.
- 5) "Ready to Proceed" materials listed in # 3.
- 6) Budget - The Owner provides a detailed budget estimating the project expenses in accordance with TWDB budget table. The budget can include the costs of the implementation team, engineering costs to plan and do preliminary design, independent inspection/testing, as well as the estimated DB contract costs.

Note: Stipend costs are eligible for funding and should be included in the DB contract costs.

5. Commitment

5.1. TWDB reviews application

TWDB reviews application materials and when complete develops the "Board Commitment Memo" utilized to recommend the project to the six member Board for approval of the funding. In particular for DB Process

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- 1) Planning (engineering and environmental) documents reviewed and approved.
- 2) Documentation that the project is "Ready to Proceed".

5.2. TWDB Application Approval

The TWDB Board meets monthly to consider applications. The Board will either decide to fund the project or deny funding.

6. Owner Hires Design-Build Firm

With financing for construction in place, the Owner's implementation team initiates, manages, and completes the hiring process to hire the DB Firm. The Owner will follow the steps described in Texas Gov't Code § 2267 of the government code.

Note: In some circumstances the Owner may hire the DB Firm prior to commitment as discussed in 2.3.

6.1. Owner Initiates Hiring Process

- 1) Soliciting for the DB firm Services – The following items are typically enumerated in the soliciting stage for construction procurements funded by TWDB. Federal procurement regulations require that Items b, c, and d be highlighted in the solicitation for construction phase services.
 - a. Construction contracts funded by the TWDB should include this language in the solicitation for the DB firm: "Any contract or contracts awarded under this solicitation are expected to be funded in part by a loan from the Texas Water Development Board, and shall be referred to as Project (give project number). Neither the State of Texas nor any of its departments, agencies, or employees is or will be a party to this solicitation or any resulting contract."
 - b. DBE – The Owner must reach out to "Disadvantaged Business Enterprises" (DBE) as it seeks a DB Firm and inform potential DB Firms that their sub-procurements must comply with all applicable Federal and TWDB requirements. <http://www.twdb.state.tx.us/financial/programs/DBE/dbe.asp>
 - c. Wage Rates – The Owner must enumerate to potential DB Firms that the SRF funded project will be required to comply with DOL wage rates and the selected firm will need to assist the Owner to document compliance as necessary. <http://www.twdb.state.tx.us/financial/instructions/doc/DB-0156.pdf>
 - d. "Equal Opportunity and Employment – All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, handicap, or national origin. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations 41 CFR Part 60."
- 2) Owner follows steps in Texas Gov't Code § 2267 and selects a DB Firm.
- 3) Owner drafts a contract with the selected DB Firm.

6.2. TWDB reviews draft DB Contract

- 1) Owner provides the TWDB:
 - a. A ranked list of the DB firms that responded to the solicitation.
 - b. The draft contract with the selected DB Firm.
 - c. Documentation required to show compliance with DBE requirements.

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- 2) TWDB Review of DB Firm contract - TWDB will review the document for the following at a minimum.
- a. Scope agrees with TWDB Board action, Intended Use Plan scoring, Environmental finding.
 - b. Scope appears adequately defined.
 - c. Firm Fixed Price (Lump Sum) or Guaranteed Maximum Price (GMP) – If GMP, describes the cost controls and how any savings over the GMP will be shared between the Owner and the DB firm (see limits in Step 15.2). Includes description of any contingency and its uses as well as other contract incentives.
 - d. Any Environmental mitigation requirements included in contract.
 - e. Changes (Step 12) in the project require review and approval by the TWDB.
 - f. DBE (federal programs only) outreach required for sub procurements (TWDB forms WRD-216, 217, 373).
 - g. Performance and Payment Bonds requirements.
 - h. Includes Equal Employment Opportunity (EEO) requirements. (TWDB form WRD-255).
 - i. Any work that would be ineligible for the program is clearly broken out with regard to costs.
 - j. Funded by TWDB Language- "Any contract or contracts awarded under this Invitation for Bids are expected to be funded in part by a loan from the Texas Water Development Board, and shall be referred to as Project (give project number). Neither the State of Texas nor any of its departments, agencies, or employees is or will be a party to this Invitation for Bids or any resulting contract."
 - k. Green Costs – Green project elements are described and budget estimates the amount of Green project costs.
 - l. Statement included "This contract is contingent on the release of funds from the TWDB".
 - m. Trench Safety – Any line work over five feet deep requires the contractor to utilize trench safety and such will be paid at \$___/linear foot.
 - n. Inspection and testing provisions – Clearly describes how the DB Firm relates to the Owner's independent inspection and testing (Step 9.3).
 - o. Actual Agreement – Draft of the agreement to be signed by Owner and DB Firm (when final signed).
 - p. Insurance - Contractor to provide insurance for Workman's Compensation, liability (public and automobile) and other appropriate coverage (builder's risk, and property), amount specified should protect the Owner and TWDB's interests.
 - q. DOL Wage Rates – Contract includes current DOL wage rates along with provisions explaining certifications and record keeping required.
 - r. TWDB requirements – Contract includes forms ED-103 and 104 in which DB firm promises to abide by TWDB requirements.
 - s. Debarment and Suspension – Includes TWDB form SRF-404.
 - t. TWDB General Condition Items (review and redact what is needed from ED-004), including requirements for release of retainage.

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- u. Project Schedule along with penalties for non-performance.
 - v. Definition of discrete work packages (P&S).
 - w. Draw Schedule (for DWSRF funded projects).
 - x. Project Budget (detailed as needed, explains availability of any contingency and use thereof).
 - y. TCEQ Compliance – requires designs comply with Chapter 217 of the State Design Criteria and/or Chapter 290 of the Water Code regarding Drinking Water Systems.
 - z. Examine what competitive procurement requirements exist (or equal).
- 3) TWDB will provide a comment letter as required to communicate any concerns with the draft contract.
 - 4) Once any concerns have been addressed, the TWDB will concur in the award of the contract.

6.3. Owner/DB Firm Execute Contract

The Owner and the DB Firm execute the DB contract and provide a copy to the TWDB.

In the case of a fixed price DB procurement the project price is negotiated at this time and is part of the contract. In this case, step 6.5 is next and bonds are provided.

In the case of a DB project where the price will be agreed to at some design complete milestone after the DB Contract is executed, the Owner can:

- 1) Require performance and payment bonds based on the Owner's project budget to be submitted immediately after award.
- 2) Accept a bid bond or other financial security acceptable to the Owner to ensure the performance and payment bonds will be furnished prior to the start of construction.

6.4. Price Agreement

In the case of a DB project where the price will be agreed to at some design complete milestone after the DB Contract is executed, the design work will proceed for a time involving close coordination between the Owner and the DB Firm. At the time that Owner believes the design has progressed sufficiently to negotiate the project price (either a firm fixed price or a GMP), the Owner and DB Firm will finalize negotiations.

If the price is a GMP, the Owner will only pay the GMP if the actual construction costs exceed the GMP. The DB Contract also states if costs come in lower, how the savings will be distributed between the Owner and the DB firm. The Owner should insure that his implementation team has sufficient expertise (in-house or hired) to represent the Owner's interests in the negotiations.

The Owner and the DB Firm will reach an agreement.

If they do not reach an agreement on price the Owner can:

- 1) Proceed to next best DB Firm on the ranked list or solicit again for a DB Firm.
- 2) Decide to deliver the project by DBB method.

6.5. DB Firm provides Bonds

Texas Gov't Code § 2267.366 addresses the provision of Performance and Payment Bonds by the DB Firm. A copy of the bonds are provided to the TWDB.

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In Texas Gov't Code § 2267 (b) "If commercially available" seem to envision projects so large that bonding may not be available. In such case the TWDB would require that the work be broken into sub-contracts to the DB Firm and performance and payment bonds be provided by each major sub-contractor to the DB Firm. The DB Firm would then provide performance and payment bonds that cover the difference between the fixed price and the sum of the subs bonds.

7. Loan Closing

7.1. Owner submits Closing Docs

- 1) Owner prepares Closing documents.
- 2) Budget update and request for release. In particular request for release of funds at closing should include:
 - Financial Costs
 - Legal Costs
 - Engineering Planning, Preliminary Design
 - DB Firm Design Costs
 - Request can include reimbursement for any stipends paid during procurement (Texas Gov't Code § 2267.364, 1/2 of 1% of contract amount)

The closing will be based on the GMP or fixed price for the DB contract along with any contingency to be available according to the contract. Where the DB contract is for a lump sum, the owner should provide a breakdown of the lump sum costs as described in Step 10.5.

Owner prepares Outlay Report with invoices for costs expended in above categories. TWDB outlay report guidance is available at

http://www.twdb.state.tx.us/about/contract_admin/outlay/index.asp.

7.2. TWDB Reviews Closing Docs - \$\$ to Owner

- 1) TWDB reviews the closing documents.
- 2) Loan is closed.
- 3) Funds Release.
 - a. DWSRF funds are released as costs are invoiced to the Owner for actual expenses. At closing this will include:
 - Financial Costs
 - Legal Costs
 - Engineering Planning, preliminary Design invoiced to date
 - Implementation team costs invoiced to date
 - DB Firm Costs for Design invoiced to date
 - Stipend Costs
 - b. CWSRF - The above expense categories can be released to the construction fund and the remaining funds will be placed in escrow for construction related expenses. Funds in escrow will be released to the construction account as milestones in the construction process are achieved.

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7.3. Owner Makes Payments

Owner receives Funds and:

- 1) Makes payments according to contracts for any invoices not paid prior to closing.
- 2) Reimburses City accounts with loan funds for costs invoiced and paid prior to closing.

8. P&S Approval

Plans and Specifications (P&S) for construction packages (Texas Gov't Code § 2267.365) must be submitted to the TWDB for review and approval prior to construction.

8.1. Review of First P&S Package

DB Firm completes the design for the first package of work on the project and submits to the Owner in accordance with Texas Gov't Code § 2267.365. An engineer designated by the DB firm Texas Gov't Code § 2267.359 (b) (1) will seal the P&S (Texas Gov't Code § 2267.365 (b)). Owner when satisfied with scope compliance submits the P&S to the TWDB.

8.2. TWDB Review and Approval

TWDB reviews P&S for compliance with:

- 1) Program requirements.
- 2) Approved scope.
- 3) Environmental findings.
- 4) Wastewater Projects – State Design Criteria (Texas Admin. Code § 217).
- 5) Water Projects (Texas Admin. Code § 290).
 - a. TWDB reviews for water distribution and storage portions of the project.
 - b. TCEQ reviews for wells, water treatment plants, and intake structures.
 - c. TCEQ Coordination – where the project involves Water Treatment Plants, Water Wells, or Intake structures, the TWDB will forward P&S to TCEQ for review.

Note: The Owner will have to coordinate with TCEQ regarding how to proceed in a progressive design mode if TCEQ review is required.

- 6) For wastewater projects – Ability to comply with TCEQ discharge permit.
- 7) Identify and breakout any ineligible work.
- 8) Variances – Innovation in alternative delivery is very possible. Where designs require a variance from TCEQ rules, documentation of TCEQ acceptance will be required. Occasionally the Owner may be required to utilize performance bonds on the innovative portion of the design.

Comments are forwarded to the Owner as needed. After comments are sufficiently addressed, TWDB approves P&S. TWDB review of P&S is generally less than 30 days.

9. Hire First Sub-contractor

The DB Firm may hire sub-contractors to perform construction or utilize its own forces to perform construction.

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9.1. DB Firm Hires Subs as Needed

The DB Firm hires subs according to any requirements in the contract or state law. For projects receiving federal funding (CWSRF and DWSRF) the DB Firm will have to follow EPA's guidance with regard to Disadvantaged Business Enterprises (DBE) in the hiring process.

9.2. TWDB Review of Subcontracts

For CWSRF and DWSRF projects, the TWDB will review documentation of compliance with Disadvantaged Business Enterprises requirements where they apply to the project.

Note: The DB Firm is required to comply with DBE requirements in all its procurements; however, the DB Firm's subs are not required to follow the DBE steps if they sub any of their work.

9.3. Inspection and Testing

Owner finalizes inspection and testing plan (Texas Gov't Code § 2267.355). The plan includes oversight of DOL wage rate provisions for CWSRF or DWSRF funding.

- 1) Completes Hiring by two step process for any professional services by contract.
- 2) Provides organization chart, resumes, estimate of effort and cost to Owner.
- 3) Submits plan and contracts to TWDB for funding with documentation of compliance with DBE requirements.

Owner will also provide a "site certificate" to confirm ownership of required properties before construction.

9.4. TWDB Concurs in NTP

The TWDB will issue a letter concurring in the Owner's issuance of a "Notice to Proceed" on the work.

TWDB will raise the ceiling (funding by reimbursement) or release funds (where funds are escrowed) in an amount equal to the cost of the package to begin construction. TWDB review of bid documents is generally less than 2 weeks.

Note: For projects not receiving federal funding, or where the DB Firm is doing the work with its own forces the TWDB may issue the NTP with the P&S approval letter.

10. Construction Phase Initiated

The DB or a subcontractor mobilizes at the site. It is important that the Owner does not allow the DB Firm to begin construction until the TWDB concurs in the issuance of a "NTP". Activity prior to environmental clearance or some other milestone could make the project ineligible for TWDB assistance.

10.1. DB Firm supervises Construction

The DB Firm acts as the Construction Manager and carries out the work in the contract.

10.2. DB Firm creates monthly Invoice

On a monthly basis the DB Firm provides the Owner his invoices and pay estimate for that month's work.

10.3. Owner inspects work and prepares outlays

The Owner during construction:

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- 1) Supervises the inspection and testing process to confirm that construction is being performed in accordance with the approved P&S.
- 2) The Owner reviews invoices from the DB Firm and recommends payment.
- 3) The Owner gathers payment requests from the DB Firm, inspection, testing, implementation team, and other Owner subcontractors and creates an Outlay Report supported by invoices to document costs to the TWDB.
- 4) Owner submits Outlay Report to the TWDB monthly for CWSRF and DWSRF programs.

10.4. Inspection by TWDB

TWDB inspection staff periodically inspects the project. They confirm that construction progress is proceeding in accordance with Outlay Reports. They confirm that the Owner is providing adequate inspection and oversight of the project. The TWDB inspector generates a monthly inspection report which is provided to the Owner.

10.5. TWDB Releases Funds Based on Outlay Reports

Outlay Reports are provided to the TWDB for:

- 1) DWSRF projects on a monthly basis. The TWDB draws federal funds directly from EPA based on the invoices provided. Funds are released to the Owner to reimburse the Owner for expenses incurred.
- 2) CWSRF to document costs incurred on a monthly basis. In the case of CWSRF projects, funds are in the Owner's construction fund and payment is made by the Owner monthly when invoiced. Outlays are forwarded to TWDB to document the expenditure. TWDB utilizes the outlay and invoices to draw federal funds from EPA to reimburse the TWDB for the funds delivered to the Owner at closing.
- 3) Outlay and Invoices for DB contract
 - a. Where the contract involves a GMP and provides for a disposition of excess funds following completion of the project, typically as an incentive to the DB Firm, the Owner must provide invoices that detail costs actually incurred as the work proceeds.
 - b. Where the contract is for a lump sum price, the owner must provide a breakdown of project costs by categories justifying the lump sum price. Invoices as work progresses are then provided based on percentage of completion against the breakdown of lump sum price.
- 4) TWDB reviews Outlay Reports to insure they are project related expenses according to the contracts provided to the TWDB.

11. Subsequent Construction Packages

11.1. Repeat Steps 8 through 10

DB Firm and Owner repeat Steps 8, 9 and 10 for each subsequent construction package as the work progresses.

Note: In some cases Design Build work is divided into many small construction packages. Where the construction work packages become numerous, the TWDB may discuss with the Owner methodologies whereby the Owner could perform a review (check sheets) and self-certify compliance with TWDB requirements.

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12. Changes to Project

Changes to the project must be documented and provided to the TWDB for review and approval.

- 1) Changes from the original purpose or scope of the project as well as changes in the project from representations made in the Engineering Feasibility Report or Environmental Review Documents must be summarized in a letter and forwarded to the TWDB for review and approval.
 - Changes in purpose could affect scoring in the SRF priority list and make the project ineligible.
 - Changes in location – Any change in the overall footprint of the work should be discussed with the TWDB prior to preceeding.
 - Environmental review of new sites could involve significant time. This would include a change to another street for line work or new lift station site.
 - Where environmental approval covered only one side of a street or highway, a change to the other side could involve additional environmental review
- 2) Changes from approved P&S. After approval of the P&S any changes should be summarized and documented to the TWDB.
 - Work Order – minor changes to the P&S that occur during construction could be summarized in work orders and reviewed by TWDB inspection staff.
 - Substantial changes (as in 1 above) should be summarized in a letter before implementing for review by TWDB.
 - Change Orders – Changes that affect the Fixed Price or GMP shall be summarized in a change order and forwarded to the TWDB.

12.1. Owner Submits Proposed Change to TWDB

Owner evaluates need for change and submits to TWDB.

12.2. Changes Reviewed by TWDB

TWDB reviews materials. Where changes affect the environmental finding or purpose of the project, additional actions may be required, TWDB will provide a formal approval letter.

13. Construction Substantially Complete

As construction progresses the Owner must withhold 5% retainage on each payment. The retainage is essentially a tool to compel the contractor to complete the entire project.

13.1. DB Firm Requests Reduction in Retainage

At such time as the project is nearing completion (>95% completed), the DB Firm may request that the Owner reduce the retainage amount.

13.2. Owner Determines Reduction Warranted

The Owner by observation of the amount of construction completed, when confident that a full 5% retainage is not required to compel completion of the project, the Owner can request that the TWDB allow a reduction in retainage.

13.3. TWDB OK's Reduction

If TWDB concurs in the evaluation, the TWDB will in writing allow the reduction in retainage (Texas Water Code Chapter 17.183).

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Note: The procedure described here for TWDB concurrence in release of retainage only applies to the DB Firm contract and not to sub-contracts.

14. Construction Complete

At the end of the project the Owner through inspection and testing procedures will determine whether the project is meeting any and all performance standards specified in the DB contract. The Owner at this time will prepare a punch list detailing items the DB Firm must address in order to complete the project.

14.1. DB Firm Requests Final Release Retainage

At such time that the DB Firm is confident that all performance tests and punch list items have been satisfied, the DB Firm will request final release of all retainage.

14.2. Owner Determines Complete

The Owner and TWDB will conduct a final inspection. The Owner will provide a statement that the project is complete and has been constructed in accordance with the design plans and specifications and all requirements of the DB contract. The Owner's Independent Engineer (IE) as leader of the implementation team will be a part of this recommendation.

14.3. TWDB concurs issues COA

If the TWDB is able to concur that the project is complete, the TWDB will issue a "Certificate of Approval" (COA) which allows the Owner to make final payment and release all remaining retainage (Texas Water Code Chapter 17.183).

Note: The procedure described here for TWDB concurrence in release of retainage only applies to the DB Firm contract and not to sub-contracts.

14.4. Final Retainage Released

Owner pays the DB Firm the final retainage held from partial payments.

15. Incentives Distributed

DB contracts may include incentives paid to the DB firm for completing the project for less than the GMP. This could also include other agreed upon incentives related to schedule, quality or safety performance. In such a case, the Owner will do the steps below to distribute incentives.

Note: In the case of DB contracts the price may be simply a Fixed Price for the completed work. In such a case, Step 15 would not be required.

15.1. Owner Determines Delta from GMP and Distribution

The Owner will review the final accounting of costs for the DB Firm and determine the difference between the GMP and the final cost of the project. The Owner will determine in accordance with the contract the amount of additional funds to be paid to the DB Firm. The Owner will provide to the TWDB an Outlay Report supported as needed to document this request.

15.2. TWDB Releases Funds

Incentives in the DB contract for the DB Firm are an eligible expense subject to the below ceiling on TWDB reimbursement. Any incentive payments to be utilized must be clearly described in the contract. The TWDB will review the request and;

- 1) Release the amount requested in accordance with the DB contract for the DB Firm up to a ceiling of 5% of the GMP. As a lender of public funds the TWDB will not finance more than 5% of the GMP as an incentive. If the DB contract allows a greater amount, the

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owner will have to cover the additional costs with local funds. In addition, TWDB funding will not exceed the GMP through incentives.

- 2) Any surplus funds by the DB contract to flow to the Owner will only be available to the Owner in accordance with TWDB guidance regarding the use of surplus loan funds. Surplus funds can be used for eligible project costs, as per Board rules and as authorized by the Board resolution for the project financing.

15.3. Owner Pays Final Sum

- 1) Owner makes final payment to DB Firm.
- 2) Submits final accounting for close-out of the project.

16. Project Complete

Project is completed. TWDB interest going forward is in timely debt repayment and submittal of annual audits.

Appendix I

Project Management Plans Design-Build

The TWDB requests that Owners consider creating Project Management (PM) Plans early in the development of their project due to the **changing roles, risk assignment, negotiated price, and quality control issues involved in DB**. The PM Plans can help the Owner think through the needed time, expense and effort to manage the DB process properly. If the project is scoped and awarded in a fixed price manner, the Owner will have to be very engaged in the scoping, technical and quality requirements for the procurement, negotiating, and writing the contract. If a GMP approach is used, the Owner needs to be very engaged in the choices as to the project scope, quality, price, and schedule being made during design and writing the contract. The TWDB may require this work where an Owner appears weak in its ability to manage the project. In such cases as described in Step 2.2, the TWDB would be available to discuss the development of a PM Plan.

It is acknowledged that portions of the PM Plan should be planned by the Owner before he begins to solicit the DB firm. Portions of this material would not be finalized until the DB firm is hired and part of the team.

This appendix was developed from material available from the Project Management Institute (www.pmi.org). This material is hoped to be helpful in thinking and planning the issues that should be considered. For simpler projects the plan could just cover the basic issues. For more complex projects the plans may be much more involved than this discussion. Owners may find better material available elsewhere but the kinds of issues raised should be considered.

Project Management Plans could include:

Implementation Team

The Owner should analyze its existing resources to determine their ability to manage alternative delivery. This analysis should consider the changing roles, risk assignment, negotiated price, and quality control issues involved in DB. The Owner should determine if the needed skills are available in-house. If not, the community should seek consulting help to supplement their resources. Independent judgment in engineering, construction and legal issues are critical in crafting the selection process, hiring, negotiating these contracts, and project oversight. The PM plan should describe the members of the implementation team and their roles.

Scope Management

The Owner should define all the project's requirements, scope elements and activities to complete the project with the subsequent specific activities to complete the project. This plan may utilize a Work Breakdown Structure (WBS) for the project's activities. A WBS includes only the scope activities pertinent to the project. Work activities not in the WBS are outside the scope of the project. Utilizing a WBS, the Owner should have a detailed scope statement and baselines for the project available for use in other project plans including the Risk, Schedule and Cost, Quality, Communication, and Procurement Management Plans.

The Scope Management Plan should answer questions like those below:

- 1) What is being built?
- 2) What type enforcement activity or schedule requirements are expected to be satisfied by the project?
- 3) What quality and design life is desired for major components and of the project in general?

- 4) What level of automation and control?
- 5) What steps are required for implementation in a quality manner?
- 6) What responsibilities remain with the Owner?
- 7) What scope of services are expected from each party?
- 8) Are services needed to provide a smooth initiation of operation of the project?
- 9) Is the scope sufficiently defined to enter into the procurement process for a DB Firm? Can an enforceable contract be written that insures the Owner obtains what he envisions at the end of the project?

Time Management

Once activities have been identified in the Scope Management Plan, the Owner should further define the activities to establish their respective durations, necessary resources, and sequence. The Owner should utilize the sequence of activities and their durations to estimate a project's baseline schedule, milestones, and completion date. The Owner should take note of specific activities on the Critical Path. Activities on the Critical Path are those that cannot be completed without the input or completion of a previous activity and directly affect the project's completion date. The detail required of the Critical Path diagram depends largely on the complexity and time constraints for the project.

The Time Management Plan should answer questions like those below:

- 1) What is the overall project schedule? What enforcement order deadlines must be met?
- 2) What are major critical path activities and who is responsible?
- 3) What incentives in the proposed contracts help insure schedule compliance?
- 4) Is the Owner providing adequate resources (internal and contract) to provide the required oversight of the project in a timely manner?

Cost Management

The Cost Management Plan details the strategy used by the Owner to control the project's costs and baseline budget. Owner should develop actions to ensure timely completion of activities within the approved baseline budget. The Cost Management Plan can also be utilized to integrate costs associated with management of the project's risks.

The Cost Management Plan should answer questions like those below:

- 1) Will a fixed price be part of the initial hiring process or will the Owner utilize progressive DB to some level and then a price be negotiated?
- 2) What is the expected project budget? Is a contingency to be utilized, by whom and under what conditions?
- 3) What incentives will the contracts utilize to insure budget compliance?
- 4) Is the contract price to be a Fixed Price or will there be a GMP with any savings from delivery of the project below the GMP shared between the Owner and the DB Firm?
- 5) How will the Owner monitor activity and task costs?
- 6) Will the DB Firm be required to bid any portion of the project?
- 7) Under what circumstances will cost changes be allowed?
- 8) Will adjustments in the cost of raw materials due to inflation be allowed, how will these risks be handled?
- 9) Do multiple components or stages require multiple Fixed Price or GMP Contracts?

Quality Management

The Quality Management Plan identifies quality requirements and standards for the project and details the strategies to be utilized for assurance. The Owner should consider functional requirements as well as equipment and materials of the project that should not be compromised and other specific regulatory requirements. The Quality Management plan also includes the Inspection and Testing Plan (Texas Gov't Code § 2267.058).

The Quality Management Plan should answer questions like those below:

- 1) Are the quality expectations of the Owner for the project adequately defined in the scope to assure project compliance?
- 2) During design, what steps will be taken to insure all scope requirements are met?
- 3) What minimum qualifications are required of the DB Firm to design and manage construction?
- 4) As design is progressing, at what stages will the Owner or IE review the work for compliance with the scope?
- 5) How much review effort during design is needed by the Owner and IE?
- 6) What review steps (sign-offs by whom) are to be utilized prior to submittal of P&S to TWDB?
- 7) Who will perform inspection during construction and what level of effort (time) is required?
- 8) Who will perform testing during construction and what level of effort (time) is required?
- 9) What type testing services are required during construction?
- 10) Who will assure compliance with any environmental review or mitigation requirements?
- 11) Who will need to sign-off on final acceptance of construction work? The Independent Engineer (IE) required by state law and who else within the Owner's organization?

Risk Management

The purpose of developing a Risk Management Plan is to analyze risks and mitigate their impact on the project's development. The Owner should analyze project risks and develop strategies that maximize opportunity and minimize threats. This plan includes identification, analysis, response/mitigation strategies, and monitoring and control of project risks. Tools from the PMI such as a Composite Risk Index could be utilized to evaluate risks.

The guidance as created here envisions that environmental clearance, critical sites and major permits have been obtained, and preliminary design completed prior to any hiring of a DB Firm. A project that has passed these major milestones has mitigated many major risk factors that could substantially impact cost and schedule. Schedule requirements for the project might require that the Owner hire the DB Firm earlier when fewer aspects are known; however, the TWDB would request a detailed discussion of risk management in this case to mitigate these issues.

The Risk Management Plan should answer questions like those below:

- 1) Are there siting issues for the project that are unknown (environmental issues, buried unknowns, geotechnical) that could impact cost and schedule substantially? How are these issues mitigated?
- 2) Is the site adequate for the proposed use? What unknowns remain?
- 3) Is there substantial volatility in prices for cost inputs? How will these risks be handled?
- 4) Does the project involve work in densely developed areas or safety risks?
- 5) Does the project involve construction in areas sensitive to the environment or members of the community and how will these issues be addressed?

- 6) How will any federal requirements such as disadvantaged business enterprise (DBE) and department of labor wage rates (DOL) be reviewed and compliance assured?

Communications Management

Communication Management Plan - The purpose of this plan is to develop a strategy that provides timely and appropriate project information to stakeholders. The Owner shall develop a Communication Management Plan that includes all project stakeholders, a brief description of their roles and responsibilities, and a matrix that illustrates the type of communication medium utilized, frequency, and the respective stakeholder(s). The Communication Management Plan shall include an organizational chart to be utilized by the project team and stakeholders to gain an understanding of the relationships and structure to deliver the project.

The Communications Management Plan should answer questions like those below:

- 1) How will the implementation team communicate with different departments within the Owner's organization (frequency, location, degree of detail, formal reporting)?
- 2) Would the project benefit from project management software? Which one, who purchases, how many licenses?
- 3) Who are the stakeholders involved in the project?
- 4) What community, social, or environmental aspects of the project require attention (i.e. major milestones like FNSI, property owners in construction) by the parties?
- 5) What information will be required to communicate to stakeholders?

Procurement Management

This plan details the contract type(s) used for the project's procurement. The Owner should utilize the Procurement Management Plan to draft the RFQ and RFP for hiring the DB Firm, develop selection criteria, include specific regulatory requirements (DBE, Davis-Bacon, etc.). The PM Plan should provide the Owner the proposed RFQ and RFP as well as a draft DB Firm contract at this stage.

The Procurement Management Plan should answer questions like those below:

- 1) What qualifications are needed for persons to be involved in the DB Firm selection committee? How big should the committee be?
- 2) Will the DB Firm be required to competitively bid any work and what steps will be required?
- 3) What requirements on sub-contracting will the DB Firm be required to implement? City requirements? TWDB DBE requirements? How will compliance be monitored?
- 4) Will stipends (1/2 of 1% of estimated project costs as detailed in Texas Gov't Code § 2267.364) be utilized in the hiring process for the DB Firm?
- 5) What contract procurements (besides DB Firm) are expected for what service (inspection, testing, other)?
- 6) How many procurements are expected in the project?
- 7) What unique local, state, or federal requirements must be complied with?
- 8) What are the procurement steps to be utilized?

Integration Management

The Owner should insure that the PM plans integrate into a whole management plan.

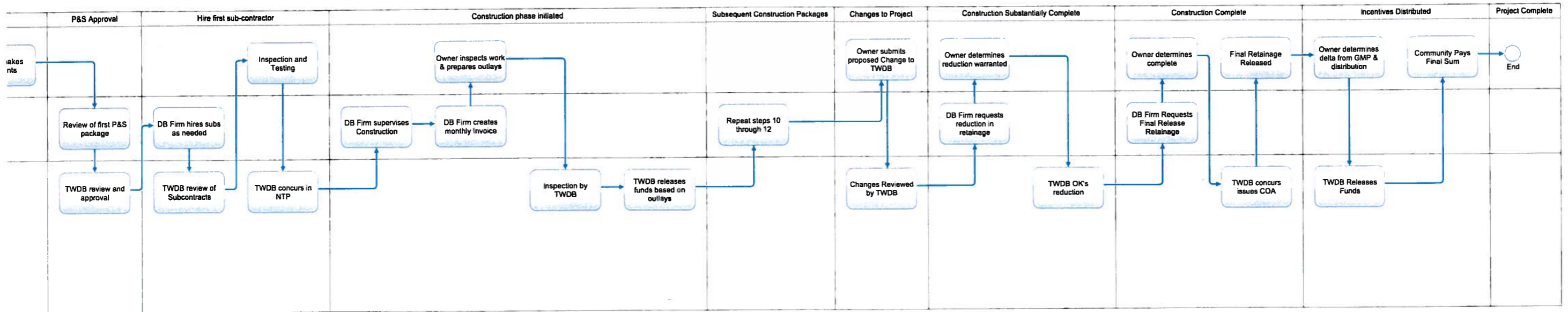
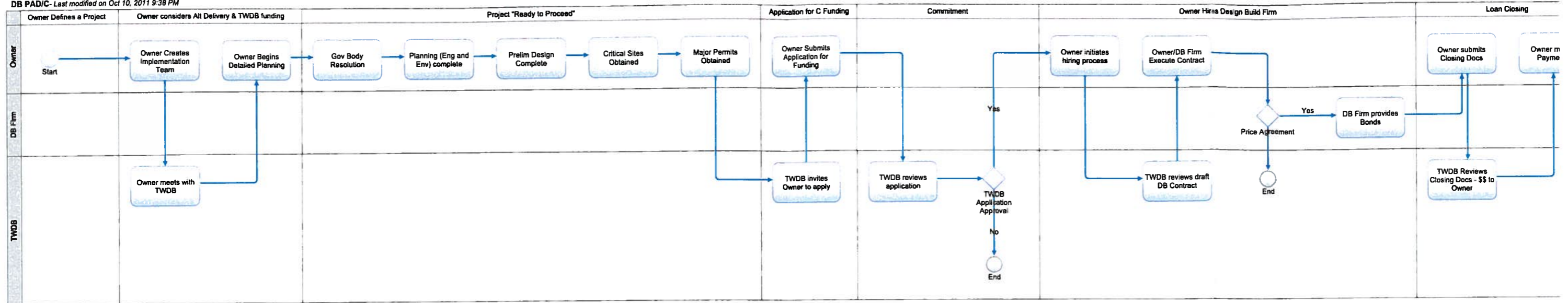
Appendix II

Pre-Design Funding Option For Design-Build Alternative Delivery

The DB Alternative Delivery procedure can be altered as follows to accommodate Pre-Design Funding

- 1) Project Planning and Financing
 - a. Step 1, Define Project
 - b. Step 2, Owner Considers Alternative Delivery and TWDB Funding
 - c. Step 4, Owner applies for TWDB Funding
 - d. Step 5, TWDB makes Commitment
 - e. Step 7, Loan is Closed
- 2) Getting Ready to Build
 - a. Owner plans his own approach to planning and design
 - b. Steps 3 (Ready to Proceed) and 6 (Hire DB Firm) are arranged as best for the Owner
 - c. Funds for design will only be released after planning is completed (engineering and environmental, Step 3.2)
 - d. Must achieve Step 3 "Ready to Proceed" prior to release of funds for construction
- 3) Construction – Steps 8-16 unchanged

Note: Some of the TWDB programs are not federally funded. Disadvantaged Business Enterprise (DBE) and Davis Bacon Wage Rate monitoring are not required on projects that are not federally funded. The Program Guidance Manual for the particular TWDB program should be followed with regard to these details.



Construction Manager at Risk (CMAR)

Alternative Delivery Guidance

For Communities Seeking “C” Construction Financing
Through the Texas Water Development Board

Utilizing the PAD/C Rules for SRF Financing

To Be Used With the Program Guidance Manual for the Appropriate Funding Program
With Appendix for PDFO and Other Programs

CMAR PAD/C Guidance

In 2007 the Texas Local Government Code was amended to allow the use of alternative project delivery methods for water and sewer projects. The 82nd legislature placed this material in the Texas Government Code under Chapter 2267. Texas Gov't Code § 2267 Subchapter F details the process to utilize a "Construction Manager at Risk" (CMAR) method of project delivery. This guidance mirrors the requirements set forth in Texas Gov't Code § 2267. This document is created to provide clear guidance for communities seeking a "C" or Construction loan under the Drinking Water State Revolving Fund (DWSRF) or Clean Water State Revolving Fund (CWSRF) rules under Planning Acquisition and Design funding followed by Construction funding (PAD/C) provisions in the SRF rules. This document assumes that the Owner is moving quickly and will not seek a separate PAD commitment; however, nothing would preclude an Owner from requesting a PAD to fund upfront work. Critical to the process is the definition of "Ready to Proceed" and thereby able to seek a commitment for "C" or Construction funding. Note: PAD expenses can be requested for reimbursement with the "C" funding.

Process Diagram - Attached to this guidance is a process flow chart or process diagram showing the activities of the Owner, Design Engineer (DE), CMAR, and the TWDB as the project progresses. It is hoped that the picture assists in understanding the flow of the work from the beginning of the project to completion.

Note: This guidance does not repeat all of the requirements detailed in the state statute. Owners must carefully comply with the requirements in the Texas Gov't Code § 2267 with regard to hiring and implementing any alternative delivery project. This guidance is not intended to be a "how to" guide, rather it provides discussion of the typical processes needed to clearly communicate the steps of how financing will be delivered. Also, the TWDB has found material available in "The Municipal Water and Wastewater Design-Build Handbook (DB Handbook), Second Edition, Expanded to include Construction Manager at Risk", helpful in understanding and implementing the alternative delivery guidance. This was created by the Water Design-Build Council. The DB Handbook would be more of a "how to" guide for Owners. The DB Handbook is available on-line at <http://waterdesignbuild.org/resources.htm>. Please be aware that this DB Handbook while helpful for the general understanding and implementation of alternative delivery may not reflect the requirements of Texas law or how a project needs to be procured and implemented under Texas law. The requirements for Texas law must be complied with first and foremost.

1. Owner Defines a Project

Define Project – Owner evaluates needs and defines a project that requires engineering and construction services along with capital expenditure.

IUP – Owner is considering TWDB funding and places project on the CWSRF or DWSRF Intended Use Plan (IUP). Projects to be funded on the CWSRF or DWSRF IUP must submit a "Project Information Form" in January of each year in order to be ranked and available for funding in the fall of that year. See TWDB web-page for details.

2. Owner Considers Alternative Delivery

Owner begins to plan his project delivery and determines that the project would benefit from the use of CMAR project delivery.

2.1 Owner Implementation Team

The Owner recognizing the unique aspects (changing roles, risk assignment, negotiated price, and quality control issues) of the CMAR process begins to organize an "implementation team" to guide the project delivery. Representatives from different departments such as engineering, operations, finance, and legal should be part of the team. The Owner should gather people with sufficient knowledge and experience to be able to guide the project delivery. A well-qualified contract manager with appropriate decision-making authority should be designated to oversee the work of the design engineer and CMAR firm. The contract manager will assess recommendations (from the design engineer and CMAR firm when both are hired) and serve as

CMAR PAD/C Guidance

a decision-maker for the best interests of the Owner. The contract manager and associated staff may all be in-house staff. If the required functional skills are not available in-house, an outside consultant(s) may be needed to support the contract manager. An Owner may particularly need engineering and legal consulting assistance when embarking on their first CMAR project. **In this document "Owner" refers to this implementation team.**

2.2 Owner meets with TWDB to discuss Alternative Delivery

Owner is considering TWDB funding along with CMAR. Owner requests a meeting with TWDB in order to discuss the project along with his desire to use CMAR for the project delivery method. The TWDB at this time distributes this guidance to the Owner. Many of the members of the implementation team may want to attend this meeting.

In this meeting the TWDB will ask the Owner to discuss the project as well as his ideas for alternative delivery. The project schedule is often critical in an alternative delivery project. TWDB and Owner will discuss the Owner's needs and how these needs can be met within the SRF funding program. In some cases other TWDB funding programs with greater flexibility may need to be discussed. The relative size of the project may require multiple CMAR contracts or Guaranteed Maximum Prices (GMPs) within the contract. The TWDB will want to discuss issues such as the following:

- 1) PAD Financing - TWDB would discuss with the Owner his schedule and financial needs. Does the Owner have the financial resources to proceed with much of the PAD work through funds on hand and then reimburse these funds at closing?
 - a. This guidance is written assuming that an alternative delivery project is very time sensitive and the Owner has resources to fund the early PAD work and will apply for the "C" funding when "ready to proceed". The application will include PAD work completed for reimbursement.
 - b. If financial resources for the Owner are limited and the PAD work must be financed upfront, the TWDB will discuss with the Owner funding of PAD work in an initial commitment and loan. CMAR preconstruction services costs could be included in a PAD loan. At such time as the PAD work reached "Ready to Proceed" as described in Section #3, the Owner could apply for "C" or construction funding and follow this guidance.
- 2) Timing of certain project milestones in particular.
 - a. Timing for commitment and closing on funds as it relates to the Intended Use Plan (IUP). If project is not yet on the IUP, discuss timing for submittal of Project Information Form for the next IUP.
 - b. Definition of "Ready to Proceed" and able to receive "C" or construction funding:
 - i. Environmental review requirements and status
 - ii. Status of major permits
 - iii. Status of property acquisitions
 - iv. Status of Design
 - c. Timing of reviews and release of funds.
 - d. DBE requirements in hiring.
- 3) Number of different construction packages expected and any need to develop a self-certification procedure.
- 4) Review limits on incentives as described in Step 16.2.
- 5) Management of Alternative Delivery.

CMAR PAD/C Guidance

- a. Implementation Team, Qualifications/Experience in project delivery.
- b. Project Management Plan – CMAR requires delivery planning prior to selection of the designer and CMAR firm. Owners should develop an overall project management plan, parts of which need to be well defined before designer selection. Appendix I, attached to this guidance provides suggestions as to what could be addressed in a Project Management Plan.
- c. State law allows the Owner to hire a Design Engineer and CMAR firm that are the same firm (Texas Gov't Code § 2267.252). It is suggested that the Owner that wants to utilize this approach be larger and more skilled with a strong implementation team. Owner's need to consider how independence described in state law will be maintained:
 - i. Independence in hiring as described in the law (Texas Gov't Code § 2267.253)
 - ii. Independent inspection as described in the law (Texas Gov't Code § 2267.058)
 - iii. Independent review of the bidding process as described in the law (Texas Gov't Code § 2267.256)

Note: The above management issues (Item 4 above) are matters an Owner should consider. In cases where during review of an application, concern exists that the applicant shows signs of weak project management skills and/or experience, the TWDB may require the submittal of a "Project Management Plan". The PM Plan in that case would be used to demonstrate actions being taken by the Owner to supplement, strengthen, and improve management systems in order to successfully manage and complete the project with CMAR delivery.

2.3 Owner Hires Design Engineer

- 1) Owner by Qualifications Based Selection hires a "Design Engineer" (DE) to plan and design the project Texas Gov't Code § 2267.252, Texas Gov't Code § 2267.057).
- 2) If Owner intends to access TWDB funding through a federal program (CWSRF III, DWSRF) follows TWDB Disadvantaged Business Enterprise (DBE) guidance during procurement.

Note: State law in Texas Gov't Code § 2267.252 allows the Owner to proceed with hiring a CMAR concurrently with the hiring of the DE. The CMAR cannot be hired before the DE. This guidance is written assuming the Owner does not want to enter into the hiring process for the CMAR until the financing for construction of the project is in place. This guidance does not prohibit the Owner from hiring the DE and CMAR concurrently.

3. Project "Ready to Proceed"

The Owner at application will need to present documentation that the project is "Ready to Proceed" in order to apply for "C" funding.

Note: The TWDB has developed the PAD/C method of funding in order to direct financing toward projects that are "ready to proceed" with construction in a timely manner. For CMAR projects, the hiring of the construction contractor is the hiring of the CMAR firm. The TWDB seeks a balance in defining "ready to proceed" (reflected in 3.1–3.5 below) to allow communities to utilize the method; however, with an assurance that projects will proceed in a timely manner. The further a project has proceeded in the steps of planning and design the more that is known and the less that is unknown. The further a project has progressed, the less the risk that a problem will surface that delays or halts progress on the work. Also, the greater the knowns, the lower the risk, and the greater the ability of the Owner to negotiate prices that are the best value. The "ready to proceed" criteria proposed allows the use of the CMAR method with assurance to the Board that the project will proceed in a

CMAR PAD/C Guidance

timely manner to completion. Communities can hire their CMAR firm before these milestones are completed; however, the board will not commit "C" funding until these milestones are achieved.

3.1 Planning (Engineering and Environmental) complete

The DE should complete the planning process for the project. The below referenced guidance is available at <http://www.twdb.state.tx.us/financial/instructions/>.

- Engineering Feasibility Report - ED-002 guidance
- Environmental Review Documentation - ED-001 guidance (This includes any needed coordination letters with agencies and transcript of any public hearing.)

3.2 Prelim Design Complete

Preliminary design documents are complete consisting of:

- 1) Design criteria, preliminary drawings, outline of specifications, written descriptions of the project, and updated opinion of probable cost.
- 2) Project Sites - the project layout on site maps, site has been surveyed, geotechnical analysis of site completed, facility sizing, and process schematics.

3.3 Critical Sites Obtained

Critical sites and easements have been obtained. Any critical land purchases that are required for the project to succeed have been secured (i.e. if sites "x, y and z" are not obtained, entire project cannot be utilized). Less critical sites may yet to be obtained (if site "a, b and c" are not obtained, 10% of the project cannot be built).

3.4 Major Permits Obtained

- 1) Major permits are in place. Examples: TCEQ wastewater discharge permit if required, Corp of Engineers 404 permit if required, and any other planning level permit.
- 2) TCEQ Coordination on Water Projects - Applicable pilot studies are completed. This includes the submittal of any necessary plans to the TCEQ for review. The Owner must produce a plan for coordination of Plans and Specifications (P&S) review at TCEQ for WTP projects, surface water Intakes, and water wells.
- 3) For water projects developing new sources of supplies, "water rights" required for the project have been obtained.

3.5 Implementation Team

Owner has created an implementation team (Step 2.1) for the project and can provide the TWDB with team members, organization, their qualifications/experience, time (budget) to be devoted to oversight.

4. Application for C Funding

This procedure is written for projects accessing Construction financing under the TWDB PAD/C requirements in the CWSRF and DWSRF rules. In this case the project must be "Ready to Proceed" in order to apply for "C" funding.

4.1 TWDB invites Owner to apply

- 1) TWDB issues invitation to apply utilizing the IUP funding list created from "Project Information Forms" submitted by communities interested in CWSRF or DWSRF funding. See TWDB web-page for details.
- 2) The Owner has 90 days to submit its application.

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4.2 Owner Submits Application for Funding

Owner submits application in accordance with application procedures. Application guidance materials are available at the TWDB web-page <http://www.twdb.state.tx.us/financial/applications/>.

- 1) Required Engineering information.
- 2) Required Environmental information.
- 3) Required Legal information.
- 4) Required Financial Information.
- 5) "Ready to Proceed" materials listed in # 3.
- 6) Budget - The Owner provides a detailed budget estimating the project expenses in accordance with TWDB budget table. The budget will include the DE costs, inspection/testing, and an estimate of the CMAR contract cost.

5. Commitment

5.1 TWDB reviews application

TWDB reviews application materials and when complete drafts a "Board Commitment Memo" utilized to recommend the project to the six member Board for approval of the funding.

In particular for CMAR:

- 1) Engineering planning documents (environmental and engineering) reviewed and approved.
- 2) Documentation that the project is "Ready to Proceed" is acceptable.

5.2 TWDB Application Approval

The TWDB Board meets monthly to consider applications. The Board will either decide to fund the project or deny funding.

6. Entity Hires CMAR

With construction funding in place the Owner can proceed to hire CMAR firm. Owner will initiate, manage, and complete the process to hire the CMAR in accordance with Texas Gov't Code § 2267.253 and 254. The Owner should insure that his implementation team has sufficient expertise (in-house or hired) to manage this process.

Note: As stated in Step 2.3, Owners may elect to hire the CMAR prior to receiving a commitment for funding.

6.1 Owner Initiates hiring process

- 1) The initial materials provided to solicit a CMAR (Request for Proposals (one step), Request for Qualifications (two step)) should include the below items. The following items are typically enumerated in the advertising stage for construction procurements funded by TWDB. Federal procurement regulations require that Items b, c, and d be clearly stated in the solicitation for construction phase services.
 - a. Construction contracts funded by the TWDB should include this language in the solicitation for the CMAR firm: "Any contract or contracts awarded under this solicitation are expected to be funded in part by a loan from the Texas Water Development Board, and shall be referred to as Project (give project number). Neither the State of Texas nor any of its departments, agencies, or employees is or will be a party to this solicitation or any resulting contract."
 - b. DBE - Owner must reach out to "Disadvantaged Business Enterprises" as it seeks a CMAR Firm and inform potential CMAR Firms that their sub-

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procurements must comply with all applicable Federal and TWDB requirements.
<http://www.twdb.state.tx.us/financial/programs/DBE/dbe.asp>

- c. Wage Rates - Owner must enumerate to potential CMAR Firms that the SRF funded project will be required to comply with DOL wage rates and the selected firm will need to assist the Owner to document compliance as necessary.
<http://www.twdb.state.tx.us/financial/instructions/doc/DB-0156.pdf>
- d. "Equal Opportunity and Employment - All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, handicap, or national origin. Bidders on this work will be required to comply with the President's Executive Order No. 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations 41 CFR Part 60."

- 2) Owner follows steps in Texas Gov't Code § 2267 and selects a CMAR firm.
- 3) Owner drafts a contract with the selected CMAR firm.

6.2 TWDB reviews draft CMAR Contract

- 1) Owner provides the TWDB:
 - a. A ranked list of the CMAR firms that responded to the solicitation.
 - b. The draft contract with the selected CMAR Firm.
 - c. Documentation required to show compliance with DBE requirements.
- 2) TWDB Review of CMAR Firm contract - TWDB will review the document for the following at a minimum:
 - a. Scope agrees with TWDB Board action, Intended Use Plan scoring, Environmental finding.
 - b. Defines major and minor work. Major work must be bid. Clearly states whether the CMAR can bid on the work and details the Owner's review of bidding.
 - c. Guaranteed Maximum Price (GMP) – describes the cost controls and how any savings over the GMP will be shared between the Owner and the CMAR firm (see step 16.2). Includes description of any contingency and its uses as well as other contract incentives.
 - d. Any environmental mitigation requirements cited.
 - e. Changes in the project (Step 13) require review and approval by the TWDB.
 - f. DBE outreach required for sub procurements (TWDB forms WRD-216, 217, 373).
 - g. Performance and Payment Bonds requirements cited (these may be delivered at execution or with the GMP).
 - h. Includes Equal Employment Opportunity (EEO) requirements (TWDB form WRD-255).
 - i. Any work that would be ineligible for the program is clearly broken out with regard to costs.
 - j. Funded by TWDB Language- "Any contract or contracts awarded under this Invitation for Bids are expected to be funded in part by a loan from the Texas Water Development Board, and shall be referred to as Project (give project number). Neither the State of Texas nor any of its departments, agencies, or employees is or will be a party to this Invitation for Bids or any resulting contract."

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- k. Green Costs – Green project elements are described and budget estimates the amount of Green project costs.
 - l. Statement – States that the contract is contingent on the release of funds from the TWDB.
 - m. Trench Safety – Any line work over five feet deep requires the contractor to utilize trench safety and such will be paid at \$___/linear foot.
 - n. Inspection and testing provisions – Clearly describes how the CMAR firm relates to the Owner's independent inspection and testing. May also detail Owner's expectation of inspection by the CMAR.
 - o. Examine what competitive procurement requirements exist (or equal for equipment and materials).
 - p. Insurance - Contractor to provide insurance for Workman's Compensation, liability (public and automobile) and other appropriate coverage (builder's risk, and property), amount specified should protect the Owner and TWDB's interests.
 - q. DOL Wage Rates – Contract includes current DOL wage rates (or provisions to supply with each sub-contract) along with provisions explaining certifications and record keeping required.
 - r. TWDB requirements – Contract includes forms ED-103 and 104 in which CMAR firm promises to abide by TWDB requirements.
 - s. Debarment and Suspension – Includes TWDB form SRF-404.
 - t. TWDB General Condition Items (review and redact what is needed from ED-004), including requirements for release of retainage.
 - u. Project Schedule along with penalties for non-performance.
 - v. Definition of discrete work packages (P&S).
 - w. Draw Schedule (for DWSRF funded projects).
 - x. Project Budget (detailed as needed, explains availability of any contingency and use thereof).
 - y. Actual Agreement portion (pages) – Signed by Owner and CMAR firm, when executed.
- 3) TWDB will provide a comment letter as required to communicate any concerns with the draft contract.
 - 4) Once any concerns have been addressed, the TWDB will concur in the award of the contract.

6.3 Owner/CMAR Execute contract

Following TWDB review of the draft contract, the Owner executes the agreement with the CMAR Firm and provides a copy to the TWDB.

6.4 CMAR begins review of Design

- 1) Once chosen, the CMAR works with the DE to refine the project design.
- 2) CMAR will provide cost estimates and other pre-construction services to the Owner as design is refined. In this case Owner has estimate of future "Guaranteed Maximum Price" GMP as project develops.

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7. Negotiate GMP

In CMAR the Owner agrees on a negotiated price for construction costs with the CMAR. A Guaranteed Maximum Price (GMP) is often used to assign the risk of cost escalation on the CMAR. The CMAR is at risk if costs rise. The CMAR contract may specify some mitigation of that risk. The contract also states if costs come in lower how that savings will be distributed between the Owner and the CMAR. The Owner should insure that his implementation team has sufficient expertise (in-house or hired) to represent the Owner's interests in the negotiations.

7.1 Design matures

As the design progresses the CMAR provides input into the design from the perspective of the builder. The DE and the CMAR should collaborate as much as possible during this review. At times the Owner will need to resolve conflicts. The design will reach a stage where the Owner is ready to negotiate the final GMP.

7.2 Owner and CMAR negotiate GMP

The Owner and the CMAR enter into negotiation for a GMP for the project.

7.3 GMP Agreement

The Owner and the CMAR will either reach an agreement on the GMP or the contract negotiations will be terminated.

If an agreement on GMP is not reached, the Owner:

- 1) Solicits again for a CMAR.
- 2) Decides to bid the project by Design-Bid-Build or other method.
- 3) Considers the next ranked firm from the original solicitation.

7.4 CMAR provides Bonds at GMP

CMAR provides performance and payment bonds for GMP price (Texas Gov't Code § 2267.258) if not provided by the CMAR immediately after the selection process. A copy of the bonds is provided to the TWDB.

8. Loan Closing

8.1 Owner submits Closing Docs

- 1) Owner prepares financial and legal closing documents. The budget for the project is restated reflecting the GMP. The Owner at closing can request the release of the following funds:
 - Financial Costs
 - Legal Costs
 - Engineering Planning, Design (DE)
 - CMAR Costs for Preconstruction services

The remaining funds will be placed in an escrow account.

Note: The closing budget will reflect the GMP amount for construction. Additional funds for a contingency will be allowed as detailed in the CMAR contract.

- 2) Owner prepares outlay report with invoices for costs expended in above categories.
http://www.twdb.state.tx.us/about/contract_admin/outlay/index.asp

8.2 TWDB Reviews Closing Docs - \$\$ to Owner

- 1) TWDB reviews the closing documents

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- 2) Loan is closed
- 3) Funds Release
 - a. For DWSRF, funds are released as costs are invoiced to the Owner for actual expenses. At closing this will include:
 - Financial Costs
 - Legal Costs
 - Engineering Planning, Design (DE) invoiced to date
 - CMAR Costs for Design Review invoiced to date
 - b. For CWSRF, the above expense categories can be released to the construction fund and the remaining will be placed in escrow for construction related expenses. Funds in escrow will be released to the construction account as milestones in the construction process are achieved as detailed in Steps 9-16.
 - c. Outlay and Invoices - , the owner will provide invoices that detail costs incurred as the project proceeds

8.3 Owner makes Payments

Owner receives Funds and:

- 1) Makes payments according to contracts for any invoices not paid prior to closing.
- 2) Reimburses Owner accounts with loan funds for costs invoiced and paid prior to closing.

9. P&S Approval

Plans and Specifications (P&S) for construction for bid packages must be submitted to the TWDB for review before advertising or construction. This would include "General Conditions" work done by the CMAR where P&S are involved.

9.1 First P&S package submitted for review

DE will complete P&S packages. Following Owner review P&S are submitted to the TWDB. P&S are sealed by the DE.

9.2 TWDB review and approval

TWDB reviews P&S for compliance with:

- 1) Program requirements,
- 2) Approved scope,
- 3) Environmental findings, and
- 4) Wastewater Projects – State Design Criteria (Texas Admin. Code § 217).
- 5) Water Projects (Texas Admin. Code § 290).
 - a. TWDB reviews for water distribution and storage portions of the project.
 - b. TCEQ reviews for wells, water treatment plants, and intake structures.
 - c. TCEQ Coordination – where the project involves Water Treatment Plants, Water Wells, or Intake structures, the TWDB will forward P&S to TCEQ for review.

Note: The Owner will have to coordinate with TCEQ regarding how to proceed in a progressive design mode if TCEQ review is required.

- 6) For sewer projects - able to comply with TCEQ TPDES permit.

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- 7) Identify and breakout any ineligible work.
- 8) Variances - Innovation in alternative delivery is very possible. Where designs require a variance from TCEQ rules such documentation should be provided or TWDB will coordinate with TCEQ as needed. Occasionally the Owner may need to carefully review the sufficiency of performance bonds on the innovative portion of the design.

Comments are forwarded to the DE and Owner as needed. After comments are sufficiently addressed, TWDB approves P&S. Note: First package may be "General Conditions" work and proceed straight to Step 11. TWDB review of P is generally less than 30 days.

10. Hire first sub-contractor

Bidding under a CMAR contract (Texas Gov't Code § 2267.255 and 256).

- 1) State Law for CMAR allows that the CMAR can self-perform without bidding "General Condition" work. The Owner should insure that "General Condition Work" is adequately defined in the CMAR contract.
- 2) State Law provides that work "other than General Condition work" must be advertised for bids.
- 3) State law allows that the CMAR can bid on these packages. The Owner in the CMAR contract should define to what extent the CMAR can self-perform construction work. Owner may desire the CMAR to extensively self-perform work or may desire to limit self-performance in order to create a more competitive bidding environment and enhance involvement of local bidders.

Note: Where the CMAR intends to self-perform "General Condition" work, the package proceeds to Step 11 after P&S approval by the TWDB.

10.1 CMAR advertises work

The CMAR shall publicly advertise, as prescribed for a governmental entity under Texas Gov't Code § 2267.052 and receive bids or proposals from trade contractors or subcontractors for the performance of all major elements of the work.

10.2 Owner and CMAR agree on sub-contractor

From Texas Gov't Code § 2267.256 of the Local Government Code.

- 1) The construction manager-at-risk and the governmental entity or its representative shall review all trade contractor or subcontractor bids or proposals in a manner that does not disclose the contents of the bid or proposal during the selection process to a person not employed by the construction manager-at-risk, engineer, architect, or governmental entity. All bids or proposals shall be made available to the governmental entity on request and to the public after the later of the award of the contract or the seventh day after the date of final selection of the bids or proposals.
- 2) If the construction manager-at-risk reviews, evaluates, and recommends to the governmental entity a bid or proposal from a trade contractor or subcontractor but the governmental entity requires another bid or proposal to be accepted, the governmental entity shall compensate the construction manager-at-risk by a change in price, time, or guaranteed maximum cost for any additional cost and risk that the construction manager-at-risk may incur because of the governmental entity's requirement that another bid or proposal be accepted.

10.3 TWDB review of Bidding

The TWDB will review the documentation that the contract was advertised, bid tabulation, and recommendation of award. This will include documentation of compliance with Disadvantaged Business Enterprises requirements where they apply to the project. Owner will also provide a

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"site certificate" to confirm ownership of necessary property rights (e.g. title to land, easements) before construction.

Note: The CMAR is required to utilize the 6 affirmative steps in his hiring in compliance with TWDB Disadvantaged Business Enterprise guidance; however, the CMAR firm's subs are not required to follow the DBE steps if they sub any of their work.

10.4 Inspection and Testing Final Plan

The Owner finalizes an inspection and testing plan independent of the CMAR firm (Texas Gov't Code § 2267.058). The plan includes oversight of DOL wage rate provisions for CWSRF or DWSRF funding.

- 1) Completes hiring by two step process for any professional services by contract.
- 2) Provides organization chart, resumes, estimate of effort and budget.
- 3) Submits plan and contracts to TWDB for funding with documentation of compliance with DBE requirements.

10.5 TWDB concurs in NTP

The TWDB will issue a letter concurring in the Owner's issuance of a "Notice to Proceed" on the work. TWDB review of bid documents is generally less than 2 weeks. TWDB will adjust the ceiling (funding by reimbursement) or release funds (where funds are escrowed) in an amount equal to the cost of the package to begin construction.

11. Construction phase initiated

Construction phase is initiated. Dirt begins to move at the project site. It is important that the Owner does not allow the CMAR to begin construction until the TWDB concurs in the issuance of a "NTP". Activity prior to environmental clearance or some other milestone could make the project ineligible for TWDB assistance.

11.1 Owner issues NTP

Owner issues a letter to the CMAR to begin construction.

11.2 CMAR manages Construction

The CMAR acts as the Construction Manager and carries out the work in the contract.

11.3 CMAR creates monthly Invoice

On a monthly basis the CMAR provides the Owner his invoices and pay estimate for that months work.

11.4 Owner directs Inspection - reviews outlays

The Owner during construction:

- 1) Supervises the inspection and testing process to confirm that construction is being performed in accordance with the approved P&S.
- 2) Reviews invoices from the CMAR, DE, inspection, and testing contracts and creates an outlay report supported by invoices to document costs to the TWDB.
- 3) Owner submits Outlay report to the TWDB monthly for CWSRF and DWSRF programs.

11.5 Monthly Inspection by TWDB

TWDB inspection staff periodically inspects the project to confirm that construction progress is proceeding in accordance with outlay reports and that the Owner is providing adequate inspection and oversight of the project. TWDB inspector generates a monthly inspection report which is provided to the Owner.

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11.6 TWDB releases funds based on outlays

Outlay reports are provided to the TWDB for:

- 1) DWSRF projects on a monthly basis. The TWDB draws federal funds directly from EPA based on the invoices provided. Funds are released to the Owner to reimburse the Owner for expenses incurred.
- 2) CWSRF to document costs incurred on a monthly basis. In the case of CWSRF projects, funds are in the Owner's construction fund and payment is made by the Owner monthly when invoiced. Outlays are forwarded to TWDB to document the expenditure. TWDB utilizes the outlay and invoices to draw federal funds from EPA to reimburse the TWDB for the funds delivered to the Owner at closing.

TWDB reviews outlays to insure they are project related expenses according to the contracts provided to the TWDB.

12. Subsequent Construction Packages

12.1 Repeat Steps 10 through 12

DE and Owner and CMAR repeat Steps 9, 10, and 11 for each subsequent construction package as the work progresses.

Note: In some cases CMAR work is divided into many small work packages (P&S). Where the P&S or work packages become numerous, the TWDB may discuss with the Owner methodologies whereby the Owner could perform a review (check sheets) and self-certify compliance with TWDB requirements.

13. Changes to Project

Changes to the project must be documented and provided to the TWDB for review and approval.

- 1) Changes from the original purpose or scope of the project as well as changes in the project from representations made in the Planning documents (Engineering Feasibility Report or Environmental Review Documents) must be summarized in a letter and forwarded to the TWDB for review and approval.
 - Changes in purpose could affect scoring in the SRF priority list and make the property ineligible.
 - Changes in location - any change in the overall footprint of the work should be discussed with the TWDB prior to proceeding.
 - Environmental review of new sites could involve significant time. This would include a change to another street for line work or new lift station site.
 - Where environmental review covered only one side of a street or highway, a change to the other side could involve additional environmental review.
- 2) Changes from approved P&S. After approval of the P&S any changes should be summarized and documented to the TWDB.
 - Addenda - During the bidding process changes should be summarized in an addenda and forwarded to the TWDB.
 - Work Order - Minor changes to the P&S that occur during construction can be summarized in work orders and reviewed by TWDB inspection staff.
 - Substantial changes (as in 1 above) should be summarized in a letter before implementing for review by TWDB.
 - Change Orders - Changes that affect the GMP shall be summarized in a change order and forwarded to the TWDB.

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13.1 DE submits to TWDB proposed Change

The DE and Owner should review proposed changes and insure proper documentation and then submit to the TWDB.

13.2 Changes Reviewed by TWDB

- 1) TWDB reviews materials. Where changes affect the environmental finding or purpose of the project, additional actions may be required.
- 2) TWDB will provide a formal approval letter.

14. Construction Substantially Complete

As Construction progresses the Owner must withhold 5% retainage on each payment. The retainage is essentially a tool to compel the contractor to complete the entire project.

14.1 CMAR requests reduction in retainage

At such time as the project is nearing completion (>95% completed), the CMAR may request that the Owner reduce the retainage amount.

14.2 Owner determines reduction warranted

The DE by observation of the amount of construction completed can recommend to the Owner that a reduction in retainage is warranted. This would be at a time when the DE is confident that a full 5% retainage is not required to compel completion of the project. The Owner then requests that the TWDB allow a reduction in retainage.

14.3 TWDB OK's reduction

If TWDB concurs in the evaluation, the TWDB will allow the reduction in retainage.

15. Construction Complete

At such time as the CMAR believes the project is completed, the DE and Owner will review the site and prepare a punch list for the Owner detailing items the CMAR must address in order to complete the project.

15.1 CMAR Requests Final Release Retainage

At such time that the CMAR is confident that all punch list items have been satisfied, the CMAR will request final release of all retainage.

15.2 Owner determines complete

DE and Owner will conduct a final inspection with TWDB. The DE will provide a statement that the project is complete and has been constructed in accordance with the design plans and specifications.

15.3 TWDB concurs issues COA

If the TWDB is able to concur that the project is complete, the TWDB will issue a "Certificate of Approval" (COA) which allows the Owner to make final payment and release all remaining retainage.

15.4 Final Retainage Released

Owner pays the contractor the final retainage held from partial payments.

16. Incentives Distributed

CMAR contracts may include incentives paid to the contractor for completing the project for less than the GMP. This could also include other agreed upon incentives related to schedule, quality or safety performance.

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16.1 Owner determines delta from GMP and distribution

The Owner will review the final accounting of costs for the CMAR and determine the difference between the GMP and the final cost of the project. The Owner will determine in accordance with the contract the amount of additional funds to be paid to the CMAR under incentives clauses. The Owner will provide an outlay report supported as required to document this request.

16.2 TWDB Releases Funds

Incentives in the CMAR contract for the CMAR are an eligible expense in the CMAR contract, subject to the below ceiling on TWDB reimbursement. Any incentive payments to be utilized must be clearly described in the contract. The TWDB will review the request:

- 1) Release the amount requested in accordance with the CMAR contract for the CMAR up to a ceiling of 5% of the GMP. As a lender of public funds the TWDB will not finance more than 5% of the GMP as an incentive. If the CMAR contract allows a greater amount, the Owner will have to cover the additional costs with local funds. In addition, TWDB funding will not exceed the GMP through incentives.
- 2) Any funds by the CMAR contract to flow to the Owner will only be available to the Owner in accordance with TWDB guidance regarding the use of surplus loan funds. Surplus funds can be used for eligible project costs, as per Board rules and as authorized by the Board resolution for the project financing.

16.3 Owner Pays Final Sum

- 1) Owner makes final payment to CMAR and consultants.
- 2) Owner submits final accounting for close-out of the project.

17. Project Complete

Project is complete. Final accounting is completed and TWDB interest going forward limited to repayment of debt.

Appendix I

Project Management Plans For CMAR

The TWDB requests that Owners consider creating Project Management (PM) plans early in the development of their project due to the **changing roles, risk assignment, negotiated price, and quality control issues involved in CMAR**. The PM plans can help the Owner think through the needed time, expense and effort to manage the CMAR process properly. Due to the progressive design process in CMAR, the Owner needs to be very engaged in the choices being made in a collaborative environment (Design Engineer and CMAR) with regard to the project. As stated in Step 2.2, the TWDB may require this work where an Owner appears weak in its ability to manage the project. In such a case, the TWDB would be available to discuss the development of a PM Plan.

The following is taken from the DB Handbook

“Developing a project management plan

CMAR delivery requires a bit more Owner planning prior to selection of the designer and CMAR firm. Owners should develop an overall project delivery and management plan, parts of which need to be well defined before designer selection.

In addition to the topics discussed earlier as part of design-build project management planning, Owners should consider developing the following for CMAR projects:

- An integrated project schedule including each planned procurement
- Requirements for the CMAR procurement
- A process to guide collaboration between the designer and the CMAR firm, including an understanding of when to have the CMAR firm engage with the design firm. Often, the input from the CMAR firm may reduce the overall project cost but may increase the cost of engineering design
- The responsibilities for QA and QC for each team member
- A process for how CMAR services during design are to be paid to the CMAR firm
- The procurement approach for the CMAR component of the project
- The level of self-performance, if any, to be allowed by the CMAR firm
- The level of transparency in the cost of the work that will be required for the invoicing of the construction work
- Information on how the CMAR firm is expected to prepare procurement packages
- A process for how changes are to be addressed with the CMAR firm
- Clear delineation of responsibilities between the designer, the CMAR firm, and the Owner during the startup and commissioning period.”

The remainder of this appendix was developed from material available from the Project Management Institute (www.pmi.org). This material is hoped to be helpful in thinking and planning the issues that should be considered. For simpler projects the plan could just cover the basic issues. For more complex projects the plans may be much more involved than this discussion. Owners may find better material available elsewhere but the kinds of issues raised should be considered. Also, some of these matters will be refined after the full team (DE and CMAR) are on-board.

Project Management Plans should include:

Implementation Team

The Owner should analyze its existing resources to determine their ability to manage alternative delivery. This analysis should consider the changing roles, risk assignment, negotiated price, and quality control issues involved in CMAR. The Owner should determine if the needed skills are available in-house. If not, the Owner should seek consulting help to supplement their resources. Independent judgment in engineering, construction and legal issues are critical in crafting the selection process, hiring, negotiating these contracts, and project oversight. The PM plan should describe the members of the implementation team and their roles.

Scope Management

The Owner must define all the project's requirements, scope elements and activities to complete the project with the subsequent specific activities to complete the project. This plan may utilize a Work Breakdown Structure (WBS) for the project's activities. A WBS includes only the scope activities pertinent to the project. Work activities not in the WBS are outside the scope of the project. Utilizing a WBS, the Owner should have a detailed scope statement and baselines for the project available for use in other project plans including the Risk, Schedule and Cost, Quality, Communication, and Procurement Management Plans.

The Scope Management Plan should answer questions like those below:

- 1) What is being built?
- 2) What type enforcement activity or schedule requirements are expected to be satisfied by the project?
- 3) What quality and design life is desired for major components and of the project in general?
- 4) What level of automation, control?
- 5) What steps are required for implementation in a quality manner?
- 6) What responsibilities remain with the Owner?
- 7) What scope of services are expected from each party?
- 8) Are services needed to provide a smooth initiation of operation of the project?

Time Management

Once activities have been identified in the Scope Management Plan, the Owner should further define the activities to establish their respective durations, necessary resources, and sequence. The Owner should utilize the sequence of activities and their durations to estimate a project's baseline schedule, milestones, and completion date. The Owner should take note of specific activities on the Critical Path. Activities on the Critical Path are those that cannot be completed without the input or completion of a previous activity and directly affect the project's completion date. The detail required of the Critical Path diagram depends largely on the complexity and time constraints for the project.

The Time Management Plan should answer questions like the below:

- 1) What is the overall project schedule? What deadlines for completion exist?
- 2) What are major critical path activities and who is responsible?
- 3) What incentives in the proposed contracts help insure schedule compliance?
- 4) Is the Owner providing adequate resources (internal and contract) to provide the required oversight of the project in a timely manner?

Cost Management

The Cost Management Plan details the strategy used by the Owner to control the project's costs and baseline budget. Owner should develop actions to ensure timely completion of activities within the approved baseline budget. The Cost Management Plan can also be utilized to integrate costs associated with management of the project's risks.

The Cost Management Plan should answer questions like the below:

- 1) How will costs be estimated during the development of the design, by whom? DE? CM?
- 2) What is the expected project budget? Is a contingency to be utilized, by whom and under what conditions?
- 3) What incentives will the contracts utilize to insure budget compliance?
- 4) How will the Owner monitor activity and task costs?
- 5) Will the project benefit from a minimum or maximum self-performance requirement?
- 6) Under what circumstances will cost changes be allowed?
- 7) Will adjustments in the cost of raw materials due to inflation be allowed, how will these risks be handled?
- 8) At what stage will the GMP be determined?
- 9) Do multiple components or stages require multiple GMP's?

Quality Management

The Quality Management Plan identifies quality requirements and standards for the project and details the strategies to be utilized for assurance. The Owner should consider functional requirements as well as equipment and materials of the project that should not be compromised and other specific regulatory requirements. The Quality Management plan also includes the Inspection and Testing Plan (Texas Gov't Code § 2267.058).

The Quality Management Plan should answer questions like the below:

- 1) Are the quality expectations of the Owner for the project adequately defined in the scope to assure project compliance?
- 2) During design, what steps will be taken to insure all scope requirements are met?
- 3) What minimum qualifications are required of the CMAR to review design and manage construction?
- 4) How will suggestions by the CMAR be reviewed and considered in design?
- 5) How much time is expected from the CMAR to review P&S during the design phase?
- 6) What review steps (sign-offs by whom) are to be utilized prior to submittal of P&S to TWDB?
- 7) Who will perform inspection during construction and what level of effort (time) is required?
- 8) Who will perform testing during construction and what level of effort (time) is required?
- 9) What type testing services are required during construction?
- 10) Who will assure compliance with any environmental review or mitigation requirements?
- 11) Who will represent the Owner in signing off on final acceptance of the construction work? This would likely include the Design Engineer, manager of inspection and testing, as well as the contract manager.

Risk Management

The purpose of developing a Risk Management Plan is to analyze risks and mitigate their impact on the project's development. The Owner should analyze project risks and develop strategies that maximize opportunity and minimize threats. This plan includes identification, analysis, response/mitigation strategies, and monitoring and control of project risks. Tools from the PMI such as a Composite risk index could be utilized to evaluate risks.

The guidance as created here envisions that environmental clearance, critical sites and major permits have been obtained, and preliminary design completed prior to any hiring of a CMAR contractor. A project that has passed these major milestones has mitigated many major risk factors that could substantially impact cost and schedule. Schedule requirements for the project might require that the Owner hire the CMAR earlier when less aspects are known; however, the TWDB would request a detailed discussion of risk management in this case to mitigate these issues.

The Risk Management Plan should answer questions like the below:

- 1) Are there siting issues for the project that are unknown (environmental issues, buried unknowns, geotechnical) that could impact cost and schedule substantially? How are these issues mitigated?
- 2) Is the site adequate for the proposed use? What unknowns remain?
- 3) Is there substantial volatility in prices for cost inputs? How will these risks be handled?
- 4) Does the project involve work in densely developed areas or Safety risks?
- 5) Does the project involve construction in areas sensitive to the environment or members of the Owner and how will these issues be addressed?
- 6) How will any federal requirements such as disadvantaged business enterprise (DBE) and department of labor wage rates (DOL) be reviewed and compliance assured?

Communications Management

Communication Management Plan - The purpose of this plan is to develop a strategy that provides timely and appropriate project information to stakeholders. The Owner should develop a Communication Management Plan that includes all project stakeholders, a brief description of their roles and responsibilities, and a matrix that illustrates the type of communication medium utilized, frequency, and the respective stakeholder(s). The Communication Management Plan shall include an organizational chart to be utilized by the implementation team, DE, CMAR, and stakeholders to gain an understanding of the relationships and structure to deliver the project.

The Communications Management Plan should answer questions like the below:

- 1) How will the contract manager communicate with different departments within the Owner's organization (frequency, location, degree of detail, formal reporting)?
- 2) Would the project benefit from project management software? Which one, who purchases, how many licenses?
- 3) Who are the stakeholders involved in the project?
- 4) What Owner, social, or environmental aspects of the project require attention (i.e. major milestones like FNSI, property owners in construction) by the parties?
- 5) What information will be required to communicate to stakeholders?
- 6) Would a partnering workshop assist in developing the level of collaboration needed on the project?

- 7) Is there a need to co-locate the design and construction management teams to further the partnership and collaboration in design?

Procurement Management

This plan details the contract type(s) used for the project's procurement. The Owner should utilize the Procurement Management Plan to draft the RFQ and RFP for hiring the CMAR, develop selection criteria, include specific regulatory requirements (DBE, Davis-Bacon, etc.). The Procurement Management Plan also describes how procurement will be managed during construction including the evaluation of bidding on construction packages (Texas Gov't Code § 2267.256). The PM should provide the Owner the proposed RFQ and RFP as well as a draft CMAR contract at this stage.

The Procurement Management Plan should answer questions like the below:

- 1) What qualifications are needed for persons to be involved in the CMAR selection committee? How big should the committee be?
- 2) What amount of self-performance will the contract allow by the CM?
- 3) Who will be involved in the review of construction phase procurements by the CMAR (Texas Gov't Code § 2267.256)?
- 4) What contract procurements are expected for what service (inspection, testing, other)?
- 5) How many procurements are expected in the project?
- 6) What unique local, state, or federal requirements must be complied with?
- 7) What are the procurement steps to be utilized?

Integration Management

The Owner should insure that the PM plans integrate into a whole management plan.

Appendix II Pre-Design Funding Option For CMAR Alternative Delivery

The CMAR Alternative Delivery procedure can be altered as follows to accommodate Pre-Design Funding

- 1) Project Planning and Financing
 - a. Step 1, Define Project
 - b. Step 2, Owner Considers Alternative Delivery and TWDB Funding
 - c. Step 4, Owner applies for TWDB Funding
 - d. Step 5, TWDB makes Commitment
 - e. Step 8, Loan is Closed
- 2) Getting Ready to Build
 - a. Owner plans his own approach to the timing of hiring the CMAR
 - b. Step 3 (Ready to Proceed) and Steps 6 and 7 (Hire CMAR Firm) are arranged as best for the Owner
 - c. Funds for design will only be released after planning is completed (engineering and environmental)
 - d. Must achieve Step 3 "Ready to Proceed" prior to release of funds for construction
- 3) Construction – Steps 9-17 unchanged

Note: Some of the TWDB programs are not federally funded. Disadvantaged Business Enterprise (DBE) and Davis Bacon Wage Rate monitoring are not required on projects that are not federally funded. The Program Guidance Manual for the particular TWDB program should be followed with regard to these details.

