**Application:** This template is used when the Certified LPA owns the contract on a federal funded project.

**Version Date: 10/10/2022**

**GENERAL INSTRUCTIONS:**

* Yellow highlighted areas include instructions that should be deleted prior to release.
* Blue highlighted areas indicate text or fields that need information provided or revised.
* “Agency” means the Certified LPA as defined in the CLPA Contract.
* **Delete instructions throughout the document before executing Contract or amendment. Deletions can be automated as follows:**
	+ From the “Edit” menu (or “Editing” menu on the “Home” ribbon) select “Replace”;
	+ With cursor in the “Find what” field, click “More” button, then “Format”, then “Font”, then in the font field select “Times New Roman” text;
	+ Leave the “Replace with” field blank;
	+ Click “Replace All”. This will delete all yellow highlighted text.

**PROJECT-SPECFIC INSTRUCTIONS:**

* The template language must be revised if needed for specifics applicable to the current project (including deletion of requirements that don’t apply to the current project).
* Not all subtasks are needed for each project.  If an entire subtask is not needed, leave the task number, add “RESERVED” after the subtask title, and delete all subtask text.

 **TASK 11 BRIDGE DESIGN**

[LPA does not need to always follow ODOT’s Bridge Design Manual (BDM). AASHTO is required. See LAG for additional requirements and references to BDM.]

Consultant shall perform preliminary structural analysis and design. Consultant shall base the general design upon the applicable sections of the AASHTO LRFD Bridge Design Specifications and the Local Agency Guidelines (LAG) for Certified Local Public Agencies (LPA). Consultant shall address other design requirements and costs conforming to AASHTO and Agency standards.

Deviations from these standards require prior approval by the Agency Project Manager (APM) and ODOT.[For bridges on a State highway or for unusual designs as determined by FHWA, ODOT approval required.]

**11.1 Bridge Type, Size and Location (“TS&L)**

Consultant shall perform an alternatives analysis to determine the type, size and location of the proposed bridge work. Consultant shall evaluate up to X alternatives consisting of [insert type of structure here, see attachment at bottom of document] precast concrete slabs or girders, cast-in-place concrete and steel alternatives in order to develop a recommended structure type. Consultant shall develop a recommendation of the structure type by using evaluation criteria such as cost, stage construction, speed of construction, environmental impacts, right-of-way requirements and durability. Waterway crossings shall be sized as determined by environmental permitting and hydraulic requirements, foundations shall be as recommended and in agreement with the required project geotechnical report.

Consultant shall address the following in the Bridge TS&L narrative:

* Type, size and location recommendation for the preferred structure type meeting statutory requirements and standards as agreed upon with the APM.
* Summary of existing conditions of the Bridge
* Outline of site specific constraints, including but not limited to; topography, geology, hydrology, environmental constraints and requirements, permits, R/W, utilities, geotechnical and cost

Consultant shall prepare bridge plan sheets as specified in Table 11 which is attached at the end of Task 11.

Consultant shall prepare quantity based cost estimates for the alternatives considered with a 30% contingency applied.

Consultant shall resolve any comments received on draft Bridge TS&L not incorporated into the final TS&L with the APM, and incorporate remaining comments into the Final TS&L report to be included with the DAP submittal.

**11.1 Consultant Deliverables and Schedule**

 Consultant shall provide:

* Draft Bridge TS&L for all alternatives considered including narrative, plan sheets and cost estimates to APM in accordance with the schedule of Task XX.
* Incorporate final Bridge TS&L for the recommended alternative including narrative, plan sheets and cost estimate into the DAP submittal delivered under Task XX.

**11.2 Preliminary Bridge Design [Contingency Task (Requires separate NTP from APM)]**

[This task is optional, but often used, especially on larger or complex bridge projects. If not needed, label 11.2 as “RESERVED”. If unsure whether 60% plans will be needed, leave in as a Contingency Task. If it will be a required task, delete “CONTINGENCY TASK; requires separate NTP” from heading. Ensure cost/level of effort in BOC for completing this task is only included in Task 15.1 per the first paragraph below.]

For the purpose of establishing the extents limits of construction and impacts the Consultant shall prepare preliminary plans for the Project incorporating or resolving Agency comments on the DAP submittal.

Plan and elevation of the proposed structure extents, associated grading work and outline of all structural components is to be completed at this stage of development. All non-standard details, materials, or other specialty works are to be defined and presented for approval and acceptance. Level of effort for updating the cost estimate and identifying applicable specifications is included in Task XX.X.

Consultant shall complete design and prepare bridge plans to be in the construction bid package to a Preliminary design level. Consultant shall reference Agency and ODOT standard drawings and details as needed. The following bridge and structure plans are anticipated [the list below is typical on bridge replacement projects; see attached document below for additional options]:

* Plan and Elevation
* General Notes
* Foundation Plan and Data Sheet
* Stage Construction Details
* Footing Plan
* Deck Plan
* Typical Deck Sections
* Bent Plan and Elevation
* Bent Details
* Miscellaneous details
* Temporary work bridge/shoring details

Consultant shall illustrate and report non-standard details, materials, or other specialty works sufficient for Agency reviewers to evaluate and provide acceptance for such items. Consultant shall address review comments and incorporate feedback into the final design.

**11.2 Consultant Deliverables and Schedule**

Consultant shall provide:

* Preliminary plans, draft design exceptions and/or draft design deviations [Design deviations are for bridges on a State highway.] submitted as part of Task 15.1 deliverables

[Include the following subsection if Consultant is requested to perform pre-DAP development of bridge design exceptions, or as part of the DAP phase.]

**11.3 Bridge Design Exceptions [Contingency Task (Requires separate NTP from APM)]**

Consultant shall prepare up to \_\_ Bridge Design Exception Request(s) using Agency’s forms and or \_\_Bridge Design Deviation(s). [Design deviations are for bridges on State highway.] Consultant shall address review comments and incorporate feedback into the final design deviation request. Consultant PM shall submit the final design exception and/or design deviation requests to APM who will obtain necessary approvals.

**11.3 Consultant Deliverables and Schedule**

Consultant shall provide:

* Final design deviations submitted within 2 weeks of receipt of comments from Agency and ODOT.[For bridges on State highway.]
* Final design exceptions submitted within 2 weeks of receipt of comments from Agency.

**11.4 Advance Bridge Design**

Consultant shall incorporate all comments received from the Agency during DAP or Preliminary plans review and prepare the advance bridge plans, specifications and cost estimate to be included in the construction bid package. Consultant shall reference Agency and ODOT standard drawings, details, and other related drawings as required. Advance PS&E shall be a completed set ready for final comment by the Agency and technical Class I/II design check (as outlined in the ODOT BDM).

Consultant shall prepare/update bridge technical special provisions, construction cost estimate and advance bridge plans as specified in Task XX.X. Advance Estimate shall have a contingency of 8% applied.

Consultant shall complete Class I/II design check of the Advance PS&E.

**11.4 Consultant Deliverables and Schedule**

Consultant shall provide:

* Advance bridge PS&E documents as part of Task 15.2
* A Class I/II design check in quality assurance and calculation book.

**11.5 Final Bridge Design**

Consultant shall incorporate or resolve all comments received from the Agency during advance plans review and prepare final bridge plans to be included in the construction bid package.

Consultant shall finalize bridge technical special provisions, construction cost estimate and final bridge plans as specified in Task XX. Final Cost estimates shall have a 3.5% contingency applied.

Consultant shall complete a Class I/II design check of the Final Plans, Special Provisions and estimate according to the BDM.

**11.5 Consultant Deliverables and Schedule:**

* Consultant shall provide final bridge PS&E documents with engineering seals affixed, submitted as part of Task XX
* Calculation book incorporating Class I or II design check.

**Steel Bridge**

Use the precast prestress bridges as a template and the list of the example drawings as supplement to the precast prestress bridge template

**Concrete Short-Span (up to 120ft)**

Use the precast prestress bridges as a template and the list of the example drawings as supplement to the precast prestress bridge template

**Concrete Long-Span (over 120ft)**

Use the precast prestress bridges as a template and the list of the example drawings as supplement to the precast prestress bridge template

**Pedestrian Bridge**

Can use the precast prestress bridges as a template with some adjustments including the design specification

**Historic Restoration**

Historic restorations are very unique and depend on the scope of the work (i.e covered bridge, steel, concrete, etc.). For historic restoration a drawing list for Table 11 needs to be developed on a case by case basis.

**Table 11** [Revise table as needed. Rows that are not needed may be deleted.]

|  |  |  |
| --- | --- | --- |
| **Drawing Title** | **Scale** | **Estimated # of Sheets** |
| **Retrofit / Repair Bridges** |  |  |
| **FRP Strengthening** |  |  |
| FRP Strengthening - Plan |  |  |
| FRP Strengthening - Beam Elevations |  |  |
| FRP Strengthening - Beam Details |  |  |
|   |  |  |
| **Crack Repair** |  |  |
| Crack Repair Detail |  |  |
|   |  |  |
| **Internal Shear Anchor Strengthening** |  |  |
| Internal Shear Anchor Strengthening - Plan |  |  |
| Internal Shear Anchor Strengthening - Stage Construction Details |  |  |
| Internal Shear Anchor Strengthening - Details |  |  |
|   |  |  |
| **Crossbeam Strengthening External PT**  |  |  |
| Crossbeam Strengthening External PT - Plan & Elevation |  |  |
| Crossbeam Strengthening External PT - Top Bracket Details |  |  |
| Crossbeam Strengthening External PT - Bottom Bracket Details |  |  |
|   |  |  |
| **Cap Beam Strengthening - Internal Shear Anchor** |  |  |
| Cap Beam Strengthening - Internal Shear Anchor |  |  |
|   |  |  |
| **Retrofit / Repair Std Details** |  |  |
| Access Hole Detail 1 of 2 |  |  |
| Access Hole Detail 2 of 2 |  |  |
|   |  |  |
| **Cap Beam - Concrete Encasement** |  |  |
| Cap Beam Strengthening - Concrete Encasement |  |  |
|   |  |  |
| **Cap Beam Strengthening - Exposed External Stirrups** |  |  |
| Cap Beam Strengthening - Exposed External Stirrups |  |  |
|   |  |  |
| **Barrier Replacement** |  |  |
| Type "F" Rail Replacement - Plan and Stage Construction |  |  |
| Type "F" Rail Replacement - Rail Details |  |  |
| Thrie Beam Rail Retrofit 1 of 2 |  |  |
| Thrie Beam Rail Retrofit 2 of 2 |  |  |
|  |  |  |
| **Drain Plug** |  |  |
| Drain Plug Detail |  |  |
|  |  |  |
| **Replacement Bridges** |  |  |
| **General Drawings - All Bridges** |  |  |
| TSL - Plan and Elevation |  |  |
| TSL - Staging and Typical Section |  |  |
| General Layout and Index |  |  |
| General Notes 1 of 2 |  |  |
| General Notes 2 of 2 |  |  |
| Footing Plan |  |  |
| Foundation (Borings) Data |  |  |
|   |  |  |
| **Piles / Drilled Shafts** |  |  |
| H-Pile Details |  |  |
| Pipe Pile Details |  |  |
| Drilled Shaft Details |  |  |
|  |  |  |
| **PS Girder Bridge** |  |  |
| PS Girder Bridge - Plan and Elevation |  |  |
| PS Girder Bridge - Stage Construction 1 of 2 |  |  |
| PS Girder Bridge - Stage Construction 2 of 2 |  |  |
| PS Girder Bridge - Deck Plan |  |  |
| PS Girder Bridge - Deck Section |  |  |
| PS Girder Bridge - Diaphragm Beam Detail |  |  |
| PS Girder Bridge - End Bent Details 1 of 2 |  |  |
| PS Girder Bridge - End Bent Details 2 of 2 |  |  |
| PS Girder Bridge - Bent Plan & Elevation |  |  |
| PS Girder Bridge - Bent Details |  |  |
| PS Girder Bridge - Wingwall Details |  |  |
|   |  |  |
| **Steel Plate Girder Bridge** |  |  |
| Steel Plate Girder Bridge - Plan and Elevation |  |  |
| Steel Plate Girder Bridge - Construction Sequence |  |  |
| Steel Plate Girder Bridge - Deck Pouring Sequence |  |  |
| Steel Plate Girder Bridge - Deck Plan |  |  |
| Steel Plate Girder Bridge - Typical Section |  |  |
| Steel Plate Girder Bridge - Field Splice Details |  |  |
| Steel Plate Girder Bridge - End Bent Details 1 of 2 |  |  |
| Steel Plate Girder Bridge - End Bent Details 2 of 2 |  |  |
| Steel Plate Girder Bridge - Bent Plan & Elevation |  |  |
| Steel Plate Girder Bridge - Bent Details |  |  |
| Steel Plate Girder Bridge - Wingwall Details |  |  |
|  |  |  |
| **PS Slab Bridge** |  |  |
| PS Slab Bridge - Plan and Elevation |  |  |
| PS Slab Bridge - Stage Construction |  |  |
| PS Slab Bridge - Deck Plan |  |  |
| PS Slab Bridge - Deck Section |  |  |
| PS Slab Bridge - End Bent Details (Short) |  |  |
| PS Slab Bridge - End Bent Details (Tall) |  |  |
| PS Slab Bridge - Bent Plan & Elevation |  |  |
| PS Slab Bridge - Bent Details |  |  |
| PS Slab Bridge - Wingwall Details |  |  |