

## A. PROJECT DESCRIPTION

The proposed project includes two segments of the Nebraska Highway 12 (N-12) roadway east and west of the Village of Niobrara, in Knox County, Nebraska. The west segment starts just east of Verdel and extends east approximately 6.2 miles. The east segment starts just east of Niobrara and extends east approximately 6 miles.

The purpose of the proposed project is to rehabilitate the existing roadway to maximize utilization, improve the safety and reliability, and bring the roadway up to current NDOT design standards for a major arterial highway between Verdel, Nebraska and Santee Spur (S-54D). The project is needed due to ongoing risk of flooding, unreliable operations, and interruptions to regional connectivity.

The ultimate configuration will be a two-lane roadway with paved shoulders. The new alignment will be shifted north or south and elevated approximately 6 to 8 feet higher than the existing to meet the design year flood elevation. Traffic will be maintained throughout construction on either the existing lanes or temporarily constructed lane(s) by the use of appropriate traffic control devices and practices. There will be multiple bridges, box culverts, and pipe culverts that will be constructed where necessary. Right-of-Way (ROW), wetland, and stream impacts are anticipated to occur with the proposed project.

## B. INTRODUCTION

The Consultant shall be the Independent Cost Estimator (ICE) which is integral part of the Construction Manager/General Contractor Delivery Method (CM/GC) during the Pre-Construction Services ("PCS"). The Pre-Construction Services are intended for NDOT and the CM/GC Contractor to develop, implement, and maintain a spirit of cooperation and open communication among Integrated Project Team (IPT) members consisting of the CM/GC Contractor, Designer, and NDOT so that the goals and objectives of each are clearly understood, problems are resolved promptly, and upon completion, the Project is deemed a success by all. The PCS will continue until the NDOT accepts or rejects the Guaranteed Maximum Price (GMP) from the CM/GC Contractor. The Consultant shall work in support of the NDOT's role within of the IPT to provide input and comparison on constructability, risk, cost, and schedule of the Project.

The Consultant is a participant owing its fiduciary duty to NDOT. The consultant is responsible for participation ensuring the veracity of the CM/GC Contractor's means, methods, risk assessments, risk valuations, costs for the post-construction work, and schedule for completion of the Project, including specifically independent cost evaluation and verification of the component parts of the CM/GC Contractor's iterative OPCC's and ultimate GMP.

The Consultant offers the skills and knowledge to provide:

- a. Information on constructability, maintenance of traffic, and other design input.
- b. Estimates of the quantities, unit prices or other pricing, labor, durations, sequencing, and equipment needed for construction of the Project.

- c. Identification and input of the actual and potential risks and methods, costs, and impacts on the foregoing materials, equipment, labor resources and scheduling to mitigate actual or potential risks during the design of the Project.

The Consultant tasks during the Pre-Construction Services include, but are not limited to, the following:

- a. Attend an Initial Project Scoping Workshop.
- b. Participate in design coordination meetings with NDOT and the IPT.
- c. Review and evaluate risk management strategies and monitor the Risk Register.
- d. Provide recommendations to NDOT on each aspect of the planning, design, and proposed construction.
- e. Review and evaluate value engineering, innovations, or other potential strategies for Project construction.
- f. Document impacts (including cost savings, other benefits, and schedule) associated with proposed changes and submit to NDOT.
- g. Provide technical assistance to the IPT as alternatives are evaluated. The technical assistance may include providing risk assessments, constructability input, cost estimate, and schedule impacts.
- h. Participate in the interim pricing milestone process, anticipated to occur at Initial, Functional, and Final design milestone submissions by the CM/GC. The interim milestone pricing process involves developing cost and pricing information in connection with further development of the Risk Register for comparison with the CM/GC Contractor and NDOT.
- i. Develop an independent Opinion of Probable Construction Cost ("OPCC") and corresponding total bid estimate, prepare and submit a Project Baseline Schedule, as well as finalized budget, and review and provide input on the CM/GC's schedule for completion of construction within budget and within the allotted time.
- j. Support NDOT's cost estimate negotiations with the USACE and the United States Department of Justice.

The Consultant's Milestone Deliverables to NDOT in performance of the Pre-Construction Services include the following:

- a. The Initial Design Milestone Deliverables.
- b. The Functional Design Milestone Deliverables.

- c. The Final Design Milestone Deliverables.

#### C. PROJECT MANAGEMENT

The Consultant shall perform project management duties throughout the Pre-Construction Services, in accordance with the schedule below such as:

- a. Monitor project schedule
- b. Monitor workload assignments and internal cost controls
- c. Prepare project correspondence with NDOT and maintain project records.

This task and duties shall include the following:

- a. Periodic invoices and progress reporting.
- b. Coordination with NDOT Project Coordinator.
- c. Quality control and general quality management of the services.

#### D. MEETINGS

##### Project Scoping Workshop

This workshop is intended to introduce IPT members to one another. This workshop will be the start of the collaborative environment and form the IPT. NDOT will present information known about the Project and the Consultant will identify information necessary for Project development.

The Consultant will attend a Project Scoping Workshop that includes the following agenda items:

- a. Introduction of the IPT and partnering protocols and approach.
- b. Communication protocols.
- c. Introduction of the Project stakeholders as determined by NDOT.
- d. Discussion of Project elements, including but not limited to current Project status, Project goals, Project constraints, schedule risks, and milestones.
- e. Process for design input, identification, analysis, evaluation, presentation, and consideration.
- f. The process for evaluating alternative strategies and value engineering proposals.
- g. Discussion of the risk identification, valuation, and assignment/sharing processes and discussion of preparation, updating, and population of the Risk Register.

- h. Question and answer session.

[Pricing Assumptions: The Consultant shall participate in one IPT kickoff workshop which will be held at NDOT and last up to 8 hours during the course of one Business Day.]

#### Progress Meetings

The Consultant shall participate in progress and partnering meetings among members of the IPT and when scheduled by the NDOT.

That Consultant shall scope for {15} progress and partnering meetings. These progress and partnering meetings will be used to coordinate and track the work effort and resolve problems. The Consultant shall be prepared to discuss their reservations, ideas, and challenges to the Project.

Meeting minutes prepared by others will include details discussed, notes, and action items and assignments relating to the meeting within one week of the meeting. The Consultant will provide comments to the meeting minutes within one week of receipt.

The agenda and discussion topics for these meetings will include, but are not limited to, the following:

- a. Review of action items and activities from last meeting.
- b. Design and design coordination.
- c. Constructability, construction planning (including MOT).
- d. Project planning.
- e. Risk, Risk Register, risk mitigation, risk valuation, and risk assignment.
- f. Environmental permitting, planning, environmental compliance, and USACE topics.
- g. Cost, and ultimately, iterative OPCCs and the GMP.
- h. Project Baseline Schedule.
- i. Problems and challenges encountered/anticipated, potential solutions, and final resolution.
- j. Pre-Construction Services Schedule updates.
- k. Action Items.

#### Coordination Meetings

The Consultant shall attend and participate in informal coordination meetings as may be requested by NDOT. These meetings shall occur outside of regularly schedule progress meetings at a time mutually agreeable to all members of the IPT, which agreement shall not be unreasonably withheld, conditioned, or delayed by the Consultant. Coordination

meetings will be held virtually unless otherwise requested by NDOT or the Consultant.

NDOT expects this task shall include the following:

- a. This task allows for [12] coordination meetings between NDOT and the Consultant.
- b. NDOT will prepare and submit to the Consultant one copy of a report summarizing the decisions reached.

#### Initial Cost Workshop

The Consultant shall participate in a meeting with the IPT to establish baseline production rate assumptions and various other input standards for formulation of future cost estimates and schedules. The purpose of this meeting will be to establish similar assumptions for construction means and methods as well as to establish the plan to communicate changes in scope, quantity, and phasing between the CM/GC Contactor, the Consultant and the NDOT in order to create a foundation for estimation as a part of the cost estimates prepared for this Project.

The Consultant shall attend and actively participate in this meeting with the IPT to discuss cost and pricing development and process for design input, analysis, evaluation, and resolution for specific assumptions and inputs used to create the cost models and OPCCs.

*[Pricing Assumptions: The Consultant shall participate in the meeting which will be held at NDOT and last up to 8 hours during the course of one Business Day.]*

Deliverable: Document the description and assumptions for the bid items and work elements that communicate the comparative estimating practices for the Project, including production rate assumptions.

#### Initial Risk Workshop

The Consultant shall attend an Initial Risk Workshop. The Consultant shall provide input for the development of the process for identifying, assigning, and tracking risks affecting cost and schedule. The Consultant shall provide input to develop a Risk Register as the primary means for documenting each identified risk affecting the OPCCs and overall Project Baseline Schedule. The final process must be approved by the NDOT.

*[Pricing Assumptions: The Consultant shall participate in the meeting which will be held at NDOT and last up to 8 hours during the course of one Business Day.]*

Deliverable: The Consultant shall provide the IPT written documentation for identifying and documenting risk in the Risk Register.

### E. RISK MANAGEMENT

The Consultant shall identify, quantify, and provide feedback on risk items. The Consultant shall help implement and support risk avoidance, reduction, and mitigation strategies. The Risk Register will be maintained by NDOT and the CM/GC Contractor. The Consultant shall help monitor and provide input into the maintenance of Risk

Register.

The Consultant shall participate in formal risk analysis workshops with the IPT. The focus of the risk analysis workshops will be to apply the process developed at the Initial Risk Workshop to identify actual and potential risks and to assign cost, schedule impacts, and responsibility to each risk in cooperation with the CM/GC Contractor. This task includes but is not limited to assisting with or conducting probability calculations, estimating cost and schedule impacts.

*[Pricing Assumptions: The Consultant shall plan to attend 10 formal risk analysis meetings. The meetings will be held at NDOT and each will last up to 8 hours during the course of one Business Day.]*

Deliverable: The Consultant shall submit documentation regarding their input into the Risk Register specifying the associated value, savings, and cost of risk avoidance, reduction, and mitigation strategies. This documentation shall be submitted [one week] after each risk workshop and at each Design Milestone

At the time of each OPCC, the Consultant shall submit a report that itemizes, justifies, summarizes the decisions approved by NDOT for risk elimination or reduction and associated value of each decision in terms of cost and savings in direct relationship with its OPCC. The Consultant shall work with the IPT to reconcile any differences.

#### F. COST ESTIMATING & GUARANTEED MAXIMUM PRICE VALIDATION

The Consultant shall develop an OPCC and corresponding total bid estimate in order to provide production-based construction cost estimates for comparison to the CM/GC Contractor and NDOT's estimates. The Consultant's OPCC and its supporting information will not be shared (commonly referred to as "closed book") to the CM/GC Contractor which is fully shared (commonly referred to as "open book"). The Consultant's OPCC shall contain assumptions, contingency, risk, and approach to the estimate that are fully identified, delineated, and understood by the NDOT. The Consultant shall be responsible for verifying the quantities and methods of measurement and payment for the Project work items from NDOT standard bid items. The OPCC will be updated for each Progress Meeting, the Initial, Functional, and Final Design Milestones, and whenever a value engineering proposal is accepted by NDOT.

The Consultant shall validate and evaluate the CM/GC Contractor's proposed OPCCs and GMP at each Design Milestone. The Consultant shall participate in additional price resolution and reconciliation meetings to resolve components of the price of an item that comprises 5% of the contract value or more that deviates from that of the CM/GC Contractor by more than 3% of a value, or at such other time where the deviation requires, in NDOT's sole judgment, resolution and reconciliation. During price resolution and reconciliation meetings, the Consultant shall provide conflict management support regarding its "closed book" cost model to the "open book" cost model of the CM/GC Contractor to help reconcile differences. This notwithstanding, the Consultant agrees to, and shall be prepared to, share cost and pricing information with the USACE as and when requested by NDOT.

The Consultant shall prepare, update, and share the cost model with NDOT. The Consultant shall submit and include backup documentation to NDOT with each iteration of its costing model used to prepare the OPCC, which documentation shall include but is not limit to the following:

- a. Unit prices and quantity take-offs using the NDOT's provided standard pay items including contingency items for which quantities have not been established.
- b. Details of the unit price work shown and specified in the design documents.
- c. Material costs, equipment costs, labor costs, general conditions costs, production rates, and total cost. The Consultant shall work with the CM/GC Contractor to obtain the necessary information to establish these costs.
- d. Cost associated with fixed equipment, site improvements, utility and equipment installations necessary to complete the work using the same assumptions as the CM/GC Contractor.
- e. The CM/GC Contractor's profit, project overhead, allocated general and administrative expenses, bonds, taxes, and insurance.
- f. Risk allocation cost from the Risk Register.
- g. Memoranda, narratives, and other information included by the Consultant to arrive at the price shown in the cost model or total bid estimate. Include a list of all assumptions and description and breakdown of all allowances.

#### G. SCHEDULE DEVELOPMENT

The Consultant shall create and update an independent Project Baseline Schedule ("PBS") for the construction work to compare to the CM/GC Contractor. The Consultant will have access to the CM/GC Contractor's schedule for the development of the independent PBS. The Consultant shall address NDOT comments as relates to the iterative Project Baseline Schedules, which will be updated by the Consultant for each progress meeting and at the Initial, Functional and Final Design Milestones and for scope changes that necessitate changes in schedule.

*[Pricing Assumptions: Consultant shall plan to attend 10 construction schedule development meetings.]*

Deliverable: The Consultant shall provide a detailed independent schedule(s) that can be coordinated with the CM/GC Contractor. The schedule shall be updated for each progress meeting and at the Initial, Functional, and Final Design Milestones. The schedule shall include a narrative report documenting critical path elements of the schedule and the critical assumptions and/or decisions that may impact schedule adherence, including construction phasing or sequencing and long-lead time items. The Consultant shall also include in the report any acceleration opportunities and the cost (or savings), through updates to the Risk Register. The schedule shall be submitted to NDOT electronically as a pdf and software file.

#### H. CONSTRUCTABILITY REVIEW & VALUE ENGINEERING

The Consultant shall participate in Project constructability review and value engineering sessions throughout the term of the Pre-Construction Services. The purposes of the Project design constructability review sessions are intended to ensure:

- a. Complete, coordinated, constructible and cost-effective designs.
- b. Sufficient detail for cost and pricing for Risk Register items to complete the Consultant's OPCCs and total bid estimate for comparison to the CM/GC Contractor's GMP.
- c. Phased construction to maintain two lanes of traffic.
- d. Identification of errors and omissions.

The Consultant shall provide NDOT electronic and hard copies of written reviews and redlined drawings, plans, and specifications.

#### I. DESIGN MILESTONES

The Pre-Construction Services term has been divided into three milestones that coincide with the development of the design. The three milestones are Initial, Functional, and Final Design Milestones (each a "Design Milestone" or "Milestone"). The tasks regarding, constructability, risk, schedule, and cost will be continuous and kept up-to-date throughout the design of the Project. The CM/GC Contractor and the NDOT will create the drawings, plans, and specifications at each Design Milestone. As each Design Milestone is met, more information will be available to the Consultant for refinement of the Milestone Deliverables. Accordingly, the Design Milestone Submittals are intended to capture the progression of the development and design of the Project.

The Consultant shall submit written reviews with redlined drawings, plans, and specifications after each Design Milestone that include but are not limited to the following:

- a. Constructability review.
- b. Project Baseline Schedule.
- c. OPCC and total bid estimate
- d. CM/GC Contractors GMP review and validation

The cost model used to prepare the OPCCs shall be prepared in a format agreed upon in advance by the NDOT. It will be based on the NDOT's list of standard pay items.



J. SCHEDULE

2. Project Scoping Workshop	Tentative August 25, 2022
3. Initial Risk Workshop	Tentative August 30, 2022
4. Initial Cost Workshop	Tentative August 31, 2022
5. Initial Design Milestone Deliverables	Tentative September 22, 2022
6. Functional Design Milestone Deliverables	Tentative March 2023
7. Final Design Milestone Deliverables	Tentative October 2023
9. Final GMP from CM/GC Contractor	Tentative October 2023