



## **Central 70 Construction Assessment & IAT Services Scope of Work**

### **Project Background**

CDOT has recently selected a Developer for the Central 70 Design-Build-Finance-Operate-Maintain (DBFOM) Project. The Project will reconstruct a 10-mile stretch of the I-70 corridor, add one new express lane in each direction, remove the aging 50-year old viaduct, lower the interstate between Brighton and Colorado boulevards, and place a four-acre cover over a portion of the lowered interstate. The Project will widen I-70 from I-270 to Chambers Road and restripe I-70 from I-25 to Brighton Boulevard to accommodate the new express lane.

CDOT anticipates the Developer to begin construction of the Project in early 2018 and complete construction in late 2022. Per the Project Agreement, the Developer shall be responsible for implementation and maintenance of an effective quality program to manage, control, document and ensure compliance with all obligations of the requirements in the Project Agreement. Throughout construction, CDOT will implement an audit program that monitors the Developer's quality program and compliance with the requirements of the Central 70 Project Agreement. CDOT will also conduct Owner Verification Testing (OVT) and Independent Assurance Testing (IAT) throughout construction to verify and validate that the Developer is conducting acceptable material tests.

CDOT desires to contract an experienced Assessment Team of Consultant inspectors and/or engineers to conduct audits for specialized facets of CDOT's Project construction oversight program. CDOT also desires to contract an IAT Team to conduct material tests in accordance with the Project's IAT requirements. The Assessment Team and IAT Team shall be capable of performing the services as described in the following sections of this document.

### **General Scope of Work**

This Scope of Work requires the Consultant to provide the following:

1. Assessment Team which consists of:
  - a. Assessors capable of Auditing the Construction Work as described in the Project Agreement
  - b. A Segment Lead capable of managing the Assessors
2. IAT Team capable of testing materials per the Independent Assurance Program requirements within the most recent version of CDOT's Field Materials Manual (FMM).

## Central 70 Construction Assessment & IAT Services Scope of Work

### Assessment Team

The Consultant shall provide an Assessment Team primarily responsible for planning and conducting Construction Verification and Process Audits for CDOT on the Project. The Assessment Team will perform Construction Verification Audits on the construction Work products. These audits evaluate whether the Developer has constructed specific aspects of work in accordance with the Project Agreement requirements. The Assessment Team will also perform Process Audits on the implementation of all Developer construction Work activities. Such activities include the procedural requirements prescribed in the Project Agreement and/or an approved Management Plan. These audits evaluate whether the Developer is performing construction Work per the required processes.

CDOT staff will manage the Project audit program. The audit program and the entire CDOT project oversight program will be a blended team of CDOT employees, other consultants, and this Consultant Assessment Team. CDOT expects the Consultant Assessment Team to work side-by-side with CDOT employees and other consultants while performing construction oversight and audit tasks. For example, the Project will have one CDOT Segment Lead and one Consultant Segment Lead that will perform similar job duties within different sections of the Project. Collaboration between the Segment Leads is essential for successful oversight of the Project.

The Assessment Team shall conduct audits in accordance with direction from their Segment Lead (either CDOT or Consultant). Segment Leads will receive direction from CDOT's Project Construction Manager. Each Assessor and the Segment Lead shall comply with the Project audit plan. CDOT staff will provide a Project Audit Orientation to each member of the Assessment Team. This Orientation is not meant to train the Assessment Team with regard to Design-Build basics. The Assessment Team should already have experience and knowledge with regard to an owner's role in oversight on Design-Build contracts. This Orientation is meant to inform the team of Project-specific processes and procedures.

The Assessment Team shall plan and conduct audits of the Developer's Construction Work as it relates to requirements of the Project Agreement including, but not limited to the following work components:

- Maintenance of Traffic (MOT),
- Utilities,

## Central 70 Construction Assessment & IAT Services Scope of Work

- Survey,
- Roadway Pavements,
- Earthwork,
- Drainage,
- Railroads,
- Signing,
- Striping,
- Lighting,
- Cover MEP System,
- Structures,
- Landscaping and Aesthetics,
- Environmental including erosion control,
- Operations and Maintenance during Construction (O&M),
- Safety

CDOT requires that the Consultant provide Assessors that, together, are capable of auditing all of the Work components listed above. Due to the complex nature of the Project, CDOT anticipates that the Developer will have a dynamic schedule. Therefore, CDOT expects that audit planning will also be very dynamic. CDOT desires that each member of the team is capable of auditing a wide-range of the Work components to accommodate an adaptive auditing approach. As described in the Work Duration and Hours section of this Scope of Work, CDOT will request Assessors via Task Orders depending on the needs for a particular time within the Construction period which could increase/decrease the staffing numbers.

CDOT expects that Utilities, Cover MEP, Structures, and Roadway Pavements may require a full-time auditing presence. Once the Developer begins substantial Work with any of these particular Work components, CDOT may require that the Consultant is able to commit an Assessor that exclusively audits the particular Work component on a full-time basis. CDOT requires that the Consultant Assessors responsible for auditing these Work components are fully capable of auditing all of the applicable requirements described in the Project Agreement.

## **Central 70 Construction Assessment & IAT Services Scope of Work**

### **Segment Lead**

The Construction Segment Lead is responsible for managing construction oversight of the Developer within an assigned segment during the Construction phase of the Project. The Project Construction Manager will define the segments once the construction schedule and phasing of the selected Developer becomes clearer. The Segment Lead is responsible for assigning the Assessment Team with oversight audits that verify if the Developer complies with the Project Agreement and their approved management plans. The Segment Lead will manage and review the Assessor's audits and subsequently submit to the Developer. They will assist Assessors with resolution of audit results that result in a Nonconformance Notice (NCN).

The Segment Lead is responsible for ensuring the construction audits that are assigned to and completed by the Assessment team meet the target percentages identified in the Project Audit Priority Matrix. The Project Priority Matrix is developed by CDOT management staff. The Segment Lead is also responsible for working with the Developer to resolve Nonconformance Reports issued by the Independent Quality Control Firm (IQCF). This position is responsible for coordination with the Developer and IQCF via weekly Task Force Meetings. The Segment Lead will support and report to the Project Construction Manager, and will have decision making authority for the resolution of Nonconformance Reports, as a CDOT representative. Therefore, they must have a thorough knowledge of the Construction Work elements and their acceptable remedies.

### **IAT Team:**

The IAT team shall be responsible for implementing and documenting the Independent Assurance Testing program. The IAT Team is responsible for ensuring the following:

- Developer ICQC personnel are trained and certified and demonstrate that they understand the test procedures they are performing;
- Department verification (OVT) personnel are trained and certified and demonstrate that they understand the test procedures they are performing;
- The test equipment used by the Developer ICQC personnel, and Department verification personnel, is calibrated;
- Split sample test results correlate; and
- Conducting referee tests to assist with non-validated tests between Owner Verification testing and Developer Independent Quality Control testing

## **Central 70 Construction Assessment & IAT Services Scope of Work**

The IAT Team shall be responsible for implementing the IAT program (project basis) per Independent Assurance (IA) Program requirements within the most recent version of CDOT's Field Materials Manual (FMM). Currently, the 2017 FMM is the most up-to-date version. See below for a link to the 2017 FMM on CDOT's public website: <https://www.codot.gov/business/designsupport/materials-and-geotechnical/manuals/2017-fmm>

The IAT Team shall be responsible for continuous, real-time updates to CDOT Form 379. The IAT Team shall assist the CDOT management staff in the completion of the Monthly Quality Report. CDOT expects the need for full time IAT Testers and potentially part time Testers to meet the IAT needs of the Project. Similar to the Assessment Team, IAT Testers are bought on via Task Orders depending on project needs.

### **Other Duties**

The CDOT Project Manager may request the Consultant team members to perform other duties as described below. The Consultant team members must be capable of performing these tasks in a diligent, efficient, and professional manor.

### **Assessment Team (including Segment Lead)**

The Assessors and Segment Lead are primarily responsible for planning and conducting Construction Verification and Process Audits per the descriptions in the "General Scope of Work" section. However, Assessors or the Segment Lead will also be responsible for performing the following tasks:

- Participation in the weekly Internal Construction Management Meeting. Provide the CDOT team with audit updates;
- Daily verbal updates to CDOT staff regarding construction activities;
- Prepare and transmit written updates of construction activities to Project staff;
- Maintaining accurate notes and photos of construction work;
- Nonconformance Report and resolution tracking;
- Preparation of correspondence to the Developer, CDOT staff, local agencies, and third parties as requested;
- Assistance in preparing responses to Developer correspondence;
- Attendance at the weekly Developer Task Force meetings;

## **Central 70 Construction Assessment & IAT Services Scope of Work**

- Attendance at the weekly Developer Construction Update meeting;
- Preparation of meeting minutes as requested;
- Review of Developer's Management Plan submittals;
- Review of Developer's Monthly Progress Report;
- Review and verify Developer Schedule updates;
- Review Field Design Changes;
- Assistance with Design Plan reviews (including Structure Demolition, Girder Erection, and Safety Critical Plan submittals from the Developer);
- Assistance with developing CDOT's monthly Quality Report;
- Assistance with Change Order and other Project Controls tasks;
- Assistance with Third Parties and Local Agencies inspections of their construction elements (i.e. CCD, Utility Owners, Railroad);
- Conduct interviews on an as needed basis of workers at the project site to ensure compliance with Davis Bacon Act and Equal Employment Opportunity requirements;
- Conduct visual inspection of the project site on an as needed basis to ensure notices are posted in compliance with Equal Employment Opportunity requirements and that the project site complies with civil rights requirements;
- Conduct Milestone and Substantial Completion Acceptance Audits (i.e. punch list, as-built plans, etc.);
- Other duties as assigned by the CDOT Project Manager.

### **IAT Team:**

The IAT Team is primarily responsible for conducting IAT tests in accordance with the "General Scope of Work" section. However, the IAT Team may also be responsible for performing the following tasks:

- Participation in the weekly Internal Construction Management Meeting. Provide the CDOT team with IAT updates.
- Daily verbal updates to CDOT staff regarding IAT activities.
- Preparation of correspondence to the Developer, CDOT staff, local agencies, and third parties as requested.
- Assistance in preparing responses to Developer correspondence
- Attendance at the weekly Developer Task Force meetings
- Attendance at the weekly Developer Construction Update meeting

## **Central 70 Construction Assessment & IAT Services Scope of Work**

- Preparation of meeting minutes as requested
- Other duties as assigned by the CDOT Project Manager

**Note: The IAT team shall not have any impermissible conflict of interest as outlined in 23 C.F.R. 637.209(c) or any other relevant state or federal regulations.**

### **Personnel Requirements:**

The Consultant shall provide a resume for each member of the Assessment Team (including the Segment Lead). The Consultant shall designate which Work components each Assessor is qualified to audit. The resumes should describe qualifications that exceed the minimum requirements (if applicable). CDOT desires to have a qualified and experienced Design-Build staff. CDOT desires to have a team that can all adapt to a dynamic schedule and subscribe to and comply with the quality management principles that are outlined in Schedule 8, Section 6 of the Central 70 Project Agreement. CDOT desires to have a team in which members are able to commit to the Project throughout the construction duration. In the event that an Assessor is replaced during the contract term, with two weeks' notice, the Consultant shall submit a resume of the new Assessor for approval by the CDOT Construction Manager.

### **Assessment Team:**

CDOT prefers that each Assessor have construction oversight experience on State or FHWA design-build Highway projects. In general, CDOT requires that each Assessor possess a fundamental knowledge of general design-build principles, comprehensive knowledge of construction means and methods, and proficiency interpreting design plans and specifications typical for a highway construction project. Experience with City and County of Denver roadway projects is beneficial. The Consultant shall remove Assessors or the Segment Lead from the Project that do not meet the specified requirements, or do not perform their work in an acceptable manner, as determined and directed by the CDOT Project Manager.

To implement the Project construction audit and oversight program effectively, CDOT requires that the Consultant assemble a team that is collectively capable of performing the General Scope of Work and Other Duties for a dynamic schedule. CDOT expects that the Consultant understands the scope of each Work component within the Project Agreement. To be considered qualified for a particular Work component,

## Central 70 Construction Assessment & IAT Services Scope of Work

an Assessor must meet the minimum requirements shown in Table 1 and effectively enforce the technical requirements within the Project Agreement. CDOT posts the Project Agreement on the Central 70 Project website for public reference:

<https://www.codot.gov/programs/high-performance-transportation-enterprise-hpte/projects/i-70/central-70/request-for-proposals-rfp>

**Table 1 - Minimum Qualifications for Work Component**

Work Component	Minimum Requirements
MOT	Experience, CDOT TCS certification
Utilities	Experience
Survey	Experience
Pavements	<b>Expertise</b> (HMA, SMA, and PCCP)
Earthwork	Experience. WAQTC certification
Drainage	<b>Expertise</b>
Railroads	Experience. E-Rail Safe Certification
Signing	Experience
Striping	Experience
Lighting	Experience
Cover MEP	<b>Expertise</b>
Structures	<b>Expertise.</b> Obtained or ability to obtain Structural Steel and Precast Concrete inspection qualifications in accordance with CDOT Staff Bridge Inspection Manual Section 4.0 and 3.0, respectively. Experience reviewing Structure Demolition, Girder Erection, and Safety Critical Plan submittals.
Landscaping	Experience
Environmental	Experience, CDOT TECS Certification
O&M	Experience
Safety	Experience, OSHA 10

**EXPERIENCE:** For the work components that require experience, the Consultant shall list the past projects and duration in which the Assessor has gained the experience and how the experience qualifies the Assessor to provide oversight of the particular technical requirements noted in the Central 70 Project Agreement.

**EXPERTISE:** For the work components that require expertise, the Consultant shall demonstrate that the Assessor has obtained relevant certifications, training, and/or experience to qualify as a person who has a comprehensive and authoritative knowledge of the particular Work component. In particular, the Consultant Assessor



## **Central 70 Construction Assessment & IAT Services Scope of Work**

shall have the expertise needed to provide oversight of the particular technical requirements noted in the Central 70 Project Agreement.

### **Segment Lead:**

The Segment Lead must meet the following requirements:

- Professional Engineer in the State of Colorado.
- Experience with the majority of Work Components,
- Personnel Management experience.
- 5 years design-build experience.
- Design Build Institute of America (DBIA) certification is preferred

### **IAT Team:**

The IAT testers must be qualified per CP 10 to test all of the items described in the IA FREQUENCY GUIDE SCHEDULE shown in the most recent version of the FMM. The Consultant shall provide resumes for each tester that include a list of relevant certifications.

## **Work Duration and Hours**

CDOT anticipates issuing NTP2, the start of Project construction, to the Developer in early 2018 and expects Substantial Completion around late 2022. CDOT requires Consultant Assessors, a Segment Lead, and the IAT Team on the Project throughout this duration. CDOT will likely request (via yearly Task Order) that the Consultant provide the Segment Lead to the Project shortly after NTP1 is issued to the Developer, which is expected in late 2017. As Construction Work escalates, CDOT will request (via yearly Task Orders) an appropriate amount of Assessors and IAT personnel to accommodate the Project needs.

CDOT anticipates that Consultant personnel will work 8 hours/day, 5 days/week and requires the flexibility to work nights, overtime, and/or weekends. CDOT will provide workspace for the Consultant personnel within the Project Office, collocated with CDOT and Developer Staff. Unless otherwise approved by the CDOT Project Manager, the Assessors shall perform billable Project work from within the Project Office or from within a construction work zone on the Project.



## **Central 70 Construction Assessment & IAT Services Scope of Work**

### **Equipment and Vehicles**

The Consultant shall furnish all equipment and transportation required to perform the Construction Assessment and IAT work. Additionally, and at a minimum, each member of the Consultant Assessment and IAT Team shall have:

- Appropriate vehicles equipped with flashing beacons that are capable of traversing typical work zone terrain. The Consultant shall display the company logo on each vehicle. (CDOT will provide a project logo to apply to the vehicle).
- A cell phone capable of service at any location within the Project limits
- A laptop computer (processor speeds of 2 GHZ or better, with CD/DVD drive, Windows 7 or newer) with standard office software. All laptop computers shall have internet connectivity. CDOT's Developer will provide internet service with speed of 100 Mbps within the collocated Project Office.
- The ability to connect to the internet remotely from any location within the Project limits to perform audits via the web-based QRD and access the project document control system, Aconex.
- Secured email accounts for each employee
- Access to a color printer and a scanner (capable of 11"x17" sheets).
- Digital GPS cameras for documentation of Construction Work

### **Civil Rights Compliance Assessor**

During Construction, CDOT may request via a task order that the Consultant provide a specialized (expert) Civil Rights Compliance Assessor. The Civil Rights Compliance Assessor would assist CDOT staff with enforcing and auditing the Developer's compliance with Schedule 15 requirements within the Central 70 Project Agreement. Upon CDOT request, the Consultant shall provide a resume for the Civil Rights Compliance Assessor that specifically highlights the individual's experience with all elements of the Schedule 15 requirements.