

**I-70 Twin Tunnels Westbound Widening
CONSTRUCTION ADMINISTRATION
SCOPE OF WORK**

Date: December 13, 2013
Region 1

Project:
I-70 Twin Tunnels Widening
PROJECT CODE:
PROJECT #IM 0703-408 (19879)
PROJECT #IM 0703-392 (19037)

Estimated Start Date: March 1, 2014

The Contract Administrator for this Contract will be:

Mike Keleman
Project Engineer
425A Corporate Circle
Office: (720)497-6901,
Mobile: (720) 388-9588,
Fax: (720)497-6901

Active day-to-day administration will be delegated to:

Mike Keleman
Project Engineer
425A Corporate Circle
Office: (720)497-6901,
Mobile: (720) 388-9588,
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General Scope of Work

CDOT has need of a consultant to provide construction administration support, project engineering services [construction management], inspection, and materials-testing services required for construction of the I-70 Twin Tunnels Westbound Bore Widening project located on I-70 between Milepost 242.3 and Milepost 242.83. Work on the project will include rock cuts, tunneling, blasting, concrete liner installation, traffic control, vertical roadway realignment, and concrete and asphalt paving, as well as many other incidental items. The work will progress 24 hours a day, 7 days a week for significant portions of the project.

This project is being delivered using Construction Manager/General Contractor project delivery method(CMGC). The contractor for CMGC services will be Kraemer Obayashi Joint Venture. They will be immediately involved with the preconstruction of the project. It will be expected that the selected consultant for construction management will also be involved in the final design review process.

Definitions:

CDOT Resident Engineer – The CDOT Resident Engineer is responsible to the Region Program Engineer for the quality and successful completion of a transportation project. The CDOT Resident Engineer authorizes interim and final payments and all changes to Contracts for all Consultants and Contractors.

CDOT Project Engineer – The CDOT Project Engineer is responsible for the quality and successful completion of a transportation project.

Consultant - The firm or corporation providing personnel under this agreement to perform construction services as outlined herein.

Consultant Construction Manager - The Consultant Construction Manager directs the consultant services for the administration and satisfactory completion of the project improvements, which are under separate contract between CDOT and a Contractor.

Consultant Professional Engineer - The Consultant employee in responsible charge of Consultant services performed as described in this Contract. The Consultant Professional Engineer administers the Consultant contract.

Consultant Inspector or Materials Testing Technician (MTT) - Consultant employee who performs construction materials testing services, construction inspection, and other project-related services under the direction of the Consultant Construction Manager.

Contractor - The individual, firm, or corporation contracting with CDOT to construct a transportation project.

CDOT Region Materials Engineer – The CDOT Region Materials Engineer (RME) assists the CDOT Resident Engineer and CDOT Project Engineer on this project with materials related issues including concrete, asphalt and steel.

Work Duration

The period for the work described in this scope of work covers approximately March 1, 2014 to October 30, 2015. Work will be required on weekends, nights and holidays.

Authorization to Proceed

Work shall not commence until written Notice to Proceed is received by the Consultant, and shall be completed in the time specified. Construction funding is not guaranteed at this time for westbound construction. The selected consultant is not guaranteed to receive a Notice to Proceed to perform construction work if services are terminated at the completion of the preconstruction phase due to lack of construction funding.

Routine Billing & Reporting

The Consultant shall provide the following on a regular basis:

- 1) Monthly billing formats, suitable to the CDOT Project Engineer, for all contract activities performed by the Consultant.
- 2) Periodic reports and billings required by CDOT Procedural Directive 400.2.
- 3) Weekly time cards for consultant personnel. The Consultant Professional Engineer, prior to billing, must sign these time cards.

Status of Contract

The Consultant shall monitor the fiscal status of the contract, and advise the CDOT Resident Engineer of any potential for supplementing their contract or negotiating an additional task order. Failure to monitor contract status and provide timely notification may result in discontinuation of the Consultant's services on the project until a supplemental agreement can be effected.

Project Standards

All documentation shall be in accordance with the latest versions of the Colorado Department of Transportation's Construction Manual, Field Materials Manual, CDOT Laboratory Manual of Test Procedures, Colorado Department of Transportation Inspector's Checklist, Standard Specifications for Road and Bridge Construction, the Supplemental Specifications, applicable M & S standards, and the plans and specifications currently in use when the construction project is advertised or revised under advertisement.

References to “the specifications” shall include all applicable CDOT Standard Specifications for Road and Bridge Construction including Supplemental Specifications, Project Standard Revisions and Project Special Provisions, and project plans and specifications.

Consultant’s proposed work procedures shall be coordinated with the CDOT Project Engineer prior to the start of work.

Labor, Materials, Vehicles & Equipment

It is anticipated that CDOT will require at least one full time lead person (Consultant Construction Manager), one full time inspector, and one full time MTT. All work performed by consultant staff will be under the responsible charge of the Consultant Professional Engineer.

The Consultant shall furnish all personnel, equipment and transportation required to perform the work. Consultant personnel shall have appropriate vehicles (equipped with a flashing amber beacon), cell phone, computers, and miscellaneous equipment (calculator, office and lab supplies, safety equipment, etc.) required for performing the work.

Each consultant staff member shall be supplied with a computer running Windows 7 w/modem (phone, ISDN or cable as required), a writeable CD, a color printer (that can be networked for all staff or black/white for other staff) and loaded with the most current version of MS Office software (Microsoft Project & Site Manager or QA/QC program if applicable).

The Consultant shall have a digital camera available to staff at all times and document the project accordingly submitting CD’s with relevant photos to the CDOT Project Engineer on a regular basis.

The following equipment shall be furnished by the consultant inspector or tester in sufficient quantity and in good working order (with current calibration) to ensure accurate performance of all work required in a timely manner:

- Nuclear Asphalt Content Gauge
- Nuclear Moisture-Density Gauge
- Concrete air meter, slump cone, and other concrete testing equipment.
- Sieves for aggregates and soil gradations
- Electronic scales
- Asphalt & A/C sample containers and small tools
- Proctor equipment for soil curves and one point tests
- Atterburg, Rice value, and Sand Equivalent equipment
- Sample drying equipment
- Concrete cylinder molds which meet AASHTO requirements except that paper molds shall not be used, and plastic molds shall not be reused
- Miscellaneous equipment for performing the required soils, asphalt and concrete tests

Work Description

The Construction Administration of the project will require Consultant personnel to have a combination of CDOT construction experience, tunneling inspection experience, and roadway construction experience. Specific experiences should include bridge replacement, reinforced concrete, retaining walls, caissons, environmental constraints, , erosion control, embankment, HMA, and traffic control management. The Consultant personnel shall be prepared to work in a mountain environment and adverse weather conditions. Additional experience in project delivery method Contraction Manager/General Contractor (CMGC) will be beneficial.

A separate consultant will be providing Design Support for the project.

The Consultant shall provide support to the CDOT Project Engineer through assignment of personnel to construction administration and inspection responsibilities. Construction Administration and Inspection responsibilities include:

- Preparing and transmitting updates of construction activities to the Project Engineer for CDOT's Public Information Office.
- Periodic reports and billings required by CDOT Procedural Directive 400.2.
- Monitoring contractor payroll compliance.
- Participation in weekly progress meetings with contractor, subcontractors, utilities and other interested parties.
- Securing project documentation from the contractor.
- Anticipating project problems then formulating and implementing solutions.
- Reviewing drawings and data submitted by the construction contractor and suppliers for conformance with the specifications. Inform and obtain concurrence as needed from the CDOT Project Engineer and keep relative documentation for project records.
- Maintaining accurate notes reflecting actual construction details to be used in preparation of as-constructed plans.
- Communicating with adjacent landowners as required to-resolve issues that arise due to construction.
- Monitoring compliance with and taking appropriate action to preserve safety on the project for all workers and traveling public in accordance with Method of Handling Traffic (MHT).
- Initial, follow up, and final inspections of work in progress including interim and final measurements.
- Notifying contractors and CDOT Project Engineer of non-compliance with the contract plans and specifications
- Performance of special tests, investigations, or monitoring which are required to fulfill the intent of the CDOT inspection program
- Ensure compliance with permits such as 404 and NPDES.
- Inspection of erosion control, review of SWMP notebook, and participation in Erosion Control Compliance Reviews

- Preparation of inspection documentation for development of progress payments for the contractor in accordance with prescribed procedures
- Submittal of standard documentation reports no later than the following working day,
- Aiding in the preparation of correspondence to the contractor, CDOT Staff, local agencies, etc.
- Providing communication to contractor field crews
- Preparation of final “As Constructed” plans upon project completion
- Miscellaneous project related duties as requested by the CDOT Project Engineer and CDOT Resident Engineer
- Assist in preparing punch lists of uncompleted work, non-conformance reports, and deficiency notices.
- Assist in preparing responses to contractors' and suppliers' requests for information, submittals, change notices, claims, and correspondence.
- Evaluate the project schedule

When directed by the CDOT Project Engineer, the Inspector or MTT (Materials Testing Technician) shall sample, test, and document specified materials incorporated into the project. This includes materials delivered to the project that are listed in the Summary of Approximate Quantities or referred to in the Design/Build Plans and Specifications. Additional quantities may be added by Contract Modification Order, or plan approximate quantities may be increased or decreased.

The Consultant Inspector, MTT, and Consultant Construction Manager shall review project quantities on a weekly basis to ensure that sufficient tests have been performed for all material placed to date.

Testing of materials that are specifically designated to be pre-inspected or pre-tested shall remain the responsibility of CDOT. When directed by the CDOT Resident Engineer, the Consultant Inspector or MTT, or the CDOT inspector or MTT, shall document and transport samples of any and all materials to the CDOT Region or Central Laboratory that are required to be tested by CDOT, regardless of pre-inspection or pre-testing responsibilities.

The items and test frequencies of CDOT tested materials shall be in accordance with the column titled “Project Verification” in the Schedule in the Field Materials Manual.

Documentation

The Consultant shall provide all correspondence and applicable CDOT forms to the CDOT Project Engineer or his authorized representative for review and signature.

The Consultant personnel shall be capable of preparing CMO’s, justifications for CMO’s and MCR’s; price justification (force account analysis); review of MHT’s, construction quantity calculations required for this type of project; inspection reports; daily diaries; site manager;

review of 205's; and other construction administration documentation required per CDOT construction manual.

Each of the Consultant's personnel shall maintain a daily diary for each day they perform work on the project. They shall use CDOT's Automated Form 103a - Project Diary unless otherwise approved by the CDOT Resident Engineer. The contents of the diary shall be brief and accurate statements of progress and conditions encountered during the prosecution of the work. Editorial comments are not to be incorporated in the diaries or on any written correspondence applicable to the project. A copy of the daily diary shall be given to the CDOT Project Engineer within one working day of its date.

Personnel Qualifications

CDOT is seeking supplemental construction administration support staff from the Consultant to augment the CDOT staff as required for the Twin Tunnel Widening Project. From the Consultant, the construction administration team shall include up to three Consultant Construction Assistant Project Engineers, multiple Consultant Inspectors, and several Consultant Material Testing Technicians. CDOT staffing on this project will vary as conditions change through the duration of construction work. It is expected that consultant staffing may vary between 8 and 20 full time personnel depending on project needs. It is anticipated the project will have multiple shift work, 24 hours a day 7 days a week. Working nights, weekends and holidays will be required. The exact personnel requirements will be determined upon the CMGC construction schedule.

The Consultant will need to provide an individual with strong experience in critical path scheduling using Primavera Scheduling software. This Individual will be will review the schedule on a weekly basis or as requested by the Project Engineer.

Personnel qualifications and staffing levels for the project shall be subject to the approval of the CDOT Resident Engineer. CDOT will reserve the right to review the resume and interview any new proposed staff to the project. The Consultant shall be certified as defined by the requirements set.

The Consultant Assistant Project Engineers will be on the project site for the duration of the project and will assist the Project Engineer in administration activities and management of inspectors and material testing technicians. The Consultant shall provide at least one Professional Engineer who may be in responsible charge of the project when the CDOT Project Engineer is not available and shall have at least 4 years construction experience as a project engineer or a resident engineer, either with CDOT or as a consultant.

Other skills to be highly considered for all personnel:

- CDOT experience with the federal project requirements such as OJT, review of 205's, have done interviews to complete CDOT form 280, and have reviewed Davis-Bacon wages

- Reviewing and approving Method of Handling Traffic and have taken the Traffic Control Supervision class.
- Survey experience
- Utility coordination

The Consultant Materials Testing Technicians (MTT or Testers) shall have experience in cast in place concrete, asphalt, earthwork, and certifications accordingly. The Consultant MTT shall review project plans, specifications, and the current version of the CDOT Field Materials Manual and the project specific CDOT Form 250 to assist the CDOT MTT in completing the project with the number and type of test that will need to be performed on the project. The Consultant MTT, the CDOT MTT, the CDOT Project Engineer, and the Consultant Manager shall meet on a regular basis to address any questions or issues involving testing procedures, frequency, or documentation. Additional testing may be required if requested by the Consultant Construction Manager or the CDOT Project Engineer. The Consultant MTT shall be thoroughly familiar with CDOT forms and documentation requirements. The consultant-supplied Materials Testing Technicians shall be available to the project and report to the project site when requested by the CDOT Project Engineer. The Consultant MTT shall be approved by the CDOT Project Engineer and have the following minimum qualifications:

- **National Institute for Certification in Engineering Technology (NICET) Level II Certification in Construction Materials Testing and Inspection for the types of work being performed, e.g. aggregates, asphalt, concrete, and soils. NICET Certification shall be provided to the CDOT Project Engineer or equivalent.**
- **The MTT performing concrete tests shall be certified by The American Concrete Institute (ACI).**
- **The MTT performing hot bituminous pavement tests shall be Level II, A&B certified by The Colorado Asphalt Technician Certification Program (LabCAT).**
- **WAQTC, Soils Certification**

Personnel provided by the consultant who do not meet all of the specified requirements, or who fail to perform their work in an acceptable manner, shall be removed from the project when determined and directed by the CDOT Resident Engineer.

Back-up Consultant resources should be available in case of loss of staff, sickness, or vacations or as required for the project.

**CONSTRUCTION MANAGEMENT REQUIREMENTS
CHECKLIST**

The following checklist shall be used to establish the Construction Management responsibilities of the individual parties for this project.

The checklist shall be prepared by placing an “✓” under the responsible party opposite each of the tasks listed below.

When a task does not apply to the project, not-applicable “NA” shall be placed under both parties.

Tasks that will be performed by CDOT Headquarters staff will be so indicated.

The Region in accordance with established policies and procedures shall determine who will perform all other tasks that are the responsibility of CDOT.

DESCRIPTION OF TASK	CONSULTANT	CDOT
1. Conduct the Pre-Bid conference, answer all questions, and maintain a log of all decisions given and/or made.		✓
2. Attend design meeting as they relate to CMGC project delivery method.	✓	✓
3. Coordinate all construction contract activities with appropriate stakeholders.	✓	✓
4. Distribute <u>ten</u> award sets of plans and specifications to the CDOT Resident Engineer.		✓
5. Issue Notice to Proceed to the Contractor.		✓
6. Schedule, conduct and prepare minutes of all project meetings as follows:		
a. Job Showing	NA	NA
b. Pre-construction Conference	✓	✓
c. Partnering Workshop (if required)	✓	✓
d. Weekly Project Meetings	✓	✓
e. Pre-Survey Conference (if required):		
(1) Construction Staking	✓	
(2) Survey Documentation	✓	
f. Structural Concrete Pre-pour Conference	✓	✓
g. Concrete Pavement Prepaving Conference	✓	✓
h. HBP Prepaving Conference	✓	✓
i Contractor Weekly Safety “Tool Box” Meeting	✓	✓

DESCRIPTION OF TASK	CONSULTANT	CDOT
8. Public Relations:		
a. Prepare and coordinate with CDOT and others to publish and distribute public notices of all planned construction activities and schedules to the media, property owners, local residents, tenants, and other appropriate stakeholders affected by the project.	✓	✓
b. Perform public relation tasks with appropriate individuals as requested by CDOT.	✓	✓
c. Explain construction and work with adjacent property owners to resolve issues that arise during construction.	✓	✓
9. Review, comment, accept and/or approve as appropriate the following submittals: <i>Note: This list is not all-inclusive and other submittals may require action as directed by CDOT.</i>		
a. CDOT Form # 205 – Sublet Permit Application after Form #713 has been checked by the Region EEO Administrative Program Specialist.	✓	✓
b. Method of Handling Traffic	✓	✓
c. Progress Schedules	✓	✓
d. Method Statements	✓	✓
e. Shop drawings per 105.02	✓	✓
f. Working drawings per 105.02	✓	✓
g. Other submittals per 105.02	✓	✓
h. All EEO, Labor compliance requirements	✓	✓
i. Other submittals as directed	✓	✓
10. Construction inspection including calculations, measurements, and documentation of interim and final pay quantities as directed by the Project Engineer.	✓	✓
11. Perform required EEO/AA/DBE/OJT or labor compliance tasks as requested as follows:		
a. Conduct Contractor/Subcontractor reviews to ensure conformance with the Equal Employment Opportunity (EEO)/Affirmative Action (AA)/DBE/OJT requirements contained in the contract. (Standard Special Provisions, Project Special Provisions and FHWA Form 1273.)	✓	✓

DESCRIPTION OF TASK	CONSULTANT	CDOT
b. Complete and submit to the CDOT Resident Engineer, the required number of CDOT Form 280 – Equal Employment Opportunity and Labor Compliance Verification.	✓	✓
c. Monitor DBE participation to ensure compliance with the “commercially useful function” requirements.	✓	✓
d. Complete and submit to the CDOT Region EEO Administrative Program Specialist, the applicable number CDOT Form #200 – OJT Training Questionnaire, when project utilizes OJT’s.	✓	✓
e. Check certified payrolls to verify contractor/subcontractor compliance with contract requirements. Project personnel trained in payroll checking shall complete the checking. (Contact the Region EEO Administrative Program Specialist for training requirements.)	✓	✓
f. Coordinate submittals by Contractor and all subcontractors of FHWA Form 1391 (Highway Construction Contractor’s Annual EEO Report) to the CDOT Region EEO Administrative Program Specialist.	✓	✓
12. Materials:		
a. CDOT Form # 250 – Materials Documentation Record:	✓	✓
(1) Fill out and distribute CDOT Form # 250 before the Contractor commences work.	✓	✓
(2) Complete Form # 250 after work is completed; distribute per instructions in CDOT Materials Manual.	✓	✓
b. Approve changes to the Typical Section (requires a CMO).		✓
c. Development, checking and design mix approvals:	✓	✓
(1) Concrete	✓	✓
(2) Hot Bituminous Pavement	✓	✓
d. Acceptance of manufactured products	✓	✓
e. Inspecting fabrication of structural steel and pre-cast concrete structural components.	✓	✓
f. Inspecting fabrication of bearing devices	✓	
g. Laboratory check testing.	✓	✓

DESCRIPTION OF TASK	CONSULTANT	CDOT
h. Acceptance testing.	✓	✓
i. Independent assurance testing - develop, complete and distribute CDOT Form # 379 – Project Independent Assurance Sampling Schedule.		✓
j. Approve sources of materials.	✓	
13. Maintain time counts	✓	✓
14. Maintain project files for documentation; provide duplicate documentation to CDOT Resident Engineer when requested.	✓	✓
15. Obtain, accept, and approve all required material certifications.	✓	✓
16. Approve shop drawings	✓	✓
17. Perform Traffic Control Inspections	✓	✓
18. Approve traffic signal equipment		✓
19. Construction surveying – quality control checking and quantity verification as needed.	✓	
20. ROW Monumentation – quality control checking		✓
21. Prepare monthly estimates of the Contractor's work performed, materials placed or stockpiled materials on hand in accordance with the Contract. <i>Note: Only a CDOT Resident Engineer can approve and sign vouchers for interim and final Contractor pay estimates.</i>	✓	✓
22. Review interim and final billings for Utility relocation work. <i>Note: Only a CDOT Resident Engineer can approve and sign vouchers for interim and final Utility Company billings.</i>	✓	✓
23. Prepare CDOT Form # 90 [Contract Modification Order (CMO)] and/or # 90 [Minor Contract Revision (MCR)] including letter of explanation for CMO/MCR <i>Note: The Consultant may negotiate costs for extra work but only CDOT can approve costs. Only the CDOT Resident Engineer can approve and sign CMO/MCR's for modifying CDOT's Contract or paying the Contractor.</i>	✓	✓
24. Monitor project financial status and submit monthly in a format acceptable to the Region, such as CDOT Form # 65a – Project Financial Status Report.	✓	✓

DESCRIPTION OF TASK	CONSULTANT	CDOT
25. Prepare and submit monthly progress reports to the Region Program Engineer: CDOT Form # 110a – Status of Active Construction Projects and CDOT Form # 517a – Status of Construction Project Finals	✓	✓
26. Prepare appropriate responses to Contractor, subcontractor or supplier requests for information, submittals, disputes, claims, change notices, or other correspondence.	✓	✓
27. Prepare response for Project Engineer status of claim & Claim Status Report Form	✓	✓
28. Prepare complete claim record	✓	
29. Give oral or written presentation to Region Director for claims.	✓	✓
30. Give presentation for Claim Review Board or AAA Arbitration board.	✓	✓
31. Conduct routine, random, project reviews to ensure the project is being administered in accordance with the terms of the construction contract.	✓	✓
32. Conduct final project inspection of completed or unacceptable work and prepare punch list for final acceptance.	✓	✓
33. Prepare and submit CDOT Form # 1212a – Final Acceptance Report	✓	✓
34. Prepare final project acceptance letter and distribute per procedures in the CDOT Construction Manual.	✓	
35. Advertise for final settlement.		✓
36. Maintain accurate as constructed notes and prepare and distribute final as-constructed plans per procedures in the CDOT Construction Manual.	✓	✓
37. Check final quantities, final plans, and prepare the final pay estimate. <i>Note: Only CDOT can sign final pay estimate sheets and voucher.</i>	✓	✓
38. Check material records.	✓	✓
39. Submit final materials certifications	✓	✓

DESCRIPTION OF TASK	CONSULTANT	CDOT
40. Obtain and review CDOT Form # 17 – Contractor DBE Payment Certification from the Contractor and submit to the Region.	✓	✓
41. Obtain and review FHWA Form PR 47 (Statement of Materials and Labor Used) from the Contractor, check and submit to the Region.	✓	✓
42. Complete and submit CDOT Form # 950 for project closure.		✓
43. Submit original of all project records to the CDOT Resident Engineer. (CDOT will retain project records for six years from the date of project closure.)		✓