

**SH21 (POWERS BLVD.) & RESEARCH INTERCHANGE
CONSTRUCTION ADMINISTRATION
SCOPE OF WORK**

Scope Date: December, 2020
Estimated Construction Start Date: May, 2021
Region 2

PROJECT NUMBER: STM 0212-011
PROJECT CODE: 23522
CMS ID NUMBER: TBD
PROJECT LOCATION: SH 21 (Powers Blvd.) & Research Intersection
CONTRACT TYPE: Project Specific, Specific Rate of Pay
CONTRACT SUBJECT: Construction Management, Inspection and Testing Services

The Contract Administrator for this Contract will be:

John Hall, PE II
Resident Engineer – Region 2
1480 Quail Lake Loop
Colorado Springs, CO 80906
Office: (719) 227-3200
Email: John.Hall@STATE.CO.US

Active Day to Day administration and monitoring of this contract will be delegated to the following CDOT employee:

Yun Han, PE I
Project Manager – Region 2
1480 Quail Lake Loop
Colorado Springs, CO 80906
Cell: (719) 492-1431
Email: Yunsu.Han@STATE.CO.US

General Requirements

This Scope of Work (SOW) has been carefully reviewed by the Department and reflects a plan of approach based on the known goals. The Consultant's analysis of the project goals, its evaluation of the work elements, and its formulation of the work plan, coupled with its understanding of and sensitivity to the key issues may produce new approaches or modifications to the project's work elements. Therefore, the Final Scope of Work for the project may change in some details to incorporate the Consultant's input. This work is located in Region 2 of the Colorado Department of Transportation.

The positions described herein are anticipated needs. The Department reserves the right to not utilize any of the positions listed if at the time of construction, the Department has available resources to staff the project from within.

Definitions

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

Engineer - The CDOT Project Engineer.

Quality Project Manager – The assistant to the CDOT Project Engineer. Responsible for administering and monitoring the Contract for Consultant Inspectors and Testers.

Consultant - The individual, firm, or corporation under contract by this agreement to perform construction services as outlined below.

Consultant Assistant Project Engineer – The Consultant’s Individual in responsible charge of Consultant services performed as described in this Contract. The Consultant Assistant Project Engineer shall report directly to the CDOT Project Engineer.

Contractor - The individual, firm, or corporation under contract with CDOT to construct the facility.

Initial Project Meeting

The Consultant shall meet with CDOT project personnel to coordinate and schedule the required work prior to active construction. The Consultant shall complete all work in accordance with the approved schedule or as approved by the CDOT Engineer.

Project Description and Project Location

SH 21 (Powers Blvd) and Research Intersection in Colorado Springs, El Paso County, CO area. SH 21 is a major north/south state highway in Colorado Springs, CO.

The limits of the project, SH 21 from milepost 149.00 to 151.00, Colorado Springs, CO.

The key elements of the work on this Project include bridge structure, walls, bridge repair, mill/fill HMA overlay, embankment, safety improvements, drainage, and erosion control.

Work Duration

The time for the work described in this scope of work covers the period from Notice to Proceed to an expected completion date of June 30, 2023. Work will be required during the day, night, on weekends, holidays, and/or on a split-shift basis. Work weeks may be in excess of or less than the standard 40-hour week. The number and types of personnel may be adjusted up or down to meet project(s) workload. The Consultant shall meet with the CDOT Engineer if it is anticipated that Consultant services may not be required for a period exceeding one week. A procedure shall be agreed upon at the Initial Project meeting to resolve this issue.

Anticipated Construction: May 2021 to June 2023

During construction, CDOT anticipates utilizing approximately:

- 1 Assistant Project Engineer (Full-Time)
- 1 Consultant Inspector (Structure) (Full-Time)
- 1 Consultant Inspector (Full-Time), plus additional on call inspectors during key structure, paving and concrete work operations

- 1 Consultant Materials Testing Technician (Senior) - Materials Documentation Specialist (LIMS Materials and COC Entry) (Certifications Required – Asphalt, Concrete, and Soils) (Full-Time)
- 1 Consultant Materials Testing Technician – (Certification Required – Asphalt, Concrete, and Soils) (Full-Time)
- ½ Consultant Material Testing Technician – As needed basis

Ideal team members will demonstrate the ability to work in teams, referencing successful interchange projects (CDOT or similar).

It is anticipated that work may be performed during the day/night shifts for this project. The post F.O.R. level designs indicated that approximately 700 calendar days will be required to complete the work for the contractor. Because we expect a calendar day contract, we anticipate the total construction will occur in approximately 24 months of duration. One additional month is anticipated to be required for punch list completion and project finals documentation.

Conditions Applicable to all Consultant Personnel: Overtime / Travel Pay / Commute Miles

Overtime hours are not allowable per State Fiscal Rules. Labor Hours will be billed to CDOT at the same rate as regular, non-overtime hours. Travel time will not be paid for travel to and from the project. Commuting mileage will not be paid for travel to and from the project. Mileage for travel while on the project will be paid for at the applicable State rate.

Authorization to Proceed

Work shall not commence until requisite Task Order are completed and written Notice to Proceed is received by the consultant, and work shall be completed in the time specified.

Routine Billing & Reporting

The consultant shall provide the following on a regular basis:

- Monthly billing reports in formats suitable to the CDOT Engineer for all contract activities performed by Consultant personnel authorized to perform work on the project.
- Periodic reports and billings required by CDOT Procedural Directive 400.2.

The consultant shall bear all costs related to delay of construction when the Consultant fails to provide qualified personnel when required. The Consultant’s monthly payments may be withheld for that portion of the work for which the consultant personnel fail to provide accurate and timely reporting.

Status of Contract

The consultant shall monitor the fiscal status of the contract, and advise the CDOT Engineer of any potential need to supplement their contract. Failure to monitor contract status and provide timely notification may result in discontinuation of the Consultant’s services. The invoice shall include monthly status reports per the consultant guidelines and shall include budget information.

GENERAL WORK DESCRIPTIONS:

Consultant Inspection Requirements: All personnel on the project should be capable of performing these duties as needed to deal with contingencies.

Project Standards

All construction inspection shall be in accordance with the Colorado Department of Transportation's Construction Manual, Field Materials Manual, Standard Specifications for Road & Bridge Construction, Project Standard Provisions, Project Special Provisions, and the plans and specifications in use when the project is advertised. All Consultant construction inspection activities shall be as authorized by the CDOT Engineer. For the purposes of this document, construction inspection shall be known as "the work" and references to "the specifications" shall include all applicable CDOT Standard Specifications for Road and Bridge Construction as amended by Project Standard Provisions, Project Special Provisions, and project plans and specifications.

General Work Description

The Consultant Project Inspectors shall provide support to the CDOT project staff through assignment of personnel to inspection activities if requested by the CDOT Resident Engineer. The Inspector shall be trained and qualified in accordance with CDOT's Construction Inspection Qualification Plan.

The Consultant Project Inspectors must have experience and expertise with inspection activities related to Road Construction. Experience with significant size projects which include multiple structures, difficult phasing, and significant amount of embankment work is also highly desirable. Inspection responsibilities include but are not limited to:

Assist the CDOT Project Engineer and Consultant Assistant Project Engineer in the following Construction activities:

- Prepare inspection documentation for development of progress payments for the contractor in accordance with prescribed procedures;
- Submit daily diary at the end of the working day;
- Submit payment-documentation reports (Form 266's) at the end of the working day;
- Preparing and transmitting updates of construction activities to the Project Manager for CDOT's Public Information Office;
- Monitoring contractor payroll compliance requirements as they relate to B2G and LCP Tracker;
- Utilize B2G and LCPTracker to check and report compliance with related specifications (<https://www.codot.gov/business/civilrights/compliance/support/b2g>);
- Ensure compliance with permits such as 404 and NPDES;
- Inspection of erosion control, review of SWMP notebook, and participation in Erosion Control Compliance Reviews (includes completion of CARL reporting and drafting of enforcement documentation);
- Understand the principals outlined in the following links and apply them to ensure proper erosion control through final stabilization: https://www.codot.gov/business/designsupport/chief-eng-memos/chief_eng_memo-epa-audit_finding/view, CDOT Construction Manual Section 208, and <https://www.codot.gov/programs/environmental/landscape-architecture/cdot-revegetation-training-modules>.
- Participate and reviews of the Safety Critical Work such as Girder Erection Plans;
- Participate in weekly progress meetings with contractor, subcontractors, utilities and other interested parties;
- Secure project documentation from the contractor;
- Anticipate project problems and propose solutions to CDOT Project Engineer;
- Have read and provide expertise in applying the guidelines of the CDOT Construction Manual.

- Maintain accurate notes reflecting actual construction details to be used in preparation of as-constructed plans;
- Perform initial, follow-up, and final inspections of work in progress including interim and final measurements;
- Notify contractors and CDOT Project Engineer of non-compliance with the contract plans and specifications;
- Perform special tests, investigations, or monitoring to fulfill the intent of the CDOT inspection program;
- Aid in the preparation of correspondence to the contractor, CDOT Staff, local agencies, etc.;
- Provide liaison and communication to contractor field crews;
- Prepare final “As-Constructed” plans upon project completion;
- Deliver material samples to designated laboratories or locations;
- Perform miscellaneous project-related duties as requested by the CDOT Project Engineer.

Labor, Materials, Vehicles & Equipment

The Consultant shall provide the Consultant Inspector with the following:

- A suitable vehicle equipped with programmable LED light bars (Large flashing amber beacon arrays) that shall be visible a minimum of five hundred (500) feet in normal sunlight.
- Newer “smart” cellular phone, able to run new apps such as Survey 123.
- A state-of-the-art computer with networking capability sufficient for accessing internet email through a project-supplied internet-service provider. Each computer shall be loaded with MS Office software (2007 version or later), including MS Word and MS Excel at a minimum. Computers shall be capable of running current CDOT software, including Asphalt '03, Voids '03, Site Manager, etc.
- Miscellaneous equipment (calculator, camera, office supplies, safety equipment, etc.) required to perform the work (ASTM Certified Work Boots, ANSI Certified Hardhat (Z89.1 stamp and be High Visibility), Safety Glasses (Z87 stamp on the glasses/goggles) and Approved Safety Vest. (Meeting or exceeding ISEA for Class 3), including all applicable manuals.
- CDOT will provide a field-office space.

Personnel qualifications, staffing level, and number and types of vehicles shall be subject to the approval of the CDOT Engineer. The Consultant shall assign the core required personnel for the duration of the Contract unless otherwise approved by the CDOT Engineer. Employees required to operate vehicles must possess and maintain a valid State of Colorado driver's license. The Consultant Inspector(s) permanently assigned to a project shall be competent in road and bridge construction and be thoroughly familiar with CDOT specifications, manuals, forms, and documentation requirements including SiteManager. The level of qualification provided shall be as requested and approved by the CDOT Resident Engineer.

Project Personnel Descriptions:

Assistant Project Engineer

- The Assistant Project Engineer (APE) will be responsible for the management of all project documentation. The APE will develop and maintain an electronic structured system for documentation and RFI tracking of the project. The APE will input all Inspector Reports, Change Orders, Stockpile Materials request, B2G, LCP Tracker and any other required information as needed. The APE will prepare all estimates per the direction of the Project Engineer, and will assist and assemble Project Final Documentation (As-Built) for delivery to the Finals Engineer.
- The APE is expected to develop CMO justification memo drafts and cost data analyses within 48 hours of an identified CMO need. And, to ensure all CMO paperwork is completed within 14 days of executing each CMO.
- The APE is also expected to spend 50% of his/her time out on the field

Consultant Inspector (Structure)

- The Consultant Inspector (Structure) shall be responsible for monitoring and inspecting the structural construction for compliance to all CDOT and Federal standards. The Structure Inspector shall have a minimum of 10 years of relevant experience in bridge construction, bridge deck repair, wall construction, and bridge joint inspection. A Registered Professional Engineer in the State of Colorado is not required, however, it is a plus.

Documentation

The Consultant shall provide all correspondence and applicable CDOT forms to the CDOT Project Engineer. 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; 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 (CDOT Form 103a) for each day they perform work on the project. The contents of the diary shall be brief and accurate statements of progress and conditions encountered during the prosecution of the work, and sketches as needed for clarification and documentation. 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 available to the CDOT Engineer at the end of each workday and a copy shall be filed in the project records within one working day of its date.

All project documentations shall be uploaded into ProjectWise Share electronically with digital signatures (where applicable) including but not limited to MHT's, Traffic Control Daily Diaries, CDOT and Consultant Daily diaries (103), 266's, Weekly Progress Meeting minutes, Speed Memo, Time Counts, estimates, as-constructed plan, CO, and etc.

Consultant Materials Testing Technician Requirements: Project Standards

All sampling, testing, inspection, and documentation shall be in accordance with the Colorado Department of Transportation (CDOT) Construction Manual, Field Materials Manual, CDOT M&S Standards, and applicable Project and Standard Special Provisions in the construction project contract and the applicable CDOT Standard Specifications for Road and Bridge Construction. The applicable CDOT Manual shall be the one currently in use when the construction project is advertised

If the required method is not described in the CDOT Field Materials Manual, the required work shall be completed in accordance with AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing (as revised and supplemented),

Proposed work procedures shall be coordinated with the CDOT Engineer prior to the start of work.

General Work Description

1. Consultant Materials Testing Technician (Senior) – Materials Documentation Specialist (LIMS Materials and COC Entry) (Certifications Required – Asphalt, Concrete, and Soils) (Full-Time)
2. Consultant Materials Testing Technician – (Certification Required – Asphalt, Concrete, and Soils) (Full-Time)
3. ½ Time Consultant Material Testing Technician – As needed it basis

The Consultant MTTs (Materials Testing Technicians) shall sample, test, and document all 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 Plans and Specifications. The number of tests required shall be in accordance with the Schedule in the Field Materials Manual. Additional quantities may be added by Contract Modification Order, or plan approximate quantities may be increased or decreased. The MTTs, the Consultant Assistant Project Engineer, and the CDOT Engineer will review project quantities on a weekly basis to ensure that sufficient tests have been performed for all material placed to date. The MTT will set-

up and maintain all materials books (both hard copies and electronic format). The consultant shall also provide any other project-related services requested by the CDOT Project Engineer.

The Consultant Senior MTT shall perform weekly review of the CAR Form 250 and Certification Checklist. Any deficiencies of testing frequencies, lack of COC's, CTR, and etc. shall be discussed with CDOT Project Engineer and Consultant Team for immediate mitigation.

Testing of materials that are specifically designated to be pre-inspected or pre-tested by this or any other Department of Transportation will remain the responsibility of CDOT. The 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 "Central Laboratory" in the Schedule in the Field Materials Manual.

The Consultant shall follow the requirements of CP-16 to meet, coordinate and schedule the required work with the CDOT Engineer and Resident Engineer. The consultant shall complete all work in accordance with their approved schedule. The consultant materials testing evaluation form shall be completed by the CDOT Engineer or Resident Engineer and head tester, and distributed as described in CP-16. The CDOT Engineer shall forward a copy of the completed Pre-Testing Meeting Agenda for Consultant Materials Testing to the Region Materials Engineer.

In addition to the tasks identified in **Consultant Materials Testing Technician Requirements**, the MTTs shall assist the CDOT Engineer in performance of construction inspection activities and other project-related activities, as directed by the CDOT Engineer, when they are not required to perform the MTT related activities. Inspection responsibilities may include but are not limited to those identified in the **Consultant Inspector Requirements** above.

Labor, Materials, Vehicles & Equipment

The Consultant shall furnish the Consultant Materials Testing Technician with the following:

- A suitable vehicle equipped with programmable LED light bars (Large flashing amber beacon arrays) that shall be visible a minimum of five hundred (500) feet in normal sunlight.
- Newer "smart" cellular phone, able to run new apps such as Survey 123.
- A state-of-the-art computer with networking capability sufficient for accessing internet email through a project-supplied internet-service provider. This computer shall be loaded with MS Office software (2003 version or later), including MS Word and MS Excel at a minimum. This computer shall be capable of running current CDOT software, including Asphalt '03, Voids '03, Site Manager, etc. This computer shall be connected or networked to the Consultant-supplied main project printer/scanner described above, or shall be provided with a separate stand-alone printer.
- Miscellaneous equipment (calculator, camera, office supplies, safety equipment, etc.) required to perform the work (ASTM Certified Work Boots, ANSI Certified Hardhat (Z89.1 stamp and be High Visibility), Safety Glasses (Z87 stamp on the glasses/goggles) and Approved Safety Vest. (Meeting or exceeding ISEA for Class 3) including all applicable manuals.
- CDOT will provide a Class II field laboratory.

The following equipment shall be furnished along with the MTTs for each project in sufficient quantity and in good working order (with current calibration) to ensure accurate performance of all work required in a timely manner. Such equipment and supplies shall remain the property of the consultant.

- Nuclear Asphalt Content and Moisture/Density Gauge;
- Concrete air meter, slump cone, thermometers, and other concrete testing equipment;
- Sieves for aggregates and soil gradations;
- Electronic scales;
- Small tools;
- Proctor equipment for soil curves and one point tests;

- Atterburg and Sand Equivalent equipment;
- Sample hauling containers, and drying containers, and equipment;
- Concrete cylinder molds which meet AASHTO requirements;
- Miscellaneous equipment for performing the required soils, asphalt and concrete tests.

Personnel qualifications, staffing level, and number and types of vehicles shall be subject to the approval of the CDOT Engineer. The MTTs shall be thoroughly familiar with CDOT specification, manuals, forms, and documentation requirements. The MTTs shall be permanently assigned to a project for the duration of the project and shall have the following qualifications:

1. A degree in Engineering or related Science(s) from a four year curriculum school or a *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 or five (5) years of field testing experience with CDOT construction projects.
2. The MTT performing concrete tests shall be certified by *The American Concrete Institute (ACI)*.
3. The MTT performing hot bituminous pavement tests shall be Level II, A&B certified by *The Colorado Asphalt Technician Certification Program (LabCAT)*.
4. WAQTC, Soils Certification
5. In addition, the Consultant MTT must be certified in the appropriate classes of CDOT's Inspector Qualification Program.

A copy of work experience and proof of Certification, Degree, and/or License shall be provided to the CDOT Engineer before work begins. 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 Project Engineer.

Documentation

The MTT shall maintain a daily diary (CDOT Form 103a) for each day the MTT performs work on the project. The contents of the diary shall be brief and accurate statements of progress and conditions encountered during the prosecution of the work, and sketches as needed for clarification and documentation. 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 available to the CDOT Engineer at the end of each workday.

Test results and sample submittals transmitted to CDOT's Region or Central Laboratory shall be recorded on appropriate CDOT Forms. The MTT may use CDOT worksheets or worksheets approved by the CDOT Engineer. CDOT Forms and worksheets are available through the CDOT Engineer.

The MTT shall furnish the CDOT Engineer with original copies of all worksheets and test results on a daily basis. The MTT shall also keep the CDOT Form 626 up to date at all times and provide copies of this form to the CDOT Engineer within 12 hours.

The CDOT Engineer shall be informed immediately of any non-specification material. At the discretion of the CDOT Engineer, the MTT may also be required to provide the CDOT Form 626 to the contractor within 12 hours for any non-specification material.

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

Assurance Sampling and Testing

The MTT shall coordinate the schedule of the Independent Assurance Tests (IAT) for the project with the Region Materials Section in accordance with the CDOT Form 379. Advance notice of 48 hours is required for proper coordination.

Submittal of Final Documentation

Final documentation shall be submitted to the CDOT Engineer within 7 calendar days after completion of all work. A completed CDOT Form 250 shall be submitted to the CDOT Engineer 4 days after the consultant has been notified of final quantities. Failure to submit final documentation as required will result in withholding of consultant payments.

Additional Construction Inspection and Materials Testing Requirements:

In addition to the qualifications, requirements set forth above, the following certifications will also be required:

Class/Certification	Consultant Inspector	MTT
Basic Highway Math	X*	X
Basic Construction Surveying	X*	X
Basic Highway Plan Reading	X*	X
Storm water Management and Erosion Control	X	
CCA Traffic Control Supervisor	X	
LabCAT (Levels)	Level A & I	A & B
Excavation & Embankment	X	X
WAQTC		X
ACI Field Testing Tech I		X

* Not required if the Consultant is a licensed Professional Engineer or EIT