NON-PROJECT / NON-TASK SPECIFIC
General Construction Management, Construction Inspection & Material Testing
SCOPE OF WORK – JOINT REGION 3 & REGION 5

CONTRACT ADMINISTRATION:

REGION TRANSPORTATON DIRECTOR:
RICHARD REYNOLDS
COLORADO DEPARTMENT OF TRANSPORTATION
REGION 5
3803 N. MAIN STREET, #306
DURANGO, CO 81301
PHONE (970) 385-1404

REGION TRANSPORTATON DIRECTOR:
WELDON ALLEN
COLORADO DEPARTMENT OF TRANSPORTATION
REGION 3
222 S. 6TH STREET, ROOM 317
GRAND JUNCTION, COLORADO 81501
PHONE (970) 248-7225

General administration of this contract will be delegated to Keith Powers Region 5. Active day to day administration and monitoring of task orders will be delegated to Region(s) Resident Engineers within each task order.

COLORADO DEPARTMENT OF TRANSPORTATION

*SCOPE OF WORK FOR:

- **I. Project Materials Testing**
- **II. Region 3 & 5 Materials Laboratory Testing**
- **III. Construction Project Management**
- **IV. Project Construction Inspection**
- **V. Highway Materials Evaluation**
- **VI. Voids Acceptance Laboratory**

VII. Profiling

VIII. Other Services

Note: This Scope of Work has been carefully reviewed by the Department and reflects an approach based on the known goals of Region 3 & 5. 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.

GENERAL REQUIREMENTS

WORK DURATION:

The time period for the work described in this scope is 730 calendar days. Work may be required: night or day; weekends; holidays; or on a split shift basis.

AUTHORIZATION TO PROCEED:

Work shall not commence until the consultant receives the written Notice to Proceed. Work shall be completed within the allotted contract time. Time charged shall be exclusive of time lost for:

- Reviews and approvals
- Responses/direction from CDOT

ROUTINE REPORTING AND BILLING:

The consultant shall provide the following on a routine basis:

- Coordination of all contract activities by the Consultant's Project Manager when required
- Periodic reports and billings required by CDOT Procedural Directive 400.2

STATUS OF PROJECT:

The consultant shall monitor the status of work, and advise the CDOT Project Engineer/Manager of any potential need for supplementing their contract. Failure to monitor work status and provide timely notification may result in discontinuing the consultant's services relative to the task order until a supplemental agreement can be affected.

PROJECT STANDARDS:

All sampling, testing, and documentation shall be in accordance with *the Colorado Department of Transportation (CDOT) Field Materials Manual, Construction 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 Field Materials Manual,* including *Colorado Procedures and Colorado Procedure-Laboratory,* 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 the current *AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing* (as revised and supplemented) or the *ASTM Standards and Tentatives.* Proposed work procedures shall be coordinated with the CDOT Project Engineer prior to the start of work.

I. GENERAL WORK DESCRIPTION FOR PROJECT MATERIALS TESTING:

The consultant shall sample, test and inspect those specified materials utilized in construction. Test results and inspection observations shall be documented and approved by the CDOT Project Engineer in accordance with the references cited below under PROJECT STANDARDS. Project specific work will be defined by task order, prior to work commencing.

MANAGEMENT OF CONSULTANT PROJECT MATERIALS TESTING:

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

PROJECT STAFFING AUTHORITY:

The CDOT Project Engineer is in direct charge of the work and is responsible for administration of the project contract as defined in the CDOT Standard Specifications. This includes approving and setting work hours for both project construction and the materials testing.

LABOR, MATERIALS, AND EQUIPMENT:

The consultant shall furnish all personnel, materials, and equipment required to perform the work. CDOT will provide a field laboratory for many of the construction projects and the required traffic control for all of the construction projects. The CDOT Project Engineer will advise the consultant on the availability of the field laboratory. When a field laboratory is not provided, the consultant shall use his own facilities (**Note: For Asphalt Voids Acceptance projects see V. Voids Acceptance Laboratory)**. When the consultant is required to use his own facility, he shall follow the Laboratory Qualification Program requirements contained in the applicable CP-10.

The following equipment and supplies shall be furnished by the consultant for each project in sufficient quantity to ensure performance of all work required in a timely manner. Such equipment and supplies shall remain the property of the consultant.

1. A.C. content gauge and/or extraction equipment and solvents
2. Nuclear Moisture/Density gauge
3. Concrete air meter, slump cone, and other concrete testing equipment
4. Sieves for aggregates and soil gradations
5. Scales
6. Sample containers and small tools
7. Proctor equipment for soil curves and 1 point tests
8. Atterberg equipment
9. Sample drying equipment
10. Miscellaneous equipment for performing the required soils, concrete and asphalt field tests
11. Concrete cylinder molds, which conform to AASHTO requirements, except that PAPER MOLDS SHALL NOT BE USED, AND PLASTIC MOLDS SHALL NOT BE REUSED
12. Cell Phone for each tester
13. Computer and printer for each test lab (CDOT or Consultant). This equipment needs to have capability to operate all current CDOT project software as defined in the current migration plan. This includes Site Manager and an email account.
14. Ignition Oven for determining asphalt binder content and RAP gradations meeting specifications of CPL 5120.

Personnel staffing level and qualifications of testing personnel and laboratories for the project shall be subject to the approval of the CDOT Project Engineer. The CDOT Project Engineer shall receive and review the testing personnel and consultant laboratory qualifications prior to commencement of testing on the project.

Sampling and testing personnel qualifications shall be in conformance with the requirements of the applicable CP-10. Additionally the tester must possess a current and valid Colorado Driver's license.

The Consultant's work shall be under the direction of, and shall be reviewed, stamped and signed by a Professional Engineer registered in the State of Colorado. The only work to be stamped will be the summary sheets; i.e., CDOT Forms 6, 9, 58, 69, 212, 250, and 554. The Project Engineer may request that additional forms be stamped. The

Professional Engineer shall be available to review work, resolve problems, and make decisions in a timely manner as requested by the CDOT Project Engineer, and must be experienced and competent in road and bridge construction materials testing.

Copies of the tester's required certifications and a resume including his/her materials testing experience shall be provided to the CDOT Project Engineer.

The materials testing technician(s) shall be thoroughly familiar with CDOT testing procedures, forms and documentation requirements. If oversight is necessary, the consultant shall provide the supervision and guidance needed for completion of the work. Oversight required by the consultant will not be paid for by CDOT. The materials testing technician(s) and inspector(s) shall be thoroughly familiar with CDOT forms and documentation requirements.

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. Failure to perform the testing and documentation processes may result in termination of the task order as determined by the Task Order Administrator (Project Manager).

SPECIFIC TESTING REQUIREMENTS:

The consultant shall sample, test, inspect, and document all materials generated and produced on the project. This includes: materials delivered to the project that are listed in the Summary of Approximate Quantities in accordance with the **SCHEDULE** in the Field Materials Manual; materials that may be added to the project through contract modification; and altered material quantities whether increased or decreased. The consultant's Project Manager, field tester(s) and CDOT's Project Engineer shall be required to review project quantities on a monthly basis to ensure that sufficient tests have been performed for the material placed to date. The consultant shall also provide any other services as requested by the CDOT Project Engineer.

Testing of materials that are specifically designated to be preinspected or pretested by this or any other Department of Transportation shall remain the responsibility of CDOT. The consultant shall document and transport samples of any and all materials to the CDOT Central Laboratory that are required to be tested by CDOT regardless of preinspection or pretesting responsibilities. The items and test frequencies of Department tested materials shall be in accordance with the column titled "Central Laboratory" in the SCHEDULE.

DOCUMENTATION:

Each of the consultant's field testers shall maintain a daily diary for each day the tester performs work on the project. They may use CDOT's Form 103, Project Diary, or a form as approved by the CDOT Project Engineer. The contents of the diary shall be brief and accurate statement 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 three working days of its date. Test results, sample submittals and inspection documentation transmitted to CDOT's Region or Central Laboratory shall be recorded on appropriate CDOT Forms. The consultant's Project Manager and field tester(s) shall be required to review project quantities on a weekly basis to ensure that sufficient tests have been performed for the material placed to date. The consultant may use CDOT worksheets or worksheets approved by the CDOT Project Engineer. CDOT Forms and worksheets are available through the Residency Head Tester, Project Manager or Region Materials at no cost to the consultant.

The consultant shall furnish the CDOT Project Engineer with copies of all worksheets on a daily basis. The consultant shall also keep the CDOT Form 626 up to date at all times and provide copies of this form to the CDOT Project Engineer and the contractor within 12 hours for any material found to be out of compliance with the specifications.

The consultant shall coordinate the schedule for Independent Assurance Tests for the project in accordance with CDOT Form 379, with the Residency Head Tester, or directly with the Region IAT personnel.

SUBMITTAL OF FINAL DOCUMENTATION:

Final documentation shall be submitted to the CDOT Project Engineer within 20 working days after project acceptance. A completed CDOT Form 250 shall be submitted to the CDOT Project Engineer 10 days after the consultant has been notified of final quantities. Failure to submit final documentation as required may result in withholding any and all consultant payments.

II.GENERAL WORK DESCRIPTION FOR REGION MATERIALS LABORATORY TESTING (Including the Voids Acceptance Tester):

This work consists of materials testing at the Region Materials Laboratory (located in Grand Junction and Durango), the Regions mobile laboratorys (potentially located any where in Regions) or an approved laboratory furnished by consultant or contractor. Materials testing could involve a wide range of projects consisting of, but not limited to, the resurfacing, reconstruction, maintenance and new construction projects. When the consultant is required to use his own facility **(Note: For Asphalt Voids Acceptance see V. Voids Acceptance Laboratory)**, he shall follow the Laboratory Qualification Program requirements contained in the applicable CP-10.

MANAGEMENT OF CONSULTANT REGION LABORATORY MATERIALS TESTING:

The consultant, CDOT Region 3 or 5 Materials Engineer and CDOT Region 3 or 5 Materials Lab Manager shall meet, coordinate and schedule the required work. The consultant shall complete all work in accordance with their approved schedule.

PROJECT STAFFING AUTHORITY:

The CDOT Region 3 or 5 Materials Engineer is in direct charge of the work in the Region Materials Lab and is responsible for administration of the project contract as defined in the CDOT Standard Specifications. This includes approving and setting work hours for the materials testing.

PROJECT STANDARDS:

The consultant tester(s) must meet the requirements of Chapter 800 of the Field Materials Manual, be a minimum of 19 years of age and possess a personnel-monitoring device.
Personnel staffing level and qualifications of testing personnel and laboratories for the project shall be subject to the approval of the CDOT Project Manager. The CDOT Project Manager shall receive and review the testing personnel qualifications prior to commencement of the work. When required, the consultant tester's work may be required to be under the direction of a Professional Engineer licensed in the State of Colorado. The Professional Engineer shall be available to review work, resolve problems, and make decisions in a timely manner as requested by the Region 3 or 5 Materials Engineer. Personnel Staffing level and qualifications of testing personnel and laboratories for this work shall be subject to the approval of the Region 3 or 5 Materials Engineer. The Region 3 or 5 Materials Engineer shall receive and review the testing personnel and consultant laboratory qualifications prior to commencement of testing.

Activities will include sampling, sample reducing, and testing materials supplied to and/or produced on the projects. This includes but is not limited to performing the following tests:

1. Rice Test (CP 51)
2. Gradations of aggregate (CP 31)
3. Bulk Specific Gravity of cores and/or compacted mix (CP 44 and CP-L 5103)
4. Fine aggregate angularity (CP-L 5113)
5. Standard Method for Preparing and Determining the Density of Bituminous Mixture Test Specimens by Means of the Superpave Gyratory Compactor (CP-L 5105 and CP-L 5115)
6. Hveem Stability (CP-L 5106)
7. Lottman Testing (CP-L 5109)
8. AC Content by Nuclear Method (CP 85)
9. AC Content by Ignition Method (CP-L 5120)
10. Sand Equivalent Test (AASHTO T-176)
11. Liquid Limit and Plasticity Index of Soils (AASHTO T-89, T-90)
12. Moisture Density Relations of Soils (AASHTO T-99, T-180)

Assist with documentation, general cleanup and routine laboratory equipment upkeep as needed. The consultant may enter results into a computer database. The tester(s) may assist Region 3 or 5 Materials lab personnel (using mobile drill rig) in the collection of soil profile data and samples.

Tests will be performed in accordance with the applicable CDOT Field Materials Manual, CDOT Laboratory Manual of Test Procedures, and/or AASHTO and ASTM Test Procedures. The Region 3 Materials Engineer will determine testing frequency.

The contract tester(s) may be allowed the use of Region 3 or 5 Materials Laboratory and all equipment, except for nuclear moisture density gauges, in order to conduct the required testing, when deemed necessary by the Region 3 or 5 Materials Engineer. Unless designated, the consultant tester will conduct his/her testing services in the lab provided.

The Region 3 or 5 Materials Engineer may designate a member of his staff to represent him in the contract.

SPECIAL QUALIFICATIONS OF REGION 3 or 5 LABORATORY MATERIALS TESTER(S)

Tester(s) must have a working knowledge, a minimum of 320 hours relevant experience, and possess and maintain current relevant certifications in the following programs for the duration of the task order:

- *CAPA (LABCAT) asphalt technician* Certification in Levels A,B (and C iv Voids Acceptance)
- *WAQTC Embankment & Base Testing Technician* Certification

Tester(s) must possess a current and valid Colorado Driver's License

III.CONSTRUCTION PROJECT MANAGEMENT

Construction Services - The scope of work for construction services may include:

Provide construction management and engineering personnel including a professionally licensed engineer, materials testing, and inspection.

Construction inspection to ensure compliance with plans and specifications.

Work assignments may be for any shift in the 24-hour day. Project site may be anywhere within geographic boundaries of CDOT Region 3 & 5.

Review of Contractor submittals including falsework and shoring.

Provide necessary equipment including cell phones, vehicles and computer equipment capable of interfacing with CDOT software/hardware.

IV. PROJECT MANAGEMENT & CONSTRUCTION INSPECTION

In addition to the construction inspection tasks identified in **I. Project Materials Testing,** the construction inspector(s) shall assist the CDOT Project Engineer in performance of construction inspection activities and other project-related activities, as directed by the CDOT Project Engineer. Inspection responsibilities may include but are not limited to the following:

- Reviewing periodic reports and billings
- Participation in weekly progress meetings with contractor, sub contractors, utilities, and other interested parties;
- Anticipating project problems and suggesting solutions to the CDOT Project Engineer
- 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 and the Manual of Uniform Traffic Control Devices;
- Initial, follow-up, completion, and final inspections of work in progress, including interim and final measurements;
- Notifying contractor and Project Engineer of non-compliance with the contract plan and specifications;
- Performance of special tests, investigations, or monitoring which are required to fulfill the intent of the CDOT inspection program;
- Completing inspection documentation using CDOT forms for the development of progress payments for the contractor in accordance with CDOT's prescribed procedures;
- Submittal of standard documentation reports no later than the following working day;
- Preparation of routine correspondence to the contractor, CDOT Staff, local agencies, etc;
- Providing liaison and communication to contractor field crews;
- Assisting in preparing punch lists of uncompleted work, non-conformance reports, and deficiency notices;
- Maintaining accurate field notes during construction reflecting actual construction details to be used in preparation of the as-constructed plans;
- Miscellaneous project-related duties as directed by the CDOT Project Engineer.

Inspection observations shall be documented and approved by the CDOT Project Engineer in accordance with the references cited below under PROJECT STANDARDS. Project specific work will be defined by task order, prior to work commencing.

MANAGEMENT OF CONSULTANT PROJECT CONSTRUCTION INSPECTION

The consultant, CDOT Project Engineer, and Resident shall meet, coordinate and schedule the required work. The consultant shall complete all work in accordance with their approved schedule.

PROJECT STAFFING AUTHORITY:

The CDOT Project Engineer is in direct charge of the work and is responsible for administration of the project contract as defined in the CDOT Standard Specifications. This includes approving and setting work hours for both project construction and inspection.

LABOR, MATERIALS, AND EQUIPMENT:

The consultant shall furnish all personnel, materials, and equipment required to perform the work in a timely manner:

- Clipboard, string line, 4-foot carpenter level
- Miscellaneous equipment to include calculator, officer supplies, and personal safety equipment
- Cell phone
- Project transportation

SPECIAL QUALIFICATIONS FOR CONSTRUCTION PROJECT INSPECTORS

The construction inspector(s) must possess a current and valid Colorado Driver's license The construction inspector(s) must be certified in the areas of inspection to be performed by the CDOT Construction Inspector Qualification Program.

V.GENERAL WORK DESCRIPTION FOR HIGHWAY MATERIALS EVALUATION:

The scope includes all necessary work to assess product performance relating to material utilization on highway projects.

The purpose of the highway materials work is to accomplish field investigation, literature review or technical evaluation to determine suitability of material for inclusion or exclusion pertaining to highway projects. This work may be accomplished in a preliminary phase, construction phase or post-project investigation. The processes necessary to conduct Materials work may include, but are not limited to, the following activities: material source investigation (aggregate pit processing methods, quality verification), recommendations on aggregate pit suitability and involvement with maintaining and concluding pit permits, material additive issues (e.g. lime), test result variance, material property correlation with test results, review of construction techniques as they affect material properties, roadway distress evaluation, value engineering proposal evaluation, selection of pavement types and determination of typical sections for the pavement structure.

MANAGEMENT OF CONSULTANT HIGHWAY MATERIALS EVALUATION

The consultant, CDOT Region Material Engineer shall meet, coordinate and schedule the required work

DOCUMENTATION:

The final product of Material work will be reports containing problem descriptions and recommendations for solutions or a synopsis of the issues. Included in reports may be appropriate test results and analysis of findings.

Project specific work will be defined by task order, prior to work commencing.

VI.**VOIDS ACCEPTANCE LABORATORY**

At the direction of the CDOT Project Engineer, the consultant shall furnish and equip an operable voids acceptance laboratory at a location deemed acceptable to CDOT. The purpose of the laboratory is to provide a working environment for the consultant's tester or for a CDOT tester to perform volumetric testing on asphalt samples for the purpose of Quality Assurance (QA) testing. It is expected that all equipment will be operated in the lab to generate sample results. Testing documentation will be generated and distributed from the **voids acceptance laboratory.** The traveling distance from the project site to the **voids acceptance laboratory** will be deemed to be of paramount importance in obtaining timely test results.

MINIMUM REQUIREMENT FOR VOIDS ACCEPTANCE LABORATORY

The Voids Acceptance Laboratory (Voids Lab) will be subject to the approval of the project engineer and must pass inspection as provided by CDOT Field Materials Manual CP 11 , 8.1.

The Voids Lab must be temperature controlled to provide a suitable working environment for the testing personnel and applicable ambient temperatures for testing. Space must be adequate to provide for safe and reasonable testing conditions.

An acceptable **Voids Lab** should have a minimum of 384 Square Feet of space such as a 48 feet long by 8 feet wide trailer.

The minimum amount of operational equipment should be as follows:

- Water bath (circulating 140 F)
- Water bath (circulating 77 F)
- Forced Draft Oven 4 cu ft (minimum of 3)

- Incubator 6 cu ft
- Freezer 4.7 cu ft
- Thermometer (293 to 401 F) certified
- Thermometer (203 to 311 F) certified
- Thermometers (-8 to 30 F)
- Thermometers (daily use)
- Dessicating Crystals
- Compression Testing Machine
- Super Pave Gyratory Compactor---Troxler model 4140-B
- Accessories for Gyratory—3 molds (100 mm), Calibration Kit, printer
- Vacuum Pump
- Vibro de-aerator
- Mechanical Splitter
- Quartermaster---Gilson
- Manometer
- Fine Aggregate Voids Device CPL 5113
- Sieves—12 inch brass
- Stabilometer
- Lottman Breaking Head
- Ignition Furnace CPL 5120
- Microwave Oven—1.1 cu ft, 10 power levels
- Puck extractor
- Computer for CDOT Asphalt software (Voids03 & Millennium) and email
- Supporting equipment e.g. glassware, scoops, cooling fans, gloves etc.

VII.**PROFILING**

The selected Consultant will identify two pavement smoothness testing contractors (PSTC) to be used in the Region.

The PSTC shall supply:

- A high speed profiler (HSP) with a current CP 78 certification
- A HSP operator with a current LabCAT Level S certification

The PSTC shall be capable of mobilizing to a Project within 7 days upon notification by the Department.

The PSTC will collect pavement smoothness data on a Project following the procedures of CP 74 and in compliance CDOT specifications.

The PSTC will submit the pavement smoothness data file to the Department within 48 hours after it was collected. All data submitted to the Department shall be reviewed by a Professional Engineer for accuracy and completeness. The data may be submitted on either a CD or thumb drive. If the PSTC utilizes a HSP manufactured by International Cybernetics Corp (ICC) the data shall be submitted in the native ICC file format. If the

PSTC does not utilize an ICC HSP, the data shall be submitted in a format recognizable by ProVAL 2.7. Along with the pavement smoothness data, the PSTC shall submit a detailed log identifying the location of each exclusion area.

The Consultant shall select which PSTC will be used on a Project. The PSTC shall not perform both QC and QA work on a Project.

PSTC time will be paid hourly to include mobilization time, testing time, demobilization & processing time.

Note: The CDOT Project Manager will use the cover sheet on the following page, together with the Contract Scope, in order to provide a consistent Task Order request template. The CDOT Project Manager will fill in the Task Order #, the Scope request date, and the other Project information. The CDOT Project Manager will also indicate the requested services for the Task Order by marking one or more of the listed materials services, and will also attach any additional project-specific details or information necessary to complete the Scope package for the Task Order.

1. Scope Of Work

Task Order # _____
Region 3 and 5 Materials Testing and Construction Inspection Services

Date: _____

Project Number: _____

Project Location: _____

Scope of Work For:

- **I. Project Materials Testing**
- **II. Region 3 and 5 Materials Laboratory Testing**
- **III. Project Construction Inspection**
- **IV. Highway Materials Evaluation**
- **V. Voids Acceptance Laboratory**
- **VI. Profiling**

Active day – to – day administration of this contract will be delegated to:

NAME: _____

TITLE: _____

ADDRESS: _____

_____

TELEPHONE NUMBER: _____

VIII. Other Services

As requested by the Regions and specified in the task orders other services not specified above may be requested on an as needed basis. The scope of work for these services will include the details of the needs