I. GENERAL

The goal of this project is to develop a risk based inspection program for retaining walls and sound walls, inventory and inspect the retaining walls and sound walls on Colorado’s state highway system, report the conditions of the individual walls to the Colorado Department of Transportation (CDOT), Staff Bridge, utilize a web based data management to gain efficiency in collecting and distributing data that integrates with our PONTIS and NBIS databases, and meet compliance with any FHWA requirements and guidelines. Retaining walls and sound walls will be referred to as “structures” hereafter in this Scope of Work (Scope). The Colorado Department of Transportation will be referred to as the “Owner” hereinafter in this Scope.

The purpose of this scope is to update the inventory, conduct inspections and report the findings to the Owner on the state’s structures in accordance with the most current version of the Recording and Coding Guide for the Inventory and Inspection of Colorado’s Retaining Walls and Sound Walls. The guide will be developed in this project.

It is anticipated that task orders will be written to this contract for a period of four years to perform the following work:

A. Development of a CDOT Recording and Coding Guide for the Inventory and Inspection of Colorado’s Retaining Walls and Sound Walls.

B. Development or recommend of a web based data management system compatible with the CDOT PONTIS version 5.x and NBIS databases. Integration with other databases may be required as identified in the individual task orders.

C. Development of a risk based inspection program for retaining walls and sound walls.

D. Development of a risk based asset management plan for retaining walls and sound walls.

E. Inventory and inspection the retaining walls and sound walls on Colorado’s state highway system.

II. DEFINITIONS

A. AASHTO – American Association of State Highway and Transportation Officials.
B. BRIAR – Bridge Ratings, Inspections and Records

C. ELECTRONIC DATA FILES - Electronic files containing inventory and inspection data for each structure in the version of Pontis AASHTOWARE, or other database format as specified by the Bridge Inspection Engineer. Electronic sketches of structures in a MicroStation compatible format as needed. PDF files of all inspection reports. JPG files of structure photographs.

D. ENGINEER – CDOT Bridge Inspection Engineer or his/her designee.

E. FHWA – Federal Highway Administration.

F. FY – Fiscal Year

G. MUTCD – Manual on Uniform Traffic Control Devices

H. NEW STRUCTURES – Structures not previously inspected such as newly constructed structures requiring initial inspection or structures found to be qualifying and without prior inspections.

I. NHS – National Highway System.

J. PEI – Pontis Element Inspection form. A structure inspection form found within the inspection module of Pontis AASHTOWARE, on which the applicable structure element condition states and comments are reported for each structure inspected.

K. SI&A – Structure Inventory and Appraisal form, (formerly CDOT Form #422). An inventory and appraisal form found within the Pontis AASHTOWARE inspection module that contains information about a structure.

L. STRAHNET – Strategic Highway Network

III. INSPECTION STANDARDS

The work shall be carried out in accordance with the following documents and revisions thereto:

A. Bridge Asset Management and Inspection Manual (BRIAR Manual)

B. CDOT Pontis Bridge Inspection Manual,
C. AASHTO Manual for Bridge Evaluation

D. Bridge Inspection Reference Manual

E. Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Bridges (Report No. FHWA-PD-96-001)

F. Other documents as defined by individual task orders.

IV. CONSULTANT QUALIFICATIONS

The consulting firm shall be pre-qualified to conduct bridge inspection work for the State of Colorado, Department of Transportation.

The individual in charge of the organizational unit, in charge of the inspection team, and the bridge inspectors, shall meet the qualifications as stated in the Code of Federal Regulations, 23 CFR, 650.309.

V. PROJECT MANAGEMENT AND COORDINATION

The Contract Administrator for the work is:

Joshua R. Laipply, P.E.
Bridge Engineer
Colorado Department of Transportation
4201 East Arkansas Ave.
Room 107
Denver, Colorado 80222
(303) 757-9309

The Bridge Inspection Engineer and Project Manager for the work is:

Lynn E. Croswell, P.E.
Bridge Inspection Engineer
Colorado Department of Transportation
4201 East Arkansas Ave.
Room 107
Denver, Colorado 80222
(303) 757-9188
VI. PROJECT LOCATION

The project location will be state-wide. The structures to be inspected will be identified by a risk based selection and listed within the individual task orders.

VII. PROJECT DURATION

A. The work shall commence on the date specified in the notice to proceed and shall be completed as specified in the individual task orders.

B. Completion is defined as (1) having submitted all structure inspection reports in the required format to the Project Manager or his/her designee for review, (2) the Project Manager or his/her designee having reviewed and approved the reports and (3) presentations of the final reports given to CDOT.

VIII. CONSULTANT RESPONSIBILITY

A. The Consultant shall be responsible for the development of a Recording and Coding Guide for the Inventory and Inspection of Colorado’s Retaining Walls and Sound Walls.

B. The Consultant shall be responsible for the development of a web based data management system compatible with PONTIS version 5.x and NBIS databases.

C. The Consultant shall be responsible for the development of a risk based inspection program for retaining walls and sound walls.

D. The consultant shall draft a risk based wall asset management plan for review and potential adoption by the owner.

E. The Consultant shall be responsible for the complete, timely inspection and reporting of all structures identified in individual task orders.

F. The Consultant shall furnish all electronic equipment such as computers, laptops, tablets or other as necessary to complete the work.

G. The Consultant shall submit completed inspection reports to the Project Manager.

H. The Consultant shall conduct the work in accordance with all governing safety rules and regulations applicable to the work.
I. The Consultant shall provide for their own lane closures, working with the appropriate maintenance sections and Region Traffic Engineers to close lanes when required. A list of contacts will be provided to the Consultant upon request.

J. The Consultant will provide all necessary inspection and testing equipment, personal protective equipment (PPE), vehicles for transport and access to properly and adequately perform the work described herein.

IX. INSPECTION REQUIREMENTS

A. Inspections and structure evaluations will be performed via normal and customary visual means as defined by the following references and will include evaluation of all accessible structure components within reason unless noted otherwise to identify changes from previously recorded conditions, and to determine their physical and functional condition. All structure coding items shall be completed per the requirements of the NBIS and CDOT in accordance with the most recent editions of the following:


2. The FHWA manual Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation’s Structures, December 1995 (Federal Coding Guide), except that English Units shall be recorded.

3. The CDOT Structure Inventory Coding Guide.

4. The CDOT Pontis Bridge Inspection Coding Guide. The condition states and comments for the Pontis elements applicable to a structure shall be reported in the Pontis inspection module.

5. AASHTO Manual for Bridge Evaluation

6. Other documents as defined by individual task orders.

All of the above material will be supplied to the Consultant by CDOT upon request.

B. Inventory digital color photographs are required for each structure as defined by individual task orders.

C. Supplemental digital color photographs and sketches shall be taken and/or developed as necessary to give a clear understanding and documentation of distressed conditions.
D. Digital cameras shall be a minimum of 2 megapixel resolution capabilities and be Global Positioning System (GPS) enabled. Photos shall be submitted in the Joint Photographic Experts Group (jpg) format. The photos shall be submitted on a compact disk (CD), DVD or flash drive.

E. The PEI condition states and comments and the SI&A items shall be reported with the PONTIS Inspection Report as directed by the Project Manager or his/her designee. The PEI and SI&A information shall be revised, if necessary, to reflect the actual elements, quantities, comments and items found in the structure.

F. Completed inspection reports shall be submitted to the Bridge Inspection Engineer and his/her designee at the end of the month following each inspection or at the end of the Task Order period whichever is earlier. For example, a submittal would be required on April 30th for field work completed in March.

G. Each inspected structure shall be located using GPS equipment to obtain longitudes and latitudes as defined by individual task orders.

X. UNDERWATER INSPECTIONS

A. Underwater inspections shall consist of any appropriate method, short of employing diving or remote submersibles, to evaluate the structure below the waterline. For water depths up to 3 feet, the consultant shall investigate the foundation conditions by probing and/or feeling for undercutting of the foundation or other problems such as deterioration of foundation elements.

B. All structures with typical water depths in excess of 3’ throughout the year shall be recorded in the inspection notes in the report and a list shall be provided to the Bridge Inspection Engineer.

XI. REPORTING

A. All inspection data shall be submitted electronically.

B. Completed inspection reports containing PEI and SI&A information shall be submitted to the Project Manager or his/her designee.

C. All forms shall include the inspector’s original or electronic signature and the appropriate date.
D. As necessary, supplemental sketches, photos, plans, etc. shall be prepared and included as part of the final report to document the structures condition.

E. Electronic report shall be submitted on a CD in the Pontis AASHTOWARE version specified by the Bridge Inspection Engineer and compatible with IBM PC microcomputer systems. Alternately, electronic files may be e-mailed. In lieu of submitting separate CDs, all information can be included on a single CD, DVD or flash drive at the consultant’s option.

XII. SERVICES AND MATERIALS AVAILABLE FROM CDOT

   The following services and materials will be available to the consultant from CDOT:


   B. CDOT Staff will be available for reference on coding, or other related concerns.

   C. Most current designated STRAHNET and NHS routes (identified in the database).

XIII. FINAL REVIEW

   A. Each electronic structure folder will be reviewed by the project manager for completeness and consistency. Each incomplete or inconsistent report will be returned to the consultant for review and for corrections.

   B. The consultant shall hold a final report presentation meeting with CDOT when all inspection work is completed and reports have been accepted by the project manager. This presentation shall occur no later than 60 days from the date that the final reports are accepted by the project manager.

   C. The Bridge Inspection Engineer or his designee may accompany the consultant during field inspections or visit the office of the consultant to review procedures and inspection reports and to verify billings.
XIV. METHOD OF PAYMENT

These contracts will be paid for on a cost plus fixed fee basis. The consulting firms will bill for their actual costs, using the negotiated rates, incurred while performing the work. Consultants will bill monthly and include a project status update with each billing.
APPENDIX A
IDENTIFICATION OF CRITICAL WALL CONDITIONS

A. PURPOSE: This appendix establishes the procedures of the Colorado Department of Transportation (CDOT), Staff Bridge Branch regarding the general subject of critical inspection findings (CIF). The term “critical” as contained within these procedures is intended to mean a structural or safety related deficiency that requires immediate follow-up inspection or action.

B. TYPICAL CONDITIONS: The following represents typical but not all inclusive inspection findings which are considered to be a CIF:

1. Retaining Wall Structures
   a. A portion of the wall may fall and injure a person or damage property
   b. Scour, drainage, damage, deterioration, or corrosion that threaten the structural integrity of the wall
   c. Scour under a spread footing, which has caused a loss of 15% of the bearing area

2. Sound Wall Structures
   a. A portion of the wall may fall and injure a person or damage property
   b. Scour, drainage, damage, deterioration, or corrosion that threaten the structural integrity of the wall

C. It shall be the responsibility of the bridge inspection team leader performing an inspection to be alert for conditions other than identified above which may also be considered a CIF. Such a finding shall be reported to CDOT upon return from the inspection or, if deemed necessary, immediately by telephone or in person.

D. The criticality of the deficiency will result in one or more of the following actions with an importance described as follow:

   1. Immediate closure.
   2. Restricted traffic usage.
   3. Urgent repairs.

E. SPECIAL ACTIONS REQUIRED OF THE INSPECTION TEAM LEADER:

   1. The team leader shall notify CDOT by phone, or in person, when the actions identified as 1 (Immediate closure) or 2 (Restricted traffic usage) above are appropriate. He or she should describe the unsafe condition and recommend immediate steps to be taken to insure safety to the traveling public. The consultant shall follow-up all verbal communication in writing within 3 business days.
2. The consultant shall notify CDOT in writing, within one week, when the action identified as 3 (Urgent repairs) above is appropriate. This notice should include comments relative to an appropriate repair. This does not mean that the consultant must provide a design for the repair.

3. The team leader shall provide written confirmation to CDOT for any action required above. E-mail confirmation with supporting documentation shall be sent to the Bridge Inspection Engineer with “cc” to other as directed by the Bridge Inspection Engineer or his/her designee on all essential inspection finding correspondence.