

PURCHASE OF SERVICE AGREEMENT 2016.436A

THIS AGREEMENT ("Agreement") is made this 30th day of August 2016, by and between the Adams County Board of County Commissioners, located at 4430 South Adams County Parkway, Brighton, Colorado 80601, hereinafter referred to as the "County," and RockSol Consulting Group, located at 6510 W 91st Ave, Suite 130, Westminster, Colorado 80031, hereinafter referred to as the "Contractor." The County and the Contractor may be collectively referred to herein as the "Parties".

The County and the Contractor, for the consideration herein set forth, agree as follows:

1. SERVICES OF THE CONTRACTOR:

1.1. All work shall be in accordance with the attached IFB 2016.436 and the Contractor's response to the IFB 2016.436 attached hereto as Exhibit A, and incorporated herein by reference. Should there be any discrepancy between Exhibit A and this Agreement the terms and conditions of this Agreement shall prevail.

1.2. Emergency Services: In the event the Adams County Board of County Commissioners declares an emergency, the County may request additional services (of the type described in this Agreement or otherwise within the expertise of the Contractor) to be performed by the Contractor. If the County requests such additional services, the Contractor shall provide such services in a timely fashion given the nature of the emergency, pursuant to the terms of this Agreement. Unless otherwise agreed to in writing by the parties, the Contractor shall bill for such services at the rates provided for in this Agreement.

2. RESPONSIBILITIES OF THE COUNTY: The County shall provide information as necessary or requested by the Contractor to enable the Contractor's performance under this Agreement.

3. TERM: The work to be performed under this Agreement shall be completed prior to December 31, 2017.

3.1. Renewal Option: The County, at its sole option, may offer to renew this Agreement as necessary for up to two, one year renewals providing satisfactory service is given and all terms and conditions of this Agreement have been fulfilled. Such renewals must be mutually agreed upon in writing by the County and the Contractor.

4. PAYMENT AND FEE SCHEDULE: The County shall pay the Contractor for services furnished under this Agreement, and the Contractor shall accept as full payment for those services, the sum of forty-four thousand one hundred ninety-seven thousand dollars and fifty-five cents (\$44,197.55).

4.1. Payment pursuant to this Agreement, whether in full or in part, is subject to and contingent upon the continuing availability of County funds for the purposes hereof. In the event that funds become unavailable, as determined by the County, the County may immediately terminate this Agreement or amend it accordingly.

5. **INDEPENDENT CONTRACTOR:** In providing services under this Agreement, the Contractor acts as an independent contractor and not as an employee of the County. The Contractor shall be solely and entirely responsible for his/her acts and the acts of his/her employees, agents, servants, and subcontractors during the term and performance of this Agreement. No employee, agent, servant, or subcontractor of the Contractor shall be deemed to be an employee, agent, or servant of the County because of the performance of any services or work under this Agreement. The Contractor, at its expense, shall procure and maintain workers' compensation insurance as required by law. Pursuant to the Workers' Compensation Act § 8-40-202(2)(b)(IV), C.R.S., as amended, the Contractor understands that it and its employees and servants are not entitled to workers' compensation benefits from the County. The Contractor further understands that it is solely obligated for the payment of federal and state income tax on any moneys earned pursuant to this Agreement.

6. **NONDISCRIMINATION:**

6.1. **The Contractor shall not discriminate against any employee or qualified applicant for employment because of age, race, color, religion, marital status, disability, sex, or national origin. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices provided by the local public agency setting forth the provisions of this nondiscrimination clause. Adams County is an equal opportunity employer.**

6.1.1. The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Agreement so that such provisions will be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

7. **INDEMNIFICATION:** The Contractor agrees to indemnify and hold harmless the County, its officers, agents, and employees for, from, and against any and all claims, suits, expenses, damages, or other liabilities, including reasonable attorney fees and court costs, arising out of damage or injury to persons, entities, or property, caused or sustained by any person(s) as a result of the Contractor's performance or failure to perform pursuant to the terms of this Agreement or as a result of any subcontractors' performance or failure to perform pursuant to the terms of this Agreement.

8. **INSURANCE:** The Contractor agrees to maintain insurance of the following types and amounts:

8.1. **Commercial General Liability Insurance:** to include products liability, completed operations, contractual, broad form property damage and personal injury.

8.1.1. Each Occurrence: \$1,000,000

8.1.2. General Aggregate: \$2,000,000

8.2. **Comprehensive Automobile Liability Insurance:** to include all motor vehicles owned, hired, leased, or borrowed.

8.2.1. Bodily Injury/Property Damage: \$1,000,000 (each accident)

8.2.2. Personal Injury Protection: Per Colorado Statutes

8.3. **Workers' Compensation Insurance:** Per Colorado Statutes

8.4. **Professional Liability Insurance:** to include coverage for damages or claims for

damages arising out of the rendering, or failure to render, any professional services, as applicable.

8.4.1. Each Occurrence: \$1,000,000

8.4.2. This insurance requirement applies only to the Contractors who are performing services under this Agreement as professionals licensed under the laws of the State of Colorado, such as physicians, lawyers, engineers, nurses, mental health providers, and any other licensed professionals.

8.5. Adams County as "Additional Insured": The Contractor's commercial general liability, and comprehensive automobile liability, insurance policies and/or certificates of insurance shall be issued to include Adams County as an "additional insured" and shall include the following provisions:

8.5.1. Underwriters shall have no right of recovery or subrogation against the County, it being the intent of the parties that the insurance policies so affected shall protect both parties and be primary coverage for any and all losses resulting from the actions or negligence of the Contractor.

8.5.2. The insurance companies issuing the policy or policies shall have no recourse against the County for payment of any premiums due or for any assessments under any form of any policy.

8.5.3. Any and all deductibles contained in any insurance policy shall be assumed by and at the sole risk of the Contractor.

8.6. Licensed Insurers: All insurers of the Contractor must be licensed or approved to do business in the State of Colorado. Upon failure of the Contractor to furnish, deliver and/or maintain such insurance as provided herein, this Agreement, at the election of the County, may be immediately declared suspended, discontinued, or terminated. Failure of the Contractor in obtaining and/or maintaining any required insurance shall not relieve the Contractor from any liability under this Agreement, nor shall the insurance requirements be construed to conflict with the obligations of the Contractor concerning indemnification.

8.7. Endorsement: Each insurance policy herein required shall be endorsed to state that coverage shall not be suspended, voided, or canceled without thirty (30) days prior written notice by certified mail, return receipt requested, to the County.

8.8. Proof of Insurance: At any time during the term of this Agreement, the County may require the Contractor to provide proof of the insurance coverage or policies required under this Agreement.

9. WARRANTY:

9.1. The Contractor warrants and guarantees to the County that all work, equipment, and materials furnished under the Agreement are free from defects in workmanship and materials for a period of one year after final acceptance by the County. The Contractor further warrants and guarantees that the plans and specifications incorporated herein are free of fault and defect sufficient for Contractor to warrant the finished product after completion date. Should the Contractor fail to proceed promptly in accordance with this guarantee, the County may have such work performed at the expense of the Contractor. This section does not relieve the Contractor from liability for defects that become known after one year.

10. TERMINATION:

- 10.1. **For Cause:** If, through any cause, the Contractor fails to fulfill its obligations under this Agreement in a timely and proper manner, or if the Contractor violates any of the covenants, conditions, or stipulations of this Agreement, the County shall thereupon have the right to immediately terminate this Agreement, upon giving written notice to the Contractor of such termination and specifying the effective date thereof.
- 10.2. **For Convenience:** The County may terminate this Agreement at any time by giving written notice as specified herein to the other party, which notice shall be given at least thirty (30) days prior to the effective date of the termination. If this Agreement is terminated by the County, the Contractor will be paid an amount that bears the same ratio to the total compensation as the services actually performed bear to the total services the Contractor was to perform under this Agreement, less payments previously made to the Contractor under this Agreement.

11. MUTUAL UNDERSTANDINGS:

- 11.1. **Jurisdiction and Venue:** The laws of the State of Colorado shall govern as to the interpretation, validity, and effect of this Agreement. The parties agree that jurisdiction and venue for any disputes arising under this Agreement shall be with Adams County, Colorado.
- 11.2. **Compliance with Laws:** During the performance of this Agreement, the Contractor agrees to strictly adhere to all applicable federal, state, and local laws, rules and regulations, including all licensing and permit requirements. The parties hereto aver that they are familiar with § 18-8-301, *et seq.*, C.R.S. (Bribery and Corrupt Influences), as amended, and § 18-8-401, *et seq.*, C.R.S. (Abuse of Public Office), as amended, , the Clean Air Act (42 U.S.C. 7401-7671q), and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended, and that no violation of such provisions are present. The Contractor warrants that it is in compliance with the residency requirements in §§ 8-17.5-101, *et seq.*, C.R.S. Without limiting the generality of the foregoing, the Contractor expressly agrees to comply with the privacy and security requirements of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
- 11.3. **OSHA:** The Contractor shall comply with the requirements of the Occupational Safety and Health Act (OSHA) and shall review and comply with the County's safety regulations while on any County property. Failure to comply with any applicable federal, state or local law, rule, or regulation shall give the County the right to terminate this agreement for cause.
- 11.4. **Record Retention:** The Contractor shall maintain records and documentation of the services provided under this Agreement, including fiscal records, and shall retain the records for a period of three (3) years from the date this Agreement is terminated. Said records and documents shall be subject at all reasonable times to inspection, review, or audit by authorized Federal, State, or County personnel.
- 11.5. **Assignability:** Neither this Agreement, nor any rights hereunder, in whole or in part, shall be assignable or otherwise transferable by the Contractor without the prior written consent of the County.

- 11.11. Authorization: Each party represents and warrants that it has the power and ability to enter into this Agreement, to grant the rights granted herein, and to perform the duties and obligations herein described.
- 11.12. Confidentiality: All documentation related to this Agreement will become the property of Adams County. All documentation maintained or kept by Adams County shall be subject to the Colorado Open Records Act, C.R.S. 24-72-201 *et seq.* ("CORA"). The County does not guarantee the confidentiality of any records.

12. CHANGE ORDERS OR EXTENSIONS:

- 12.1. Change Orders: The County may, from time to time, require changes in the scope of the services of the Contractor to be performed herein including, but not limited to, additional instructions, additional work, and the omission of work previously ordered. The Contractor shall be compensated for all authorized changes in services, pursuant to the applicable provision in the Invitation to Bid, or, if no provision exists, pursuant to the terms of the Change Order.
- 12.2. Extensions: The County may, upon mutual written agreement by the parties, extend the time of completion of services to be performed by the Contractor.

13. COMPLIANCE WITH C.R.S. § 8-17.5-101, ET. SEQ. AS AMENDED 5/13/08: Pursuant to Colorado Revised Statute (C.R.S.), § 8-17.5-101, *et seq.*, as amended May 13, 2008, the Contractor shall meet the following requirements prior to signing this Agreement (public contract for service) and for the duration thereof:

- 13.1. The Contractor shall certify participation in the E-Verify Program (the electronic employment verification program that is authorized in 8 U.S.C. § 1324a and jointly administered by the United States Department of Homeland Security and the Social Security Administration, or its successor program) or the Department Program (the employment verification program established by the Colorado Department of Labor and Employment pursuant to C.R.S. § 8-17.5-102(5)) on the attached certification.
- 13.2. The Contractor shall not knowingly employ or contract with an illegal alien to perform work under this public contract for services.
- 13.3. The Contractor shall not enter into a contract with a subcontractor that fails to certify to the Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this public contract for services.
- 13.4. At the time of signing this public contract for services, the Contractor has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under this public contract for services through participation in either the E-Verify Program or the Department Program.
- 13.5. The Contractor shall not use either the E-Verify Program or the Department Program procedures to undertake pre-employment screening of job applicants while this public contract for services is being performed.

- 13.6. If the Contractor obtains actual knowledge that a subcontractor performing work under this public contract for services knowingly employs or contracts with an illegal alien, the Contractor shall: notify the subcontractor and the County within three (3) days that the Contractor has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and terminate the subcontract with the subcontractor if within three days of receiving the notice required pursuant to the previous paragraph, the subcontractor does not stop employing or contracting with the illegal alien; except that the Contractor shall not terminate the contract with the subcontractor if during such three (3) days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.
- 13.7. Contractor shall comply with any reasonable requests by the Department of Labor and Employment (the Department) made in the course of an investigation that the Department is undertaking pursuant to the authority established in C.R.S. § 8-17.5-102(5).
- 13.8. If Contractor violates this Section, of this Agreement, the County may terminate this Agreement for breach of contract. If the Agreement is so terminated, the Contractor shall be liable for actual and consequential damages to the County.

The remainder of this page is left blank intentionally.

IN WITNESS WHEREOF, the Parties have caused their names to be affixed hereto:

County Manager

Todd Leopold 8/30/16
Todd Leopold Date

RockSol Consulting Group, Inc.

S. Saeb 8,18,16
Signature Date

Saeid Saeb President
Printed Name Title

Attest:

Stan Martin, Clerk and Recorder M. Hannah
Deputy Clerk

Approved as to Form: D. East
Adams County Attorney's Office

NOTARIZATION OF CONTRACTOR'S SIGNATURE:

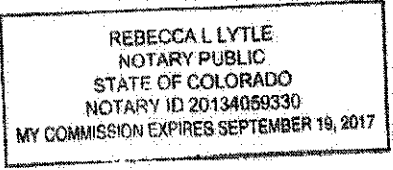
COUNTY OF JEFFERSON)

STATE OF COLORADO)SS.

Signed and sworn to before me this 18th day of AUGUST, 2016,

by Saeid Saeb

Rebecca Lytle
Notary Public



My commission expires on: September 19, 2017

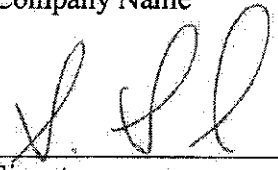
CONTRACTOR'S CERTIFICATION OF COMPLIANCE

Pursuant to Colorado Revised Statute, § 8-17.5-101, *et. seq.*, as amended 5/13/08, as a prerequisite to entering into a contract for services with Adams County, Colorado, the undersigned Contractor hereby certifies that at the time of this certification, Contractor does not knowingly employ or contract with an illegal alien who will perform work under the attached contract for services and that the Contractor will participate in the E-Verify Program or Department program, as those terms are defined in C.R.S. § 8-17.5-101, *et. seq.* in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the attached contract for services.

CONTRACTOR:

Rocksol Consulting Group, Inc.
Company Name

8,18,16
Date


Signature

Saeid Saeb
Name (Print or Type)

President
Title

Note: Registration for the E-Verify Program can be completed at: <https://www.vis-dhs.com/employerregistration>. It is recommended that employers review the sample "memorandum of understanding" available at the website prior to registering

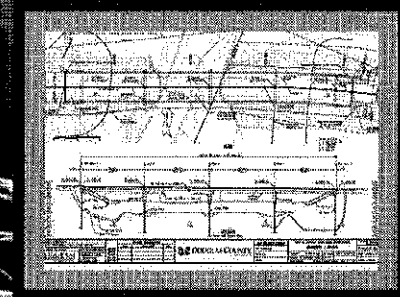
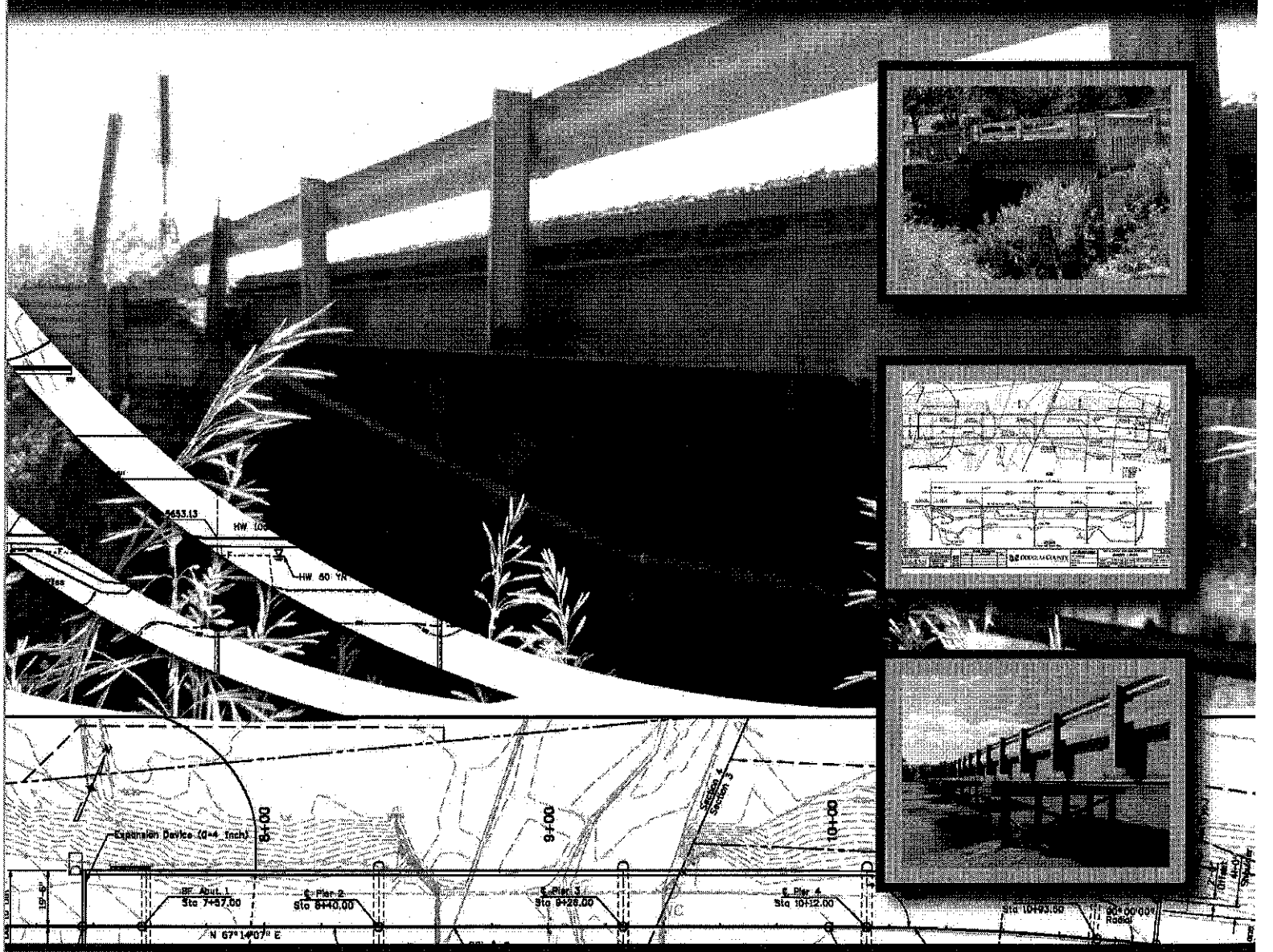
Riverdale Road over Todd Creek

Scour Critical & Structural Maintenance

Adams County



ADAMS COUNTY
COLORADO



RFQ # 2016.436
June 24, 2016



RockSol
Consulting Group, Inc.

Curve 2 Data:
Δ = 23°18'54" Rt
R = 1090.00'
L = 439.37'
T = 329.77'

PLAN



June 24, 2016

Ms. Bethany Bonasera
Purchasing Division of the Finance Department
Adams County Government Center
4430 South Adams County Parkway, 4th Floor
Brighton, Colorado 80601

**SUBJECT: RIVERDALE ROAD OVER TODD CREEK
ADAMS COUNTY BRIDGE ADA10.8-153.259**

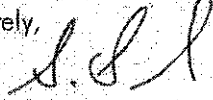
Dear Ms. Bonasera and Selection Committee:


RockSol Consulting Group, Inc. (RockSol) is one of the engineering consultants selected by Adams County for the 2016-2018 Non-Project Specific Professional Services contract for the Structural Engineering service category. We are pleased to submit this proposal in response to RFP 2016.436 to provide engineering services for the Riverdale Road over Todd Creek.

Our guiding work principle focuses on providing exceptional, personalized attention to our clients. To best meet the needs of this bridge project, we are providing a comprehensive team ready to act as an extension of Adams County staff. We offer the County:

Integrated Design Services	Our design team offers an integrated approach to the primary disciplines vital to successfully completing this project: bridge design, bridge scour, roadway design, and geotechnical engineering. Our team also includes in-house environmental and survey services. We have teamed with Olson Engineering to provide non-destructive testing as outlined in our proposal.
Extensive Project Management Experience	Our project manager, Martin, brings a wealth of experience in managing bridge design projects. Martin has worked on bridge rehabilitations and reconstructions of all sizes and types, enabling him to select the project approach that best fits the needs of the actual project. With a keen understanding of the County's needs, Martin is dedicated to ensuring the project is completed on time and within budget.
Commitment to Client Satisfaction	We are committed to providing superior performance to Adams County. We excel at responding quickly to client requests, developing the right teams for multidiscipline projects, and executing the scope of services under each task order to meet the needs of our clients. We manage projects centered on our client's goals, and we treat each project with focused dedication.

Combined, these qualifications demonstrate RockSol's ability to produce excellent work for Adams County. We appreciate the opportunity to provide this proposal. We acknowledge receipt of Addendum 1. The information contained in this proposal, including all attachments, is true and complete to the best of our knowledge. Please contact Martin Merklinger at 303.962.9326, via e-mail at merklinger@rocksol.com, or via fax at 303.962.9350, if we can be of any assistance.

Sincerely,

Saeid Saeb, PhD, PE
Project Principal


Martin Merklinger, PE
Project Manager



ADAMS COUNTY

**ADAMS COUNTY, COLORADO
PROPOSAL FORM**

2016.436 SCOUR CRITICAL AND STRUCTURAL MAINTENANCE

VENDOR'S STATEMENT

I have read and fully understand all the special conditions herein set forth in the foregoing paragraphs, and by my signature set forth hereunder, I hereby agree to comply with all said special conditions as stated or implied. In consideration of the above statement, the following proposal is hereby submitted.

WE THE UNDERSIGNED HEREBY ACKNOWLEDGE RECEIPT OF

Addenda # 1 Addenda # Addenda #

If None, Please write NONE.

RockSol Consulting Group, Inc. 6/23/2016
COMPANY NAME DATE

Corporation 85-0445526
TYPE OF ENTITY (CORPORATION, TAX IDENTIFICATION NUMBER GENERAL
PARTNERSHIP, ETC.)

New Mexico
STATE OF INCORPORATION,
IF APPLICABLE

6510 W. 91st Ave., Suite 130
ADDRESS

SIGNATURE

Westminster, Colorado 80031
CITY, STATE, ZIP CODE

Saeid Saeb, PhD, PE
PRINTED SIGNATURE

303.962.9300
TELEPHONE NUMBER

303.962.9350
FAX NUMBER or EMAIL ADDRESS

Jefferson
COUNTY

President and Project Principal
TITLE (Corporate Officer/Manager/General or
Registered Agent, or General or Managing Partner)

(Seal - If Proposal is by a Corporation)

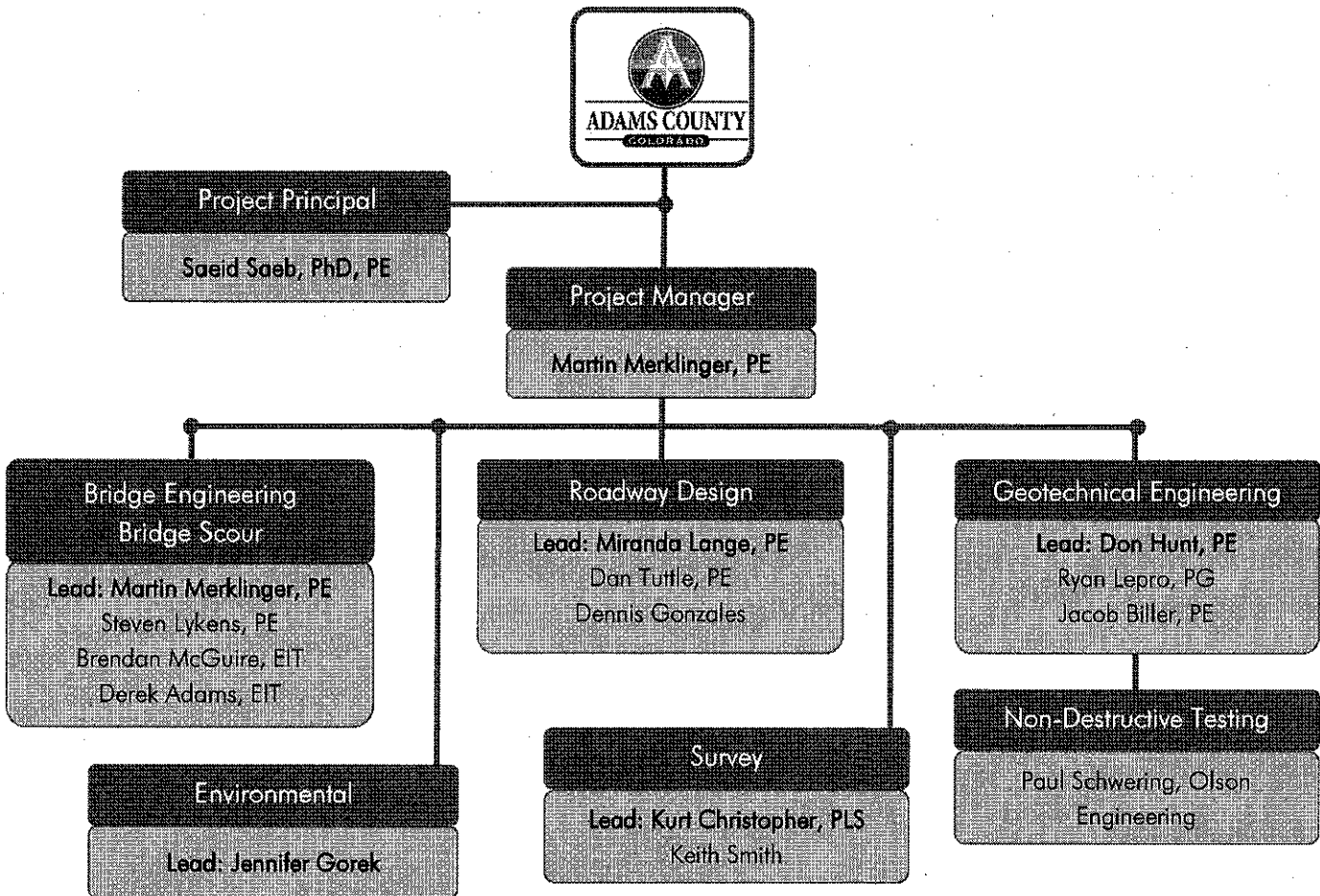
FIRM QUALIFICATIONS

Founded in 1996, RockSol Consulting Group, Inc. provides engineering services to government agency clients. RockSol is a Colorado-based DBE firm providing engineering services for the analysis, design, and construction of bridges, roadways, tunnels, structures, retaining walls, pavements, foundations, underground excavations, rock slopes, and concrete and earthen structures. Our full capabilities include geotechnical investigations, pavement design, structural engineering, and roadway design. We also provide construction management, inspection, and materials testing services. For 20 years, RockSol has built its reputation on providing top quality services to all of our clients.

High Quality Services | RockSol approaches every project the same way: provide superior quality services efficiently, effectively, while achieving all applicable requirements and standards. We are committed to excellent client service, responding rapidly to project requests. Our services are backed by our Quality Commitment and supported by our Quality Management System, which emphasizes the needs of our clients and adheres to current industry and regulatory standards and has earned us our ISO 9001 certification. **Our past performance exemplifies our dedication to quality transportation projects.**

Integrated Design Services | RockSol offers a well-rounded design team with experience in both design and construction practices. **Our in-house design team offers full integration of bridge design and bridge scour as well as roadway design, geotechnical engineering, and environmental services.** As a small firm, our disciplines work closely together, enabling us to nimbly respond to changing project requirements.

RockSol can provide all the engineering services in the various engineering disciplines needed to accomplish bridge rehabilitation to **remove the scour critical designation, and address the structural maintenance issues.** Our experienced staff have the necessary experience to complete the rehabilitation design for the bridge. The RockSol staff are organized as shown in the organization chart below.



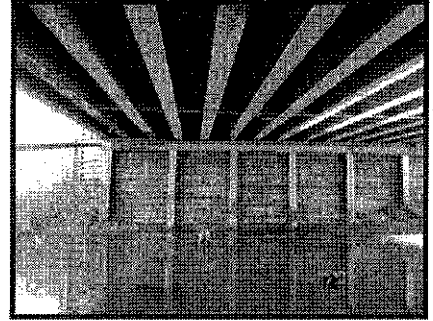
UNDERSTANDING THE ISSUES

Our assessment of the issues from our site visit, and from the bridge inspection report, indicates the issues are in three categories: **scour critical designation**, **hydraulic capacity**, and **structural condition**.

Scour Critical designation

Large flows from the September 2013 flood removed scour protection from the entire length of Abutment 2 and from 80% of length of Abutment 1. The remaining scour protection is asphalt rubble, a material that contains fossil fuels. The inspection report states that the channel is 4 feet lower after the September 2013 flood than at a 2012 inspection. Significant erosion has occurred where the wingwalls meet the abutments.

The Riverdale Road bridge over Todd Creek is designated as a Scour Critical structure. The **designation is due to the unknown depth of the pile foundations, the recent scour magnitude, and the potential that future scour could cause loss of stability to the abutments.**



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PILE DEPTH > POTENTIAL FUTURE SCOUR

Hydraulic Capacity

The Flood Insurance Rate Map (FIRM) for Adams County, panel 326 of 1150, Map number 08001C0326H, shows the 100 year floodplain for Todd Creek and the South Platte River at the site. The FIRM shows the 100 year floodplain covers Riverdale Road near the Todd Creek bridge, and covers the surrounding land upstream and downstream of Riverdale Road. The Riverdale Road bridge over Todd Creek creates a flow constriction. Riverdale Road is too low to avoid overtopping during the 100 year event. The Riverdale Road bridge has inadequate hydraulic capacity to pass the 100 year event, and likely has inadequate hydraulic capacity to pass smaller flow events.

Structural Condition

The Riverdale Road bridge has several structural condition issues:



- Abutment and wingwall backwalls are significantly rusted. Rusted wingwall backwalls allow erosion of the wingwall fill through rust holes, especially the Southwest wingwall connection to the South abutment. The upper Southeast wingwall has significant deformation.
- Abutment cap to pile welds are irregular and inadequate. The abutment cap to pile welds are the load path from superstructure to substructure to piles, and need to resist the vertical loads to be transferred to the piles.
- Superstructure girders are very rusted near the leaking abutment upper backwalls, and below leaking transverse joints of the steel deck. Girders have

a range of corrosion to rust, with some flaking steel rust and section loss near girder ends.

- Steel bridge plank deck is very rusted along the edge of deck, and along leaking transverse joints of the steel deck.
- Bridge rails reveals collision damage and other distress. Posts of the West rail are not vertical due to collision damage. Post spacing is approximately 8.5 feet, which is larger than the post spacing of current rail types. The railing height is 1'-7" to 1'-8", which does not comply with the height requirements or with the requirements that railing configuration be a crashed tested rail type.
- Approach guardrail is not installed at the approaches.



APPROACH TO PROVIDE COMPREHENSIVE AND ECONOMICAL ENGINEERED SOLUTIONS

Our experience with bridge design and bridge rehabilitation projects such as the Martinez bridge rehabilitation for Douglas County and the Cooper Bridge Deck Replacement project for Morgan County have given RockSol the opportunity to develop solutions to bridge rehabilitations. RockSol engineers have determined solutions to the identified issues related to the scour critical designation, and to the structural condition issues.

Scour Critical Designation Removal

We understand Adams County's primary goal with this project is to remove the scour critical designation for this bridge. The scour critical designation is due to unknown pile foundation depth, the recent scour magnitude, and the potential that future scour could cause loss of stability to the piers and abutments. **Removal of the scour critical designation can only be achieved by verifying that the pile depth exceeds the depth of potential future scour.**

$$\begin{array}{c} ? \\ \text{PILE DEPTH} > \text{POTENTIAL FUTURE SCOUR} \end{array}$$

RockSol proposes to address both sides of the equation. To address the left side of the equation, we intend to use non-destructive testing to determine the pile foundation depth at a representative abutment location. The RockSol geotechnical staff will arrange for one vertical soil boring to be drilled near the South abutment, a location that experienced scour during the September 2013 flood. Olson Engineering, who specializes in non-destructive testing, will conduct **parallel seismic testing** to determine the pile depth of the pile foundation members. The RockSol geotechnical staff and Olson Engineering conducted parallel seismic testing on the Martinez bridge rehabilitation project for Douglas County. This testing is an established method to determine the pile depth without excavation or destructive methods. Parallel seismic testing measures sonic waves traveling down through steel piles and then into the subsurface soil, where the response is measured by a receiver located at various depths in the boring hole near the abutment. We can then determine the pile foundation depth by plotting the sonic wave response and interpreting changes in the wave length.



Our team will calculate potential future scour using HEC-18, the established scour calculation software. The main scour calculation parameters are the flow velocity, depth of water, shape of the abutment, angle of the flow on the abutment, and particle size. The Riverdale Road bridge abutments have multiple piles below the abutment cap. HEC-18 documentation suggests three alternatives for abutment scour: Froehlich's equation, HIRE equation, or the NCHRP equation. The total potential future scour will be the sum of the calculated abutment scour plus contraction scour.

After we determine the pile depth and calculate the potential future scour, we will compare the pile depth to the potential future scour depth. We anticipate the pile depth to be deeper than the calculated potential future scour depth. **Our engineering approach is to determine the pile foundation depth and compare the depth to the calculated potential scour depth.**

$$\text{PILE DEPTH} > \text{POTENTIAL FUTURE SCOUR}$$

If the pile foundation depth is deeper than the potential future scour depth, the scour critical designation can be removed. If the scour depth needs to be minimized, our team can design scour mitigation, such as rip rap or articulated mats. We will collaborate with Adams County to determine if the cost of scour mitigation provides benefits that outweigh the cost.

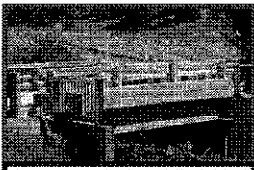
Evaluation of Bridge Replacement or Bridge Rehabilitation

We will conduct an evaluation of bridge replacement compared to bridge rehabilitation after we determine the scour critical designation. Our team will analyze a comparison of pile foundation depth to potential future scour depth to

determine if the scour critical designation can be removed or not. This determination is an important part of evaluating a comparison between a bridge replacement and a bridge rehabilitation.

We will consider hydraulic capacity in the evaluation of bridge rehabilitation compared to bridge replacement. The FIRM indicates the Riverdale Road bridge over Todd Creek is a constriction to flow and is very inadequate hydraulically. Our evaluation of bridge rehabilitation will consider if the costs to mitigate scour and to address structural condition items, while leaving a hydraulically inadequate bridge in place, is a viable alternative compared to bridge replacement.

Our evaluation of bridge replacement compared to bridge rehabilitation will also consider the various structural condition repair items and their estimated construction costs. We can estimate the structural condition repair items, described below, for the evaluation of bridge replacement versus bridge rehabilitation. Our team will prepare a memo containing the evaluation of the various components, their associated estimated construction costs, a qualitative evaluation of benefits and estimated remaining bridge life, and a quantitative comparison of construction costs.

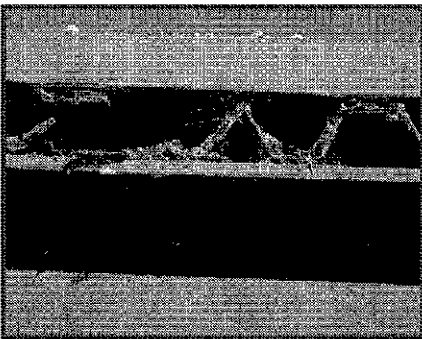


Martinez Road Bridge

Structural Condition

Our experience with bridge design and bridge rehabilitation projects, such as the Martinez bridge rehabilitation for Douglas County and the Cooper Bridge Deck Replacement project for Morgan County, have given RockSol the opportunity to develop solutions to bridge rehabilitations. RockSol has determined solutions to the identified issues related to structural condition.

- Abutment and wingwall backwalls require replacement to correct the rust, deformations, and fill erosion. By removing the retained fill and replacing the abutment and wingwall backwalls, the replaced members will be stable and adequate to support the fill.
- Abutment cap to pile welds require removal and replacement of the welds. New welds are necessary to resist the vertical loads to be transferred to the piles.
- Superstructure girders will be sandblasted to remove heavy-metal paint, corrosion, rust, and flaking metal. The girders will then be painted for corrosion protection.
- Steel bridge plank deck requires replacement with new steel bridge plank or a reinforced concrete deck. A reinforced concrete deck would be more durable and would eliminate water intrusion onto the girders and abutments, but a concrete deck is heavier and potentially not able to be supported by the girders. A new steel bridge plank deck will also be considered and compared to the concrete deck.



- Bridge rail collision damage, distress, post yielding, inadequate height, excessive post spacing, and lack of a crashed tested rail configuration require the rail be replaced. RockSol determined that the road classification corresponds to AASHTO category for a Test Level 2 (TL-2) rail. RockSol evaluated potential rail types that can be mounted on the steel girders or mounted on a concrete deck, provide the required rail height and post spacing, and provide documented TL-2 crash test performance. **We determined seven rail types that meet the listed criteria.** We will present the seven alternatives to Adams County, discuss the benefits and cost of each alternative, and achieve a consensus on the rail type.
- Approach guardrail will be laid out to connect to the bridge rail.

SCOUR MITIGATION DELIVERABLES, ASSOCIATED WORK HOURS, AND COSTS

Scour mitigation deliverables include determination of the existing pile foundation depth, calculation of the potential future scour depth, comparison of the pile depth to scour depth, and design of scour mitigation if scour depth needs to be minimized. The deliverables include:

- Non-destructive evaluation of pile depth, using parallel seismic testing; evaluation contained in a report.

- Calculation of potential future scour depth, including HEC-18 computer results.
- Comparison of pile depth to calculated potential future scour depth, and determination if the scour critical designation can be removed; comparison and conclusion contained in a memo.
- Determination of scour mitigation, including quantities, costs, and benefits; contained in a memo.
- Plans showing placement extents of scour mitigation

Associated work hours and costs are shown below.

RIVERDALE ROAD BRIDGE OVER TODD CREEK
 BRIDGE REHABILITATION TO ADDRESS SCOUR CRITICAL DESIGNATION
 Adams County, Colorado

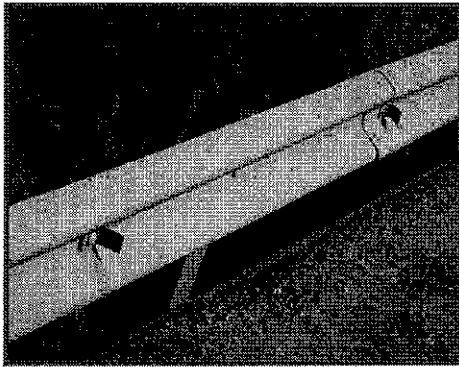
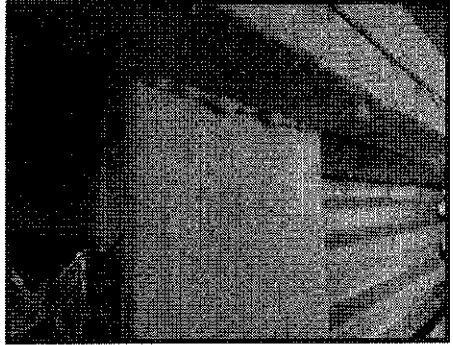
Effort is based on Scope of Work in RFP and as Described in Proposal

Effort to Conduct Tasks needed to accomplish Scope of Work	Labor classification										Total (hours)
	Project Manager (hours)	Lead/Sr Bridge Engineer (hours)	Assistant Bridge Engineer (hours)	CAD Technician 1 (hours)	Roadway Engineer (hours)	CAD Technician 2 (hours)	Lead/Sr Geotech Engineer (hours)	Geologist (hours)	Technician (hours)	Admin (hours)	
Scour Critical Mitigation											
Non-destructive evaluation of pile depth, using parallel seismic testing, RockSol involvement only; includes RockSol involvement in drilling bore hole, casing the hole, grouting the outside of the casing, parallel seismic testing, and preparation of a report	2					2	2	16	6	2	30
Calculation of potential future scour depth, including HEC-18 computer results	2		24								26
Comparison of pile depth to calculated potential future scour depth, determination if the Scour Critical designation can be removed, and preparation of a memo containing the evaluation and conclusion.	2	2	2								6
Determination of scour mitigation, including quantities, costs and benefits; preparation of a memo.	1	2	4								7
Plans showing placement extents of scour mitigation.		1	2	6							9
Coordination with Adams County and stakeholders	7										7
Project management of the design team	6									2	8
Total hours: prime consultant	20	5	32	6	0	2	2	16	6	4	93
Hourly Billing Rates	\$ 159.00	\$ 159.00	\$ 82.33	\$ 82.00	\$ 112.00	\$ 82.00	\$ 146.00	\$ 112.00	\$ 76.80	\$ 69.00	
Labor cost: prime consultant	\$ 3,180.00	\$ 795.00	\$ 2,634.56	\$ 492.00	\$ -	\$ 164.00	\$ 292.00	\$ 1,792.00	\$ 460.80	\$ 276.00	\$ 10,086.36
Other Direct Costs: mileage 150 miles @ \$0.52/mile											\$ 78.00
Driller costs: 1 Bore hole to a depth of 60 feet with a truck mounted drill rig											\$ 1,800.00
Sub-consultant Olson Engineering: non-destructive testing, and report											\$ 2,500.00
Total Cost: Scour Mitigation											\$ 14,464.36

STRUCTURAL CONDITION REPAIRS, ASSOCIATED DELIVERABLES, ASSOCIATED WORK HOURS, AND COSTS

RockSol has determined solutions to the identified issues related to structural condition. The deliverables include:

- Details for Abutment and wingwall backwalls replacement; details on one bridge plan sheet.
- Details for abutment cap to pile welds removal and replacement of the welds; details on one bridge plan sheet.
- Details and typical sections showing the superstructure girders will be sandblasted to remove heavy-metal paint, corrosion, rust, and flaking metal. The girders will then be painted for corrosion protection; details on one bridge plan sheet.
- Memo with the benefits and costs of reinforced concrete deck compared to new steel bridge plank deck, for discussion with Adams County to achieve concurrence on the deck replacement type based on benefits and costs.
- Details and typical sections showing deck replacement with new steel bridge plank or a reinforced concrete deck; details on one bridge plan sheet.
- Memo containing figures of bridge rail types that can be supported on the girder sides, provide the required rail height and post spacing, and provide documented TL-2 crash test performance, including cost estimates, for discussion with Adams County of the benefits and cost of each alternative, and to achieve a consensus on the rail type.
 - Layout extents and details of bridge rail replacement, including rail height, post spacing, and anchoring to the curb, or anchoring to the side of girders; details on one bridge plan sheet.
 - General Layout of the bridge, showing the location of the repairs.
 - Bridge quantities for each pay item, and associated notes for the bridge repairs; one bridge plan sheet.
 - Layout of approach guardrail to the bridge rail; details on one roadway plan sheet.



Associated work hours and costs are shown on the following page.

"I found RockSol ... to be one of the more diligent and responsive consultants to provide Douglas County services. The design team was especially insightful and mindful of county criteria and associated costs. I would recommend their team for other agencies."

Neil Sarno, Douglas County CIP Engineer III

RIVERDALE ROAD BRIDGE OVER TODD CREEK
 BRIDGE REHABILITATION TO ADDRESS STRUCTURAL CONDITION REPAIRS

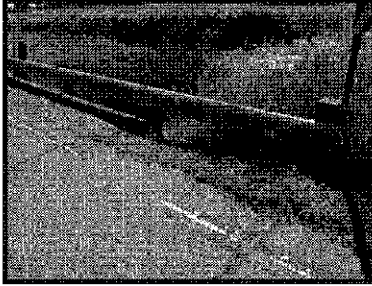
Adams County, Colorado

Effort is based on Scope of Work in RFP and as Described in Proposal

Effort to Conduct Tasks needed to accomplish Scope of Work	Labor classification										Total (hours)
	Project Manager (hours)	Lead/Sr Bridge Engineer (hours)	Assistant Bridge Engineer (hours)	CAD Technician 1 (hours)	Lead/Sr Roadway Engineer (hours)	Roadway Engineer (hours)	CAD Technician 2 (hours)	Lead/Sr Geotech Engineer (hours)	Geologist (hours)	Admin (hours)	
Structural Condition Repairs											
Details for Abutment and wingwall backwalls replacement; details on one bridge plan sheet.		2	4	6							12
Details for abutment cap to pile welds removal and replacement of the welds; details on one bridge plan sheet.		2	2	4							8
Details and typical sections showing the superstructure girders will be sandblasted to remove heavy-metal paint, corrosion, rust, and flaking metal. The girders will then be painted for corrosion protection; details on one bridge plan sheet.		2	4	4							10
Memo with the benefits and costs of reinforced concrete deck compared to new steel bridge plank deck, for discussion with Adams County to achieve concurrence on the deck replacement type based on benefits and costs.	2	3	1								6
Details and typical sections showing deck replacement with new steel bridge plank or a reinforced concrete deck; details on one bridge plan sheet.		4	2	6							12
Memo containing figures of bridge rail types that can be supported on the girder sides, provide the required rail height and post spacing, and provide documented TL-2 crash test performance, including cost estimates, for discussion with Adams County of the benefits and cost of each alternative, and to achieve a consensus on the rail type.	2	2	4	2							10
Layout extents and details of bridge rail replacement, including rail height, post spacing, and anchoring to the curb top and side, or anchoring to the side of curb and deck edge; details on one bridge plan sheet.		4	2	6							12
General layout of the bridge, showing the location of the repairs.		4	2	6							12
Bridge quantities for each pay item, and associated notes for the bridge repairs; one bridge plan sheet.		2	2	2							6
Layout of approach guardrail to the bridge rail; details on one roadway plan sheet.	2					2	2	4			10
Coordination with Adams County and stakeholders	4										4
Project management of the design team	6									2	8
Total hours: prime consultant	16	25	23	36	0	2	2	4	0	2	110
Hourly Billing Rates	\$ 159.00	\$ 159.00	\$ 82.33	\$ 82.00	\$ 146.00	\$ 112.00	\$ 82.00	\$ 146.00	\$ 112.00	\$ 69.00	
Labor cost: prime consultant	\$ 2,544.00	\$ 3,975.00	\$ 1,893.59	\$ 2,952.00	\$ -	\$ 224.00	\$ 164.00	\$ 584.00	\$ -	\$ 138.00	\$ 12,474.59
Other Direct Costs: mileage 60 miles @ \$0.52/mile											\$ 31.20
Total Cost: Structural Condition Repair											\$ 12,505.79

OTHER ENGINEERING AND ENVIRONMENTAL WORK, ASSOCIATED DELIVERABLES, ASSOCIATED WORK HOURS, AND COSTS

In addition to the scour critical designation mitigation and structural condition repairs, other engineering and environmental work is required to develop complete biddable plans specifications, and estimates. We have determined the following engineering and environmental work is needed, along with associated deliverables include:



Survey

Scour critical evaluation and structural condition repairs do not require survey information. The scour critical evaluation and structural condition repairs can be designed and detailed with layout and dimensions relative to the bridge abutments.

The guardrail for the roadway approaches requires field survey of the existing approach road surface and embankments. The field survey and control will be conducted by the RockSol survey staff, including a Professional Land Surveyor and an experienced surveyor. The associated costs are shown on the following page.

Right-of-Way

Right-of-way effort will consist of research of the county road right-of-way width, and adjacent property ownership. Field locating right-of-way monuments is not necessary to accomplish the bridge rehabilitation described.

Utilities

Utilities will be cleared before the bore hole is drilled for the non-destructive testing. One communication conduit is located on the West side of the bridge, and shows displacement below the superstructure. Other utilities work is not needed to accomplish the bridge rehabilitation described.

Environmental

RockSol understands that environmental impacts require analysis and minimization, regardless of whether a project is federally or locally funded. In preparing the structural maintenance design for the bridge, we will provide the County with full environmental clearances for applicable federal, state, and local laws. During her time at CDOT, our Environmental Manager provided environmental clearances for several bridge scour projects in Northern Colorado that resulted from the September 2013 flood. This experience will allow for a streamlined clearance process.

The bridge scour improvements will require 404 permitting administered by the US Army Corps of Engineers (USACE). The project action will likely be covered under a Nationwide 3(a) permit. We will produce a Preconstruction Notification that includes Endangered Species Act and Section 106 of the National Historic Preservation Act considerations provide it to the County for submission to the USACE. We have included two rounds of review with Adams County and USACE in our proposal. We do not anticipate any cultural resources or threatened and endangered species will be affected by the project.

Based on the age of the bridge, it is likely that the paint contains lead. The structure maintenance aspect of the project will require the removal of the paint. We will include project specifications addressing the proper removal and disposal of the material.

Our team will create a site specific stormwater management plan that addresses temporary erosion control practices, site restoration, and the process for removal of bridge components such as sand blasting and backwall replacement in order to ensure that the creek's water quality is maintained. We anticipate that disturbance will equal less than one acre; therefore, we assume no Stormwater Construction Permit.



Our environmental team will also create Migratory Bird Treaty Act specifications to ensure compliance with this act. We are not anticipating any impacts.

Plans, Specifications, and Estimates

In addition to the scour critical designation mitigation and structural condition repairs, other engineering and environmental work is required to develop complete biddable plans specifications, and estimates. The overall project

deliverables include:

- Preliminary design submittal; preliminary plans, list of specifications, preliminary quantities and preliminary cost estimate.
- Summary of preliminary review meeting; review comments compiled, and responses prepared.
- Draft final design submittal; draft final plans, draft final specifications, draft final quantities and draft final cost estimate.
- Summary of draft final review meeting; review comments compiled, and responses prepared.
- Final design submittal; final plans, final specifications, final quantities and cost estimate.
- Prepare responses to questions during the bid phase.
- Prepare and transmit plans and specifications containing the professional engineer stamp, signature and date of the professional engineer directing the engineering work shown on each plan sheet and specifications title page.
- Provide design support services during construction, estimated to be 24 hours for a structural engineer.

Associated work hours and costs are shown on the following page.

PROPOSED SCHEDULE FOR DELIVERABLES

The proposed schedule is shown on page 11.

RIVERDALE ROAD BRIDGE OVER TODD CREEK
OTHER ENGINEERING AND ENVIRONMENTAL WORK

Adams County, Colorado

Effort is based on Scope of Work in RFP and as Described in Proposal

Effort to Conduct Tasks needed to accomplish Scope of Work	Labor classification										Total (hours)	
	Project Manager (hours)	Lead/Sr Bridge Engineer (hours)	Assistant Bridge Engineer (hours)	CAD Technician 1 (hours)	Roadway Engineer (hours)	CAD Technician 2 (hours)	Geologist (hours)	Surveyor (hours)	Environmental Scientist (hours)	Admin (hours)		
Other Engineering and Environmental Work												
Survey: field survey of existing approach road surface, embankment, and side slopes, to accommodate design of approach guardrail. The field survey and control will be conducted by the RockSol survey staff, including a Professional Land Surveyor and an experienced surveyor.	1							16				17
Right-of-way effort will consist of research of the county road right-of-way width, and adjacent property ownership. Field locating right-of-way monuments is not necessary to accomplish the bridge rehabilitation described.	1							6				7
Utilities will be cleared before the bore hole is drilled for the non-destructive testing. Other utilities work is not needed to accomplish the bridge rehabilitation described.							2					2
Environmental work: prepare 404 Permit PCN, hazardous materials specification, MBTA specification. Includes one site visit. Assumes two rounds of review by Adams County.									16			16
Preliminary design submittal; preliminary plans, list of specifications, preliminary quantities and preliminary cost estimate.	2	2	2	4	1	2			1			14
Summary of preliminary review meeting; review comments compiled, and responses prepared.	2	2										4
Draft final design submittal; draft final plans, draft final specifications, draft final quantities and draft final cost estimate.	2	4	4	6	2				4			22
Summary of draft final review meeting; review comments compiled, and responses prepared.	2	2										4
Final design submittal; final plans, final specifications, final quantities and cost estimate.	2	2	2	6								12
Prepare responses to questions during the bid phase.	1	2										3
Prepare and transmit plans and specifications containing the professional engineer stamp, signature and date of the professional engineer directing the engineering work shown on each plan sheet and specifications title page.		2			1							3
Provide design support services during construction, estimated to be 24 hours for a structural engineer.		12	12									24
Coordination with Adams County and stakeholders	6											6
Project management of the design team	6									3		9
Total hours: prime consultant	25	28	20	16	4	2	2	22	21	3		143
Hourly Billing Rates	\$ 159.00	\$ 159.00	\$ 82.33	\$ 82.00	\$ 112.00	\$ 82.00	\$ 112.00	\$ 109.80	\$ 112.00	\$ 69.00		
Labor cost: prime consultant	\$ 3,975.00	\$ 4,452.00	\$ 1,646.60	\$ 1,312.00	\$ 448.00	\$ 164.00	\$ 224.00	\$ 2,415.60	\$ 2,352.00	\$ 207.00		\$ 17,196.20
Other Direct Costs: mileage 60 miles @ \$0.52/mile												\$ 31.20
Total Cost: Other Engineering and Environmental Work												\$ 17,227.40

SCHEDULE - RIVERDALE ROAD BRIDGE OVER EAST BIJOU CREEK

Activity	Activity Duration (month)	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9
Scour Critical Mitigation	1.5	█								
Determine Pile Depth	0.5	█								
Calculate Potential Scour Depth	1	█								
Determine if Scour Critical	0.5	█								
Structural Condition Repairs	2	█	█							
Str. Condition Repair Items	2	█	█							
Design & Plans Preparation plus Reviews	4	█	█	█	█					
Surveying, Right-of-Way Research	0.5	█								
Environmental	2	█	█							
Preliminary Design Submittal	2	█	█							
County Review Prelim Submittal	0.5		█							
Preliminary Review Meeting				◆						
Draft Final Design Submittal	0.5		█							
County Review Draft Final Submittal	0.5			█						
Draft Final Review Meeting					◆					
Final Plans & Specs & Estimate Submittal	0.5				█					
Advertisement for Bids						◆				
Pre-Bid Meeting							◆			
Answer Questions								█		
Bid Preparation	0.75								█	
Bid Opening										◆
Construction	4								█	█
Design Support During Construction	2									█