

**TOWN OF CASTLE ROCK
SERVICES AGREEMENT
(Colorado Front Range Trail Design)**

DATE: _____, 2020.

PARTIES: **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 (“Town”).

SHORT ELLIOTT HENDRICKSON, INC., a Minnesota corporation, 2000 South Colorado Boulevard, Suite 6000, Colorado Center Tower One, Denver, CO 80222-7938, (“Consultant”).

RECITALS:

- A. The Town issued a Request for Proposals from qualified firms with expertise in professional engineering design services.
- B. Consultant timely submitted its proposal.
- C. Town wishes to engage Consultant to provide the services more fully described in the following Agreement and Exhibits.

TERMS:

Section 1. Scope of Services. Consultant shall provide profession engineering design services related the East Plum Creek and McMurdo Trail, in accordance with the scope of work attached as *Exhibit 1* (“Services”).

Section 2. Payment. Consultant shall invoice Town on a monthly basis for the Services rendered in accordance with the rate and fee scheduled identified in *Exhibit 1*. Town shall pay such invoices within 30 days receipt of such invoice. In no event shall the cumulative payment to Consultant exceed \$486,063, unless authorized in writing by Town.

Section 3. Completion. Consultant shall commence the Services on August 1, 2020 and complete the Services September 15, 2021. Consultant shall devote adequate resources to assure timely completion of the Services. Consultant shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

Town shall have the right to terminate this Agreement at any time with 30 days written notice to Consultant. The Town’s only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination. Consultant shall turn over all work product produced up to the date of termination.

Section 4. Subcontractors. Consultant may utilize subcontractors to assist with specialized works as necessary to complete the Services. Consultant will submit any proposed subcontractor and the description of their services to the Town for approval.

Section 5. Assignment. This Agreement shall not be assigned by Consultant without the written consent of the Town.

Section 6. Notice. Any notice required or permitted by this Agreement shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the party to whom such notice is to be given at the address set forth on the first page of this Agreement, or at such other address as has been previously furnished in writing to the other party or parties. Such notice shall be deemed given when deposited in the United States mail.

Section 7. Prohibition Against Employing Illegal Aliens. Consultant shall not knowingly employ or contract with an illegal alien to perform work under this contract. Consultant shall not enter into a contract with a subcontractor that fails to certify to the Consultant that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract.

Consultant has confirmed the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services through participation in either the E-verify program or the Department program, as defined in C.R.S. §§ 8-17.5-101(3.3) and 8-17.5-101(3.7), respectively. Consultant is prohibited from using the E-verify program or Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed.

If Consultant obtains actual knowledge that a subcontractor performing work under this Agreement for services knowingly employs or contracts with an illegal alien, Consultant shall:

A. Notify the subcontractor and the Town within three days that the Consultant has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

B. Terminate the subcontract with the subcontractor if within three days of receiving notice required pursuant to this paragraph the subcontractor does not stop employee or contracting with the illegal alien; except that the Consultant shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

Consultant shall comply with any reasonable request by the Department of Labor and Employment 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).

If Consultant violates a provision of this Agreement required pursuant to C.R.S. §8-17.5-102, Town may terminate the Agreement for breach of contract. If the Agreement is so terminated, the Consultant shall be liable for actual and consequential damages to the Town.

Section 8. Insurance. Consultant agrees to procure and maintain, at his own cost, the following policy or policies of insurance. Consultant shall not be relieved of any liability, claims, demands or other obligations assumed pursuant to this Agreement by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

A. Consultant shall procure and maintain, and shall cause each subcontractor of the Consultant to procure and maintain a policy with the minimum insurance coverage listed below. Such coverage shall be procured and maintained with forms and insurers acceptable to the Town. All coverage shall be continuously maintained from the date of commencement of services hereunder. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers Compensation insurance to cover obligations imposed by the Workers Compensation Act of Colorado and any other applicable laws for any employee engaged in the performance of Work under this contract, and Employer's Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-policy limit, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease-each employee.

2. Comprehensive General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability Insurance with minimum combined single limits for bodily injury and property damage of not less than ONE MILLION DOLLARS (\$1,000,000) each occurrence and ONE MILLION DOLLARS (\$1,000,000) aggregate with respect to each of Consultant's owned, hired and/or non-owned vehicles assigned to or used in performance of the services. The policy shall contain a severability of interests provision.

4. Professional Liability insurance with minimum limits of ONE MILLION DOLLARS (\$1,000,000) per claim and ONE MILLION DOLLARS (\$1,000,000) aggregate.

B. The policies required above, except Workers' Compensation insurance, Employers' Liability insurance and Professional Liability insurance shall be endorsed to include the Town, its officers and employees, as an additional insured. Every policy required above, except Workers' Compensation and Professional Liability insurance, if applicable, shall be primary insurance, and any insurance carried by the Town, its officers, or its employees, shall be excess and not contributory insurance to that provided by Consultant. The additional insured endorsement for the Comprehensive General Liability insurance required

above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Consultant shall be solely responsible for any deductible losses under each of the policies required above.

C. Certificates of insurance shall be completed by Consultant's insurance agent as evidence that policies providing the required coverage, conditions and minimum limits are in full force and effect, and shall be subject to review and approval by the Town. Each certificate shall identify the Project and shall provide that coverage afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days prior written notice has been given to the Town. If the words "endeavor to" appear in the portion of the certificate addressing cancellation, those words shall be stricken from the certificate by the agent(s) completing the certificate. The Town reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

D. Failure on the part of Consultant to procure or maintain policies providing the required coverage, conditions, and minimum limits shall constitute a material breach of contract upon which at the Town's discretion may procure or renew any such policy or any extended connection therewith, and all monies so paid by the Town shall be repaid by Consultant to the Town upon demand, or the Town may offset the cost of the premiums against any monies due to Consultant from the Town.

E. The parties understand and agree that the Town is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations (presently \$387,000 per person, \$1,093,000 for two or more persons, per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, §24-10-101, *et seq.*, C.R.S., as from time to time amended, or otherwise available to Town, its officers, or its employees.

Section 9. Indemnification. Consultant expressly agrees to indemnify and hold harmless Town or any of its officers or employees from any and all claims, damages, liability, or court awards including attorney's fees that are or may be awarded as a result of any loss, injury or damage sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, to the extent caused by the negligent acts, errors or omissions of Consultant or any of their employees or agents in performing work pursuant to this Agreement. In the event that any such suit or action is brought against Town, Town will give notice within ten (10) days thereof to Consultant.

Section 10. Delays. Any delays in or failure of performance by any party of his or its obligations under this Agreement shall be excused if such delays or failure are a result of acts of God, fires, floods, strikes, labor disputes, accidents, regulations or orders of civil or military authorities, shortages of labor or materials, or other causes, similar or dissimilar, which are beyond the control of such party.

Section 11. Additional Documents. The parties agree to execute any additional documents or take any additional action that is necessary to carry out this Agreement.

Section 12. Entire Agreement. This Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by the parties. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Agreement shall continue in full force and effect.

Section 13. Time of the Essence. Time is of the essence. If any payment or any other condition, obligation, or duty is not timely made, tendered or performed by either party, then this Agreement, at the option of the party who is not in default, may be terminated by the non-defaulting party, in which case, the non-defaulting party may recover such damages as may be proper.

Section 14. Default and Remedies. In the event either party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than 10 days after notice of default is given to the defaulting party, the non-defaulting party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action. In addition, no Party will be entitled to lost profits, economic damages, or actual, direct, incidental, consequential, punitive or exemplary damages in the event of a default.

Section 15. Waiver. A waiver by any party to this Agreement of the breach of any term or provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either party.

Section 16. Governing Law. This Agreement shall be governed by the laws of the State of Colorado.

Section 17. Independent Contractor. Consultant and Town hereby represent that Consultant is an independent contractor for all purposes hereunder. As such, Consultant is not covered by any worker's compensation insurance or any other insurance maintained by Town except as would apply to members of the general public. Consultant shall not create any indebtedness on behalf of the Town.

Section 18. No Third Party Beneficiaries. It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to Town and Consultant, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the parties that any person other than Town or Consultant receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

ATTEST:

TOWN OF CASTLE ROCK

Lisa Anderson, Town Clerk

Jason Gray, Mayor

Approved as to form:

Approved as to content:

Michael J. Hyman, Town Attorney

Jeff Brauer, Director of Parks and Recreation

CONSULTANT:

SHORT ELLIOTT HENDRICKSON, INC.

By: _____

Its: _____

[Handwritten Signature]
VICE PRESIDENT

PROPOSAL FOR PROFESSIONAL SERVICES

Colorado Front Range Trail

Along East Plum Creek and McMurdo Gulch

TOWN OF CASTLE ROCK, COLORADO | FEBRUARY 6, 2020



Building a Better World
for All of Us®

Engineers | Architects | Planners | Scientists

February 6, 2020

Rich Havel, Trail Planner
Town of Castle Rock
rhavel@crgov.com

Re: Colorado Front Range Trail at Castle Rock

Dear Mr. Havel:

The Colorado Front Range Trail is an ambitious undertaking; 876 miles of trails linking Wyoming to New Mexico and traversing a number of diverse communities along the way. To that end, the Town of Castle Rock plays an important part in the overall trail system. Because of the importance of Castle Rock to the whole, this project to provide engineering design and permitting services for a 5-mile concrete trail along East Plum Creek and McMurdo Gulch through open space from the southern to northern boundary needs to be done correctly. You need a partner who understands trails and the challenges that may be presented. You need a team who is available to do the work on your schedule and your budget. Short Elliott Hendrickson Inc. (SEH®) should be that partner.

In reviewing your request for proposals (RFP) we believe we have the right qualifications and team assembled to be your ideal partner.

READY RESOURCES.

We assembled a multidisciplined team who are ready and committed to work on your project. We brought together trail designers, multimodal specialists, structural engineers, water resource engineers, landscape architects, surveyors, geotechnical engineers and environmental scientists. Together, the

SEH team will work tirelessly to design the trail that meets all of your expectations and blends seamlessly into the existing portions of the Colorado Front Range Trail.

DEMONSTRATED EXPERIENCE.

As a firm, SEH has designed hundreds of miles of trails and has encountered challenges unique to each project and, more importantly overcome those challenges with innovative, collaborative ideas. From safe routes to school and Creekside trails throughout the Denver-metro area, to TAP trails at Pueblo West to the Animas River trail in Durango, we bring extensive experience. Our project manager, Erica Olsen has been an integral team member on a number of these trail projects as well as her supporting staff members. We have included some of these projects as well as resumes in our proposal to demonstrate that experience.

PROVEN APPROACH.

We have an established process for managing and delivering projects which has kept our projects on schedule and budget. This process includes quality review on designs as well as regular check ins. In addition, through our previous work with the Town of Castle Rock—from fire stations to roundabouts—we

have a good understanding of your various submittal requirements and preferences. The approach in the proposal discusses how we will complete the design for the trail.

Our trails are some of Colorado’s and Castle Rock’s most treasured assets. As hikers and riders we know how important trails are, providing access to our natural environment. We also understand that every project is a learning experience. We welcome this opportunity to share our ideas and be a part of this important project for Castle Rock and the State of Colorado. Should you have any questions about our proposal please don’t hesitate to contact Project Manager Erica Olsen at 303.586.5828 or eolsen@sehinc.com or Project Principal Rick Coldsnow at 720.540.6806 or rcoldsnow@sehinc.com.

Sincerely,



**ERICA OLSEN, PE
PROJECT MANAGER**



**RICK COLDSNOW, PE
PRINCIPAL**

Engineers | Architects | Planners | Scientists



Building a Better World
for All of Us®

Project Team Qualifications and Related Experience

After reviewing the Request for Proposals (RFP), we selected the following individuals and firms based on their qualifications. The following page highlights key team members and their associated roles for serving the Town. These team members will be fully committed to your project when called upon. We've also provided condensed one-page resumes of these key staff in the Appendix of this submittal.

Town of Castle Rock

Rich Havel | Trail Planner

Rick Coldsnow PE

Principal
SEH

Erica Olsen PE

SEH Project Manager
SEH

PLANNING AND DEVELOPMENT

Matthew Seubert AICP

Planning and Development Lead
SEH

Billy Gregg RLA, ASLA

Trail Designer
StudioCPG

SURVEYING AND MAPPING

Scott Klinker PLS

Survey Lead
SEH

TRAIL DESIGN

Drew Chandler PE

Design and Engineering Lead
SEH

Tim Nuetzel PE, LEED AP®, ENV SP

Design and Engineering Support
SEH

Jeremy Thompson EI

Design and Engineering Support
SEH

Aicha Menendez PLA

Landscape Architect
SEH

STRUCTURAL DESIGN

Steve Kaye PE, LEED AP®

Structural Lead
SEH

DRAINAGE DESIGN AND PERMITTING

David Hoesly PE

Drainage Lead
SEH

Jennifer Russell PE

Drainage Support
SEH

Paul Thomas EI

Design, Engineering and Drainage Support
SEH

GEOTECHNICAL

Greg Fischer PE, PHD

Geotechnical Lead
Shannon & Wilson

ENVIRONMENTAL

Jon Hedlund

Environmental Lead
ERO Resources

Hidde Snieder

Biologist
ERO Resources

SUBSURFACE UTILITY EXPLORATION (SUE)

Cameron Greer EIT

SUE Lead
UMSI

SEH

Subconsultants

The specific licenses and credentials of the team members are described in the personnel and/or resume section of this document.



ERICA OLSEN PE

Erica is a project manager in our Denver office who specializes in multimodal design projects. She is currently managing the development of the City and County of Denver Bicycle Design Manual as well as development of construction plans for Crown Blvd and 51st Avenue High Comfort Bike Lanes and the Cory Merrill Safe routes to School project. She was the lead project engineer for development of preliminary plans for the Founders and Fifth intersection improvements for the Town of Castle Rock. Erica is an experienced project manager and supervisor who emphasizes regular communication with her clients – no surprises.



RICK COLDSNOW PE

Rick will serve as project principal responsible for quality assurance and assistance with resource allocation to make sure all deadlines and quality expectations are met. Rick has managed over \$10 million in professional services during his 13 years with SEH. Rick managed our Town of Castle Rock on call contract, providing oversight for the Founders and Fifth intersection and Plum Creek and Wolfensberger roundabout projects.



MATTHEW SEUBERT AICP

Matthew is SEH’s multimodal planner who will lead concept design efforts during Phase 2 of the project, working with Billy Gregg from StudioCPG and other team members, Matthew is an avid cyclist with extensive experience leading development of municipal master plans and standards, including managing the Houston Bicycle Master Plan and Complete Streets projects.



SCOTT KLINKER PLS

Scott will provide topographic survey of the project area and prepare easement descriptions. He has direct experience completing surveys for our projects in Castle Rock and regularly works with the proposed project team. Scott is a licensed Unmanned Aircraft System (UAS) Pilot and has started utilizing drone technology on some of SEH’s survey projects.



DREW CHANDLER PE

Drew will be the Engineer of Record for the project, and will lead and be responsible for the Civil design and engineering of the trail, crossings, and hydraulic capacity designs. Drew is an avid bicyclist who has logged thousands of commuting miles. He led design efforts for the Animas River Trail in Durango.



TIM NUETZEL PE, LEED AP®, ENV SP

Tim is a senior project engineer who will assist with development of construction documents. He is familiar with Castle Rock having recently led the site design for Castle Rock Fire Station 152 and prepared standard trail details for the Roaring Fork Transportation Authority under our on-call contract. He also led design of the challenging Garrison Street Safe Routes to School trail in Arvada. He has been with SEH over eight years.



AICHA MENENDEZ PLA

Aicha is a landscape architect who will develop revegetation plans as part of the construction document process. Aicha is familiar with Colorado native species. She has recently been providing landscape design on several of our BLM projects in the west, often in sensitive natural environments similar to the Colorado Front Range Trail.



STEVE KAYE PE, LEED AP®

Steve will lead all structural design for the project. Steve was the lead structural engineer for the Westerly Creek channel improvement project in Aurora which included rock retaining walls, a low flow path crossing, and a pre-manufactured bridge trail crossing of the creek as well as roadway bridges. He worked closely with Billy Gregg and StudioCPG as well as Shannon & Wilson on this project. He was also on the team for the Cherry Knolls Park rock walls for UDFCD.



DAVID HOESLY PE

David will lead the hydraulic analysis and design component of the project, including scour analysis, culvert design and assistance with the Conditional Letter of Map Revision documentation. David is an integral part of our civil team working hand in hand with our designers using HECRAS, HEC-HMS and EPA SWMM to support design and assess impacts. David has recently assisted with scour analysis for bridges in Boulder and Logan Counties and designed stormwater collection and water quality infrastructure for a major arterial in Colorado Springs. David’s knowledge of AutoCAD also allows him to take designs from concepts to documents.



JENNIFER RUSSELL PE

Jennifer will assist David with evaluation of major drainageways for CLOMR and no rise documentation. Jennifer recently assessed flooding potential due to potential irrigation dam failure for several communities in Laramie County and designed a unique articulated concrete block scour protection for a major pipeline river crossing. She also assists our bridge inspection team, providing scour assessment of structures throughout the state.



BILLY GREGG RLA, ASLA

Billy will assist in preliminary design of trail alignment and cross sections, including field verification of trail alignment, impact of proposed alignment on existing conditions including interface with proposed trail cross sections.



GREG FISCHER PE, PHD

Greg will be the lead geotechnical engineer on the project responsible for determining boring locations and depths, as well as identifying laboratory testing requirements. Greg will also oversee engineering analyses related to walls, foundations and subgrades.



JON HEDLUND

Jonathan Hedlund will lead the archaeological component of the Town of Castle Rock Front Range Trails project. He will work with the project team to identify and avoid any potential cultural resource constraints and work closely with the agencies to limit extended consultation timelines.



HIDDE SNIEDER

Hidde is the lead biologist for the Town of Castle Rock Front Range Trails project. He will oversee the environmental data gathering and coordinate directly with the agencies to ensure the project maintains its permitting schedule.



CAMERON GREER EIT

Cameron will be completing a Subsurface Utility Engineering (SUE) QL B utility designating investigation, mapping out the existing utilities.

SUBCONSULTANTS

STUDIOCPG

StudioCPG provides a full range of landscape architectural services. Their staff has successfully managed complex projects that require a systematic approach to collaboration with engineers, architects as well as federal, state and local agencies. Their areas of concentration include urban design and planning, site planning and landscape design, stormwater management, green infrastructure and parks, trails and open space. **SEH has teamed with StudioCPG on over 25 trail, park and urban design projects in the region.**

SHANNON & WILSON

Shannon & Wilson has provided engineering services for roads, bridges and other transportation projects throughout the United States since 1954. The company has provided geotechnical and environmental studies and recommendations, tunnel engineering, instrumentation, and construction observation for thousands of transportation projects. Shannon & Wilson’s geotechnical engineers and geologists offer guidance on pavement design, subgrade preparation, earthwork, wall and bridge foundations, as well as geologic hazards along routes. **Shannon & Wilson has teamed with SEH on previous projects for the Town of Castle Rock, BLM, Town of Arvada, and the Westerly Creek project in Aurora.**

ERO RESOURCES

ERO’s team of consultants provides natural resource and environmental evaluation, compliance, planning, and facilitation services to address clients’ complex environmental issues. For more than 35 years, this environmental consulting firm has served clients in Colorado and the West with an enduring commitment to quality and integrity. ERO’s diverse and collaborative team of knowledgeable experts is responsive, reliable, and available to clients. **ERO is currently on SEH’s Town of Castle Rock on-call contract and is providing environmental services for SEH on the Ward Station Area trail and roadway. They have provided environmental services for other segments of the Colorado Front Range Trail.**

UMSI

Utility Mapping Services, Inc. (UMSI) is a highly specialized, small business specifically focused on performing Subsurface Utility Engineering (SUE). Established in 2002 by engineers and geophysicists who are advancing state of the art SUE practices, UMSI is recognized as a leader in this specialized engineering field, with current contracts for infrastructure and transportation projects throughout the upper mid-western and western United States. **UMSI has recently provided SUE services for SEH in Denver, Colorado Springs and Westminster.**

SECTION 2 | Response to Scope of Work

SEH has reviewed available documentation, including the RFP and Addenda Nos. 1, 2 and 3, available plans for the Montaine Development, Colorado Parks and Wildlife information on the Colorado Front Range Trail, FEMA flood maps and Town standards. We have also walked most of the accessible alignment along the three proposed segments to get a better understanding of specific challenges and opportunities for the project.

We are familiar with the Town and how to help get projects designed and built from our work on the recently constructed Fire Station No. 152 on Crystal Valley Parkway at Plum Creek and the Plum Creek/Wolfensberger Rd. roundabout, which is adjacent to Town open space. Eight years ago, our structural engineers designed a new rail for two Castle Oaks bridges over McMurdo Gulch. In addition, the SEH team, including subconsultants proposed for this project, has recently been awarded a new on-call contract with Castle Rock Public Works and are currently pre-qualified for minor roadway and bridge design as well as construction services in Douglas County. We also hold a nationwide on-call contract with the Bureau of Land Management (over \$3 million in services the last three years), where we have had the opportunity to provide design for trail, campground and site improvements in sensitive natural areas. Many of our Colorado projects have included features relevant to those anticipated on the Castle Rock portion of the Colorado Front Range Trail.

The following section summarizes our approach to the scope of work, emphasizing the value provided by our experience and “out of the

box” thinking. This section also includes an opportunities map (page 16) to illustrate our approach and ideas for your project.

PROJECT MANAGEMENT

Thorough, responsive project management is the foundation for a successful project with informed engaged clients. SEH provides our project managers with the resources and training to be successful, as is evidenced by the extensive repeat work we have with our clients

At the beginning of your project **Erica Olsen, PE**, will prepare a Project Management Plan which summarizes the project goals, schedule (MS Project Schedule will be included) project contacts, risk management and anticipated challenges. Erica will have the support of a strong, experienced technical staff as well as project principal **Rick Coldsnow, PE**, who will provide independent quality assurance reviews since he will not be involved in day-to-day activities. Both Erica and Rick understand how design impacts construction and the challenges that may occur. We anticipate 12 progress meetings as well as formal review meetings. Erica will also provide regular updates to the Town of Castle Rock.

PHASE 1 PRE DESIGN SERVICES

KICK OFF MEETING

The SEH team, under the direction of Erica, will attend a kick off meeting with the Town of Castle Rock staff to review the goals of the project, confirm the project schedule and introduce key

team members. We suggest a follow up meeting with other stakeholders once a schedule and approach has been established. SEH will prepare an agenda for all meetings as well as meeting minutes with action items.

PRE DESIGN RESEARCH

“No surprises” – that will be the most critical and possibly the most difficult goal to achieve. Surprises extend construction, increase costs and generally make the Town, your staff and your consultant targets for criticism. It’s apparent from the information in the RFP that Town staff have put a lot of thought and effort into this project and it will be important that we obtain your input and suggestions before beginning pre-design efforts. In addition, an assessment of current design and regulatory criteria such as the CDOT Trail Design Guide, Town of Castle Rock and Douglas County Standards, USACE and FEMA requirements should occur to be sure that items such as ADA compliance, water quality and flood impacts, environmental concerns and other current criteria are addressed throughout design (leading to no surprises).

SURVEYING

KICK OFF MEETING - RIGHT OF ENTRY

SEH will prepare letters of survey notice (right of entry) to the property owners where access will be required to inform them of the work taking place on their property. Before letters are sent out, SEH will provide a copy to the Town for approval of the wording. The letters will be sent within 24 hours once approval is given.

CONTROL SURVEY

While waiting for the 14-day property owner response to survey notice period, SEH will begin working on establishing primary control based on Horizontal Datum of Colorado State Plane NAD83, Central Zone and Vertical Datum of NAVD 88. After the 14-day survey notice period, project control will be established.

Based on the RFP we are assuming that property right-of-way mapping and easement identification and legal descriptions will not be required.

TOPOGRAPHY SURVEY

SEH will use existing LiDAR data supplied by the Town for the 30% design. In addition, survey data will be collected at key design areas such as trail tie-ins, roadway crossings, structure locations, steep slopes, etc. with conventional survey using Trimble GPS RTK and a Robotic Total Station. The existing LIDAR data is six years old so there may be changes that have occurred along the alignment in that time. We will verify consistency with existing conditions and perform spot checks to evaluate the accuracy of the LIDAR data. Topographic features to be located include: existing improvements, property pins, structures, irrigation pipes, diversion structures, wetland delineation, swales, ditches, pavement, curb and gutter, pedestrian access, landscape features—including all trees, fences, signs, gates, storm and sanitary sewer facilities with pipe sizes and inverts and other relevant topography features.

HYDRAULIC AND STRUCTURE DESIGN, CLOMR SURVEY

SEH will provide survey of six identified existing major drainage channels for the proposed structure design. Waterway/ditch cross

sections will be performed to aid in hydraulic modeling together with channel topography and existing water elevations to represent CLOMR information.

ASSUMPTIONS

- We are assuming that the LIDAR survey is accurate for most of the overland alignment except for areas proposed above for additional surveying. The field walk may identify some locations (i.e. retaining wall) additional locations for on the ground surveying. If early investigation determines that more detailed surveying is needed we would provide a scope to provide an unmanned aircraft survey and mapping of the alignment or portions of the alignment.
- Utility locations will be surveyed by UMSI, our Subsurface Utility Engineering subconsultant.

DELIVERABLES

SEH will provide an electronic AutoCAD 2018 format drawing representing one-foot contours.

INITIAL ENVIRONMENTAL AND CULTURAL INVESTIGATION

BACKGROUND

SEH's environmental subconsultant ERO will provide environmental/cultural assessment and permitting services for the trail. SEH has worked with ERO on multiple projects and they have experience with other segments of the Colorado Front Range Trail. The Town of Castle Rock identified two federal nexuses for the project: the U.S. Fish and Wildlife Service (Service) and the U.S. Army Corps of Engineers (Corps). Both agencies will require compliance with Section 106 of the National Historic Preservation Act (NHPA).

Service requirements are identified in the Douglas County and Town of Castle Rock Habitat Conservation Plan (DCHCP), which supports an incidental take permit from the Service under the Endangered Species Act (ESA). Preble's meadow jumping mouse (Preble's) is a species listed as threatened under the ESA and its habitat is assumed by the Service to be present in the project area. The DCHCP outlines how Castle Rock shall address impacts to Preble's habitat and includes mitigation approaches and requirements for Castle Rock projects.

The project will also have unavoidable impacts on waters of the U.S. and will require a Clean Water Act (CWA) Section 404 permit from the Corps. As part of obtaining Section 404 CWA permit authorization from the Corps, the project must comply with the ESA. Based on current knowledge of the proposed activities, ERO anticipates that the proposed work would most likely be authorized under a Section 404 Nationwide Permit (NWP) 14 for Linear Transportation Projects. As part of obtaining a Section 404 CWA permit, ERO anticipates that the Corps and Service will require mitigation for impacts to waters of the U.S. and Preble's habitat within the Riparian Conservation Zone (RCZ).

For Section 106 of the NHPA, the Service typically limits its area of potential effect (APE) to the RCZ (only present on East Plum Creek), and the Corps typically limits its APE to permitted crossings buffered by a small area. Based on ERO's past experience working with the Corps and Service on similar projects, neither agency will assume lead responsibilities when the APEs are scattered and separated. Two federal agencies will therefore require separate consultation reports and separate consultation events with the Colorado State Historic Preservation Office (SHPO).

Furthermore, Castle Rock stated that a Class III survey should also take place where the trail wraps around the 1934 Civilian Conservation Corps (CCC) camp (5DA3745) and motor pool yard (5DA3746). ERO will coordinate with the Corps to determine if the Corps will assume jurisdiction over this portion of trail because the Corps is actively consulting on these sites with the SHPO for a different project.

IDENTIFY AND MAP WETLANDS, OPEN WATER AND CHANNELS

ERO will delineate wetlands, open waters and channels found within the proposed project area. Wetlands will be delineated following the routine onsite wetland determinations in areas of less than 5 acres as described in the revised online version of the 1987 Corps Wetlands Delineation Manual and appropriate regional supplement. Open water and channels will be determined based on the presence of an ordinary high water mark (OHWM), as defined in 33 Code of Federal Regulations (CFR) 328. ERO will map the boundaries of wetlands, OHWM, open water and streambeds to submeter accuracy using a Global Positioning System (GPS) unit or, when appropriate, ERO will hand draw boundaries onto an aerial photograph. ERO will incorporate the wetland boundaries into base mapping provided by SEH and will send a revised base mapping file that includes a layer with the boundaries of wetlands, open water and channels.

ASSUMPTIONS

Performing the delineation is weather dependent. The ground must be free of snow and, in most instances, the soils must be unfrozen to collect the needed soil data.

Castle Rock will arrange and provide written permission to access the project area.

DELIVERABLES

Electronic file with wetland, open water and channel boundary. This will be incorporated in the SEH survey map deliverable.

CLASS I FILE AND LITERATURE REVIEW

ERO will conduct an archaeological file search and literature review with the Office of Archaeology and Historic Preservation (OAHP) to identify previous cultural resource inventories and documented cultural properties for the Service and Corps APEs. A file search will also be conducted with the lead federal agency, if one is involved and maintains records separate from the OAHP. Additional records may be consulted, including general land office records, historical maps and historical aerial imagery to identify potential unknown resources.

The results of the investigations will be used to coordinate with the Service and Corps to determine their respective APEs and level of effort (i.e., Class III survey or no further work). Based on prior project experience with both agencies, ERO does not expect either to assume a lead federal agency role.

ASSUMPTIONS

- The Service and Corps will not assume a lead federal agency role.

DELIVERABLES

- Two technical memos with accompanying figures for the Corps and Service to define their APEs and level of effort.

CLASS III CULTURAL RESOURCES SURVEY

ERO will conduct an intensive Class III cultural resource survey of the Corps and Service APEs that conforms to the Secretary of the Interior's Guidelines for Identification and by supervisory personnel that meet the Secretary of the Interior's Professional Qualification Standards. This task will involve two archaeologists walking systematic transects to identify unknown cultural resources within the APEs. Resources identified during Task 1 will be documented or reevaluated, if necessary.

Identified cultural resources will be documented on relevant OAHP site forms, mapped, photographed and located using a submeter GeoXH GPS unit. Each identified resource will be assessed for its eligibility to be listed in the National Register of Historic Places (NRHP) per 36 CFR 60.4 of the NHPA (1966, as amended).

Based on a preliminary review of the project area and ERO's previous work on McMurdo Gulch, ERO has identified the following area-specific expectations:

SOUTHERN SEGMENT (EAST PLUM CREEK)

- The Corps and Service APEs will intersect the historical Lowell O.V. Ranch (5DA1915), which is eligible for the State Register. ERO assumes the ranch will require minor documentation because the trail will not impact any of the ranch's constructed features.

MIDDLE SEGMENT (MCMURDO GULCH)

- The trail will intersect four to five Corps APEs. All of the crossings were recently surveyed by ERO or another cultural resource firm, PaleoWest, and the Corps will not require

additional survey for most of the crossings. If the scour wall impacts waters of the U.S., the Corps will require survey and documentation of a known buried eligible historical trash site. Impacts on the trash site will be assessed.

- It is unclear if the Corps will assume jurisdiction over the trail near the CCC camps. ERO will survey this portion of trail to assess effects on the eligible sites and coordinate with the project engineers to make any necessary adjustments to avoid impacts on significant parts of the sites (5DA3745 and 5DA3746).
- The trail will impact an existing CCC-related road (5DA3660), but the road is not eligible for the NRHP and will not require additional work.
- The Corps APE will intersect one not eligible Prehistoric Native American camp (5DA3894), but the site has been determined not eligible by the Corps and will require no additional work.

NORTHERN SEGMENT (MCMURDO GULCH AND CHERRY CREEK)

- The Corps APE is fully disturbed and the permit area will require no additional work.

ASSUMPTIONS

- SHPO stipulations require that ground conditions are 80 percent free of snow and any pedestrian survey areas and access roads must be dry to initiate survey.
- ERO's cost estimate assumes that the trail can be designed to avoid adverse effects on the CCC camp. If impacts are unavoidable, ERO will identify treatment options and negotiate a new SOW and cost estimate to resolve adverse effects.

- ERO's cost estimate does not account for any subsurface exploratory or evaluative testing.
- The number and complexity of cultural resources within the APE can substantially affect the level of effort to adequately document and evaluate the resources. ERO's cost estimate assumes four cultural resources will be located within the APE. If more than four resources are encountered, ERO will provide an updated scope.

DELIVERABLES

- Technical email memorandum with a summary of findings and management recommendations.

SUE INVESTIGATION

SEH is teaming with Utility Mapping Services, Inc. (UMSI) They have recently provided SUE services to SEH on projects in Colorado Springs, Denver and Westminster. They have always met our project deadlines and provided documentation in full compliance with ASCE/CI 38-02 and Colorado State statutes.

SCOPE OF WORK

Our initial field investigation identified utilities along the majority of the trail corridor which could impact the horizontal and vertical alignment as well as crossing locations. In particular, there are water supply lines along much of the south and middle segments. SUE work will be performed in accordance with the American Society of Civil Engineers Construction Institute Standard 38-02 (ASCE/CI 38-02) and include the following activities:

- Compilation of utility data (i.e. records and as-built information) acquired by UMSI and others.

- Preparation of field books, log sheets and crew scheduling and logistics for the initial utility designating field campaign.
- Phase 1: 2D QL B data acquisition (using electromagnetic (EM) induction, acoustic and/or other geophysical technologies), characterization, and 2D depiction (CADD file) of existing utility infrastructure data to develop a reliably qualified base map and data set from which to develop and support future design, coordination and construction decisions.
- Populating utility data management system GEOfeature™ with hydraulic structure information from the field investigation.

DESIGNATING

Although Phase 1 utility designating of buried infrastructure will have goal of QL B (i.e., position is determined via a combination of geophysical, survey and engineering methods) some facilities such as non-conductive water are pragmatically designated to a mixture of QL C (i.e., based on surveyed surface features and record data), B, and A (i.e., exposed survey grade observations such as possible at manholes) during the Phase 1 field effort. Likewise, some non-conductive piping and/or ducts lacking tracer wire may be designated to QL D (i.e., based on evidence consisting of available record information and/or verbal accounts) during the Phase 1 effort. Data quality is improved as and where required during subsequent project utility engineering phases. Any utilities designated to QL C and/or QL D quality levels will be explained and described in the Phase 1 SUE existing utility report as to why a quality level below QL B has been used.

All work is intended to incorporate and stem from previous efforts performed by the Town of Castle Rock and their consultants, and will be performed in compliance with applicable project design standards, procedures and accepted engineering principles. Information contained within this SOW and corresponding labor and cost estimate is based on: project standards and deliverables; Federal Highway Administration (FHWA) Avoiding Utility Relocations (DTFH61-01-C-00024); FHWA guidelines for SUE; and the American Society of Civil Engineers (ASCE) Standard Guideline for the Collection and Depiction of Existing.

SUE LIMITS AND QUALITY LEVELS

The project limits include a QL B field investigation and corresponding designation of existing utilities at various locations along the Front Range Trail in Castle Rock, Colorado. The proposed limits of the investigation are along the entire south and middle segments along a corridor width of 50 feet on the proposed alignment and any manholes outside of the alignment with laterals in the alignment.

The designating of some individual utilities may extend beyond the noted SUE project limits to include surface features or structures which are necessary to complete QL C alignments. Table 1 to the right presents the utility owners listed by Colorado 811 as being present within or nearby the project area, along with the estimated lineal footages which are the basis for the Phase 1 cost estimate.

Quality Level A investigations (test holes – up to 20) will be conducted after 30% design when conflicts have been identified.

TABLE 1: EXISTING UTILITIES IN THE CORRIDOR

OWNER	UTILITY
*Bell Mountain Ranch Metro District	Water
*Black Hills Energy	Gas
*CenturyLink	Fiber, Telco
*Comcast	CATV, Fiber
*Intermountain REA	Electric
*Level 3	Fiber
*Pinery Water & Wastewater District	Water, Sewer
*Town of Castle Rock	Water, Sewer
*US Sprint	Fiber

**Record information not available at the time of estimate.*

DELIVERABLES

Utility engineering deliverables include digital and hardcopy submittals of the following:

- CADD utility reference file based on Phase 1 findings.
- Hydraulic structure summary report (pdf format).
- A PE sealed SUE existing utility plan set with quality level designations.
- A PE sealed submittal report summarizing this investigation with highlights of unusual findings (pdf format).

In addition, UMSI will provide ongoing interpretive support to assist design engineers and utility coordinators with subsequent findings and ensure submitted data is properly understood and utilized.

GEOTECHNICAL INVESTIGATION

SEH is teaming with Shannon & Wilson Engineers for geotechnical services. They are currently on our Town of Castle Rock on-call contract and have supported us on many of the projects referenced later in the proposal

GEOTECHNICAL SCOPE OF WORK

We anticipate subsurface explorations will be required for the following features. The number and depth of borings at each of these features is indicated:

- Trail subgrade (obtained as part of other borings).
- Cut and fill slopes (assume 5 borings to 20 feet deep each).
- Retaining walls (assume 5 borings to 20 feet deep each).
- Five drainage features (assume 5 borings to 10 feet deep each).
- Two box culvert crossings (assume 2 borings to 20 feet deep each).
- Two grade separation crossings (assume 2 borings to 30 feet deep each).
- East Plum Creek crossing improvements (assume 3 borings to 10 feet deep).
- Scour wall (assume 1 boring to 20 feet deep).

Samples will be obtained at 2-1/2- to 5-foot depth intervals using the Standard Penetration Test (SPT) sampler or modified California (MC) barrel sampler.

A geologist or geotechnical engineer from their staff will complete a geotechnical reconnaissance, log borings and collect samples for classification and laboratory testing. Laboratory tests will include moisture

content, dry unit weight, gradation, Atterberg limits, corrosion, swell and moisture/density, as appropriate.

DELIVERABLES

Data generated during the subsurface exploration and laboratory testing programs will be analyzed by a geotechnical engineer in developing findings and recommendations to be presented in a formal report. The report will be signed and sealed by a professional engineer registered in the state of Colorado. The report will include:

- A site plan showing exploration locations.
- Field and laboratory test results, including boring logs.
- General description of subsurface soil/rock conditions and groundwater levels below the site.
- Earthwork recommendations, including cut and fill slope angles, reuse of onsite soils, and fill and backfill requirements.
- Parameters for retaining wall design.
- Parameters for culvert and bridge foundation design.

ASSUMPTIONS

- All borings are accessible with truck-mounted drill rig.
- Permits for fees will be waived.
- 8am to 5pm window for drilling borings.
- Subsurface conditions are suitable for hollow stem auger drilling methods.
- Borings will encounter soil/rock that is not contaminated and is non-hazardous. Drill cuttings can be used to backfill borings or disposed of as non-hazardous waste.

- Boring location coordinates will be collected using a handheld GPS receiving unit. Shannon & Wilson will stake/paint the boring locations to facilitate surveying by others if requested.
- Work will be completed during calendar year 2020.

PHASE 2 CONCEPT DESIGN AND FIELD VERIFICATION

The RFP scope recommends staking the alignment after 30% design. As an alternative, we are suggesting that the alignment be laid out on the LIDAR survey and staked during the initial phase of the project. The purpose for this is that 30% design usually requires extensive effort and analysis. We are concerned that valuable time and expenses would be wasted if the alignment changes substantially after 30% design. Also, the Castle Rock Segment was first proposed in 2006. Before moving to 30% design we want to verify that the alignment is still appropriate and verify vertical and horizontal features. We propose the following alternative scope.

Immediately after review of standards and Town/Stakeholder criteria, SEH will lay out the alignment on the LIDAR mapping and prepare conceptual level plan and profile sheets. Based on this, our surveyors will stake the centerline alignment per the RFP, but at 10%-15% instead of 30% design. Wetland boundaries will also have been identified in the field by ERO.

The plan and profile on aerial mapping will be provided to the Town and a field walk of the alignment will be scheduled to include Project Manager **Erica Olsen**, our bicycle planner, **Matthew Seubert**, water resource engineer **David Hoesly**, **Billy Greg with Studio CPG** and

Hidde Snieder with ERO, Town staff and other stakeholders, potentially including representatives from Toll Brothers and Starwood Land Ventures or their consultants for a portion of the alignment. This will allow the team to view how the alignment affects natural terrain, drainageways and corridors, grading, user comfort, wetlands and cultural resources. In particular, Billy has extensive experience in developing trails in natural settings. Alignment changes will be made in the field to help guide a more confident and accurate 30% design.

This will occur while we are completing an on-the-ground detailed survey of drainage crossings and grade separations and the SUE investigation so the overall schedule will not be impacted by this effort.

TRAIL DESIGN AT 15%

Trail design and construction is more than filling in a blank or making a missing connection.

Trails are a great way to connect people to the outdoors and they should feel simple in terms of how their component pieces and materials integrate with the site. Fitting trails gracefully into existing conditions requires understanding the corridor in fine detail. One key to minimizing risk and getting the best possible results lies in a process for doing initial (15%) design on the ground.

Trail design is best done in the field as follows:

- 1 Create a base drawing for each trail segment using existing information from LiDAR mapping.
- 2 Draw a trail alignment on the base that supports project requirements.

- 3 Test the alignment in field, adjusting it to accommodate real site conditions while taking detailed notes and photos.
- 4 Stake the revised centerline and prepare a topography and improvements survey of the corridor that includes this information.

A small initial investment in time and resources yields the information needed to proceed with a real awareness of issues that distinguish trail design including:

- o How do longitudinal grades sit on existing side-slopes?
- o How will local drainage conditions will work?
- o What are opportunities and constraints related to access for construction?
- o How can the existing landscape support a sense of place?
- o How will it feel to use the trail?

All of these combine to support confidence in the alignment and an awareness of the work it will take to achieve a complete construction package.

PHASE 2 DELIVERABLES

- o See Section 3
- o Memo summarizing all of the information obtained with recommended design criteria and graphics of the conceptual profile and cross sections.

PHASE 3 30% DESIGN

Once a final alignment has been determined and accepted by the Town and field investigations have been completed, SEH will prepare 30% design level plans for review by Castle Rock and your partners. We believe that 30% design is the most critical phase of the project, where

important decisions will be made that guide development of preliminary and final design. We anticipate meeting with the Town and other stakeholders at least biweekly during this phase so we don't go too far down the wrong "path." Our approach addresses anticipated challenges and opportunities in each segment. Further information is available on the opportunities map provided with this proposal. Tasks will be per the RFP for each level of design so we are not re-listing them here.

TRAIL DESIGN CONSIDERATIONS

SOUTH SEGMENT

We were unable to access most of the proposed alignment for the south segment since properties were posted. However, the southern end of the segment appears to follow an existing private access drive with little cross slope and fairly gentle grades. Since the UPRR track crossing is being designed by others, the most critical design feature will be the high water trail crossing of Plum Creek.

A proposed high water crossing will carry the trail over East Plum Creek at the southern part of the southern trail segment. According to the current regulatory FEMA flood insurance study (FIS), the width of the floodway at the anticipated location of the crossing is greater

than 400 feet. Potential options for the water crossing at this location include: a longer span option which could completely span the floodway with a low chord elevation above the 100-year water surface elevation, or a shorter span option that does not span the entire floodway and may have a low chord elevation which is below the 100-year water surface elevation. Comparison of the Longer Span vs. Shorter Span options are provided below (Figure 1).

Per Addendum 3, box culverts will also be considered but may be more costly and could impact the 100 year flood water surface elevation.



[CLICK HERE](#) to learn more about the Laramie River Crossing project.



Laramie River crossing designed by SEH

FIGURE 1	LONGER SPAN	SHORTER SPAN
Advantages	<ul style="list-style-type: none"> o Greater resiliency o Less impact to existing floodway o Tethered/breakaway bridge not needed 	<ul style="list-style-type: none"> o Smaller structure/lower cost o Less visually impactful o Lower approach trail
Disadvantages	<ul style="list-style-type: none"> o Larger structure/higher cost o More visually impactful o Higher approach trail 	<ul style="list-style-type: none"> o Lower resiliency o Greater Impact to existing floodway o Tethered/breakaway bridge needed

KEY DESIGN CONSIDERATION:

HIGH WATER CROSSING

HYDRAULIC DESIGN

Hydraulic design criteria for the bridge has the biggest impact on the size/cost of the structure and the impacts to the floodway.

COST SAVINGS:

- 1 Use a precast concrete box culvert (CBC), or pre-engineered, pre-fabricated steel truss superstructure for cost efficiency.
- 2 Keep the alignment of the crossing as close to perpendicular to the creek as possible, to minimize bridge length.

SEH has designed several pre-engineered pre-fabricated steel truss superstructure trail bridges as discussed in the reference section.

Further north, the Montaine development is currently under construction. Based on the proposed alignment, the trail will be between the development and the UPRR, adjacent to drainageways and a small pond. It's likely that there is high groundwater in these areas so excavation and disturbance should be kept to a minimum. The trail will cross a major outfall from the Montaine detention/water quality basins. Further north, the trail will be next to a Town of Castle Rock well and pump station. There are pipelines in this area that will run under the trail alignment.

CENTRAL SEGMENT

The central segment begins at Founders Parkway. The southern portion is behind homes on Ghost Dance Drive. This section is on a relatively steep grade, which may be over 5%. However, SEH has experience with that type of challenge. In Arvada,

we designed a safe routes to school trail on a steep grade incorporating periodic landings to comply with design standards.

Farther north, there is an existing at-grade crossing of Autumn Sage Street. Currently Autumn Sage is a through street with no controls at the Castle Oaks Drive intersection. For user safety, we recommend that stop signs or a rectangular rapid flashing beacon be installed at this trail crossing location.

A separated grade crossing is proposed where the trail crosses Castle Oaks near Wrangler Park and the existing unpaved trail.

At this crossing, the roadway will need to be raised in the area to allow adequate height for the crossing. That and the fact that Castle Oaks will possibly be widened at some point will likely require extending existing drainage culverts. If budget allows, it may be worthwhile to consider replacing the current culverts.

A low water trail crossing of McMurdo Gulch is proposed just downstream of the Castle Oaks Crossing. The low water crossing will provide trail access over drainage ways and will be designed to pass higher frequency/lower flow events through/under the structure, while lower frequency/higher flow events can overtop the structure.



Garrison Street Safe Routes to School Trail in Arvada, with Landings

KEY DESIGN CONSIDERATION:

SEPARATE GRADE CROSSINGS

Vertical and horizontal opening clearances - the larger the crossing opening is the safer, and more user-friendly the trail will be. However, the larger the opening the higher the cost will be.

POTENTIAL COST SAVINGS:

- 1 Use precast, prefabricated concrete elements for cost efficiency.
- 2 Close road, if possible, to improve constructability. Most traffic currently uses Autumn Sage.
- 3 Keep the alignment of the crossing as close to perpendicular to the road as possible, to minimize crossing length.



[CLICK HERE](#) to learn more about the Westerly Creek project.



Low water crossing of Westerly Creek designed by SEH

KEY DESIGN CONSIDERATION:

ELIMINATE THE NEED FOR A RAILING

AT LOW WATER CROSSING

This may require a wider structure with rumble strips and a profile/structure depth that minimizes the drop off from the trail to the creek. Having a railing in the floodway increases the likelihood of raising water surface elevations and increases the potential for debris to get trapped in the railing during high flow events.

POTENTIAL COST SAVINGS:

- 1 Use precast, prefabricated concrete elements (concrete box culverts) for cost efficiency.
- 2 Keep the alignment of the crossing as close to perpendicular to the creek as possible, to minimize crossing length and reduce skew angle. A skewed alignment may require cast in place construction.

The low water crossings will require an iterative design approach that includes water resource engineering to determine the needed hydraulic opening for the design event frequency (10 year), trail planning and civil engineering to create a vertical/horizontal trail alignment that is safe, usable and meets design requirements for the proposed users, and structural engineering so the structure can support the applied loads given the span length, needed hydraulic opening and trail alignment.

SEH has designed several similar precast and cast in place structures. Near this location, if the budget allows, the Town may want to consider an elevated boardwalk to minimize wetland disturbances and provide a viewing amenity. SEH

has experience with boardwalk design; a major challenge on the Nine Mile Creek regional trail was designing the trail with timber boardwalks through approximately three miles of wetlands and floodplain.

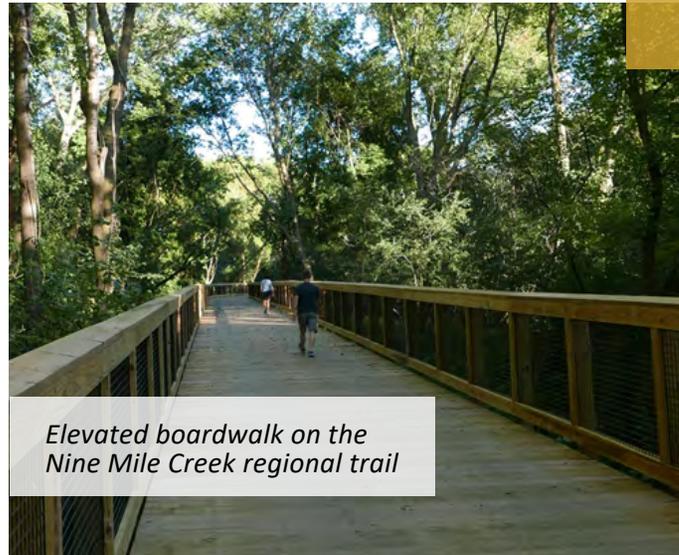
The alignment generally follows Castle Oaks Drive to the north. There are several water mains from Town wells and pump stations that will be crossed in this portion of the segment. In a couple locations, the proximity of McMurdo Gulch to Castle Oaks Drive results in the requirement to place the trail on a steep side-slope. This will likely require a retaining wall on the uphill side and railing on the downhill side. Cut for the trail will need to be minimized due to the water lines. The wall could be a boulder wall to provide a natural looking amenity. SEH recently designed boulder walls along the Westerly Creek Trail in Aurora and in Cherry Knolls Park in Centennial. In this area the trail will also be adjacent to historic structures, which will be addressed as part of the environmental investigation.

There is another grade separated crossing of Castle Oaks adjacent to an existing bridge further north. We anticipate the box culvert underpass will be adjacent to the existing McMurdo Creek bridge, but far enough away so it is not impacted by the construction. The depth of the underpass may require design of a barrier so creek water is separated from the trail. This barrier could also provide scour protection which could be boulders or another option. As with other retaining walls, we anticipate a structure selection assessment at 30% design or in the pre design phase to determine desired wall types.

Farther downstream, there is another location where scour could be a concern.



[CLICK HERE](#) to learn more about SEH's solutions to design challenges on this award winning trail.



Elevated boardwalk on the Nine Mile Creek regional trail



NORTH SEGMENT

The north segment will provide a final connection from the McMurdo Gulch Trail constructed as part of residential developments and the existing Cherry Creek Trail. This segment crosses an open area with a proposed low water crossing of the gulch. This portion of the trail will need to be incorporated into a future public park. Some modification to the alignment may be warranted by existing grades.



Boulder scour wall designed by SEH at Cherry Knolls Park

HYDROLOGY AND HYDRAULIC ANALYSIS AND DESIGN

Throughout design as the trail alignment and grading is developed, SEH's water resource engineers, led by **David Hoesly, PE**, will be assessing impacts of the project and developing guidance for culvert sizing, floodplain impacts, water quality and stormwater control.

SEH will gather existing relevant hydrologic and hydraulic data including drainage reports, master drainage studies, floodplain maps, and available floodplain models. This information will be used to establish existing conditions and drainage patterns in the project area. Working

with the design team, water resource engineers will design and size all culverts and proposed drainage crossings in order to minimize effect on adjacent properties and downstream drainage ways. The design will maintain existing drainage paths where possible.

The Northern, Central and Southern Segments of the trail are all adjacent to regulatory floodways. Improvements within the regulatory floodplains will require analysis of their effect on the floodplain. SEH will obtain the regulatory floodplain models and use them as the basis to create proposed models updating the sections with proposed grading to include the trail. Proposed bridges and culvert crossings will be added to the model to assist in design of the bridges and analyze their effect on the floodplain. The proposed and existing models will then be compared to assess any changes to the floodplain. This comparison will be used to determine if a Conditional Letter of Map Revision (CLOMR) is necessary. If this is the case the CLOMR application will be submitted to FEMA in accordance with Castle Rock's Storm Drainage Design and Technical Criteria Manual as well as FEMA regulations. If this is not necessary a No-Rise Certification will be submitted.

SEH will also analyze the proposed design to determine where any water quality improvements will be necessary in order to comply with Castle Rock's Storm Drainage Design and Technical Criteria Manual. Where applicable, water quality best management practices (BMPs) will be installed to ensure that there are no adverse effects on water quality or volume of runoff due to the proposed trail.

PHASE 3 30% DESIGN DELIVERABLES

- See section 3

PHASE 4 60% DESIGN

This phase of the project will include preliminary (60% level) design, using the concepts developed during the 30% design and after review by the Town and stakeholders. Initially, we will provide a response matrix to comments from the 30% design review meeting.

The 60% design is where we would typically verify specific utility impacts with test holes. More detailed structural plans will be developed. Construction phasing and traffic control as well as initial Temporary Erosion and Sediment Control (TESC) Plans and draft specifications will be prepared.

60% DESIGN DELIVERABLES:

- See Section 3

PHASE 5 FINAL DESIGN

After meeting with the Town and receiving comments from the 60% design review, SEH will move forward with 90% design. The design will incorporate any revisions or clarifications required by the Town and other reviewers. Initially we will provide a comment response matrix from the 60% review meeting. At this point drawings will be advanced enough to begin environmental permitting as summarized by the following:

ENVIRONMENTAL PERMITTING

PREPARE REQUEST FOR NATIONWIDE PERMIT AUTHORIZATION

ERO will prepare a preconstruction notification (PCN) as part of the request for NWP authorization. The PCN will include a discussion of the purpose and need for the project, a

summary of the wetland delineation and threatened and endangered species assessment conducted for the project, a discussion about reference site selection used to inform the project design, and information on the design provided by SEH. We will coordinate with the Castle Rock on what information ERO requires for the application. Typical information includes plan and profile views, cross sections, figures showing and quantifying impacts on jurisdictional areas, details, and background information on other approval requirements (e.g., those of the Federal Emergency Management Agency).

ERO will review the construction drawings and specifications for compliance with Section 404 requirements, wetland mitigation requirements and the DCHCP.

ASSUMPTIONS

- ERO assumes the work will be authorized under a NWP. If an Individual Permit is required by the Corps, ERO will provide a new SOW.
- No stream functional assessments are included in this SOW.

DELIVERABLES

- Draft PCN submittal document in PDF format delivered to the client and project team via email.
- Final PCN includes one hard copy mailed to the Corps and a PDF document emailed to the client and project team.

DEVELOP MITIGATION PLAN

ERO will also coordinate with the client to develop a wetland mitigation and revegetation plan for the project area using the proposed

construction limits, grading and channel plan and profile views. ERO will have one meeting and two conference calls with the client to develop the wetland mitigation and revegetation plan for the project. The wetland mitigation and revegetation plan will include proposed plant material, native seed mixes and notes to be included in the specifications and final design. The wetland mitigation plan will be prepared to meet the regulatory requirements of Section 404 of the CWA and the DCHCP. ERO will provide the client with the plant material quantities and notes in Microsoft Word and/or Excel format, and the seeding and planting areas will be represented graphically (redlined) on the plan sheets. ERO will review the construction drawings and specifications for compliance with Section 404 requirements.

DELIVERABLES

- Redlined plan sheets with revegetation recommendations delivered to the client and stream via email.
- Seed mixes, plant lists and revegetation notes delivered to the client and stream via email.

DCHCP COMPLIANCE

The DCHCP provides programmatic incidental take coverage and ESA compliance, including impact mitigation, for specified activities that would occur within Preble's habitat. Currently, the proposed project is not an activity covered under the DCHCP. ERO will submit a letter to the Service requesting approval that the project can be substituted with a covered activity (i.e. a nearby trail project).

During the design phase of the project, ERO will provide recommendations as needed on how to comply with DCHCP requirements, including ways to avoid and minimize impacts

to the RCZ. ERO will coordinate with the client on identifying the work limits and calculating temporary and permanent impacts to the RCZ. ERO will incorporate BMPs and the revegetation guidelines that are required for the activities covered under the DCHCP into the stream mitigation plans and specifications developed in Tasks 3. ERO will provide input on the revegetation design to be included in the construction drawings.

ASSUMPTIONS

- This SOW does not include any trapping surveys for Preble's.
- Consultation with the Service on depletions will not be required for the project.
- A new SOW will be prepared if Castle Rock does not use the DCHCP for the East Plum Creek crossing.

DELIVERABLES

- Letter to the Service requesting covered activity substitution.
- Information on BMPs and revegetation guidelines delivered to the client via email.

90% DESIGN DELIVERABLES:

- See Section 3 for additional deliverables

SEH will attend a 90% review meeting with Town staff then incorporate revisions into 100% bidding documents. Deliverables will be updated from 90% submittal and stamped by qualified Colorado licensed engineers, landscape architects and surveyors for bidding.

COLORADO FRONT RANGE TRAIL DESIGN CHALLENGES AND OPPORTUNITIES



400 foot wide floodplain at or near proposed water crossing. Pre-cast box culvert or pedestrian bridge are potential solutions.



Major storm crossings from Montaine development.



Steep grade may require landings.



Recommend stop signs or RRFB at Autumn Sage Crossing.



Possible road profile change at separate grade grading.



An elevated boardwalk could span wetlands and floodplain in this area and provide enhanced views.



Narrow section with steep cross slope and water line. Possible retaining wall.



Scour protection could be articulated concrete blocks.



Scour protection could use boulders for a more natural looking slope.



Low water crossing – concrete wall without rails that impacts flood levels.



KEY

- EXISTING TRAIL
- PROPOSED SEGMENTS
- ||| CASTLE ROCK WATER WELL AND PUMPHOUSE. AVOID PIPELINE.

PHASE 1

PRE DESIGN SERVICES

Begin: Aug 1, 2020
 Complete: Sept 22, 2020
 Duration: 1 month

TASK NAME	HOURS
Kick Off Meeting	18
Pre Design Assessment	40
Surveying/Mapping	271
SUE Investigation	200
Environmental Field Investigation	30
Geotechnical Investigation	82

DELIVERABLES

- Meeting Minutes
- Topographic survey with delineated wetlands



Baseline Pedestrian Underpass in Boulder, CO

PHASE 2

CONCEPT DESIGN AND FIELD VERIFICATION

Begin: Aug 14, 2020
 Complete: Oct 12, 2020
 Duration: 2 months

TASK NAME	HOURS
Concept Plan and Profiles	60
Stake on 50-foot Stationing	30
Site Walk	40
Alignment Revisions	24
Summary Report	16

DELIVERABLES

- Memo summarizing all of the information obtained with recommended design criteria
- Layout plan and profile on LIDAR Map provided
- SEH will provide trail centerline field surveying staking (at 50 foot intervals/stations) including major components at concept design for evaluation and trail alignment adjustment as needed.
- Field walk of entire alignment with follow up notes.
- Surveying of adjusted alignment stakes after field review



PHASE 3

30% DESIGN

Begin: Oct 13, 2020
 Complete: Dec 10, 2020
 Duration: 2 months

TASK NAME	HOURS
Trail Design	320
Hydrology and Hydrologic Analysis	140
Roadway Plan and Profile	40
Drainage Layouts and Profiles	80
Bridge and Low Water Crossing Design	210
Retaining Wall Layout	20

DELIVERABLES

- Drawings
 - Cover sheet
 - Project Control and Survey Sheet
 - Typical sections
 - Overall Layout including Alignment and Wetland Boundaries
 - Trail Plan and Profile Sheets
 - Profiles at Trail and Drainage Crossings
 - Roadway Plan and Profile at Crossings
 - Wall Locations
 - Preliminary Construction Access Plan
- Preliminary Hydraulic Calculations and Supporting Maps
- Wall, Bridge and Low Water Crossing Structure Alternatives Report
- 30% Opinion of Probable Construction Costs
- Geotechnical Report
- SUE Report (Level D, C and B) and stamped plans

PHASE 4

60% DESIGN

Begin: Jan 1, 2021
 Complete: Feb 15, 2021
 Duration: 1.5 months

TASK NAME	HOURS	TASK NAME	HOURS
30% Response Matrix	8	Roadway Design	24
SUE Test Holes	110	Bridge and Crossing Design	160
Trail Design	201	Retaining Wall Design	74
H&H	40	60% design Review Meeting	8

DELIVERABLES

- Drawings
 - Cover Sheet
 - General Notes Sheets
 - Quantities Summary
 - Project Control and Surveys
 - Existing Utilities Plan
 - Overall Site Improvement Sheet
 - Typical Trail Sections
 - Removal Plans
 - Trail Plan and Profile Sheets
 - Separate grade crossing plans including
 - Layout and grading
 - Profile of box culvert
 - Roadway plan and profile at crossing
 - Structural details
 - Drainage Crossing Plan and Profile
 - Low water crossing plans including
 - Layout and grading
 - Profile of drainageway through box culvert
- Trail profile at crossing
- Structural details
- Retaining wall plans including
 - Layout and grading
 - Wall profile
 - Structural details
- Water Quality and Detention Plans if it is determined that this can be provided.
- Detailed Drainage Crossing Sheets
 - Detailed Drainage Crossing Profiles
 - Landscaping (revegetation) Plans
 - Detailed Trail Cross Sections on 100 foot intervals
 - Construction Access and Phasing Plan
 - Trail Construction Details
 - Drainage Construction Details
- Outline Construction Specifications
- TESC Plan and Report, including a Technical Criteria Variance for exclusions to permanent water quality enhancements.
- 60% Cost Estimate

PHASE 5

90% AND FINAL DESIGN AND PERMITTING

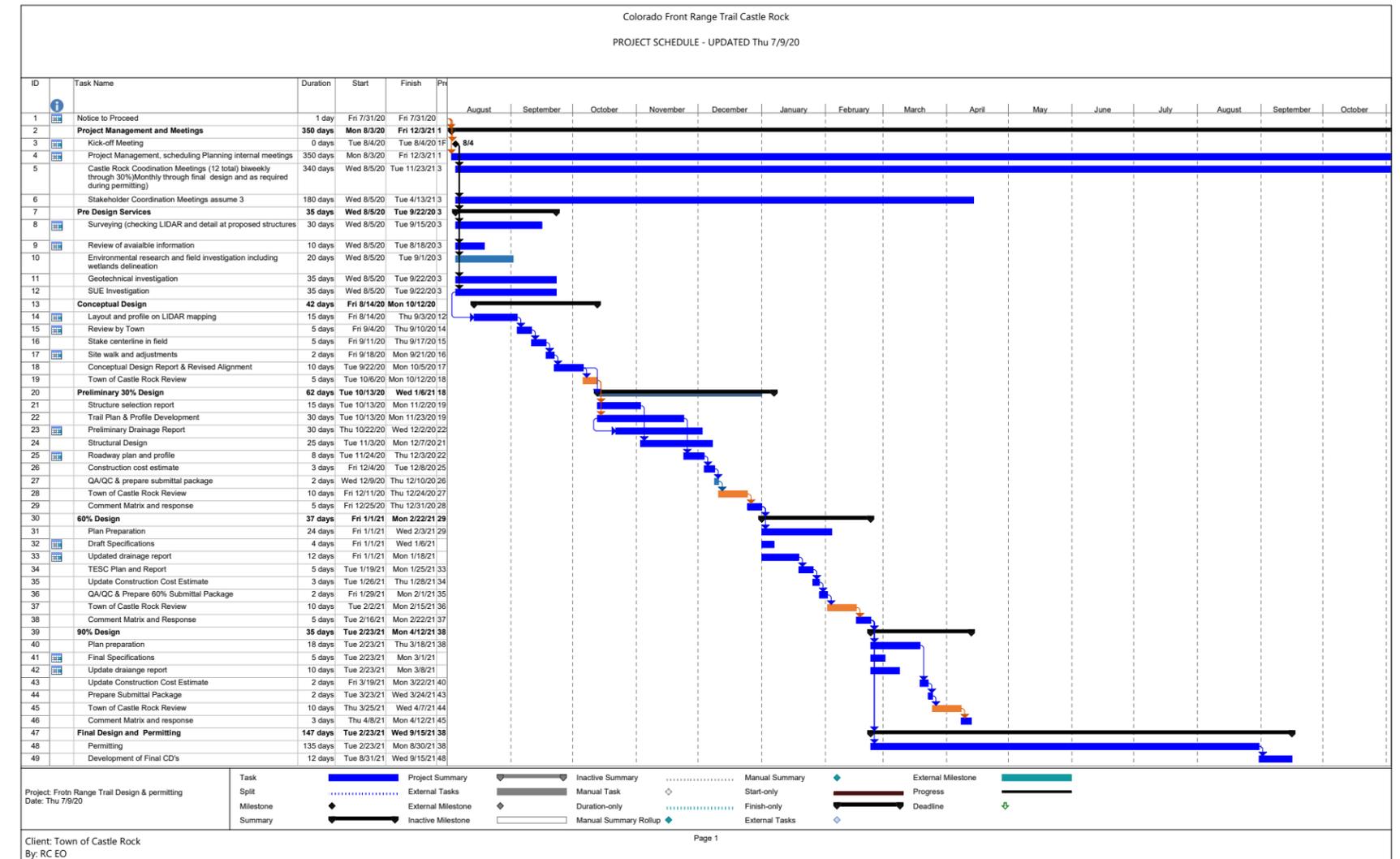
Begin: Feb 23, 2021
 Complete: Sept 15, 2021
 Duration: 7 months

TASK NAME	HOURS	TASK NAME	HOURS
60% Response Matrix	4	Bridge and Crossing Design	82
Trail Design	86	Retaining Wall Design	24
H&H	24	90% design Review Meeting	8
Roadway Design	16	Environmental Permitting	150

DELIVERABLES

- Drawings
 - Cover Sheet
 - General Notes Sheets
 - Quantities Summary
 - Project Control and Surveys
 - Map of proposed easements
 - Existing Utilities Plan
 - Overall Site Improvement Sheet
 - Typical Trail Sections
 - Removal Plans
 - Trail Plan and Profile Sheets
 - Site Specific Sidewalk and Ramp Plans with Detailed grading
 - Culvert Plan and Profile Sheets
 - Separate grade crossing plans including
 - Layout and grading
 - Profile of box culvert
 - Roadway plan and profile at crossing
 - Structural details
 - Low water crossing plans including
 - Layout and grading
 - Profile of drainageway through box culvert
 - Trail profile at crossing
 - Structural details
- Retaining wall plans including
 - Layout and grading
 - Wall profile
 - Structural details
- Water Quality and Detention Plans if it is determined that this can be provided.
- Detailed Drainage Crossing Sheets
- Detailed Drainage Crossing Profiles
- Landscaping (revegetation) Plans
- Detailed Trail Cross Sections on 100 foot intervals
- Construction Access and Phasing Plan
- Trail Construction Details
- Drainage Construction Details
- Drainage Memorandum with Calculations
- CLOMR (or no-rise certification)
- Final Estimate of construction costs
- Phase III Drainage Report per Town of Castle Rock criteria
- TESC Plan and report per Town of Castle Rock criteria with Variance request
- Technical Specifications (CDOT, and Town of Castle Rock)
- 100 % Cost Estimate

PROJECT SCHEDULE DETAIL



4 | Summary of Similar Projects
SECTION

PROJECT AND CLIENT	PERSONNEL	TASKS PERFORMED	CONSTRUCTION COST		SCHEDULE		RELEVANCE TO CASTLE ROCK COLORADO FRONT RANGE TRAIL
			ESTIMATED	ACTUAL	ESTIMATED	ACTUAL	
Founders and Fifth Intersection Improvements Preliminary Design Town of Castle Rock, CO CONTACT: Aaron Monks 720.733.2465 amonks@crgov.com	Erica Olsen Rick Coldsnow David Hoesly Scott Klinker Shannon & Wilson	Preliminary analysis and design for intersection improvements at busy location in Castle Rock. Developed alternatives including roundabout. Coordination with Town staff and CDOT, traffic and drainage analysis and topographic surveying.	\$240,195 <i>Design</i>	\$182,055 <i>Design</i>	August 2020	August 2020	Coordination with Town staff and CDOT. Understanding of Castle Rock design procedures and standards. Connection to sidewalks on Ridge Road and Founders Parkway. Coordination with impacted property owners.
Westerly Creek Drainage City of Aurora CONTACT: Vern Adam 720.859.4324 vadam@auroragov.org	Rick Coldsnow Tim Nuetzel Steve Kaye Scott Klinker StudioCPG Shannon & Wilson	Design of extensive channel improvements to reduce neighborhood flooding. Large design team with several consultants.	\$6 million	\$6.95 million	September 2015	January 2016 <i>Started later due to obtaining additional grant funding</i>	Extensive channel reconstruction with drainage analysis, CLOMR, boulder retaining walls, trail bridge, low water crossing, adjacent to park.
Ward Station Area Improvements City of Wheat Ridge CONTACT: Mark Westberg 303.235.2863 mwestberg@ci.wheatridge.co.us	Rick Coldsnow Erica Olsen Tim Nuetzel David Hoesly Steve Kaye Scott Klinker Shannon & Wilson StudioCPG	Design to replace three streets, add a greenway trail and pedestrian bridge adjacent to new G line light rail, including drainage analysis and design, water quality, coordination with water and sewer districts, utility coordination, public involvement.	\$9.76 million	TBD	2021-2022	TBD	New streets with curb and gutter replacing old streets without C&G. New in-street drainage and outfall to detention area. New trail on steep sideslope with retaining walls and utility impacts. New pedestrian bridge over BNSF and RTD rail lines.
Animas River Trail City of Durango, CO CONTACT: Scott McClain 970.375.7322 scott.mcclain@durangogov.org	Drew Chandler Jeremy Thompson Paul Thomas	Design of over 2 miles of 10 ft.-wide concrete multi-use pathways and trails. The trail segments include drainage improvements incorporating additional culverts, storm drains and water quality BMPs, retaining walls, pre-cast box culverts and alignment improvements.	\$1.5 million <i>Estimated construction costs (sitework only)</i>	TBD	Summer 2019	TBD	Highly used multi-use regional trail along River. Design included retaining walls and ADA accessibility. Also incorporated drainage and water quality BMPs.
Baseline Road Underpass City of Boulder, CO CONTACT: Bryant Gonsalves 303.441.3857 gonsalvesb@bouldercolorado.gov	Steve Kaye Rick Coldsnow Scott Klinker Tim Nuetzel	Alternatives analysis with stakeholder engagement, survey, trail design, structural design for underpass and retaining walls, construction traffic control design, significant utility conflict resolution.	\$4.6 million	\$4.27 million	December 2015	December 2015	Trail underpass in tight area, so constructability was a critical item. Extensive community involvement. Significant utility conflicts. Construction traffic control was important to minimize impacts to vehicle and trail users. Connectivity of new underpass to existing trail network. Click here to see more about this project.
Nine Mile Creek Regional Trail Three Rivers Park District, MN CONTACT: Amy Gurski 763.559.6764 amy.gurski@threeriversparks.org	SEH Central Region	SEH provided preliminary engineering, final engineering and environmental services for the 7.4-mile trail. Design included timber boardwalks through approximately three miles of wetlands and floodplain.	\$20 million	\$18.5 million	June 2018	June 2018	Public involvement. Trail traveling through developed commercial and residential areas and on bridges across highways. Trail crossed through wetlands and floodplain. Needed approvals from a number of entities including the DNR and U.S. Army Corps of Engineers among others.
Open Space Front Range Trail Douglas County, CO CONTACT: Cheryl Matthews 303.660.7495 cmatthew@douglas.co.us	Jonathan Hedlund Hidde Snieder	ERO helped Douglas County comply with the U.S. Fish and Wildlife Service, Douglas County Habitat Conservation Plan (DCHCP), U.S. Army Corps of Engineers, Clean Water Act Section 404 permitting, and CDOT access permits. ERO conducted a Class III survey of 7.8 miles of trail.	NA	NA	NA	NA	Compliance with the DCHCP under the Service and permitting through Corps. The consultation path for Castle Rock will require a similar approach because Castle Rock intends to use the DCHCP for work in the RCZ and the Corps will require Nationwide Permits for the drainage crossings.

February 6, 2020

Rich Havel, Trail Planner
Town of Castle Rock
rhavel@crgov.com

Re: Colorado Front Range Trail at Castle Rock Professional Services – Letter of Indemnification

Dear Mr. Havel:

Thank you for providing SEH the opportunity to comment on confidential items in our accompanying proposal for the above referenced project.

Certainly we are proud of our ideas and experience, however since more than 80% of our work is for public agencies, we are aware of your citizens need to be kept informed. On that basis none of the information in this proposal is considered confidential and we indemnify the Town if the information is released.

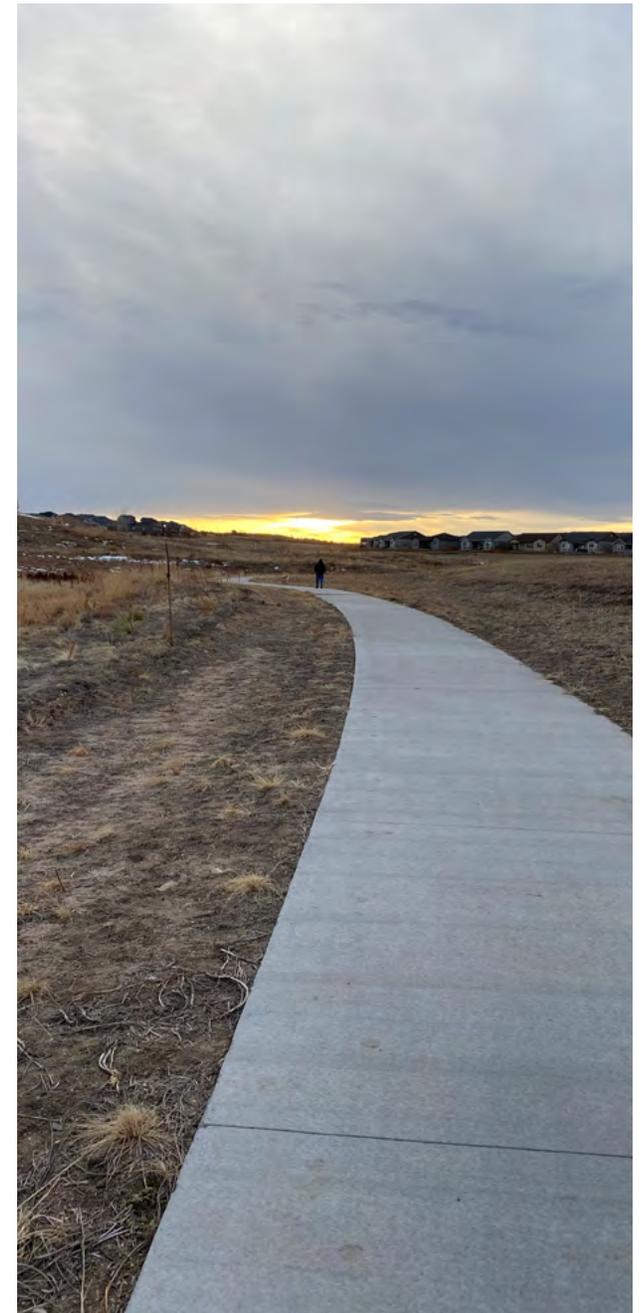
We do request that hourly rates and total fees in that submittal be kept confidential. If selected, we understand that the total not to exceed fee will be part of the public record. In that case, total fees do not need to be confidential but we request that hourly rates not be released to the public or our competitors.

Please don't hesitate to contact me with any questions.

Sincerely,



**RICK COLDSNOW, PE
PRINCIPAL**



A topographic map with contour lines and a dashed line, overlaid with a brown rectangular box containing the word "REFERENCES" in white capital letters.

REFERENCES

References



WARD STATION AREA IMPROVEMENTS

Mark Westberg
Engineering Design Supervisor
City of Wheat Ridge
7500 W 29th Ave
Wheat Ridge, CO 80033
303.235.2863
mwestberg@ci.wheatridge.co.us



WESTERLY CREEK DRAINAGE

Vern Adam
Sr. Water Project Manager
City of Aurora
15151 E Alameda Pkwy, 3rd Floor
Aurora, CO 80012
720.859.4324
vadam@auroragov.org



ANIMAS RIVER TRAIL

Scott McClain
Assistant Parks Director
City of Durango
2700 N. Main Avenue
Durango, CO 81301
970.375.7322
scott.mcclain@durangogov.org

A topographic map background with contour lines and a dashed line. The map shows a central mountain range with a dashed line running through it. The text 'APPENDIX: RESUMES' is overlaid on the map.

APPENDIX:

RESUMES

ERICA OLSEN PE

PROJECT MANAGER | SEH

Erica is a professional engineer with extensive experience working on projects ranging in size and scope. Erica has worked extensively on design projects, such as roadway/street, erosion control, traffic control, drainage, commercial site, utility, etc., and has experience in project coordination. She has worked with a variety of clients including private, municipal and federal, and is familiar with federal, state and local codes and regulations.

EXPERIENCE

Bicycle Design Standards (City and County of Denver) – Denver, CO

Under our City and County of Denver on-call contract, Erica is managing development of CCD Bicycle Design Standards. The standards have not been updated for several years. With new focus on multimodal travel in the City, we are teaming with Toole Design Group to update standards and typical sections to guide new development and street improvements. Services include: bicycle facility design process and policy guidance; bicycle facility transportation standards and details; bicycle facility sign and marking standards; bicycle facility standard specifications; and a template for bikeway design plan sheets.

Crown Boulevard High Comfort Bike Lane (City and County of Denver) – Denver, CO

Project manager. The Elevate Denver Bond Projects, approved by voters in 2017 includes \$18 million for development of on street bike lanes in the City. SEH was selected for one of the first high comfort (protected) bike lane design projects in the City, in the Montbello neighborhood. Services have included evaluating parking, vehicle and bicycle traffic in the neighborhood, stakeholder presentations and public meetings to present proposed bike lane layout and cross sections.

Cory-Merrill Safe Routes to School (City and County of Denver) – Denver, CO

Project manager. SEH designed two miles of bikeway improvements that included buffered bike lanes and new signage along the corridor. SEH is also designing one mile of new sidewalk and ADA ramp improvements in the Cory Merrill neighborhood. These sidewalk improvements are intended to fill in missing sidewalk gaps and provide safe walking routes for children in the Cory Merrill neighborhood. This project is a task order off the City and County of Denver On Call.

TAP Trails (Pueblo West Metropolitan District) – Pueblo, CO

Project engineer for this 13,000+ LF multimodal trail in Pueblo West, Colorado. The project was a Local Agency Transportation Alternatives Program funded project through the Colorado Department of Transportation. The trail alignment utilized existing Pueblo West Metropolitan District property connecting West McCulloch Boulevard to South Spaulding Avenue near Pueblo West High School. The trail was an 8-foot wide asphalt trail with 4-foot gravel shoulder that meandered along the alignment.



16
YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil Engineering (Minor: Mathematics)
Colorado State University-Fort Collins



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO

CDOT Bicycle Design Workshop

RICK COLDSNOW PE

PRINCIPAL | SEH

Rick is a senior project manager with extensive experience in project management and design. Rick's experience encompasses the areas of public works, municipal streets, drainage and utilities. He has provided permitting, planning and design for a variety of projects, and has assisted municipal clients with grant applications and the development and management of capital improvement programs. On the project management side, he has led multidisciplinary design teams throughout the Rocky Mountain region. His experience includes managing large on-call engineering services contracts for the City of Denver, City of Arvada, City of Aurora, City of Centennial, USDA Forest Service and the National Park Service, as well as managed projects for complicated urban street reconstruction that involved large, multidisciplinary teams.

EXPERIENCE

Complete Streets (City and County of Denver) – Denver, CO

Project manager. Under our on-call contract with the City and County of Denver, SEH is working with StudioCPG and Toole Design Group to develop guidelines for consistent development of streets for various classifications with an emphasis on multimodal, green infrastructure and utility accommodation in urban residential and industrial corridors throughout the City. The team has hosted several workshops with Denver staff and stakeholders such as RTD, Bicycle Colorado, Walk Denver, Motor Carriers and others, to develop guidelines for typical street sections, bike lanes, streetside stormwater treatment and sidewalks.

TAP Trails (Pueblo West Metropolitan District) – Pueblo, CO

Principal for this 13,000+ LF multimodal trail in Pueblo West, Colorado. The project was a Local Agency Transportation Alternatives Program funded project through the Colorado Department of Transportation. The trail alignment utilized existing Pueblo West Metropolitan District property connecting West

McCulloch Boulevard to South Spaulding Avenue near Pueblo West High School. The trail was an 8-foot wide asphalt trail with 4-foot gravel shoulder that meandered along the alignment.

Cherry Creek South Drive Phase III (City and County of Denver) – Denver, CO

Project manager for multidisciplinary team providing design services for the final phase of improvements. Project elements included pedestrian and bicycle facilities improvements, traffic signal intersection design, permeable paver drainage design for on street parking and storm sewer improvements.

Lower Westerly Creek Flood Control Improvements at Montview Boulevard (City of Aurora) – Aurora, CO

Project engineer responsible for roadway, street drainage and temporary traffic control design for Montview Boulevard reconstruction. This project involved two-span, 71 ft. 10 in. prestressed concrete box girders, composite concrete deck, split, skewed bridges, along with a 100 ft. 9 in. steel truss with concrete deck pedestrian bridge and a cast-in-place low flow trail crossing.



45

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil Engineering
Michigan Technological
University-Houghton



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO, NM and WY

MATTHEW SEUBERT AICP

PLANNING AND DEVELOPMENT LEAD | SEH

Matthew has over twenty years of professional experience as a multi-modal transportation and land use planner. Prior to working with SEH, Matthew worked for the City and County of Denver’s Community Planning and Development Department as a Development and Planning Supervisor, and previously as a Senior Planner. Matthew also worked as a Transportation Planner IV with the City of Houston where he was Project Manager for the Houston Bike Plan and the Complete Streets program. Prior to this, he served as the Zoning Hearing Officer and as a Senior Planner for San Mateo County California, where he was the Project Manager for the County’s first Climate Action Plan and first Complete Streets Resolution. Matthew also worked for the San Francisco County Transportation Authority, where he wrote Strategic Analysis Reports on transportation-related topics, and also previously worked for the Bay Area Ridge Trail Council.

EXPERIENCE PRIOR TO JOINING SEH

Houston Bike Plan (City of Houston)
Project Manager. The Houston Bike Plan, adopted by City Council in 2017, was the first update to Houston’s bicycle master plan since 1993. In his role as Transportation Planner IV with Houston’s Planning and Development Department, Matthew worked with the City’s Public Works and Parks and Recreation Departments, the Houston Parks Board, BikeHouston, and other partners to develop consensus on a plan to make Houston a safer, more accessible bike-friendly city. Matthew also represented Houston on the Houston-Galveston Area Council’s Pedestrian and Bicyclist Subcommittee.

Lower Westheimer Corridor Study (City of Houston)
Co-Project Manager. As a Transportation Planner with Houston’s Planning and Development Department, Matthew worked with the City’s Public Works Department and stakeholders on an enhanced pre-engineering study to develop a preferred design that enhances the character of Houston’s highest bus-ridership corridor, while improving mobility and safety.

Houston Complete Streets and Transportation Plan (City of Houston)
Plan Manager. As a Transportation Planner with Houston’s Planning and Development Department, Matthew worked on the implementation of the Mayor’s Complete Streets Executive Order. The Plan is meant to provide safe, accessible and convenient use by pedestrians, motorists, public transit riders, and bicyclists. The Plan incorporated multi-modal elements including the adoption of the Houston Bike Plan, expansion of the City’s bike share program, annual updates to the Major Thoroughfare and Freeway Plan, as well as sub-regional mobility studies, livable center studies, and pre-engineering corridor studies.



20
YEARS OF
EXPERIENCE



EDUCATION
Master of City Planning
University of California at Berkeley

Bachelor of Arts
Public Policy, emphasis in Urban Planning
Occidental College, Los Angeles



REGISTRATIONS/CERTIFICATIONS
American Institute of City Planners (AICP)
Certification

SCOTT KLINKER PLS

SURVEY LEAD | SEH

Scott is a senior survey crew chief with extensive experience providing services to municipalities, government agencies, developers, contractors and private clients. Scott's proficiency includes topographic, boundary, easement, horizontal/vertical control, design, building staking, bridge layout, airport layout and construction surveys. Scott is also experienced in construction quality control and has experience reviewing civil design drawings. Scott's various project experience involves CDOT/CDOT standards projects that include right-of-way plan sets and legal descriptions for right-of-way and easement acquisitions. Scott is also proficient in AutoCAD and MicroStation CAD programs. His attention to detail and years of experience guarantee a quality product is delivered to the client.

EXPERIENCE

Baseline Pedestrian Underpass (City of Boulder) – Boulder, CO

Lead Surveyor for this pedestrian underpass and trail project. SEH survey and ROW team collected topography and boundary/mapping data, along with completion of right of way plans and legal descriptions. This pedestrian safety improvement project included alternative analyses and public outreach to gain consensus for the design. SEH performed preliminary and final design of the underpass, Baseline Road reconstruction, retaining wall design, multi-use path realignment, utility relocations, right-of-way acquisition and design support services during construction. The project also included a 9.5 ft. x 24 ft. x 105 ft. three-sided box culvert and required extensive coordination with multiple agencies and stakeholders including CDOT, the University of Colorado, RTD, Xcel, Centurylink and the Basemar Shopping Center.

Ward Station Area Projects (City of Wheat Ridge) – Wheat Ridge, CO

Land Surveyor. The City of Wheat Ridge is improving its existing private and public infrastructure due to increased activity with a new RTD light rail station at Ward Road. SEH

is designing a variety of improvement projects related to the new development associated with the mixed-use area.

Lower Westerly Creek Flood Control Improvements at Montview Boulevard (City of Aurora) – Aurora, CO

Lead surveyor for the design survey, CAD operations and survey project management. This project involved two-span, 71 ft. 10 in. prestressed concrete box girders, composite concrete deck, split, skewed bridges, along with a 100 ft. 9 in. steel truss with concrete deck pedestrian bridge and a cast-in-place low flow trail crossing.

Cherry Creek South Drive, Phase III (City and County of Denver) – Denver, CO

Land Surveyor. This project included pervious paver water quality, a signal at the intersection of Alameda and Cherry Creek South Drive and the construction of a roadway across existing residential parking, now in the street right-of-way which required development of a site specific improvement plan for the parcel and multiple coordination meetings as well as general public involvement.



30

YEARS OF
EXPERIENCE



EDUCATION

Associate in Applied Science
Civil Engineering
St. Cloud Technical College -
St. Cloud, MN



REGISTRATIONS/CERTIFICATIONS

Professional Land Surveyor in CO

DREW CHANDLER PE

DESIGN AND ENGINEERING LEAD | SEH

Drew will lead development of civil construction documents for the trail. He is a senior project engineer with over 23 years of civil engineering experience. Since 1996, Drew has been bike commuting to work—logging a combined total of over 35,000 miles during that time. Drew has been involved in many local ADA, multimodal, mixed-use trail and transit projects, as well as volunteering each year for the City of Durango bike and pedestrian count survey. In 2013, Drew was named the City of Durango’s Multi-Modal commuter of the year, although several of his co-workers claim this was more of a Lifetime Achievement award. Drew had a similar role for design of the Animas River Trail.



23

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil Engineering
University of Minnesota



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO and NM
Professional Structural Engineer in UT

EXPERIENCE

Mercury Village (Studley Group) – Durango, CO

Drew is the project manager for this project that included site and access planning for a 58-acre commercial development with 325,800 sq. ft. of office and 75,000 sq. ft. of retail space. As part of this project, the team designed over 1,800 linear ft. of 10 ft. wide multi-use trail and spurs connecting to and extending the City of Durango’s Animas River Trail. The team designed a grade-separated roadway and mixed-use trail underpass of the US 160/550 “High Bridge” which required a high level of coordination between the Army Corps of Engineers, the City of Durango, La Plata County and CDOT to ensure the soil-nail retaining walls did not adversely affect the bridge superstructure, abutments or pilings. Additional multimodal features include additional bike lanes along new roadways as well as a dedicated transit stop.

Aztec North Main Extension (City of Aztec) – Aztec, NM

Project manager responsible for a 1,500 foot extension of North Main Avenue in Aztec, NM. Project includes DOT coordination, wetland and archaeological sites, floodplain mapping and an arroyo crossing consisting of precast box culverts.

Rio Hondo Drainage Improvement Project (Twining Development, LLC) – Taos Ski Valley, NM

Drew is the project manager for this ongoing project that began in 2015 within the core village area of Taos Ski Valley, NM. Located at nearly 9,000 ft. above sea level, this mountain resort community is in the process of upgrading their roads, utilities, stormwater treatment and detention, as well as upgrading multiple river crossings and creating a trail network to serve the community. With both the North and Lake Forks of the Rio Hondo river converging within the core village, the project includes multiple pre-cast arch and box culvert river crossings, as well as dedicated pedestrian pathways and bridges. As part of the design, the team analyzed the Rio Hondo river basin to determine the 100 year flood event flows in order to effectively size the structures and provide proper scour protection, all while working with biologists to maintain effective fish passage through these structures.

TIM NUETZEL

PE, LEED AP®, ENV SP
DESIGN AND ENGINEERING SUPPORT | SEH

Tim is a senior professional engineer with extensive experience in roadway, water and wastewater system design, storm drainage and site designs. He takes pride in detailed and thorough design that minimizes field questions or adjustments. Tim's experience also includes utility coordination, trail design, hydraulic design and site improvements.



EXPERIENCE

Ward Station Area Projects (City of Wheat Ridge) – Wheat Ridge, CO

Project engineer responsible for the design of the storm drain system. The City of Wheat Ridge is improving its existing private and public infrastructure due to increased activity with a new RTD light rail station at Ward Road. SEH is designing a variety of improvement projects related to the new development associated with the mixed-use area.

Garrison Street Safe Routes to School (City of Arvada) – Arvada, CO

Senior project engineer responsible for horizontal and vertical design of this challenging trail project completing a Safe Routes to Schools project. This challenging trail project completed a Safe Routes to Schools project. The design included numerous short walls and coordination with an existing irrigation ditch overflow to allow the trail to climb the steep grade to interconnect the area sidewalks.

Fire Station #152 (Castle Rock Fire Department) – Castle Rock, CO

Site design lead. The 13,000 sq. ft. station includes three drive-thru vehicle bays, living quarters for eight firefighters, a full kitchen, pantries, exercise, gear, restroom, work area, day room and storage. SEH has provided architectural design, site planning, civil

engineering and structural engineering as well as all municipal approvals and community outreach efforts. In addition, SEH completed facility assessments that included site capability, turnout time, station functionality, code requirements and accessibility. Although LEED Certification has not been pursued, LEED Principles have been incorporated into the design.

Cherry Creek South Drive Phase III (City and County of Denver) – Denver, CO

Senior project engineer responsible for design of roadway and parking lot. Project elements included pedestrian and bicycle facilities improvements, traffic signal intersection design, permeable paver drainage design for on street parking and storm sewer improvements.

Lower Westerly Creek Flood Control Improvements at Montview Boulevard (City of Aurora) – Aurora, CO

Senior project engineer responsible for water and sewer line relocation design for this open channel and trail project. Tim also assisted with storm sewer design, channel and trail grading and addressing review comments. This project involved two-span, 71 ft. 10 in. prestressed concrete box girders, composite concrete deck, split, skewed bridges, along with a 100 ft. 9 in. steel truss with concrete deck pedestrian bridge and a cast-in-place low flow trail crossing.

21

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil Engineering
Purdue University - West Lafayette, IN



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO

ENVISION Sustainability
Professional (ENV SP), Institute for
Sustainable Infrastructure

LEED AP, U.S. Green Building Council

AICHA MENENDEZ

PLA, LEED AP®

LANDSCAPE ARCHITECT | SEH

Aicha is a professional landscape architect with experience in parks, open space, playgrounds and campuses along the Front Range. As a designer, she seeks site-specific solutions that respect the social and environmental fabric of a place while balancing constructability and maintenance. She approaches projects through the eyes of users, emphasizing safety and accessibility, comfort and security while enhancing and celebrating the built environment.



EXPERIENCE

Ward Station Area Projects (City of Wheat Ridge) – Wheat Ridge, CO

Landscape architect. The City of Wheat Ridge is improving its existing private and public infrastructure due to increased activity with a new RTD light rail station at Ward Road. SEH is designing a variety of improvement projects related to the new development associated with the mixed-use area.

Recreational Shooting Site (Bureau of Land Management) – Phoenix, AZ

Landscape design for multiple sites in the Sonoran Desert including native vegetation protection and restoration, slope stabilization and enhancing wayfinding at developed sites with plant material placement.

1190 Transit Campus Expansion (Mountain Metro Transit) – Colorado Springs, CO

Landscape design at brownfield site to enhance streetscape and parking areas while complying with municipality's plant and irrigation requirements. SEH provided conceptual design for construction of a new indoor bus storage building and associated drives, outdoor parking, landscaping and drainage improvements.

2019 TOs RFTA 2040 (Roaring Fork Transportation Authority) – Aspen, Glenwood Springs and Carbondale, CO

Landscape designer for research and planning studies for surface and structured parking near the bus rapid transit station, including compliance with municipal landscape codes and cost estimating.

Loveland Fort Collins Northern Colorado Law Enforcement Training Center (City of Loveland Police Department) – Loveland, CO

Landscape designer for new eight-acre training facility with parking area and open space, focused on low water use, visual buffering and native species. The combined law enforcement agencies hired SEH to design a world class training facility with firing range, administration and teach facilities as well as a road course. The new 27,600 sq. ft. facility is a combined precast concrete and structural steel building, designed to be LEED certified with a goal of LEED Silver.

Kletzsch Park Dam Fish Passage and Scenic Overlook (Inter-Fluve Inc) – Glendale, WI

SEH was hired to design a scenic overlook, canoe/kayak launch and portage as well as trail connections adjacent to a new fish passage designed to reconnect aquatic habitat along the Milwaukee River.

21

YEARS OF
EXPERIENCE



EDUCATION

Master of Landscape Architecture
Washington University - St. Louis, MO

Bachelor of Arts
Architecture
Washington University - St. Louis, MO



REGISTRATIONS/CERTIFICATIONS

Landscape Architect in AZ, CO, NM, OR,
UT and WY

STEVE KAYE PE, LEED AP®

STRUCTURAL LEAD | SEH

Steve is a structural engineer with far-reaching structural design and inspection experience in the transportation industry. His project expertise includes the design, assessment and inspection of bridges, tunnels, culverts and transportation structures; light and heavy rail infrastructure; train platforms; buildings; wastewater treatment structures; water storage tank foundations; mining structures; airport terminals; and various hydraulic structures. His structural engineering experience includes reinforced concrete design, prestressed concrete design, masonry design, steel design and construction phasing design. In addition, Steve has worked on many transportation projects that include low-volume local roadways and bridges, interstate highways and bridges, snowmobile and pedestrian bridges, retaining walls, light rail stations and platforms, as well as heavy rail layover yards.

EXPERIENCE

Baseline Pedestrian Underpass (City of Boulder) – Boulder, CO

Lead structural engineer. This pedestrian safety improvement project included alternative analyses and public outreach to gain consensus for the design. SEH performed preliminary and final design of the underpass, Baseline Road reconstruction, retaining wall design, multi-use path realignment, utility relocations, right-of-way acquisition and design support services during construction. The project also included a 9.5 ft. x 24 ft. x 105 ft. three-sided box culvert and required extensive coordination with multiple agencies and stakeholders including CDOT, the University of Colorado, RTD, Xcel, Centurylink and the Basemar Shopping Center.

Lower Westerly Creek Flood Control Improvements at Montview Boulevard (City of Aurora) – Aurora, CO

Senior project engineer was the task leader and lead structural engineer. As such, Steve was responsible for the design of all the structures and as task leader, was responsible for coordination with all other project disciplines including landscape architects to incorporate aesthetic features into the bridge design and water resource

engineers to provide an adequate hydraulic opening. A new vehicular bridge was designed to replace the existing undersized double cell box culvert. A 100 ft long pre-engineered steel truss bridge and a cast-in-place concrete low-flow structure were included for creek crossings.

Cherry Creek South Drive, Phase III (City and County of Denver) – Denver, CO

Lead structural engineer responsible for the design of pedestrian bridge railing modifications, site retaining walls and railing designs. Project elements included pedestrian and bicycle facilities improvements, traffic signal intersection design, permeable paver drainage design for on street parking and storm sewer improvements.

Big Dry Creek at Cherry Knolls Park (Urban Drainage and Flood Control District) – Centennial, CO

Lead structural engineer responsible for the design of a stacked boulder retaining/scour wall. The project was initiated to stabilize a compromised slope, provide resiliency during future scour events and protect an existing multi-use trail located on the outside of a bend in the creek. The wall was approximately 120 feet long and had a maximum height of approximately 8' and was designed for stability against sliding and overturning.



20

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil and Environmental Engineering
Tufts University - Medford, MA



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO, IN, KS, MA,
NM and WY

NCEES Record Holder, National Council of
Examiners for Engineering and Surveying

LEED AP, U.S. Green Building Council

DAVID HOESLY PE

DRAINAGE LEAD | SEH

David is a senior project engineer with extensive experience designing tailing facilities, landfills, water lines, storm sewers, detention ponds, roadways and site grades. David has lead, trained and developed AutoCAD classes for employees and is proficient in AutoCAD Civil 3D, AutoCAD and LDD, WaterCAD, HES-RAS, HEC-HMS and EPA SWMM.



EXPERIENCE

Barnes Road Widening (City of Colorado Springs) – Colorado Springs, CO

Drainage engineer performing drainage study including basin analysis, storm pipe design, inlet design, water quality feature design and accompanying report production associated with the roadway improvements. SEH provided the preliminary and final design for the widening of Barnes Road as part of our on-call contract. The project improves a ½ mile section of Barnes Road by providing a four-lane median separated roadway, bicycle lanes and a new traffic signal.

Ward Station Area Projects (City of Wheat Ridge) – Wheat Ridge, CO

Drainage engineer performing drainage study including basin analysis, storm pipe and inlet design, and report production associated with roadway improvements. The City of Wheat Ridge is improving its existing private and public infrastructure due to increased activity with a new RTD light rail station at Ward Road. SEH is designing a variety of improvement projects related to the new development associated with the mixed-use area.

71st Street, Lookout Road to SH 52 (Boulder County) – Boulder County, CO

Drainage engineer performing drainage study including storm system and water quality design, as well as producing reports associated with the roadway improvements. SEH was retained to

prepare conceptual and preliminary design plans for 71st Street from Lookout Road to SH 52, and for the proposed multi-use path on the north side of Lookout Road from 71st Street to Idylwild Trail. The project consisted of areas of widening and mill and overlay, as well as areas requiring full reconstruction and addition of bike lanes. The project also involved multiple crossings of irrigation ditches and waterways.

U.S. Highway 34 Roadway Widening Project (City of Loveland) – Loveland, CO

Drainage engineer performing storm water design for irrigation ditches at crossing with Highway 34 and accompanying memos. Currently under design, improvements will include a third through-lane in each direction, bike lanes and pedestrian paths, traffic signals, utility coordination and right-of-way acquisition.

North Chelton Road Drainage (City of Colorado Springs) – Colorado Springs, CO

Drainage engineer performing drainage study including basin analysis, storm pipe and inlet design, and report production associated with roadway improvements. SEH is designing drainage improvements to benefit a residential neighborhood experiencing flooding. Improvements include a private storm system on a school site. The design includes a new 24-in to 30-in storm system in the roadway to bisect the watershed and add inlets to the surrounding street and finally connect to the existing downstream storm sewer.

14

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Environmental Engineering
Colorado State University-Fort Collins



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO

JENNIFER RUSSELL PE

DRAINAGE SUPPORT | SEH

Jennifer has experience in various segments of water resource projects, civil design and commercial developments. She has completed water supply studies for siting reservoirs; coordinated with hydrologic, environmental, geologic/geotechnical and other subconsultants to produce cohesive and thorough project reports. Jennifer has also completed complex and comprehensive drainage calculations; design of small water transmission systems; and conceptual, preliminary, and final designs and cost estimates for storage dams ranging in size from 6 ft. to 150 ft. tall. She has assembled construction documents, including “front ends” and technical specifications. Jennifer’s urban drainage work includes hydrologic and hydraulic calculations for runoff and storm sewer systems.

EXPERIENCE

Laramie River Crossing (Cheyenne Board of Public Utilities) – Jelm, WY

Project engineer who updated and finalized HEC-RAS model for river reach that was experiencing channel and bank degradation due to stream meandering. Jennifer also assisted with the design of countermeasures to protect high pressure waterlines under the Laramie River channel and the preparation of construction drawings and specifications, and prepared permit applications and supporting documentation and assisted with the construction contractor bid process. The project provides channel and bank improvements to protect two high-pressure water lines under the Laramie River that were close to being exposed due to stream meandering, degradation of the channel and severe bank erosion.

Galley Road Drainage Design (City of Colorado Springs) – Colorado Springs, CO

Design engineer responsible for modeling of storm sewer inlets and pipe mains. SEH is providing solutions for updating the stormwater system at the Galley Road and Murray Boulevard intersection in Colorado Springs. This busy intersection regularly sees decreased drivability

due to flooding in relatively minor storms. SEH designed the update to the stormwater infrastructure while managing the needs of this intersection, large stormwater inputs and a crowded utility corridor.

Barnes Canyon Trailhead (Bureau of Land Management) – Caliente, NV

Design engineer responsible for hydrologic and hydraulic modeling. This project includes design of a 29,000 square foot parking area, manufactured pit toilet, picnic shelters, perimeter fencing and storm water controls.

Zuni Paving and Drainage (City and County of Broomfield) – Broomfield, CO

Project engineer performed drainage basin delineations, drainage calculations and modeling (EPASWMM) for this project that paved existing cul-de-sacs in a semi-rural area of Broomfield. This project includes the repaving and reconfiguration of each cul-de-sac, utility relocations, driveway modifications, and improvements to roadside ditches to provide water quality and capacity. This project also includes preparing a drainage study and construction plans for proposed improvements to eliminate flooding of adjacent parcels during major storms.



25

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Civil Engineering
Kansas State University-Manhattan



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO and WY

BILLY GREGG

RLA, ASLA

TRAIL DESIGNER | STUDIOCPG

Billy had practiced landscape architecture for 16 years prior to founding StudioCPG in 2004, and offers over 25 years of trail design experience. The StudioCPG portfolio of built work includes planning and design of local and regional trail systems that requires collaboration with related design and engineering disciplines and jurisdictional agencies. Billy is also an adept public facilitator, working side-by-side with the stakeholders to integrate public amenities for public and private sector clients into local and cherished landscapes.

Billy's ongoing interest and experience in public realm design is reflected in both the breadth and depth of his projects. His experience ranges from small scale repair and renovations under "on-call" contracts to large-scale planning and design projects for State Parks and Wildlife, State Historical Society, Denver Zoo, Urban Drainage Flood Control District and numerous Front Range municipalities. His work extends beyond new installations and includes extensive experience in trail restoration, redevelopment of existing park systems, and open channel conveyance, and seeks to leverage large scale infrastructure improvement projects for the benefit of public parks and recreation opportunities as well as improved system connectivity.

EXPERIENCE

First Creek Trail and Restoration at DIA (City and County of Denver/UDFCD) – Denver, CO
Principal. Provided trail, site restoration and landscape management for open channel reconstruction within 198 acres of open space from Tower Road to Peña Boulevard. The project includes trail design, wetland restoration and serves as critical link from localized trail systems to Rocky Mtn. Arsenal.

Westerly Creek (City of Aurora) – Aurora, CO (with SEH)

Principal. Provided urban design, landscape architecture and ecological restoration along Westerly Creek at the Montview Boulevard crossing. The project included wetlands mitigation, regional trail design, and bridge and streetscape design.

Crawford State Park Reservoir and Trail Renovations – Crawford, CO

Principal. Provided design services for the Crawford Loop Trail for boardwalks, bridges, elevated and standard trails, including prioritized phasing diagrams, technical trail design options for varying edge conditions, bridge locations, identifies permitting issues and costs.

Soda Springs Park Redevelopment Phase II/III; – Manitou Springs, CO (with SEH)

Principal. Designed park improvements for Phases II/III of the Soda Springs Park Master Plan. The plan included an ADA compliant trail system, low maintenance landscape plan and irrigation system, designated creek access points, a turf area for informal play, improved lighting, site furnishings, individual and group seating areas, and parking.



30

YEARS OF EXPERIENCE



EDUCATION

Bachelor of Fine Arts
Emerson College

Master of Landscape Architecture
University of Colorado



REGISTRATIONS/CERTIFICATIONS

Landscape Architect in CO

GREG FISCHER

PHD, PE
GEOTECHNICAL LEAD | SHANNON & WILSON



Greg has more than 30 years of experience providing geotechnical engineering services on civil engineering projects. Greg's experience in retaining wall design includes mechanically stabilized earth walls, reinforced soil slopes, tieback walls, soil nail walls, conventional concrete cantilever walls, and noise barrier walls. His bridge foundation experience includes spread footings and all types of deep foundations. Regarding pavements, Greg has experience with performing in-situ tests to evaluate pavement subgrades, developing exploration and laboratory testing programs for subgrade evaluation, mitigation of unstable subgrades and high groundwater conditions, and designing pavements using several techniques, including those developed by the Colorado Department of Transportation (CDOT), the American Association of State Highway and Transportation Officials (AASHTO) and the Metropolitan Government Pavement Engineers Council (MGPEC).

30
YEARS OF
EXPERIENCE

EXPERIENCE

Wolfensberger Road and Plum Creek Parkway Improvements – Castle Rock, CO

Greg served as Principal-in-Charge of geotechnical engineering services for this project, which includes the removal of the four-way stop signs and the addition of a roundabout at Wolfensberger Road and Plum Creek Parkway. Shannon & Wilson's scope of work included subsurface explorations, laboratory testing, geotechnical engineering analyses, development of geotechnical engineering and pavement design recommendations, and preparation of a geotechnical engineering report.

Founders Parkway/Fifth Street/Ridge Road Intersection Improvements – Castle Rock, CO

Greg served as Principal-in-Charge of geotechnical engineering services for this intersection improvements project. Shannon & Wilson's scope of work included subsurface explorations, laboratory testing, geotechnical engineering analyses, development of geotechnical engineering and pavement design recommendations, and preparation of a geotechnical engineering report.

CDOT, C470 Express Lanes – Douglas County, CO

Greg is overseeing geotechnical engineering for this design-build project involving the addition of express lanes, safety and operational improvements, adding and improving on and off ramps, realigning substandard curves, widening existing structures, replacing the bridges over the South Platte River; installing noise barriers, and adding grade separations for the multi-use trail. Geotechnical engineering for the project includes recommendations for embankments, foundation design for the bridge/culvert structures, and pavement design.

Arapahoe County, East Jewell Avenue, Hayesmount to Watkins – Arapahoe County, CO

Greg oversaw geotechnical services for this interim 2-lane roadway project. Work included subsurface investigations and laboratory testing; development of multiple pavement design options; and design recommendations for the selected pavement option, which involved HMA and Rotopave technology. Greg also oversaw construction observation and materials testing services for the project.



EDUCATION

PhD
Civil Engineering
University of Washington

Master of Science
Civil Engineering
University of Illinois

Bachelor of Science
Civil Engineering
University of Illinois



REGISTRATIONS/CERTIFICATIONS

Professional Engineer in CO and 24 other states

Post-earthquake Structure Evaluation (ATC-20)

JONATHAN HEDLUND

ENVIRONMENTAL LEAD | ERO RESOURCES

Jonathan has worked in Colorado cultural resource management since 2007. He has managed Section 106 and NEPA projects with numerous federal agencies and for private developers, special-use districts, State Parks, and local municipalities. Jonathan has managed large pedestrian block and linear surveys, archaeological data recovery excavations for both prehistoric and historical sites; developed geomorphic study, and exploratory testing programs. His experience includes extensive National Register of Historic Places evaluation, effects assessments, and avoidance strategies for all types of historic and prehistoric resources. Jonathan has worked with clients to resolve or avoid adverse effects on historic properties through both traditional and creative methods.

EXPERIENCE

Front Range Trails Project – Douglas County, CO
Project Manager/Field Director – Coordinated with the U.S. Fish and Wildlife Service and U.S. Army Corps of Engineers for 7.8 miles of new trail within the Douglas County Habitat Conservation Plan Riparian Conservation Zone. Oversaw a Class III survey of 7.8 miles of new trail, activity areas, and other facilities in compliance with the Douglas County Habitat Conservation Plan requirements. The survey resulted in the documentation of 18 cultural resources. Three prehistoric sites were subjected to evaluative testing in support of eligibility recommendations. Adverse effects on historic properties were resolved by conducting additional Class III survey of 1,000 acres instead of using traditional excavation. The Class III survey resulted in the documentation of 37 new sites that date from the Late Paleoindian Period to the Historic Stage.

McMurdo Gulch Priority 1 – Town of Castle Rock, CO

Principal Investigator – Oversaw the Class III pedestrian survey and exploratory testing of four different reaches of McMurdo Gulch proposed for stream restoration. ERO worked with the

engineer to avoid known cultural resources and minimize disturbance which reduced costs associated with the survey and testing. ERO identified and documented historical and prehistoric resources but ultimately recommended the cultural resources did not require any additional work.

Cherry Creek Downstream of Hess Road Channel Improvement Project – Cultural Resource Resurvey – Douglas County, CO
Project Manager – Reviewed areas excavated outside of the original area of potential effect by the contractor and surveyed new areas proposed for channel redesign. Coordinated with Mile High Flood Control District and the Town of Parker on consultation approach with the U.S. Army Corps of Engineers. The U.S. Army Corps of Engineers agreed with ERO's recommendations and did not require any additional work or consultation for the additional project areas.



13

YEARS OF
EXPERIENCE



EDUCATION

Master of Arts
Anthropology
University of Colorado, Denver



REGISTRATIONS/CERTIFICATIONS

Permits Currently Held

- State Lands - Colorado
- BLM Lands - Colorado
- USDA Forest Service - Region 2

HIDDE SNIEDER

BIOLOGIST | ERO RESOURCES

Hidde joined ERO in 2014. He is experienced in Clean Water Act Section 404 permitting, wetland mitigation monitoring, and threatened and endangered species surveys. Hidde has conducted wetland delineations, storm water management plan inspections, and nest surveys in the Denver metropolitan area and along the Front Range, and has assisted clients with obtaining Section 404 Nationwide and Regional permits. Hidde is also experienced with preparing mitigation monitoring reports, natural resource reports, and habitat assessments.



EXPERIENCE

Douglas County Front Range Trail – Douglas County, CO

Biologist – Assisted Douglas County with obtaining a Section 404 Nationwide Permit, and incorporated requirements of the Douglas County Habitat Conservation Plan (HCP) into design plans for the Front Range Trail Project. Assisted with the development of wetland and riparian mitigation plan to address impacts on wetlands and Preble’s meadow jumping mouse (Preble’s) habitat.

Park Trail Projects – Douglas County, CO

Assisted the town of Parker with restoration of impacted areas and implementation of mitigation plans during construction for compliance with the Douglas County HCP with an incidental take permit for Preble’s and its habitat for the Salisbury Park and East West Phase III trail projects.

Dominion Eastern Pipeline Project – Douglas County, CO

Biologist – Assisted Dominion Water with identifying potential environmental constraints for the proposed Eastern Pipeline from Castle Rock to Sterling Ranch. The project included identifying wetlands and other waters of the

U.S. and federally threatened and endangered species habitat, specifically Preble’s habitat. ERO helped develop permitting strategies to avoid major impacts on federally regulated natural resources to facilitate permitting.

Newlin Gulch Projects – Douglas County, CO

Biologist – Conducted wetland delineations, threatened and endangered species habitat evaluations, and prepared Section 404 Permit applications for the Newlin Gulch East-West Trail Project, and for the Chambers Road Extension at Newlin Gulch.

Cherry Creek Interceptor Project – Douglas County, CO

Biologist – Conducted wetland delineations, habitat assessment for federally threatened and endangered species, and prepared Section 404 Nationwide Permit and a Biological Assessment under Section 7 of the Endangered species act for 12,000 linear feet of sewer line with several crossings of Cherry Creek.

Cherry Creek Downstream of Hess Road Stream Channel Improvements – Douglas County, CO

Assisted with construction observation services and annual mitigation monitoring for Douglas County HCP associated with an incidental take permit for Preble’s and its habitat.

5
YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Ecology and Evolutionary Biology
University of Colorado



REGISTRATIONS/CERTIFICATIONS

Trained to survey for burrowing owl, Ute ladies’-tresses orchid (ULTO), and Colorado butterfly plant

Colorado Department of Transportation (CDOT) Erosion Control Supervisor Training (Stormwater Management and Erosion Control Course)

CDOT Functional Assessment of Colorado Wetlands Method

Richard Chinn - Army Corps of Engineers Wetland Delineation Certification

CAMERON GREER EI

SUBSURFACE UTILITY ENGINEERING LEAD | UMSI

Cameron has experience in utility surveying, CADD and as a SUE project manager/project engineer. He manages Phase I and II operations, data acquisition, processing, review and analysis and is the point of contact on many Colorado projects. He works closely with prime engineering firms or CDOT directly in communicating utility issues and collaborating with designers, utilities, and contractors in resolving utility conflict issues. These tasks include data management using Microstation and Bentley CADD programs, interpreting imported data and creating preliminary and final deliverables. Cameron's responsibilities include properly geo-referencing SUE data onto plans, profiles, and cross sections in a manner that greatly facilitates design, coordination and construction efforts. His duties have also included survey data collection using RTK GPS and robotic total station methods, acquiring or establishing project control, and locating project control points. He has routinely performed work for state transportation departments in ten different states; however, since 2008 Cameron's primary role has been focused with managing UDOT projects. He has been recently trained in the use of Bentley's Power Geopak and Subsurface Utility Engineering software that can be used to create 3D models of existing utility infrastructure. He has recently participated in Bentley's 2015 Be Inspired award competition in which UMSI was selected as a finalist in the Utilities and Communications category for a 3D existing utility model that he created using the new Bentley SUE utility design application for a high-pressure gas main project along SR-510 in Lacey, Washington.



14

YEARS OF
EXPERIENCE



EDUCATION

Bachelor of Science
Construction Engineering Technology
Montana State University Bozeman, MT



REGISTRATIONS/CERTIFICATIONS

Engineering Intern in MT

EXPERIENCE

- US-550 Montrose (Colorado Department of Transportation) – Montrose, CO
- Imboden Road, 56th Avenue to 64th Avenue (City of Aurora) – Aurora, CO
- SH-52 and US-287 (Colorado Department of Transportation) – Longmont, CO
- US-34; Denver Avenue to Rocky Mountain Avenue (City of Loveland) – Loveland, CO
- Marion Street System (City and County of Denver) – Denver, CO
- Dartmouth Avenue Bridge Widening (City of Englewood) – Englewood, CO
- Lincoln Avenue Auxiliary Lanes (Town of Parker) – Parker, CO
- Loveland Signals (Colorado Department of Transportation) – Loveland, CO
- Brandywine Park (City of Broomfield) – Broomfield, CO
- 120th Avenue (City of Broomfield) – Broomfield, CO
- 71st Street (Boulder County) – Boulder, CO
- SR-172; 5600 West Railroad Crossing (Utah Department of Transportation) – Salt Lake City, UT
- I-15 Weber County Express Lanes (Utah Department of Transportation) – Weber and Davis Counties, UT
- Mountain View Corridor (Utah Department of Transportation) – Salt Lake County, UT

Building a Better World for All of Us[®]

Sustainable buildings, sound infrastructure, safe transportation systems, clean water, renewable energy and a balanced environment. Building a Better World for All of Us communicates a company-wide commitment to act in the best interests of our clients and the world around us.

We're confident in our ability to balance these requirements.

JOIN OUR SOCIAL COMMUNITIES

