RESOLUTION NO. 2018-008

A RESOLUTION APPROVING THE FIRST AMENDMENT TO TOWN OF CASTLE ROCK SERVICES AGREEMENT BETWEEN SHORT ELLIOTT HENDRICKSON INC. AND THE TOWN FOR THE FOUNDERS PARKWAY/FIFTH STREET/RIDGE ROAD INTERSECTION IMPROVEMENT DESIGN

WHEREAS, the Town and Short Elliot Hendrickson, Inc. ("SEH") are parties to the Town of Castle Rock Services Agreement for the design of the Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Project dated April 17, 2017,

WHEREAS, the Town and SEH have determined that it is appropriate to amend the Agreement to (i) modify the Scope of Services to include the design of a roundabout at the intersection, (ii) extend the date of completion for the design, and (iii) adopt SEH's 2018 fee schedule for the additional design work.

NOW, THEREFORE BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK, COLORADO AS FOLLOWS:

Section 1. **Approval**. The First Amendment to Town of Castle Rock Services Agreement (Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Design) in the form attached as ***Exhibit 1*** is hereby approved. The Mayor and other proper Town officials are hereby authorized to execute the First Amendment by and on behalf of the Town of Castle Rock.

Section 2. **Encumbrance and Authorization for Payment**. In order to meet the Town's financial obligation under the Contract, the Town Council authorizes the expenditure and payment from the 2018 appropriation account 135-3175-431.78-69, in an amount not to exceed $294,293, unless authorized in writing by the Town of Castle Rock.

PASSED, APPROVED AND ADOPTED this 6th day of February, 2018 by the Town Council of the Town of Castle Rock, Colorado, on first and final reading by a vote of ____ for and ____ against.

ATTEST:

_____
Lisa Anderson, Town Clerk

TOWN OF CASTLE ROCK

_____
Jennifer Green, Mayor

Approved as to form:

_____
Robert J. Slentz, Town Attorney

Approved as to content:

_____
Robert Goebel, P.E., Director of Public Works

FIRST AMENDMENT TO TOWN OF CASTLE ROCK SERVICES AGREEMENT
(Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Design)

DATE: January 3, 2018.

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

SHORT ELLIOT HENDRICKSON INC., a Minnesota corporation, 2000 South Colorado Boulevard, Suite 6000, Denver, Colorado 80222 ("Consultant").

RECITALS:

A. Town and Contractor are parties to the Town of Castle Rock Services Agreement (Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Design) dated April 17, 2017 ("Agreement").

B. The Town has chosen a roundabout as the preferred intersection control improvement and due to the change in scope and delay in obtaining the Colorado Department of Transportation's concurrence and approval, it has been determined that it is appropriate to amend the Agreement to (i) modify the scopes of Services to include a roundabout design, (ii) extend the completion date for the Services, and (iii) adopt Consultant's 2018 fee schedule.

TERMS:

Section 1. **Amendment.** The Agreement is amended as follows:

A. Section 1 of the Agreement is amended to include the additional scope of services required for the design of a roundabout at the Founders Parkway, Fifth Street and Ridge Road intersection, in accordance with Consultant's proposal attached as ***Exhibit 1-A*** ("Additional Services").

B. Section 2 of the Agreement is amended to increase the Agreement sum by an additional $54,098, in accordance with the rate and fee schedule for the Additional Services set forth in ***Exhibit 1-A***. In no event shall the cumulative payment to Consultant exceed $294,293, unless authorized in writing by the Town.

C. Section 3 of the Agreement is amended to extend the completion date to December 31, 2018.

Section 2. **Ratification**. Except to the extent expressly modified by this First Amendment, the Agreement is in full force and effect. To the extent of any inconsistency

between this First Amendment and the Agreement, the terms and conditions of this First Amendment shall control.

ATTEST:

Lisa Anderson, Town Clerk

TOWN OF CASTLE ROCK

Jennifer Green, Mayor

Approved as to form:

Robert J. Slentz, Town Attorney

Approved as to content:

Robert Goebel, PE, Director of Public Works

CONSULTANT:

SHORT ELLIOT HENDRICKSON, INC.
a Minnesota corporation

By: Rick Coldsnow

Its: Principal

Building a Better World for All of Us®

Mr. Tony Marusiak
Town of Castle Rock
4175 N. Castleton Court
Denver, CO 80202

December 29, 2017

Subject: Amendment for roundabout design services
Town of Castle Rock Service Agreement Date April 17, 2017
Founders Parkway, Fifth Street and Ridge Road Intersection Improvement Design
SEH No. 142054

Dear Tony:

Please find enclosed our proposed scope and fee for the design of roundabout at the intersection of Founders Parkway/Fifth Street/Ridge Road in the Town of Castle Rock.

The following project sequence and scope of services is provided as an amendment to the scope of services provided for the Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Design. Through the conceptual design process for the Founders Parkway/Fifth Street/Ridge Road Intersection Improvement Design, the Town selected a roundabout as the preferred configuration for this intersection. This scope of work is based on the design of a roundabout at the Founders Parkway/Fifth Street/Ridge Road intersection and reflects the changes from the original scope of work for the design of a roundabout as well as work in the original scope of work yet to be performed. The project sequence provided in the original RFP has been provided and along with a status update of each task.

The original contract anticipated the design ending in December 2017 and the associated fee estimate was based on 2017 On-Call rates. As mentioned above the consideration of intersection alternatives has resulted in the proposed design commencing in January 2018. Due to work now occurring in 2018, the proposed design work for the roundabout is based on 2018 On-Call rates. Also, unused fee from the original contract was updated to account for 2018 rates. As part of this amendment, SEH is also requesting an extension of the original contract to January 2019.

The change in fee requested for the design of the roundabout including additional geotechnical borings to complete per the Town of Castle Rock criteria is $51,957. The change in fee for the unused fee converted to 2018 On Call rates is $2,141 resulting in an overall change request amount of $54,098. A detailed fee estimate has been provided as part of this amendment.

Please contact me at 720.773.2835 or enyce@sehinc.com if you have any questions on the enclosed.

Sincerely,

Erik Nyce, P.E.
Project Manager
Short Elliott Hendrickson, Inc.

Rick Coldsnow, P.E.
Principal/Contract Manager
Short Elliott Hendrickson, Inc.

Project Sequence and Scope of Services for the Founders/Fifth/Ridge Road Roundabout

Short Elliott Hendrickson Inc. (SEH) Scope of Work

Items yet to be completed are shown as **bold:**

Project Sequence

1. Project Initiation and Continuing Requirements includes:
    a. Kick off Meeting (Complete)
    b. Project Meetings (Partially Complete)
    c. Coordination Meetings (Partially Complete)
    d. Project Management (Partially Complete)
    e. Quality Assurance/Quality Control (Partially Complete)

2. Conceptual Design (Approximately 10% design) which includes: **(Complete except where noted)**
    a. Kick off Meeting (Complete)
    b. Progress and Review Meetings (Complete)
    c. Pre design surveying (Complete**), geotechnical investigation (Not Complete) and potholing (Not yet started)**
    d. Accumulation and review of relevant data, reports and existing as built plans (Complete)
    e. Conceptual layouts and sections – development of 10% design (Complete)
    f. Conceptual Design Report (Complete)
    g. Traffic analyses at roundabouts and intersections (Complete)
    h. Opinion of costs (Complete)

3. Traffic Analysis **(Complete except where noted)**
    a. The Town will supply the transportation master plan traffic analysis for the intersection for the use in the design. **(**Complete for initial intersection concepts**, additional modeling necessary for roundabout option.)**

4. 30% Design (Not Complete except where noted)
    a. **Progress and Review Meetings (Partially Complete)**
    b. Design Field Survey (Complete)
    c. **Geotechnical Investigation (Not Complete)**
        i. **Additional Geotechnical Investigations needed for concrete roundabout (Not Complete, not in original scope of work)**
    d. Utility Coordination
        i. Mapping existing utilities (Complete)
        ii. Reviewing utility types, sizes, and locations with utility owners (Not Complete)
        iii. Evaluate possible design modifications to resolve conflicts (Not Complete)
    e. Preliminary Roundabout Design (Not Complete, not in original scope of work)
    f. **30% Design Plan Review Package including: (Task Not Started - Not Complete)**

i. **Title Sheet**
ii. **Typical Sections**
iii. **Roundabout Geometry Plan**
iv. **Roundabout Performance Checks**
v. **Removal plans**
vi. **Roundabout Plan and Profile sheets**
vii. **Grading and Erosion control plans**
viii. **Utility Plans**
ix. **Construction Phasing Plans**
x. **Signing and Striping Plans**
xi. **Cross Sections**
xii. **Preliminary ROW Exhibits**
xiii. **Prepare an Opinion of Probable Costs**

5. **90% Design (Task Not Started - Not Complete)**
    a. **Progress and Review Meetings**
    b. **Hydrology & Hydraulics Memorandum outlining the recommended design and existing conditions**
    c. **Right-of-Way exhibits for use by the Town during the ROW acquisition process**
    d. **90% Design Review Package per the RFP, including:**
        - **Title Sheet with legend and location map**
        - **General Notes**
        - **Quantities**
        - **Survey Control Diagram**
        - **Typical Sections**
        - **Geometry Plan**
        - **Removal Plans**
        - **Roadway Plan and Profile Sheets**
        - **Drainage Plans**
        - **Grading and Erosion Control Plans**
        - **Utility Plans**
        - **Construction Phasing Plans**
        - **Traffic Control Plans**
        - **Signing and Striping Plans**
        - **Landscape Plans**
        - **Lighting Plans**
        - **Cross Sections**
        - **Specifications**
        - **Updated Opinion of Probable Cost**
6. **Bidding Services (Task removed from original contract – Design to be shelved after 90% Design)**
    a. **Final Stamped documents for bidding**
    b. **Bid package distribution**
    c. **Scheduling and running a pre-bid meeting**
    d. **Issuance of pre-bid meeting minutes**

e. **Responding to bidder inquiries, with input from the Town**
f. **Issuance of bid addenda**
g. **Assisting with the bid opening**
h. **Tabulation of bidder results and award recommendation**

7. **Construction Phase Services**
    a. **These services are excluded from the scope of services per the RFP.**

Following summarizes the proposed scope for design tasks

Scope of Services

Survey and Mapping

CDOT Format Right of Way Plans and Legal Descriptions

SEH will prepare CDOT format ROW Plans and legal descriptions for any right-of-way acquisition or easements on private property. This will include the title sheet, tabulation of properties, monumentation sheets, plan sheets, and ownership sheets, along with area closures for each acquired parcel, and signing ROW plans upon CDOT approval. This proposal includes up to two ROWPR meetings with CDOT.

The Town of Castle Rock will perform all right-of-way acquisitions services and are not included in this scope of work.

Geotechnical and Pavement Design

A concrete pavement design, in addition to the previously prepared asphalt pavement design, may also be required for the project. The scope of work will include:

Additional Borings to meet Town of Castle Rock Standards:

- Drill eight 5-foot borings within the paved roadway, all at approximately 250-foot intervals along the proposed roadway improvements.
- Total proposed drill footage for Design Fee is 40 feet.
- Laboratory testing of selected soil/rock samples recovered from the borings.
- Updating our existing draft geotechnical report and asphalt pavement design to incorporate the new subsurface data.

Concrete Pavement Design:

- Prepare a concrete pavement design for the project in accordance with the Castle Rock Transportation Design Criteria Manual.
- Issue a letter report summarizing our pavement design.

Design will be in accordance with MGPEC procedures and Town of Castle Rock Transportation Design Criteria Manual. M-E pavement design will not be required.

Hydrology and Hydraulics

The roundabout project will allow for improvements to be made for the conveyance of stormwater. SEH will obtain and review the design documents (if available) for the existing drainage system around the intersection, including off-site flows from adjacent areas, and supplement any missing data with survey information and field verification. Before any new drainage infrastructure is considered, the function of the existing drainage system will need to be analyzed to fully understand how stormwater is conveyed throughout the intersection. An understanding of the existing system will provide the basis for the design of the drainage system for the proposed intersection improvements. As a standard practice, SEH stormwater engineers design new drainage systems with the goal of utilizing as much of the existing drainage infrastructure as possible.

The results from the analysis of the additional pavement areas and the increases in stormwater discharge may conclude that additional inlets are needed to prevent flooding around the intersection. The analysis may also conclude that additional stormwater can be conveyed throughout the intersection in curb and gutter sections to existing downstream outfall sources. In either case, the best combination of inlets and/or curb and gutter sections will be used for the design of drainage improvements at the intersection.

The analysis of drainage and water quality will follow the guidelines of the Storm Drainage Design and Technical Criteria Manual (SDDTCM), developed by the Town of Castle Rock in September 2007 and revised in October 2012. SEH will provide preliminary and final drainage reports as per Chapter 4, Sub-section 4.1.1 of the SDDTCM.

A thorough understanding of the existing drainage system and the available right-of-way, along with conveyance, detention and water quality considerations using the guidance of the SDDTCM, will ensure that stormwater is effectively drained from the new intersection improvements.

Environmental

For this project, Pinyon will lead the environmental task by completing the technical studies applicable to CatE's, as noted in CDOT's Form #128. Based on recent direction from CDOT Region 1, the Town of Castle Rock will be required to address every resource on CDOT Form #128. Based on review of the proposed improvements and the context of the surrounding environment, the focus of the environmental task will be on potential noise, Section 4(f) and air quality impacts.

The following are key tasks needed for this project:

Noise:

Pinyon will conduct the noise assessment and mitigation analysis using CDOT's current Noise Analysis and Abatement Guidelines as these guidelines are in accordance with the requirements of 23 CFR §772, Procedures for Abatement of Highway Traffic Noise and Construction Noise and utilize the Federal Highway Administration's Traffic Noise Model (TNM, version 2.5) to predict existing and horizon-year traffic noise levels within the study area. The scope included in this task is outlined below.

Pinyon will first review the data for existing conditions and proximity of transportation elements to noise-sensitive receptors. The data required includes: CAD drawings of the existing and proposed conditions with elevations, aerial photographs, land use, and existing and future traffic data. If necessary, Pinyon can utilize Google Earth (or equivalent) for the ground elevation of receptors. Also included in this task are noise measurements taken at four sites of at least 15 minutes each, which will be taken with a calibrated sound meter that conforms to American National Standards Institute Standards for Type 2 sound level meters during suitable weather conditions. Traffic volumes and truck percentages will be counted and traffic speeds will be measured during each of the noise measurements to validate TNM model.

Noise Modeling and Reporting: Computer modeling will be performed for existing conditions and the horizon year at the intersection resulting in two (2) model runs. Pinyon will document the environmental context, noise assessment methodology, and model results in a technical memorandum for the Town. Should the current or horizon year noise levels exceed the Noise Abatement Criteria thresholds, Pinyon will also include recommendation for next steps in assessing mitigation options but has not included the development and assessment of mitigation measures in this proposal.

Air Quality:

An initial step will be to review the traffic data to confirm the need to model for carbon monoxide (CO) at the intersection. Assuming modeling is required, Pinyon will consult with CDOT and the Colorado Department of Health Public and Environment to obtain the MOVES data for use in the hot spot analyses, complete the hot spot modeling for the current year and horizon year, and develop an Air Quality Technical Memorandum. Should modeling not be required, Pinyon will document the rationale as why it is not needed in a brief memo to file; this would reduce the level of effort from that proposed in this scope. We assume that SEH will provide the required traffic and design data.

Historic Resources:

A Pinyon staff historian has completed a COMPASS search of the area in addition to a review of the Douglas County Assessor Records, the CDOT Online Transportation Information System (OTIS), USGS Topographic Maps, and aerial photography, and has identified two officially eligible historic resources within the project area (Colorado State Highway 86A and State Highway 86B). Although there are two officially eligible historic resources in the project area, this scope assumes that this project can still be addressed as a screened undertaking in accordance with the CDOT Programmatic Agreement for intersection improvements because the historic character of these resources will not be adversely effected by the proposed actions. As such a technical memorandum will be sufficient for completion of the historic review process. Should the project design change or should previously unknown and potentially historic resources be discovered within the project area, additional scope and fee will be required for eligibility and effects determination and Section 4(f) documentation.

Biological Resources:

Pinyon biologist will evaluate sensitive biological resources, including federally and state-listed threatened and endangered species, Senate Bill 40, noxious weeds, prairie dogs, wetlands, and migratory birds. Species-specific surveys, noxious weed management plans, and/or mitigation plans may also be necessary, but are not included in this proposal. This information will be presented in a Biological Technical Memorandum.

Waters of the U.S. (WUS), including Wetlands:

There is one potential jurisdictional WUS in the project vicinity. Pinyon's biologists will conduct a wetland delineation in accordance with US Army Corps of Engineers (USACE) and CDOT protocols. Using this information and information from SEH, (e.g., impacts, both temporary and permanent) Pinyon will prepare a Preconstruction Notice for the USACE Section 404 permit. It is assumed that impacts would be minimal and will be permitted with under Nationwide Permit

14. It is assumed that impacts to wetlands will not be greater than 500 square feet; therefore, a CDOT Wetland Finding Report will not be required. If the proposed action requires an individual permit or CDOT Wetland Finding Report, Pinyon will provide a revised scope and fee. CDOT requires mitigation for any impact to wetlands. If impacts to wetlands are determined unavoidable, mitigation will be required. The type of mitigation will be determined by CDOT but it is likely that the Town will be required to purchase credits towards a mitigation banks.

Hazardous Materials:

Based on aerial photograph review, commercial and industrial activities are unlikely to occur near the project. Pinyon will document these conditions in an Initial Site Assessment report and CDOT Form 881 and present recommendations for handling hazardous materials if needed. A file search and regulatory agency review will be conducted as part of this task; interviews will not be conducted. Pinyon assumes that SEH will obtain the necessary permission to enter documentation. Phase 2 work is not included in this scope or associated fee.

Section 4f:

Federal Highway Administration (FHWA) Section 4(f) regulations govern the use of land from publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public or private historic sites. City of Castle Rock Open Space is located adjacent to the roadway and includes the sidewalks located within the project area. The sidewalks within the Open Space may be considered a Section 4(f) resource. Impacts to the sidewalks are assumed to be minor with full restoration or enhancements. A de minimis Section 4(f) evaluation or utilization of an "Exception" under Section 4(f) 23 Code of Federal Regulation (CFR) §774.13, specifically (g) "transportation enhancement", is anticipated. Pinyon will coordinate with CDOT and City of Castle Rock, the Official with Jurisdiction (OWJ) and prepare an OWJ letter. A de minimis determination will also require FHWA agency coordination and public involvement (which is assumed to be minor such as a newspaper advertisement). Any use of Section 4(f) resources requiring evaluation other than an exception or de minimis finding would require additional scope and fee.

Section 6(f):

Pinyon will coordinate with CDOT to determine if Section 6(f) resources are present; this scope assumes that they are not and the lack of presence will be documented in a very brief memo to file.

Paleontology:

Pinyon retain a subcontractor for the paleontology task requested by CDOT. Paleo Solutions will review the project area for previously recorded, or potential, paleontological resources through a database search and a pedestrian site visit. This scope assumes none are present; therefore, a technical memorandum to file will be prepared. If resources are identified that require additional recordation, consultation, or otherwise, this scope will require re-visitation.

Archeology:

An archeologist will review the project area for previously recorded, or potential, archeological resources through a database search and a pedestrian site visit. This scope assumes that no sites are present and a memorandum to file will be prepared. If resources are identified that require additional recordation, consultation, or otherwise, this scope will require re-visitation.

Utility Coordination

Thorough and comprehensive identification of existing and proposed utilities in the project area is vital for an effective and successful improvement project. Our team understands the importance of properly identifying utilities and their associated impacts to this project. Through a virtual windshield survey and a site walk, we have identified utilities that may potentially be affected by proposed improvements. SEH will work with utility owners to identify, locate and evaluate impacts to their facilities. Our goal is to provide proactive utility coordination to expedite utility relocations. We understand that utility relocations can be a major risk to meeting the construction schedule and we will work to have clearances and scheduling established well before construction is set to begin. We will be able to achieve this based on our relationships and experience with utility companies.

Our team's experience on similar projects with constrained right-of-way indicate that the greatest potential for utility impacts will be related to the roadway and drainage improvements crossing buried utilities. By confirming the location of the utilities relative to the proposed improvements and coordinating with utility owners and the design team, it is possible to avoid or minimize utility relocations.

There are existing overhead powerlines running along the north side of both 5th Street and Highway 86, as well as lines crossing those streets to the south. Storm sewer manholes and inlets are along the median in Ridge Road and along the north and south gutter of Hwy 86. If available, existing utility as-builts and design information will be obtained for all potential impacted utilities along the corridor. Locates will be performed early in the project schedule and incorporated in the design base file so coordination can begin soon after survey is complete. (Insert photo IMG1759 with caption "Existing utilities at north end of proposed Founders Park improvements should be avoided or minimized"

Our approach, combined with our team's relationships with the utility companies, should ensure smooth and productive coordination, allowing the Ridge Road project to move forward with minimal schedule risk. The method involves the following steps:

- **Utility Contacts:** The identification of all utility contacts within the project area is initiated immediately by conducting a search of the UNCC utility owner database and following up with

identified owners to confirm the presence and location of facilities.

- **Utility Information:** As-built drawings and key maps would be obtained from utility owners to fill data gaps. Information regarding planned relocations for other projects in the area would provide a complete overview.
- **Utility Identification:** A private engineering locate will be conducted, with horizontal locations of utilities marked and subsequently surveyed. While potholing of utilities is usually reserved for preliminary or final detailed design, pothole data from other projects would be collected and compiled as available. A preliminary estimate of 10 potholes is assumed.
- **Utility Mapping:** Compiling all utility data into an existing utility map and any preliminary design plans is the most important step in the utility program. Map review from all affected utility companies at each phase maximizes data accuracy, and ensures that utility information provided to the design team is the most up-to-date information available.
- **Preliminary Conflict Analysis:** Using the utility mapping and plans, potential conflicts between existing utilities and proposed improvements and relocation strategies are identified. An effort will be made to eliminate or mitigate conflicts by coordinating with the utility owners and project team.
- **Conflict Resolution:** Conflict resolution happens after preliminary conflict analysis. Potholing will be conducted to resolve alignment and cover issues.
- **Utility Agreements:** By following CDOT's utility clearance process, concurrence for all work by and for utility owners is obtained. Relocations of Black Hills Energy and IREA's facilities are done in compliance with the City's franchise agreement.

Landscape / Streetscape Design

Due to the narrow width of the raised medians at each of the approaches to this intersections it's likely that hardscape median cover material would be provided in these medians in an effort to minimize the landscape and irrigation maintenance. Where applicable landscaping and irrigation will be provided between detached sidewalks. The center of the roundabout will be native seeding.

Lighting Design

Ken Taillon will lead the roadway lighting task and coordination with the Town and will hold a lighting and electrical kick-off meeting to identify proposed lighting equipment, electrical design approach and operation and maintenance requirements associated with the new lighting and electrical systems. We will likely perform photometric calculations to aid in the recommendation of appropriate roadway lighting and supporting electrical infrastructure. Construction documents will outline lighting and electrical details associated with the project. Intersection lighting will conform to the *Town of Castle Rock Transportation Design Criteria Manual* and will adhere to the latest FHWA design guide for roundabouts and/or publications of the Illuminating Engineering Society (IES) concerning roundabout lighting.

Roundabout Design and Traffic Engineering

Roundabout Design

SEH will prepare the preliminary roundabout layout based on the recommendation presented in the Founders/Fifth/Ridge Road Intersection Improvement Project - Conceptual Design Memo to ensure the functionality of the design, verify the operational performance of the proposed layout, review the geometric design and capacity analysis/simulation and review design year traffic forecasts. Confirming the preliminary layout is a high priority because delineation of new right-of-way must be completed to meet the deadline for submitting right-of-way plans.

Key design features will be reviewed to provide for a functionally safe and operationally efficient project. Vehicle turning movement paths will be verified, pedestrian and bicycle movements will be evaluated and pavement markings, signing and lighting reviewed. We will review key vertical design features including approach and yield condition sightlines, as well as any visual barriers created by features in the center island. SEH will verify construction limits and impacts to private property, as well as permanent right-of-way needs and temporary easements. Design criteria for the roundabout will be in conformance with the Town's requirements and will include:

- Town of Castle Rock Transportation Design Criteria Manual
- CDOT's Standard Drawings & Specifications
- Manual on Uniform Traffic Control Devices (MUTCD)
- FHWA Roundabout guidelines
- Pedestrian refuge areas at splitter islands
- Inscribed Circle (min.): 150' two-lane
- ADA compliant
- WB-67 Design Vehicle (min.)

Traffic Engineering

Based on the Town-provided Transportation Master Plan traffic analysis, SEH ran a RODEL analysis during conceptual design to analyze the operations of the proposed roundabout. Due to the high PM peak hour volumes a third northbound/southbound lane will be needed in the future on Founders Parkway and Ridge Road. As a result, a two lane roundabout will be designed that can accommodate the future third lane with limited reconstruction of the proposed roundabout. After the lane configuration is chosen we will use the recommended design vehicle for this site to properly size the roundabout and then check all the design parameters to ensure the roundabout is designed based on current FHWA standards. RODEL analyses performed during conceptual design will be updated to account for design changes made during preliminary design.

Through the development of final design, the SEH team will also develop signing and marking plans for the roundabout and adjacent roadways in compliance with the MUTCD. Signing and marking of a roundabout are critical elements that directly contribute to its successful operations, including advance lane assignment signing. The SEH team will leverage its extensive experience in roundabout design to optimize design and implementation of the roundabout traffic control scheme.

Construction Phasing and Traffic Control

As major components of Castle Rock's transportation system, it is anticipated that traffic will need to be maintained on all four legs of the intersection throughout the duration of construction. To accomplish this, SEH will develop a phased construction sequence and associated maintenance-of-traffic plan that will maximize construction efficiency while accommodating traffic demands at the intersection. By shifting traffic off alignment, a substantial portion of the roundabout can be constructed under traffic. Once completed, traffic can be shifted to the newly completed work while the remaining construction is performed. Phasing and traffic control plans will need to be developed in sufficient detail to ensure a constructible plan, and specifications will be provided requiring the contractor to submit Methods of Handling Traffic (MSTs) for approval as the plan is adapted to the contractor's specific construction approach. Key considerations that will control the phasing and traffic control plans include:

- Available space for temporary pavement and traffic shifts.
- Utility conflicts.
- Need for exclusive left- and right- turn lanes at the intersection.
- Time limits for temporary closures to make traffic shifts and closure pours.
- Alternate detour routes.
- Maintaining safe separation of construction activities and vehicular traffic.

PS&E Development

The SEH team will progress the design through 30%, 90% and bidding services phases, as specified in the Scope of Services. Prior to each milestone submittal, QA/QC tasks will be performed to verify that documents conform to the project Quality Management Plan. Plan review packages will then be distributed to the Town and CDOT for a fixed review period (three weeks, or as otherwise agreed to by the Town and CDOT) and a comment review/resolution meeting will be conducted to gather and discuss all package review comments. SEH will use a comment tracking process to ensure all comments are documented and brought to resolution as the design progresses.

We anticipate participating in two progress meetings per month as well as a preliminary (30%) FIR and final (90%) FOR design review meetings and a ROWPR meeting. We will prepare meeting notes for all meetings that have action item assignments with dates. Based on the schedule, we anticipate eleven (13) bi-weekly and monthly progress meetings, a kick off, preliminary and final design review meetings and a ROWPR.

Specifications will incorporate Town-specific provisions and will be based on CDOT Standard Specifications for Road and Bridge Construction. Any necessary project-specific construction special provisions will be determined by the project team in coordination with the Town's construction manager.

Public Meeting Assistance

Public meetings are proposed to provide residents the opportunity to learn about the project and what changes to expect. Impacts during construction will also impact residents traveling the corridor. SEH will provide graphics for the meetings and assist with presentations. Typically there is public meeting early in design to inform citizens and give them the opportunity to provide input. Later meetings can be held to present how concerns were addressed and provide more detail on the project. We also

recommend a meeting just before construction to introduce the contractor, their proposed traffic control and phasing as well as the final schedule.

Project Management

PROJECT CONTROL

Your Project Manager, Erik Nyce, brings over 22 years of experience as a manager and senior engineer in municipal roadway and drainage design. Erik has managed similar projects for several Denver Metro and Colorado communities. Erik will be your primary contact, responsible for oversight and management of cost and quality control for the project and adherence to the project schedule. SEH recognizes the project manager is the frontline project representative of the firm to his/her clients, subconsultants, outside agencies and staff; therefore SEH's project managers and selected key staff are required to attend training that establishes expectations for quality, cost and schedule management.

Cost Control

Erik will execute a well-conceived and disciplined project management strategy to stay one step ahead, avoid surprises and meet the project budget—our goal is to provide our services to you within the budget for the defined scope of work. To accomplish this, he will monitor all project activity to make sure the work delivered as agreed, with resources that can complete the work as budgeted and scheduled. Rick will regularly review project progress to assess any gaps in delivery or schedule, and take appropriate corrective actions.

Our approach begins with adequate scoping, focusing on processes, requirements and expectations. In addition, Erik's cost control capabilities are derived from:

- Regular project updates and meetings accompanied by thoughtful action items designed to maintain the schedule and project delivery.
- Full and accurate disclosure of challenges as they arise, in tandem with cost-effective solutions.
- Application of project experience and lessons learned.
- Allocation of appropriate specialists and quality staff

As project manager, Erik will keep a regularly updated cost estimate that will be available at any time during the project. With the current fluctuation in bid pricing, this will help assure there are no surprises when the final construction cost estimates are provided to the Town at the final plans stage of development.

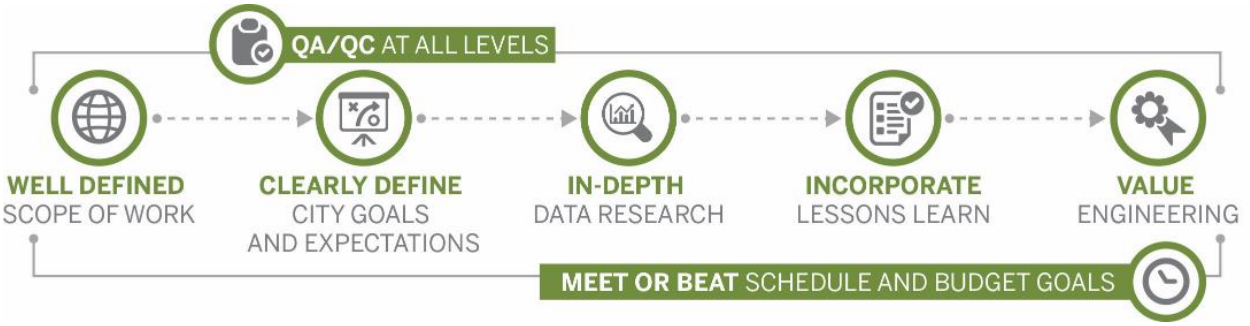
If at any point the construction cost estimate appears to be beyond the available budget, the SEH team will work with our project engineers and the Town's project manager to explore a range of solutions available to get back within budget.

Quality Control

SEH has a formal, firm-wide Quality Assurance/Quality Control (QA/QC) Program incorporated into a set of published guidelines used by each department and project manager to develop a unique plan for each project. The SEH Civil Practice QA Plan requires that all designs be reviewed by a senior level project engineer, not involved in the day-to-day design. For this project, Rick Coldsnow, our project

principal, will serve in that role. Hours and budget are allocated to QA review at each milestone of the project.

At the beginning of the project, Erik will develop a project work plan that includes QA/QC requirements. This plan and schedule will be presented at the kick-off meeting. The plan will be reviewed by the Town to ensure a clear understanding is formed and agreed upon regarding project requirements including goals and objectives. The program continues throughout the project and imparts professionalism and technical specialties into the work as it is performed. Use this Quality control graphic for both the Founders parkway and Ridge Road proposal



Schedule Control

Erik will develop and maintain a detailed project schedule to clearly understand the sequence, duration and interdependencies of all tasks, and update the schedule if things change or new information is gathered. Our history on similar projects enables us to efficiently and cost-effectively move through the design process, while ensuring the highest level of collaboration and information sharing among County staff and project stakeholders. Our goal is to follow a streamlined, feasible and customized work plan/schedule that leaves you with a constructible and affordable project.

Erik uses earned-value management on all of his projects as a way to track work performed compared to work completed to make sure that work is being completed on time and on budget. Erik will provide an earned value report each month as part of the project progress report.

SEH uses Microsoft Project scheduling software to develop track and manage critical project tasks. Erik will actively monitor project progress by task, bi-monthly. Variances from the schedule will be flagged, and Erik will employ necessary measures to redirect tasks back on schedule. Schedule updates will be provided to the County at least monthly at project meetings. Keeping projects on track is critical to meet budget objectives.

A critical part of schedule management is identifying critical path elements. These elements usually include right-of-way, utilities and environmental. We will be closely monitor and address these elements in off-line meetings to carefully identify even the slightest potential delay.

PROJECT FEE ESTIMATING WORKSHEET
SEH INC.

Estimated Project Duration - 12 Months

By: By: EN Revision Date: 12/5/2017
Date: Date: 12/5/2017
Proposal No: Proposal No: Job No:
Project: Project: Founders Parkway (SH 86), Fifth Street, and Ridge Road Intersection Improvements - RFP NO. PW2017.03
Additional Fee for Roundabout design - 2018 Billing Rates
Client: Client: Town of Castle Rock

		SEH									Subconsultants					
	TASK	Principal Hrs.	Senior Project Manager Hrs.	Senior Project Engineer Hrs.	Senior Project Engineer Hrs	Staff Engineer I Hrs.	Accounting Hrs.	SEH SUBTOTAL HOURS	SEH SUBTOTAL Cost	SEH Expenses	Utility Locates	Utility Potholing	Pinyon Environmental	Goodbee/PKM	Shannon and Wilson	Total Cost per Task
	Hourly Rates	$208.00	$181.00	$142.00	$142.00	$102.00	$115.00									
		RC	EN, KT	EO, CW	SH, JL	EE	SO									
1	**Project Management and Meetings**															
	Project Management		16				2	18	$3,126.00							$3,126.00
	Kick Off Meeting	2	2	2	1			7	$1,204.00							$1,204.00
	Design Progress/Coordination Meetings (Assume 2 additional meetings with Town and CDOT)		8	4	2			14	$2,300.00							$2,300.00
	Task 1 Subtotal	2	26	6	3	0	2	39	$6,630.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$6,630.00
2	**Preliminary Design (30% FIR)**															
	Geotechnical Investigations and Report							0	$0.00							$0.00
	Additional Borings							0	$0.00						$7,998.00	$7,998.00
	Concrete pavement Design		1					1	$181.00						$1,317.00	$1,498.00
	Roadway and Grading Design		4	24	24	16		68	$9,172.00							$9,172.00
	Utility Design and Coordination		2					2	$362.00							$362.00
	Hydrology and Hydraulic Analysis and Design			4		4		8	$976.00							$976.00
	Traffic Analysis			4	16			20	$2,840.00							$2,840.00
	Construction Phasing		4	4	8	16		32	$4,060.00							$4,060.00
	Cost Estimate							0	$0.00							$0.00
	Prepare 30% Plans and Report			8		8		16	$1,952.00							$1,952.00
	Environmental		2					2	$362.00				$3,547.00			$3,909.00
	30% Design Review (FIR) Meeting with Town of Castle Rock and CDOT		1	1				2	$323.00							$323.00
	Respond to Review Comments		2		2			0	$646.00							$646.00
	Task 2 Summary	0	16	45	50	44	0	151	$20,874.00	$0.00	$0.00	$0.00	$3,547.00	$0.00	$9,315.00	$33,736.00
3	**Final Design (90% Design and Plans)**															
	Landscape Design (including irrigation)							0	$0.00							$0.00
	Roadway and Grading Design		2	4	8			14	$2,066.00							$2,066.00
	Utility Design and Coordination							0	$0.00							$0.00
	Structural Engineering (Retaining Wall Design)							0	$0.00							$0.00
	Hydrology and Hydraulic Analysis and Design			4		4		8	$976.00							$976.00
	Signing and Striping		1	4	4	4		13	$1,725.00							$1,725.00
	Construction Phasing and Traffic Control		2	4	4	8		18	$2,314.00							$2,314.00
	Concrete Jointing Plan					8		8	$816.00							$816.00
	Lighting Design		4			4		8	$1,132.00							$1,132.00
	Final Drainage Report							0	$0.00							$0.00
	Specifications							0	$0.00							$0.00
	Cost Estimate							0	$0.00							$0.00
	Prepare 90% Plans							0	$0.00							$0.00
	Compile and Respond to 90% (FOR) Review comments		2	2				4	$646.00							$646.00
	Attend 90% Design Review Meeting with Town of Castle Rock and CDOT							0	$0.00							$0.00
	Task 3 Subtotal	0	11	18	16	28	0	73	$9,675.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$9,675.00
4	**Public Meetings**															
	Attend and prepare for 3 Public Meetings	3	4	4				11	$1,916.00							$1,916.00
	Task 4 Subtotal	3	4	4	0	0	0	11	$1,916.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,916.00
	Total SEH Hours per Staff =	5	57	73	69	72	2	274								
	Total SEH Cost per Staff	$1,040	$10,317	$10,366	$9,798	$7,344	$230	$39,095								
	Project Totals								$39,095.00	$0	$0	$0	$3,547	$0	$9,315	$51,957

Assumptions:
No ROW acquisition services
Does not include construction services.

Founders Parkway (SH 86), Fifth Street, and Ridge Road Intersection Improvements - RFP NO. PW2017.03
Unused Original Fee converted to 2018 On Call rates

Task Number	Task Name	2017 Task Amount Remaining	2018 Rate Task Amount	2018 Rate Difference
1	Project Management and Meetings	$9,014.00	$9,202.00	$188.00
2	Topographic Survey/ROW Plans/Utility Potholing	$9,993.00	$10,162.00	$169.00
3	Conceptual Design	$16,796.00	$17,153.00	$357.00
4	Preliminary Design (75% Design and Plans)	$38,530.00	$39,294.00	$764.00
5	Final Design (90% Design and Plans)	$27,437.00	$28,019.00	$582.00
6	Construction Documents	$0.00	$0.00	$0.00
7	Public Meetings	$3,802.00	$3,883.00	$81.00
8	Bid Support	$0.00	$0.00	$0.00
	Total Project Fee	$105,572.00	$107,713.00	**$2,141.00**