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March 21, 2025

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**INTRODUCTION**

Basis Partners (Basis) will provide professional engineering services to Douglas County (County) for the Quebec Street (Quebec) and Park Meadows Drive (Park Meadows) Improvements project.

At times, the intersection of Quebec and Park Meadows/Business Center Drive (Business Center) experiences delays in all directions. Specifically of concern is that the AM peak hour delays in the intersection appear to impact flow of vehicles traveling north on Quebec and turning east on the C470 interchange on-ramp. This scope comprises the work necessary to provide traffic operations analysis and concept design for a minimum of four alternatives to address the delays.

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**CONTACTS**

Key individuals related to the administration of this project include:

County Project Manager  
Dan Roberts  
Douglas County  
303.663.6284  
drroberts@douglas.co.us

Basis Principal in Charge  
Jason Bonini  
Basis Partners  
719.235.2901  
jason.bonini@basispm.com

Basis Project Manager (PM)  
David Ziegler  
Basis Partners  
719.467.6407  
david.ziegler@basispm.com

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**SCHEDULE**

Anticipated milestone dates include:

- Notice to Proceed (NTP): May 15, 2025
- Data Collection and Traffic Analysis: June 2025
- Traffic Report, Concept Designs, and Construction Cost Estimate: August 2025

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**A. PROJECT MANAGEMENT AND COORDINATION**

The following tasks will be performed by Basis to administer and coordinate the project.

**1. Project Management and Administration**

Project Management tasks include the work necessary to set up the project financially within the Basis system, track project progress, and manage Basis staff and subconsultants on the project.

Basis will follow the general schedule outlined above and refine the dates after receiving NTP. A detailed project schedule will be created in Microsoft Project and include milestones/deliverables.

**Tasks**

- Project and subconsultant setup
- Financial tracking and invoicing
- Basis QA/QC and staff management
- Subconsultant management

**Deliverables**

- Invoices and progress letters
- Project schedule (PDF)

## **2. Project Coordination**

This task includes the work necessary for Basis to conduct a project kickoff meeting, monthly progress meetings with the County, biweekly internal meetings with the design team, and a milestone review meeting to discuss the traffic report, concept designs, and cost estimate. Basis will plan and facilitate these meetings and produce summaries that will be available upon request.

This task also includes time for as-needed coordination between meetings.

### **Tasks**

- Kickoff meeting (1 meeting assumed)
- Monthly progress meetings with County (3 meetings assumed)
- Biweekly internal team meetings (7 meetings assumed)
- Milestone review meeting (1 meeting assumed)
- As-needed coordination

### **Deliverables**

- Meeting agendas and summaries (PDF)

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## **B. TRAFFIC ANALYSIS & CONCEPT DESIGN**

This phase includes the work necessary to complete a traffic operations analysis and conceptual design alternatives using Bentley OpenRoads Designer (ORD) with primarily CDOT workspace standards.

### **1. Concept Design**

This task includes the work necessary to develop concept-level designs for up to six alternatives. Basis will use the results and recommendations from the traffic analysis to develop alternatives that address the delays at the intersection while seeking to minimize construction costs related to utility relocations, right-of-way (ROW) impacts, stormwater impacts, etc. 11x17 exhibits will be created for each alternative to detail benefits of each.

For design alternatives that require roadway widening, available LiDAR will be utilized to determine if there are concerns with grading or needs for wall structures. Should existing signal equipment be impacted, Basis will determine the required replacements and utilize County Traffic Signal Specifications, as found in the Douglas County Roadway Design and Construction Standards.

The intersection is the high point for drainage in the north, south, and west directions. To the east, the high point is approximately 300 feet east of the intersection. Basis will develop drainage improvements for each alternative, including identification of increased runoff, existing inlet analysis, and proposed inlet sizing. If the alternatives do not increase the impervious footprint, there will be no increase in runoff and the downstream drainage systems will not be impacted. For alternatives where the impervious footprint is increased, analysis will be completed to quantify the increase in runoff to the existing storm systems and if the existing surface inlets can receive the increase. If they cannot, the analysis will identify the additional drainage infrastructure that is needed. As there are a number of storm systems in the area, downstream capacity analyses are not included in this scope.

Construction cost estimates will be produced for each alternative using a streamlined process from Basis that includes a mix of developing quantities for key items and using percentage-based costs for other items.

The alternatives will be coordinated with the County to identify a preferred alternative that can be carried into preliminary design under a separate task order.

### **Tasks**

- Field investigation; record 360° videos of the project site
- Set up CADD (ORD) workspace, border, geographic coordinate systems (GCS), aerial photos
- Establish project design criteria
- Develop up to six alternatives
- Create alternative exhibits
- Calculate quantities and generate concept-level cost estimates
- QA/QC

### **Deliverables**

- Design criteria (PDF)
- Concept designs
  - Scroll plot (PDF)
  - Google Earth KMZ
- Construction cost estimates (XLSX and PDF)

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## **2. Subsurface Utility Engineering (SUE)**

This task includes the work necessary to identify utility conflicts during concept design based on Quality Level (QL) D research and mapping. This work will be completed by Triunity, Inc. (Triunity) as a subconsultant to Basis. **See attached scope from Triunity for detailed information on their tasks and deliverables.**

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## **3. Traffic Analysis**

This task includes the work necessary for traffic data collection and analysis. This work will be completed by Peters and Yaffee (PY) as a subconsultant to Basis. **See attached scope from PY for detailed information on their tasks and deliverables.**

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### **C. EXCLUSIONS**

The following are not included in this scope. This list is not comprehensive. Inclusion of these items will be subject to a change in scope, schedule, and fee.

- Environmental analysis, documentation, or clearance
- Topographic survey
- Boundary survey, legal descriptions, ROW plans, or ROW acquisition services
- Geotechnical engineering
- Public Involvement efforts beyond those noted in the scope above
- Construction phasing methods of handling traffic (MHTs)
- SUE QLB, QLA, or plans
- Utility design
- Irrigation and landscaping design
- Lighting design
- Preliminary or final design
- Bid support services
- Construction management, inspection, and materials testing services
- Other items not specifically included in this scope of work.

**SUBMITTED**  
**Basis Partners**



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David Ziegler, PE  
Basis Project Manager



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Jason Bonini, PE  
Basis Principal in Charge

## SCOPE OF WORK

**Douglas County, CO**

### **Quebec Street / Park Meadows Drive Intersection Improvements Project**

#### **I. PROJECT DESCRIPTION**

This scope of work by Peters and Yaffee (“Consultant”) outlines the design services required to provide Traffic Analysis Services for the Quebec Street / Park Meadows Drive Intersection Improvements Project. The purpose of this scope of work is to provide a final Traffic Analysis Report for concept improvements at the signalized intersection of Quebec Street / Park Meadows Drive Intersection in Douglas County, Colorado, as well as the signalized intersection immediately north and immediately south. This scope of work is based on the request for proposals (Douglas County RFP, Project Number CI 2025-014).

The project limits are as follows:

- The project will occur on South Quebec Street and include the intersections of C470 eastbound ramp, Park Meadows Drive / Business Center Drive, and 8664 South Quebec Street (Shopping Center).

Traffic Analysis Services include:

- Data Collection
- Traffic Analysis & Concept Development Support
- Traffic Analysis Report

## II. PROJECT SCOPE REQUIREMENTS

### Phase 0 – Project Management and Meetings

Consultant will provide project management services and attend meetings (up to four) in support of Traffic Analysis Services.

#### Phase 0 Deliverables:

- N/A

### Phase 1 – Data Collection

Consultant will utilize a traffic data collection subconsultant to obtain Turning Movement Counts (TMC) at the three (3) study area intersections to evaluate traffic operations and we recommend two (2) segment Average Daily Traffic (ADT) counts on S Quebec Street to evaluate capacity and speeds. Based on the existing transportation system and adjacent land uses, we recommend more comprehensive counts beyond the traditional peak period counts. TMCs should be collected Tuesday, Wednesday, Thursday, and Saturday from 6:00 AM to 7:00 PM (13-hour) and ADT counts should be collected during a weekday and Saturday from 12:00 AM to 12:00 AM (24-hour). This will provide a better understanding of traffic operations during both peak and off-peak periods, ensuring that the traffic analysis and recommended solutions will address and improve the existing traffic congestion issues. These recommended counts will be reflected in our fee but can be reduced at the request of the County. There are no schools in the immediate vicinity, so data collection may proceed over the summer, but our team will discuss and confirm this with Douglas County staff to ensure data collection should not occur in September when school resumes.

Consultant will also work with Douglas County and associated stakeholders to obtain crash data.

Consultant will perform a field review to verify existing conditions, evaluate traffic operations, and inform recommended solutions and concept development.

#### Phase 1 Deliverables:

- Turning Movement Counts at 3 intersections
- Average Daily Traffic (Volume/Speed) at 2 locations
- Crash Data Summary

## Phase 2 – Traffic Analysis

Consultant will provide Traffic Analysis and utilize Synchro to understand existing and future conditions for the no-build scenario. The future analysis will look at 5-year and 20-year horizons. This analysis will provide Douglas County staff with an understanding of existing level of service, queuing, impacts to coordination along S Quebec Street, and any issues with signal phasing and timing.

Consultant will complete Intersection and Safety Improvements Evaluation and utilize Synchro to demonstrate the benefits of various improvements and support concept development. Our team will evaluate the full range improvements, from low-cost signal, signing, and striping improvements to high-cost geometric improvements such as widening or intersection reconstruction. This evaluation will provide Douglas County staff with an understanding of improved level of service, queuing, optimized coordination along S Quebec Street, and proposed signal phasing and timing. Our team has extensive experience with Intersection Control Evaluation (ICE) and can evaluate innovative intersection improvements at the request of the County.

### Phase 2 Deliverables:

- Synchro Models (AM Peak and PM Peak) for Existing, No-Build, and Proposed Conditions

## Phase 3 – Traffic Report

Consultant will develop a draft Traffic Report based on the information and analysis developed in Phases 1 and 2. The draft Traffic Report will be submitted to Douglas County staff for review and comment.

Consultant will record reviewer comments, create a comment resolution matrix, and develop a final Traffic Report.

### Phase 3 Deliverables:

- Draft Traffic Report
- Final Traffic Report



### **III. ESTIMATED PHASE DURATION (in business days)**

- 1. Data Collection: 10 days**
- 2. Traffic Analysis: 20 days**
- 3. Traffic Report: 20 days**

### **IV. PROGRESS REPORTING**

Consultant will provide a monthly project progress status report as part of each monthly invoice submittal. Consultant will monitor the budget and schedule for the project duration. In the event of unforeseen delays, Consultant will attempt to mitigate these delays and report on actions taken to maintain the original schedule. Any changes made to the schedule will be explained. Significant activities for the past month and projected activities for the next month will be highlighted in the progress status report.

### **V. NOTICE TO PROCEED**

No work on this project shall be performed until a contract has been executed and a Notice to Proceed is issued that specifically authorizes such work.

### **VI. RE-ALLOCATION OF PROPOSED SCOPE / FEE TASK ITEMS OF WORK**

As may be required, Consultant proposed scope and fee items of work may be re-allocated on an as-needed basis to facilitate overall project needs and objectives that may result as specific tasks are sequentially completed. This includes both Consultant and subconsultant scope and fee items as described herein and further detailed on the attached Fee Estimate included herewith.

## UTILITY SCOPE OF WORK

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Triunity anticipates the following activities as part of the project:

### 1. PROJECT MANAGEMENT

- Miscellaneous project startup, file sharing, and project coordination activities
- 1 1-hour kickoff meeting
- Up to 2 1-hour design coordination meetings
- Monthly progress reports and invoicing.

### 2. SUBSURFACE UTILITY ENGINEERING AND UTILITY PLANS

Subsurface Utility Engineering is not anticipated with this project. All utility mapping is anticipated to meet ASCE 38-22 Quality Level D.

- Obtain utility location maps from the utility owners which identify utility facility locations in the project area.
  - Submit a notification to Colorado 811 for a SUE required project.
  - Contact local utility providers to request records.
  - Collect known data on utilities within project area – (key maps, electronic files, as-built drawings, GIS data, etc.).
- Prepare an electronic CAD deliverable of the existing utility mapping meeting ASCE 38-22 Quality Level D.

#### Deliverables:

Utility base file, and utility owner mapping (811).

#### Exclusion/Assumptions

- Engineered design of new or relocated utilities is not included.
- Sanitary services, abandoned utilities, irrigation systems, septic systems, underground storage tanks will be shown as Quality Level D if they are shown on existing maps, as-builts or provided records.
- Non-metallic, untraceable utilities, unmapped utilities, abandoned utilities, thrust blocks, traffic loops, irrigation systems, septic systems, underground storage tanks, and drain tiles are excluded unless records are provided.
- Test Holes are not included in this project.
- Traffic Control is not anticipated for this project.

Figure 1 - Anticipated QLD Mapping Limits



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1	Project Management and Coordination	214 days	Thu 5/15/25	Wed 3/11/26		
2	Notice to Proceed (NTP)	0 days	Thu 5/15/25	Thu 5/15/25		
3	Kickoff Meeting	0 days	Fri 5/16/25	Fri 5/16/25	2FS+2 days	
4	Monthly Project Meetings	175 days	Wed 6/18/25	Wed 2/18/26		
14	Biweekly Internal Coordination Meetings	200 days	Wed 6/4/25	Wed 3/11/26		
36	Traffic Analysis and Concept Design	63 days	Mon 5/19/25	Wed 8/13/25		
37	Subsurface Utility Engineering (SUE)	45 days	Mon 5/19/25	Fri 7/18/25		
38	Submit notification to Colorado 811	15 days	Mon 5/19/25	Fri 6/6/25	3	
39	Contact local utility owners for records	10 days	Mon 6/9/25	Fri 6/20/25	38	
40	Collect known utility data within project area	10 days	Mon 6/9/25	Fri 6/20/25	38	
41	Provide QLD existing utility file	10 days	Mon 6/23/25	Fri 7/4/25	39,40	
42	Identify utility conflicts	10 days	Mon 7/7/25	Fri 7/18/25	41	
43	Traffic Analysis	60 days	Mon 5/19/25	Fri 8/8/25		
44	Data collection	10 days	Mon 5/19/25	Fri 5/30/25	3	
45	Existing conditions and no-build analyses	10 days	Mon 6/2/25	Fri 6/13/25	44	
46	Proposed improvements analysis	10 days	Mon 6/16/25	Fri 6/27/25	45	
47	Draft Traffic Report	10 days	Mon 6/30/25	Fri 7/11/25	46	
48	Final Traffic Report	10 days	Mon 7/28/25	Fri 8/8/25	66	
49	Concept Design	55 days	Mon 5/19/25	Fri 8/1/25		
50	ORD setup	2 days	Mon 5/19/25	Tue 5/20/25	3	
51	Design criteria	5 days	Wed 5/21/25	Tue 5/27/25	50	
52	Field investigation and 360 video	1 day	Mon 5/26/25	Mon 5/26/25	3FS+5 days	
53	Alternative development	15 days	Mon 6/30/25	Fri 7/18/25	46	
54	Alternative exhibits	10 days	Mon 7/14/25	Fri 7/25/25	53FS-5 days	
55	Quantities & cost estimates	5 days	Mon 7/28/25	Fri 8/1/25	54	
56	QA/QC	8 days	Mon 8/4/25	Wed 8/13/25		
57	Detail Check	5 days	Mon 8/4/25	Fri 8/8/25	55	
58	Constructability Review	2 days	Mon 8/11/25	Tue 8/12/25	57	
59	PM Review	1 day	Wed 8/13/25	Wed 8/13/25	58	
60	Concept Design Submittal	0 days	Wed 8/13/25	Wed 8/13/25	48,59	
61	30% Design & Survey	50 days	Thu 8/28/25	Wed 11/5/25	68	
62	90% Design	50 days	Thu 11/20/25	Wed 1/28/26	70	
63	Construction Plans	20 days	Thu 2/12/26	Wed 3/11/26	72	
64	Milestones / Deliverables	173 days	Fri 7/11/25	Wed 3/11/26		
65	Draft Traffic Report	0 days	Fri 7/11/25	Fri 7/11/25	47	
66	County Traffic Report Review	10 days	Mon 7/14/25	Fri 7/25/25	65	
67	Concept Design Submittal	0 days	Wed 8/13/25	Wed 8/13/25	60	
68	Concept Design Review Meeting	0 days	Wed 8/27/25	Wed 8/27/25	67FS+10 days	
69	30% Design Submittal	0 days	Wed 11/5/25	Wed 11/5/25	61	
70	30% Review Meeting	0 days	Wed 11/19/25	Wed 11/19/25	69FS+10 days	
71	90% Design Submittal	0 days	Wed 1/28/26	Wed 1/28/26	62	
72	90% Review Meeting	0 days	Wed 2/11/26	Wed 2/11/26	71FS+10 days	
73	Construction Plans Submittal	0 days	Wed 3/11/26	Wed 3/11/26	63	

