

AMENDATORY DESIGN SERVICES AGREEMENT

THIS AMENDATORY DESIGN SERVICES AGREEMENT is entered into between the **CITY AND COUNTY OF DENVER** (the “City”), a municipal corporation of the State of Colorado, and **PARSONS TRANSPORTATION GROUP INC.** (the “Design Consultant” or “Consultant”), an Illinois corporation authorized to do business in Colorado, whose address is 1776 Lincoln St., Suite 600, Denver, Colorado 80203, (collectively, “the Parties”).

RECITALS:

A. The Parties entered into a Design Services Agreement dated October 21, 2020, (the “Agreement”) to perform, and complete all of the services and produce all the deliverables set forth on Exhibit A, the Scope of Work/Budget, to the City’s satisfaction.

B. The Parties wish to amend the Agreement to increase the fee for basic services, increase the reimbursable expenses maximum, increase the additional services maximum, increase the maximum contract amount, add section 2.02(h), extend the term, update Section 5.06 - No Discrimination in Employment and amend the scope of work, budget, key personnel, rates and expenses.

NOW THEREFORE, in consideration of the premises and the Parties’ mutual covenants and obligations, the Parties agree as follows:

1. Section 2 of the Agreement entitled “**DESIGN CONSULTANT’S SERVICES**”, Subsection 2.02, “**Professional Services.**”, part (h), is hereby added in its entirety as:

“(h) The City may receive state and/or federal funding or funding distributed by the Colorado Department of Transportation for the Project. These funds may be used to pay for services provided by the Design Consultant. Design Consultant agrees to comply with any additional requirements related to such funding.”

2. Section 3 of the Agreement entitled “**COMPENSATION, PAYMENT, AND FUNDING**”, Subsection **3.01** “**Fee for basic services.**” is hereby deleted in its entirety and replaced with:

“**3.01 Fee for basic services.** The City agrees to pay the Design Consultant, as full compensation for its basic services rendered hereunder, a fee not to exceed **TWENTY-TWO MILLION ONE HUNDRED EIGHTY-NINE THOUSAND ONE HUNDRED SIXTY-FOUR DOLLARS AND ZERO CENTS (\$22,189,164.00)** for all basic services in accordance with the scope of services set forth in **Exhibits A and A-1** and the corresponding billing rates and project budget stated in **Exhibits B and B-1**. The rates in **Exhibit B** shall apply to those services set forth in **Exhibit A** while the rates in **Exhibit B-1** shall apply to those services set forth in **Exhibit A-1**. The amounts budgeted for phases may be increased or decreased, and the amounts

allocated for services and expenses adjusted, upon written approval of the Director or his designee, and subject to the Maximum Contract Amount stated in this Section 3.”

3. Section 3 of the Agreement entitled “**COMPENSATION, PAYMENT, AND FUNDING**”, Subsection **3.02** “**Reimbursable Expenses.**” is hereby deleted in its entirety and replaced with:

“**3.02 Reimbursable Expenses.** Except for those reimbursable expenses specifically identified in **Exhibit A**, or approved in writing by the City as reasonably related to or necessary for the Design Consultant’s services, all other expenses shall be included in the Design Consultant’s fee and will not be reimbursed hereunder. The maximum amount to be paid for all reimbursable expenses under this Agreement is **ONE MILLION ELEVEN THOUSAND EIGHT HUNDRED FIFTY-ONE DOLLARS AND ZERO CENTS (\$1,011,851.00)** unless an additional amount is approved by the Director or his designee in writing, subject to the Maximum Contract Amount stated herein. Unless this Agreement is amended in writing according to its terms to increase the Maximum Contract Amount, any increase in the maximum amount of reimbursable expenses will reduce the Design Consultant’s maximum fee amount accordingly. The rates in **Exhibit B-1** shall apply to reimbursable expenses authorized and approved after the effective date of this Amendatory Agreement.”

4. Section 3 of the Agreement entitled “**COMPENSATION, PAYMENT, AND FUNDING**”, Subsection **3.03.** “**Additional Services.**” is hereby deleted in its entirety and replaced with:

“**3.03 Additional Services.** If pre-approved additional services are performed by the Design Consultant, the City agrees to pay the Design Consultant for such additional services in accordance with Section 2.08. The maximum amount to be paid by the City for all additional services under this contract is **NINE HUNDRED FORTY THOUSAND DOLLARS AND ZERO CENTS (\$940,000.00)**. The rates in **Exhibit B-1** shall apply to additional services authorized and approved after the effective date of this Amendatory Agreement.”

5. Section 3 of the Agreement entitled “**COMPENSATION, PAYMENT, AND FUNDING**”, Subsection **3.05** (a), “**Maximum Contract Amount.**” is hereby deleted in its entirety and replaced with:

“**3.05 Maximum Contract Amount.**

(a) Notwithstanding any other provision of the Agreement, the City’s maximum payment obligation will not exceed **TWENTY-FOUR MILLION ONE HUNDRED FORTY-ONE THOUSAND FIFTEEN DOLLARS AND ZERO CENTS (\$24,141,015.00)** (the “Maximum Contract Amount”). The City is not obligated to execute an Agreement or any amendments for any further services, including any services performed by Design Consultant beyond that specifically described in **Exhibit A and Exhibit A-1**. Any services performed beyond those set forth therein are performed at Design Consultant’s risk and without authorization under the Agreement.”

6. Section 4 of the Agreement entitled “**TERM AND TERMINATION**”, subsection 4.01 “**Term.**” is hereby deleted in its entirety and replaced with:

“**4.01 Term.**”

The Agreement will commence on **November 1, 2020**, and expire on **December 31, 2028**, unless sooner terminated, upon final completion of the Project.”

7. Section 5 of the Agreement entitled “**GENERAL PROVISIONS**”, subsection 5.06 “**No Discrimination in Employment.**” is hereby deleted in its entirety and replaced with:

“**5.06 No Discrimination in Employment.** In connection with the performance of work under the Agreement, the Design Consultant may not refuse to hire, discharge, promote, demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, ethnicity, citizenship, immigration status, gender, age, sexual orientation, gender identity, gender expression, marital status, source of income, military status, protective hairstyle, or disability. The Design Consultant shall insert the foregoing provision in all subcontracts.”

8. All references in the original Agreement to **Exhibit A** now refer to **Exhibit A** and **Exhibit A-1**. **Exhibit A-1** is attached and incorporated by reference herein.

9. All references in the original Agreement to **Exhibit B** now refer to **Exhibit B** and **Exhibit B-1**. **Exhibit B-1** is attached and incorporated by reference herein.

10. As herein amended, the Agreement is affirmed and ratified in each and every particular.

11. This Amendatory Design Services Agreement will not be effective or binding on the City until it has been fully executed by all required signatories of the City and County of Denver, and if required by Charter, approved by the City Council.

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Contract Control Number: DOTI-202265292-01 [202055954-01]
Contractor Name: PARSONS TRANSPORTATION GROUP INC.

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of:

SEAL

CITY AND COUNTY OF DENVER:

ATTEST:

By:

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

Attorney for the City and County of Denver

By:

By:

By:

Contract Control Number:
Contractor Name:

DOTI-202265292-01 [202055954-01]
PARSONS TRANSPORTATION GROUP INC.

By: DocuSigned by:
Anthony R. Marcello
1A114E710AB34AC... _____

Name: Anthony R. Marcello
(please print)

Title: Vice President
(please print)

ATTEST: [if required]

By: _____

Name: _____
(please print)

Title: _____
(please print)

COLFAX BRT FINAL DESIGN

Scope of Work

Project Background

After years of studying East Colfax Avenue and gathering substantial community input, the City and County of Denver (City) is currently completing preliminary engineering and National Environmental Policy Act clearance (PE/NEPA) for a center-running bus rapid transit (BRT) project from Broadway to Yosemite with a dedicated transit lane in each direction. The project includes new and enhanced transit stations, service amenities, improved pedestrian and bike connections, streetscape improvements, and placemaking opportunities. West of Civic Center Station to Denver Union Station, BRT will operate in the existing side-running transit lanes along 15th and 17th Streets. East of Yosemite to I-225, BRT will operate as side-running in mixed flow traffic lanes.

Upon implementation, the project will reduce transit travel time by up to 15 minutes, increase transit ridership, provide more affordable and reliable access to over 250,000 jobs and community services along the corridor, improve pedestrian safety, and create exciting streetscape, placemaking and economic development opportunities. The project corridor and station locations are shown on Figure 1.

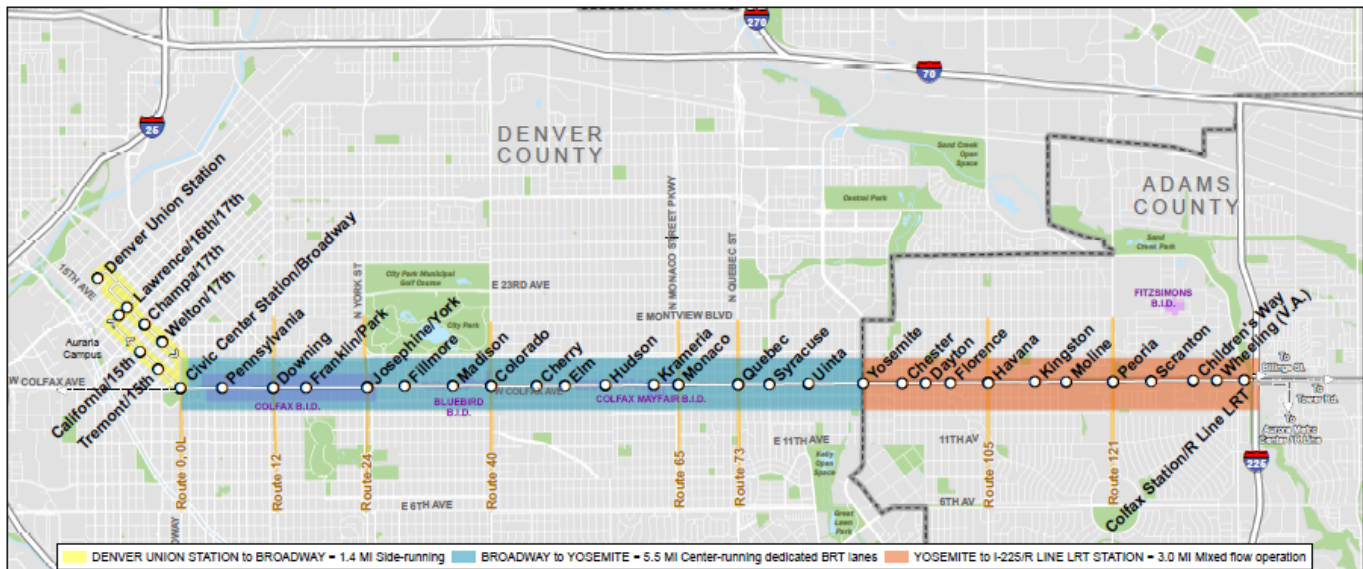


Figure 1 – Project Corridor and Station Map

1.0 Project Management

1.1 PROJECT MANAGEMENT

The role of Project Management is to ensure the timely and effective delivery of the contract design scope. This involves day-to-day management of an adopted schedule and budget, using processes agreed to and understood by all parties. Key elements include directing and managing the team's activities, ensuring quality control, participating in meetings, providing proper project documentation and communication protocol, and preparing monthly progress reports and invoices.



1.2 PROJECT ORGANIZATION

The Consultant's Principal-in-Charge (PIC) – Phil Hoffmann - will make sure the design team has the required resources to deliver a successful project for the City. The Consultant's Project Manager (PM) – Jen Wood, PE - will oversee the design team and manage the design schedule and timely completion of technical deliverables for the City. Jen and Phil will simply reverse roles from the PE/NEPA phase so the final design will be managed by a Professional Engineer licensed in Colorado. The Consultant will directly assist the City's PM and Owner's Representative (OR) to support coordination between City departments, stakeholders, and agencies that will be involved in the project. Our management team will report to Jen, who will report directly to the City management team. She will focus her efforts on design phase scope, schedule, and budget control and collaborate with the Construction Manager/General Contractor (CMGC), stakeholder groups, and the public involvement team. Amber Haines will continue her role as the Consultant's Deputy Project Manager (DPM). She will manage design team project control activities, assist with internal communication, oversee project coordination tasks, and manage subconsultant coordination. James Moore, PE will remain Design Manager leading all design coordination and progress through successful delivery of final design. Tony Marcello, PE will support Jen and James with design and constructability oversight and troubleshooting, as needed. Lindsey Sousa will continue her role as Environmental Lead and oversee any environmental mitigation requirements.

The Consultant's approach includes spreading the work among Minority/Women Business Enterprise (MWBE) subconsultant firms to fully engage their expertise. The Consultant is proposing to keep five MWBE firms from the PE/NEPA phase through final design and add three new MWBE firms. With eight MWBE subconsultants, the Consultant will meet the 25 percent MWBE contract goal. The draft project organization chart is shown on the following page on Figure 2.

1.3 PROJECT MANAGEMENT PLAN

The Consultant will manage the East Colfax BRT design team in close collaboration with the City's PM, the OR, and the CMGC. The Consultant will:

- Provide solid upfront understanding of the City's expectations, scope and budget, including a clear definition of what a successful project will be, so the goal is always in mind.
- Provide frequent/ongoing communication with the City, OR, CMGC, RTD, other stakeholders and Consultant team members throughout the project.
- Provide careful and timely resolution of project issues and management of expectations as they arise to minimize schedule delays and resulting impacts to the budget.
- Provide timely reviews of project deliverables with both the City and stakeholders to minimize impacts to the schedule and budget.
- Provide monthly reviews with the City on the project status, deliverables, and budget, with a discussion about any needed adjustments to task durations or budgets as appropriate.
- Develop a design schedule, in coordination with the City, the OR, and the CMGC, for the Project.
- Assist as needed with establishing design criteria and assess and address project risks.
- Support cost estimating and construction schedule development throughout the design process (at each major Project milestone as well as each time a major Project change occurs)
- Prepare final design drawings and specifications in coordination with City standards and the CMGC, and coordinate design submittals and reviews with the OR.
- Provide design services during construction.

The Consultant will be in frequent contact with the City's Project Manager, the OR, and the CMGC throughout the project duration, including monthly coordination meetings to review progress and upcoming activities, and to identify any potential technical or project-related issues, including slippage in the schedule that could impact the budget, with a plan to resolve such issues.



Deliverable: Design team Project Management Plan (PMP) that will include a communications plan, scope of work, budget, schedule, Design Quality Management Plan (DQMP), document control, risk management plan, and coordination and implementation plan. The PMP will reference or incorporate relevant plans or documents developed by the City, OR, or CMGC.

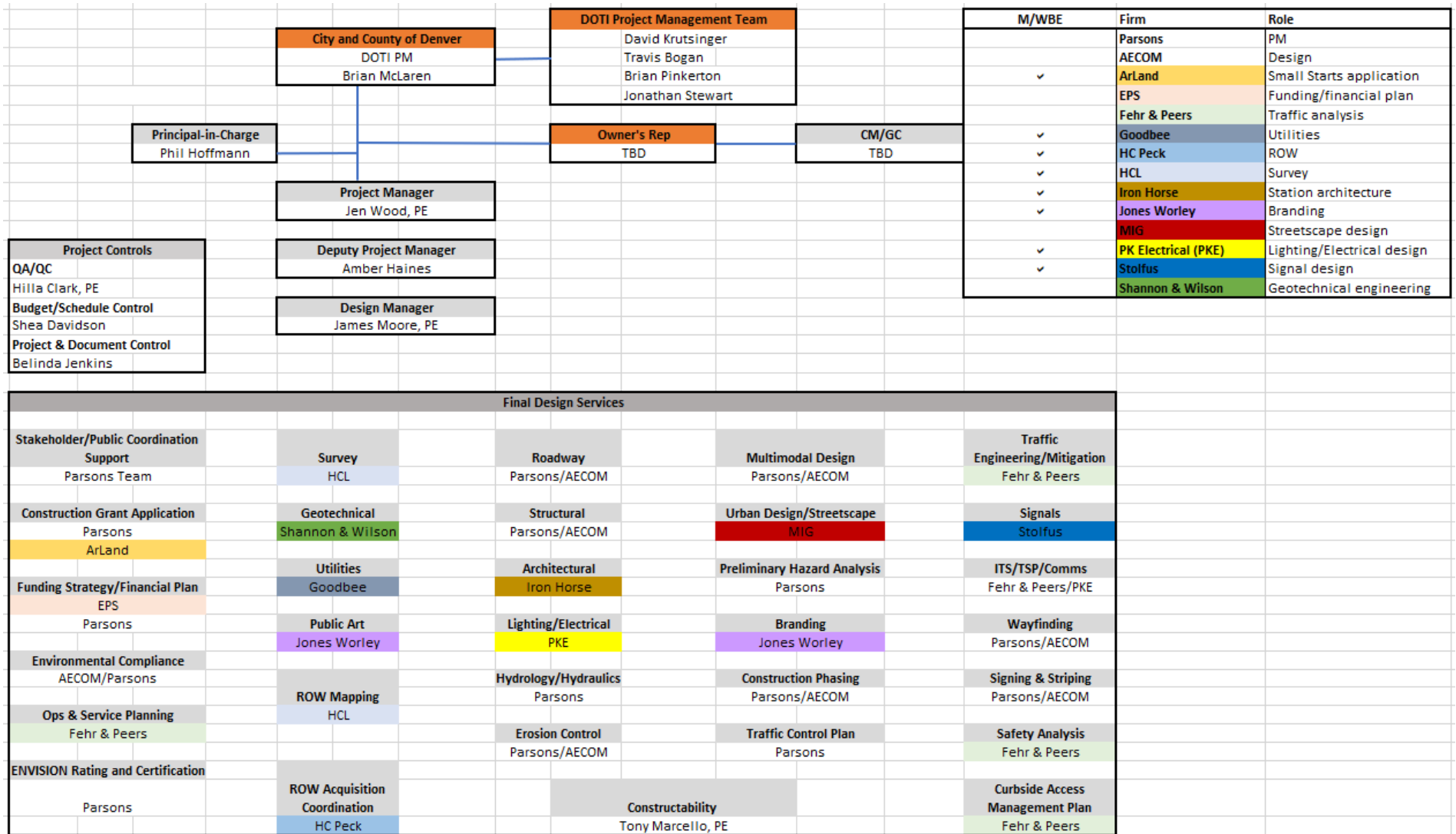


Figure 2 – Final Design Organization Chart



1.4 DESIGN SCHEDULE

The anticipated project delivery schedule is shown below on Figure 3. This schedule demonstrates construction starting after FTA Small Starts Grant funding is available. Should other funds become available prior to this, early construction packages may commence during the final design phase (to be determined by the City and the CMGC).

| Activity | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | | 2026 | | | |
|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Financial Plan | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts project rating application | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Annual Report on Funding Recommendations | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Design (18 - 21 months) | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts construction grant application | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Annual Report on Funding Recommendations | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts Grant Negotiations/Approval | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts Grant Appropriation/Availability of Funds | | | | | | | | | | | | | | | | | | | | | | | | |
| Construction, Bidding, Bus acquisition, Testing (24 months) | | | | | | | | | | | | | | | | | | | | | | | | |
| Revenue Operations (start in July 2026) | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 3 – Proposed Project Delivery Schedule

Deliverable: Design Schedule (updated as needed)

1.5 RISK MANAGEMENT

A BRT Risk Management Plan has been completed for the project. The Consultant will be a member of a multidisciplinary Risk Management Group that will include the City, OR, and CMGC. Risk assessment and management includes identification of risks, evaluation/measurement of risks, analysis of risk treatment alternatives (i.e., avoidance, prevention, mitigation, cost control, and insurance), assignment of risk and monitoring/evaluating the performance of measures implemented.

1.6 DESIGN QUALITY MANAGEMENT PLAN

The Consultant will develop and submit for the City’s acceptance a DQMP covering Consultant activities for: general tasks; system integration; intra-discipline and inter-discipline review; design workshops; engineering design; the City’s design review process; and CMGC design/construction coordination. The DQMP will describe project controls to be implemented by the Consultant to verify compliance with the project procedural requirements. The requirements of the Consultant’s DQMP and supporting procedures will apply to all subconsultants. Quality assurance and quality control requirements identified in the DQMP will address:

- Design requirements as specified by the City, RTD, CDOT, and FTA (and others as applicable)
- Accuracy and reducing the need for rework
- Interdisciplinary oversight to make sure documents capture accurate details that integrate appropriately with the larger overall concept of the project
- Constructability and maintainability

Deliverable: Design Quality Management Plan

1.7 PROGRESS REPORTS AND INVOICING

The Consultant will establish and maintain a system of cost accounts pertaining to Consultant costs under the contract, ensure that the cost accounting and related invoicing conform to the project’s Work Breakdown Structures (WBS), and provide detailed billing of hours worked and references to the Monthly Progress Report for tasks accomplished. The



Consultant will process subconsultant and vendor invoices and assemble these for monthly billing to the City. The Consultant will provide reports with the level of detail and summary that are adequate for proactive management control and project management by the City and Consultant.

Deliverable: Monthly invoices and progress reports

2.0 Coordination, Communication, and Outreach

2.1 TEAM COORDINATION

The Consultant will support the program Communication Plan (to be developed by the OR), including communication with stakeholders, agencies, jurisdictions, and the public. The Communication Plan will include procedures, timing, methods, and triggers to communicate relevant project information about project issues, status, and decisions. The Consultant is currently meeting bi-monthly with the public involvement teams from the City, RTD, City of Aurora, and CDOT. The Consultant plans to continue participation in these meetings as needed during final design.

2.1.1 Meetings

Design Team Kickoff Meeting: The Consultant will facilitate and lead a design team kickoff meeting to introduce new team members, review the proposed design schedule and important milestones, establish communication protocols, and discuss expected scope coordination between firms as relevant. Scope assumes a 4-hour meeting with 10 attendees from Parsons.

Program Kickoff/Partnering Meeting: The Consultant will participate in a program kickoff meeting that will introduce the project and project team (including, but not limited to, the City, RTD, OR, Consultant, and CMGC). This meeting will emphasize the benefits of team building and partnering through CMGC project delivery. This scope assumes one eight-hour meeting with 10 attendees from Parsons.

Design and Construction Innovation Workshop: Design team to present preliminary design to the CMGC. Conduct workshop to evaluate the preliminary design and discuss CMGC innovations and design refinements. Implement a Value Engineering (VE) process to identify design and construction efficiencies. This scope assumes two eight-hour meetings with six attendees from Parsons.

Project Management Team: The Consultant will participate in regularly scheduled project management team (PMT) meetings, led by the OR. This scope assumes 21 two-hour meetings over 21 months, with four attendees from Parsons. The Consultant will attend and participate in the following anticipated meetings (led by the OR):

- **Risk Workshop:** At 60%, 90%, and 100% design completion
- **Design Review Meetings:** At 60% and 90% design completion
- **Cost Model Review Meetings:** At 60%, 90%, and 100% design completion
- **Schedule Review Meetings:** At 60%, 90%, and 100% design completion
- **Envision Workshops (2)**

Design/Construction Coordination Meetings: The Consultant will lead regularly scheduled design Task Force meetings to review design development and engage key stakeholders and project partners for input. Task force teams will be broken out by discipline to facilitate relevant participation by individuals and agencies. The Consultant will lead a bi-weekly Interdisciplinary Task Force Meeting that will include leads from the discipline Task Force teams, the City, OR, and CMGC. To facilitate design and construction coordination, it is anticipated the CMGC will attend all Task Force meetings.

2.2 STAKEHOLDER COORDINATION

The Colfax BRT stakeholder coordination effort will continue to require intentional engagement of the diverse communities represented within the project area. The following graphic represents the meeting cycle that the Consultant led through the PE and NEPA phase of the project. The consultant anticipates a similar process through the design phase with the intent to maintain consistent communication with the project stakeholders. The objective is that milestone-driven technical content is shared first with the Technical Working Group (TWG). The Consultant will modify and augment the content accordingly to then present to the Stakeholder Task Force, and finally the general public.

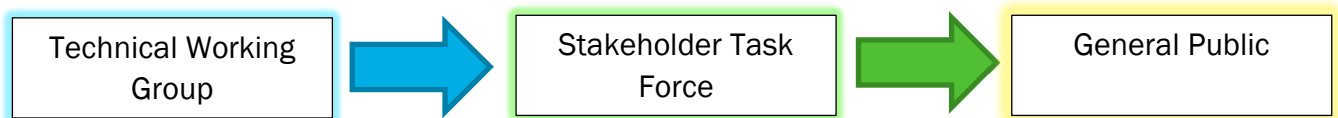


Figure 4 – Stakeholder and Public Meeting Cadence

The Technical Working Group will include the City, the OR, the CMGC, RTD, City of Aurora, CDOT, DRCOG, and FTA. The Consultant will support TWG meetings during the final design phase. This scope assumes three (3) TWG meetings.

The Stakeholder Task Force includes the Colfax, Bluebird, and Mayfair Business Improvement Districts (BIDs), neighborhood organizations, and other community groups. The Consultant will support stakeholder task force meetings during the final design phase. This scope assumes three (3) stakeholder task force meetings.

Deliverables: Design content (plans, details, renderings, graphics) to support stakeholder meetings and communications

2.3 PUBLIC OUTREACH

It is important to continue to include the community in the design process for this project. The Consultant team will support a multifaceted outreach program to ensure community inclusion in the design process, with the goal of working toward broad consensus on the project design and components, in partnership with City and RTD staff.

The Consultant will support public outreach activities led by the OR. This includes preparing graphics and plans to communicate design development, participating in public outreach events, and responding to public input. This scope assumes three (3) public outreach meetings during the final design phase. At this point, the meetings will remain virtual. However, as the pandemic proceeds to lift, in-person opportunities will be considered, and safety concerns evaluated as each meeting is scheduled.

At the conclusion of the project, the Consultant will support the development of a report documenting the full public involvement and communication process and how it was used to support the design process. This report will summarize the online engagement tools, including the virtual engagement hub, and results, project meetings, public questions, comments, and conclusions reached at these meetings, samples of collateral material that were employed throughout the process, and feedback received through the project webpage.

The Consultant team will be available to support other public outreach efforts where appropriate, such as speaking about the project at community events, making presentations to community groups, etc. This scope assumes up to six (6) events throughout the duration of the final design process.

Deliverables:

- Public Involvement Plan update (from PE/NEPA phase)
- Design content (plans, details, renderings, graphics) to support public involvement meetings and communications



- Response to public comments

3.0 One Build Coordination

3.1 ONE BUILD COORDINATION

Denver's Project Lifecycle Workflow (PLW) and One Build implementation strategies consider potential impacts to all assets within the City right-of-way (ROW) when planning, designing, validating, and implementing projects. This ensures City funds are spent efficiently and impacts to residents, businesses, and the traveling public are reduced. The OR will lead this task and support the City's comprehensive approach to project implementation by integrating this project in the PLW in general, and the One Build module specifically, to coordinate with concurrent projects taking place in the same geographic area. The Consultant will coordinate with the OR and with the City Departments including Community Planning and Development (CPD), Wastewater, Utilities, Parks and Recreation, and Forestry on planned projects within the project area through final design and construction. During the PE/NEPA phase, the Consultant is identifying opportunities to combine construction periods and maintenance of traffic plans for adjacent planned projects that are not part of the BRT project to minimize construction and local access impacts on the neighborhoods, local businesses, and the traveling public.

3.2 MULTIMODAL CONNECTIONS

The Consultant will coordinate with the OR who will lead this sub-task. The Consultant is currently evaluating multimodal connections for pedestrians, bicycles, and transit to the BRT, and opportunities to improve safe access and connectivity. The Consultant understands the City's goals for Denver Moves: Bicycles Program are to understand and prioritize multimodal concerns and implement a system of bikeways. The Consultant will continue to monitor and coordinate with the Community Transportation Networks that are developing as part of Denver Moves: Bicycles Program and identify One Build opportunities that integrate bicycle improvements with the BRT development.

The Consultant has identified transit connections that currently interface with the Colfax BRT project, with the highest connection activity located at Denver Union Station, Civic Center, and Colfax (R line) Station at I-225. The Consultant will continue to coordinate with RTD as well as monitor and coordinate with Denver Moves: Transit Part 2 and Denver Moves Everyone 2050 for One Build opportunities to further integrate with transit projects.

3.3 STREETSCAPING

The 2017 Elevate Denver Bond Program included \$20 million for pedestrian safety and streetscape improvements, of which \$15.5 million may be available for the East Colfax BRT project. The Consultant is currently working on the preliminary design of these items as they directly tie to the Colfax BRT project in terms of station access, pedestrian safety, and the overall BRT corridor enhancement. The Consultant will continue to coordinate with the City and BIDs on other streetscape opportunities to incorporate into final design, including opportunities to implement early improvements.

3.4 TRAFFIC MITIGATION FOR ADJACENT STREETS

The overall traffic analysis was completed during the PE/NEPA phase. Based on current traffic analysis efforts, there will likely be additional diverted traffic on adjacent streets as a result of removing two general purpose lanes from Colfax, and the project team is currently evaluating potential mitigation measures on these adjacent streets. Through the modeling effort, these impacts were established, and mitigation strategies were identified. After coordination with FTA, it was determined the mitigation strategies in need of design and NEPA clearance during the final design phase include:

- Park/17th – Restripe as dual south and eastbound left turn



- York/Josephine/13th/14th – Actuated-coordinated signal control
- Colfax/Elizabeth – Add westbound right turn pocket
- Colorado/17th – Add second northbound left
- Colorado/13th – Add second northbound left
- Quebec/17th – Protected-permitted eastbound left phasing
- Colfax/Yosemite – Protected-permitted eastbound left/westbound left phasing

The Consultant will run up to 20 scenarios of the Colfax Avenue BRT TransModeler model to answer questions specific to the Colfax BRT project, mitigation measures associated with the Colfax BRT project, or other projects in the study area. As a part of this task, we assume that we will document the results of our analysis in up to five technical memorandums. We assume that no new data collection or re-calibration of the model is necessary.

4.0 Funding Support

The Consultant will work closely with the City, OR, and RTD to ensure sufficient funding is identified to support the capital and operations and maintenance (O&M) costs of the project. This will include available federal, state, and local funding sources.

4.1 FTA SMALL STARTS COORDINATION

The Consultant will work closely with the City, OR, and RTD to pursue a Federal Transit Administration (FTA) Small Starts Capital Investment Grant (CIG), in continuation of efforts completed through the PE/NEPA process and to complete the Project Development process that was formally approved by FTA in November 2021. This task will include ongoing coordination with the OR, City, and RTD and periodic meetings with FTA to discuss project status and identify required actions through each step of the Project Development progression, grant application advancement, and the CIG negotiation effort. These FTA-related efforts will be synchronized with the final design and CMGC project delivery process. The Consultant will assist the coordination with FTA Region VIII and Washington, DC Headquarters offices throughout the process.

Deliverable: Summaries of meeting notes documenting all the City/RTD and FTA funding coordination meetings

4.2 CONSTRUCTION GRANT APPLICATION AND NEGOTIATION SUPPORT

The FTA Small Starts rating application developed as part of the current PE/NEPA contract will be submitted in August 2022 based on the preliminary engineering design plans and cost estimate. The Consultant will continue to advance the project design to the point of at least 60% plans and provide all quantities so the OR and CMGC can develop the independent cost estimate in current year and year-of-expenditure (YOE) dollars in the FTA Standard Cost Category (SCC) spreadsheets for inclusion with the construction grant application to be submitted in August 2023.

The Consultant will work closely with the OR, City and RTD to develop the construction grant application including all FTA templates and supplemental materials. The construction grant application will build on and refine the Small Starts rating application developed under the PE/NEPA contract, based on FTA feedback and comments.

RTD will provide all STOPS (Simplified Trips-on-Project Software) model outputs required in the Small Starts application templates, including mobility improvements, environmental benefits based on VMT reductions, cost effectiveness, and congestion relief based on new linked transit trips. RTD will also provide the financial information required for the Local



Financial Commitment portion of the application as detailed in Task 4.3. The Consultant will provide the land use and economic development data/writeups for the application with input from the City.

Deliverable: FTA Small Starts grant application and backup documentation

4.3 FINANCIAL PLAN

The Consultant will work closely with the City, OR, and RTD to develop a final 20-year Financial Plan that will accompany the Small Starts construction grant application that meets all FTA requirements. The final Financial Plan will build on the draft Financial Plan developed in support of the Small Starts rating application, based on FTA feedback and comments. The Financial Plan will include the following elements:

Financial Plan Outline

1. Introduction
 - a) Description of the Project Sponsor and Funding Partners
 - b) Description of the Project
 - c) Summary of the Financial Plan
2. Capital Plan
 - a) Proposed Project Capital Plan
 - b) Agency-Wide Capital Plan
3. Operating Plan
 - a) Operating Revenues
 - b) Operating and Maintenance Costs
 - c) Agency-Wide Operating Plan
4. Cash Flow Analysis
 - a) Three-Year Cash Flow Projection
 - b) Financial Evaluation
5. Appendix (Reference Supporting Documentation)
 - A. Summary of Regional Economic Forecasts
 - B. Summary of Financial Condition of Project Sponsor
 - C. Summary of Bus and Rail Fleet Management Plans

RTD will provide all of the agency's financial information as required by FTA such as 3 years of audited financial statements and compliance reports, and the City will provide details for GO Bond funding and any other local match funding for the project. RTD will also provide information on other potential Federal funding to support the project, e.g., for vehicle purchase.

Deliverable: Financial Plan

4.4 FTA "BEFORE" STUDY & DOCUMENTATION

As strongly encouraged by FTA for Small Starts projects, the City and the OR will prepare a "before" study for the Colfax BRT project prior to start of revenue operations (expected in Summer of 2026) with RTD staff assistance. In contrast with the "prediction" milestones that preserve the sponsor's predictions of project outcomes, the "before" study deals only with data on actual conditions in the real world prior to start of revenue operations. The Consultant will collect data on transit service levels, operating and maintenance costs, and transit ridership before the project opens to service (or, if construction will substantially affect service and ridership, before construction begins). These data provide the basis for determining changes caused by the project through comparisons with the "after" data and report that will be prepared by RTD approximately two years after start of revenue operation. Because the project and its final costs do not exist at this point in time, the data do not include anything related to the project's physical scope or capital costs. With assistance from RTD and the City the OR will collect and document the data, prepare a milestone archive, and provide review and



final copies to FTA. Details will be discussed with FTA prior to initiating this task. The Consultant will support development of the Before Study if desired as an optional task.

5.0 Environmental Compliance

5.1 BUSINESS ACCESS DURING CONSTRUCTION

The Consultant is currently determining all potential environmental resource impacts and is subsequently developing appropriate mitigation plans as needed, along with next steps, to complete FTA approval of the NEPA Categorical Exclusion (CatEx) process. The Consultant will manage and ensure compliance with all mitigation plans during final design and construction, including access to businesses along Colfax Avenue.

As discussed previously under Section 3.3, the traffic mitigations required along adjacent streets will be evaluated for any potential NEPA resource impacts and will be documented within the CatEx.

5.2 LOCATE TROLLEY TRACKS

One potential resource that will be explored further during the final design phase includes the potential presence historic trolley lines within the project area. When the Denver trolley system was discontinued in 1951, the tracks were paved over in-situ and may still exist within the pavement of Colfax Avenue within the project area. Ancillary equipment and small structures serving the trolley lines were typically removed. Trolley tracks are considered potentially historic, and their removal is typically considered an adverse effect under Section 106. At this time, the removal of trolley tracks is not anticipated; however, tracks may be encountered during construction. Should tracks be discovered the project will leave them in place or work with FTA and SHPO on the appropriate actions, whether that be to repurpose them within the corridor or another preferred mitigation measure. If the decision is to leave them in place, the location will be photo-documented and treatment of the tracks will be communicated to FTA and SHPO.

In reviewing CDOT's Trolley Track Report, their GIS mapping tool, and historical information, an existing track envelope has been identified along East Colfax Avenue. The CDOT report and GIS do not provide a confident horizontal and vertical level of detail. At locations where excavation is proposed within the assumed track envelope, geophysical techniques and nondestructive testing will be used to detect the approximate horizontal and vertical position of any existing tracks. Magnetic detection and Ground Penetrating Radar (GPR) are two examples of geophysical techniques that have been used successfully on other projects to confirm the presence (or absence) of buried tracks.

5.3 HAZARDOUS MATERIALS MANAGEMENT PLAN

During the NEPA phase, the Consultant performed a GeoSearch of the project for hazardous materials and delivered a Hazardous Materials Technical Report with the GeoSearch Radius Report included as backup to the findings. Approximately 60 facilities were identified and further reviewed for impacts to the project area. None of the facilities were identified as having a high potential to impact project activities. Additionally, due to the limited depth of disturbance, impacted media (e.g., soil and groundwater) are not anticipated to be encountered during Project activities.

However, contaminated soil and groundwater could be encountered during construction of the project. A Materials Management Recommendation Report (MMRR) describes recommendations that the CMGC will use to prepare a Materials Management Plan (MMP) and Health and Safety Plan (HASP) in accordance with the Colfax BRT Standard Specifications, Standard Specials and Project Special Provisions (Revision of Section 250 Environmental, Health and Safety Management and Section 107.25 Water Quality Control). The Project Special Provisions supplement and take precedence over the Standard Specials and the Standard Specifications for Road and Bridge Construction (CDOT 2021).

The procedures documented in the MMP will be the basis for the proper handling of hazardous materials, such as contaminated soil and groundwater, lead-based paint coated materials, and asbestos-containing materials (ACM) encountered during construction and will form the City's expectation for this project's work. In addition to the project-

specific MMP and HASP, the CMGC is required to obtain all necessary permits and must establish a set of procedures that will assure the City that hazardous materials will be properly managed to comply with the permit requirements.

The Consultant will prepare an MMRR that provides site information to assist the CMGC in the preparation of their project-specific MMP and HASP. Contained in the MMRR will be site soils and groundwater sampling data and the research findings of the environmental standards imposed by the City's Department of Environmental Health (DEH) and the Colorado Department of Public Health and Environment (CDPHE).

Deliverable: Documentation of necessary mitigation and compliance efforts and a Materials Management Recommendation Report

6.0 RTD Coordination

6.1 RTD COORDINATION

The Consultant will continue to coordinate with RTD as project sponsor in all aspects of the project throughout final design and construction, including coordination with FTA as described in Task 4. This will include coordination with: RTD design staff in the final design development of the BRT stations; RTD operations staff in the final design completion of the service plan; RTD modeling staff in the final STOPS model runs to obtain the required data/information for the Small Starts grant application templates; and RTD finance staff in the final design development of the required financial information. The Consultant will also assist the OR, City and RTD in the FTA negotiations for the CIG and assist in the grant pre-award activities associated with ROW acquisition and utility coordination.

6.2 OPERATIONS AND SERVICE PLANNING/O&M COST ESTIMATING

The Consultant will work closely with RTD operations staff to finalize the operations and service plan for Colfax BRT, determine the annual service hours and fleet requirements, and estimate the annual O&M costs. This information will be included in the Small Starts construction grant application.

Building on the transit service plan and associated analysis tools developed during the preliminary engineering phase, the Consultant will update and finalize the service plan, travel times, fleet size, and operations and maintenance costs based on updates that occur through the final design phase of the project. The Consultant will make one round of updates, document our findings in a technical memorandum, and address one round of consolidated, resolved comments into a final technical memorandum all in close coordination with RTD.

6.3 TITLE VI MEMO DEVELOPMENT AND OUTREACH

In concert with RTD staff, the Consultant will advance development of the Title VI memo that was started during the PE/NEPA phase. The memo will meet all FTA requirements and address the equity issues associated with the BRT alignment and changes in service to the Sun Valley neighborhood adjacent to the Federal/Decatur transit station specifically. The Consultant will assist RTD in finalizing the Title VI memo approximately six months prior to start of revenue operations for submittal to FTA.

Deliverable: Title VI Memo

6.4 ONBOARD SURVEY

RTD staff will develop an onboard survey in 2023 or 2024 to support both the Title VI memo and the latest STOPS modeling. The onboard survey will provide updated travel patterns and identify any gaps in service caused by the BRT refined alignment as well as opportunities for improved transit connectivity.

7.0 Final Design

7.1 COLLABORATION WITH CMGC

The Consultant will work in conjunction with the CMGC to collaborate on innovation, constructability, schedule, and risk throughout the duration of the project, as well as follow the CMGC process. The Consultant will partner with an integrated design team that will consist of the City, the OR, the CMGC, and an independent cost estimator (ICE). The Consultant will provide input on schedule, phasing, constructability, and project cost throughout the preconstruction phase of the project. Additionally, the Consultant will collaborate with the CMGC to identify best practices to protect the safety of the traveling public and reduce construction duration to minimize impacts and reduce project costs.

The Consultant will participate in a project Partnering Workshop shortly after Notice to Proceed (NTP) for the CMGC (shortly after the conclusion of the PE/NEPA phase). This workshop will be facilitated by the City and will include the following items:

- Introduce the project and project team (including the City, OR, Consultant, CMGC, and Stakeholder team members). Emphasize the benefits of team building and partnering through CMGC project delivery.
- Review project status, goals, funding status, preliminary design, risk items, and schedule.
- Discuss design and construction innovations, construction phasing, and risk mitigation. Establish an interactive and collaborative process that will promote innovation and generate value for the project.
- Confirm necessary project coordination, outreach, stakeholder, and review meetings. Discussion to include identifying attendees and frequency. Schedule Design and Construction Innovation Workshop.

7.1.1 Preliminary Design Review and Risk Assessment

The Consultant will coordinate with the CMGC to review the preliminary design and identify opportunities to optimize project components. The Consultant will provide all supporting documents including but not limited to preliminary design plans, specifications, cost estimates, environmental documentation, ROW information, and stakeholder coordination documentation.

The Consultant will work with the CMGC to maximize overall value of the project by providing quality design while reducing overall cost and minimizing risk. Risk assessment and management will be a continual process throughout the preconstruction and construction stages. The CMGC will schedule a Risk Assessment and Management workshop early in the preconstruction phase. The Consultant will participate in this meeting and share risk management activities from the preliminary design phase. The Consultant will attend risk management meetings, facilitated by the CMGC, and support the following risk responsibilities:

- Participate in risk management discussions to identify risks, quantify probabilities, quantify impacts, develop mitigation strategies, and assign risk responsibility.
- Collaborate with the project team to review/update the Risk Management Plan as appropriate.
- Provide updates to the Risk Matrix in a concerted effort with that previously stated in Section 1.5.

7.1.2 Constructability/Innovation/Construction Phasing

After the Consultant and CMGC have reviewed the project design and initially assessed project risks, the project team will participate in a two-day Design and Construction Innovation Workshop. The workshop will be co-facilitated by the City, the Consultant, and the CMGC. Key objectives include:

- Evaluate the preliminary design and discuss CMGC innovations and design refinements.
- Implement a Value Engineering process to identify design and construction efficiencies.
- Incorporate Stakeholder input.
- Move forward with the Preferred Build Alternative identified in the PE/NEPA phase.

- Review constructability of the project, business access, and develop a construction phasing plan. Considerations will include:
 - Business access
 - Transit and multimodal access
 - ADA access
 - Impacts on traffic on adjacent streets from construction detours and activities
 - Safety to the general public
 - Coordination with other projects
- Confirm Preferred Build Alternative meets project objectives (including budget and schedule) and satisfies project goals.

7.1.3 Establish Design Schedule

The Consultant will develop an initial design schedule that includes NEPA, design, funding, and cost estimating that aligns with construction activities. After NTP for the CMGC, the Consultant will coordinate with the CMGC to further refine the project schedule. The CMGC will assume ownership of the schedule prior to 60% design completion. The CMGC will collaborate with the City and the Consultant and include the following items in the project schedule:

- Project management activities including Partnering Workshop, Design and Construction Innovation Workshop, coordination meetings, risk management, and quality management
- Preconstruction activities including design, stakeholder coordination, public information, NEPA, funding, operations and service planning, and field reconnaissance.
- Quantity calculations, cost estimates, independent cost estimates, and pricing negotiations for construction packages.
- Procurement for long-lead construction items.
- Construction schedule including early construction and phasing packages.

7.1.4 Identify Design Packages for Construction

The Consultant will collaborate with the CMGC to identify construction packages and sequencing that benefit the project. Benefits to the project include:

- Minimize impacts to businesses, adjacent neighborhoods, and the traveling public
- Accelerate construction schedule
- Decrease construction cost

7.2 DESIGN WORK ITEMS

7.2.1 Survey

The City will provide the aerial survey that was prepared and used in the preliminary design phase. Where additional detail is needed to ensure roadway, drainage, and ADA requirements are met, the Surveyor will supplement the existing aerial survey with conventional ground survey at areas where new construction is anticipated and at 100-foot cross-sections, from Broadway to Yosemite. The additional ground survey data will be added to the existing dtm surface which will provide a more accurate surface for final design. An exhibit identifying additional survey needs will be prepared by the Consultant and reviewed by the City prior to any field work. Within the identified supplemental survey limits, cross sections of the roadway will be acquired at approximately 10-foot intervals to include all high points, low points and significant breaks in terrain or profile. A (.dtm) surface of the roadway will be generated and depicted at a 1-ft contour interval within the final base map. The survey will delineate all visible surface improvements to include lip of gutter, flowline of gutter, top face of curb, back of sidewalk, driveways, alleys, signing, striping, etc.



Upon completion of the design survey, the Surveyor will perform a site inspection to confirm the location and completeness of all topography, improvements, and appurtenances. The Surveyor will also provide an office review ensuring the limits of the survey are met and that all tasks have been completed.

The completed product will be one digital base map of the existing topography and surface improvements within the defined survey limits. Survey field notes, sketches and point files will be made available upon request. The deliverable will also include surveyed points at all test hole and soil boring locations, as well as a Land Survey Control Diagram prepared to the City standards.

7.2.2 Geotechnical and Pavement Design

Subsurface Investigation

The Consultant will conduct a geotechnical and pavement subsurface investigation along the project with 1 borehole at or near each individual station and borings for pavement design at a maximum of 500 feet between borings. The station borings may double for pavement borings. Subsurface investigations will describe subsurface conditions and adequately delineate major changes in subsurface conditions. Subsurface investigations for structures shall be completed in accordance with AASHTO guidelines at all structure locations.

The Consultant shall assume the following:

- Lane closure times within CDOT right-of-way shall correspond to CDOT's Region 1 Lane Closure Policy for highway US 40C (9:00 AM to 3:00 PM and 6 PM to 6AM from Broadway to Grant and 9:00 AM to 1:00 PM and 7 PM to 6AM from Grant to Yosemite).
- A total number of 64 station and platform geotechnical borings with depths varying between 15 and 25 feet and up to 35 additional borings drilled to a depth of 5 feet for the pavement design.
- At up to 10 locations, extend the pavement boring drilling depth to 25 feet to accommodate signal pole design.
- Groundwater will be measured during drilling. No monitoring wells or piezometers are required.
- All subsurface explorations will be located on CDOT or the City of County of Denver right-of-way. Right of entry onto the private property is not required.
- Cuttings and groundwater generated during drilling are not contaminated, are non-hazardous, and will not require disposal as hazardous materials. All cutting shall be removed from the site at upon traffic opening.
- Borings in the roadway will be backfilled and repaired according to the CDOT right of way permits.
- Potholing will not be completed by the geotechnical subconsultant.

Laboratory Testing

The field boring logs will be analyzed to select bulk and undisturbed samples for laboratory testing. Testing shall be conducted on representative samples to adequately describe the subsurface conditions and to identify potential problems which may exist. Results of the laboratory tests, together with the field boring data, will be used for engineering analyses. The following laboratory tests are envisioned:

- In-place moisture and density (for earthwork)
- Atterberg limits (plasticity of cohesive soils)
- Grain size distribution (soil classification and earthwork)
- Swell/Collapse (foundation/pavement settlement)
- Soil corrosivity/Sulfate Content (foundations/pavement)
- Moisture density relationship(earthwork)
- R-Value (pavement design)

All tests will be conducted in general accordance American Standard Test Methods (ASTM) or AASHTO methods.



Pavement Design

Pavement material shall comply with CDOT Standard Specifications for Road and Bridge Construction. All concrete supplied to the Project shall be Designed for Class 2, Severity of Sulfate Exposure, unless field testing indicates a greater sulfate resistance is required.

Pavement designs for all pavements for the project will use Version 2.3.1 of the AASHTOWare Pavement Mechanistic-Empirical Design software (M-E Design software). The pavement designs shall utilize the Colorado-specific calibration factors. Material properties of the pavement, aggregate base course, and subgrade shall be in accordance with the CDOT M-E Pavement Design Manual and utilize Level 1 or Level 2 design parameters. Level 3 design parameters shall not be used without specific written Acceptance from the City. Typical CDOT Hot Mix Asphalt Pavement (HMAP) and Portland Cement Concrete Pavement (PCCP) mixes from the CDOT material database shall be used in all M-E Design analyses.

Pavement designs shall follow the recommendations set forth in the 2021 CDOT M-E Pavement Design Manual and the CDOT M-E Pavement Design Manual 2021 Addendum, unless otherwise specified.

Flexible pavements shall be designed for a 20-year design life; rigid pavements shall be designed for a 30-year design life. Flexible overlay of existing pavements shall be designed for a minimum 10-year design life. All pavement designs shall utilize a base year of 2023 and a Reliability of 95%. Calculated flexible pavement design thicknesses shall be rounded up to the nearest ½ inch. Calculated rigid pavement design thickness shall incorporate an extra ¼-inch to accommodate future grinding and then be rounded up to the nearest ½ inch.

All pavements shall be underlain by at least six inches of aggregate base course (ABC) Class 6. ABC shall have a minimum R-Value of 78. Composite hot mix asphalt over ABC utilizing the structural component of the ABC will be considered, based on swell and other factors. Any pavement underlain by aggregate base course and subgrade soil which classifies as A-6 or A-7-6 shall have a layer of separation geotextile between the subgrade and ABC.

Pavement designs shall be submitted to the City for approval. Construction of paved surfaces shall not commence until the pavement design has been reviewed and Approved by the City.

The lift breakdown for flexible pavements shall follow the guidelines established in Table 3.7 of the 2021 CDOT Pavement Design Guide. The thickness of each overlying lift shall be equal to or less than the thickness of the lift directly below.

Rigid pavement Designs, consisting of PCCP, shall be doweled and tied per CDOT M-412 unless otherwise specified by the City. The Consultant shall prepare a pavement jointing plan per CDOT M-412, the 2021 CDOT Pavement Design Manual, and industry best practices. The jointing plan shall be submitted to the City for Approval.

Pavement Design Report for all pavements, including temporary pavements, shall be submitted to the City for Approval. The report shall include the following:

- The proposed typical pavement sections;
- Geotechnical data and geotechnical Design assumptions;
- Material property assumptions;
- Input and output from the AASHTOWare ® pavement M-E Design software; and
- All traffic counts/calculations and assumptions used to determine the proper traffic data that was used.

The pavement design Consultant scope of work shall exclude a life cycle cost analysis and performing a traffic study or traffic counts.

Analysis and Reporting

A Geotechnical and Pavement Investigation and Design Report shall be prepared for the Project summarizing all subsurface investigations performed. The report shall provide a comprehensive written description of all the subsurface investigations and Laboratory testing completed, final boring logs, description of subsurface conditions, engineering recommendations, and Construction considerations. The data generated during the subsurface investigation will be

analyzed by a geotechnical engineer in developing geotechnical engineering recommendations the proposed bus stations, new pavements, and rehabilitation of existing pavements. Draft versions of the report deliverable will be provided to the design team, City of Denver and CDOT for review. Once comments are addressed, the report shall be sealed and signed by a Professional Engineer licensed in the State of Colorado. In addition, the Consultant shall provide geology sheets for stations and typical pavement section detail plan sheets to be included with the 60%, 90%, and Final design plans.

7.2.3 Utilities

Subsurface Utility Engineering (SUE)

The Consultant will conduct relevant Subsurface Utility Engineering (SUE), subsurface asset mapping, exploratory utility excavations, utility design, and utility coordination. The Consultant's responsibilities are as described below:

This project requires SUE under the requirements of CRS 9-1.5. The Consultant will perform SUE services in accordance with CRS 9-1.5 and the recommended practices and procedures described in ASCE publication CI/ASCE 38-02 "*Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*". The Quality Levels (QL) established in ASCE 38 are as follows:

| QL | ASCE 38-02 Description |
|----|---|
| D | Information derived from existing records or oral recollections. |
| C | Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to quality level D information. |
| B | Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Quality level B data should be reproducible by surface geophysics at any point of their depiction. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents. |
| A | Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy as defined or expected by the project owner. |

The Consultant will perform Quality Level D (QL-D) investigations throughout the corridor to evaluate changes in utility conditions that may have occurred since utility investigations were conducted in early 2021. As Colfax and the surrounding neighborhoods are experiencing growth and new utility installations, the original SUE plans may be outdated. The Consultant will:

- Perform a site visit to visually identify locations of probable utility installations, as evidenced by 811 utility markings, recently performed contractor potholes, new appurtenances, or actively occurring construction.
- Where appropriate, conduct permit and/or easement research with the City's Office of the Clerk and Recorder.
- Identify sites that were previously investigated for which the SUE plan sets are invalidated by probable new construction and/or utility installations.



The Consultant will perform Quality Level B (QL-B) investigations at discrete locations throughout the Colfax corridor to address the following:

- Utility conflicts with areas of full-depth construction (to be coordinated with and determined by the City).
- Gaps in prior QL-B investigations that were originally out of scope and are currently depicted as QL-D
- Changes to existing utility conditions

In the Final Design, the Consultant will deliver SUE drawings and existing utility plans based on Quality Level B, C, and D methods of utility investigation. The QL-B investigation and depiction focuses on proposed station locations, where full-depth reconstruction and excavation requires more detailed utility information.

The Consultant will perform Quality Level A (QL-A) exploratory utility excavations to determine the precise horizontal and vertical position of utilities at identified potential conflicts. It is anticipated that approximately 275 test holes will be required on the Project. Test hole locations will be coordinated with the design team and CMGC.

The Consultant will:

- Assist in determining utility conflicts where QL-A information is required
- Acquire requisite permits for excavation within the ROW
- Excavate utilities at identified locations and survey the horizontal and vertical positioning for incorporation into SUE plans
- Develop a test hole summary table and incorporate test hole locations into Utility Plans.
- Support the development of utility cross sections, drainage profiles, landscape and irrigation plans, and CDOT's signal and lighting plans by evaluating SUE deliverables with both vertical and horizontal positioning to avoid construction conflicts.
- Deliver stamped SUE drawings and associated CADD files

Subsurface Asset Mapping

In 1872, the first tramway in Denver was constructed by the Denver Horse Railway Company, marking the beginning of a streetcar (trolley) system that expanded throughout the City of Denver until growth ceased in 1923. As a major transportation corridor, Colfax received its own trolley in 1887, which, along with the rest of the trolley system in Denver, was abandoned in 1950. The existing tracks were either demolished or paved over.

During preliminary phases of SUE, it was determined that the Colfax trolley tracks were abandoned in situ and now pose possible design or construction conflicts. To address possible conflicts, the Consultant will utilize Ground Penetrating Radar (GPR) to develop an electronic CAD file depicting the horizontal location of trolley tracks, along with the estimated vertical depth, where practicable. GPR investigations are limited to 300± lineal-foot swaths at each proposed BRT station.

The Consultant will:

- Perform historical research to delineate probable trolley track alignments
- Perform GPR investigations, marking the horizontal location of buried trolley tracks
- Document trolley track depth below-grade at approximately 50-foot intervals
- Survey trolley track alignments for incorporation into an electronic CAD file

GPR investigations will occur under the oversight of a competent professional, however no stamped plan set will be furnished by the Consultant.

Utility Relocation Design

To accommodate the proposed improvements, the Consultant will coordinate with public and private utilities to facilitate utility relocations. Additionally, the Consultant will develop as needed relocation design for City-owned utilities, including



water and sanitary sewer. Plans will be produced according to City requirements and will include the following drawings: title sheet, utility notes, plan, profile, and special utility details.

The preliminary utility plans (currently underway) will be advanced through final design in accordance with the controlling design criteria. The Consultant will develop:

60% Utility Relocation Plans:

- Utilize plans developed during the PE phase to progress utility relocations to a 60% design level
- Update existing utility base file from updated topo
- Update preliminary utility plans confirming existing utilities and proposed project elements

Preliminary Denver Water Design / Relocation Plans:

- Develop Denver Water relocation plans for relocations of 6", 8", 10", 12", and 16" lines. Denver Water relocation design assumes pre-design layout meeting and presubmittal review for up to 10 submittal packages.

Preliminary Denver Sanitary Design / Relocation Plans:

- Develop sanitary design plans for relocations of 8", 10", 12", and 24" lines to be included in 60% overall project plan submittal. Denver Wastewater relocation design assumes a single relocation package.

90% Utility Relocation Plans:

- Revise preliminary utility plans based on 60% comments
- Prepare Final Utility Plans for the Project at 1"=50' scale. Plans will include General Notes applicable to the project, existing utilities, proposed utility relocations, utility owner contact list, test hole table, and manhole
- Prepare utility special provision describing work to be done by CMGC and each utility owner
- Prepare Xcel work request for work to be done on Xcel facilities

Final Denver Water Design / Relocation Plans:

- Develop Denver Water relocation plans for relocations of 6", 8", 10", 12" and 16" lines. Denver Water relocation design assumes formal plan submittal, subsequent plan submittal, and final plan approval for up to 10 submittal packages.

Final Denver Sanitary Design / Relocation Plans:

- Revise sanitary design plans for relocations of 8", 10", 12", and 24" lines based on 60% plan review and overall project design refinements.

90% Utility Owner "As Constructed" Relocation Plans:

- Incorporate utility owner proposed relocations into design team proposed design files to assure compatibility with project elements. Assume utility owner proposed relocation packages based on 60% or 90% utility plans

100% Final Utility Relocation Plans:

- Revise 90% plans and special provisions per comments or/design changes to 90%



Utility Coordination

The Consultant will:

- Act as liaison between the City and the utility companies during design as it pertains to information, scheduling, coordination and documents
 - Coordinate scoping meetings with all utility providers
 - Obtain GIS information from utility providers
 - Request utility maps and easements from utility companies
 - Conduct a review of utility information and share findings with the City
 - Request franchise agreements from the local agencies. Determine responsible party for cost implications.
 - Request any secondary utility provider feeds, laterals, services and other attachments to the main utility provider's facility
 - Work with surveyor and City to confirm information is adjusted and matches project datum
 - Provide photos of existing utility facilities and conditions in the project limits
 - Define and develop mapping and associated pertinent information of existing underground, at grade, and overhead utilities within the project limits
 - Coordinate with individual utility companies to convey and jointly resolve conflicts. Document findings in utility relocation plans, utility special provisions, and agreement letters.

60% Utility Coordination

- Send copies of 60% plans to utility companies to request verification of existing and proposed utility locations shown on the plans per Colorado Subsurface Utility Law (CRS 9-1.5) Quality Level D.
 - Identify utility conflicts and potential relocations.
 - Before the 60% comment review meeting, meet with up to 10 of the affected utility companies that will be impacted by the project including Lumen, Comcast, Xcel Energy, Crown Castle, Level 3, MCI/Verizon, Windstream/Paetec, and Zayo. The meetings will review their facilities and potential conflicts; determine how the conflicts should be resolved; and determine who is financially responsible for work required to resolve the conflict. (note coordination will be held with all affected companies after 60% submittal).
 - A "Memorandum of Design - Utilities" (utility conflict matrix) will be prepared to include a list of locations where conflicts exist between utilities and proposed roadway construction and where utility facilities will need to be relocated.
 - Preliminary (Draft) Utility Agreement Letters will be prepared for each affected utility owner.

90% Final Utility Coordination:

Once the additional services for utility test holes are performed (soon after the 60% submittal) and the conflict locations are verified per Colorado Subsurface Utility Law (CRS 9-1.5) Quality Level B, the CMGC will conduct a group Utility Coordination Meeting. All affected utility companies shall be invited to the meeting. The purposes of the meeting will be to:

- Review conflicts
- Confirm how the conflicts should be resolved
- Confirm who is financially responsible for work required to resolve the conflict
- Confirm which portions of the work will be performed by Utility Company versus CMGC forces
- Confirm the duration or expected completion date of the utility work and the advance notification time requirements.
- Confirm property rights and/or existing easements of utility owners



Additional final utility coordination services include:

- Conduct field reviews or one-on-one meetings with utility owners, up to 10 assumed utility owners
- Revise plans for 90% deliverable to reflect input from utility owners at the Utility Coordination Meeting and field reviews
- Submit clearance letters on DOTI letterhead to the utility companies requesting their signature and return of the letters
- Prepare a utility project special provision specification (specifications based on CDOT Standard Specifications for Road and Bridge Construction, latest version) listing all utility owners adjacent to the Project and the provisions of the “Utility Agreement Letters”

90% Utility Owner “As Construction” Relocation Plans:

- Incorporate utility owner relocation from CMGC survey data into proposed design files to assure compatibility with project elements

Post Design Services

- Progress and safety construction meetings
- Periodic field visits as requested by the City to provide assistance during utility relocations
- Respond to questions and Requests for Information (RFIs)
- Review water and sanitary sewer shop drawings and other submittals
- Assistance with design revisions and plan revisions (DCN's)

Utility Scope Assumptions and Exclusions:

1. Assume a 21-month period of performance (assume August 2022 through May 2024)
2. Assume an 18-month period of performance for post design services (assume September 2024 through February 2025)
3. CAD work in Bentley OpenRoads 10.10 as requested by design team
4. 3D modeling included utilizing Bentley Open Roads Designer (ORD) for existing underground utilities at assumed depths, water lines, sanitary sewer lines, and proposed underground dry utilities
5. Utility relocation plans assume 46 sheets including general notes (1), test hole log (2), manhole table (1), and utility plans (43) at 1" = 50'
6. Water relocation design included and assumes 10 separate packages for plan review fees. Denver Water plans assume 150 sheets total and include cover sheet, general notes, water plan and profile sheets, water only plan sheets, and overall utility plan sheets at 1" = 50'
7. Sanitary sewer relocation design included. Sanitary plans assume 32 sheets total and include cover sheet, general notes, and sanitary plan and profile sheets at 1" = 50'. Sanitary plans assume single plan package.
8. Water line design for water lines greater than 16" is excluded.
9. Note that utility contacts identified during utility records collection (QL-D) will likely be different than utility contacts developed during utility coordination process
10. QL-B SUE investigations are limited to areas of full-depth construction, utility installation, and areas where suspected utility changes have occurred. Utility service lines will be designated where accessible and traceable
11. Consultant will inform the City if a portion of the SUE area cannot be accessed due to homeless encampments, trash/debris, or other safety concerns. Due to any of these safety concerns, this area will be noted as excluded from the SUE investigation area
12. Client will provide any changes from 30% design submittal updated project survey control prior to field work and the topographic survey

13. Consultant's SUE Surveyor will collect visible utility features associated with SUE markings, including ground-level and invert elevations. Consultant SUE will not collect data on overhead wires and utility poles, open channels, open-air culverts, irrigation ditches, or landscape irrigation, as it is assumed those are collected as part of project topographic survey. SUE Survey will be provided by Consultant for QL-B and QL-A to incorporate SUE investigation data
14. Third-Party traffic control will be required for SUE investigations. The traffic control cost is estimated based on past fees and will be invoiced at cost
15. The City will arrange for Right of Entry to access work areas, where required, prior to the commencement of field work. Permitting fees will be waived or paid by the Agency or City
16. The Client will evaluate the proposed design to the existing utilities to determine the location of the test holes for the QL-A SUE investigation
17. It is assumed that SUE investigations can be completed during weekday working hours (generally 8-5 Monday through Friday). If CDOT or local agency permit requires night work, Consultant may charge an after-hour premium
18. QL-A test holes will be restored using flowable fill concrete with material specifications matching DOTI engineering standards. It is the responsibility of the Client or Owner to inform Consultant if there are areas of potentially contaminated soils or groundwater. Should contaminated spoils be encountered, Consultant will invoice testing and disposal costs with a 15% upcharge
19. The updated SUE QL-B plan set is valid only at the time of sealing. Should the project occur over an extended duration of time, an additional SUE investigation may be warranted to collect updated existing subsurface utility conditions
20. It is the responsibility of Consultant to perform due diligence with regards to records research (QLD level of effort) and acquisition of available utility records. To supplement prior utility investigations, Consultant will request additional records and City permit applications, in conjunction with a site walk, to determine locations where utilities have been installed or relocated. Consultant will further investigate the project area utilizing a suite of geophysical equipment to obtain QL-B data. During QL-B field work, Consultant will scan the defined work area using electronic prospecting equipment to search for previously un-recorded utilities. Utilities that are not identified through these efforts will be here forth referred to as "unidentified" utilities. Consultant is not responsible for designating "unidentified" utilities that were not detected through due diligence and scanning the work area

7.2.4 Roadway Design

The preliminary roadway design (currently underway) will be advanced through final design in accordance with the controlling design criteria, as defined in the Basis of Design (BOD) report. The Consultant will:

- Finalize design decisions and variances
- Revise final roadway design plans incorporating all stakeholder input
- Finalize alignments, toes of slope and pertinent design features, including permanent and temporary impacts
- Plot/develop all required information on the plans in accordance with all applicable City policies and procedures
- Finalize a 3-dimensional design model
- Finalize layouts in the plans for roadside items including but not limited to, curb and gutter, sidewalks, curb ramps, platform walkways, and driveways
- Finalize coordination of the roadside items with the Storm Water Management Plan (SWMP)
- Deliver a final plan submittal with the following roadway plans:
 - Title Sheet
 - Standard Plans List
 - Abbreviations and Symbols
 - General Notes



- Typical Sections
- Summary of Approximate Quantities
- Quantity Tabulations
- Removal Plans
- Geometric Layout
- Roadway Plans
- Roadway Profiles
- Intersection Details
- Curb Return Details
- Driveway Details
- Special Roadway Details
- Cross Sections
- Produce final quantities and specifications

7.2.5 Construction Phasing

Using the traffic control technical memo developed in the PE/NEPA phase, the Consultant will collaborate with the CMGC to develop a construction phasing plan that integrates the construction of all project work elements into a practical and feasible sequence. The design team will produce plans sheets with the following information: phasing descriptions and notes, schematic phasing plan, proposed construction cross sections for each phase, descriptions of proposed detours, short term closure requirements, and work time and access requirements.

7.2.6 Traffic Control Plan

The Consultant will produce initial traffic control plans that are compatible with the phasing plan. Traffic control plans will be created at a scale of 1"=50' and will show the traffic control devices to be used during each phase of construction. Plans will include the following information: location of traffic, construction zones, temporary signing and pavement markings, temporary paving, access requirements, construction signing, barriers, and channelizing devices. This will be coordinated closely with the CMGC.

7.2.7 Structural Design

The Consultant will provide structural design services for station elements including shelters/canopies, urban design features, fencing/gates, lighting, ramps/stairs, ITS, and signals. Structural design services will include design, plans, specifications, quantity calculations, and cost estimating support. The structural design team will collaborate with the station architecture, urban design, landscape design, and public art teams to ensure structural design and details are coordinated with overall corridor and station designs. Additionally, the structure design team will identify survey needs and work with the geotechnical engineering team to coordinate data collection, soils testing, and foundation recommendation requirements for structural design efforts.

7.2.8 Station Design

7.2.8.1 Station Layout/Architecture/Landscape Design/Urban Design

The Consultant will develop station plan layouts that include ground surfaces, drainage details, landscape and urban design elements, shelters/canopies, and related equipment. The station design team will collaborate with the transit planning and operations team to coordinate passenger loading locations and requirements, access requirements including ADA accommodations, wayfinding, and multimodal connectivity and integration. Station features will comply with the latest ADA requirements including curb ramps, directional bars, clear zone for wheelchair access, and accessible



signs. The design team will identify clear lines of sight to all areas for security in accordance with CPTED (Crime Prevention through Environmental Design) principles.

The Consultant will develop economical station features, utilizing uniform details where appropriate and reflecting the unique character of the corridor and adjacent neighborhoods. Architectural and urban design features will complement and integrate corridor branding and public art elements. While individual station plans will reflect existing site conditions and linkages to multimodal connectivity, the stations will be designed in a modular fashion to the extent possible. Standardized elements will be incorporated to provide unity and minimize cost. The Consultant will advance preliminary station and station site development design drawings including plans, sections, elevations, and details to support plan and profile drawings for approval prior to commencement of final design. Final plans will reflect all proposed features that will occupy the station site development including adjacent transit line sections, plazas, bicycle racks/lockers, furniture, bikeways, signage, information kiosks, traffic control devices, lighting, equipment, and hardscaped/landscaped areas. Additionally, plans will include electrical and communications for lighting, photovoltaic applications, variable message signs, emergency telephones, closed-circuit television (CCTV) for security cameras, maintenance equipment, fire and emergency management systems, conduits, and other related equipment.

7.2.8.2 Branding

Brand & Message Development

- **Immersion:**
 - **Kickoff Meeting** – Preparation and final design phase kickoff
 - **Research/Best Practices** - Research peer agencies to determine best practices in several areas including bus design, shelter branding, marketing materials templates, messaging, style guides, signage, and totems.
 - **Meetings** – Includes two bi-weekly meetings with the project team.
- **Administrative:**
 - **Progress Reports & Invoicing** – Includes invoicing, monthly activity reports to accompany invoices, budget monitoring, etc. for 12 months.
- **Brand Development:** To define and create a dynamic identity for Lynx, the Consultant will develop brand assets including:
 - **Logo** – a continuation of work begun in the PE/NEPA phase; includes refinement and finalization of the logo and related selection activities
 - **Tagline** – a continuation of work begun in the PE/NEPA phase; includes refinement and finalization of the tagline and related selection activities
 - **Messaging** – a continuation of work begun in the PE/NEPA phase; includes refinement and finalization of the logo and related selection activities
 - **Marketing Collateral Templates** – three to five collateral templates will be developed to support Lynx communications efforts
 - **Style Guide** - brand standards for the new Lynx logo and all asset applications will be developed
 - **Meetings** – an estimated 10 bi-weekly meetings with the project team and 20 presentations to the Project Management Team (PMT), Technical Working Group (TWG) and the public/stakeholders on the logo, tagline, messaging, marketing collateral templates and the style guide are included

Experiential Graphic Design

Utilizing the approved logo system and manufacturing specifications and drawings provided by the Consultant architects, the Consultant will integrate the brand identity and graphic elements into the Design Intent template and production documents of the following experiential design assets:

- **Vehicle branding** – logo elements, bus route identification, branding colors and supporting graphics
- **Station shelter & canopy** – station identification branding (logo application), rules and regulations postings, branding color applications (railings, trash can, wind screens, etc.) and supporting graphics
- **Station totem/marker/pylon** – station identification branding (logo application), flexible advertising/regulation poster holder, branding color applications and supporting graphics
- **Wayfinding and bus stop signage** – BRT bus route information, vicinity area maps, wayfinding directional signage (if needed)
- **Meetings** – an estimated 12 bi-weekly meetings with the project team and 24 presentations to the PMT, TWG, and the public/stakeholders on the vehicle branding, station shelter and canopy, totem, and wayfinding and stop signage

Public Information/Engagement

Jones Worley will participate in appropriate outreach efforts conducted by the Parsons team, including:

- Partner workshop
- Innovation/value engineering workshop
- Design/construction coordination meeting
- Stakeholder coordination meetings
- Public communication
- Public meetings/open houses

7.2.8.3 Public Art (in coordination with Denver Arts & Venues)

The Consultant will identify an art coordinator who will coordinate with Denver Arts & Venues for the implementation of public art features along the corridor. The art coordinator will work with the design team, including the architects, landscape architects, and urban designers to make sure art features are incorporated into the overall corridor design and complementary to the corridor branding.

- To facilitate the timely fabrication and delivery of artwork for the project, the Consultant will provide the following services: Work with the City, Denver Arts & Venues, and the CMGC to finalize the fabrication and installation agreement for artwork
- Incorporate art fabrication schedule into project design and construction schedule
- Meet with contractor to review installation procedures and conservation review recommendations
- Document artwork delivery protocol and protection of artwork if needed
- Provide onsite services with contractor during installation
- Review final art installation with contractor

7.2.9 Multimodal Design

The Consultant will design the roadway and BRT facilities to enable safe access for various users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. The following multimodal elements will be coordinated with stakeholders and addressed in the final design:

- Pedestrian facilities
- Bicycle facilities



- Shared facilities
- Crossing treatments
- Transit facilities

7.2.10 Traffic Engineering

7.2.10.1 Signing and Striping

Signing and striping plans will be prepared by the Consultant at a scale of 1"=50' (11"x17"). Plans will indicate signs to be removed, reset, new signs, post type, sign layout for non-standard signs, existing and proposed pavement markings. Tabulation sheets, specifications, and quantities will be produced.

7.2.10.2 Wayfinding

The Consultant will prepare wayfinding signage sheets for the BRT and local bus system to ensure the user's experience on the system is seamless, and information is clear and accessible. Wayfinding signs for pedestrians and bicyclists will guide them to the nearest BRT station and nearest pedestrian crossings. These signs may be combined with directional signs to public buildings and attractions. BRT wayfinding signage will be consistent with the BRT system branding. Description and graphic rendering of each type of sign and wayfinding element will be developed, including material, dimensions, fonts, graphics, installation details, and other relevant information.

7.2.10.3 Signals

The Consultant will be responsible for the final design of traffic signal phasing, pole/mast arm placement, traffic signal head layout, conduit/pull boxes, cabinet/controller, detector design (including video detection if applicable), traffic signal interconnect, Traffic Signal Priority (TSP), and associated signs and pavement markings. An Accessible Pedestrian Signal (APS) will be incorporated into all newly signalized or altered intersections that include the installation of visual pedestrian signals. Signal plans will be prepared at scale of 1"=20' (11"x17"). Plans will be prepared showing pole locations, signal heads, detectors, and conduit. Final design will include specifications, and quantities. A traffic signal warrant analysis will be prepared for those intersections where a traffic or pedestrian signal is proposed where one does not currently exist.

The Consultant will design TSP for the Colfax Avenue corridor at up to 20 signalized intersections. We assume submittals at 60%, 90%, and 100%, incorporating one consolidated, resolved round of comments at each stage. The Consultant will complete field work of existing corridor signals and signal cabinets to identify existing TSP elements, including make/model. Based on the existing inventory, the Consultant will identify TSP elements on the traffic signal design sheets (coordinating with the signal designer). We assume that we will co-stamp plans with the signal designer. We assume up to 60 hours to develop Concept of Operations, Memorandum of Agreement, or similar language describing the design and operational parameters of TSP on the Colfax Avenue corridor. We assume 40 hours for coordination meetings with the cities of Denver and Aurora and CDOT as a part of this task.

7.2.10.4 ITS/Communications

The Consultant will develop design plans for the following items at stations and connections between stations within the project limits:

- Communication systems (wireless, fiber optic, Ethernet, networks, etc.)
- Communication hardware (modems, cabinets, racks, conduit systems, etc.)
- Dynamic message signs (DMS)
- Closed circuit television (CCTV)
- Vehicle detection systems
- Ticket Vending Machines (TVM)
- Fare validators
- Fire and emergency management systems
- Speakers



- The consultant will develop comprehensive design of infrastructure for all items listed above, including conduit and cabling requirements and equipment selection. Further coordination and interconnectivity with traffic signals will also be considered.

7.2.10.5 Curbside Access Management Plan

The Consultant will develop a comprehensive, implementation-based curbside access management and parking plan that addresses resident, business, and property owner parking challenges and concerns, establishes goals, explores alternative curbside management strategies, and identifies recommendations for neighborhood-specific needs as a result of the BRT project along the center-running BRT segment of Colfax.

The Consultant will develop a Curbside Access Plan for the area bounded by Broadway, Colorado Boulevard, 13th Avenue, and 17th Avenue.

We will manage the Curbside Access Plan, coordinating with City staff as needed. We assume that the outreach process (including a Stakeholder Working Group and city council communications) will be collapsed into the overall Colfax Avenue BRT design process.

Initiate Plan

The Consultant will collect missing parking supply/inventory data. We will update our 2021 inventory on Colfax Avenue and collect new supply/inventory data for east-west and north-south streets in the study area. Additionally, we will collect study area demand data across three time periods: mid-week between noon and 1 PM, Friday evening between 6 PM and 7 PM, and weekend afternoon between noon and 1 PM. We will present this data as a part of the outreach process. We also assume one day each of field observations and data collection at up to five special generators to be determined with City staff (e.g., the Ogden Theatre, Fillmore Theatre, East High School, etc.).

Identify Parking Challenges, Generators, and User Groups

The Consultant will analyze parking utilization across the study area in each of the time periods, presenting the results in both map and tabular format. We will present this data to stakeholders and community members at an outreach event. We assume that we will develop a Web-based outreach tool (Social Pinpoint or similar) for community members to identify parking challenges, generators, and user groups.

Establish Goals

Based on the analysis of parking utilization, field observations, and stakeholder/community member input, the Consultant will develop draft goals for curbside access in the study area. We will vet these goals through the Colfax Avenue BRT outreach process.

Develop Parking Strategies & Locations for Implementation

The deliverable for the Curbside Access Plan will be a map of the plan area, designating curb uses and regulations with enough specificity that appropriate signing plans can be developed and implemented as a part of the Colfax Avenue BRT project. The Consultant will post the plan to a Web-based outreach tool (Social Pinpoint or similar) for community members to provide feedback. We assume incorporating one round of edits based on community member feedback, and two rounds of consolidated, resolved comments from City staff into the final map to be delivered to the project's signing design team.

Prepare for Plan Implementation

The Consultant assumes up to 40 hours of labor to meet with design team members, DOTI staff, business owners, residents, or other community members to discuss location-specific issues that need to be reflected in the Curbside Access Plan.



7.2.11 Hydrology/Hydraulics

The Consultant will adhere to requirements primarily provided in the City and County of Denver Storm Drainage Design & Technical Criteria (2013) (SDDTC) and The City and County of Denver Public Works Ultra-Urban Green Infrastructure Guidelines (UUGIG) for drainage design work.

The Consultant shall design and construct the Project to not preclude proposed drainage system improvements identified in the City's Drainage Master Plan that fall within the Project Limits.

The Consultant shall design drainage facilities compatible with existing or proposed drainage systems located on adjacent properties while maintaining existing drainage patterns. If existing drainage patterns must be changed due to Project design, the Consultant will design a solution that does not create an adverse impact to property owners.

To demonstrate no adverse impact of the proposed design due to off-site flow conditions contributing to the project area, the Consultant shall develop existing and proposed conditions Flo-2D rain-on-grid models for the project area for the major and minor rainfall events. These models shall compare existing conditions maximum depths to proposed conditions maximum depths adjacent to the project site and shall roughly account for the existing storm sewer capacity. The Flo-2D guidelines will be established jointly with the City & the Consultant. The Consultant will submit a Drainage Criteria Summary spreadsheet to accompany the Drainage Report that will detail the hydrologic and hydraulic requirements for the project and provide references for those criteria. The Consultant will perform the following related to:

Hydrology:

- The primary hydrologic modeling software utilized will be PCSWMM v.7.4.3220 with the SWMM v.5.1.015 computational engine. Hydrologic calibration of catchment runoff rates against alternative hydrologic software/methodologies will not be performed.
- Perform catchment delineation at a level of detail required to adequately model roadway and storm drain hydraulics.
- Incorporate results from previous studies to quantify runoff rates from offsite areas where possible.
- Quantify and compare pre- and post-Project hydrologic parameters including percent impervious, runoff volumes, and runoff rates.

Hydraulics:

- The primary hydraulic modeling software utilized will be PCSWMM v.7.4.3220 with the SWMM v.5.1.015 computational engine. Hydraulic calibration of nodes (inlets, manholes) and links (storm drains) will be performed against software, spreadsheets, and/or nomographs as required per the SDDTC.
- Compute and provide proposed condition hydraulic grade lines (HGLs) for proposed and impacted existing storm drains within the Project extents for the minor and major design storms.
- Ensure that new drainage infrastructure satisfies applicable hydraulic criteria, and that existing drainage infrastructure is not impacted such that previously satisfied hydraulic criteria are no longer satisfied under the proposed condition.
- Compute and provide exhibits showing pre- and post-Project surface flooding along Colfax Ave. within the Project extents. The Project will not increase flood elevations at locations where existing flood elevations are at or above the adjacent top of curb.
- Quantify and compare peak flow rates for the pre- and post-Project conditions at Project outfalls (surface and subsurface).

Water Quality:

- Calculate the water quality capture volume (WQCV) for the Project based only the total area where grading changes from existing conditions are proposed.
- Provide WQ treatment for the entire WQCV using WQ elements detailed in the UUGIG.



- Employ a credit-based WQ treatment approach, whereby existing/undisturbed and previously untreated Project area may be treated to offset areas where grading changes are proposed but treatment of runoff from such areas is infeasible.
- Meet with the City to determine an acceptable solution should treatment of the entire Project WQCV be infeasible.
- Provide detail sheets for each WQ treatment element/structure for procurement or construction.

Additional hydrologic and hydraulic design scope items include:

- Improve existing flooding within the Project limits along Colfax Ave. where feasible.
- Prepare and submit a Floodplain Permit for the Westerly Creek Crossing of Colfax Ave. at Yosemite St. for the City and County of Denver and a Floodplain Development Permit for the City of Aurora (if required).
- Complete all documents, plans, reports, and specifications as noted in the SDDTC.
- Coordinate between other disciplines to avoid conflicts and ensure timely submittals.
- Coordinate with the City and County of Denver Department of Transportation and Infrastructure to obtain variances and work through unforeseen challenges related to the Drainage design.

7.2.12 Erosion Control

A Surface Water Management Plan (SWMP) will be prepared by the Consultant in accordance with City guidelines and Municipal; Separate Storm Sewer Systems (MS4) requirements. SWMP site maps will be developed at a scale of 1"=50', depicting limits of construction, limits of disturbed area, proposed Best Management Practices (BMP), existing and proposed contours, existing and proposed drainage structures, and any necessary BMP details.

7.2.13 Lighting/Electrical

The Consultant shall produce lighting and power design plans showing all existing and proposed intersection, street, and pedestrian lights, and lighting and power needed at each station. Lighting design at each station will produce lighting to RTD station required light levels. Lighting will be direct and indirect under the canopy to decrease visible glare, and under-bench lighting, and additional accent lighting to reduce dark spots. Power will also be supplied for integrated lighting in station flag signs. Horizontal and vertical light levels will be considered to address glare concerns for traffic.

Intersection, street, and pedestrian lighting surrounding the stations can be evaluated by consultant to determine deficiencies and proposed solutions. Street lighting should be considered approximately one block North and South of intersections as well as East and West to provide comprehensive lighting for the entire corridor with a focus on increased safety.

Power sources for stations will be utility metered including with grid-tied photovoltaic systems with grid-tied storage. On-site energy storage is not recommended., conduit and/or lighting control center and power pedestal locations. Power will be run as needed to a PCC for distribution to equipment at each station, including speaker amplifiers, fare ticket sales and redemption validation kiosks, and any other equipment needing power. One power and control pedestal will be provided for each pair of stations.

The following information shall be included on the plans: type of streetlight and lamp, locations, dimensions between streetlights, detail to locate the streetlights in the field and at stations, notes indicating whether the contractor or Xcel will be responsible for the streetlight installation, information on Special Lighting District Boundaries.

7.2.14 Right-of-Way

Right-of-Way Mapping and Legal Descriptions

The Consultant will prepare a ROW set per City requirements. The ROW set will include cover sheet, tabulation of properties, survey control diagram, monumentation of properties, plan sheets, and ownership maps.

Right-of-Way Acquisitions

The ROW acquisition process for the project is predicated on the following assumptions - partial fee or permanent easement acquisition along with associated temporary construction easements from the 22 parcels identified in the February 9, 2022 Estimated Land Cost spreadsheet. Relocation activities, if needed, are not included herein. If agreement cannot be reached to acquire the required property rights through a negotiated settlement, the file or files will be turned over for condemnation.

All the following activities will be performed in compliance with applicable policies, guidelines, and procedures.

1. Update title commitments
2. Attend meetings/calls and coordinate project tasks with the project team and landowners. Prep/updates of status spreadsheets
3. Prepare narrative appraisals
4. Prepare/process Waiver Valuations
5. Prepare: Notices of intent, offer letters, final offer letters, and any additional correspondence with property owners
6. Conduct negotiations with each owner for the acquisition of the property rights to be acquired based on the approved fair market value
7. PSA execution/due diligence coordination

7.2.15 Sustainability/ENVISION Rating and Certification

The City is pursuing ENVISION certification and rating as per Executive Order 123 Horizontal Infrastructure for the Project. The Consultant developed a sustainability gap analysis during the PE/NEPA phase that will identify sustainability opportunities to target during the final design and construction phases to achieve higher rating levels for the City to review and approve. The ENVISION evaluation will be further developed during final design, with additional construction phase opportunities identified to potentially achieve Silver certification. The ENVISION scoring matrix with rating recommendation and all backup will be provided and finalized during construction for the City to pursue certification upon construction completion. The ENVISION activities anticipated as part of this scope include:

- Envision Kick-off meeting with Design, OR, and CMGC
- Design Coordination - confirm credit commitments from Gap analysis
- Construction-related Envision credit coordination with CMGC team
- Identify, collect, develop any supporting documents not found or available during the Gap Analysis exercise
- Meetings, workshops, with Design Team, OR, CMGC as needed – anticipate two workshops
- Prepare cover sheets and assemble supporting documentation
- Collaborate with the City for staggered Over the Shoulder (OTS) reviews, as each credit group reaches substantial completion (anticipate 5-6 OTS reviews)
- Incorporate feedback from final OTS review.
- Clean up and assemble Envision package for IDR/CR
- IDR/CR of entire Envision Package (approximately 2 weeks)
- Coordinate with Design, OR, and CMGC teams for remaining supporting documentation
- Address internal action items
- Incorporate comments from IDR/CR (approximately 4 weeks)
- Substitute final design drawings as needed for placeholders.



- IDR/CR Verification step, prepare clean documents for QC (approximately 2 weeks)
- QC/QA (approximately 2 weeks)
- Milestone: Submit to ISI (early November 2023 as a target)
- Initial ISI review, est. receipt of preliminary review, mid- to end-December
- Make ISI clarification revisions to Envision Application (approximately 4 weeks)
- Complete ISI clarification revisions to Envision Application (approximately 2 weeks)
- Milestone: Submit clarifications/responses based on ISI comments for ISI final review (mid-February 2024)
- Anticipated Envision Award (mid to late March 2024)
- Tie up loose ends, turnover to CMGC for Construction Phase Activities and Tracking

7.2.16 Safety Analysis and Mitigations

Building on the safety analysis, report, and tools developed during the preliminary engineering phase of this project, the Consultant will complete additional safety analyses on the parallel streets of 13th, 14th, 16th, and 17th. The methodology will include using Colorado-specific Safety Performance Functions (DiExSys Vision Zero Suite) to make associated recommendations and identify countermeasures. Additionally, we will make recommendations based on our multimodal safety expertise and leveraging resources including FHWA's Proven Safety Countermeasures and the Crash Modification Factor Clearinghouse. We will deliver the results of our analyses and our recommendations in a technical memorandum, incorporating one round of consolidated, resolved comments from the City and CDOT staff.

There will be no additional safety analyses performed in the Aurora segment.

Preliminary Hazard Analysis

The Consultant will follow RTD BUS INFRASTRUCTURE DESIGN GUIDELINES AND CRITERIA (March 2016), Section 13.5 to deliver the Preliminary Hazard Analysis (PHA). According to RTD's Section 13.5 guidelines, the PHA activity is the engineering function which is performed to identify the hazards and their preliminary causal factors of the system in development. The hazards are formally documented to include information regarding the description of the hazard, causal factors, the effects of the hazard, and preliminary design considerations for hazard control by mitigating each cause. Performing the analysis includes assessing hazardous components, safety-related interfaces between subsystems, environmental constraints, operation, test and support activities, emergency procedures, test and support facilities, and safety-related equipment and safeguards. The analysis also provides an initial assessment of hazard severity and probability of occurrence. The probability assessment at this point is usually subjective and qualitative. To support the tasks and activities of a safety effort, the "causes" of the root hazard must be assessed and analyzed. These causes should be separated in four separate categories:

1. Hardware initiated causes
2. Software initiated causes
3. Human error initiated causes
4. Human error causes that were influenced by software input to the user/operator

The Consultant will conduct a hazard management workshop in an initial effort to prepare the PHA. The PHA document itself is a living document, which must be revised and updated as the design and development progresses. It becomes the input document and information for all other hazard analyses performed on the system. It is noted that RTD's safety group is currently in the process of updating their PHA process and overall safety and security certification process. The Consultant will work closely with RTD and DOTI as they update their process and requirements.

Deliverables: Draft and final PHA report for the final design



Safety and Security Certification

RTD has stated the next step in the design development is the PHA. These analyses will inform progression of design for transit related elements, which will then determine if a full safety and security certification process is necessary for this project. Safety and Security Certification scope is currently not included or budgeted in the Consultant's fee.

7.3 60%/90%/FINAL PS&E DOCUMENTS

- Design Plans
- Specifications
- Quantities (for Independent Cost Estimate)
- Comment Review Meeting
- Comment Response and Resolution
- PS&E for Early Construction Packages (as needed)

8.0 Design Services During Construction

8.1 RESPONSE TO REQUESTS FOR INFORMATION (RFI'S)

The Consultant will provide qualified personnel to address and respond to Request for Information (RFI) documents submitted by the contractor. The Consultant will maintain a log of RFI submittal documents categorized by:

- Date received
- RFI description
- Responsible discipline
- Date response requested by
- Actual date of response

8.2 POST-DESIGN PLAN MODIFICATIONS

The Consultant may be required to provide revised plan sheets reflecting any design changes made during the construction phase of the project. These services may include developing revised design documents, revised engineer's estimates, special provisions and detail drawings. The revised documents will be signed and sealed by the Consultant. This work will be completed following authorization by the City's Project Manager or authorized representative.

8.3 SHOP DRAWING REVIEW

The Consultant will maintain a log of all shop drawing submittals for review. The log will include the following:

- Date received
- Drawing description
- Responsible discipline
- Date response requested by
- Actual date of response

The Consultant will provide construction shop drawing reviews, including erection plans, as requested by the City, for all components supplied by the contractor requiring shop drawings. Verify the conformance and compliance of shop drawings with the contract documents, the provisions of the applicable Standard Specifications, and the Project Special Provisions. Review and process shop drawing submittals within fourteen calendar days of their receipt or as required by the contract.

8.4 FIELD OBSERVATIONS / TECHNICAL ASSISTANCE

The Consultant will make on site appearances during construction at the request of the City to address questions and discussion resolution of conflicts identified in the field. The Consultant will maintain the following for all on-site inspections:

- Documentation of the activities and inspections/observations completed
- Documentation/justification for any changes, revisions, or modifications to the plans and/or specifications
- Monthly progress reports of Consultant's activities

The Consultant will attend partnering session at commencement of construction.

The Consultant will attend Preconstruction and Construction Progress Meetings, as needed.

If requested by the City, the Consultant will evaluate the CMGC's construction schedule at the onset of construction and evaluate throughout the construction phase.

The Consultant will assist the City in the analysis of CMGC claims involving the plans, schedule, specifications, and special provisions developed as part of the contract. The fee(s) for these additional services will be established if, and when, said services are required.

8.5 PROJECT CLOSEOUT

The Consultant will upon project closeout, submit to the City copies of all submittal logs, documentation of field visits, inspections, and observations.

9.0 Additional Services

The Consultant will provide additional services as needed and requested by the City that are not currently included in this scope of work. To be discussed with the City.

| | | | | | | | | | | | | | | | | |
|--|--|---------------------|---------------------|------------------|------------------|-------------------|---------------------|-------------------|-------------------|-------------------|---------------------|-------------------|-------------------|-------------------|-------------------|----------------------|
| 7.2.13 | Lighting/Electrical | \$25,425 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 20,600 | \$ - | \$ - | \$ 24,000 | \$ - | \$ 70,025 |
| 7.2.14 | Right-of-Way | \$25,425 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 229,764 | \$ 62,280 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 317,469 |
| 7.2.15 | Sustainability/ENVISION Rating and Certification | \$182,750 | \$ 40,440 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 223,190 |
| 7.2.16 | Safety Analysis and Mitigations | \$3,000 | \$ - | \$ - | \$ - | \$ 49,750 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 52,750 |
| 7.3 | 60% PS&E Documents - assume 9 months | \$0 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 7.3.1 | Design Plans | \$500,200 | \$ 358,440 | \$ - | \$ - | \$ - | \$ 55,330 | \$ - | \$ 3,290 | \$ 17,890 | \$ 705,100 | \$ - | \$ 37,790 | \$ 55,320 | \$ 116,075 | \$ 1,849,435 |
| 7.3.2 | Specifications | \$32,200 | \$ 42,660 | \$ - | \$ - | \$ - | \$ 94,925 | \$ - | \$ - | \$ - | \$ 44,820 | \$ - | \$ 3,665 | \$ 6,900 | \$ 800 | \$ 225,970 |
| 7.3.3 | Quantities (for Independent Cost Estimate) | \$263,250 | \$ 55,380 | \$ - | \$ - | \$ - | \$ 27,400 | \$ - | \$ - | \$ - | \$ 15,800 | \$ - | \$ 3,740 | \$ 12,000 | \$ 3,160 | \$ 380,730 |
| 7.3.4 | Comment Review Meeting | \$14,320 | \$ 7,880 | \$ - | \$ - | \$ 3,440 | \$ - | \$ - | \$ - | \$ - | \$ 4,780 | \$ - | \$ 825 | \$ 2,800 | \$ 2,920 | \$ 36,965 |
| 7.3.5 | Comment Response and Resolution | \$41,375 | \$ 31,200 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 3,290 | \$ - | \$ 17,950 | \$ - | \$ 1,955 | \$ 12,000 | \$ 2,780 | \$ 110,550 |
| 7.3.6 | PS&E for Early Construction Packages | \$315,900 | \$ 69,600 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 735 | \$ - | \$ - | \$ 386,235 |
| 7.4 | 90% PS&E Documents - assume 5 months | \$0 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 7.4.1 | Design Plans | \$365,900 | \$ 234,680 | \$ - | \$ - | \$ - | \$ 34,910 | \$ - | \$ 3,290 | \$ 1,280 | \$ 404,800 | \$ - | \$ 37,930 | \$ 44,820 | \$ 64,035 | \$ 1,191,645 |
| 7.4.2 | Specifications | \$84,800 | \$ 41,110 | \$ - | \$ - | \$ - | \$ 85,550 | \$ - | \$ - | \$ - | \$ 30,060 | \$ - | \$ 5,405 | \$ 3,450 | \$ 3,200 | \$ 253,575 |
| 7.4.3 | Quantities (for Independent Cost Estimate) | \$263,250 | \$ 62,560 | \$ - | \$ - | \$ - | \$ 20,200 | \$ - | \$ - | \$ - | \$ 8,800 | \$ - | \$ 3,740 | \$ 3,000 | \$ 5,140 | \$ 366,690 |
| 7.4.4 | Comment Review Meeting | \$14,320 | \$ 7,880 | \$ - | \$ - | \$ 3,440 | \$ 69,650 | \$ - | \$ - | \$ - | \$ 4,400 | \$ - | \$ 825 | \$ 2,800 | \$ 2,920 | \$ 106,235 |
| 7.4.5 | Comment Response and Resolution | \$41,375 | \$ 23,260 | \$ - | \$ - | \$ - | \$ 3,080 | \$ - | \$ 3,290 | \$ - | \$ 12,600 | \$ - | \$ 3,430 | \$ 9,000 | \$ 2,780 | \$ 98,815 |
| 7.4.6 | PS&E for Early Construction Packages | \$315,900 | \$ 54,480 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 735 | \$ - | \$ - | \$ 371,115 |
| 7.5 | Final PS&E documents - assume 2 months | \$0 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 7.5.1 | Design Plans | \$182,775 | \$ 140,420 | \$ - | \$ - | \$ - | \$ 18,720 | \$ - | \$ - | \$ 640 | \$ 161,950 | \$ - | \$ 21,810 | \$ 36,820 | \$ 63,670 | \$ 626,805 |
| 7.5.2 | Specifications | \$58,000 | \$ 27,940 | \$ - | \$ - | \$ - | \$ 8,740 | \$ - | \$ - | \$ - | \$ 11,160 | \$ - | \$ 3,025 | \$ 3,360 | \$ 1,600 | \$ 113,825 |
| 7.5.3 | Quantities (for Independent Cost Estimate) | \$157,250 | \$ 44,160 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 8,800 | \$ - | \$ 2,640 | \$ 3,000 | \$ 1,580 | \$ 217,430 |
| 7.5.4 | Comment Review Meeting | \$7,160 | \$ 7,580 | \$ - | \$ - | \$ 1,720 | \$ - | \$ - | \$ - | \$ - | \$ 2,800 | \$ - | \$ 550 | \$ 1,400 | \$ 2,920 | \$ 24,130 |
| 7.5.5 | Comment Response and Resolution | \$41,375 | \$ 17,740 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 7,100 | \$ - | \$ 2,790 | \$ 9,000 | \$ 2,780 | \$ 80,785 |
| 7.5.6 | PS&E for Early Construction Packages | \$84,025 | \$ 36,920 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 735 | \$ - | \$ - | \$ 121,680 |
| Task 8 Design Services during Construction - assume 24 months | | \$253,175 | \$ 218,980 | \$ - | \$ - | \$ 6,880 | \$ 82,920 | \$ - | \$ - | \$ - | \$ 271,700 | \$ - | \$ - | \$ 68,800 | \$ 26,560 | \$ 929,015 |
| 8.1 | Response to Requests for Information (RFI's) | \$51,600 | \$ 53,900 | \$ - | \$ - | \$ 3,440 | \$ 3,000 | \$ - | \$ - | \$ - | \$ 86,300 | \$ - | \$ - | \$ 18,000 | \$ 8,760 | \$ 225,000 |
| 8.2 | Post-Design Plan Modifications | \$77,400 | \$ 62,600 | \$ - | \$ - | \$ 3,440 | \$ 76,920 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 20,650 | \$ 6,600 | \$ 247,610 |
| 8.3 | Shop Drawing Review | \$41,325 | \$ 57,900 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 97,900 | \$ - | \$ - | \$ 12,000 | \$ 3,200 | \$ 212,325 |
| 8.4 | Field Observations / Technical Assistance | \$51,600 | \$ 44,580 | \$ - | \$ - | \$ - | \$ 3,000 | \$ - | \$ - | \$ - | \$ 87,500 | \$ - | \$ - | \$ 18,150 | \$ 8,000 | \$ 212,830 |
| 8.5 | Project Closeout | \$31,250 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 31,250 |
| Labor Budget | | \$7,393,695 | \$3,072,480 | \$20,125 | \$49,160 | \$510,910 | \$965,850 | \$229,764 | \$186,270 | \$150,135 | \$1,978,860 | \$146,270 | \$162,840 | \$332,770 | \$405,335 | \$ 15,604,364 |
| ODC's | | \$5,000 | \$ 10,000 | \$ - | \$ - | \$ 100 | \$ 541,450 | \$ 133,686 | \$ 18,000 | \$ 121,525 | \$ 500 | \$ 4,890 | \$ 1,200 | \$ - | \$ 500 | \$ 836,851 |
| Additional Services (if required) | | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 500,000 |
| Total Budget | | \$ 7,398,695 | \$ 3,082,480 | \$ 20,125 | \$ 49,160 | \$ 510,910 | \$ 1,507,300 | \$ 363,450 | \$ 204,270 | \$ 271,660 | \$ 1,979,360 | \$ 151,160 | \$ 164,040 | \$ 332,770 | \$ 405,835 | \$ 16,941,215 |
| MWBE total | | | | \$ 20,125 | | | \$ 1,507,300 | \$ 363,450 | \$ 204,270 | | \$ 1,979,360 | \$ 151,160 | | \$ 332,770 | \$ 405,835 | \$ 4,964,270 |
| | | Parsons Fee | AECOM | Arland | EPS | Fehr & Peers | Goodbee | HC Peck | HCL | S&W | Iron Horse | Jones Worley | MIG | PK | Stolfus Fee | |

Colfax Avenue BRT Final Design Fee by firm for Aurora Segment
8/31/2022

| | Parsons | AECOM | EPS | Fehr & Peers | Goodbee | HC Peck | HCL | S&W | Jones Worley | Iron Horse | PK | Total | % of total |
|--|------------|------------|-----------|--------------|------------|-----------|------|-----------|--------------|------------|-----------|--------------|------------|
| Task 1 Project Management, Administrative Tasks and Agency Coordination | \$ 47,600 | \$ 10,000 | \$ - | \$ 500 | \$ 500 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 58,600 | 3% |
| Project Management | 47,600 | \$ 10,000 | | \$ 500 | \$ 500 | | | | | | | \$ 58,600 | 3% |
| Task 2 Coordination, Communication, and Outreach | \$ 19,160 | \$ 9,000 | \$ - | \$ 3,000 | \$ 11,000 | \$ - | \$ - | \$ - | \$ 1,000 | \$ 6,000 | \$ 3,000 | \$ 52,160 | 2% |
| Design team kickoff meeting | 4,000 | \$ 1,000 | | \$ 1,000 | \$ 1,000 | | | | \$ 1,000 | | | \$ 7,000 | 0% |
| Project Management Team | 4,000 | \$ 2,000 | | \$ 2,000 | | | | | | \$ 3,000 | | \$ 11,000 | 0% |
| Design/Construction Coordination Meetings (or Task Force meetings) | 11,160 | \$ 6,000 | | | \$ 10,000 | | | | | \$ 3,000 | \$ 3,000 | \$ 33,160 | 1% |
| Task 3 Funding Support | \$ 52,100 | \$ 4,000 | \$ 25,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 81,100 | 3% |
| FTA Small Starts Coordination | 52,100 | \$ 4,000 | \$ 25,000 | | | | | | | | | \$ 81,100 | 3% |
| Task 4 NEPA Evaluation | \$ 63,000 | \$ 100,000 | \$ - | \$ 10,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 173,000 | 7% |
| Technical Resource Evaluations | 31,500 | \$ 60,000 | | \$ 10,000 | | | | | | | | \$ 101,500 | 4% |
| Environmental Document - CatEx | 31,500 | \$ 40,000 | | | | | | | | | | \$ 71,500 | 3% |
| Task 5 RTD Coordination | \$ 30,200 | \$ 3,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 33,200 | 1% |
| RTD Coordination | 30,200 | \$ 3,000 | | | | | | | | | | \$ 33,200 | 1% |
| Task 6 Engineering | \$ 894,310 | \$ 295,068 | \$ - | \$ 56,000 | \$ 120,000 | \$ 25,000 | \$ - | \$ 54,000 | \$ 30,000 | \$ 75,362 | \$ 31,000 | \$ 1,580,740 | 68% |
| 6.1 Collaboration with CMGC | | | | | | | | | | | | | 0% |
| 6.1.1 Preliminary Design Review and Risk Assessment | 14,320 | \$ 5,000 | | | | | | | | | | \$ 19,320 | 1% |
| 6.1.2 Constructability/Innovation/Construction Phasing | 14,320 | \$ 5,000 | | | | | | | | \$ 5,000 | | \$ 24,320 | 1% |
| 6.1.3 Establish Design and Construction Schedule | 9,160 | \$ 2,000 | | | | | | | | | | \$ 11,160 | 0% |
| 6.1.4 Identify Design Packages for Construction | 9,160 | \$ 5,000 | | | | | | | | \$ 1,000 | | \$ 15,160 | 1% |
| 6.2 Design Work Items | | | | | | | | | | | | | 0% |
| 6.2.1 Survey | | | | | | | | | | | | \$ - | 0% |
| 6.2.2 Geotechnical and Pavement Design | 4,300 | \$ 5,000 | | | | | | \$ 40,000 | | | | \$ 49,300 | 2% |
| 6.2.3 Utilities | 6,450 | \$ 5,000 | | | \$ 120,000 | | | | | | | \$ 131,450 | 6% |
| 6.2.4 Roadway Design | 17,200 | \$ 5,000 | | | | | | | | | | \$ 22,200 | 1% |
| 6.2.5 Construction Phasing | 8,600 | \$ 2,000 | | | | | | | | | | \$ 10,600 | 0% |
| 6.2.6 Traffic Control Plan | 7,200 | | | \$ 10,000 | | | | | | | | \$ 17,200 | 1% |
| 6.2.7 Structural Design | 21,920 | | | | | | | | | | | \$ 21,920 | 1% |
| 6.2.8 Station Design | 21,920 | | | | | | | | \$ 5,000 | \$ 49,362 | | \$ 71,282 | 3% |
| 6.2.8.1 Architecture/Landscape Architecture/Urban Design | 9,750 | \$ 3,000 | | | | | | | | | | \$ 12,750 | 1% |
| 6.2.8.2 Branding | 3,000 | \$ 1,000 | | | | | | | | | | \$ 4,000 | 0% |
| 6.2.8.3 Public Art (in coordination with Denver Arts & Venues) | 3,000 | | | | | | | | | | | | |
| 6.2.9 Multimodal Design | 5,760 | \$ 2,000 | | | | | | | | | | \$ 7,760 | 0% |
| 6.2.10 Traffic Engineering | 8,640 | \$ 1,000 | | \$ 5,000 | | | | | | | | \$ 14,640 | 1% |
| 6.2.10.1 Signing and Striping | 8,640 | \$ 1,000 | | \$ 1,000 | | | | | | | | \$ 10,640 | 0% |
| 6.2.10.2 Wayfinding | 6,920 | \$ 1,000 | | | | | | | | | | \$ 7,920 | 0% |
| 6.2.10.3 Signals | 11,500 | | | | | | | | | | | \$ 11,500 | 0% |
| 6.2.10.4 ITS/Communications | 0 | | | \$ 40,000 | | | | | | | | \$ 40,000 | 2% |
| 6.2.11 Hydrology/Hydraulics | 15,260 | \$ 2,000 | | | | | | | | | | \$ 17,260 | 1% |
| 6.2.12 Erosion Control | 4,300 | \$ 2,000 | | | | | | | | | | \$ 6,300 | 0% |
| 6.2.13 Lighting/Electrical | 2,580 | \$ 1,000 | | | | | | | | \$ 7,000 | | \$ 10,580 | 0% |
| 6.2.14 Right-of-Way Mapping and Acquisitions | 2,580 | \$ 1,000 | | | | \$ 25,000 | | | | | | \$ 28,580 | 1% |
| 6.2.15 ENVISION/Sustainability | 18,250 | | | | | | | | | | | \$ 18,250 | 1% |
| 6.3 PS&E Documents | | | | | | | | | | | | | |
| 6.3.1 30% PS&E Documents | | | | | | | | | | | | | 0% |
| Design Plans | 110,000 | \$ 40,000 | | | | | | | \$ 5,000 | | \$ 2,000 | \$ 152,000 | 7% |
| Specifications | 25,200 | \$ 30,000 | | | | | | \$ 5,000 | | \$ 10,000 | \$ 500 | \$ 70,700 | 3% |

| | | | | | | | | | | | | | |
|--|---------------------|-------------------|------------------|------------------|-------------------|------------------|-------------|------------------|------------------|------------------|------------------|---------------------|--------------|
| Quantities (for Independent Cost Estimate) | 28,800 | \$ 30,000 | | | | | | | \$ 10,000 | \$ 500 | \$ 69,300 | 3% | |
| Comment Review Meeting | 7,160 | \$ 10,000 | | | | | | | | \$ 1,000 | \$ 18,160 | 1% | |
| Comment Response and Resolution | 62,600 | \$ 4,000 | | | | | | | | \$ 1,000 | \$ 67,600 | 3% | |
| PS&E for Early Construction Packages | 31,300 | \$ 6,000 | | | | | | | | | \$ 37,300 | 2% | |
| 6.3.2 60% PS&E Documents | | | | | | | | | | | | 0% | |
| Design Plans | 82,000 | \$ 20,000 | | | | | | \$ 10,000 | | \$ 4,000 | \$ 106,000 | 5% | |
| Specifications | 12,600 | \$ 15,000 | | | | | \$ 2,000 | | | \$ 500 | \$ 30,100 | 1% | |
| Quantities (for Independent Cost Estimate) | 14,400 | \$ 15,000 | | | | | | | | \$ 500 | \$ 29,900 | 1% | |
| Comment Review Meeting | 5,440 | \$ 5,000 | | | | | | | | \$ 1,000 | \$ 11,440 | 0% | |
| Comment Response and Resolution | 33,800 | \$ 2,000 | | | | | | | | \$ 1,000 | \$ 36,800 | 2% | |
| PS&E for Early Construction Packages | 16,900 | \$ 3,000 | | | | | | | | | \$ 19,900 | 1% | |
| 6.3.3 90% PS&E Documents | | | | | | | | | | | | 0% | |
| Design Plans | 47,200 | \$ 20,068 | | | | | | \$ 5,000 | | \$ 4,000 | \$ 71,268 | 3% | |
| Specifications | 12,600 | \$ 5,000 | | | | | \$ 5,000 | | | \$ 500 | \$ 23,100 | 1% | |
| Quantities (for Independent Cost Estimate) | 14,400 | \$ 5,000 | | | | | | | | \$ 500 | \$ 19,900 | 1% | |
| Comment Review Meeting | 5,440 | \$ 5,000 | | | | | | | | \$ 1,000 | \$ 11,440 | 0% | |
| Comment Response and Resolution | 33,800 | \$ 2,000 | | | | | | | | \$ 1,000 | \$ 36,800 | 2% | |
| PS&E for Early Construction Packages | 16,900 | \$ 3,000 | | | | | | | | | \$ 19,900 | 1% | |
| 6.3.4 Final PS&E documents - assume 2 months | | | | | | | | | | | | 0% | |
| Design Plans | 32,800 | \$ 15,000 | | | | | | \$ 5,000 | | \$ 2,000 | \$ 49,800 | 2% | |
| Specifications | 12,600 | \$ 2,000 | | | | | \$ 2,000 | | | \$ 500 | \$ 17,100 | 1% | |
| Quantities (for Independent Cost Estimate) | 14,400 | \$ 2,000 | | | | | | | | \$ 500 | \$ 16,900 | 1% | |
| Comment Review Meeting | 5,440 | \$ 2,000 | | | | | | | | \$ 1,000 | \$ 8,440 | 0% | |
| Comment Response and Resolution | 16,900 | \$ 2,000 | | | | | | | | \$ 1,000 | \$ 19,900 | 1% | |
| PS&E for Early Construction Packages | 16,900 | \$ 3,000 | | | | | | | | | \$ 19,900 | 1% | |
| Task 7 Design Services during Construction - assume 24 months | \$ 60,200 | \$ 26,000 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 86,200 | 4% | |
| DSDC | 60,200 | \$ 26,000 | | | | | | | | | \$ 86,200 | 4% | |
| Labor Budget | \$ 1,166,570 | \$ 447,068 | \$ 25,000 | \$ 69,500 | \$ 131,500 | \$ 25,000 | \$ - | \$ 54,000 | \$ 31,000 | \$ 81,362 | \$ 34,000 | \$ 2,065,000 | 89% |
| ODC's (Plan review fees shown as ODCs under Parsons budget) | \$ 150,000 | | | | \$ 5,000 | | | \$ 10,000 | | | | \$ 165,000 | 7% |
| Additional Services (if required) | | | | | | | | | | | | \$ 100,000 | 4% |
| Total Budget | \$ 1,316,570 | \$ 447,068 | \$ 25,000 | \$ 69,500 | \$ 136,500 | \$ 25,000 | \$ - | \$ 64,000 | \$ 31,000 | \$ 81,362 | \$ 34,000 | \$ 2,330,000 | 100% |
| | 59.0% | 20.0% | 1.1% | 3.1% | 6.1% | 1.1% | 0.0% | 2.9% | 1.4% | 3.6% | 1.5% | 100% | |
| MWBE total | | | | | \$ 136,500 | \$ 25,000 | \$ - | | \$ 31,000 | \$ 81,362 | \$ 34,000 | \$ 307,862 | 13.8% |

EXHIBIT B-1

Key Personnel

PARSONS TRANSPORTATION GROUP INC. has identified the following individuals as 'Key Personnel' for the Colfax Transit Implementation – Bus Rapid Transit Design Project:

- Jen Wood – Project Manager
- Amber Haines – Deputy Project Manager
- James Moore – Design Manager
- Lindsey Sousa – NEPA Lead
- Charlie Alexander – Safety Analysis, Curbside Access Mgmt Plan, Traffic Engineering Lead
- Cynthia Parks – BRT Branding
- Kevin Ashby – Station Architecture Lead
- Jason Freitas – Signal Design Lead
- Amanda Vaughan – Structural Engineering Lead
- Rachel Shindman – Funding/Financing Lead

CONSULTANT TEAM MEMBERSPRIME CONSULTANT: Parsons Transportation Group, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|------------------------|--------------------------------|-----------|
| Princial-in-Charge | Project Oversight | \$350.00 |
| SR. Project Manager | Project Oversight | \$315.00 |
| Project Manager | Project Oversight | \$248.00 |
| Deputy Project Manager | Project Oversight | \$205.00 |
| Quality Manager | Quality Assurance | \$206.00 |
| Project Controls | Scheduling and Project Support | \$165.00 |
| SR. Admin | Administration | \$ 110.00 |
| Admin | Administration | \$83.00 |
| Design Manager | Design Oversight | \$234.00 |
| Roadway Lead | Roadway Oversight | \$143.00 |
| Modeling Lead | Modeling/Design Oversight | \$242.00 |
| SR. Modeling/Design | Modeling/Design | \$198.00 |
| Modeling/Design III | Modeling/Design | \$167.00 |
| Modeling/Design II | Modeling/Design | \$131.00 |
| Modeling/Design I | Modeling/Design | \$92.00 |
| Drainage Supervisor | Drainage Oversight | \$248.00 |
| Drainage Lead | Drainage Lead | \$180.00 |
| SR. Drainage | Drainage Design | \$160.00 |
| Drainage III | Drainage Design | \$139.00 |
| Drainage II | Drainage Design | \$113.00 |
| Drainage I | Drainage Design | \$89.00 |
| Landscape Lead | Landscape Architecture | \$185.00 |

| | | |
|----------------------------|-----------------------------------|----------|
| SR. Landscape | Landscape Architecture | \$138.00 |
| Landscape III | Landscape Architecture | \$119.00 |
| Landscape II | Landscape Architecture | \$105.00 |
| Landscape I | Landscape Architecture | \$85.00 |
| SR. Traffic | Traffic Engineering | \$162.00 |
| Traffic III | Traffic Engineering | \$140.00 |
| Traffic II | Traffic Engineering | \$123.00 |
| Traffic I | Traffic Engineering | \$112.00 |
| MOT Lead | Maintenance of Traffic (MOT) Lead | \$242.00 |
| SR. MOT | Maintenance of Traffic (MOT) | \$182.00 |
| MOT III | Maintenance of Traffic (MOT) | \$138.00 |
| MOT II | Maintenance of Traffic (MOT) | \$118.00 |
| MOT I | Maintenance of Traffic (MOT) | \$106.00 |
| Structures Supervisor | Structural Oversight | \$223.00 |
| Structures Lead | Structural Oversight | \$165.00 |
| SR. Structures | Structural Design | \$154.00 |
| Structures III | Structural Design | \$140.00 |
| Structures II | Structural Design | \$129.00 |
| Structures I | Structural Design | \$109.00 |
| Safety/Sustainability Lead | Safety/Sustainability Oversight | \$219.00 |
| SR. Safety/Sustainability | Safety/Sustainability | \$179.00 |
| Safety/Sustainability III | Safety/Sustainability | \$151.00 |
| Safety/Sustainability II | Safety/Sustainability | \$125.00 |
| Safety/Sustainability I | Safety/Sustainability | \$110.00 |
| SR. NEPA/Environmental | Environmental Support | \$217.00 |

| | | |
|------------------------------|-----------------------|----------|
| NEPA/Environmental Associate | Environmental Support | \$108.00 |
| CADD Lead | Design Support | \$222.00 |
| SR. CADD | Design Support | \$179.00 |
| CADD III | Design Support | \$160.00 |
| CADD II | Design Support | \$124.00 |
| CADD I | Design Support | \$96.00 |
| CADD Associate | Design Support | \$75.00 |
| | | |
| | | |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 2.65

All reimbursable expenses are subject to the review and approval of the City. The additional expenses of the Consultant reimbursable by the City shall include:

- (1) Mileage: Reimbursable at the current IRS Business Rate ONLY when Consultant is required to drive to a project located outside the City and County of Denver Boundary.
- (2) Actual cost of reproducing and printing reports, drawings, specifications and other work products, and the associated cost for shipping and handling. These reimbursable expenses pertain only to requests made to the Consultant from the City, and exclude intra-office printing, scanning and reproduction required by the Consultant to complete the work.
- (3) Actual cost for expendable supplies and services not normally used on a routine or normal basis in an architectural or engineering office (i.e. aerial photography) and which are provided especially under this Agreement for the benefit of the City.

SUB-CONSULTANT TEAM MEMBERS

Firm Name: AECOM Technical Services, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | | Rate/Hr. |
|--|--|---|----------|
| Principal | Provides senior-level client contact and services. Is ultimately responsible for team performance. | 1 | \$300 |
| | | 2 | \$340 |
| | | 3 | \$370 |
| Senior Project Manager/ Senior Project Professional | Plans and manages the project delivery process for large or complex projects. Serves as a senior professional on project teams. | 1 | \$230 |
| | | 2 | \$245 |
| | | 3 | \$270 |
| | | 4 | \$300 |
| Project Manager/Project Professional | Plans and manages the project delivery process for projects. Serves as an experienced professional on project teams. | 1 | \$160 |
| | | 2 | \$185 |
| | | 3 | \$205 |
| | | 4 | \$215 |
| Engineer/Planner | Prepares design criteria and design analysis reports, develops contract documents (plans and specifications), develops opinions of cost, assists in pre-bid meetings, assists in contractor procurement and interfaces with clients. | 1 | \$95 |
| | | 2 | \$105 |
| | | 3 | \$120 |
| | | 4 | \$130 |
| | | 5 | \$140 |
| | | 6 | \$160 |
| | | 7 | \$185 |
| | | 8 | \$200 |
| | | 9 | \$220 |
| Consultant | Conducts advisory analysis and consulting services using professional services such as economics, modeling, risk and financial analysis. | 1 | \$150 |
| | | 2 | \$180 |
| | | 3 | \$205 |
| | | 4 | \$235 |
| Project Assistant | Performs technical-level services involving the preparation of project deliverables (ADD or word processing), graphics, and project accounting. | 1 | \$65 |
| | | 2 | \$75 |
| | | 3 | \$85 |
| | | 4 | \$95 |
| | | 5 | \$105 |
| | | 6 | \$120 |
| | | 7 | \$135 |
| | | 8 | \$150 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 2.8

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproductions, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: AECOM Technical Services, Inc.

The additional expenses of the consultant reimbursable by the City shall include:

1. Actual cost of reproduction of drawings and specifications requested by the City.
2. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|----------------------------|--------------------|
| Mileage | At federal rate |
| Copies (8 1/2 x 11") BW | \$ 0.06 each |
| Copies (8 1/2 x 11") Color | \$ 0.22 each |
| Copies (11 x 17") | \$ 0.12 each |
| Color Copies (11 x 17") | \$ 0.44 each |
| Foam Core Mounted Boards | \$4.00 sq. ft. |
| Mylar | \$3.50 sq. ft. |
| Other Materials/Supplies | At cost |

REIMBURSABLE EXPENSES

Sub-Consultant: ArLand LLC DBA ArLand Land Use Economics

The additional expenses of the consultant reimbursable by the City shall include:

3. Actual cost of reproduction of drawings and specifications requested by the City.
4. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|----------------------|--------------------|
| Copies (8 1/2 x 11") | \$.05 / each |
| Copies (8 1/2 x 14") | \$.05 / each |
| Red-line copies | \$ / S.F. |
| Reproducibles | \$ / page |

SUB-CONSULTANT TEAM MEMBERSFirm Name: Economic & Planning Systems

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e., Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|--------------------------|---|----------|
| Senior Principal | Project Advisor | \$263.65 |
| Managing Principal | Oversight for all aspects of project. Provide day-to-day management for all team members. Provide strategic direction for the project. | \$274.38 |
| Principal | Project Advisor | \$202.70 |
| Executive Vice President | Project Advisor | \$160.93 |
| Vice President | Day-to-day project management. Responsible for managing all associates and research associates and aligning staff efforts by task to complete all assignments | \$131.47 |
| Associate | Technical support, reporting to the Vice President | \$99.32 |
| Production | Provides assistance with report production | \$94.64 |
| Production Manager | Responsible for quality assurance on all materials delivered to the prime consultant. | \$127.07 |
| Senior Associate | Technical support, reporting to the Vice President | \$93.14 |
| Research Analyst | Technical support, reporting to the Vice President | \$71.23 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate:

The Fringe Benefit and Labor Burden accounts for 56%, the General and Administrative Expense accounts for 103%, and the profit accounts for 10% for a total multiplier of 169% on direct labor.

All reimbursable expenses are subject to the review and approval of the City. The additional expenses of the Consultant reimbursable by the City shall include:

- (1) Mileage: Reimbursable at the current IRS Business Rate ONLY when Consultant is required to drive to a project located outside the City and County of Denver Boundary.
- (2) Actual cost of reproducing and printing reports, drawings, specifications and other work products, and the associated cost for shipping and handling. These reimbursable expenses pertain only to requests made to the Consultant from the City, and exclude intra-office printing, scanning and reproduction required by the Consultant to complete the work.
- (3) Actual cost for expendable supplies and services not normally used on a routine or normal basis in an architectural or engineering office (i.e., aerial photography) and which are provided especially under this Agreement for the benefit of the City.

SUB-CONSULTANT TEAM MEMBERSFirm Name: Fehr & Peers

List **ALL** potential firm personnel titles/classification that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|-----------------------------|--|----------|
| Principal 4 | Project oversight, report review, QA/QC of deliverables | \$290 |
| Principal 3 | Project oversight, project management, report review, QA/QC of technical analysis and deliverables | \$260 |
| Principal 1/2 | Project oversight, project management, report preparation and review, QA/QC of technical analysis and deliverables | \$230 |
| Senior Associate | Project management, report preparation, QA/QC of technical analysis and deliverables | \$220 |
| Associate | Project management, report preparation, analysis and deliverable preparation | \$210 |
| Senior Engineer/ Planner | Project management, technical memorandum preparation, analysis and deliverable preparation | \$170 |
| Engineer/Planner | Project management, data collection, analysis and deliverable preparation | \$145 |
| Intern | Data collection and analysis | \$105 |
| Senior Technician | Analysis, CAD/GIS, design preparation, design review | \$185 |
| Technician | Analysis, CAD/GIS, design preparation | \$145 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: Varies.

All reimbursable expenses are subject to the review and approval of the City. The additional expenses of the Consultant reimbursable by the City shall include:

- (1) Mileage: Reimbursable at the current IRS Business Rate ONLY when Consultant is required to drive to a project located outside the City and County of Denver Boundary.
- (2) Actual cost of reproducing and printing reports, drawings, specifications and other work products, and the associated cost for shipping and handling. These reimbursable expenses pertain only to requests made to the Consultant from the City, and exclude intra-office printing, scanning and reproduction required by the Consultant to complete the work.
- (3) Actual cost for expendable supplies and services not normally used on a routine or normal basis in an architectural or engineering office (i.e. aerial photography) and which are provided especially under this Agreement for the benefit of the City.

SUB-CONSULTANT TEAM MEMBERS

Firm Name: Goodbee & Associates, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|---------------------------------|---|-----------------|
| President | Directs all aspects of the firm's operations | \$185 |
| Principal | Directs all aspects of the firm's operations | \$185 |
| Project Manager IV | Leads and reviews technical work | \$170 |
| Project Manager III | Leads and reviews technical work | \$150 |
| Project Manager II | Leads and reviews technical work | \$135 |
| Project Manager I | Leads and reviews technical work | \$125 |
| Landscape Architect (Principal) | Leads and reviews technical work | \$175 |
| Landscape Architect III | Leads and reviews technical work | \$150 |
| Landscape Architect II | Leads and reviews technical work | \$130 |
| Landscape Architect I | Leads and reviews technical work | \$110 |
| Designer III | Completes technical work under direction of a PM/LA | \$125 |
| Designer II | Completes technical work under direction of a PM/LA | \$110 |
| Designer I | Completes technical work under direction of a PM/LA | \$100 |
| CAD II | Completes technical work under direction of a PM/LA | \$100 |
| CAD I | Completes technical work under direction of a PM/LA | \$80 |
| SUE Field Manager | Leads and reviews field work | \$150 |
| SUE Senior Technician | Leads and completes field work | \$130 |
| SUE Technician II | Completes field work under direction of manager | \$110 |
| SUE Technician I | Completes field work under direction of manager | \$90 |
| SUE Junior Technician | Completes field work under direction of manager | \$70 |
| Survey Manager | Leads and reviews field work | \$145 |
| Survey Party Chief | Leads and completes field work | \$125 |
| Survey Technician II | Completes field work under direction of manager | \$95 |
| Survey Technician I | Completes field work under direction of manager | \$80 |
| Administrator | Bookkeeping and general administration | \$110 |
| Administrative Assistant | General administration | \$80 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 3.0.

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducibles, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: Goodbee & Associates, Inc.

The additional expense of the consultant reimbursable by the City shall include:

Actual cost of reproduction of drawings and specifications requested by the City.

Travel/transportation costs shall not be reimbursable by the City for Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|--|--------------------------|
| Copies (8 1/2 x 11") | \$ <u>at cost</u> / each |
| Copies (8 1/2 x 14") | \$ <u>at cost</u> / each |
| Red-line copies | \$ <u>at cost</u> / each |
| Reproducibles | \$ <u>at cost</u> / each |
| Traffic control | \$ <u>at cost</u> / each |
| Potholing and restoration | \$ <u>at cost</u> / each |
| Utility Designating Supplies and Equipment (use fee) | \$190 per day |
| Survey Equipment (use fee) | \$100 per day |
| Ground Penetrating Radar | \$70 per day |

SUB-CONSULTANT TEAM MEMBERS

Firm Name: H.C. Peck & Associates, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|----------------------|--|----------|
| Principal | Overall project management; acquisition of property rights; business and residential relocations | 170 |
| Sr. Project Manager | Day to day project management; acquisition, relocation | 150 |
| Project Manager | Day to day project management; acquisition; relocation | 135 |
| Sr. ROW Agent | Acquisition; relocation | 125 |
| ROW Agent III | Acquisition; relocation | 112 |
| ROW Agent II | Acquisition; acquisition support; relocation | 100 |
| ROW Agent I | Acquisition support | 90 |
| Admin/Support Staff | Acquisition and relocation support | 75 |
| Title Staff | Title research; title commitments | 140 |
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Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: N/A.

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducibles, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: H.C. Peck & Associates, Inc.

The additional expenses of the consultant reimbursable by the City shall include:

3. Actual cost of reproduction of drawings and specifications requested by the City.
4. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|----------------------|--------------------|
| Copies (8 1/2 x 11") | \$0.25/ each |
| Copies (8 1/2 x 14") | \$0.25/ each |
| SKLD document copies | \$3.75/each |
| Red-line copies | \$_____/ S.F. |
| Reproducibles | \$_____/ page |

SUB-CONSULTANT TEAM MEMBERS

Firm Name: HCL Engineering & Surveying

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|-------------------------|---|-----------|
| Principal | Available to review projects or answer questions | \$220.00 |
| Survey Manager | Manage overall survey project and team | \$200.00 |
| Senior Project Surveyor | Supervise and perform office and/or field survey activities | \$145.00 |
| Project Surveyor | Perform office and/or field survey activities | \$125.00 |
| Senior CAD Technician | Supervise and develop CAD drawings | \$125.00 |
| CAD Technician | Develop CAD drawings | \$ 100.00 |
| Party Chief | Supervise field survey activities | \$145.00 |
| Instrument Operator | Assist the party chief in obtaining accurate measurements | \$ 55.00 |
| Utility Locator | Use instruments to locate utilities | \$125.00 |
| Project Manager | Manages all tasks related to the project | \$170.00 |
| SUE Manager | Manages overall utility and SUE tasks | \$145.00 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 2.86.

All reimbursable expenses are subject to the review and approval of the City. The additional expenses of the Consultant reimbursable by the City shall include:

- (1) Mileage: Reimbursable at the current IRS Business Rate ONLY when Consultant is required to drive to a project located outside the City and County of Denver Boundary.
- (2) Actual cost of reproducing and printing reports, drawings, specifications and other work products, and the associated cost for shipping and handling. These reimbursable expenses pertain only to requests made to the Consultant from the City, and exclude intra-office printing, scanning and reproduction required by the Consultant to complete the work.
- (3) Actual cost for expendable supplies and services not normally used on a routine or normal basis in an architectural or engineering office (i.e. aerial photography) and which are provided especially under this Agreement for the benefit of the City.

SUB-CONSULTANT TEAM MEMBERS

Firm Name: Iron Horse Architects

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|------------------------|---|----------|
| Chief Design Officer | Architect with a thorough knowledge of architecture who develops design standards and supervises design across the company | 325.00 |
| Senior Administrator | Oversees all administrative management of architectural projects | 250.00 |
| Principal | Architect with a thorough knowledge of architecture who develops design standards and supervises a design department | 325.00 |
| Senior Project Manager | Handles projects of the largest magnitude. Oversees and coordinates project efforts in order to ensure effective execution | 225.00 |
| Architect | Licensed architect who applies architecture principles and practices in a broad array of assignments and related fields. | 200.00 |
| Project Manager | Manages multiple small/medium projects, coordinates all aspects of assigned projects, and estimates scope of work | 200.00 |
| BIM Manager | Responsible for BIM and the digital Construction procedures at the design, construction and closeout stages of a project. | 225.00 |
| Jr. Architect | These newly licensed design professionals apply sound and diverse knowledge of architecture principles and practices in a broad array of assignments. | 175.00 |
| Designer | Unlicensed design professional, uses independent judgement in design evaluation, selection and modification | 150.00 |
| Project Administrator | Project Administrator plays a crucial role in the overall success of architectural projects, provides high level administrative support. | 150.00 |
| Intern | Entry Level position performing specific/limited portions of assignments under supervision. | 75.00 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: Varies

The City will not compensate the Consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction and travel costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducible, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

SUB-CONSULTANT TEAM MEMBERS

Firm Name: Iron Horse Architects

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|----------------------|--|----------|
| Jr. Designer | Full Time, entry level position, works from the design of others and performs routine architectural assignments. | 115.00 |
| Sr. Designer | Unlicensed professional client presentation, supervising team's design and technical delivery | 175.00 |
| Sr. Architect | Licensed professional with major project responsibilities. | 250.00 |
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Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: Varies

The City will not compensate the Consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction and travel costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducible, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: Iron Horse Architects

The additional expenses of the consultant reimbursable by the City shall include:

3. Actual cost of reproduction of drawings and specifications requested by the City.
4. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|----------------------|----------------------|
| Copies (8 1/2 x 11") | \$ <u>N/A</u> / each |
| Copies (8 1/2 x 14") | \$ <u>N/A</u> / each |
| Red-line copies | \$ <u>N/A</u> / S.F. |
| Reproducibles | \$ <u>N/A</u> / page |

SUB-CONSULTANT TEAM MEMBERS

Firm Name: Jones Worley Design, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|------------------------------|---|----------|
| Program Principal | Quality Control, client relations and contract matters | \$342.31 |
| SVP Acct Services/Strategist | Strategy development, client relations | \$157.86 |
| Account Executive | Executes assignments surrounding client initiatives | \$ 52.34 |
| Account Coordinator | Internally coordinates details of client initiatives | \$ 52.34 |
| Project Manager | Quality control, manages initiatives with client team and internal team | \$117.70 |
| SVP Creative Services | Creative direction and concepting | \$131.50 |
| Creative Director | Creative concepting and development | \$124.29 |
| Sr. Graphic Designer | Creative development | \$109.08 |
| Graphic Designer | Creative development | \$87.81 |
| Project Accountant | Manages project administration | \$83.08 |
| Copywriter | Research, plan and create written content | \$124.07 |
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Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 2.81.

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducibles, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: Jones Worley Design, Inc.

The additional expenses of the consultant reimbursable by the City shall include:

- 3. Actual cost of reproduction of drawings and specifications requested by the City.
- 4. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|---|-----------------------|
| Copies/Prints (8 1/2 x 11")-Black & White | \$ <u>.08</u> / each |
| Copies/Prints (8 1/2 x 11")-Color | \$ <u>.16</u> / each |
| Copies/Prints (8 1/2 x 14")-Black & White | \$ <u>.10</u> / each |
| Copies/Prints (8 1/2 x 14")-Color | \$ <u>.20</u> / each |
| Red-line copies-Black & White | \$ <u>1.00</u> / S.F. |
| Red-line copies-Color | \$ <u>1.50</u> / S.F. |
| Reproducibles | \$ <u>2.00</u> / page |

SUB-CONSULTANT TEAM MEMBERS

Firm Name: MIG, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|--------------------------|---|----------|
| Principal | Overall management; resource allocation; thought leadership; planning and urban design vision; quality assurance and quality control | \$275 |
| Director | Design leadership; planning and urban design vision and execution; client and consultant communications quality assurance and quality control | \$205 |
| Senior Project Manager | Oversee day-to-day scope, budget and schedule; lead communication with other team members; planning and urban design supervision | \$175 |
| Project Manager | Assist with day-to-day project management and coordination; Prepare progress reports and invoices; participate in updates to schedule and development of critical path tasks and milestones | \$150 |
| Senior Project Associate | Lead project tasks with supervision and guidance from Principal and Project Managers | \$115 |
| Associate | Contribute to project tasks with assistance from Senior Project Associates and supervision and guidance from Principal and Project Managers | \$90 |
| Civil Engineer | Lead Civil Engineering tasks related to utilities and grading; Provide guidance on details and specs for urban design | \$185 |
| Executive Assistant | Scheduling, invoicing, travel arrangements; copy editing; duplication and scanning | \$115 |
| Project Assistant | Assist with scheduling, invoicing, travel arrangements; copy editing; duplication and scanning | \$105 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 3.3.

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproductions, etc. are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: MIG, Inc.

The additional expenses of the consultant reimbursable by the City shall include:

3. Actual cost of reproduction of drawings and specifications requested by the City.
4. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs

| <u>Item</u> | <u>Charge Rate</u> |
|----------------------|----------------------|
| Copies (8 1/2 x 11") | \$0.25 / each |
| Copies (8 1/2 x 14") | \$0.50 / each |
| Red-line copies | \$ 1.00 / S.F. |
| Reproducible | \$ <u>N/A</u> / page |

SUB-CONSULTANT TEAM MEMBERS

Firm Name: Pinyon Environmental, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager). Provide additional sheets, as necessary.

| Title/Classification | Responsibilities | Rate/Hr. |
|----------------------------------|---|----------|
| Principal Engineer/ Scientist | Responsible for providing strategic direction, vision, and leadership. Performs senior-level QA/QC and conducts meetings and negotiations with regulatory and oversight agencies. | \$220 |
| Senior Engineer/ Scientist | Responsible for technical completeness and competency of all submissions and work performed, including performance of junior- and mid-level planners and scientists. Conduct and supervise professional and technical staff to complete studies focused on engineering, planning, NEPA evaluations, air quality, noise, biology, geology, chemistry, and environmental science. | \$205 |
| Senior Project Manager | Project management, including coordination of multi-disciplinary teams, preparing responses to agency questions, and facilitates project meetings with client and regulators. Develops project requirements, site investigations, facility requirements development, budget and programming support, analyses and project execution. | \$180 |
| Project Manager | Directs the gathering of data and prepares complex reporting and analysis. Oversight of technical products and development of detailed studies related to NEPA, air quality, noise, environmental justice, biology, geology, chemistry and environmental science. | \$163 |
| Project Specialist | Reports to Regulatory and Oversight Agencies, Preparation of Permits, GIS Library Development and Data Analysis, Technical Review of Documents | \$ 150 |
| Project Engineer/ Scientist | Phase I ESA Site Visits/Reporting, Interpretation of Data, Collection of Non-Field Data, Development of Logs and Maps, Pilot Testing, Biological and Wetland Field Mapping, Preparation of Reports to Clients, GIS Data Collection/Processing/Presentation, Asbestos Designer/Air Monitoring Specialist/Project Manager, Technical Review of Documents | \$125 |
| Staff II Engineer/ Scientist | Soil Logging, Monitoring Well Installation Oversight, Water-Level Surveying, Slug Tests, Field Oversight, Lead Driller, Miscellaneous Field Services, Asbestos Building Inspector | \$115 |
| Staff I Technician | Groundwater Sampling, Sampling During UST Removals, Surveyor's Assistant | \$99 |
| Drafting (Graphics) | AutoCAD, floor plans, elevations, sections, scale drawings, layering and concept design for architects and engineers. Duties may include configuring and maintaining CADD libraries, engineering documentation management systems and CADD computer network systems. | \$98 |
| Project Assistant | Maintain Field Equipment, Data Management | \$86 |
| Word Processing, Clerical | Word Processing, Clerical | \$67 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 3.01 .

The City will not compensate the consultant for expenses such as postage, mileage, parking, or telephone costs. Reproduction costs, if requested by the City, shall be reimbursed at actual cost if approved in advance by Project Manager. Such costs are, in all such instances, included in the hourly rates paid by the City. Reproduction of submittals requested by the City including such items as end-of-phase reports, drawings, bid documents, record drawing reproducible, etc., are not included in the hourly rates, and will be itemized as a not-to-exceed reproducible expense and will be reimbursed at actual cost.

REIMBURSABLE EXPENSES

Sub-Consultant: Pinyon Environment, Inc.

The additional expenses of the consultant reimbursable by the City shall include:

1. Actual cost of reproduction of drawings and specifications requested by the City.
2. Travel/transportation costs shall not be reimbursable by the City for Prime Consultants.

Actual Costs:

| EXPENSE OR SERVICE | RATE | BILLING RATE |
|---|--------|-----------------|
| Dual Interface Probe | day | \$70.00 |
| Groundwater level indicator | day | \$30.00 |
| Photoionization Detector / FID or similar | day | \$75.00 |
| Automated Samplers, Monitors, and Data Loggers | day | \$100 |
| PID / FID / multi gas meter (or similar) | day | \$75.00 |
| Groundwater sampling kit | day | \$201.00 |
| Soil Sampling kit | day | \$315.00 |
| Field Visits (General Projects [e.g., Phase I ESA]) | Day | \$50.00 |
| Field Visits (Wetland/Biology) | Day | \$50.00 |
| Soil Logging (During Drilling) | Boring | \$105.00 |
| Monitoring Well Development | Well | \$55.00 |
| Monitoring Well Sampling | Well | \$67.00 |
| Asbestos Sampling Kit (Building Inspections) | Day | \$45.00 |
| Asbestos Air Monitoring Kit | Day | \$110.00 |
| Pass Through Rate – Subcontractor Costs and Management | | |
| All Subcontracted Services | Cost | Cost |
| Field Sampling and Investigation Supplies and Materials as preapproved by City and County of Denver Project Manager | Cost | Cost |
| Remediation Supplies and Materials as preapproved by City and County of Denver Project Manager | Cost | Cost |
| Bonding Rate | 2.2% | |

Other potential reimbursables will be shown on specific task orders, to be approved by the City.

SUB-CONSULTANT TEAM MEMBERSFirm Name: PK Electrical, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|---|---|----------|
| Principal / Engineer of Record | Oversees entire project, manages clients, provides QA/QC reviews. | \$235.00 |
| Engineering Manager | Engineer in charge of design, standards, requirements, project management staff, and attends client meetings. | \$200.00 |
| Senior Project Engineer | Engineer responsible for technical aspects of project, code reviews, oversees junior engineers and designers. | \$195.00 |
| Senior Project Manager | Assists Project Engineer, manages staff, resources, schedule, budget | \$185.00 |
| Electrical/Technology Designer | Designs low voltage systems, lighting and power systems, edits specifications | \$150.00 |
| Fire Alarm Engineer / Designer | Design of fire alarm, mass notification, v-evac systems, and specifications | \$175.00 |
| Technology Manager | Manages designers and designs for low voltage systems (DATA/voice, A/V, security, CCTV, infrastructure systems) | \$190.00 |
| Bookkeeper / Accounting | Finance accounts manager / bookkeeping | \$105.00 |
| Electrician / Field Technician / Designer | Assists in designs, performs field investigations and site surveys | \$150.00 |
| Production / BIM Manager | Manages production department and staff, assigns work, maintains drafting standards and drafting software | \$130.00 |
| Drafter | Microstation, BIM, CAD drafting and production | \$100.00 |
| Admin | Filing, document control, spec editing, general tasks | \$90.00 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 3.6201

All reimbursable expenses are subject to the review and approval of the City. The additional expenses of the Consultant reimbursable by the City shall include:

- (1) Mileage: Reimbursable at the current IRS Business Rate ONLY when Consultant is required to drive to a project located outside the City and County of Denver Boundary.
- (2) Actual cost of reproducing and printing reports, drawings, specifications and other work products, and the associated cost for shipping and handling. These reimbursable expenses pertain only to requests made to the Consultant from the City, and exclude intra-office printing, scanning and reproduction required by the Consultant to complete the work.
- (3) Actual cost for expendable supplies and services not normally used on a routine or normal basis in an architectural or engineering office (i.e. aerial photography) and which are provided especially under this Agreement for the benefit of the City.

SUB-CONSULTANT TEAM MEMBERSFirm Name: Shannon & Wilson, Inc.List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|-----------------------|--|----------|
| Senior Vice President | Principal in Charge, QA/QC | \$295 |
| Vice President | Senior level review | \$260 |
| Senior Associate | Project Management and main contact for CCD. Task Leader for Construction Services. Develop project, cost, schedule and assign tasks, track progress, review submittals, oversee QA/IAT as necessary. Review design plans/specifications for constructability and conformance to building codes. | \$220 |
| Associate | Task Leader for Environmental Services. Assign tasks, track progress, review field screening and analytical test results, review reports. | \$190 |
| Sr. Professional III | Task Leader for Design Services. Review design plans/specifications for constructability and conformance to building codes. Geotechnical engineering design and preparation of reports. Pavement design. Construction observation of drilled caissons and other foundation elements. | \$165 |
| Sr. Professional II | Review design plans/specifications for constructability and conformance to building codes. Geotechnical engineering design and preparation of report. Pavement design. Construction observation of drilled caissons and other foundation elements. | \$150 |
| Sr. Professional I | Review design plans/specifications for constructability and conformance to building codes. Geotechnical engineering design and preparation of report. Pavement design. Construction observation of drilled caissons and other foundation elements. | \$135 |
| Professional IV | Geotechnical Investigations, including soil borings and visual classification of soils. Construction observation of drilled caissons, driven piles, and other foundation elements. Environmental investigations and monitoring. | \$125 |
| Professional III | Geotechnical Investigations, including soil borings and visual classification of soils. Construction observation of drilled caissons, driven piles, and other foundation elements. Environmental investigations and monitoring. | \$115 |

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|------------------------|--|-------|
| Professional II | Geotechnical Investigations, including soil borings and visual classification of soils. Construction observation of drilled caissons, driven piles, and other foundation elements. Environmental investigations and monitoring. | \$105 |
| Professional I | Geotechnical Investigations, including soil borings and visual classification of soils. Construction observation of drilled caissons, driven piles, and other foundation elements. Environmental investigations and monitoring. | \$95 |
| Sr. Technician | Lead Inspector. Field inspection/testing of soil subgrade preparation, asphalt, concrete, reinforcing steel, masonry, and spray-applied fireproofing. Construction observation of drilled caissons, driven piles, and other foundation elements. Laboratory testing for soil properties. QA/QC for conformance of materials, supplies, etc. to contract documents. | \$115 |
| Technician IV | Field Inspection/testing of soil subgrade preparation, asphalt, concrete, reinforcing steel, masonry, and spray-applied fireproofing. Construction observation of drilled caissons, driven piles, and other foundation elements. Laboratory testing for soil properties. | \$100 |
| Technician III | Field Inspection/testing of soil subgrade preparation, asphalt, concrete, reinforcing steel, masonry, and spray-applied fireproofing. Construction observation of drilled caissons, driven piles, and other foundation elements. Laboratory testing for soil properties. | \$90 |
| Technician II | Field Inspection/testing of soil subgrade preparation, asphalt, concrete, reinforcing steel, masonry, and spray-applied fireproofing. Construction observation of drilled caissons, driven piles, and other foundation elements. Laboratory testing for soil properties. | \$80 |
| Technician I | Field Inspection/testing of soil subgrade preparation, asphalt, concrete, reinforcing steel, masonry, and spray-applied fireproofing. Construction observation of drilled caissons, driven piles, and other foundation elements. Laboratory testing for soil properties. | \$70 |
| Sr. Drafter | Drafting (CADD/GIS) | \$120 |
| Drafter III/IV | Drafting (CADD/GIS) | \$110 |
| Drafter I/II | Drafting (CADD/GIS) | \$100 |
| Senior Office Services | Prepare invoices and compliance reports. | \$125 |

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|---------------|---|------|
| Admin. III/IV | Format, print, and assemble technical reports and other deliverables. | \$95 |
| Admin. I/II | Format, print, and assemble technical reports and other deliverables. | \$80 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: 3.2

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SUB-CONSULTANT TEAM MEMBERSFirm Name: Stolfus & Associates, Inc.

List **ALL** potential firm personnel titles/classifications that may be utilized under the Agreement, and their respective hourly rate. Do not list names of personnel, only titles (i.e. Project Manager).

| Title/Classification | Responsibilities | Rate/Hr. |
|----------------------------|---|----------|
| Principal | Directs all aspects of firm's operations | \$250 |
| Professional Engineer 5 | P.E. Licensed Project Engineer with over 20 years of experience with major responsibility for technical performance and project management depending on specific assignments. | \$225 |
| Professional Engineer 3 | P.E. Licensed Project Engineer with over 10 years of experience with responsibility for technical performance and project management depending on specific assignments. | \$200 |
| Professional Engineer 2 | P.E. Licensed Project Engineer with over 7 years of experience with responsibility for technical performance on projects. | \$185 |
| Professional Engineer 1 | P.E. Licensed Project Engineer with over 5 years of experience working under general supervision. | \$165 |
| Engineer-In-Training | Entry-level engineer performing engineering assignments under the guidance of experienced engineers | \$130 |
| Engineering Student Intern | Project assignments under direction of engineering professionals | \$80 |
| Office Manager | Responsible for administrative aspect of support work. | \$110 |
| Administrative Assistant | Performs routine clerical/office support work. | \$80 |

Multiplier, which when multiplied by the direct labor rate yields the above hourly billing rate: **2.99024**

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