# INTERGOVERNMENTAL AGREEMENT BETWEEN DENVER AND AURORA REGARDING FUNDING, DESIGN AND PRECONSTRUCTION OF THE EAST COLFAX AVENUE BUS RAPID TRANSIT PROJECT

**THIS INTERGOVERNMENTAL AGREEMENT** (the "Agreement") is entered into by and between **CITY & COUNTY OF DENVER**, a home rule city and municipal corporation of the State of Colorado (**"**Denver") and the **CITY OF AURORA**, COLORADO a home rule city and municipal corporation of the State of Colorado ("Aurora") (collectively, the "Parties").

## RECITALS

**WHEREAS**, the Parties are legally empowered under Article XIV, Section 18(2)(a) of the Colorado Constitution, C.R.S. Section 29-1-201, *et. seq.*, and their respective charters and organizational documents and the laws of the State of Colorado to enter into this Agreement.

**WHEREAS,** the Parties wish to cooperate to design and construct the East Colfax Avenue Bus Rapid Transit Project, that will provide a corridor-based bus rapid transit system located partially in Denver and partially in Aurora.

**WHEREAS,** the Parties have agreed that Denver will contract and manage contracts for owners representative, design, preconstruction and construction services for the Project.

**WHEREAS**, Aurora wishes to fund the design and preconstruction services of that portion of the Project located in Aurora.

**WHEREAS**, this Agreement sets forth the Parties commitments during the design and preconstruction phase of the Project.

**WHEREAS,** the Parties anticipate amending this agreement to address the construction phase of the Project.

**WHEREAS,** the Parties anticipate that maintenance and operation of the Project will be addressed in a separate agreement.

## AGREEMENT

**NOW, THEREFORE,** in consideration of the premises and the mutual covenants and obligations set forth herein, the Parties hereto mutually agree to the terms and conditions described below.

## SECTION 1 - BACKGROUND

1.01 East Colfax Bus Rapid Transit. In the fall of 2020, Denver, in coordination with the Regional Transportation District ("RTD"), initiated a National Environmental Policy Act ("NEPA") study and development of preliminary engineering plans for a Bus Rapid Transit ("Colfax BRT") system that would serve East Colfax Avenue between Denver Union Station and the RTD R-Line Colfax Station at Interstate 225 in Aurora (the "Project").

1.02 Federal Transit Administration. In November 2021, the Project was approved by the Federal Transit Administration ("FTA") for Project Development and is formally in the FTA "pipeline" of Capital Investment Grant projects.

1.03 Regional Transportation District. As the designated recipient of federal funds, RTD is the Project Sponsor, and with full cooperation of Denver, will pursue Small Starts funding for the Project. Denver submitted the East Colfax Avenue BRT Project Small Starts Rating Application in August 2022. Attached as **Exhibit A.**

1.04 Project. The Project is a corridor-based bus rapid transit system that includes features emulating the service provided by rail fixed guideway. The Project includes the features and elements set forth in the East Colfax Avenue BRT Small Starts Rating Application and the Station Design Summary. Attached as **Exhibit A** and **Exhibit B.**

1.05 Additional Station Amenities. The Project only includes those station features and amenities identified in **Exhibit A** and **Exhibit B**. The Parties expressly acknowledge and agree that additional station amenities/betterments beyond those identified in **Exhibit A** and **Exhibit B** are outside the scope of this Agreement and the FTA Small Starts Grant process.

1.06 Project Segments. The Project has three distinct segments with different physical/geometric configurations as follows:

Downtown Segment: Curbside-running alignment in westbound 15th Street and eastbound 17th Street existing bus lanes between Denver Union Station and Civic Center station ("Downtown Segment").

Denver Segment: Center-running alignment in dedicated fixed guideway lanes in Denver between Civic Center station and the intersection of East Colfax Avenue and Yosemite Street ("Denver Segment").

Aurora Segment: Curbside-running alignment in mixed traffic flow in Aurora between the intersection of East Colfax Avenue and Yosemite Street to the Colfax/R Line Light Rail Transit station ("Aurora Segment").

## SECTION 2 – FUNDING AURORA SEGMENT

2.01 Aurora Contribution. Within 30 days of the execution of this Agreement, Aurora shall pay to Denver **TWO MILLION THREE HUNDRED AND THIRTY THREE THOUSAND DOLLARS AND NO CENTS ($2,330,000.00)** to fund design and preconstruction services for the Aurora Segment of the Project ("Aurora's Contribution").

2.02 Project Fund. Denver shall set up a project account that will hold all project funds, separate from other accounts of Denver. The Project account shall contain a subaccount for Aurora's Contribution which will generate its own investment earnings.

2.03 Use of Aurora Contribution. Funds in the Aurora's Contribution subaccount shall only be used for preconstruction services and for design services as set forth in the Design Services, Scope of Services and Fees. Attached as **Exhibit C**.

2.04 Accounting. Denver shall keep an accounting of the Project account, including the subaccount for Aurora's Contribution and investment earnings, and shall provide Aurora with quarterly reports detailing investment earnings generated to date and how Aurora's Contribution is being expended.

2.05 Additional Funding. Aurora's Contribution is based upon an estimate of the cost to complete design and preconstruction of the Aurora Segment. Denver will direct the design work within Aurora's Contribution. Denver will regularly consult with Aurora on design work and associated progress. If it appears additional funding will be necessary to complete the design of the Aurora Segment or if Aurora requests changes to the design that would cause the cost of design and preconstruction services for the Aurora Segment to exceed Aurora's Contribution, the City will notify Aurora to give Aurora time to identify additional funding and/or to discuss potential cost saving measures with Denver.

2.06 Unused Funds. If funds remain in the Aurora's Contribution subaccount after the Project is complete, they will be returned to Aurora within 90 days.

## SECTION 3 – ADDITIONAL TERMS

3.01 Design Standards. Denver shall require that the design of all stations in the Aurora Segment conform to all current applicable FTA, DOT, CDOT, RTD and City of Aurora design standards. In addition, Denver shall require that the Aurora Segment be designed in conformance with the requirements of the Americans with Disabilities Act ("ADA") and consider the guidelines in the Public Rights-of-Way Accessibility Guidelines (PROWAG) to the maximum extent feasible. The Design Consultant will be required to obtain a Public Improvements Inspections Permit for any work (geotechnical or utility investigations, surveying, etc.) within Aurora's public Rights-of-Way. Plan reviews for the Aurora Segment will follow the Aurora's AMANDA review process.

3.02 The Parties do not intend, and nothing contained in this Agreement shall be deemed, to create a partnership, co-tenancy, joint venture, or agency of any kind.

3.03 This Agreement shall be construed in accordance with the laws of the State of Colorado. In the event of any dispute between the Parties to this Agreement, the venue for the dispute resolution shall be the District Court for and in the City and County of Denver, Colorado.

3.04 This Agreement shall inure to the benefit of and be binding upon the Parties to this Agreement and their respective successors and permitted assigns. This Agreement is solely between and for the benefit of the Parties, and no design consultant, contractor, any subcontractor nor any other person is a third-party beneficiary to or under this Agreement.

3.05 This Agreement cannot be amended or modified except by a written document signed by all Parties and in the same manner that approval herein is granted. Approval of the Denver City Council shall be obtained as required by the Denver Charter.

3.06 Disputes. The Parties agree to work together to resolve issues or disputes related to this Agreement informally at the lowest level possible and within the established technical working groups and between technical discipline leads, subject matter experts and project managers. If an issue cannot be resolved at this initial level Denver's Colfax BRT Program Director and Aurora's Deputy City Manager for the Public Works Department will meet to resolve the issue. Any issue Denver's Program Director and Aurora's Deputy City Manager are unable to resolve will be presented to the Executive Oversite Committee.

3.07 No waiver of any of the provisions of this Agreement shall be deemed to constitute a waiver of any other of the provisions of this Agreement, nor shall such waiver constitute a continuing waiver unless otherwise expressly provided herein, nor shall the waiver of any default hereunder be deemed a waiver of any subsequent default hereunder.

3.08 The Parties and their respective counsel have had the opportunity to review the Agreement, and the Agreement will not be construed against any party merely because any provisions of the Agreement were prepared by a particular party.

3.09 All notices required by the terms of the Agreement must be hand delivered, sent by overnight courier service, mailed by certified mail, return receipt requested, or mailed via United States mail, postage prepaid, addressed as follows:

Denver: Executive Director
Department of Transportation and Infrastructure
201 West Colfax Ave. Dept. 608
Denver, Colorado 80202

With a copy of any such notice to:

Denver City Attorney's Office
1437 Bannock St., Room 353
Denver, Colorado 80202

Aurora: City Manager
City of Aurora
15151 East Alameda Parkway
Aurora, Colorado 80012

With a copy of any such notice to:

Public Works Department
Attn: Traffic Manager
15151 East Alameda Parkway, Suite 3200
Aurora, Colorado 80012

Notices hand delivered or sent by overnight courier are effective upon delivery. Notices sent by certified mail are effective upon receipt. Notices sent by mail are effective upon deposit with the U.S. Postal Service. The Parties may designate substitute addresses where or persons to whom notices are to be mailed or delivered. However, these substitutions will not become effective until actual receipt of written notification.

3.10 The Parties are political subdivisions of the State of Colorado and, as such, (1) all financial obligations described hereunder are subject to annual budget and appropriations requirements, and (2) no consultants, contractors or subcontractors shall have lien rights against the Parties, nor against any property lying within the boundaries of the Parties, in the event of nonpayment of any amount due under this Agreement.

3.11 The Parties, their elected officials, directors, officials, officers, agents, and employees are relying upon and do not waive or abrogate or intend to waive or abrogate by any provision of this Agreement the monetary limitations or any other rights immunities or protections afforded by the Colorado Governmental Immunity Act, Section 24-10-101 et seq., C.R.S., as the same may be amended from time to time.

3.12 No elected official, director, officer, agent, or employee of any Party shall be charged personally or held contractually liable under any term or provision of this Agreement, or because of any breach thereof or because of its or their execution, approval, or attempted execution of this Agreement.

3.13 This Agreement is the complete integration of all understandings between the Parties as to the subject matter of the Agreement. No prior, contemporaneous or subsequent addition, deletion, or other modification has any force or effect, unless embodied in the Agreement in writing. No oral representation by any officer or employee of the Parties at variance with the terms of the Agreement or any written amendment to the Agreement will have any force or effect or bind the Parties.

3.14 Except as expressly provided elsewhere herein, each Party shall be responsible for all suits, demands, claims, costs, or actions proximately resulting from its own individual acts or omissions or from the acts or omissions of any of its officers or employees.

3.15 It is the intent of the Parties that no third-party beneficiary interest is created in or by this Agreement. The Parties are not presently aware of any actions by them or any of their authorized representatives which would form the basis for interpretation construing a different intent, and in any event each of them expressly disclaims any such acts or actions, particularly in view of the integration of this Agreement.

3.16 The Parties agree that any duly authorized representative of Aurora and Denver, including the Denver Auditor or his or her designee, shall, until three (3) years after termination of this Agreement, have access to and the right to examine any directly pertinent books, documents, papers, and records directly related to this Agreement upon at least ten (10) calendar days prior written notice.

3.17 Whenever possible, each provision of this Agreement shall be interpreted in such manner as to be effective and valid under applicable law; provided however if any provision of this Agreement

is held to be prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions or the remaining provisions of this Agreement.

3.18 The Parties represent that to the best of their information and belief no elected official, officer or employee of Denver and Aurora is either directly or indirectly a party to or in any manner interested in this Agreement except as such interest may arise because of the lawful discharge of the responsibilities of such elected official, officer or employee.

3.19 This Agreement may be executed in one or more counterparts, each of which shall be deemed an original and together shall constitute one and the same instrument.

3.20 Confidentiality. Denver intends to procure an owner's representative and a construction manager / general contractor for the Project. Colorado law, Denver's Charter, ordinances, and executive orders require that these selection processes be conducted in an open, fair and competitive manner. In addition, Denver's agreement with RTD and anticipated federal funding will require that contracts be procured in an open, fair and competitive manner. Aurora will have access to non-public information (verbal, written, electronic) that could give proposers an unfair advantage. Aurora will not communicate with, or provide information to, potential or actual proposers regarding the project during an active procurement. In addition, Aurora will coordinate with Denver before releasing any non-public information. If Aurora learns that non-public information has been shared with a potential or actual proposer, it will notify Denver's Project Manager in writing as soon as is practical.

3.21 The Parties consent to the use of electronic signatures. The Agreement, and any other documents requiring a signature hereunder, may be signed electronically by such Party in the manner specified by such Party. The Parties agree not to deny the legal effect or enforceability of the Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Agreement in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

**Exhibit List**

**Exhibit A -** Small Starts Rating Application, Section 1 Project Narrative.

**Exhibit B -** Station Elements.

**Exhibit C –** Design Services, Scope of Services and Fees.

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**Contract Control Number:** DOTI-202265080-00
**Contractor Name:** CITY OF AURORA

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:**

Attorney for the City and County of Denver

By: _____

**REGISTERED AND COUNTERSIGNED:**

By: _____

By: _____

**Contract Control Number:** DOTI-202265080-00
**Contractor Name:** CITY OF AURORA

**LOCAL AGENCY**
CITY OF AURORA

_____
Signature

_____
By: Mike Coffman, Mayor

Date: _____

Additional Local Agency Signature if Needed

_____
Signature

_____
As to form: Michelle Gardner, Sr. Assistant City Attorney

Date: _____

_____
Signature

_____
Attested By: Kadee Rodriguez, City Clerk

Date: _____

# Exhibit A

## Small Starts Rating Application Excerpts

| | |
|---|---|
| Section 1 Project Narrative | pp 6-10 of 1,387 PDF pages |
| Section 5 Preliminary Cost Estimate | p 144 |

## Owner's Representative & CMGC Scopes of Work

# Small Starts Rating Application
# Section 1: Project Narrative

## Introduction

The Denver Regional Transportation District (RTD) requests an FTA Small Starts project rating for the East Colfax Avenue Bus Rapid Transit (Colfax BRT) corridor project. RTD and the City and County of Denver (CCD) have been analyzing the East Colfax Avenue corridor as a potential high-capacity transit corridor for the past 10 years. Strong community support for the project was reflected in the 75% preference for center-running BRT in the Colfax corridor. RTD/CCD selected BRT as the locally preferred alternative in July 2017, and the LPA was included in the *2050 Metro Vision Regional Transportation Plan* - the region's fiscally constrained long-range transportation plan in April 2021.

In November 2020, RTD/CCD initiated a National Environmental Policy Act (NEPA) study and development of preliminary engineering plans for the BRT system that will serve East Colfax Avenue between downtown Denver Union Station (DUS) and the RTD R-Line Colfax Station at Interstate 225 (I-225) in the City of Aurora. FTA Region 8 approved the project for entry to Project Development in October 2021. RTD/CCD anticipate completing the FTA Project Development process and submitting a construction grant application in August 2023, receiving a Small Starts construction grant by early 2024, and completing construction/beginning revenue service by the third quarter of 2026.

The proposed Colfax BRT service will combine and replace the existing bus Route 15 and Route 15L services which combined have the highest ridership in the entire RTD system with 22,000 riders per average weekday. The Colfax BRT enhanced transit service will respond to growing travel demand in the corridor and is fully compatible with locally adopted neighborhood plans. The Colfax BRT project improvements will provide faster, more reliable and safer service in this increasingly congested corridor. With center-running dedicated BRT lanes, level boarding platforms, off-board fare collection, and Transit Signal Priority (TSP), as well as forecasted population and employment growth in the corridor, average weekday ridership is expected to increase by more than 40%.

As the FTA grantee for the Denver Metropolitan Area, RTD will be the project sponsor and CCD will be a subrecipient to RTD for receipt of FTA funds programmed and allocated to the project. RTD will also operate the BRT service. RTD has extensive technical capacity and experience managing New and Small Starts projects over the past 30 years. CCD and CIty of Aurora are primary providers of local match for the project and will maintain their respective corridor segments and stations. Other cooperating agencies include Colorado DOT and Denver Regional Council of Governments (DRCOG).

## Project Identification/Limits

The Colfax BRT project will operate along the 9.9-mile corridor between Denver Union Station (DUS) through Civic Center station to the R Line light rail station in Aurora, which are the limits for NEPA evaluation and clearance. A Documented Categorical Exclusion (DCE) is underway and will be completed prior to the construction grant application in August 2023. However, RTD/CCD define the Colfax BRT Capital Investment Grant (CIG) project limits for this Small Starts rating application and potential FTA funding as Civic Center station to the R Line station since that is the 8.5-mile portion of the corridor where substantial capital improvements will be made to meet the FTA BRT definition. This CIG project does not include the BRT vehicles - they will be procured by RTD with other funding.

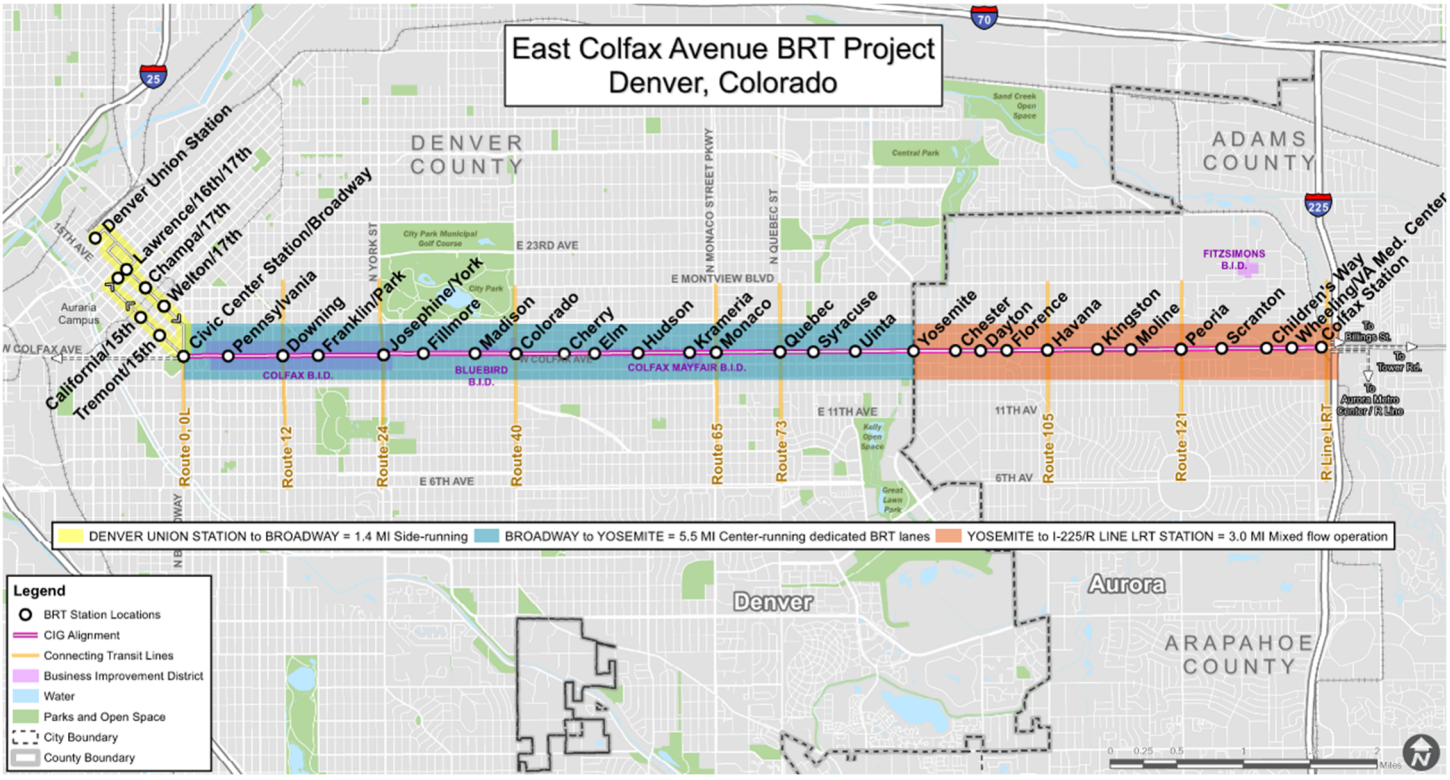
The BRT elements within the CIG project limits will include project branding; 5.5 miles of dedicated BRT lanes for faster, more reliable service; bi-directional service 24 hours per day and 7 days per week; short headways (4.3-minute composite headway all day and 15-minute headways overnight);

and enhanced stations with ADA access, shelter from the weather, and route/schedule information. In addition, the Colfax BRT project may include level boarding station platforms, off-board fare collection, improved lighting, security cameras, and emergency telephones; transit signal priority (TSP) treatments at appropriate locations to reduce transit travel time; and improved, safe pedestrian access. The capital cost estimate for the project is $255M in year-of-expenditure (YOE) dollars. In August 2023, RTD/CCD intend to request a CIG grant of less than 50% of the capital cost. RTD/DOTI already have 74% of the non-CIG funding committed or budgeted.

The 8.5-mile Colfax BRT CIG project includes 28 enhanced stations with an average spacing of 0.31-mile as shown on **Figure 1.** That map also illustrates the full 9.9-mile operational corridor including the Downtown Denver segment from Denver Union Station to Civic Center Station, as detailed below.

- Curbside-running alignment in the existing one-way 15th/17th Street dedicated bus lanes between Denver Union Station and Civic Center (Colfax/Broadway) station; 1.4 miles, 4 one-way side-stations in each direction with 0.35-mile average spacing
- Center-running alignment in dedicated BRT lanes between Civic Center (Colfax/Broadway) station and Colfax/Yosemite Street; 5.5 miles, 16 stations (32 one-direction split center-platforms) with 0.34-mile average spacing
- Curbside-running alignment in mixed traffic flow in Aurora east of Colfax/Uinta station to Colfax/R Line LRT station (near I-225); 3 miles, 12 stations (24 one-direction split side-platforms) with 0.27-mile average spacing

**Figure 1. Colfax BRT Project Limits**




The Colfax BRT project will directly serve and connect several of DRCOG's designated urban centers with improved transit service. Within those urban centers are a wide variety of residential, employment, commercial/retail, institutional, education, healthcare, office, cultural, and recreational facilities, and major activity centers. These include Denver Union Station – RTD's central rail and bus hub for the region; Downtown Denver - the largest employment center in the region with

125,390 employees; Civic Center/State Capitol complex; 14 major residential neighborhoods; four Business Improvement Districts (BIDs); Denver East High School; recreational/cultural centers such as the Ogden Theater, Bluebird Theater, Fillmore Auditorium, Aurora Fox Art Center, and Carla Madison Recreation Center; National Jewish Health Center; Martin Luther King, Jr public library; Anschutz Medical Campus including the largest VA Hospital in Colorado; and the R Line LRT station. A total of 135,760 employees are within ½-mile of and served by the corridor.

### Current Conditions

The major activity centers within the corridor include the two large employment centers of Downtown Denver and Anschutz Medical Campus at either end of the corridor. The current population and employment characteristics of the Colfax BRT corridor are summarized in **Table 1** including the various categories of transit dependents. Traffic volumes are significant and congestion levels on this major travel corridor continue to increase, with significant impact on transit travel times and increasing delay. Given the limited right-of-way, RTD/CCD have identified this opportunity to create center-running dedicated BRT lanes to create faster and more reliable transit service that will be competitive with the automobile and produce higher transit ridership.

**Table 1. Colfax BRT Corridor Population and Employment - 2020**

| Population Group | Number within ½-mile | % of Total |
|---|---|---|
| Total population | 97,392 | 100% |
| Total households | 49,294 | 100% |
| Individuals of color | 44,800 | 46% |
| Low-income households | 12,324 | 25% |
| Adults aged 65 and over | 8,765 | 9% |
| Individuals with a disability | 12,661 | 13% |
| Households without a motor vehicle | 8,380 | 17% |
| Households that are housing cost burdened | 13,802 | 28% |
| **Total Employment** | 135,760 | 100% |

The BRT project is located on a relatively hight trafic volume corridor with high crash frequency and severity. Safety measures in this project include dedicated BRT lanes to reduce vehicle and pedestrian conflicts and reduce the number of crashes; removing left turns at unsignalized intersections between Broadway and Uinta via installation of a raised barrier separating the center-running BRT lanes, center station platforms so that a BRT rider only has to cross half of the street for the outbound and return trips, pedestrian crossing improvements, sidewalk bulbouts to reduce intersection crossing distance, improved lighting at and between stations, and signal timing improvements. The dedicated BRT lanes will also reduce the bus/motor vehicle/parking lane conflicts and the number of crashes. The expected reduction in vehicle miles of travel (VMT) due to higher transit ridership with the BRT project will also result in a safer corridor.

### Conditions in the Horizon Year (2040)

Population in the corridor is forecasted to increase 23.8% and employment is forecasted to increase 12.5% by 2040 along the corridor. These increases will generate higher travel demand in the corridor, further exacerbating the current congestion and travel delays, particularly for the buses currently operating in mixed traffic flow in the corridor. The BRT project will create dedicated bus lanes, thereby making the transit service faster, more reliable and safer. The project will promote investment/reinvestment along the corridor by making significant infrastructure investments that will move more people through and within the Colfax corridor, which facilitates diversity and livability of the community. By moving forward in coordination with local and regional urban growth priorities and neighborhood plans, the project will help improve planning and investment decisions within the

growth areas served by the regionally important Colfax corridor. As previously mentioned, ridership is expected to increase by 42% to 31,300 boardings per average weekday by 2040.

## Purpose and Merits of the Project

The purpose of the Colfax BRT project is to provide faster, more reliable, and safer transit service in this increasingly congested corridor that is experiencing slower transit travel speeds and longer travel times that will worsen significantly by 2040. The need for the Colfax BRT project is demonstrated by increasing transit travel demand in the corridor as a result of growing population and employment. The Colfax BRT project will increase transit ridership in the corridor by providing a comfortable, more frequent, and more reliable service for transit patrons to a variety of destinations along the corridor. The project will provide transit travel time savings of 10-14 minutes per trip. The project also supports the City's Vision Zero initiative, making travel safer for pedestrians, cyclists, motorists and transit riders. The Colfax BRT project will support future investment and economic redevelopment along the Colfax Avenue corridor, while continuing to provide an affordable travel option to help reduce household transportation costs.

The Colfax BRT project will improve and expand the region's multimodal transportation system, services, and connections as a first step in fulfilling the regional BRT network goal. It will also improve pedestrian and bicycle accessibility to transit. Based on STOPS model output, the BRT project is expected to produce a 42% increase in ridership which will increase the overall person trip throughput in the corridor. With its increased transit ridership, the BRT project is expected to reduce auromobile VMT by 29,115 miles per day in the opening year and by 32,918 miles per day by 2040, with the resulting improvement in safety and air quality with reduction in greenhouse gas emissions.

The BRT project will connect with numerous north/south bus lines along Colfax (Routes 0/0L, 12, 24, 40, 65, 73, 105, and 121) and at the Civic Center and Denver Union Station. The service will also connect with RTD light rail and commuter rail lines at Denver Union Station and the R Line at Colfax/I-225. This will promote improved connections of people throughout the metropolitan area. The project provides access to numerous affordable housing developments along the corridor, which contributes to diversifying the region's housing stock and also improves access to opportunity.

The project will improve connections to and expand the region's transit system as the first of several BRT corridors to be implemented as part of the *Denver Regional BRT Plan*. The project will improve transit operations and travel time in the corridor, which will in turn attract new transit riders, reduce traffic congestion, improve air quality, increase multi-modal connectivity, and encourage transit-oriented development near stations.

All BRT stations will be clearly defined and enhanced with specific branding/signage and will be accessible for persons with disabilities and meet all ADA requirements, offer shelter from the weather, and provide information on other transit schedules and routes. The center-running BRT stations in the Denver segment will be split platforms across the intersections (one platform in each direction) and will include BRT branding, raised platforms for level boarding, concrete bus pads, shelters that include weather protection, ticket vending machines, benches, trash receptacles, security cameras, emergency telephone, improved lighting, and route map/schedule displays.

In the Aurora segment from Yosemite to R Line station, the recently installed Route 15L enhanced shelters will be located at each station on the sidewalk adjacent to the curb lane. BRT branding, ticket vending machines, and emergency telephones will be added to the enhanced shelters that include weather protection, benches, trash receptacles, security cameras, lighting, and map/ schedule displays. Level boarding platforms will also be added at several of the Aurora stations.

## Project Operating Plan and O&M Cost

As detailed in the Service Plan in Section 6 (attached), the BRT service will operate 24 hours a day, 7 days a week with three service patterns all serving Denver Union Station (DUS) that diverge at the R Line project terminus in Aurora to provide broader community coverage. The BRT service will provide a 4.3-minute composite headway service all weekdays (not only during peak periods), with 15-minute headway evenings/overnight and 7.5-minute weekend headway. Traffic signals will be upgraded to provide TSP where needed along the corridor to reduce transit travel time. The BRT service will combine and replace the existing bus Route 15 and bus Route 15L stops to provide more efficient station spacing and reduced transit travel time. The estimated O&M cost for the BRT project is $16,999,000 per year which is $1,061,000 higher than the current service O&M cost. This increment is less than 0.15 percent of RTD's FY 2022 operating budget (operations only, not inclusive of RTD's debt service, capital expenditures or reserves budget).

## Project Delivery Method and Implementation Schedule

RTD/DOTI anticipate a Construction Manager/General Contractor (CM/GC) project delivery method to facilitate the final design effort and identify value engineering and construction efficiencies as well as potential time and cost savings. With the CM/GC approach, construction will begin in early 2024 and be completed in mid-2026, with revenue operations starting by the 3rd quarter of 2026 as shown in the project schedule below. The CM/GC delivery method will save at least one year and facilitate earlier revenue operations as desired by the corridor stakeholders and the community.

East Colfax BRT Overall Implementation Schedule

| | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | | 2026 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Activity | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Project Development (PE/NEPA) | | | | | | | | | | | | | | | | | | | | | | | | |
| Letter Request and FTA Approval to Enter Project Development | | | | | | | | | | | | | | | | | | | | | | | | |
| Finalize LPA and include in RTP | | | | | | | | | | | | | | | | | | | | | | | | |
| NEPA Document Completion/Approval | | | | | | | | | | | | | | | | | | | | | | | | |
| PE plans and cost estimate | | | | | | | | | | | | | | | | | | | | | | | | |
| IGA/Funding Commitment for Design/NEPA of Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| PE and NEPA Clearance of Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| Financial Plan - draft/final | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts project rating application (August 2022) | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Annual Report on Funding Recommendations | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Design (21 months) incl. Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts construction grant application (August 2023) | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 (30 months) | | | | | | | | | | | | | | | | | | | | | | | | |
| Revenue Operations (start in Q3/Q4 2026) | | | | | | | | | | | | | | | | | | | | | | | | >>> |

## Summary

In summary, the Colfax BRT project is the logical response to provide significantly faster, safer, more attractive, and more reliable transit service in the highest ridership corridor in the Denver Metropolitan Area. The anticipated capital investment in improved stations, dedicated BRT lanes, and better pedestrian access will specifically address the growing travel demand in the corridor and mitigate the increased congestion and transit travel time delays resulting from that growth. The project will improve transit operations and travel time in the corridor, which will in turn attract new transit riders, reduce traffic congestion, improve air quality, increase multi-modal connectivity, improve safety, and encourage transit-oriented development near stations. The outcome of the project will be an attractive transit service that is competitive with the automobile, will improve access and mobility, and will produce significantly higher transit ridership and total person-trip throughput in the corridor. The CM/GC project delivery method will ensure efficient and timely completion of the project in line with community interests.

Preliminary Cost Estimate

RTD
East Colfax BRT

| Scope and Activity Description | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scope Code | ALI Code | Scope and Activity Line Item Descriptions | Qty | | Federal 5309 Small Starts | | | Federal Other | | | Project Totals | | | Check Total Project Cost in YOE Dollars (X000) |
| | | | | Total Federal % | Federal | Local | Total | Federal | Local | Total | Federal | Local | Total | |
| 14010 | 140110 | GUIDEWAY & TRACK ELEMENTS | 8.50 | 49.70% | 3,829 | 3,876 | 7,705 | | | 0 | 3,829 | 3,876 | 7,705 | 7,705 |
| 14020 | 140220 | STATIONS, STOPS, TERMINALS, INTERMODAL | 28 | 49.70% | 27,223 | 27,551 | 54,774 | | | 0 | 27,223 | 27,551 | 54,774 | 54,774 |
| 14030 | 140330 | SUPPORT FACILITIES, YARDS, SHOPS, ADMIN. BLDGS. | | 0.00% | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 |
| 14040 | 140440 | SITEWORK & SPECIAL CONDITIONS | | 49.70% | 37,329 | 37,780 | 75,109 | | | 0 | 37,329 | 37,780 | 75,109 | 75,109 |
| 14050 | 140550 | SYSTEMS | | 49.70% | 11,658 | 11,799 | 23,456 | | | 0 | 11,658 | 11,799 | 23,456 | 23,456 |
| 14060 | 140660 | ROW, LAND, EXISTING IMPROVEMENTS | | 49.70% | 1,030 | 1,043 | 2,073 | | | 0 | 1,030 | 1,043 | 2,073 | 2,073 |
| 14070 | | VEHICLES | 0 | 0.00% | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 |
| | 13.13.20 | Light Rail Cars | | | | | | | | | | | | |
| | 13.__.__ | | | | | | | | | | | | | |
| 14080 | 140880 | PROFESSIONAL SERVICES | | 80.31% | 24,356 | 9,650 | 34,007 | 15,000 | | 15,000 | 39,356 | 9,650 | 49,007 | 49,007 |
| 14090 | 140990 | UNALLOCATED CONTINGENCY | | 49.70% | 21,463 | 21,722 | 43,185 | | | 0 | 21,463 | 21,722 | 43,185 | 43,185 |
| 14100 | 141010 | FINANCE CHARGES | | 0.00% | 0 | 0 | 0 | | | 0 | 0 | 0 | 0 | 0 |
| **Total Project Cost (10 - 100)** | | | | 55.58% | 126,889 | 113,420 | 240,309 | 15,000 | 0 | 15,000 | 141,889 | 113,420 | 255,309 | 255,309 |

# Exhibit B
# Station Design

**Exhibit B: Station Elements**

**Station Design Overview**

The proposed stations/stops for the E Colfax BRT, as of 30% design, are listed in Table B-1 and illustrated in the drawings that follow at the end of this Exhibit B.

BRT Arch Stations: As of the 30% level of design, and as submitted for the purposes of the FTA Small Starts Rating Application, the full BRT stations have the following characteristics:

- Platform dimensions = 10' wide X 130' long (min) x 14" high. The platform length is to accommodate two 60' articulated buses at each stop. The platform height is still under consideration.
- Platform canopies either 30' or 45' long, dependent on location and forecast boarding volumes
- 5%-slope walkways on crosswalk end of platform (not included in 130' dimension) = approx. 15' to 30' long, depending on roadway longitudinal slope and assuming 14"-tall platform
- Raised median on opposite end of platform (not included in 130' dimension) = approx. 28' long, assuming 6" curb
- The stations are located on the near side of the intersection so that buses come to a complete stop before making the angled transition across the intersection. The transition therefore occurs at a lower, safer speed than would otherwise occur if the stops were located on the far side.

The full BRT arch stations are new to the metropolitan region, and as such, do not have fully established design standards. The intent for design standards, relative to their components and proposed ownership, is shown below in Table B-2. There are proposed to be 15 pairs of center-running arch stations, and two pairs of side-running arch stations.

BRT 15L Enhanced Stations: Street and sidewalk construction were completed in 2020, and the installation of bus shelters and additional amenities was completed in October of 2021. The new and improved amenities include a mix of infrastructure, technology, communications, and safety features designed to improve customer experience and operational efficiencies. There are proposed to be 11 pairs of side-running 15 L Enhanced stations, most of them currently in-place, with a few 15L Enhanced Stations that will be moved from the Denver section to the Aurora section when the arch stations take their place.

15L Enhanced Station Image

| **Table B-1: Station Location and Component Listing** (Refer to Exhibit C – Design Services, Scope of Services and Fees for additional info). | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **City** | **Street** | **Direction** | **Bus Lane** | **Stop Location** | **Count** | **Full BRT Station (Arch)?** | **New Enhanced 15L Shelter?** | **Branding and BRT Amenities?** |
| Denver Union Station (DUS) | Denver | Wewatta | EB/WB | Dedicated | Curbside | 2 | | | ✓ |
| Lawrence /16th | Denver | Lawrence | WB | Mixed-Flow | Curbside | 1 | | | ✓ |
| California/15th | Denver | 15th | WB | Dedicated | Curbside | 1 | | | ✓ |
| Tremont/15th | Denver | 15th | WB | Dedicated | Curbside | 1 | | | ✓ |
| Lawrence /17th | Denver | 17th | EB | Dedicated | Curbside | 1 | | | ✓ |
| Champa/17th | Denver | 17th | EB | Dedicated | Curbside | 1 | | | ✓ |
| Welton/17th | Denver | 17th | EB | Dedicated | Curbside | 1 | | | ✓ |
| Civic Center Station/Broadway | Denver | Colfax | WB | Dedicated | Curbside | 1 | ✓ | | ✓ |
| Civic Center Station/Broadway | Denver | Colfax | EB | Mixed-Flow | Curbside | 1 | ✓ | | ✓ |
| Pennslyvania | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Downing | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Franklin/Park | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Josephine/York | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Fillmore | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Madison | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Colorado | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Cherry | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Elm | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |

| **Table B-1: Station Location and Component Listing** (Refer to Exhibit C – Design Services, Scope of Services and Fees for additional info). | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **City** | **Street** | **Direction** | **Bus Lane** | **Stop Location** | **Count** | **Full BRT Station (Arch)?** | **New Enhanced 15L Shelter?** | **Branding and BRT Amenities?** |
| Hudson | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Krameria | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Monaco | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Quebec | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Syracuse | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Uinta | Denver | Colfax | EB/WB | Dedicated | Center | 2 | ✓ | | ✓ |
| Yosemite | Denver | Colfax | WB | Mixed-Flow | Curbside | 1 | | | ✓ |
| Yosemite | Aurora | Colfax | EB | Mixed-Flow | Curbside | 1 | | | ✓ |
| Chester | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | ✓ | ✓ |
| Dayton | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | | ✓ |
| Florence | Aurora | Colfax | WB | Mixed-Flow | Curbside | 1 | | | ✓ |
| Florence | Aurora | Colfax | EB | Mixed-Flow | Curbside | 1 | | ✓ | ✓ |
| Havana | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | ✓ | | |
| Kingston | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | ✓ | ✓ |
| Moline | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | | ✓ |
| Peoria | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | | ✓ |
| Scranton | Aurora | Colfax | WB | Mixed-Flow | Curbside | 1 | | | ✓ |
| Scranton | Aurora | Colfax | EB | Mixed-Flow | Curbside | 1 | | ✓ | ✓ |
| Children's Way | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | | ✓ |

| **Table B-1: Station Location and Component Listing** (Refer to Exhibit C – Design Services, Scope of Services and Fees for additional info). | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Station** | **City** | **Street** | **Direction** | **Bus Lane** | **Stop Location** | **Count** | **Full BRT Station (Arch)?** | **New Enhanced 15L Shelter?** | **Branding and BRT Amenities?** |
| Wheeling /Fitzsimons (VA) | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | | ✓ |
| Colfax Station / R Line LRT | Aurora | Colfax | EB/WB | Mixed-Flow | Curbside | 2 | | ✓ | ✓ |

| **Table B-2: BRT Arch Stations – Proposed Ownership, Operations & Maintenance, and Design Standards** | | |
|---|---|---|
| **BRT Station Element** | **Ownership** | **Design Standard** |
| Platform 10’ x 130’ x 14” | Denver/Aurora | Denver/Aurora – General<br>RTD – Vehicle Clearance |
| Platform Canopy Incl. Lighting | Denver/Aurora | Denver/Aurora – General<br>RTD – Vehicle Clearance |
| Vehicle Buffer or Bus Safety Strip, e.g. Carey Fingers | Denver/Aurora | RTD |
| Benches / Seating | Denver/Aurora | Denver/Aurora &<br>RTD (re: ADA) |
| Trash Receptacles | Denver/Aurora | Denver/Aurora |
| Ticket Vending Machines / Off-Board Fare Collection | RTD | RTD |
| Crosswalks and platform approach ramp | Denver/Aurora | Denver/Aurora |
| Static Information Case, e.g. route map & schedule | RTD | RTD |
| Electronic information display (as applicable) | RTD | RTD |
| Public Art | Denver/Aurora | Denver/Aurora |
| Emergency Phones / Call-boxes | Denver/Aurora | Denver/Aurora & RTD |
| Security Cameras | Denver/Aurora & RTD | Denver/Aurora & RTD |
| Buses | RTD | RTD |

**References with 2016 RTD Bus Infrastructure Design Guidelines & Criteria**

While RTDs design standards are more fully developed for the highway setting, the following RTD design standards are cross-referenced in Table B-3 for the arterial street stetting. RTD has additional specifications throughout the RTD guidelines document. Many of these, including those related to hazard analysis (PHA), and Threat-Vulnerability Analysis (TVA), will need to be further considered and coordinated with RTD between the current 30% design stage and the future 100% design/construction documents.

| Table B-3: References to RTD Design Standards | |
|---|---|
| **Ref. Section** | **Reference Text** |
| 3.2.2 A | BRT facilities shall be designed to accommodate RTD's current vehicle fleet, unless otherwise directed by RTD. |
| 3.2.2 B | BRT facilities shall be designed to accommodate support vehicles, such as tow trucks, street supervisor vans and maintenance vehicles. |
| 3.2.2 F | Community involvement is necessary to establish a sense of place of the station in the community and to select a design for shelters, windscreens and other elements. |
| 3.2.5 B | BRT architecture shall be shaped and detailed according to its setting and shall be conceived as a component of the civic fabric of the place. Architectural shape shall respond in scale to the local and corridor context, as well as to the micro-climate conditions of the site by providing adequate wind, rain, and solar protection. Street furniture including benches, trash receptacles, bicycle parking and information kiosks shall be coordinated with the overall site architecture. |
| 3.2.5 C | [BRT] Architecture shall be durable, easy to maintain and cost effective. |
| 3.2.6 E | BRT stations shall also include supporting infrastructure necessary to accommodate RTD fare collection technology (TVM, RFID, Smart CARD, etc.), public information displays (PIDs), emergency phones (E-phones), CCTV security system, parking pay stations [if applicable], and adequate lighting. |
| 3.2.7 A | BRT Superstops are BRT stations that are located on the roadway system of the local jurisdiction, typically on arterial streets. |
| 3.2.7 B | Superstop platforms shall be accessible in accordance with ADASAD or other more restrictive local standards. |

**Design Vehicles**

All the BRT stations are intended to accommodate three design vehicles:

1. 60-foot articulated low-floor (14" floor height) bus with three doors (preferred is the RTD MetroRide vehicle) or two doors (base RTD articulated fleet in 2022).
2. 40-foot standard low-floor (14" floor height) bus with two doors
3. 16-passenger or larger ADA Paratransit Vehicle with 14" floor height.

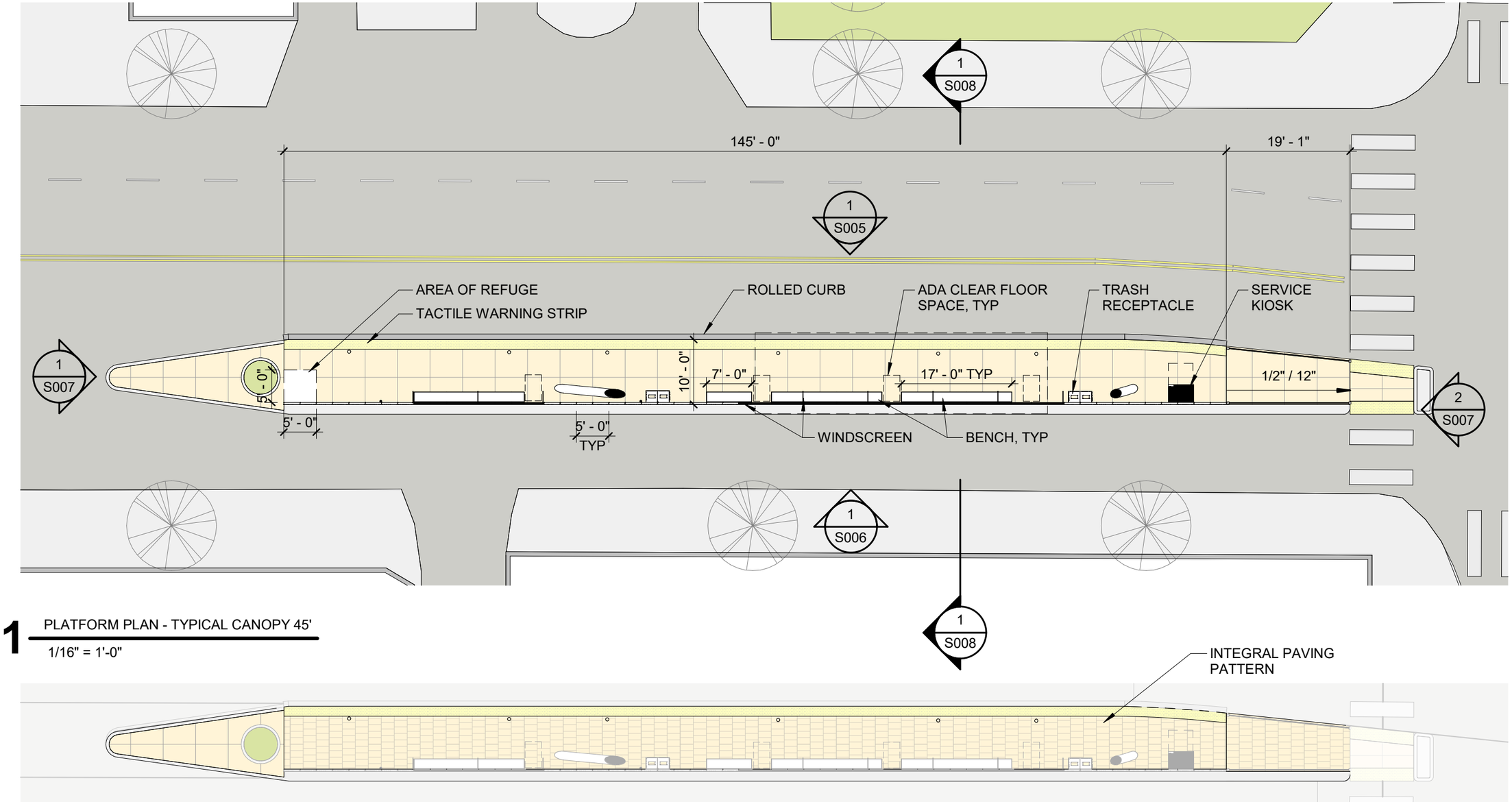
The design vehicles, above, include standard wheelchair lifts/lift cassettes capable of serving standard 6-inch curbs in locations other than quick boarding BRT Arch stations.

The following Table B-4 excerpts RTDs Bus Design Characteristics for the first two design vehicles noted above. RTDs Bus Design Characteristics did not include information for the third vehicle, but a typical vehicle was used to fill out the table.

| Table B-4: Design Vehicle Characteristics | | | |
|---|---|---|---|
| **Bus Features** | **ADA Paratransit Vehicle[1]** | **40' Low Floor Transit Bus[2]** | **60' Low Floor Articulated Transit Bus[2]** |
| Body Width, inches | 102" | 102" | 102" |
| Body Length, feet | 27' 3" | 40' 11.5" | 60' |
| Wheelbase, inches, Axle 1-2 | 208" | 279" | 229.2" |
| Wheelbase, inches Axle 2-3 | NA | NA | 292.8" |
| Turning Radius, Outer Wheels, feet | 23.8' | 43.25' | 44' |
| Height, inches | 120.5" | 122" | 126" |
| Ground Clearance, inches | | 11.8" | 10" |
| Axle Clearance, inches | | 8.5" | 5.6" |
| Curb Weight, lbs. | 6,000 | 28,200 | 39,700 |
| Gross Vehicle Weight Rating (GVWR), lbs. | 14,500 | 36,289 | 66,800 |
| Approach Angle, degrees | | 9 | 9 |
| Departure Angle, degrees | | 9 | 9 |
| Seating Capacity, seats | 14-16 seats +2 wheelchair positions | 36 | 55 |
| Ground to Step/Floor Height, inches | 14.5" | 14" | 14" |
| Ground to Step/Floor Height – kneeled, inches | 10.5" | 10" | 10" |

[1]Ford E450 International UC (Diesel) Air-Chassis 5000 Transit Shuttle Bus, LF270, per Champion Bus Inc. specifications.

[2]RTD 2016 Bus Infrastructure Design Guidelines and Criteria, Table 3A, Section 3, page 10 of 22, except the bottom two rows from a 2018 New Flyer technical summary PDF.




## 1 PLATFORM PLAN - TYPICAL CANOPY 45'

1/16" = 1'-0"

## 2 PLATFORM PLAN - PAVING PLAN

1/16" = 1'-0"

0' 4' 8' 16' 32'

| | | | |
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Denver, CO 80203

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| Revised: | Designer: K.Ashby / Detailer: M.Kutz | Structure Numbers |
| Void: | Sheet Subset: STATION | Subset Sheets: 3 of 18 |
| | | Sheet Number 196 |

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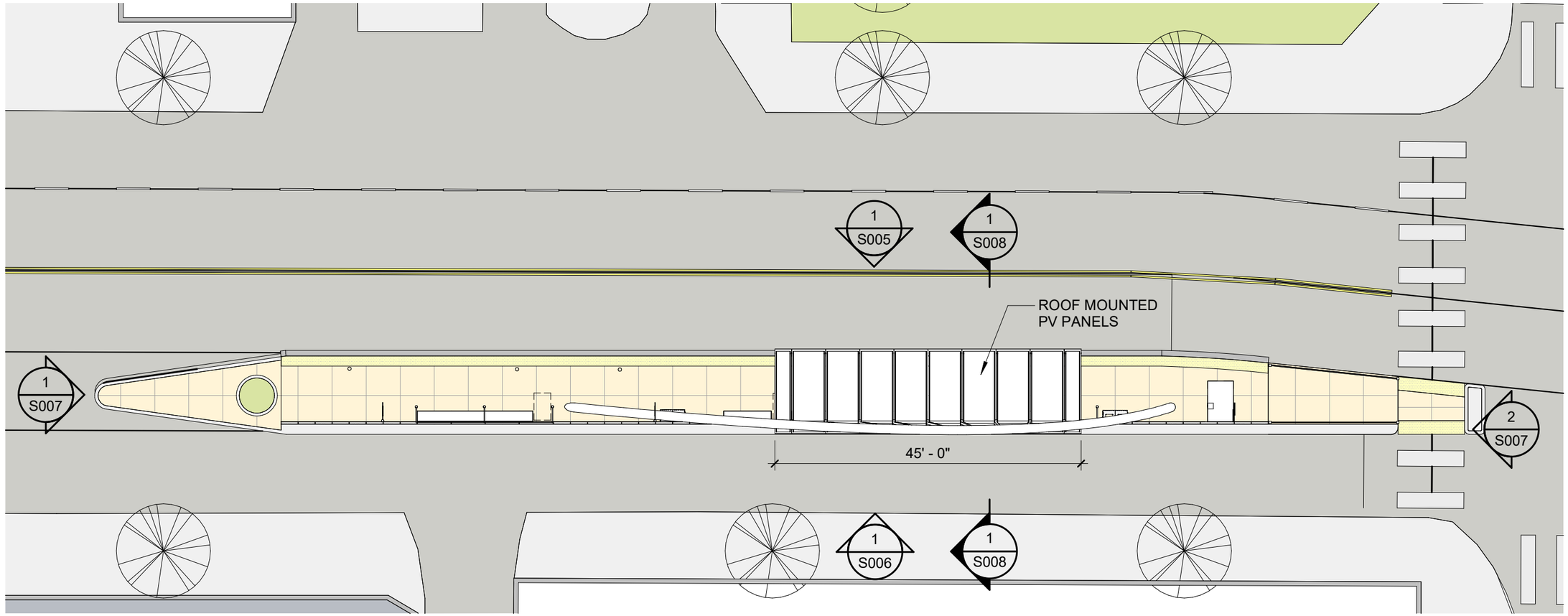
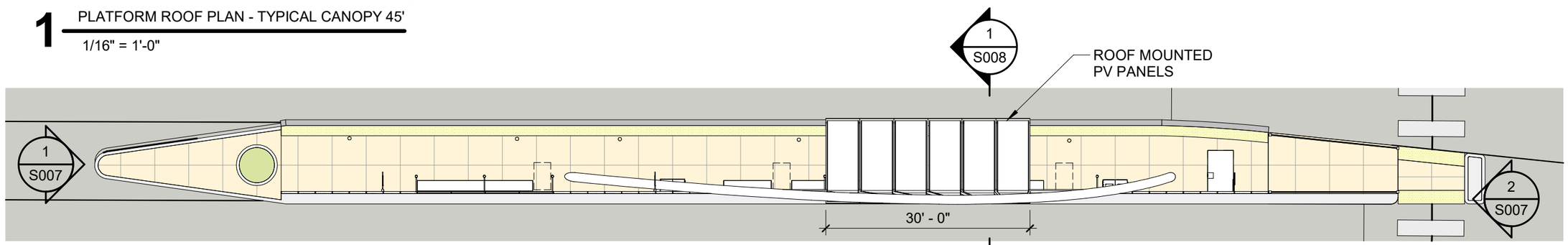



**1** PLATFORM ROOF PLAN - TYPICAL CANOPY 45'

1/16" = 1'-0"




**2** PLATFORM ROOF PLAN - SMALLER CANOPY 30'

1/16" = 1'-0"

0' 4' 8' 16' 32'

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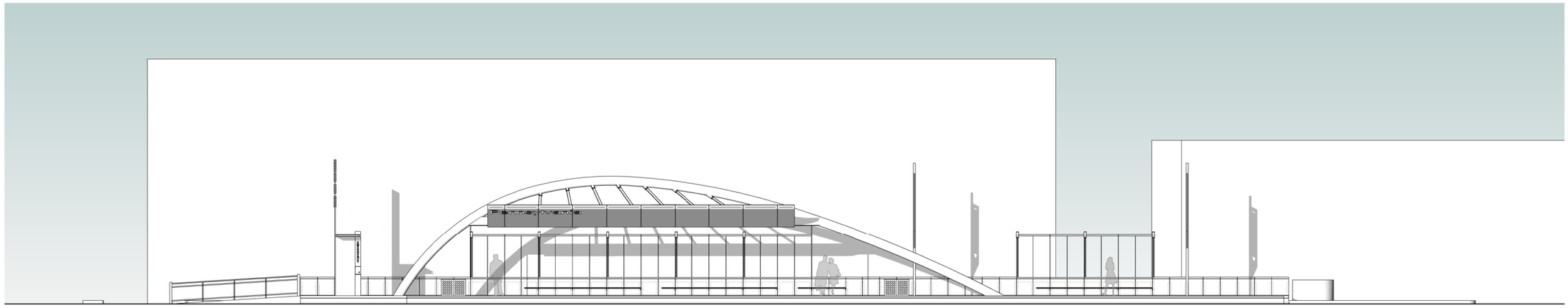
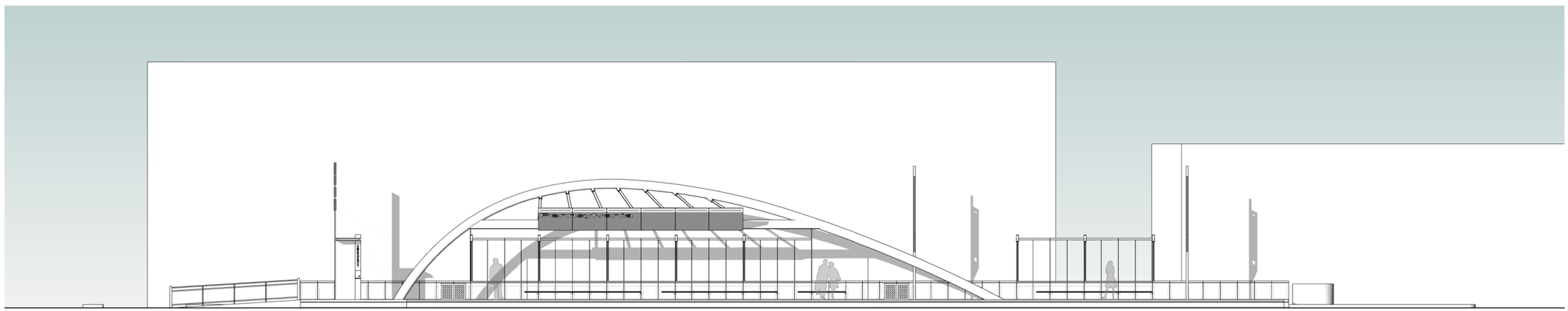
| | | Sheet Number 197 |



**1** NORTH ELEVATION - TYPICAL CANOPY 45'

1/16" = 1'-0"



**2** NORTH ELEVATION - SMALLER CANOPY 30'

1/16" = 1'-0"

0' 4' 8' 16' 32'

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Revised:

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EAST COLFAX BRT
TYPICAL PLATFORM - NORTH ELEVATION

Designer: K.Ashby
Detailer: M.Kutz
Sheet Subset: STATION
Structure Numbers
Subset Sheets: 5 of 18

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DOTI-202055954-00

Sheet Number 198

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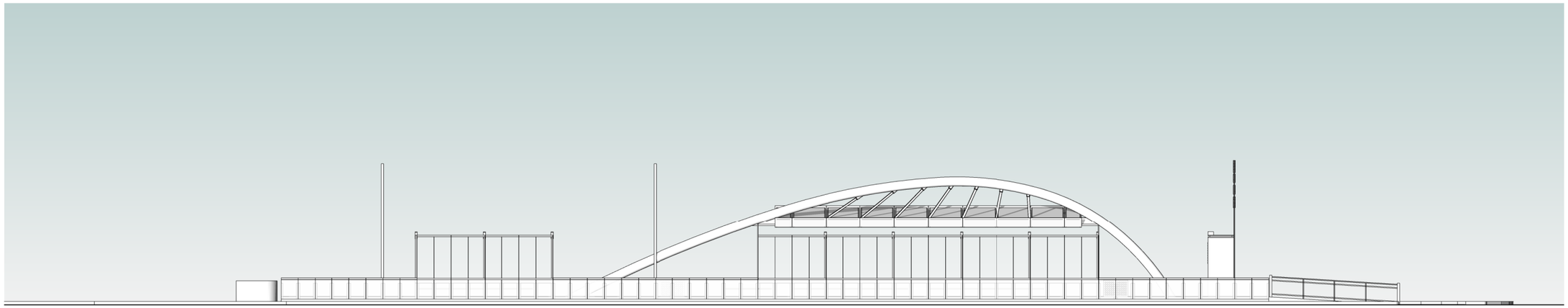

**1** SOUTH ELEVATION - TYPICAL CANOPY 45'

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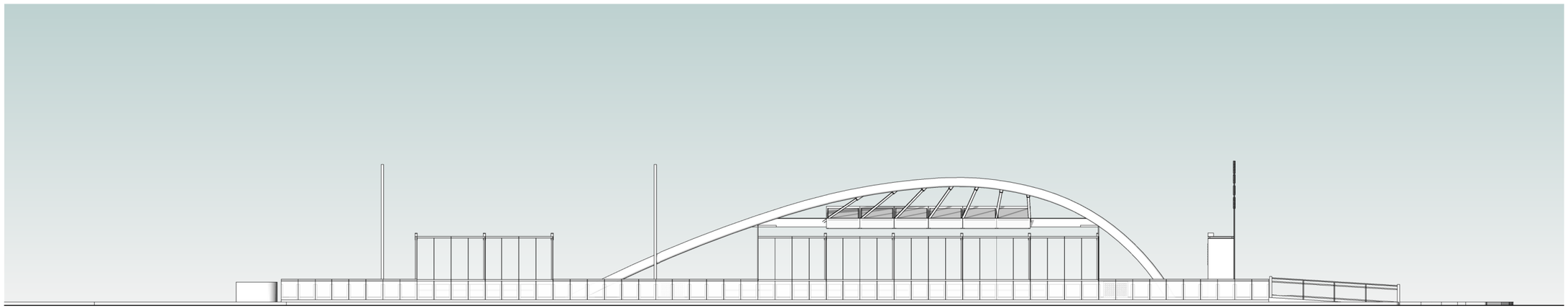

**2** SOUTH ELEVATION - SMALLER CANOPY 30'

1/16" = 1'-0"

0' 4' 8' 16' 32'

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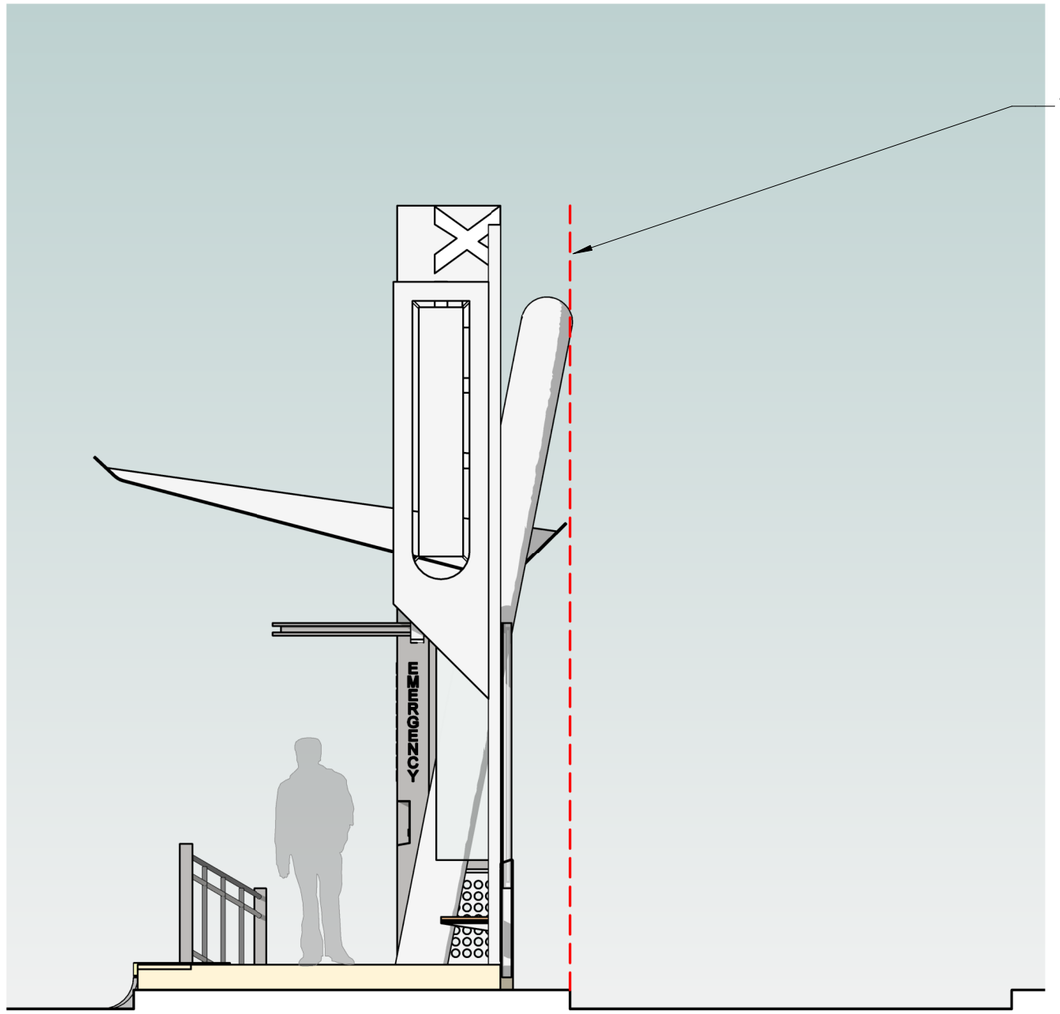
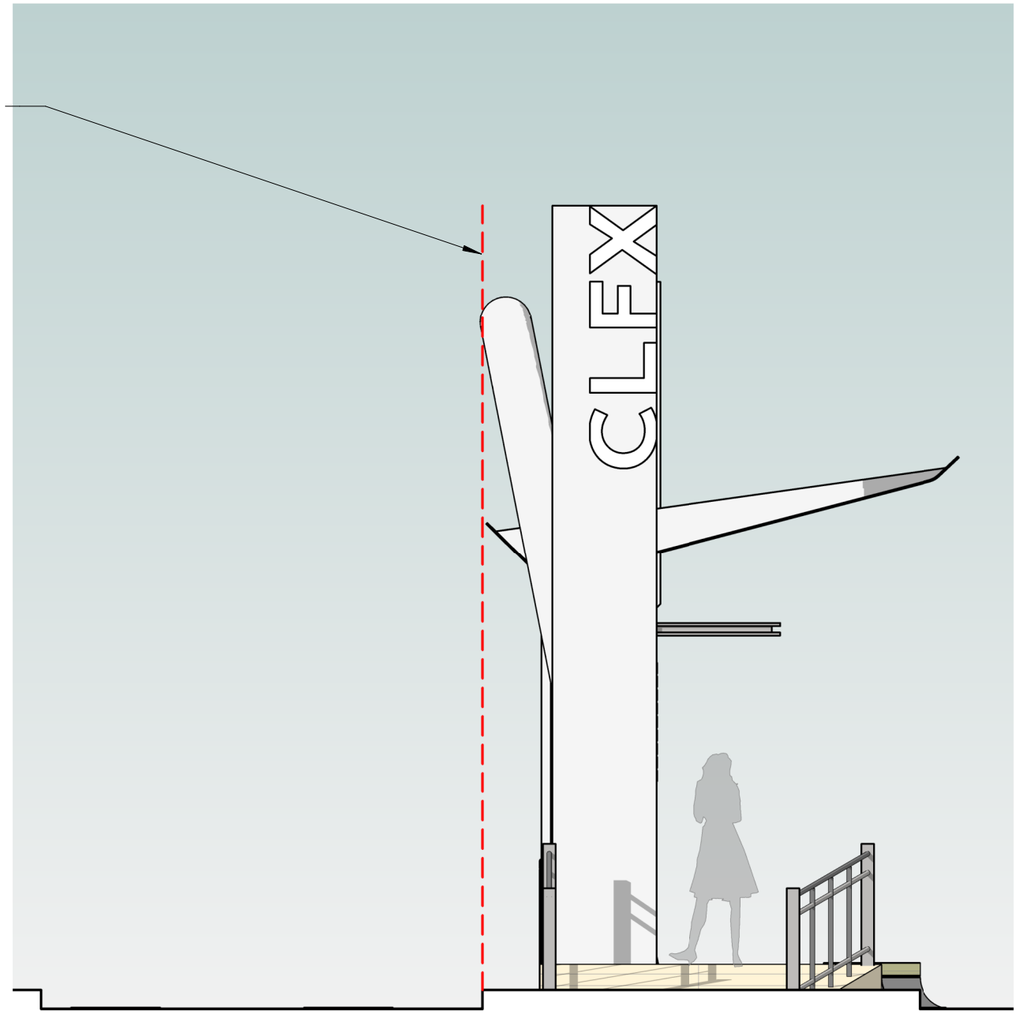



TRAFFIC LANE BOUNDARY




**1** WEST ELEVATION - TYPICAL CANOPY

1/4" = 1'-0"

**2** EAST ELEVATION - TYPICAL CANOPY

1/4" = 1'-0"

0' 4' 8' 16' 32'

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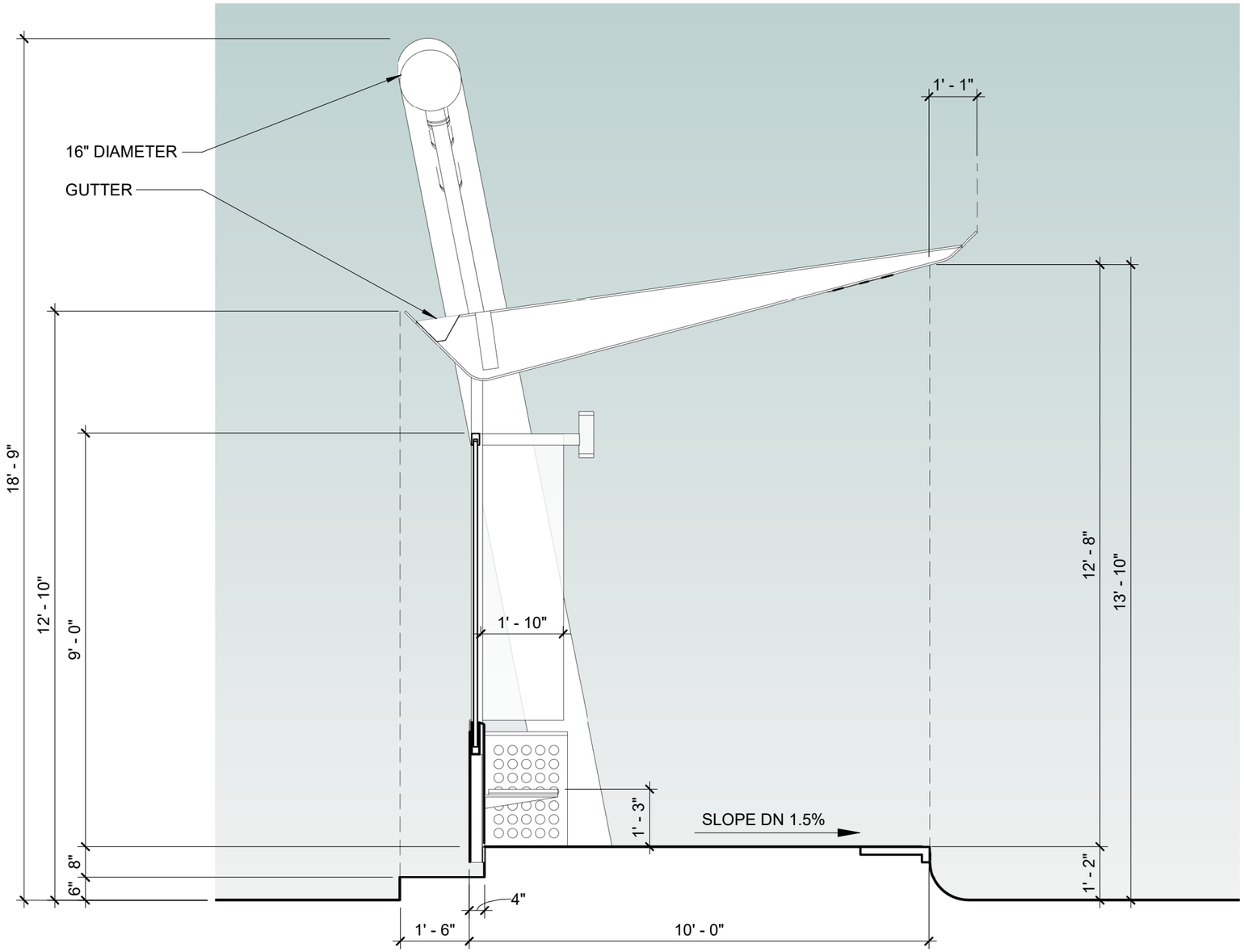


**1** SECTION - TYPICAL CANOPY

3/8" = 1'-0"

0' 1' 2' 4' 8'

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Denver, CO 80203

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| Revised: | Designer: K.Ashby / Detailer: M.Kutz / Structure Numbers | |
| Void: | Sheet Subset: STATION / Subset Sheets: 8 of 18 | Sheet Number 201 |

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# Exhibit C
# Design Services, Scope of Services and Fees

# COLFAX BRT AURORA FINAL DESIGN AND NEPA CLEARANCE

## Scope of Work

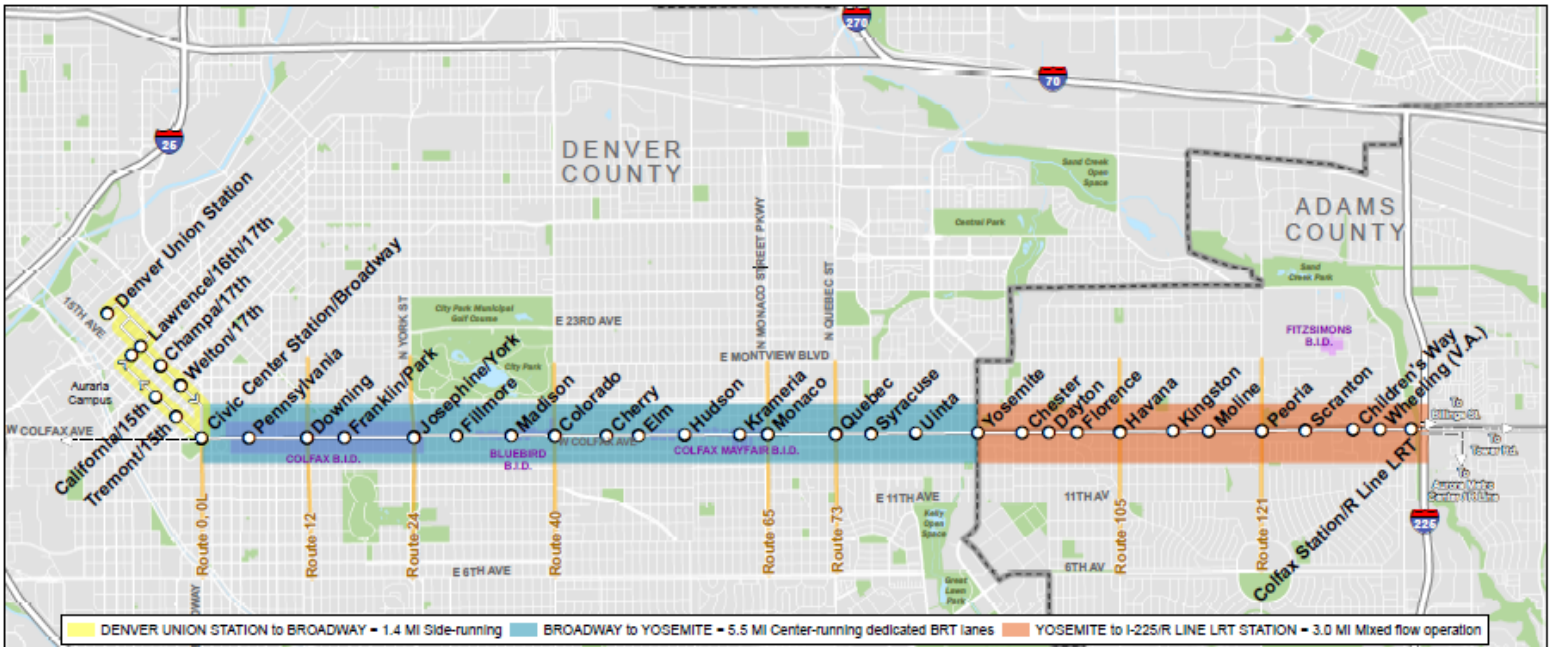
### Project Background

After years of studying East Colfax Avenue and gathering substantial community input, the City and County of Denver (CCD) is currently completing preliminary engineering and National Environmental Policy Act clearance (PE/NEPA) for the center-running bus rapid transit (BRT) project from Broadway to Yosemite with a dedicated transit lane in each direction in the City and County of Denver. The project includes new and enhanced signature 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.

The City of Aurora (Aurora) has decided to pursue design and NEPA clearance for one signature transit station/shelter, same as those to be constructed in the Denver center-running segment, at the Havana Street BRT station location. The signature station will be constructed on the curbside, where the existing enhanced 15L shelters are currently located, to maintain side-running operations through Aurora. The remaining 11 Aurora BRT stations will have the 15L enhanced shelters. Aurora has also decided to pursue design and NEPA clearance for five level boarding BRT station platforms at 3 locations:

- Moline Street – WB only (on the north side of Colfax)
- Peoria Street – EB and WB
- R Line LRT Colfax Station – EB and WB

All 12 of the Aurora BRT stations will include BRT branding elements, ticket vending machines, variable message signs with real-time schedule information and emergency telephones. 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 complete project corridor and station locations are shown on Figure 1.



# 1.0 Project Management

## 1.1 PROJECT MANAGEMENT

The Project Management scope will align with and mirror the Project Management scope and deliverables in CCD's final design scope included in Section 1 of Appendix A. The team and organizational structure will also remain the same as shown in Figure 2 of Appendix A.

## 1.2 SCHEDULE

The anticipated project delivery schedule is shown below on Figure 2. The schedule enables the inclusion of the Aurora station enhancements in the FTA Small Starts Capital Investment Grant (CIG) application in August 2023. This schedule demonstrates construction starting after FTA Small Starts CIG funding is available.

Figure 2 – Proposed Project Delivery Schedule

| | 2021 | | | | 2022 | | | | 2023 | | | | 2024 | | | | 2025 | | | | 2026 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Activity | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Project Development (PE/NEPA) | | | | | | | | | | | | | | | | | | | | | | | | |
| Letter Request and FTA Approval to Enter Project Development | | | | | | | | | | | | | | | | | | | | | | | | |
| Finalize LPA and include in RTP | | | | | | | | | | | | | | | | | | | | | | | | |
| NEPA Document Completion/Approval | | | | | | | | | | | | | | | | | | | | | | | | |
| PE plans and cost estimate | | | | | | | | | | | | | | | | | | | | | | | | |
| IGA/Funding Commitment for Design/NEPA of Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| PE and NEPA Clearance of Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| Financial Plan - draft/final | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts project rating application (August 2022) | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Annual Report on Funding Recommendations | | | | | | | | | | | | | | | | | | | | | | | | |
| Final Design (18 - 21 months) incl. Aurora Station Upgrades | | | | | | | | | | | | | | | | | | | | | | | | |
| FTA Small Starts construction grant application (August 2023) | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 Q3 2026) | | | | | | | | | | | | | | | | | | | | | | | >>> | |

# 2.0 Coordination, Communication, and Outreach

The Coordination, Communication, and Outreach scope in Aurora will align with and mirror those elements relevant to Aurora in CCD's final design scope included in Section 2 of Appendix A.

# 3.0 Funding Support

The Consultant will work closely with Aurora, CCD, 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. This effort is specific to the Aurora station improvements, and will align with Section 4 of Appendix A.

## 4.0 NEPA Evaluation

The NEPA Categorical Exclusion (CatEx) process is underway for the project definition that included only enhanced 15L shelters at the BRT station locations in Aurora. For the most part, the study area for resource evaluation has included Civic Center (Broadway) to I-225; however, capital improvements have only been focused on the Broadway to Yosemite segment prior to Aurora's decision to pursue capital improvements in the Yosemite to I-225 segment.

### 4.1 TECHNICAL RESOURCE EVALAUTIONS

The Consultant has created an Existing Conditions summary of mapping and narrative by resource to help inform the project definition process and to identify resources that may be impacted by the BRT project. For reference, the resources in the table below were identified as key resources of concern in previous studies and which may require additional investigations and updating of findings to include the station Capital Improvements in Aurora. All resources identified by FTA as required for NEPA analysis were evaluated to dismiss (if not present within the study area or clearly not affected by the project either directly or indirectly) or to carry forward for more detailed investigation. Coordination with resource agencies has been fundamental to confirm the analysis approach, issue areas, and level of mitigation if warranted.

Historic resources known to be present within the study area require substantial coordination with the State Historic Preservation Office (SHPO) to evaluate and clear through the federal Section 106 process. The Consultant will update the SHPO on the planned station improvements in Aurora and identification of potential properties within the Area of Potential Effects (APE) that are eligible or potentially eligible for the National Historic Register. The Consultant will map assessor data along the corridor and rank potentially eligible properties by low, medium and high potential to be affected to help inform design decisions. In addition, the following list of key environmental resource evaluations will be conducted and updated as needed relevant to the Aurora station improvements.

Key Environmental Resource Evaluations to be Updated

| | |
|---|---|
| **Air** | Project-level Greenhouse Gas Emissions |
| **Noise** | Prior noise assessment identified potential for moderate impact |
| **Visual** | Visual quality |
| **Historic** | APE established in 2021 for internal use and included Compass Database search for APE, historic context discussion, identification of parcels with structures older than 45 years, and photographs of potentially eligible features. Auto-eligibility approach assumes properties are eligible one parcel deep off the corridor. |
| **Parks/ Recreation** | Facilities mapped and potential impacts identified. |
| **Hazardous Materials** | A database review and limited field reconnaissance survey were completed and will be updated. |
| **Biological Resources** | The only biological resource impacts have included several tree removals. These resources will be evaluated where station improvements are taking place in Aurora. |

### 4.2 ENVIRONMENTAL CONSEQUENCES

The environmental consequences of each resource will be evaluated and updated in technical resource memos for each respective resource. All analyses and materials previously developed will be included in the documentation.

### 4.3 ENVIRONMENTAL DOCUMENT INCLUDING MITIGATION PLAN AND FTA REVIEWS AS LEAD AGENCY

Based on the previous analyses and studies, the Consultant will prepare a list of all impacts and develop an appropriate mitigation plan, along with next steps, to complete FTA approval of the NEPA CatEx process. This will include Draft and Final Documented CatEx documents with appropriate review periods by all parties and the general public, as well as the Administrative Record. The Consultant has a process by which to organize documents within one shared file structure so that it is organized efficiently through the process. This will include a system for "Draft" and "Final" versions per administrative record guidance and coordinate FTA review/approval.

NEPA deliverables will align with those included in Appendix A.

## 5.0 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 3. 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 Owner's Rep, CCD and RTD in the FTA negotiations for the CIG and assist in the grant pre-award activities associated with ROW acquisition and utility coordination. Aurora station improvements will be included in RTD coordination and FTA negotiations.

## 6.0 Engineering

For the 12 Aurora BRT stations, the Consultant will develop a preliminary design (30%) to assist with the NEPA clearance effort. The Aurora design will then be progressed from 30% design to Final design in parallel with CCD's Final Design scope of work. The Consultant will complete the design and engineering tasks in compliance with the standards listed below. RTD standards will be followed for all shelter and bus stop-related design items. When Aurora roadway/civil design requirements are not published, CDOT design criteria will be applied.

- City of Aurora Roadway Design and Construction Specifications (2016)
- RTD Bus Infrastructure Standard Drawings (2016)
- RTD Bus Infrastructure Design Guidelines and Criteria (2016)
- CDOT Roadway Design Guide (2018)
- CDOT M&S Standards (2019)
- ADA Standards for Accessible Design (2010)
- AASHTO Policy on Geometric Design of Highways and Streets (The Green Book)
- AASHTO Roadside Design Guide (RDG)
- Manual on Uniform Traffic Control Devices (MUTCD)

### 6.1 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 Aurora, CCD, 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 CCD and will include the following items:

- Introduce the project and project team (including Aurora, CCD, 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.

### 6.1.1 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, right-of-way 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 throughout the project.

### 6.1.2 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 CCD, 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.

### 6.1.3 Establish Design and Construction Schedule

The Consultant will develop an initial design and construction schedule that includes NEPA, design, funding, cost estimating, and construction activities. After award of 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 30% design completion. The CMGC will collaborate with Aurora, CCD 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.

### 6.1.4 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

## 6.2 DESIGN WORK ITEMS

### 6.2.1 Survey

The City and County of Denver will provide the aerial imagery prepared in the Denver preliminary design phase. The aerial imagery covers the entire project limits, from I-25 to I-225 (two blocks north and two blocks south of Colfax Avenue).

Conventional ground survey will be provided by Aurora at  locations where there will be new enhanced 15L shelters relocated from Denver and at the proposed Aurora curbside elevated platform locations.

### 6.2.2 Geotechnical and Pavement Design

#### Subsurface Investigation

The Consultant will conduct a pavement subsurface investigation at the following 7 Aurora station platform locations where level boarding is proposed and roadway paving could be anticipated: Havana Street EB and WB, Moline Street WB, Peoria Street EB and WB, R Line LRT Colfax Station EB and WB. At the Havana Street station, where signature shelters are proposed, 2 geotechnical boreholes at each platform will be provided. 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 4 station and platform geotechnical borings with depths varying between 15 and 25 feet and up to 10 additional borings drilled to a depth of 5 feet for the pavement 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 American Association of State Highway and Transportation Officials (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 Aurora. 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 Aurora for approval. Construction of paved surfaces shall not commence until the pavement design has been reviewed and approved by Aurora.

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 Aurora. 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 Aurora for Approval.

Pavement Design Report for all pavements, including temporary pavements, shall be submitted to Aurora 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 preforming 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, CCD, Aurora, 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 30%, 90%, and Final design plans.

### 6.2.3 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 B (QL-B) investigations at the 12 Aurora station locations. 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 50 test holes within the Aurora project limits. Test hole locations will be coordinated with the design team and CM/GC.

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

### Utility Relocation Plans:

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

### Utility Coordination

The Consultant will:

- Act as liaison between Aurora 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 Aurora
- 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 Aurora to confirm information is adjusted and matches project datum
- Coordinate with individual utility companies to convey and jointly resolve conflicts. Document findings in utility relocation plans, utility special provisions, and agreement letters.

30% Utility Coordination

- Send copies of 30% 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 30% 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 of 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 30% 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 30% submittal and the conflict locations are verified per Colorado Subsurface Utility Law (CRS 9-1.5) Quality Level B, Contractor 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
- Submit clearance letters on DOTI letterhead to the utility companies requesting their signature and return of the letters
- Prepare a utility project special provision specifications (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 Aurora 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)

### 6.2.4 Roadway Design

30% Design (Preliminary)

The Consultant will:

- Develop alignments, toes of slope and pertinent design features, including permanent and temporary impacts
- Plot/develop all required information on the plans in accordance with project plan production standards previously coordinated with Aurora
- Produce a 3-dimensional design model

- Produce layouts in the plans for roadside items including but not limited to, curb and gutter, sidewalks, curb ramps, platform walkways, and driveways
- Deliver a preliminary plan submittal with the following roadway plans:
    - Title Sheet
    - Standard Plans List
    - Abbreviations and Symbols
    - General Notes
    - Typical Sections
    - Roadway Plans
    - Roadway Profiles
- Produce quantities and specifications

**60% Design**

The Consultant will:

- Develop alignments, toes of slope and pertinent design features, including permanent and temporary impacts
- Plot/develop all required information on the plans in accordance with project plan production standards previously coordinated with Aurora
- Produce a 3-dimensional design model
- Produce layouts in the plans for roadside items including but not limited to, curb and gutter, sidewalks, curb ramps, platform walkways, and driveways
- Deliver a preliminary plan submittal with the following roadway plans:
    - Title Sheet
    - Standard Plans List
    - Abbreviations and Symbols
    - General Notes
    - Typical Sections
    - Roadway Plans
    - Roadway Profiles
    - Cross Sections
- Produce quantities and specifications

**90% Design**

The Consultant will:

- Track design decisions and variances
- Respond to and address 30% review comments
- Revise 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 Aurora 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 quantities and specifications

**Final Design**

The Consultant will:

- Finalize design decisions and variances
- Respond to and address 90% review comments
- 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 Aurora 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 (sheets will be 22x34 inches):
  - 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

### 6.2.5 Construction Phasing

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 plan 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.

### 6.2.6 Traffic Control Plan

It is assumed standard CDOT traffic control plans for lane closures can be used for the construction of the curbside platforms in Aurora. Detailed traffic control plans will be provided for designs not covered by CDOT standard plans.

### 6.2.7 Structural Design

The Consultant will provide structural design services for station elements including shelters/canopies, urban design features, fencing/gates, lighting, and ramps/stairs. 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.

### 6.2.8 Station Design

#### 6.2.8.1 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.

#### 6.2.8.2 Branding

**Brand & Message Development**

- Immersion:
  - **Kickoff Meeting** – Preparation and phase 2 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 phase 1; includes refinement and finalization of the logo and related selection activities
- **Tagline** – a continuation of work begun in phase 1; includes refinement and finalization of the tagline and related selection activities
- **Messaging** – a continuation of work begun in phase 1; 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 Project Management Team (PMT), Technical Working Group (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

#### 6.2.8.3 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 Aurora, 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

### 6.2.9 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

### 6.2.10 Traffic Engineering

#### 6.2.10.1 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.

#### 6.2.10.2 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. Tabulation sheets, specifications, and quantities will be produced.

#### 6.2.10.3 Signals

It is assumed the curbside platforms will be constructed without impact to the traffic lanes. Where proposed sidewalk and curb ramp work impacts existing signal equipment, the Consultant will be responsible for the design of traffic signal pole/mast arm placement, traffic signal head layout, conduit/pull boxes, cabinet/controller, detector design (including video detection if applicable), traffic signal interconnect, and associated signs and pavement markings. An Accessible Pedestrian Signal (APS) will be incorporated into all altered intersections that currently provide 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. Tabulation sheets, specifications, and quantities will be produced.

Transit Signal Priority (TSP) design for Colfax Avenue in Aurora is excluded from the scope of work.

#### 6.2.10.4 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 (where applicable)

- 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.

### 6.2.11 Hydrology/Hydraulics

The Consultant will perform hydrologic and hydraulic analyses within sub-basins afftected as part of this Project per the drainage methodology outlined in the City of Aurora Storm Drainage Design and Technical Criteria Manual (2010). The Consultant will review as-built plans, historical information, and previously produced hydrologic/hydraulic studies/reports provided by Aurora to aide in the drainage analysis. The Consutlant will use that historical information to inform the hydrologic and hydraulic analyses conducted within impacted sub-basins. The Consultant will work with Aurora to coordinate the BRT-related drainage design with the design of any other adjacent drainage systems planned in the City of Aurora. The drainage study will develop hydrologic and hydraulic calculations for impacted sub-basins for pre- and post-Project conditions and identify locations where new drainage infrastructure is required to satisfy applicable drainage criteria. Locations of historical surface ponding will be identified and mitigated to the extent practicable, with the minimum requirement for such locations being to not worsen existing surface flooding issues.

Water quality (WQ) requirements will be satisfied through determination and treatment of the Project Water Qualtiy Capture Volume (WQCV) to the extent practicable. The WQCV will be determined using new impervious area and existing impervious area where full pavement replacement is proposed. Minor resurfacing activities, including, including mill and overlay, will not contribute to the WQCV. The Consultant will employ a credit-based WQ treatment approach whereby existing, undisturbed, and previously untreated Project area may be treated to offset areas that contribute to the WQCV but treatment of those areas is infeasible due to constructability/ROW constraints. It is often infeasible to treat the full WQCV of a given linear transportation Project in an urban environment due to right-of-way (ROW) and constructability constraints. It is assumed that there will be no design reviews by the Mile High Flood Control District (MHFCD) and that MHFCD design approval is not required for any drainage work in the City of Aurora. 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. Drainage plans, tabulation sheets, specifications, quantities, and cost estimates will be provided.

### 6.2.12 Erosion Control

A Surface Water Management Plan (SWMP) will be prepared by the Consultant in accordance with Aurora 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.

### 6.2.13 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 the 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 and will include grid-tied photovoltaic systems with gird-tied storage. On-site energy storage is not recommended. 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 platforms.

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.

### 6.2.14 Right-of-Way Mapping and Acquisitions

#### Right-of-Way Mapping

The Consultant will research all relevant repositories and obtain recorded or existing mapping including but not limited to Subdivision Plats, Official City Resurveys, Land Survey Plats, Improvement Survey Plats, Right- of-Way Plans, Private Survey Notes, Range Point/Line Documents, and monumentation. The Consultant will collect accurate locations on all found monumentation controlling or supporting the location of the adjacent right-of-way or boundary lines for the subject properties. Documentation shall include all the monuments within the area of influence of the right-of-way line or subject properties sufficient to support the survey procedure being utilized to determine the rights-of-way or subject properties.

The Consultant will prepare a right-of-way plan (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 need for right-of-way acquisition will be determined during the Aurora preliminary design phase. It is anticipated that right-of-way acquisition could be required at the 7 level boarding platform locations in Aurora. 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

### 6.2.15 Sustainability/ENVISION Rating and Certification

CCD is pursuing ENVISION certification and rating as per Executive Order 123 Horizontal Infrastructure for the Project. The Consultant is currently developing 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 CCD 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 Aurora to the pursue certification upon construction completion. The ENVISION effort will require Aurora's participation and coordination for relevant signature station items and certain credit requirements that are specific to the City of Aurora data and policies.

## 6.3 PS&E DOCUMENTS

The plan submittal requirements and plan review timelines published on the City of Aurora's website will be followed for the Project. An informal 30% submittal will be made directly to City of Aurora staff rather than through AMANDA.

All plan review fees will be paid by the Consultant then directly reimbursed by Aurora. All sheets will be submitted at full size (22 x 34 inches).

60% Design

- Design Plans
- Quantities (for Independent Cost Estimate)
- Engineering Checklist
- Pre-submittal Meeting
- Aurora Review Period: 25 days
- Comment Review Meeting
- Comment Response and Resolution

90% Design

- Design Plans
- Specifications
- Quantities (for Independent Cost Estimate)
- Engineering Checklist
- Pre-submittal Meeting
- Aurora Review Period: 20 days
- Comment Review Meeting
- Comment Response and Resolution
- PS&E for Early Construction Packages (as needed)

Final Design

- Design Plans
- Specifications
- Quantities (for Independent Cost Estimate)
- Engineering Checklist
- Pre-submittal Meeting
- Aurora Review Period: 10 days
- Comment Review Meeting
- Comment Response and Resolution
- PS&E for Early Construction Packages (as needed)

## 7.0 Design Services During Construction

### 7.1 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

## 7.2 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 Aurora's Project Manager or authorized representative.

## 7.3 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 Aurora, 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.

## 7.4 FIELD OBSERVATIONS / TECHNICAL ASSISTANCE

The Consultant will make on site appearances during construction at the request of Aurora 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 weekly Construction Progress Meetings.

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

The Consultant will assist Aurora 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.

**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%** |