

## SCOPE OF WORK

# FRONT RANGE PASSENGER RAIL – SERVICE DEVELOPMENT PLAN

**Contract Type:** Cost Plus Fixed Fee

**Contract Date:** TBD  
**Project Number:** SW02-753  
**Project Location:** Front Range Passenger Rail corridor (Pueblo to Fort Collins)  
**Project Code:** 24420/24836

The complete Scope of Work includes this document (attached to the contract for Consultant services).

## CONTENTS

SECTION 1 - PROJECT SPECIFIC INFORMATION  
SECTION 2 - PROJECT MANAGEMENT AND COORDINATION  
SECTION 3 - EXISTING FEATURES  
SECTION 4 - REFERENCE ITEMS NEEDED BY THE CONSULTANT  
SECTION 5 - GENERAL INFORMATION  
SECTION 6 - STUDY WORK TASK DESCRIPTIONS  
APPENDIX - REFERENCES

# SECTION 1

## PROJECT SPECIFIC INFORMATION

### 1. PROJECT CONTEXT

Plans for a comprehensive passenger rail system serving the Front Range have been under consideration by local and state governmental coalitions, and advocacy groups for decades. In 2017, the Southwest Chief and Front Range Passenger Rail Commission (Rail Commission) was re-established and tasked with facilitating development and operation of passenger rail service along the Front Range.

In 2020, the Rail Commission, in partnership with CDOT, completed the first phase of work to develop a corridor vision and preliminary service development planning. These initial steps focused on project definition, planning, engineering, stakeholder engagement, governance, and environmental analysis for a long-term vision.

The Rail Commission identified that the best opportunity to initiate service would be to interoperate along the existing freight alignment. This would present the best chance for funding, operational partnerships and complementary services with other providers such as Class 1 Railroads, Regional Transportation District of Denver (RTD) and Amtrak. In 2020, FRA selected CDOT's application for an award to analyze the feasibility of such a starter service.

In 2021, the Colorado State Legislature passed SB 21-238, concerning the creation of the Front Range Passenger Rail District. This District is tasked with planning, designing, developing, financing, constructing, operating, and maintaining a passenger rail system. Upon Governor Jared Polis' signature, the Front Range Rail District was officially created to oversee the future of Front Range Passenger Rail.

Within SB 21-238, there are specific planning benchmarks that must be reached before any potential ballot initiatives can be referred. Before a 2/3rds vote by the Board of Directors, a Service Development Plan, Operations Plan and Financial Plan must be published. These three benchmarks will be the initial technical goals of the incoming Front Range Rail District.

This project will investigate the feasibility of a new passenger rail system in the Front Range corridor, an area extending north and south between Pueblo and Fort Collins. Anticipating continued regional growth and travel demand here, study of an additional travel option for the public is warranted.

### 2. PROJECT GOALS

The primary goal of this Preliminary Service Development Plan (SDP) is to develop feasible alternatives to implement an intercity passenger rail starter service in the Front Range corridor. As part of the study process, it will be necessary to identify public, environmental, and resource concerns and opportunities. The study will involve identifying and working with stakeholders to develop and evaluate alternatives.

The study will document the goals, objectives, and visions developed in coordination with stakeholders and resource agencies. The study will be completed in accordance with the Federal Railroad Administration (FRA) SDP process. To meet this process, the SDP & Alternatives Analysis shall:

1. Document the existing rail system in the study area including freight and passenger train movements. Collect information from other applicable plans and studies in the region.
2. Define a Preliminary Purpose and Need for starter intercity passenger rail service along the corridor.

3. Develop and execute a stakeholder coordination plan.
4. Collaborate with Regional Transportation District (RTD), Amtrak, host Railroads and other transit districts within the study area.
5. Estimate future travel demands in the study area using the Statewide Transportation Model current base-year model and a validated and calibrated out-year model and using the most current local agency land-use projections.
6. Define a reasonable range of system alternatives, consisting of a route, service, and capital investments.
7. Conduct train performance and rail network modeling in response to proposed service and alignment alternatives.
8. Perform conceptual design of infrastructure required to serve proposed alignment and service alternatives and produce plan sheets for review and approval by cooperating railroads.
9. Perform a public benefit analysis, calculating both the total public benefit and completing a Benefit-Cost Analysis consistent with U.S. DOT requirements.
10. Integrate existing and ongoing national, state, regional and local passenger rail and transit plans within the study area.
11. Identification of potential significant impacts from an operational, maintenance, and safety perspective.
12. Identification of potential significant impacts to natural, cultural, economic or community resources because of the proposed action.
13. Identify future approvals and permits required for a proposed action.

### **3. CONSULTANT RESPONSIBILITIES AND DUTIES**

This scope of work provides expectations to the selected Consultant in managing and conducting a preliminary SDP and alternatives analysis. During this study, the Consultant shall produce a report that identifies existing conditions and potential improvements or problematic areas. Other stand-alone reports and electronic files, such as those related to the train performance and rail operations modeling details may also be required. The Consultant will also be asked to monitor and collaborate with parallel local and regional studies in and around the study area that may inform components of a starter service. The Consultant is responsible for conducting project management, agency coordination, public participation, developing operational service and conceptual designs, environmental and design data collection, and alternatives analysis as described in the following sections.

### **4. WORK DURATION**

The time period for the work described in this scope is approximately 30 months.

### **5. WORK PRODUCT**

The work in the scope of services for this project will be contracted on an individual task-order basis, as needed and as determined by CDOT. CDOT reserves the right to, at its sole discretion, decide to not issue task orders for any part of the work contained in this scope of services. Similarly, additional funding for this project may become available during its progress. The nature of the work that will be performed by the Consultant is not expected to expand beyond

the disciplines described in this scope. Schedule milestones and deliverable deadlines may need to be adjusted to meet the issued task orders. The Consultant work products may include:

- 1) Project initiation and management plans
- 2) Project management and quality control plan
- 3) Stakeholder engagement plan
- 4) Schedules
- 5) Monthly progress reports
- 6) Meeting minutes
- 7) Draft and Final Reports
- 8) Other reports and documentation as described in following work product discussions related to specific tasks.

The Consultant will produce documents and deliverables in a form that can be incorporated by reference, as appropriate, in subsequent NEPA document(s).

*Detailed work product requirements are described in the following sections.*

## **6. WORK PRODUCT COMPLETION**

All submittals must be reviewed and determined to be acceptable by the CDOT contract administrator or designee. This Contract will be satisfied upon acceptance of the following items if applicable:

- A. Project management plan
- B. All work products as described above
- C. All data collected in research and data gathering efforts
- D. Map and GIS layers
- E. Completion of review and the Consultant revision of contract submittals

## **7. SCOPE OF WORK ORGANIZATION**

This draft scope of work has been reviewed by CDOT and reflects a plan of approach based on the known goals. One factor determining the selection of a Consultant is the ability of that Consultant to analyze the project goals, evaluate the work elements, and formulate a work plan. This process may produce new approaches or modification to the project work elements. Because of that, all Consultants should be aware that the final scope of work for the project will be produced with input from the selected Consultant.

## SECTION 2

### PROJECT MANAGEMENT AND COORDINATION

#### 1. CDOT CONTACT

The Contract Administrator for this project is: Amber Blake, Division Transit & Rail Director. Active day-to-day administration of the contract will be done by:

David Singer  
Passenger Rail Branch Manager  
2829 West Howard Place  
Denver CO 80204  
(303) 757-9878

#### 2. AGENCY COORDINATION AND PUBLIC OUTREACH

Coordination will likely be required with the following:

- A. Cities, Towns, Other
  - a) Staff and teams from affected cities and counties
  - b) Local transit agencies
  - c) Elected officials
- B. Governmental Agencies and Districts
  - a) Federal Railroad Administration (FRA)
  - b) Regional Transportation District (RTD)
  - c) Colorado Department of Public Health and Environment (CDPHE)
  - d) Colorado Department of Local Affairs (DOLA)
  - e) Colorado Parks and Wildlife (CPW)
  - f) Colorado State Historic Preservation Officer (SHPO)
  - g) US Army Corps of Engineers (USACE)
  - h) US Fish and Wildlife Service (USFWS)
  - i) US Environmental Protection Agency
  - j) US Air Force Academy (USAFA)
  - k) Denver Regional Council of Governments (DRCOG)
  - l) North Front Range Metropolitan Planning Organi (NFRMPO)
  - m) Pikes Peak Area Council of Governments (PPACG)
  - n) Pueblo Area Council of Governments (PACOG)
  - o) Colorado Department of Regulatory Agencies – Public Utilities Commission (PUC)
  - p) Front Range Passenger Rail District (Rail District)
- C. Railroads
  - a) National Railroad Passenger Corporation, d.b.a. Amtrak

- b) BNSF Railway
- c) Union Pacific Railroad
- d) OmniTRAX and other Class 2 or 3 Railroads across the corridor

## **SECTION 3**

### **EXISTING FEATURES**

#### **1. STRUCTURES**

- Refer to the CDOT Field Log of Structures at: [www.codot.gov/library/bridge/miscbridgedocs/fieldlog](http://www.codot.gov/library/bridge/miscbridgedocs/fieldlog) and appropriate GIS data.

#### **2 UTILITIES**

- Contact Utility Notification Center of Colorado (UNCC) at 800-922-1987

#### **3. IRRIGATION DITCHES**

- To be determined

#### **4. RAILROADS**

- BNSF Railway
- Union Pacific (UP) Railroad
- Amtrak
- OmniTRAX (Great Western Railroad of Colorado)

#### **5. OTHER**

- ITS Features, including fiber-optic facilities

The above is a list of the known features in the area. It should not be considered as complete. The Consultant should be alert to the existence of other possible conflicts.

## SECTION 4

### REFERENCE ITEMS NEEDED BY THE CONSULTANT

#### 1. CURRENT CDOT MANUALS, SPECIFICATIONS, STANDARDS, ETC.

The Consultant shall obtain and utilize the most recent references adopted by CDOT, including standards and specifications, manuals, and software, and as directed by the CDOT Project Manager. A list of general reference material is provided in the Appendix.

#### 2. PREVIOUS STUDIES

A search for previous relevant studies will be conducted by the Consultant. The Consultant shall be prepared to coordinate with ongoing studies or integrate detail as they are finalized or reach milestones. Known studies include:

- RTD Northwest Corridor Environmental Evaluation (2010)
- Front Range Passenger Rail and Southwest Chief Alternatives Analysis (2020)
- North I-25 Final Environmental Impact Statement (2011)
- North I-25 Commuter Rail Update (2015)
- Pueblo Station Area Plan (2020)
- Town of Castle Rock Final Transit Feasibility Study (2020)
- Amtrak Corridor Vision (2021)

#### 3. ONGOING & CONCURRENT STUDIES

A search for ongoing, concurrent, and relevant studies will be conducted by the Consultant. The Consultant shall be prepared to coordinate with ongoing studies or integrate detail as they are finalized or reach milestones. Known studies include:

- Mountain Metro Transit/City of Colorado Springs Station Area Master Plan
- Southwest Chief Through Car Feasibility Study: La Junta to Colorado Springs
- RTD's Peak Service Plan Feasibility Study for Northwest Rail
- NFRMPO LinkNoCo
- Burnham Yard Planning

# **SECTION 5**

## **GENERAL INFORMATION**

### **1. NOTICE TO PROCEED**

Work will not commence until written notice to proceed is issued by the State with certification from the Consultant that the work will be completed within the allotted time. Work may be required night or day, on weekends, on holidays, or on split shifts.

### **2. TIME LOST / DELAYS**

CDOT must review and concur on any time-lost claims prior to the time-lost delays being reflected in the baseline schedule. Subject to CDOT prior approval, the time charged may exclude time lost for any:

- A. Reviews and Approvals
- B. Response and Direction

### **3. PROJECT COORDINATION**

- A. Routine Working Contact – the routine working contact will be between the CDOT Project Manager (CDOT/PM) and the Consultant Project Manager (C/PM).
- B. Project Manager Requirements – each project manager will provide the other with the following in regard to the project:
  - 1. A written synopsis or copy of their respective contacts (via email, telephone, or in person) with others
  - 2. Copies of pertinent written communications

### **4. ROUTINE REPORTING AND BILLING**

The Consultant shall provide the following on a routine basis:

- A. Coordination of all contract activities by the C/PM
- B. Periodic reports and billings as agreed to by the project managers
- C. Minutes of all meetings – minutes will be completed and provided to the CDOT/PM within 5 working days after the meeting. When a definable task is discussed during a meeting, the minutes will identify the Action Item, the party responsible for accomplishing it, and the proposed completion date.
- D. General reports and submittals – in general, all reports and submittals must be approved by CDOT prior to their content being utilized in follow-up work efforts.

## **5. PERSONNEL QUALIFICATIONS**

The Consultant project manager must be approved by the CDOT contract administrator. Certain tasks must be done by licensed professional engineers or professional land surveyors who are registered with the Colorado State Board of Registration for Professional Engineers and Land Surveyors.

All tasks assigned to the Consultant must be conducted by a qualified person on the Consultant team. A qualified person is a professional with the necessary education, certifications (including registrations and licenses), skills, experience, qualities, or attributes to complete a particular task.

It is the intent of CDOT that all key personnel be engaged to perform their specialty for all services required by this contract, and that the Consultant's key personnel be retained for the life of this contract to the extent practicable and to the extent that such services maximize the quality of work.

If the Consultant or a subconsultant decides to replace any of its key personnel, the Consultant shall notify the Project Manager in writing of the desired change. No such changes shall be made until at least two qualified replacement candidates are recommended by the Consultant and a replacement is approved in writing by the Project Manager. The Project Manager's approval shall not be unreasonably withheld. Failure of the Consultant to comply with the requirements of this provision may be the basis for CDOT's termination of this contract.

The Project Manager shall respond to the Consultant's written notice regarding replacement of key personnel within fifteen working days after the Project Manager receives the list of proposed changes. If the Project Manager or its designated representative does not respond within that time, the listed changes shall be deemed to be approved.

If during the term of the contract the Project Manager determines that the performance of approved key personnel is not acceptable, he shall notify the Consultant and give the Consultant the time which the Project Manager considers reasonable to correct such performance. Thereafter he may require the Consultant to reassign or replace such key personnel. If the Project Manager notifies the Consultant that certain of their key personnel or the key personnel of a subconsultant should be replaced, the Consultant shall use its best efforts to replace such key personnel within a reasonable time, not to exceed thirty calendar days from the date of the Project Manager's notice.

## **6. COMPUTER DATA COMPATIBILITY**

CDOT utilizes OpenRoads data format which Consultants are required to use for submitting design data. The data format used by the Consultant to submit surveying and photogrammetric data shall be as determined by the CDOT/PM in coordination with the respective region PLS. The data format for submitting design computer files shall be compatible with the latest version of the adopted CDOT program. The Consultant shall immediately notify the CDOT/PM if the firm is unable to produce the desired format for any reason and cease work until the problem is resolved.

The Consultant shall prepare a document describing the transportation demand, train performance, and rail network operations modeling software and proposed for use in the study. Modeling methodology will be subject to review and acceptance by the FRA and other railroad partners.

## **7. PROJECT DESIGN DATA AND STANDARDS**

Appendix A is a list of technical references applicable to CDOT work. The Consultant is responsible for ensuring compliance with the latest version adopted by CDOT of the listed references. Conflicts in criteria will be resolved by the CDOT/PM.

## **SECTION 6**

### **STUDY WORK TASK DESCRIPTIONS**

This section establishes a general approach to the Consultant's individual task responsibilities. Specific individual tasks will be developed with input from the Consultant in task order scopes of work. Proposals will be evaluated for innovative processes and approaches. The Consultant shall maintain the ability to perform all work tasks which are indicated below, in accordance with the forms and conditions contained herein, and the applicable CDOT standards. Selected work tasks shall be assigned only after coordination and consultation with CDOT. All final deliverables identified in this contract will be of sufficient quality that they could be incorporated directly or by reference into these NEPA documents. The Consultant should expect to work as a part of a blended team with CDOT, Rail District and other staff members directly integrated into the team. The Consultant is also responsible for coordinating the required work schedule for those tasks accomplished by CDOT and other agencies. The Consultant should review this entire section to identify applicable material.

#### **TASK 1 - PROJECT INITIATION AND CONTINUING REQUIREMENTS**

##### **A. Initial Project Meeting**

An initial project kick-off meeting will be held with the appropriate disciplines, coordinated by the Consultant, and conducted by CDOT. The meeting will review the project management plan, project scope, schedule, key milestones, and project study area boundary. The meeting may include an on-site inspection to familiarize the entire project team (CDOT personnel, Consultant personnel, and key stakeholders) with the character and conditions of the area. The Consultant shall develop an invitation list in coordination with CDOT, send notices with a draft agenda, and provide meeting minutes to all those invited.

##### **B. Project Management Plan**

The Consultant shall provide a project management plan for management coordination and control to ensure successful and timely completion of this study. The project management plan shall:

1. Include a detailed work plan, including schedule and cost breakdown for each subtask described in this scope of services
2. Identify the method for tracking budget and schedule for the duration of the project
3. Establish key project contacts within the project team and other stakeholders
4. Establish the project milestones
5. Include a quality control plan that describes the quality control process to be used on the project

A project management plan shall be developed by the Consultant which satisfies the requirements of project development. This plan must be approved by the CDOT/PM before starting the work. The activities of communication, consensus building, project reviews, conceptual design, data gathering, documentation, and formal public notice should be planned by the Consultant and coordinated with the CDOT/PM. The times of their accomplishment will overlap, and parallel paths of activity should be planned to finish the development phase in accordance with the shortest possible schedule. The type and number of meetings, documents, etc., will depend on the category and characteristics of the project work.

##### **C. Project Management Communication**

1. The Consultant and the CDOT project manager shall meet at least monthly to review the cost, schedule status and progress of the work, as well as address unanticipated problems and potential solutions. The Consultant shall prepare status presentations at key milestones to update CDOT, stakeholders, and resource agencies on the status and progress of the work. The Consultant shall prepare for and participate in these meetings and shall provide documentation of the meetings such as agendas, presentation materials and meeting minutes.
2. The Consultant shall submit monthly cost and schedule reports to enable project monitoring. The contract budget and schedule shall be regarded as the baseline against which status and progress are measured and reported. The Consultant invoices shall be prepared to show cost against major milestone tasks.
3. The Consultant shall submit working and final drafts on all work products in a timely manner to allow for adequate review and revision prior to final submittal schedules.

### **Task 1 Work Products**

1. Project management and quality control plan
2. Meeting materials, facilitation, and minutes

### **Task 1 Deliverables**

- **1.A:** Project Management Plan

## **TASK 2 – STAKEHOLDER ENGAGEMENT PLAN**

1. The Consultant shall design and conduct a public and stakeholder engagement strategic plan throughout the corridor to increase public awareness and advance the existing corridor vision. This effort should encompass all the required stakeholder and agency engagement for this study and future NEPA actions. In addition to traditional tactics, this effort should use virtual public involvement strategies where possible.
2. The Stakeholder Engagement Plan should consider previous stakeholder engagement structures used by the Front Range Passenger Rail Commission. This effort should build upon past initiatives and develop innovative approaches.
2. Public Outreach: Public meetings will be held throughout the SDP and Pre-NEPA process. Community coordination and communication efforts will be carried out in conjunction with the meetings. Innovative methods and approaches are encouraged.
3. The stakeholder involvement plan will include activities and outreach strategies designed to promote equity and inclusion. It will identify and implement opportunities for minority and low-income populations to provide meaningful involvement. The consultant team will be asked to apply emerging local, state, and federal guidance which advance participation and decision-making for historically underrepresented communities. Efforts should be made so that all interested stakeholders will have an opportunity to provide input into the choice among alternatives, locations of features, or designs throughout the project. The stakeholder involvement plan shall include language assistance services as identified.

4. Outreach to Regional Partners and Small Groups: The Consultant will coordinate closely with regional partners and small groups to develop effective strategies for involving their respective constituencies and other key stakeholder groups. Various approaches may be used to engage and interact with the broader community, including utilizing existing communication channels such as planned events or pre-existing meetings when necessary.
5. On-going Outreach and Public Involvement Efforts: The Consultant team will serve as a point of contact for the distribution of information to key stakeholders, agencies or the general public; to populate and manage the email/ mailing lists and the contact database; to create content for project website; to support the creation and distribution of media advisories; and, to advertise and communicate the public meetings.

#### **Task 2 Deliverable**

- **2.A:** Stakeholder Coordination Plan

### **TASK 3 - DEVELOP A PRELIMINARY STATEMENT OF PURPOSE AND NEED AND GOALS**

The Consultant will develop a distinct draft Preliminary Purpose and Need that will draw upon the long-range vision and needs and serve as the foundation for the analysis of the Preliminary Service Development Plan. The preliminary Purpose and Need is for pre-National Environmental Policy Act (NEPA) planning and will be subject to agency and public review and comment as part of the NEPA process.

The preliminary Purpose and Need statement will address the requirements for the project to serve as a foundation of the Alternatives Analysis, including the assessment of various route, service, investment, and design options that are reflected in potential alternatives. The objectives of the project should be clearly identified and agreed upon early in the project process to prevent backtracking and limit schedule changes. Consultant will review previously prepared studies to help identify Purpose and Need information as appropriate (e.g., local planning studies, engineering feasibility studies, etc.). The preliminary Purpose and Need statement will be developed and refined, as necessary, to address information collected on the project during data collection, transportation analysis, and public and agency scoping and involvement. This includes referencing existing market analyses which identify major population and employment centers within the study area. The Preliminary Purpose and Need Statement is subject to FRA for review and approval.

#### **Task 3 Deliverable**

- **3.A:** Final Preliminary Purpose and Need Statement

### **TASK 4 - EXISTING CONDITIONS REPORT**

#### **A. Infrastructure Data Collection and Reporting**

1. The Consultant shall obtain the most recent track charts, timetables, valuation maps, and other supporting documents from the appropriate railroads for the entire corridor.
2. The Consultant shall field verify unclear information as needed and at clearly challenging areas of rail infrastructure, and at likely station locations.
3. Inventory shall be taken of the existing and planned infrastructure in the corridor including, but not limited to highway through and auxiliary lanes; interchanges, accesses, and connecting arterials; right of way

widths; major utilities; bicycle and pedestrian facilities; structural constraints; adjacent land ownership characteristics (including future development); transit types / service levels including station locations, routes and frequency.

4. Infrastructure inventory will be summarized in a report and in graphics in a simple and readily understandable format.

## B. Contextual Data Collection and Corridor Overview

Existing environmental conditions shall build from and be consistent with existing and ongoing comprehensive and transportation planning studies completed with the study area. Environmental overview limits may be reduced or expanded depending upon alternatives under consideration. The use of GIS for data collection and data presentation is required. Coordination will be needed with key stakeholders in the corridor to gather available data.

Environmental, cultural and community resources are to be inventoried. Resource data will be presented in a narrative, through graphics, or other methods determined during scoping. Some resource identification will be or has already been completed by CDOT environmental staff. A CDOT and agency scoping meeting will help define the levels of investigation for each resource area. The following contextual resources will be considered at this scoping meeting:

- Air Quality
- Water Quality
- Floodplains
- Wetlands and Riparian areas
- Fish, Wildlife, and Wildlife Migration
- Threatened and Endangered Species
- Cultural/Historic Resources
- Archeological Resources
- Paleontological Resources
- Land Use
- Social Resources
- Environmental Justice
- Section 4(f) Resources
- Section 6(f) Properties
- Noise and Vibration
- Visual Resources
- Hazardous Materials
- Cumulative Impacts

The purpose of the environmental context report is to inventory and map resources within the project study area. The report shall identify and describe any features that may require context sensitivity. It shall summarize any potential significant issues to resources within the project's setting. For further information, see Task 8 in this document.

### Task 4 Deliverables

- **4.A:** A stand-alone existing conditions-assessment report that identifies the existing safety, operational, travel time, geometric, and infrastructure issues of the corridor.

- **4.B:** An existing conditions report that identifies critical resources from the natural, social, cultural and economic environmental.

## **TASK 5: ALTERNATIVES ANALYSIS**

The Consultant shall help deliver an alternatives analysis to identify a preliminary range of reasonable alternatives for the proposed infrastructure investments within the Study Area. The preliminary range of reasonable alternatives will consist of various options for satisfying the Preliminary Purpose and Need statement, which could be evaluated further in a subsequent environmental analysis.

CDOT and the Rail Commission completed the Front Range Alternatives Evaluation Report in December 2020. The study performed an initial evaluation of corridor alternatives to support a long-term passenger service in the Front Range and identified corridors to be studied at a more detailed level. This analysis will build upon that evaluation and define a feasible starter service.

The Consultant will help develop a preliminary range of alternatives, which may vary in terms of routes (“Route Options”), service configurations (“Service Options”), physical infrastructure investments (“Investments Options”), which will be comprised of multiple individual infrastructure projects (or “component investments”), and design (“Design Options”) for each component investment in the alternatives.

Then this task shall demonstrate the operational and financial feasibility for each of the options identified for further analysis. The Consultant will conduct an assessment for each of these types of “Options” sequentially as separate subtasks. This includes the creation of criteria consistent with the Preliminary Purpose and Need. Criteria will be used to screen options and alternatives that are found unreasonable. Under each subtask, the team will first identify a broad range of preliminary options for satisfying the preliminary Purpose and Need statement.

Prior to the initiation of work under each subtask, the Consultant will prepare a memorandum describing the methodologies for each subtask (“Methodology Work Product”) which will include:

- The methods to be used for identifying preliminary options
- The criteria for determining which of the preliminary options will be carried forward for further analysis, versus those to be screened out and dismissed, including:
  - Metrics (quantitative and qualitative) to be used
  - Method of evaluating preliminary options against those metrics (i.e., measurement methods)
  - Standards based on the assessment of options against the identified metrics, for determining which options will be carried forward for further analysis, versus those to be screened out and dismissed based on not being a reasonable means of meeting the Preliminary Purpose and Need
- The means for incorporating the analytical outputs
- The means for incorporating agency and public input in accordance with the Stakeholder Coordination Plan

Upon completion, the Consultant will submit a Preliminary Alternatives Analysis Report that will summarize the work undertaken in each subtask and identify the range of alternatives that will be advanced for further consideration.

### **Subtask 5.1: Route Options Analysis**

The Consultant will support the analysis, at a high level, of potential routes for the proposed new rail line through the Study Area. It will assist the team evaluate the routes identified in the Front Range Alternatives Evaluation Report from December 2020. In conducting the Route Options Analysis, the Consultant will consider the anticipated operating requirements specified in the preliminary Purpose and Need statement and identify which Route Options to

be carried forward for further analysis, and which will be screened out and dismissed based on not being a reasonable means for satisfying the Purpose and Need.

#### **Subtask 5.1 Work Products**

- Route Options Analysis Methodology
- Route Options Analysis Memorandum

#### **Subtask 5.2: Service Options Analysis**

For those Route Options carried forward for further analysis, the Consultant will develop and assess potential viable service and operating options for Front Range Passenger Rail. In conducting the Service Options Analysis, the Project team will consider the anticipated operating requirements specified in both the preliminary Purpose and Need and identify which service options may be carried forward for further analysis and refinement at both the investment and design options. The identified service options should be expected to be carried forward in a potential subsequent NEPA analysis outside the scope of this effort. The effort will be completed in coordination with BNSF, UP, Amtrak, and other stakeholders. The Service Options Analysis should include, but is not limited to:

- A fleet analysis that identifies the type and quality of preferred train equipment to be used, with technical specifications such as maximum speed, passenger capacity, energy consumption profile, acceleration and deceleration rates
- Signal systems required including Positive Train Control
- Service frequency and operating speeds
- Describe potential service with existing and planned intermodal connections
- Station locations and maintenance facility locations and, for each, whether it is existing or new, and how it maximizes the use of existing infrastructure

#### **Subtask 5.2 Work Products**

- Service Options Analysis Methodology Memorandum
- Fleet Analysis Memorandum
- Service Options Analysis Report

#### **Subtask 5.3: Investments Options Analysis**

For those Service Options carried forward for further analysis, the Consultant will help develop and assess potential packages of physical investments along those routes required to achieve the operational requirements specified in the preliminary Purpose and Need statement. The Investments Options are then to be evaluated based on the meeting the Purpose and Need. The Investment Option Analysis will consider the potential phased implementation of physical investments both in the development of the Investment Options, and in determining which will be carried forward for further analysis.

#### **Subtask 5.3 Work Products**

- Investments Options Analysis Methodology Memorandum
- Investments Options Analysis Memorandum

#### **Task 5 Deliverables**

- **5.A:** Preliminary Alternatives Analysis Report

## **TASK 6: PROJECT DEVELOPMENT**

The Consultant team is responsible for project development work, encompassing project planning and engineering analysis, to support the development and screening of alternatives, concurrently. Work is divided into subtasks, and the completion of each subtask will result in a Final Work Product summarizing the work.

This task will culminate in a report that documents the project development outputs for those alternatives included in the Preliminary Range of Reasonable Alternatives.

### **Subtask 6.1: Specification of Detailed Operational Requirements and Data Collection**

The Consultant shall determine the high-level operational requirements consistent with the preliminary Purpose and Need statement and described in the Service Options Analysis to prepare a set of detailed operating requirements appropriate for supporting service planning, addressing:

- Train volumes (by operator/train type, and including all moves)
- Train characteristics (length, trailing tons, horsepower)
- Train routings through the Study Area (entry/exit and origination/destination points)
- Specific operating timetables for scheduled services, or operating windows for unscheduled service
- Maintenance-of-way window requirements

The Consultant will also collect all other data on existing conditions relevant to the analysis to be undertaken in this task, including, but not limited to, the following:

- Existing train volumes and characteristics (length, trailing tons, horsepower)
- Existing train routings through the Study Area (entry/exit and origination/destination points), including wye moves required of all long-distance trains arriving at DUS or other passenger terminals
- Abandoned rail lines and/or connections between rail lines and/or abandoned/removed track(s) on existing lines
- Track charts, public and employee timetables
- Existing track conditions, including FRA track class, existing junctions, including turnout speeds and parallel diverging moves
- Existing and proposed locations of intercity and commuter platforms
- Existing signal system design and PTC implementation status
- Railroad property records including existing right-of-way limits, including demarcation between owners/controllers of different sections of rail line and long-term operating leases
- Documentation for other rail projects under development within the Study Area

### **Subtask 6.1 Work Products**

- Data Collection Methodology Memorandum
- Data Collection Results Summary Memorandum
- Operational Requirements Summary Memorandum

### **Subtask 6.2: Operations Analysis**

In support of the development and screening of alternatives, the Consultant shall undertake an operations analysis of the various Route and Service Options under consideration to identify infrastructure investments for implementing the Project. The Consultant shall use appropriate tools, including train performance calculators and railroad operations simulation software, in performing the operations analysis.

The Consultant shall prepare a document describing the transportation demand, train performance, and rail network operations modeling software and proposed for use in the study. Modeling methodology will be subject to review and acceptance by the FRA and other railroad partners.

#### **Subtask 6.2 Work Products**

- Operations Analysis Methodology Memorandum
- Operations Analysis Report

#### **Subtask 6.3: Travel Demand Forecasting**

The Consultant will use CDOT's existing statewide activity-based travel demand model. Inputs to this effort include but are not limited to station locations, transit connections, equipment technology, operating speeds, land use, etc. This was developed in close coordination with the Front Range MPO's and their travel models. Additional model adaptations, runs and analysis will be made as refinements to alignments are made, station locations are refined, and train speeds and other issues affect the operating plans. Amtrak will also provide support to integrate its data from the national network

#### **Subtask 6.3 Work Products**

- Ridership Modeling Methodology Memorandum
- Ridership Modeling Analysis Memorandum

#### **Subtask 6.4: Revenue Evaluation Analysis**

The Project Team will develop a Revenue Evaluation Analysis with potential operating partners to support the evaluation and screening of the alternatives. A ticket pricing strategy will be proposed for this service based on comparable services around the country as well as RTD's existing pricing of its commuter rail services in the Denver metro area.

The Consultant shall coordinate with Amtrak to obtain input data, prior history, and other pertinent information to develop these estimates. Amtrak may (at their discretion) chose to provide assistance or perform some of these tasks, but the Consultant shall be prepared to perform any and all work related to these revenue estimates.

The Consultant shall be prepared to submit the ticket pricing strategy to the Front Range Passenger Rail District Board for review and adoption.

This information will then be used to generate revenue forecasts from fares and ridership for the Service Options. The Revenue Evaluation will also detail the boardings and alightings based on varying station locations and other key variables. Special events will also be analyzed to understand how service fares can impact ridership levels during events. Additional work will include identifying other revenue sources for Front Range Passenger Rail (grants, local contributions, etc.).

#### **Subtask 6.4 Work Products**

- Revenue Evaluation Analysis Methodology Memorandum
- Revenue Evaluation Analysis Memorandum

#### **Subtask 6.5: Station Area Analysis**

The team will prepare a station and access analysis to identify the location of the stations to be served by the proposed infrastructure, examine how these stations will accommodate the trains and passengers associated with the proposed infrastructure, how passengers will access the stations, and how the stations will be integrated with or connected to other modes of transportation. The assessment of the operations for each alternative should be performed to a level sufficient to identify key characteristics, challenges, or impacts to existing and future passenger rail service. The assessment will include but is not limited to:

- Determining the operational requirements of stations, and station access for the new passenger rail service with focus on the ability to maximize ridership on Front Range Passenger Rail.
- Maximizing connectivity to existing transit services where available and to future planned services not yet providing service to these specific station locations.
- Accommodating pedestrian, bicycle, micromobility, and other ride-sharing services with efficient access.
- Connecting to major transportation roadway arterials and provision of parking areas.
- Discussing the economic development potential (commercial/residential) at each station area.
- Developing a conceptual engineering layout for each of the stations, including parking sufficient for projected ridership and operations plans.
- A site selection equity analysis using the most recent federal guidance.

Station Area Plans may already be completed (i.e. Pueblo) or in progress (i.e. Colorado Springs) by and/or on the behalf of local municipalities. RTD will also be conducting a parallel process that will verify commuter rail station locations for its Northwest Rail Peak Service Plan. Parallel planning efforts' findings and decisions should be confirmed, adopted, and incorporated into this study's comprehensive analysis.

#### **Subtask 6.5 Work Products**

- Station Area Analysis Methodology
- Station Area Analysis Final Subtask

#### **Task 6 Deliverables**

- **6.A:** Draft Project Development Report
- **6.B:** Final Project Development Report

### **TASK 7 –PRELIMINARY ENGINEERING**

In support of the development and screening of alternatives, the team will develop conceptual and early preliminary engineering for the various Investment and Design Options under consideration.

#### **Subtask 7.1: Design Standards**

The Consultant shall work with CDOT to complete a draft of the system design standards for utilization in conceptual engineering design and for planning purposes. Current design standards are available upon request.

#### **Subtask 7.2: Infrastructure Designs**

For each component investment included in the Investments Options carried forward for further analysis, the Consultant will develop and assess the potential designs for that component investment. The project team will subsequently identify, for each component investment, which design options will be carried forward for further analysis, and which will be screened out and dismissed based on not being a reasonable means of meeting the Purpose and Need.

Based on inputs received from environmental identification, operations modeling, and other stakeholder and system design needs, the Consultant shall develop infrastructure designs to inform the reasonable alternative(s) carried

forward into NEPA. Conceptual designs shall be of sufficient detail to predict cost estimating, impacts assessment, and high-level right of way needs.

It is CDOT's intention to participate in the basic engineering for the conceptual level alternatives. More detail will be needed in some areas to support screening, and the Consultant shall be prepared to participate in engineering and provide other design disciplines up to and including performing the full range of basic engineering to establish the feasibility and potential impacts of an alternative. Details of the Consultant's level of involvement will be determined at the time the Task Order for this work is written.

Infrastructure designs should be commensurate with the relative challenge of locations and urban or rural infrastructure. Designs should include track horizontal and vertical alignments, turnouts, grading models, toes of slope/tops of cut and other pertinent features to evaluate the design. Designs should also include an understanding of electrical power, communication, and signals infrastructure to the extent required to understand the requirements to further the design and perform cost estimation.

### **Subtask 7.3: Targeted Challenge Designs**

The Consultant may need to develop more detailed designs of challenging or unique sections of the system to demonstrate the feasibility of a system design alternative. These designs may be required to include elements such as structure layouts, tunnel or trenched section layouts, or other civil designs beyond the primary scope of system design.

#### **Task 7 Deliverables:**

- **7.A:** Conceptual plans of required infrastructure for feasible service and route alternative(s), which include:
  - a. Right of way requirements
  - b. Track alignments
  - c. Turnouts, interlockings, and other key infrastructure
  - d. Station platform locations
- **7.B:** Proposed Track Charts
- **7.C:** Detailed or more focused design drawings at challenging points
- **7.D:** Revised design criteria manual and standard plans
- **7.E:** Maintenance and operations facilities requirements (may be a portion of the design criteria manual and standard plans)

## **TASK 8: ENVIRONMENTAL CONTEXT AND PRE-NEPA ACTIVITIES**

The Consultant will perform a high-level qualitative socio-economic, human environment, and natural environmental resource inventory and effects analysis as part of the development and screening of alternatives concurrently. A desktop analysis of potential environmental concerns resulting from the initial route options was assessed in the Front Range Passenger Rail Alternatives Analysis Report. The Consultant will build upon the findings from that report to identify potential environmental issues relating to the preliminary service, investment, and design options, and employ the outputs of this environmental analysis to support the screening of those options. Where environmental documentation is not available, the Consultant will perform additional desktop analysis to inventory existing conditions and identify key social, cultural, natural, and physical project concerns. The Project Team will review the environmental resources and determine the extent of analysis needed for each resource for the subsequent NEPA phase. The Consultant will prepare a Preliminary Environmental Context Report that will document the potential significant socio-economic, human environment and natural environmental issues of the Preliminary Range of Reasonable Alternatives. The Report will also address possible approaches to completing the environmental review of those alternatives, including the potential NEPA class(es) of action for subsequent environmental

document(s). This report will identify potential programmatic mitigation strategies and anticipated permits and agency clearance requirements that would be needed for the alternatives moving forward for additional consideration during NEPA.

Consultant will be asked to apply emerging FRA guidance which links transportation planning with NEPA processes similar to Appendix A to 23 CFR 450. Completing the following activities upfront will focus and streamline the subsequent NEPA process. It will also demonstrate the corridor's overall NEPA readiness to FRA as lead agency. This work is consistent with established Planning and Environmental Linkages (PEL) practices as well as NEPA principles and requirements.

- Develop draft Agency Coordination Plan
- Identify communities and stakeholders affected
  
- Determine the extent of environmental analysis needed for each resource during NEPA
- Identify potential significant environmental issues
- Identify potential mitigation strategies and permits needed

#### **Task 8 Deliverables:**

- **8.A:** Preliminary Environmental Context Methodology
- **8.B:** Preliminary Environmental Context Report
- **8.C:** Memorandum summarizing Pre-NEPA activities

### **TASK 9: FINANCIAL PLANNING AND BENEFIT COST ANALYSIS**

#### **Subtask 9.1: Capital Cost Estimation**

The Consultant shall prepare capital cost estimates for each alternative package (including unit cost and quantities relating to core track structures and other components), management, design and construction management allowances, and contingencies. At a minimum, these will include an initial high-level cost estimate (based on the Conceptual Engineering) to be used to support the Investment Options Analysis, and a more detailed cost estimate (based on the early preliminary-level engineering developed) to be used to support the preliminary engineering. In developing the Capital Cost Estimation Methodology, the team should refer to FRA's Capital Cost Estimating Guidance.

#### **Subtask 9.1 Work Products**

- Capital Cost Estimation Methodology Memorandum
- Capital Cost Estimate Memorandum

#### **Subtask 9.2: Operations & Maintenance Cost Estimation**

The Consultant will prepare general estimates of operating, maintenance, and capital renewal costs for an identified planning horizon. Work will additionally include identification of required maintenance facilities, such as yards, rolling stock maintenance and repair facilities, and the operational and logistical support facilities that enable operation of the system. Maintenance requirements should additionally assess requirements for and suitable locations for fleet maintenance facilities

The Consultant shall coordinate with Amtrak to obtain input data, prior history, and other pertinent information to develop these estimates. Amtrak may (at their discretion) chose to provide assistance or perform some of these tasks, but the Consultant shall be prepared to perform any and all work related to these cost estimates.

### **Subtask 9.2 Work Products**

- Operations & Maintenance Cost Estimation Methodology Memorandum
- Operations & Maintenance Cost Estimate Memorandum

### **Subtask 9.3: Financial Planning**

The Consultant will complete a financial plan that will identify the potential financial resources required to implement and operate the proposed project components identified in the Project Development Report. The financial plan will focus on the direct monetary factors of the project and will provide a single financial statement showing the proposed service's financial projections over the course of the planning horizon. The financial analysis will describe the capital and operating dollars needed to implement and operate the project.

As the project is currently in the planning phase, the financial planning analysis should be commensurate with other planning assumptions and analyses. As the program moves beyond planning and toward implementation, financial planning will specify the precise levels of funding needed and explore potential sources of funding. This may include cost sharing agreements, government grants, loans, and other available funding opportunities.

### **Subtask 9.3 Work Products**

- Financial Planning Methodology Memorandum
- Financial Plan

### **Subtask 9.4 Benefit Cost Analysis**

The Consultant shall complete a benefit cost analysis that will document the overall economic impact of the project. This will include both the financial results as described in financial planning and the benefits and impacts for the project such as operational benefits, travel time savings, air quality impacts, community and economic development, and other user and non-user economic benefits. This is informed by other earlier tasks and will be used to assess the transportation-related merits of the service alternative.

The Benefit-Cost Analysis should be completed in the manner prescribed by USDOT "Benefit-Cost Analysis Guidance for Discretionary Grant Programs" January 2020 or latest edition as appropriate.

### **Subtask 9.2 Work Products**

- Benefit Cost Analysis Methodology
- Benefit Cost Analysis Memorandum

### **Task 9 Deliverable**

- **9.A:** Financial Planning and Benefit Cost Analysis Report

## **TASK 10 GOVERNANCE & FUNDING**

The Project Team will assess potential governance and program administration options for the long-term management structure for design, construction, maintenance and operations of a future Front Range Passenger Rail system. Options may include private investment, public private partnerships, publicly funded investment for program delivery and administration in furtherance of SB 21-238 and the charge of the Front Range Passenger Rail District. The

Project team will assess governance options allowable under state law and other examples of potential governance structures for other state-supported Amtrak services that fall under Section 209 of the Passenger Rail Investment and Improvement Act of 2008. The project team will facilitate meetings, in coordination with Amtrak, FRA, the Rail District and other potential stakeholders, on the governing and operating organization for the future passenger rail service associated with this project.

#### **Task 10 Deliverable**

- **10.A:** Potential Governance & Funding Options Memorandum

#### **TASK 11 FINAL REPORT**

The preliminary SDP must express a common vision between CDOT, the Rail District and stakeholders for the future operational functionality of the Front Range corridor.

#### **Task 11 Deliverables**

- **11.A:** Prepare the Preliminary SDP & AA
  - a. The Consultant shall prepare the final report in conformance with FRA's Service Development Planning & Alternatives Analysis Guidance (latest edition). The level of detail in each technical report will be determined through coordination with CDOT & FRA.
- **11.B:** Implementation Plan
  - a. The Consultant shall document reasonable project phases and connect them with potential funding packages. Given the variability in the amount and timing of funding, the Consultant will document recommended range of projects with funding scenarios to ensure that the corridor is getting maximum benefit for the available funding.

## Deliverables Matrix

<b>Deliverable Number</b>	<b>Deliverable Description</b>
1.A	Project Management Plan
2.A	Stakeholder Coordination Plan
3.A	Final Preliminary Purpose and Need Statement
4.A	An Existing Conditions-Assessment Report that identifies the existing safety, operational, travel time, geometric, and infrastructure issues of the corridor.
4.B	An Existing Conditions Report that identifies critical resources from the natural, social, cultural and economic environmental.
5.A	Preliminary Alternatives Analysis Report
6.A	Draft Project Development Report
6.B	Final Project Development Report
7.A	Conceptual plans of required infrastructure for feasible service and route alternative(s)
7.B	Proposed Track Charts
7.C	Detailed or more focused design drawings at challenging points
7.D	Revised Design Criteria Manual and Standard Plans
7.E	Maintenance and operations facilities requirements (may be a portion of the design criteria manual and standard plans)
8.A	Preliminary Environmental Context Methodology
8.B	Preliminary Environmental Context Report
8.C	Memorandum summarizing Pre-NEPA activities
9.A	Financial Planning and Benefit Cost Analysis Report
10.A	Potential Governance & Funding Options Memorandum
11.A	Preliminary Service Development Planning & Alternatives Analysis Report
11.B	Implementation Plan

## APPENDIX: REFERENCES

1. **American Railway Engineering and Maintenance of Way Association (AREMA)**
  - A. Manual for Railway Engineering
  - B. Portfolio of Track Work Plans
  
2. **American Association of State Highway and Transportation Officials (AASHTO) and National Association of City Transportation Officials (NACTO) Publications**, using latest versions:
  - A. Policy on the Geometric Design of Highways and Streets (Green Book)
  - B. Guide for the Design of High Occupancy Vehicle and Public Transfer Facilities
  - C. Guide for the Development of Bicycle Facilities
  - D. Transit Street Design Guide
  - E. Framework for Assessing the Business Case ROI for Intercity Passenger Rail Corridor Investments
  
3. **Front Range Passenger Rail** publications, using latest versions:
  - A. Design Criteria Manual
  - B. Standard Plans
  - C. FRPR Alternatives Analysis
  - D. FRPR District/RTD/CDOT cooperation MOU
  
4. **Railroad Design Standards and Specifications**, using latest versions:
  - A. Amtrak Station Program Handbook
  - B. Railroad Standard Plans and Design Guidelines
  - C. Colorado PUC Grade Crossing Rules
  - D. BNSF Commuter Principles
  
5. **Colorado Department of Transportation** Publications, using latest versions:
  - A. Standard Specifications for Road and Bridge Construction and CDOT Supplemental Specifications
  - B. CDOT Design Guide (all volumes)
  - C. CDOT Bridge Design Guide
  - D. Cost Data Book
  - E. CDOT Traffic Analysis and Forecasting Guideline
  
6. **FEDERAL PUBLICATIONS**, using latest versions
  - A. FRA Regulations
  - B. FRA Guidance
  - C. USDOT “Benefit-Cost Analysis Guidance for Discretionary Grant Programs” January 2020 or latest edition.
  - D. Highway Rail Grade Crossing Handbook
  - E. Reference Guide Outline - Specifications for Aerial Surveys and Mapping by Photogrammetric Methods for Highways
  - F. ADAAG Americans with Disabilities Act Accessibility Guidelines