

**Board Report**

File #: 2021-0765, **File Type:** Contract**Agenda Number:** 27.

**CONSTRUCTION COMMITTEE
FEBRUARY 17, 2022****SUBJECT: DIVISION 20 PORTAL WIDENING TURNBACK FACILITY INCREASE****ACTION: APPROVE RECOMMENDATIONS****RECOMMENDATION**

AMEND the Life-of-Project (LOP) budget by \$75,000,000 for the Division 20 Portal Widening Turnback Facility (Project) from \$801,749,577 to \$876,749,577 using the fund sources (Attachment A), consistent with the provisions of the Board-adopted Measure R and Measure M Unified Cost Management Policy (Attachment B).

ISSUE

Division 20 Turnback Facility is a highly complex project to provide a turnback facility that enables trains to operate at reduced headways. The Purple Line Section 1 Project (PLE1), obtained a Full Funding Grant Agreement (FFGA) from the Federal Transit Administration (FTA) that commits to reduced headways consistent with Metro's planned service levels. The Division 20 Turnback Project will allow Purple Line trains to turn back quickly and meet planned service levels and the FTA requirements. In order to achieve the reduced headways, modifications to the Division 20 Yard are being implemented, including major modifications to track, civil work, power and train control systems.

Significant issues with the design have generated changes and delays to the project. In addition to challenges with the design, the Division 20 scope of work has increased due to the complex nature of working in an operating yard over 30-years old. The Project's location over an old industrial site, its multiple interfacing projects, third-party requirements and the need to reconfigure the structural features of a 100-year-old bridge, have led to cost and schedule increases that were not anticipated as part of the original contract. The Project has not exceeded the Life of Project Budget (LOP) and has funded the changes with the contingency that was provided in the original LOP.

Due to these additional costs, the project has nearly depleted the contract contingency (see detailed discussion on remaining contingency in the Risk Analysis Section of this Report). This Board Action requests authorization to replenish contingency, which is critical to funding key change orders that have been submitted by the contractor and are directly related to moving forward with contract work

through an approximate one-year construction period. Completing the project through additional phases will bring the construction to a more advanced condition where staff can evaluate status of design changes and unforeseen site conditions and return to the board to report on any additional funding requirements that have been identified.

BACKGROUND

Per the project's Full Funding Grant Agreement (FFGA) for Section 1 of the Westside Purple Line Extension (WPLE), Metro is committed to achieving the capability to operate service at four-minute headways on the future Metro Purple Line. As a result of reduced headways, Metro will need to coordinate headways for Purple and Red Lines in the shared trunk portion of the tunnel system from Wilshire Vermont Station through 7th and Metro and Union Station.

The Metro Red/Purple Line trains "turn-back" at Union Station, reversing direction from east to west. The current minimum headway that can be achieved at Union Station is approximately four-minute service for combined Purple/Redline service (or seven-and-a-half minutes on the branches), but that will become impracticable and less efficient once the Westside Purple Line Extension begins operating and more trains are using the same tracks.

At present, non-revenue Metro Red/Purple Line trains proceed south of Union Station and through the portal just south of the US 101 Freeway before entering a complex set of switches in the Division 20 rail yard. To produce a clear benefit to current and future operations by increasing train speeds and ensuring system reliability, the existing tunnel portal must be widened to accommodate additional tracks and switches that diverge to become the turnback and yard leads.

In addition to the turnback facility, the Purple Line 1, Purple Line 2 and Purple Line 3 projects will add train vehicles to the Metro Fleet, generating a need for increased storage capacity in the Red/Purple Line Yard. Storage tracks are being constructed North and South of the First Street Bridge as part of the Division 20 Project. Complex switching and train movements must be integrated with the Turnback Facility to enable trains to move from storage onto the main line and into service through the Portal.

To install the new turnback facility and new storage for train vehicles, the current power substation for the yard must be relocated and upgraded to meet the power requirements for the Turnback Facility and added storage. Twelve different Construction Phases will be needed as geometry and alignments are modified for relocating and upgrading track, power, utilities and train control systems in different locations in the yard. The Contractor must maintain 24/7 operations with each phase requiring safety testing and formal turnback procedures before trains can be returned for in-service operations.

Finally, construction and pre-revenue testing of the portal widening and turnback facility must be coordinated in accordance with PLE Section 1 schedule for opening for Revenue Service.

Major project elements include portal widening, power relocation and upgrades, First Street Bridge modifications and seismic upgrade, installation of turnback facility and storage tracks, train control

and signaling systems installation and integration.

DISCUSSION

Construction is progressing well on the Division 20 Project. Coordination is productive between the Project Team, Metro Operations and the Contractor. The Project has successfully completed a major milestone consisting of a 100-hour closure of the Red Line Yard to upgrade the Microlock Operating System under which all trains move and are routed to and from the Main Line tracks. Civil work, power and utility relocations are moving forward and work on the First Street Bridge is advancing to completion.

Although construction is progressing, there have been numerous Contract Change Orders from the beginning of the contract due to issues with the design that have impacted cost and schedule. Further, the complex nature of working in an older yard, its location over an old industrial site, interfacing projects, third-party requirements and reconfiguring the 100-year-old First Street Bridge, have led to additional contract changes that were not anticipated as part of the original contract.

1. Design Changes

Since the approved LOP date and initial Issued for Bid (IFB) design was released, 1157 Requests for Information were received from the contractor and 84 Contract Change Orders to address related cost and schedule impacts. Design changes occurred so frequently, that the project team and designer slowed the project, held meetings and workshops to focus solely on reconciling and making corrections to the design. Resulting Contract CO 20 was the result, consisting of 43 separate changes and a \$43.3M cost impact. Numerous additional design changes have been identified and are being tracked under various Change Orders.

2. Yard Operation Requirements Not Identified Prior to Bid

Design changes to the contract after award include: Addition of temporary vehicle cleaning platforms, adjacent system infrastructure for expanded train car inspections, addition of crossovers within the yard to improve connectivity to yard facilities, modification of special trackwork to accommodate supplier for a reduced delivery duration, reduction in third rail gaps at special trackwork to maintain train movements under worst case scenarios, addition of traction power switches within the tunnel east of Union Station to facilitate train movements within the yard, development of backup access for train delivery to accommodate Metro's train cars' fleet increases, implementation of additional yard signage at interlockings, modifications proposed by the contractor to accommodate construction staging, construction sequence movement of trains and equipment so that operations can continue on a 24/7 basis.

3. Power Upgrade

A complete power upgrade and relocation of the Yard TPSS Substation has introduced additional complexity to work in the yard, significant excavation for vaults and duct banks, and

making adjustments for design conflicts. The location of the current Yard TPSS substation conflicts with track installation for the turnback facility. Multiple changes on First Street Bridge have created temporary conflicts for track alignments which must be constructed prior to relocation of existing TPSS. Completing First Street Bridge, installing new track alignments, and cutting over of the new power substation and power system have become the critical path due to interrelated design changes.

4. Adjacent Projects

There are 8 adjacent interfacing projects to the Main Line Contract: Regional Connector (RC), Metro Center Project (MCP), Link Union Station (LinkUS), Purple Line Section 1, South Yard signal upgrades, South Yard Expansion/Permanent Cleaning Platforms, early demolition and ductbank construction project, and TPSS procurement project. Recent changes in schedule or scope in a number of these projects have directly impacted Division 20 construction activities, schedule, and phasing.

Relevant impacts to infrastructure design include: modifications at the yard's portal area to address multiple changes in the alignment of Link US, design modifications to First St. Bridge and Gold Line power and fiber systems, new system connections built during construction by Regional Connector, revisions in systems' equipment layout/locations/connections at the Division 20 Yard Tower to accommodate competing space and connection needs of interfacing projects, revisions to the design to accommodate newly constructed systems' infrastructure at the southern end of the yard, and accommodation for the addition of maintenance platforms at the new storage areas as a separate interfacing project

5. Working on an old industrial site

Division 20 project site was an old industrial facility, a larger than anticipated volume of hazardous material has been excavated and hauled away by contract change order. Much of the project site where HazMat has been discovered, was not tested prior to bid because it was originally covered by a building owned by a private developer. Historical documents were used to identify hazardous materials and determine volumes for the contract bid documents. Presence of the building and ownership by a private developer did not allow for field testing of the area. Actual quantities of hazardous materials have exceeded the volumes identified in the documents, and multiple change orders have been required as the material has been excavated and removed.

6. First Street Bridge

Design modifications resulted when the designer did not identify embedded rail within First Street bridge deck. Deteriorations in the bridge condition were not visible from the surface and only became apparent as the bridge's construction work has progressed. Resulting repairs, not contained in the original contract documents, have been extensive and have caused time delays that were not anticipated in the original contract schedule. In addition, new requirements by the City of Los Angeles to install continuous bridge displacement and crack monitoring stations have resulted in more design changes during construction.

7. Third Party requirements:

LADWP has required the development of temporary traffic control plan for the use of LADWP to carry their system upgrades within Santa Fe Ave

Metro Operations has identified unforeseen revisions that are required to the location of the CCTV video at the yard tower, to the UPS locations in Room 279 to reflect the new location of the UPS, and to the communication plans to reflect the equipment to be placed in Room 303.

Regional Connector has included multiple temporary routings that were unforeseen for Regional Connector connections from First Street bridge to Gold Line TPSS and the yard tower.

Metro Operations requiring temporary cutover of the existing Gold Line negative and positive feeders and communication fiber conduit at the First Street bridge intermediate pylon and Bent 16 to accommodate revised construction staging due to changes at the First Street Bridge.

Underground Utilities have generated changes to the TPC contract for work that was needed under a prior enabling utility contract to expedite Division 20 work.

LADWP has generated changes to the design to reflect LADWP requirements for 3 alternative options for Division 20 TPSS rectifier transformer replacing the conformed document rectifier transformer, the development of load flow simulation for replacement option with 6.1% transformer-rectifier regulation, and the preparation of related design deviation requests.

Seismic upgrades to the First Street Bridge extending across the LA River have generated changes to the original contract by addition of concrete infill walls requested by UPRR.

As construction progresses, the project is coming out of the ground, so the early phase environmental issues are expected to decrease. Installation and activation of the Yard Microlock system has been successful, and work is proceeding well on the next phase track relocations. Challenges arising from the condition of the First Street Bridge are now almost resolved, and this will contribute to increased momentum of the project in the coming months. Based on lessons learned to date, Metro has added procedures that are focused on increasing efficiencies and taking advantage of opportunities to save costs and mitigate delays, including workshops to support quality assurance, added senior level oversight from the designer, and additional Metro technical resources to help review designer responses.

A Risk Analysis has been completed to evaluate the cost and schedule impacts caused by the Change Orders identified in this board report. Projections have been applied to the current volume and the anticipated volume of changes based on the complexity of the work to be completed through the next construction phase. A projected breakdown of additional contingency funded through this requested LOP increase is shown in Attachment C.

A statistical Model has been applied, and an estimate generated for additional funding (Attachment A) required to advance the construction beyond 30% to a point where evaluation of design issues, differing site conditions and related cost and schedule risks can be accurately quantified.

The Model provides confidence levels for the recommended LOP increase needed to advance the work for approximately one-year. Staff will return to the Board at the end of this period after undertaking a thorough risk analysis, with recommendations if any additional funding is required.

Risk Analysis

Given the above discussion, much of the initial work on the project has been change order work that has been funded by project contingency. Approximately 95% of the initial \$93.9 M of unallocated contingency included in the project budget has been depleted. In accordance with Metro Board policy, expenditures have not exceeded the funding authorized in the Life of Project Budget, but additional change order work has been submitted by the contractor and is awaiting authorization in order for critical path elements to move forward. Maintaining sufficient contingency to address the risks of additional changes caused by the many complexities of this project will also be critical to advancing construction through FY 23. A Statistical Analysis has been performed to define an LOP increase that replenishes contingency and determines funding needs for the next phases of construction. The Model developed a projection of the additional funds needed over a range of confidence levels (see table below).

Confidence Level	FY 23 LOP Increase
10%	\$ 59,740,113
15%	\$ 61,499,957
20%	\$ 62,985,155
25%	\$ 64,293,906
30%	\$ 65,475,404
35%	\$ 66,563,867
40%	\$ 67,574,561
45%	\$ 68,557,278
50%	\$ 69,583,347
55%	\$ 70,663,370
60%	\$ 71,804,205
65%	\$ 73,018,356
70%	\$ 74,324,681
75%	\$ 75,743,360
80%	\$ 77,314,158
85%	\$ 79,096,563
90%	\$ 81,207,034

EQUITY PLATFORM

The Division 20 C1136 Mainline contract will support the Purple and Red Line system by increasing service frequency, reliability and access for communities that use the Metro transit system along both alignments for housing, jobs, educational, medical and entertainment needs. These service upgrades positively impact riders of the system from marginalized communities that travel along Red and Purple Line Corridors by increasing access, capacity, and reliability to meet these essential travel needs. The contract has Small Business Enterprise (SBE) commitments of 19.34% and Disadvantaged Veteran Business Enterprise (DVBE) commitments of 3.31%, and the contract modifications requested in this report do not change the level of commitments. Current level of participation is 5.60% SBE and 2.71% DVBE. The majority of the SBE scope is trackwork and the Project must complete the underground heavy civil and utility work first before the trackwork begins. There are 3 more years left in the contract to achieve the 19.34% SBE and 3.31% DVBE commitments.

DETERMINATION OF SAFETY IMPACT

This Board action will not have an impact on established safety standards for Metro's construction projects.

FINANCIAL IMPACT

Funds required for fiscal year 2022 have been requested through the fiscal year 2022 budget development, adopted at the May 2021 Board meeting. Since this is a multi-year capital project, the Chief Program Management Officer and the Project Manager will be responsible for budgeting costs in future fiscal years.

Impact to Budget

The sources of funds for the recommended actions are local and other funds that are eligible at the time of expenditure.

Multiyear Impact

The sources of funds for the Project are capital funds identified in the recommended Funding/Expenditure Plan as shown in Attachment A. With respect to the \$75,000,000 increase, Attachment B shows the Measure R and Measure M Unified Cost Management Policy (the Policy) analysis and funding strategy required for cost increases to Measure R and Measure M Projects.

To comply with the Policy of the Metro Board of Directors, Metro staff has evaluated potential offsetting cost reductions, including scope reductions, value engineering, shorter segments.

Because the project is so far along, these actions are no longer feasible.

This report identifies additional funding resources consistent with the Policy approved by the Board in 2018. Attachment B provides a detailed discussion of the Policy. In summary, the Policy was developed in recognition that some projects would need additional funding and the Policy provides a consistent and equitable process to ensure that any financial impacts are limited to the local area where the project is located and not have a region-wide impact.

The source of funds to address the LOP increase are Measure R Transit Capital (35%) for WPLE, made available from additional New Starts funding.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

The recommendation supports Strategic Plan Goal #1 - Provide high-quality mobility options that enable people to spend less time traveling. Deliver outstanding trip experience for all users of the transportation system. Enhance communities and lives through mobility.

ALTERNATIVES CONSIDERED

The Board may choose to not move forward with amending the LOP budget. This is not recommended as Metro will be unable to provide funding to complete the Project according to the current schedule

NEXT STEPS

Upon approval by the Board, the LOP budget will be amended accordingly per the recommendation..

ATTACHMENTS

Attachment A - Funding/Expenditure Plan

Attachment B - Measure R and Measure M Unified Cost Management Policy Analysis

Attachment C - Projected Breakdown of Project Contingency Use

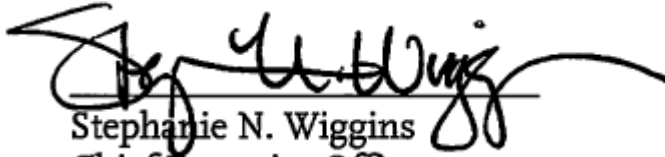
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