Memorandum

To: Executive Steering Committee
From: Alfonso Rodriguez, DTX Project Director
Stephen Polechronis, Program Manager
Date: July 16, 2021
Re: Item 5, Consider Concurrence with the Integrated Program Management Team's (IPMT) recommended Scope of Work for the Through Running Operations Analysis

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RECOMMENDATION: Concurrence with the Integrated Program Management Team's (IPMT) recommended Scope of Work for the Through Running Operations Analysis

BACKGROUND: The San Francisco Peninsula Rail Program Memorandum of Understanding (MOU), effective 5 June 2020, described an organizational structure and summary work plan to support the efforts of the TJPA to develop the Downtown Rail Extension (DTX) to ready-for-procurement status.

Among the elements of the MOU was the requirement to:

> "Prepare a preferred Phasing Plan conforming with technical studies and policy direction on realistic amounts/timing of funding and stakeholder delivery date expectations -with an explicit goal to deliver rail service to the STC as soon as possible".

In order to comply with this requirement, the IPMT commenced a Phasing Study workstream in June 2020 with several workshops, meetings, and technical discussions to conduct the study supporting the Phasing Plan. Early in this process, the IPMT concluded an updated Operations Analysis would be required to fully examine certain of the Phasing Concepts. As the Phasing Study and supporting Operations Analysis advanced, the Executive Steering Committee (ESC) was briefed on Study progress. At the October 23, 2020, meeting of the ESC, staff presented the approach to both of these efforts and described that the studies would, among several other areas of analysis, "explore the implications, both to station operations and capacity through the DTX corridor of potential future run-through operations."

Concurrently, the Link21 project began pre-scoping planning activities which included as one possible option, a rail connection between the east end of the Transit Center and a new transbay rail crossing to the East Bay, effectively creating a run-through configuration of the Transit Center as opposed to the current terminal stub-end configuration.

In consideration of the possibility of an East Bay connection, the ESC requested that the IPMT conduct a Through Running Operations Analysis (TROA). In response, the IPMT conducted a number of discussions to develop a Scope of Work that would be responsive to the ESC request.

Subject to ESC concurrence on July 16, the IPMT will conduct the TROA consistent with the below Scope of Work. Results from the analysis will be available in September 2021.

DELIVERABLE, PURPOSE, METHODOLOGY, CONTRAINTS AND ASSUMPTIONS

<u>Deliverable</u>
Based upon the methodology and assumptions laid out below, undertake a static service planning assessment to determine the theoretical maximum capacity for the operation of through running train services at the Transit Center. A technical memorandum will be produced documenting the work and results.

Purpose

The purpose of the TROA is two-fold:

- Provide a sketch level analysis of the potential long-term capacity of DTX and the Transit Center should a rail connection be constructed from the east end of the Transit Center through a new transbay rail crossing to the East Bay.
- Under a run-through configuration, identify the capacity and operational reliability constraints associated with a two track DTX as compared to the three track environmentally cleared baseline configuration.

Methodology

Using Viriato Rail Simulation software, assess the maximum through-running capacity between Control Point (CP) Common and the Alameda/Oakland end of the transbay section.

1. Evaluate both two and three tracks between 4th and Townsend and the throat at the transit center to determine whether this maximum capacity is affected by having two or three tracks.
2. Assess the impact on the maximum through-running capacity if one train per hour coming from the Peninsula terminates and reverses at the transit Center.
3. Continue adding one additional terminating train per hour until no capacity exists to accommodate any through-running trains to/from the transbay section.
4. Repeat steps 2 and 3, using two tracks between 4th and Townsend and the throat at STC.

Constraints and Assumptions

Because the potential Link21 project is not defined at this time in terms of vertical and horizontal alignment, number of tracks, connection details to the Transit Center (the throat tracks to connect as many as six Transit Center tracks to the Link21 crossing under the bay), number of vent zones, and other performance influencing characteristics, the study will make a number of assumptions regarding Link21's physical layout.

- Infrastructure design and operating parameters on the DTX and at STC to be as per 4th and Townsend Station "Concept B" from the Operations Analysis except as amended below. The decision on which track to remove from Option B to assess the two-track alternative will be left to the study team, based on maximizing through-running capacity.
- All platform tracks will be assumed to allow through-running with tracks funneling into a two-track alignment just beyond the east end of STC. This assumption provides maximum flexibility for the study and avoids the need to undertake any engineering assessment/analysis prior to work.
- Through platform tracks and special trackwork maximum allowable speed will be assumed at 20mph. This represents a reasonable assumption and as all trains are stopping at STC will have minimal impact on capacity.
- The new transbay crossing (Link21) will have a maximum allowable speed of 60mph. This represents a reasonable assumption and as all trains have a common stopping pattern line speed will have a minimal impact on capacity.
- The transbay crossing will be assumed to have a level gradient. At this sketch level, it is not possible to know what gradients to include and over what distances. In addition, their impacts are likely to broadly even out over the descent and ascent to/from the new crossing.
- The study limits to be CP Common (just outbound from the DTX 4th and Townsend Station), through the transit center and across the bay to Oakland/Alameda.
- Headways in the new transbay section to be three minutes, representing a reasonable assumption based upon modern train control technology.
- The distance from the special trackwork accessing the transbay crossing tracks and the end of the transbay crossing is 5.5 miles. This is the approximate distance from the transit center under the Bay and reaching the Oakland/Alameda side.

- No stations are assumed between the transit center and east end of the new crossing as most of the study scope for this analysis is under the Bay and unlikely to have a station.
- Sufficient infrastructure will be available at each end of the study section for trains to exit the section unimpeded at line speed. This avoids constraining the study due to trains slowing to enter or exit the study section and avoids the need to account for known constraints on the Peninsula and unknown constraints beyond the Oakland/Alameda study limit.
- Through platform dwell times to be sixty seconds will be applied to all trains to ensure the study results are operator agnostic. If required, the analysis could assess the impact of other dwell times.
- Turn times to be twenty minutes for all terminating trains, consistent with turn times used in the Operations Analysis.
- All through-running trains to stop at both 4th and Townsend Station and at the transit center so as to remain operator agnostic
- Train performance characteristics will use a generic electric multiple unit as trainset for all services with performance characteristics equivalent to Stadler EMUs.