FINDINGS OF THE APTA PEER REVIEW PANEL ON

PROJECT MANAGEMENT AND OVERSIGHT

PROVIDED AT

TRANSBAY JOINT POWERS AUTHORITY

APRIL 2019

Executive Summary: The APTA Peer Review Panel was convened at the request of Mark Zabaneh, Executive Director, Transbay Joint Powers Authority (TJPA), to assist the organization in reviewing the management and oversight of phase 1 of the Transbay Program (Program) during planning and construction and its applicability to future phases 2 and 3. The Program, which is governed by TJPA, is an intermodal transit station in downtown San Francisco. It serves as the primary bus terminal—and future rail terminal—for the San Francisco Bay Area that is a multimodal regional transportation hub that will connect eight Bay Area counties.

The observations and recommendations provided through this peer review are offered as an industry resource to be considered by TJPA in support of strengthening the organization's management and oversight of the Program as it moves into phases 2 and 3. Recommendations are offered to optimize the internal staffing of the TJPA, the project delivery method, and the oversight and communications among project stakeholders.

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APTA Peer Review Panel

The on-site APTA Peer Review Panel consisted of the following individuals:

HENRY STOPPLECAMP, P.E.
Assistant General Manager, Capital Programs
Regional Transportation District
Denver

RICHARD CLARKE
Chief Program Management Officer
Los Angeles County Metropolitan Transportation Authority
Los Angeles

ERIK STOOTHOFF, P.E.
Chief Engineer
Massachusetts Bay Transportation Authority
Boston

CONNIE CRAWFORD, P.E.
Senior Vice President, Rail/Transit Global Practice Leader
Louis Berger
Morristown, New Jersey

JEFF HIOTT
Assistant Vice President, Technical Services and Innovation Department
American Public Transportation Association
Washington, D.C.

Panel biographies

Henry J. Stopplecamp, P.E.

Henry Stopplecamp is assistant general manager of capital programs for RTD and responsible for all aspects of the FasTracks Program, including fixed guideway design and construction support for light rail, commuter rail corridors and the required freight railroad relocation, along with bus infrastructure requirements and facility maintenance. FasTracks is a multibillion-dollar transit expansion plan to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, and 21,000 new parking spaces at light rail and bus stations, and to enhance bus service for easy, convenient bus/rail connections across the eight-county district. Stopplecamp is a graduate of Montana State University with undergraduate and graduate degrees in civil engineering. He is registered as a professional engineer in the state of Colorado. Before coming to RTD, Stopplecamp worked for the Burlington Northern Santa Fe railroad handling wastewater treatment operations, large-scale remediation projects, emergency response, and track construction and maintenance.

Richard Clarke

Richard Clarke is the chief program management officer for Los Angeles Metro's $16.8 billion capital program. He leads Metro's program of projects for transit, highway and regional rail. This includes the Crenshaw/LAX light rail project, the Regional Connector downtown LRT subway and the Westside subway extension of the Purple Line. Prior to joining Metro, Clarke was assistant general manager, capital programs, for Denver RTD, leading the implementation of the $5.6 billion FasTracks program. He also served as RTD's project manager on the multimodal (highway and LRT) T-REX project. He has prior transit experience in Dallas, Philadelphia, New York, Cleveland and Boston. Clarke has graduate and undergraduate degrees from the University of Pennsylvania.

Erik Stoothoff, P.E.

Erik Stoothoff is chief engineer for the MBTA, is responsible for all standards for engineering, design, asset management, quality management and maintenance for the MBTA. Additionally, he oversees all vehicle procurements, infrastructure planning initiatives, asset management and quality management functions. In mid-2018, Stoothoff was asked by General Manager Luis Ramirez to build a new department of approximately 100 professionals within the MBTA that for the first time will be independent of maintenance and construction activities to modernize engineering and maintenance standards based on the internal operational and customer experience needs of the authority.

Cosema E. (Connie) Crawford, P.E.

Connie Crawford, senior vice president at Louis Berger, has over 30 years of public and private sector experience in the management, design and construction of major transportation programs. Crawford serves as the chief engineer for the Northeast Corridor Maglev Train project that proposes to provide one-hour service at 311 mph between New York City and Washington, D.C. She is also the program management consultant for the FTA for the Santa Ana Streetcar project in California. Overseas, she was project director for two design-build contracts totaling over $2 billion for the Doha Metro system in Qatar, design coordinator for the 200-kilometer Riyadh Metro, and project coordinator for a comprehensive new transportation network for the city of Madinah in Saudi Arabia. Prior to joining Louis Berger, Crawford served as chief engineer for NYC Transit, where she managed the $2.2 billion annual capital program for subway and bus infrastructure.

Jeff Hiott

Jeff Hiott is the assistant vice president of the Technical Services and Innovation Department for the American Public Transportation Association, the 1,500-member national trade association that represents the public transit industry. Jeff holds a B.S. in civil engineering with a transportation focus from Georgia Tech. Prior to APTA, Jeff spent several years working at an engineering firm and the Georgia DOT.

Project Management and Oversight Provided at Transbay Joint Powers Authority

1. Introduction

On Jan. 17, 2019, Mark Zabaneh, Executive Director at the Transbay Joint Powers Authority (TJPA), contacted the American Public Transportation Association (APTA) to request a peer review of the agency's management and oversight of the first phase of the Transbay Program and its applicability to future phases 2 and 3 (refer to Appendix A, Letter of request). APTA, through its wholly owned subsidiary the North American Transportation Services Association (NATSA) and through discussions between APTA and TJPA staff, determined that the review would be conducted March 11–13, 2019.

APTA assembled a panel of industry peers, comprised of individuals with senior and executive industry leadership skills from within the public transit sector to provide advice, guidance, benchmarking and best practices. The panel convened in San Francisco on March 11, 2019 (refer to Appendix B, Peer review agenda). Panel coordination and logistical support was provided by APTA staff adviser Jeff Hiott. He also coordinated panel member input in the drafting of this peer review report. Mark O'Dell, AIA, program manager, provided agency liaison support.

1.1 Opening comments

The panel observed that the Program has overcome significant challenges to deliver a state-of-the-art transit center that is functionally and aesthetically pleasing and has spurred economic development in a formerly blighted area of the city. The financing plan has been innovative and forward-thinking, generating significant revenue and value capture in and around the transit center. The approximately 15 office and residential tower projects recently completed, underway or in planning around the transit center are testament to the redevelopment success. (Refer to Attachment 1, Transbay Program Description, provided by the TJPA)

FIGURE 1
Construction of Transbay Transit Center

1.2 Scope of the review

TJPA requested that APTA conduct a peer review of the management and oversight of phase 1 of the Transbay Program and its applicability to future phases 2 and 3. The peer review focused on the following:

- **Phase 1:** Organizational structure in place for the planning, design, construction and facility management of the Salesforce Transit Center
- **Phases 2 and 3:** Organizational and best practices needs and opportunities for the continued planning, funding opportunities and design of the tunnel extension linking Caltrain's current San Francisco station to the transit center and bringing future high-speed rail into the transit center

1.3 Methodology

The APTA peer review process is well-established as a valuable resource to the industry for assessing all aspects of transit operations and functions. The process begins much like a structured formal audit, but unlike a formal audit, peer review teams are comprised of highly experienced transit professionals. The purpose of using experienced subject-matter professionals is to share methods, insights and experiences interactively with the requesting property.

It is through this exchange of ideas and experiences that the synergistic process of the peer review has value, as each of the participants—on the review team and at the property—gain a better understanding of the complexities of transit functions and opportunities for improvement. It is truly an industry self-improvement process in which all parties benefit.

The peer review concludes with a caucus among the peer review team to draw out the opinions and recommendations of the team members and to define a consensus summation of observations taken and their professional judgment as to areas where improvement could be attained. This information is then presented to the requesting property in an exit conference and followed by a report, if so desired. There are no expectations expressed or implied that the requesting property take any action to satisfy the opinions of the peer review team, nor engage any members of the team in any follow-up activities. The information provided by the peer review team is consensus-based and transferred to the requesting property as a pro bono work product, which the transit property holds all rights to under the terms of the peer review agreement.

The panel appreciates the support and assistance extended throughout the peer review process by the TJPA staff. The panel stands available to assist with any clarification or subsequent support that may be needed.

2. Organizational structure and staffing

2.1 Observations

The work to construct phase 1 of the project has been accomplished with a lean TJPA staff. The stakeholder coordination needed for this project is extraordinary and appears to have been well-managed. TJPA has a shallow owner organization with key positions filled by consultants, which contrasts with other similar transit projects with this kind of scope. The completed facility seems well-managed from an operational perspective, with capable staff in place.

2.2 Recommendations

A 10-year multibillion-dollar program needs a robust in-house management organization. When phase 1 is closed out and a new team of consultants is engaged to restart and continue phase 2, it will be incumbent upon the small TJPA staff to retain and transfer previous project knowledge and associated documentation to phases 2 and 3.

The panel recommends that TJPA should build a robust management structure, with key positions filled by TJPA and/or stakeholder staff. Key in-house positions may include:

- phase 2 project director;
- chief engineer/tunneling engineer;
- design manager;
- planning/environmental manager;
- program controls manager and team;
- quality, health and safety managers; and
- operations and municipal liaisons.

The panel recommends that two levels of TJPA in-house staff be assigned. Each of the above managers should be supported by one or more professionals to provide depth, continuity and succession planning, as some staff turnover is likely in a 10-year project.

Moving toward phases 2 and 3, TJPA is procuring new consultant support and faces the risk of a large amount of institutional knowledge leaving the project. As previously noted, phase 1 of the project had a large consultant presence in its delivery, and much of the knowledge and experience on the project rests within those teams.

3. Project delivery

3.1 Observations

The project delivery method chosen for phase 1 was Construction Manager/General Contractor (CM/GC). This delivery method is fairly common because the main advantage to using CM/GC is to have the contractor act as a consultant in the design process by offering innovations, best practices, accurate cost estimates, reduced cost and schedule risks, and expanded bidder pool.

The peer review panel concluded that the collaborative benefits of the CM/GC delivery method were not fully realized. Several factors led to not fully realizing the benefits of the CM/GC alternative delivery method, such as delays and overruns, including significant and untimely scope changes, market conditions, poor estimates, and high subcontractor bids combined with a low bidder pool. The chain of accountability among the key project players (TJPA, PMPC, TCCO, Webcor, PCPA) was not well-defined and may have contributed to the problems that were encountered.

The next phase of the project is known as the Downtown Rail Extension (DTX), which will extend Caltrain's rail connectivity 1.3 miles from Fourth and King streets to the new transit center, with accommodations for future high-speed rail service. Development of phase 2 has suffered many starts and stops, which typically has major consequences to a project's cost and schedule.

It was noted that the current Program management and design consultants have been actively working on phase 2 and the DTX since 2004, bringing phase 2 to 30 percent design. Unfortunately, phase 2 was then put on hold in 2010 due to funding constraints that will ultimately lead to increased project costs. (Refer to Attachment 2, Phase 2 Program 2004–2018, provided by the TJPA)

3.2 Recommendations

TJPA should perform a thorough evaluation to determine the project delivery methods for phase 2 and 3 work. The contract packaging decisions should consider the capacity and experience of TJPA staff to manage the work, as well as the potential for future scope and schedule changes. Delivery methods should largely be based upon the anticipated risks of the project, the project objectives, and the ability and experience of the staff to manage a delivery method. For example, a project with an emphasis on schedule may lean toward

design-build, while one with a number of unknowns may call for a higher level of design. The sooner the delivery method is selected, the sooner the project team can direct subsequent activities consistent with that delivery method.

There are several advantages and disadvantages to each project delivery method. A project delivery method is not a silver bullet, but simply the contracting mechanism best-suited to the project and staff. A project delivery workshop with the TJPA staff and key consultants may be an approach to be considered. In addition, LA Metro has a formal evaluation procedure that has been shared with TJPA (refer to Appendix C, LA Metro project delivery procedure). In making its decision, TJPA should adopt lessons learned from other major transit infrastructure projects and programs, notably the Central Subway project and LACMTA.

Initial work scope for the next-phase design team is to evaluate the appropriate procurement methodology for the construction packages for phases 2 and 3. This work should include:

- new baseline independent cost estimate;
- a project risk analysis;
- new baseline program and project-specific schedules including realistic procurement timelines and design timelines, as well as specialty procurement items that may be long-lead;
- earliest possible cost- and resource-loaded scheduling for the various projects of phase 2 and 3;
- construction market conditions analysis;
- regional analysis of alternative delivery efficacy (how much time or cost an alternative delivery method has achieved versus traditional design-bid-build relative to predictions); and
- operational needs and opportunity analysis for each mode.

The peer review panel identified some opportunities for TJPA to consider as it moves forward with the project. Considerations for phase 2 include the following:

- Reconsider what scope is built into phase 2 in light of the current status of high-speed rail. If high-speed rail implementation into San Francisco is to be delayed for the foreseeable future, TJPA should consider deferring some scope elements as appropriate, until such time that the CAHSR schedule is better developed. In addition, TJPA should continue to assess value-engineering opportunities throughout the project. Given the history of the Transbay Program and general vision of the resulting connectivity, reductions should be considered such that they do not preclude future expansion to accommodate CAHSR or other expanded rail service.
- Explore potential funding opportunity from redevelopment of King Street Yard as part of phase 2, while considering operational impacts.
- Consider the scope of the project, with “build to budget” phasing according to funding availability. If carried forward, care should be taken to consider whether future alternatives are precluded as a result.

4. Oversight and communication plan

4.1 Observations

The Transbay Program was designed with the intention to transform downtown San Francisco and its regional transportation network into a vibrant, attractive city center. Phase 1 consisted of replacing the outdated Transbay Terminal with a modern terminal and creating a transit-friendly neighborhood of residential and mixed-use commercial development. The project has achieved that goal.

A strong governance vision with unified championship by all stakeholders will lead to decisive action on phases 2 and 3 that will expedite sound engineering and construction, leading to a better product more expediently and at the lowest responsible cost.

4.2 Recommendations

TJPA should delineate the key elements of the project and the roles and responsibilities of each stakeholder in the future operations and maintenance of the facility and infrastructure. The governance structure should be refreshed, and a clearly defined path of responsibilities should be established among project team members. This is achievable through a combination of a more robust internal TJPA staff of subject matter experts, along with strong engagement by the board of directors. The Program also needs a strong external stakeholder champion to promote and support it (Caltrain, CAHSR, city official, etc.).

TJPA should explore engaging an independent engineer (IE) to observe and monitor the project and report directly to the board. An IE provides third-party oversight for projects, including independent oversight of cost and schedule, technical peer reviews, value engineering processes, and cost recovery. The IE should be registered as a professional engineer and have significant experience in the construction and supervision of projects with similar scope and complexity. The IE should enjoy unfettered access to project worksites, documents and correspondence. The IE should report directly to the highest authority with an annual report and with monthly progress updates.

To ensure that the project is properly coordinated and receives timely decisions and reviews, liaisons should be assigned to the project team from key operating stakeholders, including the following:

- Caltrain
- CAHSR
- SFPW
- BART
- AC Transit
- SFMTA

TJPA should finalize the scope, schedule and budget for phases 2 and 3, and get stakeholder buy-in before commencing the work. In doing so, TJPA should explore options for scope reallocation of phase 2 and 3 work execution, allowing each party to undertake work aligned with its capability and experience. For example, TJPA could manage the civil works for the tunnel and 4th Street Station shell, while Caltrain takes responsibility for the design and construction of track, systems and station buildout (e.g., Seoul Metro model). Similar to the approach taken on phase 1 with AC Transit, TJPA should establish cost-sharing arrangements with rail tenants for operations and maintenance of the rail infrastructure and facilities.

TJPA should document the overall success of phase 1 of the project in achieving the goal of serving as the catalyst to redevelop downtown San Francisco. It should share this with political, community and business leaders to obtain continued financial and community support.

5. Summary of recommendations

- The small TJPA staff should ensure that it retains institutional project knowledge and documentation and transfers this work into phases 2 and 3 of the project.
- Two levels of TJPA in-house staff should be assigned, with area managers supported by one or more professionals to provide depth, continuity and succession planning.
- TJPA should reassess its project delivery methods for phases 2 and 3, taking into consideration the capacity and experience of TJPA staff to manage the work, as well as the potential for scope and schedule changes.
- TJPA should reconsider what scope is built into phase 2 in light of the current status of high-speed rail, with the possibility of deferring some scope elements if high-speed rail implementation into San Francisco is to be delayed for the foreseeable future.

- TJPA should continue to assess value-engineering opportunities throughout the project, considering reductions as long as they do not preclude future expansion to accommodate high-speed rail or other expanded rail service.
- TJPA should refresh the project's concept of operations to delineate the key elements of the project and the roles and responsibilities of each stakeholder in the future operations and maintenance of the facility and infrastructure.
- A strong external stakeholder should be found to champion the Program.
- TJPA should explore engaging an independent engineer to provide oversight for the project and report directly to the board.
- Key operating stakeholders should assign liaisons to the project to help ensure that it is properly coordinated and receives timely decisions and reviews.
- TJPA should document the overall success of phase 1 and share this documentation with San Francisco political, community and business leaders.
- Lessons learned from phase 1, along with recommendations for phase 2, should be applied in phase 3.

Appendix A: Letter of request

TJPA

TRANSBAY JOINT POWERS AUTHORITY

Mark Zabaneh - Executive Director

TJPA Board of Directors

Mohammed Nuru, Chair
San Francisco Mayor's Representative

Jeff Gee, Vice Chair
Peninsula Corridor Joint Powers Board Representative

Michael Hursh
AC Transit Representative

Elly Cheng (alternate)
SF Board of Supervisors Representative

Boris Lipkin
California High Speed Rail Authority Representative

Edward Reiskin
SF Municipal Transportation Agency Representative

Nadia Sesay
SF Board of Supervisors Representative

Tony Tavares, ex officio
State Department of Transportation (Caltrans) Representative

January 17, 2019

Jeff Hiott, Assistant Vice President, Technical Services & Innovation
American Public Transportation Association
1300 I Street NW
Suite 1200 East
Washington, DC 20005

Subject: Transbay Program
Peer Review of Management and Oversight of the Transbay Program Phase 1

Dear Mr. Hiott:

The Transbay Joint Powers Authority (TJPA) would like to request a peer review by the American Public Transportation Association (APTA) of the TJPA's management and oversight of Phase 1 of the Transbay Program, and its applicability to future Phases 2 and 3.

The TJPA is the governmental entity charged with overseeing the design, construction and operation of the new Salesforce Transit Center (Phase 1) and the future Downtown Rail Extension (DTX) (Phase 2) in San Francisco, together known as the Transbay Program (Program).

The approximately $6.2 billion Program consists of two phases, each with multiple components. Phase 1 includes design and construction of the above-grade portion of the Salesforce Transit Center, including a 5.4-acre rooftop park, retail areas, and a public art program; the core and shell of the building's below-grade train station; a bus ramp that connects the building to the San Francisco-Oakland Bay Bridge; a bus storage facility; and a temporary bus terminal.

The Salesforce Transit Center was completed and opened for bus transit operations in August 2018. In September, however, the TJPA closed the building and moved all bus service back to the temporary terminal when crews discovered fractures in the flanges of two steel girders. Normal operations will resume once the TJPA establishes the root cause of the fractures and repairs are completed.

Phase 2, which includes the DTX tunnel, the build-out of the below-grade train station at the transit center, a new underground station along the DTX alignment, and an intercity bus facility, is currently in the preliminary engineering phase and is not yet fully funded.

Once Phase 2 is complete, the facility will connect eight Bay Area counties and the state of California through eleven transit systems: Alameda–Contra Costa Transit, BART (Bay Area Rapid Transit), Caltrain commuter rail, Golden Gate Transit, Greyhound, Muni (San Francisco municipal bus lines), SamTrans (San Mateo County Transit), WestCAT (Western Contra Costa Transit) Lynx, Amtrak, Paratransit, and high-speed rail from San Francisco to Los Angeles.

201 Mission Street, Suite 2100, San Francisco, CA 94105 - 415.597.4620 - tjpa.org

Over the past four years, the San Francisco Planning Department, with regional transportation agencies, has been studying transportation and land use alternatives in southeast San Francisco. The initial phase of this effort recently concluded with the City's adoption of the Pennsylvania avenue alignment, the preferred rail alignment to bring both commuter and high-speed rail into the new Salesforce Transit Center. This alignment consists of the environmentally cleared Phase 2 DTX and a underground tunnel that would extend from the DTX southward to an existing station at 22nd Street and Pennsylvania Avenue. It is anticipated that the tunnel, which is referred to as the Pennsylvania Avenue Extension (PAX), would be constructed as Phase 3 of the Program such that design and construction of Phase 2 can move forward while the PAX is undergoing environmental review and design, and funding is obtained.

We are requesting that the APTA peer review examine the history of the Program to date, the organization and structure of the TJPA, how Phase 1 of the Program was delivered, and how future phases of the Program could be delivered. Accompanying this request letter is Appendix A, the APTA Peer Review Program signed indemnification form.

The following information about the Program is available for download at https://transbaycenter.box.com/v/APTA

- Illustrated Program Description
- Program Management Plan
- Phase 1 Program Team Chart
- TJPA Organizational Chart

The staff liaison assigned to assist with logistical coordination is:

Mark O'Dell, AIA – Program Manager
Transbay Program Managers
110 Main Street
San Francisco, CA 94105
office: 415-343-2478; cell: 415-203-1895
modell@transbaycenter.org

Please let me know if you have any questions or if additional information would be helpful or is needed.

Sincerely,

Mark Zabaneh, PE
Executive Director

Enclosure: Appendix A

cc: Ron Alameida, Nila Gonzales, Mark O'Dell

Appendix B: Peer review agenda

Transbay Phase 1 Management and Oversight Peer Review Agenda

Monday, March 11, 2019

7:45am – Meet in lobby to walk to breakfast (no restaurant in the hotel)

9:00 – 10:00
- Review Program History and Governance Structure

10:00 – 11:00
- Review Overall Program Focus on Phase 1

11:00 – 12:00
- Tour of the Phase 1 Transit Canter

12:00 – 1:00
- Lunch

1:00 – 1:30
- Questions

1:30 – 2:00
- FTA, FRA, SFCTA, MTC Oversight

2:00 – 3:00
- Phase 1 budget history

3:00– 3:30
- Break

3:30– 4:00
- Operations Presentation

4:00 – 5:00
- Phase 2 - DTX
- Phase 3 - PAX

5:00 – 6:00
- Questions and Tuesday Agenda

Tuesday, March 12

7:45am – Meet in lobby to walk to breakfast

9:00 – 6:00
- As Needed based on Peer reviewer Questions and Requests

Wednesday, March 13

7:45am – Meet in lobby to walk to breakfast

9:00 – 10:30
- Draft Findings Presentation to TJPA

Appendix C: LAMetro Project Delivery Selection Procedure

POLICIES AND PROCEDURES	**Procedure #: PM01**
PROJECT MANAGEMENT DEPARTMENT	**Revision: 2**
PROJECT DELIVERY SELECTION PROCEDURE	**Date: TBD**
	Page: 1 of 27
Approved:	**Date:**

1.0 GENERAL

The purpose of this procedure is to provide a tool for evaluating and establishing a project delivery method that will result in the highest probability of achieving scope, cost, schedule, quality, and safety objectives. This procedure applies when considering “traditional” Design-Bid-Build (DBB) vs. “alternative” Design-Build (DB); and then further consideration for Design-Build-Operate-Maintain (DBOM), Construction Manager/General Contractor (CM/GC), and P3 options that include Transit Oriented Development (TOD) and/or private financing through Design-Build-Finance (DBF) and Design-Build-Finance-Operation-Maintain (DBFOM). Scoring sheets are utilized for ranking delivery parameters to assess project attributes that include size, type, complexity, cost/ schedule objectives, risk ownership and other parameters.

1.1 Overview

Most projects will at least be assessed for DBB vs. DB. The procedure provides for a primary "short-form" assessment and scoring mechanism that may be the only step required for many projects. It will become clear through this short-form process if additional analysis is required to make the best delivery method determination. The procedure, therefore, also provides for a secondary and more comprehensive "long-form" assessment most likely applicable to large/complex projects. The long-form is increasingly more detailed and only applicable in the event the short-form assessment lacks clarity to support a prudent decision. Projects favoring DBB can then be further assessed as CM/GC and/or P3 candidates; and projects favoring DB can be further assessed as DBOM and/or P3 candidates.

It should be noted that some parameters and delivery method considerations for this procedure were extracted from the industry-standard "Transit Cooperative Research Program (TCRP) Report 131: A Guidebook for the Evaluation of Project Delivery Methods." The TCRP guidance establishes a 3-tier approach, with each subsequent tier increasingly more comprehensive. This procedure is a more concise representation of the combined TCRP Tier 1 and Tier 2 delivery method analysis, which is reflected in both the short-form and the long-form assessments. If the use of this procedure alone does not result in a clear delivery method choice, the TCRP can be utilized for more in-depth guidance on the more complex Tier 2 Weighted-Matrix Delivery Decision Approach. (Note that the Tier 3 assessment in the TCRP guidance is related to a risk based qualitative and quantitative delivery assessment; this delivery assessment is addressed as part of Metro's Risk Management Program.)

There are four steps to completing the project delivery selection process as indicated below. These steps are further discussed in the body of this procedure.

Step 1. Obtain Project Definition (reference Section 4.0)

Step 2. Define Project Variables and Goals (reference Section 5.0)

Step 3. Assess and Choose Project Delivery Method (reference Section 6.0)

Step 4. Decision Results (reference Section 7.0)

2.0 DEFINITION OF TERMS

The following defines the delivery methods addressed in this procedure:

2.1 Design-Bid-Build (DBB)

Design-Bid-Build (DBB) is "traditional" delivery where drawings and specifications are taken to the 100% level prior to procuring a construction contractor. These documents are then incorporated into a bid package that is generally awarded on a low bid basis. DBB works best when the following conditions exist:

- Metro requires full control of the design
- Many unknown risks exist that can best be addressed during design
- Heavy involvement by third-party stakeholders
- Schedule is not of highest priority
- Metro is comfortable in accepting the risk of design errors

2.2 Design-Build (DB)

Design-Build (DB) delivery is when the contractor performs both design and construction in an integrated manner, eliminating the procurement step between design and construction. Some design and construction activities typically overlap enabling the project to be completed faster. Design-build contracts are generally awarded on a best value basis where both technical factors and cost are considered.

DB contracts are best issued at 30-60% design completion but are sometimes issued either sooner or later. Metro has seen some success in the past issuing the contracts at as much as 90% complete, but with a corresponding dilution of schedule benefit. In any case, the design documents are incorporated into the contract as reference documents which, depending on the level of design completion, may or may not be reliable for accuracy of design. Some of the advantages of design-build can be:

- Faster delivery schedules (which can also lower cost)
- Opportunities for innovation from the private sector
- Risk sharing including assigning the risk of design to the contractor

2.3 Design-Build-Operate-Maintain (DBOM)

DBOM delivery is an expansion of DB to also give the contractor responsibility for Operations and Maintenance (O&M) of the completed project for a period that can vary between 5 to 30 years. There are two distinct elements to DBOM. The first is the requirement to maintain the system should incentivize the DBOM contractor to place particular emphasis on both quality and life cycle costs; the second is that in addition to design and construction performance requirements, it is also necessary to develop O&M performance requirements. An advantage of DBOM is that usually disparate functions are combined as a single entity for increased efficiencies.

2.4 Construction Manager/General Contractor

Construction Manager/General Contractor (CM/GC) provides for a separate contract with the designer, in an approach where the Owner hires a construction manager (CM) early-on that also is the construction contractor. In theory, the CM/GC and the designer collaborate during design to achieve construction efficiencies; and Guaranteed Maximum Prices (GMPs) are negotiated as design packages are readied for construction. Construction Manager-at-Risk is similar, but that portion of the construction work that is not self-performed by the contractor is let for competitive bid to subcontractors. These deliveries work best on projects with sequence and schedule sensitivities and where design is complex, difficult to define, and/or subject to change.

2.5 Public-Private Partnership (P3)

A Public-Private Partnership (P3) is defined as a joint endeavor (documented with a partnership agreement) between public and private entities that will share responsibilities, resources, risks, and rewards for the completion and success of a project. P3 delivery implies that a private party will contribute something of value, typically referred to as "Value for Money," to the shared endeavor.

This delivery method would typically build on DB or DBOM contracting and expand the private sector role to cover project financing responsibilities. The Metro Office of Extraordinary Innovation takes the lead on P3 procurements with support from Program Management. P3 method offers the opportunity for further risk sharing and financial support that may enable projects to be started sooner. An advantage to P3 contracting is that private profit motives often result in reduced delays and increased efficiencies for the entire project.

3.0 RESPONSIBILITY

Responsibility for making the delivery method decision is ultimately with the Chief Program Management Officer, the CEO, and the Metro Board. However, the analysis, assessment, and recommendation as described in this procedure is performed by the Project Management Team, with input from Engineering, Program Control, Procurement, Quality Management, Real Estate, Third Party Coordination, and Operations; and help from the processes and scoring matrices provided in this procedure.

4.0 PROJECT DEFINITION

A prerequisite to performing the project delivery selection assessment is receipt of the Baseline Project Definition documentation, which should occur at completion of the 30% PE design milestone, as this information will influence delivery assessments. The fewer baseline items that are clearly defined in the documentation, the more planning and design development is required prior to making a prudent decision on delivery method.

5.0 PROJECT VARIABLES & GOALS

A Project Information Summary must be developed or obtained by Program Management to identify and summarize the key variables and objectives, and to identify and summarize project basics that will influence the delivery method decision such as a constrained

schedule, degree of utility relocations, and brownfield versus greenfield construction. A blank Project Information Summary form is provided in Attachment A.

A quick reference that depicts how "traditional" DBB and "alternative" DB delivery methods typically relate to the project variables and goals is provided in Attachment B. This exhibit is intended only as a general guide. The delivery method selection should only be made after testing project attributes against the associated scoring matrices.

6.0 REVIEW & CHOOSE PROJECT DELIVERY METHOD

The process begins with a simple short-form assessment and score sheet applicable to most small and/or less complex projects, such as when the project utilizes only Metro right-of-way and/or there is little if any third-party involvement. If the short-form does not clearly yield a "best choice" for delivery method, then the long-form scoring matrix allows for more in-depth analysis of the decision parameters.

Most projects should at least be assessed for DBB vs. DB. Further assessments for DBOM, CM/GC, and P3 would be at the discretion of the Project Manager and the Program Management Division. The scoring sheets (Attachments C through G) are intended to be "stand-alone" documents to the maximum extent possible, and the narrative contained in the written procedure is available for reference in the event additional clarifications and/or expanded discussion is warranted regarding the project parameters. The expanded discussion in the procedure is keyed to each topic on the associated Scoring Matrix for quick reference.

6.1 Scoring Metric

There are five Scoring Metrics. One each for the short-form and the long-form; and three more to further test either of those results as applicable to either DBOM, CM/GC or P3 variants. The intent, ultimately, is to provide a simplified decision-making process that can be used as a tool to assess the project delivery methodology. Ultimately, Metro will apply professional judgment to determine the recommended delivery approach.

Attachment C – Short-Form Scoring Metric

Score Range	Recommended Project Delivery Method
0-21	Favors Design-Bid-Build
22-42	Favors Design-Build

Attachment D – Long-Form Scoring Metric

Score Range	Recommended Project Delivery Method
0-39	Favors Design-Bid-Build
40-78	Favors Design-Build

Attachment E – DBOM Scoring Metric

Score Range	Recommended Project Delivery Method
0-22	Favors Non-DBOM
23-66	Favors DBOM

Attachment F – CM/GC Scoring Metric

Score Range	Recommended Project Delivery Method
0-7	Favors Traditional Design-Bid-Build
8-21	Favors CM/GC

Attachment G - P3 Scoring Metric

Score Range	Recommended Project Delivery Method
0-11	Favors Non-P3
12-33	Favors P3

6.2 "Short-Form" Delivery Assessment

The short-form assessment, shown in Attachment C, evaluates and scores project delivery parameters that are summed and compared to a standard scoring metric intended to point to either DBB or DB delivery. Projects best suited for DBB will score at the low end of the Scoring Metric scale and projects best suited for DB will score at the high-end of the scale.

The parameters used for assessing project delivery types are described below, which correspond to Items A through N on the short-form scoring matrix.

A. Size/Budget: Cost information should be based on the 30% Preliminary Engineering cost estimate as updated through the forecast/trend process. Larger projects generally lend themselves to DB. Mega Projects with a desirable financing and/or operations option are candidates for Alternative delivery methods like DBOM or P3.

B. Project Type: Characteristics of the project type are generally related to horizontal versus vertical work elements, as well as the complexity of structural elements. Subsurface scope increases complexity; vertical scope generally requires more subcontractors and coordination.

C. Complexity: Project complexity is a subjective assessment that essentially addresses the ease with which Metro may resolve complex design and construction issues prior to contractor involvement. Typically, traditional delivery favors projects where Metro is able to resolve these issues beforehand. Technical complexity, hazardous material abatement, dewatering requirements, access, and other potential issues may come into play.

Generally, DBB is better suited to brownfield (hazardous and/or occupied site) projects and DB is better suited to greenfield (clean and unoccupied site) projects.

D. Design Control: The level to which Metro intends to retain control of the design is key to the delivery method. Projects where Metro elects to maintain complete control are better suited to DBB, but Metro also retains responsibility for the quality of the design and the risk of contractor claims related to design issues. DB provides opportunity for contractor participation in constructability reviews and value engineering but limits Metro's ability to influence design beyond the contracted performance specification.

E. Schedule: Time constraints of the project will influence project delivery in terms of the aggressiveness of the schedule and also in terms of the driving factor behind the completion date (e.g. political, legal, FFGA contracted). DBB delivery favors a less aggressive project duration and requires time for a fully developed design, schedule, procurement cycle, and construction; and generally would require Metro-acquired long lead items. DB delivery generally supports a more aggressive project duration and allows for contractor input/participation with regard to long-lead fabrications/deliveries, phased delivery options, and optimizing schedule performance as necessary to maintain production rates.

F. Stakeholders or Third-Parties: Third-parties are defined as any entity with the ability to influence the project, outside of Metro Program Management. These entities include, but are not limited to: utility companies, cities, the County, labor unions, community groups, as well as Metro's OMB and O&M departments. The assessment generally focuses on the level of third-party involvement, difficulty in coordination, and the identification of any adversarial relationships. DBB assumes Metro will coordinate with all third-parties, and DB assumes a greater level of contractor involvement.

G. Utility Relocations: The utility relocation effort weighs heavily in the delivery selection process. DBB delivery generally assumes that Metro is responsible for utility relocation identification and retains the risk. DB delivery generally assumes greater responsibility with the contractor, but there is often a risk sharing provision in the contract. In any case, the primary consideration when scoring is the complexity of the utility relocation effort and the extent to which advanced utility relocation work can be done prior to contractor mobilization. Generally, areas with high risk utility relocations are better suited to DBB, and medium to low risk utility relocations to DB due to the risk of more expensive change orders in the DB environment.

H. Right-of-Way Impacts: The right-of-way (ROW) assessment considers the actions required (acquisitions, easements, relocations, eminent domain) to understand the potential impact on the schedule. DBB delivery requires Metro to secure all ROW requirements in advance of contract award; DB delivery assumes the contractor will have a role in finalizing ROW certifications as well as providing input into staging and access requirements.

I. Permitting: Federal, state, and local permitting requirements will vary from project to project. DBB delivery requires Metro to secure all permits; DB delivery assumes the contractor will participate in securing the required permits.

J. Value Engineering/Innovation Opportunities: This assessment relates to the potential for Value Engineering (VE) and/or innovations to optimize scope, cost, schedule, and operations and maintenance costs. DBB delivery assumes any such opportunities have been identified by Metro and its designer; DB delivery assumes the contractor will have additional opportunity to address innovative design solutions. Additionally, where Operations responsibilities are potentially transferable to the private sector, DBOM or P3 delivery may bring further innovations and overall life cycle cost/time savings.

K. Cost Type: The contracting type influences project delivery where unit rate contracting generally favors DBB and firm fixed price contracting generally favors DB. Project life cycle costs may also be a consideration under DBOM and P3.

L. Risk Management: This assessment focuses on the level to which Metro elects to retain risk ownership. One end of the scale is when Metro owns all risk, more common in DBB delivery, and the other is where some or all risk is transferred to a third-party, more common in DB, DBOM or P3 delivery.

M. Resource Availability: DBB typically requires more in-house technical staff to review iterations of design by consultants, with some engineering and design being done by Metro staff. DB, DBOM and especially P3 requires fewer "over-the-shoulder" design reviews, because the risks for design compliance and performance are borne by the contractor/concessionaire.

N. Environmental Requirements: If there are potentially many unknown below-grade environmental hazards (i.e. hazardous/contaminated soils, abandoned utilities containing lead or asbestos, or archeological sites), Metro may become liable for delay claims resulting from discovery, investigation, and mitigation, which among other things, will include costs for idle time or demobilization/remobilization of construction resources and extended administrative staff and overhead. These unknowns are typically better addressed through DBB because of the expensive nature of DB change orders.

6.3 "Long-Form" Delivery Assessment

This section is for use only when the short-form assessment discussed in Section 6.2 renders insufficient information to support a prudent decision and warrants a more robust or "deeper dive" assessment. Typically, this advanced assessment will be more useful on projects that are larger, lengthier, with multiple third-party involvement, more complex or riskier sub-surface conditions, and containing ROW ownership or jurisdictional issues.

The long-form scoring matrix (see Attachment D) includes sub-categories (sub-parameters) which append the parameter categories included in the short-form. These sub-categories are further Agency and/or project-level considerations which provide more specificity for delivery assessment. Additional discussion related to these sub-categories is provided below, along with considerations of the advantages and disadvantages of each project delivery method.

A.1 Project Size & Footprint: Project size is determined by project dollar value as well as physical dimensions.

DBB Considerations

There are no clear distinctions between DBB and DB in this regard as successful projects utilizing both deliveries have ranged greatly in size, therefore, project size needs to be considered in combination with other parameters such as schedule, resource availability, and risk aversion.

Generally, brownfield projects better lend themselves to DBB than DB because of unknown subsurface conditions, complex stakeholder interfaces, and the potential for change orders.

DB Considerations

There are no clear distinctions between DBB and DB in this regard as successful projects utilizing both deliveries have ranged greatly in size therefore, project size needs to be considered in combination with other parameters such as schedule, resource availability, and risk aversion.

Generally, greenfield projects better lend themselves to DB than DBB because of the reduced likelihood of unknown conditions.

B.1 Project Type: In general, horizontal projects are less complex than vertical projects, and are easier and less difficult to define through plans and specifications compared to vertical projects. The introduction of subsurface scope increases the complexity of horizontal projects, as does the introduction of major structural work.

DBB Considerations

Smaller and/or horizontal projects with mostly surface work.

DB Considerations

Vertical projects usually require more subcontractors than horizontal work, which adds risk and scheduling complications to a project.

C.1 Agency Goals and Objectives: Agency goals can be described in broad terms as providing service to the community or achieving its growth goals. Agency goals can align with project delivery attributes or can be in conflict with them. Agency goals are different from project goals. Agency goals entail safety, equal opportunity, and legal/regulatory requirements, for example.

DBB Considerations

Metro can incorporate its goals and objectives in prescriptive specifications and detailed designs. Control and approval over the design helps Metro ensure the achievement of its goals and objectives. Examples of achieving goals and objectives include specifying targets for Disadvantaged Business Enterprise (DBE) participation and resolving stakeholders' concerns with regard to Agency and project objectives.

DB Considerations

Metro will have less control over the details of the design than in DBB. To the extent that these details affect Agency goals, DB may have a negative impact on achieving them. Aesthetic objectives are examples of a Metro goal that could be compromised, and so goals need to be clearly defined prior to procurement for DB to be successful.

C.2 Competition: The choice of delivery method may affect the level of competition. A competitive market will result in more and/or better responses, so it would be considered a disadvantage if the choice of a certain delivery method reduces the number of qualified proposers/bidders. Some delivery methods may inadvertently lead Metro to package projects in sizes that can effectively reduce competition due to bonding limitations and contractors' capacities. The effects of each delivery method on competition are explained below.

DBB Considerations

Compared with other delivery methods, the availability of a relatively large pool of potentially qualified bidders in DBB ensures a high level of competition and Metro could benefit from this market competition.

Metro can divide the project into smaller packages and bid them out separately to further increase competition. The drawback to the multi-prime approach is that the coordination among various contracts will fall to Metro or a construction management consultant.

DB Considerations

The size of the bid package and the bid preparation cost may reduce the number of qualified bidders.

D. Agency Control of Project: Different delivery methods have different checkpoints and decision-making steps. This section is focused on Metro's control over the details of design and quality of construction.

DBB Considerations

Metro may benefit from the checks and balances achieved by having separate contracts with the designer and the contractor. Having periodic decision points, primarily during the design phase, will help Metro control the project design and quality.

Having a specific contract based on bid plans will help Metro control construction and material quality.

DBB provides more flexibility if field changes are required during construction.

DB Considerations

DB should provide Metro with the same quality of design and construction as DBB, but without control over the details of the design that are not defined in the RFP. Noteworthy is that under DB Metro would abdicate direct quality management to the contractor.

E.1 Schedule Completion: This parameter involves two aspects of a project schedule, (1) maintaining the project end date and (2) the ability to achieve schedule acceleration where appropriate.

DBB Considerations

Due to the nature of separate design-procurement-award, the sequential schedule generally is longer than required in DB and has less room for acceleration.

Schedule acceleration may be achieved by multi-prime contracting, but this benefit may be offset by coordination challenges with abutting primes.

DBB schedule growth tends to be larger than the schedule growth of other delivery methods.

DB Considerations

Schedule flexibility increases with DB because the designer and builder are one entity. Typically, the DB method results in a faster delivery and the least schedule growth, due to the designer and builder overlapping and "fast-tracking" the project elements and phases (example: builder can construct the underground utilities and foundations while the final designs are still underway for the superstructure finishes and landscape).

Earlier schedule certainty because the design-builder submits the project schedule at the time of contracting, which is often comparatively early in the project life.

F.1 Third-Party Agreements: This parameter concerns each delivery method's impact on facilitating agreements with third-parties that can include political entities, utilities, railroads, and other Agencies.

DBB Considerations

Using DBB can be advantageous when lengthy third-party negotiations are expected, as there will be additional flexibility and time to obtain required agreements before construction Notice to Proceed.

Third-parties have the ability to examine 100% complete designs before a contractor is hired. The possible disadvantages of completing designs before hiring a contractor include a lengthy design schedule including numerous iterations of stakeholder inputs; and a lack of construction contractor input into the third-party agreements.

DB Considerations

The DB process can move third-party agreements to an earlier point in the delivery process, often before the design is complete. There are benefits and drawbacks of having the design-build contractor on the team before all third-party agreements are in place. As the design and construction are awarded in one contract, the time required to develop agreements with other parties can be shorter than optimal. Additionally, these agreements must often be written in performance terms because the design is not completed at the time of award.

DB contractors may show success in obtaining responses from third-parties by exerting pressure on them. Contractors have different approaches to negotiating agreements with third-parties than owners do, and these approaches can often be very effective.

F.2 DBE/SBE Goals: Certain project deliveries may be more conducive than others to how work is packaged and sized. Generally, DBEs are better suited to prime on smaller packages or as part of a JV. In any case, Metro has the option of including DBE/SBE subcontractor percentage participation requirements.

DBB Considerations

Offers the advantage of being able to right-size packages for DBE/SBE participation through multi-prime contracting and DBE set-asides.

The low-bid environment may force a DBE/SBE subcontractor to submit dangerously low prices, potentially harming their future viability.

DB Considerations

Most DB contracts are larger than can be comfortably bid by a DBE/SBE, but this methodology lends itself well to DBE/SBE participation as a JV partner or subcontractor.

F.3 Labor Unions: The choice of delivery method may have an impact on labor usage and labor union issues. The legal protections for transit laborers are in place, such as Section 13(c) of the Federal Transit Act. Other acts, such as the Davis-Bacon act, should also be taken into consideration when determining laborers' minimum wages in any delivery method.

DBB Considerations

The contractor hires the laborers directly or through a subcontractor. Union or non-union labor may be used in this method as determined by local rules and regulations. There should be no fundamental opposition to DBB unless the contractor fails to comply with these local requirements.

DB Considerations

DB contracts are joint ventures that dissolve at the end of a project. This may make the unions uneasy in terms of establishing agreements.

In California, state licensed engineers have their own union and this may cause conflicts and challenges particularly on highway projects.

Unions may support alternative delivery methods as these methods give more weight to qualifications than to cost; unions assert their members are more qualified than non-union labor.

F.4 Stakeholder/Community Input: The opportunities afforded by a particular delivery method for coping with community inputs are discussed below. Any delivery method

should leverage stakeholder and community input as much as possible to achieve project goals in a meaningful and transparent fashion.

DBB Considerations

The separation of design and construction phases in DBB gives Metro more time and opportunity to obtain stakeholder and community inputs to project design and incorporate expectations before award of the construction contract.

DB Considerations

Metro will need to obtain input from stakeholders before issuing an RFP because changes in the project after that are difficult and costly.

There have been times when DB contractors were able to handle community pressure more effectively than transit agencies.

Metro will require the DB contractor to include a public information and outreach program in the project to facilitate stakeholder input during design and construction.

F.5 Adversarial Relationships: Delivery methods define the relationships among Metro and the contracting parties. If the project delivery method encourages project parties to work together as a team to achieve the project goals and characteristics, it is considered a benefit. If the project delivery method increases the possibility of adversarial relationships, it is considered a detriment.

DBB Considerations

Greater likelihood of conflict between Metro and the construction contractor.

Greater likelihood of conflict between the designer and construction contractor who have roles in approving each other's work.

The division of responsibilities may also result in these two parties blaming each other in the case of project failures or during major disputes.

DB Considerations

Decreases the potential for conflict by having a single point of responsibility for design and construction.

Less incentive for the designer and the contractor to blame each other for problems.

There may be a deterrent to DB contractors submitting numerous claims because this could carry weight in Metro's assessment of those firms in future DB project qualifications-based selections.

G. Utility Relocations: Utility relocations need to be assessed in terms of volume, complexity, and past experience working with city or county provided as-builts.

DBB Considerations

Generally, DBB is preferred when there is a large and risky utility relocation effort because there is more time to identify and relocate utilities before awarding the

construction contract. Also, in the event unknown utility relocations arise after the start of construction, change orders will be less onerous to negotiate.

DB Considerations

Generally, a large and complex utility relocation effort does not lend itself to DB because the contract may be executed before all utility requirements are known and change orders with the DB contractor may be required, or additional contingency may be included in the negotiated price if the contractor retains this risk.

K.1 Cost Restrictions: This parameter includes several aspects of project cost, including funding restrictions, early and precise cost estimation, bid competition, and consistent control of project costs.

DBB Considerations

Improved marketplace competition due to package sizing, which increases the likelihood of receiving low construction bids.

Complete design before awarding the contract increases certainty about cost estimates because Metro will have the Engineer's Estimate as well as several estimates submitted by the bidders.

Cost certainty increases when (1) construction contract is bid lump sum or (2) construction contract is bid unit price when quantities are not known with certainty (this benefits Metro by not having to pay for contractor contingencies to address quantity uncertainty, and the contractor by not having to assume the risk of fluctuating quantities).

DB Considerations

Performs well when there is funding restriction because it reduces the potential of cost overruns due to claims and delays, with research showing there are generally fewer cost overruns in DB.

Cost certainty increases when the contract is bid lump sum, and Metro can establish a firm cost estimate earlier in the process than DBB will allow.

Additional contingencies in negotiated contract price due to incomplete design.

K.2 Life Cycle Costs: The opportunities or barriers that each delivery method provides with regard to life cycle costs are discussed below.

DBB Considerations

Metro is in control of design and quality and can tailor these to long-term project life cycle goals.

DB Considerations

There is risk for increasing life cycle costs mainly because the design-builder has a motive to decrease the initial costs of the project to bring it down to the agreed upon

amount regardless of possible increases in the future operation and maintenance costs of the facility.

K.3 Construction Claims: The focus of this parameter is the way each delivery method may expose Metro to potential conflicts and claims. If a delivery method can reduce exposure to construction claims, that delivery method is a favorable choice, and if it increases the possibility of construction claims, it is an unfavorable choice.

DBB Considerations

DBB has the highest occurrence of claims and disputes over authority, responsibility, and quality.

Metro is ultimately responsible for design completeness, and errors and omissions claims are common in DBB projects.

Some contractors may bid low to win a job and try to enhance their final profit margin through claims and change orders, especially if design errors or ambiguities are present in the construction documents.

DB Considerations

Likely advantage in that this delivery method is less prone to claims and disputes resulting in fewer change orders. For example, claims for design errors are reduced considerably in DB.

Likely disadvantage as early pricing leaves Metro vulnerable to claims for scope that was missing in the RFP. The qualifications-based selection methodology creates an effective deterrent to initiating claims by requiring the design-builder to be “successful” on the current contract in order to be competitive for future projects.

L. Risk Management: Each new project has some level of uncertainty during various phases of its development. Strategies for coping with these uncertainties are built into each delivery method, and essentially are based on who will own what risks, Metro or the contractor.

DBB Considerations

DBB has the highest occurrence of claims and disputes over authority, responsibility, and quality.

Metro will own more risk including design errors and omissions.

DB Considerations

Metro is able to transfer more risk to the contractor including for errors and omissions, and for coordination with utilities and third-parties for design interfaces but often at a price.

There is a single point of contact for accountability for design/construction performance with the design-build contractor, who has an economic incentive to manage the risk.

Likely reduction in the size and frequency of change orders, but with the corresponding loss to Metro over design control.

Poorly defined Performance Specification will result in significant additional risk.

Transferring too much or the wrong types of risk will result in higher price and is not worthwhile.

M.1 Experience: This parameter relates to Metro's level of comfort using a specific delivery method. Experience in the use of a project delivery method in the past would rank that delivery method more favorable.

DBB Considerations

Metro is experienced utilizing DBB as a project delivery method, making it a good candidate in this regard.

Metro has in-house skills necessary to manage a DBB contract.

Metro should weigh past DBB experience as contractor claims, erroneous designs, delays in the schedule, and cost overruns may be considerations to try alternative methods, compared to past DBB successes as a basis to continue with this delivery.

DB Considerations

Metro is experienced utilizing DB method, making it a good candidate in this regard.

Metro has in-house skills necessary to manage a DB contract.

M.2 Resource Requirements: Each delivery method would assign specific duties to the contractor and to Metro. The total number of Metro employees available for each delivery method is one measure of the extent of owner involvement. A second measure is the variation in the number of staff required throughout the project development process.

DBB Considerations

Metro will have to administer two separate contracts for design and construction which will require a relatively large number of staff. Metro's responsibilities in DBB are spread throughout the project; fluctuation in the number of employees required during the project is minimal.

If resources are at issue, DBB could be used in conjunction with a stand-alone construction management consultant, requiring fewer Metro staff for a purely oversight effort than would be typically required in an IPMO under a DB scenario.

DB Considerations

The contractor is responsible for both design and construction after the project is awarded and will base the project design on performance specifications. Considerable effort is required to develop these specifications as a means of performance risk reduction in large projects.

The staff required for project administration decreases after the award because the number of checkpoints and controls are reduced and the oversight procedures are usually streamlined.

The contractor is in charge of day-to-day QC functions, and Metro's role is for spot QC checks and implementation of the overall Quality Assurance Plan.

M.3 Maintainability: Maintainability is affected by the choice of delivery method in two different areas, (1) level of quality and (2) ease of maintenance.

DBB Considerations

Metro can check the maintainability of the finished design before awarding the project and can ensure the design quality of the end product.

DB Considerations

As quality control is transferred to the contractor in DB and the details of the design are not known at the time that the project is awarded, there may be concerns about the maintainability and quality of the end product. Metro could consider multiyear warranties from DB contractors as protection.

N. Environmental Requirements: The project delivery method can influence the approach to designing and building energy-efficient and environmentally responsible projects. Reduced life cycle cost (both economic and environmental) is an advantage of sustainable design strategies and a fundamental LEED component. Sustainable design strategies that may produce increased initial costs are balanced and ultimately offset through reduced life cycle costs.

DBB Considerations

Metro will have the opportunity to define sustainable design with LEED criteria.

The contractor's lack of input in DBB means there will be little opportunity to take advantage of builder knowledge of sustainable design, and this could mean the project might be at risk of not achieving LEED certification.

The operation and maintenance personnel for the project may be unfamiliar with the operational requirements for sustainable systems, but this is an issue that can be resolved through early involvement of the Metro Operations staff as the design develops.

DB Considerations

Metro can clearly articulate expectations regarding the use of LEED criteria by assigning weight to the LEED criteria in the DB bidder evaluations and by using sustainable design and construction as performance criteria.

Through the bidding process, Metro will have the opportunity to assess multiple design-builders to present innovations that are consistent with clearly defined sustainability criteria.

Implementing sustainable construction and operational features is enhanced through an inherent coordination of design, construction, and operations.

DB enhances the opportunity for accelerated economic returns for sustainable systems performance by shortening the project schedule. The accelerated design schedule could, however, impact public participation thereby raising social equity issues.

The operation and maintenance personnel for the project could be unfamiliar with the operational requirements for sustainable systems, but this is an issue that can be resolved through early involvement of the Metro Operations staff as the performance specifications are developed.

6.4 Design-Build-Operate-Maintain (DBOM) Delivery Assessment

Projects that have been selected as favoring DB can be further evaluated for DBOM. The primary consideration is the level of Agency control desired over the details of operation and maintenance (O&M). Just as DB results in less control over the design function, DBOM results in less control in terms of operations, maintenance, life-cycle costs, and state-of-good-repair. Loss of checks and controls after contract award is a disadvantage of this delivery method, especially if Metro desires a high level of control over the project. Conversely, DBOM delivery can result in increased operational efficiencies and possible cost savings.

The DBOM assessment form is shown in Attachment E. This scoring matrix further evaluates those projects favoring design-build in the previous Short Form or Long Form assessments as candidates to further add the O&M component. Projects not suited for DBOM will score lower, with projects more suited for DBOM scoring the highest. The parameters used for assessing suitability for DBOM are described below, which correspond to Items A through S on the scoring matrix.

A. Project Type: Transferring O&M responsibility is typically more successful for a stand-alone alignment rather than an extension of an existing alignment where there may be interoperability and connectivity issues, possibly precluding a private entity being responsible for O&M.

B. Operations Quality and Safety: Operational goals can be described in broad terms as providing service to the community, achieving ridership growth, etc. These goals are most related to ridership quality and safety. A positive attribute may exist if a comprehensive public-private agreement with the appropriate level of detail is developed to address Metro's goals, including quality, safety, and commuter satisfaction goals. A negative attribute may exist if DBOM hinders Metro in achieving its quality, safety and commuter satisfaction goals, where Metro's ability to serve the public may be limited.

C. Cost Certainty: Under DBOM, the performance specification and cost would be fixed and the contractor obligated to execute contract requirements. While achieving this level of cost certainty early-on is beneficial in terms of financial planning, estimating operation and maintenance costs at the early stages of a DBOM contract can lead to increased

contingencies, which result in higher prices because the bidder will have to cover all risks and uncertainties.

D. Cost Efficiencies: Profit-motivated incentives can lead to cost efficiencies, including the DB benefit of engineering efficiencies into the design. Additionally, the contractor generally cannot seek additional compensation for higher-than-anticipated operations or maintenance costs resulting from inadequate design, since it is a responsibility within the contract.

The contractor is in charge of operating and maintaining the built facility. Transferring the responsibility of long-term operation and maintenance to a private entity creates opportunities to leverage private-sector expertise and to realize life-cycle cost reduction by integrating delivery activities and private-sector efficiencies. There are usually provisions in a DBOM contract that motivate the contractor to keep the operation and maintenance cost at the lowest possible amount, but with a corresponding loss of control by the Agency.

E. Market Conditions and Competition: The choice of delivery method may affect the level of competition. A competitive market will result in more and/or better responses, so it would be considered a disadvantage if the choice of a certain delivery method reduces the number of qualified proposers/bidders. Some delivery methods may inadvertently lead Metro to package projects in sizes that can effectively reduce competition due to bonding limitations and contractors' capacities.

Adding operation and maintenance to the scope of work will lengthen the contract duration compared with other delivery methods and require some extra competencies that typical construction contractors usually lack. The prime contractor usually teams with operation and maintenance subcontractors as part of the consortium. These factors may decrease the number of potentially qualified bidders when a DBOM project is bid.

F. Schedule. This parameter involves the ability to achieve the earliest revenue service date (RSD) possible. Just as schedule flexibility increases with DB because the designer and builder are one entity, the schedule also benefits under DBOM because the designer, builder, and operator are a single entity. The contractor will be responsible for commissioning, testing, pre-revenue operations, and achieving the Revenue Service Date (RSD), typically with financial incentives to begin revenue service as soon as possible.

G. Third-Parties: This parameter considers DBOM's strengths at facilitating agreements with third-parties that can include political entities, utilities, railroads, and governmental agencies. The process of executing the agreements would be similar to the DB process with the exception that the DBOM contractor would be maintaining the project for a significantly longer period after construction and needs to exert more control. The DBOM contractor would likely negotiate some of the agreements with little input from Metro.

H. DBE/SBE Goals: Project delivery types often dictate how work is sized and packaged. Generally, DBE/SBE firms are better suited to prime on smaller packages, which would not include an operations and maintenance component. In any case, Metro has the option of including DBE/SBE subcontractor percentage participation requirements. Most DBOM

contracts would be larger than can be comfortably bid by a DBE/SBE, but this methodology lends itself well to DBE/SBE participation as a JV partner or subcontractor.

I. Regulatory and Political: The use of DBOM delivery may be influenced by regulatory and political considerations, including labor usage and labor unions. There may be issues using non-Metro labor to execute the long-term operational responsibilities. Additionally, O&M is typically done by union laborers employed by public entities. There must be an agreement between the contractor and the related unions to guarantee the availability of operation and maintenance personnel at reasonable rates during the operation phase. Also, there may be some opposition from the Agency's maintenance employees to the award of such contracts.

J. Stakeholder/Community Input: Any delivery method should leverage stakeholder and community input as much as possible to achieve project goals in a meaningful and transparent fashion. DBOM decreases the decision points and covers a longer period of time in the project life cycle. This characteristic makes preconstruction interface between owners and stakeholders more complex. Due to the expense of post-award change orders to a designer-builder-operator, stakeholder-driven changes to the operations performance specifications would be a disadvantage under DBOM.

K. Operations Interface: If DBOM better facilitates project parties working together as a team to achieve the project goals and characteristics, it is considered a benefit. If DBOM increases the possibility of an adversarial relationship, it is considered a detriment. Under DBOM, Metro is less vulnerable to disputes between the design-builder and operations and maintenance personnel because the operations and maintenance functions are combined into the DB contract, but with a corresponding loss of control over the details of both design, operation, and maintenance. This delivery method also decreases start-up challenges and system integration during the initial years of operation.

L. Financial Flexibility: DBOM results in reduced financial flexibility because once the operational budget is fixed, it is less easily modified to accommodate changing or competing priorities. Conversely, if there are budgetary pressures within Metro these financial pressures could negatively impact Metro's ability to manage its operational and state-of-good repair objectives internally; then, these long-term operations, maintenance, and life-cycle costs may be better addressed under DBOM.

M. Claims: The focus of this parameter is if DBOM may or may not reduce risk exposure to Metro. DBOM minimizes the potential for start-up and system integration claims because all parties have obligated themselves not only for the construction phase but also for several years of operation and maintenance. DBOM increases the potential for difficulties during the design, construction, and operation phases in the event the contractor does not have the competencies and characteristics expected by Metro, or if Metro has not adequately defined the scope of work.

N. Risk: Each new project has some level of uncertainty during various phases of its development. Strategies for coping with these uncertainties are built into each delivery method, and essentially are based on who will own what risks, Metro or the contractor.

DBOM would be appropriate where there is a desire or opportunity (due to risk transfer or financial needs) for the private sector to operate and maintain the new alignment, once activated. The DBOM entity would assume the same risks as DB, as well as the risks involved with system integration, project start-up, and long-term operations and maintenance.

A positive consideration for DBOM is the contractor may be more inclined to ensure quality of design and workmanship, with responsibility to successfully operate the completed system. In any case, DBOM delivery does not allow compensation claims for inadequate operation and maintenance considerations because the designer and the contractor are on the same team.

O. Agency Capability: Although DBOM delivery represents a significant departure for Metro, with little or no experience with this method, this parameter is focused on an Agency's capability to manage O&M. An advantage to using DBOM is that an Agency can transfer most of the traditional O&M responsibilities to the contractor, but with a commensurate loss of control. Some experts believe that DBOM delivery is best suited for small agencies without substantial in-house expertise.

P. Agency Capacity: DBOM delivery would require specific responsibilities of the contractor and of Metro. The total number of Metro employees available and extent of involvement is one measure of DBOM feasibility. A second measure is the variation in the number of staff required throughout the project development process.

Early decisions relating to DBOM cover a wide range, from the feasibility of the project in conceptual design to safety in the operational phase. This broad range of expertise requires Metro to have a good-sized staff to handle throughout the project life-cycle.

Q. Maintainability: DBOM can affect maintainability in two areas, (1) level of quality and (2) ease of maintenance. Like DB, quality control is transferred to the contractor and the details of the design are not known at the time the project is awarded and there may be concerns about the maintainability and quality of the end product. But to the extent that DBOM includes operations and maintenance in the contract, this concern may be reduced because the contractor will likely see ensuring the quality and maintainability of the end product to its advantage.

R. Sustainability: The project delivery method can influence the approach to designing and building energy-efficient and environmentally responsible projects. Reduced life cycle cost (both economic and environmental) is an advantage of sustainable design strategies and a fundamental LEED component. Sustainable design strategies that may produce increased initial costs are balanced and ultimately offset through reduced life cycle costs.

A positive DBOM attribute may be that Metro could hold the DBOM contractor responsible for delivering the life cycle cost savings incorporated as a result of the design process. The DBOM contractor would therefore assume the risk of failing to achieve the savings associated with the approved design.

A negative DBOM attribute may be that operation and maintenance personnel lack familiarity with sustainable systems requirements. For example, materials may require

alternate maintenance procedures or systems controls may incorporate technologies requiring specialized training that may be beyond the scope of the DBOM contract.

S. Contracting Vehicle: Before moving forward with any alternative delivery, the contracting vehicle needs to be in place. Previous Metro experience with DBOM and the existence of a proven contracting template would bode well for DBOM selection; whereas if a template needs to be developed or improved there may be schedule impacts including time necessary for industry review and feedback.

6.5 Construction Manager/General Contractor (CM/GC) Delivery Assessment

Projects that have been selected as favoring traditional DBB delivery can be further evaluated for CM/GC delivery. The goal of CM/GC is to encourage teamwork and greater efficiencies by assembling the owner, designer, and general contractor (who is also the construction manager) during project development to facilitate collaboration and cooperation in design innovation, constructability, value engineering, work packaging, and other project considerations.

CM/GC differs from DBB because the contractor is both Construction Manager and General Contractor. The key to successful CM/GC contracting is the Agency's ability to negotiate fair and equitable Guaranteed Maximum Prices (GMPs) as work packages are readied for construction, and to provide proper oversight and control so the contractor does not "game" the system.

The key is contract language and operating guidance that protects Metro's interests, flexibility in the schedule to pursue outside competitive construction bids if necessary, and highly competent Agency staff to manage the process. Without these key attributes, the potential schedule advantage under CM/GC may not outweigh the cost risk.

The CM/GC assessment form, shown in Attachment F, evaluates and scores project delivery parameters that are summed to point to either favoring or not favoring CM/GC. Projects least suited for CM/GC will score at the low end of the Scoring Metric and projects best suited for CM/GC will score at the high-end of the scale.

The parameters used for assessing project attributes for CM/GC delivery are described below, which correspond to Items A through G on the P3 scoring matrix.

A. Project Type: CM/GC is most applicable on projects that have design complexities, are difficult to define, or may be subject to change. This is because design solutions can be better achieved through a collaborative process with all project participants; and because changes in the design can be addressed and priced before negotiation of each GMP. While medium size projects can also be candidates for CM/GC, the benefits are fewer absent the above referenced complexities and design uncertainties.

B. Schedule: CM/GC may be more appropriate for projects with complex sequencing, staging, and access considerations. This is because the contractor can give input over the course of design regarding constructability and packaging that can mitigate some of these issues. CM/GC may expedite the schedule because the design and construction perspectives overlap, a benefit similar to DB. Importantly, CM/GC may be less appropriate for a project having no flexibility in the end date due to political, legal, or other constraints because, without generous schedule contingency, this reduces leverage for Metro to pursue outside competitive bids in the event one or more GMP negotiations become onerous or fail entirely.

C. Agency Capacity & Capability: The most important consideration in CM/GC contracting is internal capacity and capability to manage the contract. It is important for project management to have expertise in CM/GC contracting in order to protect Metro's interests especially as GMPs are negotiated for each work package. To the extent the contractor has already been hired before "bidding" each GMP, there is essentially no price competition in CM/GC contracting. A savvy project manager can address this disadvantage with thorough, quality, and transparent interim estimate reconciliations and by assuring contract language protects Metro's interests.

D. Market Conditions and Competition: The choice of delivery method may affect the level of competition. A competitive market will result in more and/or better responses, so it would be considered a disadvantage if the choice of a certain delivery method reduces the number of qualified proposers/bidders. CM/GC requires the bidder to assemble a team to cover both construction management and construction, and there may be otherwise qualified potential bidders not able to assemble this larger team. This factor may decrease the number of potentially qualified bidders when a CM/GC is bid.

E. Risk: More cost risk is inherent in CM/GC delivery because the construction contract is awarded, but with cost bidding done later as work packages are readied for GMP negotiations. This effectively means "no cost competition" which differs from traditional DBB competitive bidding before construction contract award. Ultimately, the success of CM/GC depends on the qualities and characteristics of the contractor in terms of its willingness to partner with the designer and the Agency, as opposed to exhibiting a propensity to exploit possible built-in cost advantages. Risk in this regard must be weighed against the potential for schedule advantage under CM/GC.

F. CM/GC Operating Guidance: The chances of success are affected by the way the CM/GC rules of engagement are documented including operating guidance specifically

developed for CM/GC delivery. Industry Lessons Learned need to be accessed to understand not only how contract provisions might encourage or discourage fair and equitable GMP outcomes, but the ease with which a contractor might "game" the system as the contract provisions are being implemented. Operating Guidance relating to reconciling the current estimate, Independent Cost Estimate (ICE), and contractor's GMP bid; the parameters for accepting the bid; and practical options for outside procurement in the event GMP negotiations fail need to be developed to assure Metro stays in control.

G. Contracting Vehicle: Before moving forward with any alternative delivery, the contracting vehicle needs to be in place. Previous Metro experience with CM/GC and the existence of a proven contracting template would bode well for CM/GC selection; whereas a template needing development or improvement may cause schedule impacts including time necessary for industry review and feedback.

6.6 Public-Private-Partnership (P3) Delivery Assessment

Projects that have been selected as favoring DB or DBOM can be further evaluated for P3 delivery. For Metro's purposes, P3 is a delivery method that includes a private financial participation component, expanding the private sector role to cover project financing of a design-build project in the form of a Design-Build-Finance (DBF) or a Design-Build-Finance-Operate-Maintain (DBFOM) contract. P3s can range from a joint development endeavor to a transfer of all responsibility for project development, design, construction, maintenance, and operations to a private entity. The Metro Office of Extraordinary Innovation (OEI) takes the lead on P3 procurements with support from Program Management.

The P3 method often provides the following advantages:

- Sooner project starts through risk sharing and private financial support.
- Expedited delivery because private profit motives may result in increased schedule efficiencies and reduced delays.
- Reduced implementation duration and overall costs due to incentives for the private entity to optimize the design for constructability and operability.

It is important to note, P3s are defined in the most general sense as being any endeavor where there is both public and private financial participation. This arrangement could be (1) with a private developer (providing property or property and money), an example being an ancillary parking structure that is complimentary to the transit project or (2) a private financier (providing capital), an example being an infusion of private money to finance some or all of the public project. This procedure makes the following distinctions in this regard:

- Private Developers. When a transit agency partners with private developer it is typically known as a Transit Orient Development (TOD). TODs can vary in size and type and can range from a residential/retail development that is incorporated within or adjacent to the transit project to simple concession arrangements where a private partner installs, operates, and maintains a service within the transit property in exchange for a lease or

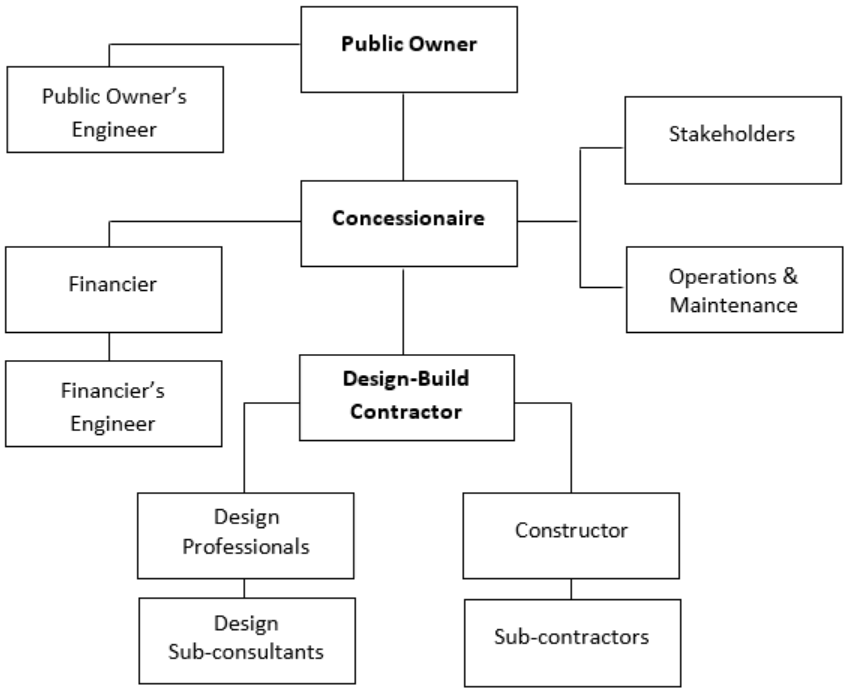
purchase payment. In TOD arrangements, the developer retains control as an owner or lessee.

This procedure does not specifically address, but makes reference to, TODs because this type of P3 is not in-and-of-itself a delivery method. Instead, TODs are assessed outside of this procedure for applicability to a transit project based on (1) enhancing patron benefits and ridership, (2) increasing community or political support for the transit project, and (3) the private market's ability or interest to respond.

- Private Financiers: Private financiers is when the partner develops, designs, constructs, maintains, and/or operates either some portion of the project, or the entire project, through infusion of its own capital. These DBF or DBFOM projects typically result in profit-driven cost and schedule efficiencies; and contractors may have opportunity for revenue sharing in the form of transit fares or highway tolls, for example. The private financial component funds scope that is integral to the operating alignment and is therefore considered to be a project delivery method, differing from a TOD in this regard.

For clarification, the industry-standard term to describe the P3 private partner is "Concessionaire" (see Figure 1 – Typical P3 Organizational Structure, below). This term applies to the private entity in any P3 arrangement but is also used in more parochial terms to describe a simple concession operator on public property, as in a TOD retail shop for example. Use of the term in either way is correct.

Figure 1 – Typical P3 Organizational Structure



The P3 delivery assessment in this procedure provides an indication if a project is suited for such a private partnership by expanding a DB contract into a DBF or expanding a DBOM contract into a DBFOM. The P3 assessment form, shown in Attachment G, evaluates and scores parameters that are summed to point to viability of either P3 or non-P3 project delivery. Projects least suited for P3 delivery will score at the low end of the scoring metric and projects best suited for P3 delivery will score at the high-end of the scale.

The parameters used for this assessment are described below, which correspond to Items A through I on the P3 scoring matrix.

A. Project Type: As a general rule, smaller projects and especially DBB projects are not suited for private financial participation but may be good candidates for partnering with a developer on TODs. In these cases, a smaller project would likely favor a simple, tangential TOD. Larger projects are better suited for private financial participation, as there is more opportunity to capitalize on profit-driven innovations and cost containment benefits; and there may be financial considerations that help to advance the project sooner. DB projects, and especially DB mega-projects, are the best candidates for DBF and/or DBFOM.

B. Cost of Capital: The cost of capital is a consideration in determining if private participation is appropriate. The primary consideration is if Metro's credit rating will remain strong, giving Metro good access to low-cost capital; and if the revenue stream from all sources, including Measures R and M, will be sufficient to cover the capital program including the project being assessed. Cash flow concerns coupled with a high cost of capital may point towards infusion of private capital.

Conversely, private financing options may carry higher cost of capital due to assumed risk by project investors. Projects that can be funded through some combination of TIFIA, FFGA, PCGA or state and local sources would make private financing options less attractive.

C. Cost Efficiencies: Private partnerships through DBF and DBFOM bring profit motives that often reduce schedule delays and provide cost efficiencies, but with corresponding transfer of control to the contractor. An additional cost efficiency may be evident under DBFOM because including full O&M and lifecycle responsibilities under this delivery typically provides a cost advantage over time. These cost efficiencies include those associated with private operator benefits compared to public, escalation trends, lifecycle maintenance, and other factors.

Infusion of private capital through DBF or DBFOM would likely result in increased investor oversight and cost containment by a private entity more experienced in this regard. Metro would likely share in the benefit from this cost efficiency, depending on how the contract is written.

Private financial participation would provide for some cost certainty, as the private partner would finance some portion of the work at its own risk. Cost certainty is greater under DBF or DBFOM because the contractor would bid and finance fixed-price, date-certain delivery;

and would also likely be incentivized through an award payment to expedite revenue service.

D. Schedule: Private financial participation similarly has shown schedule benefit, in that the infusion of capital may allow projects to begin sooner and there are usually financial incentives for early completion. These potential schedule benefits must be viewed in light of a corresponding loss of Agency influence and control. (It should be noted that TODs can help to advance a project because developers have in the past shown some success in expediting political and bureaucratic processes.)

E. Risk: Risk sharing provisions vary, as defined in each contract. However, DB and DBOM typically involve more risk transfer to the contractor (at additional cost), and DBF and DBFOM even more so because of the financial commitment.

F. Competition: The ability to access marketplace resources may come into play when considering P3 contracting. There are fewer number of private entities willing to participate financially in projects, reducing competition particularly in DBF or DBFOM scenarios.

G. Agency Capacity & Capability: Agency experience working with P3s is a consideration, and private partnerships would be less favorable when expertise in P3 lies primarily on the private side. If an Agency's ability to contract effectively for a P3 partnership and monitor profit-motivated project execution is limited, a P3 partnership would be a disadvantage.

H. Stakeholder Influence: Once a project is baselined, stakeholder-initiated scope changes can be costly. For P3 projects, this risk exposure is greater due to contractor financial and profit impacts and the potential for financial penalties to the Agency. The risk is greater depending on the size and scope of the private participation, and so under DBF or DBFOM there would be increased difficulty to accommodate stakeholder-initiated changes to both scope and operational considerations.

I. Contracting Vehicle: Before moving forward with any alternative delivery, the contracting vehicle needs to be in place. Previous Metro experience with P3s and the existence of a proven contracting template would bode well for P3 selection; whereas if a template needs to be developed or improved there may be schedule impacts including time necessary for industry review and feedback.

7.0 PROJECT DELIVERY DECISION REPORT

The four-step process forms the basis for the Project Delivery Decision Report. Steps 1 through 4 can be combined for a complete report. The Project Information Summary and related comments will be important components for documentation. Also, a "Project Delivery Justification Meeting" (referenced in the Project Readiness Review procedure) must be held prior to confirming completion of the Delivery Selection process and procedure, and the minutes from such meeting should be included in the decision report. An executive summary should be added to the beginning of the report to summarize the decision. The Project Delivery Decision Report should be structured as follows:

1. Executive Summary
2. Project Description
3. Project Goals
4. Delivery Methods Considered
5. Advantages and Disadvantages
6. Delivery Method Decision
7. Appendices

8.0 REFERENCES

Orange County Public Works Department (OCPWD) “Project Delivery Method Selection Tool Guide” – First Edition, October 2016

Transit Cooperative Research Program (TCRP) Report 131: “A Guidebook for the Evaluation of Project Delivery Methods” - February 2009

Procedure No. 004 - Project Readiness Reviews – February 2017

Metro Program Management Plan (PMP) – Section No. 3.4.2.6 Project Delivery Methods – October 2016

Metro Draft Risk Management Program Plan, March 2017

Metro Executive Interviews - October and November 2016

9.0 ATTACHMENTS

Attachment A – Project Information Summary

Attachment B – DB vs DBB Quick Reference

Attachment C - Short-Form Scoring Matrix

Attachment D – Long-Form Scoring Matrix

Attachment E – DBOM Scoring Matrix

Attachment F – CM/GC Scoring Matrix

Attachment G – P3 Scoring Matrix

10.0 PROCEDURE HISTORY

Revision Level	Revision Date	Summary of Revision	Approved
1	10/27/17	Revised Attachments C & D	
0	09/11/17	New Procedure	9/19/17

Attachment A – Project Information Summary: Key Variables and Goals

Project Information			
Project Name:			
Project Location:			
Project Description/Major Features:			
Estimated Total Project Budget:			
Source(s) of Project Funding:			
Estimated Project Delivery Period:			
Required Delivery Date (if applicable):	**Yes**	**No**	
List Major Schedule Milestones and Planned dates:			
List Major Project Stakeholders: (and level of engagement/involvement)	**High**	**Med**	**Low**
List Major Obstacles with Right-of-Way, Utilities, and/or Permitting:	**High**	**Med**	**Low**
List Major General Obstacles / Challenges / Risks:			
List Major Obstacles During Construction Phase:	**Yes**	**No**	
Opportunities for Value Engineering or Innovative Solutions:	**Yes**	**No**	
Level of Design Control Needed:	**High**	**Med**	**Low**
Sustainable Design and Construction Requirements:	**Yes**	**No**	

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Attachment B – Quick Reference Guide
Advantages of DBB vs DB Delivery

PROJECT CHARACTERISTIC	"Traditional" Design-Bid-Build (DBB) Advantages:	"Alternative" Design-Build (DB) Advantages:
Size / Type / Complexity	• Favors "brownfield" projects (hazardous and/or occupied site) • Best for Smaller projects (<$100M); horizontal elements; mostly surface work • Many complicating factors: ie. hazardous material; dewatering; access issues; litigation; political issues	• Favors "greenfield" projects (clean and unoccupied site) • Best for Larger projects (>$1B); complex technical horizontal and vertical elements; fewer complicating factors • Allows opportunity for innovative private financing and O&M through DBOM and P3
Design Control	• Allows Metro to maintain more design control • Metro accepts risk for quality of design and contractor claims for design issues	• If Metro willing to give up certain level of design control • Desire for contractor input in constructability reviews and value engineering
Schedule	• Less aggressive schedule; time for fully developed design & procurement cycle • Willingness for Metro to acquire long-lead items	• Aggressive schedule and optimizes schedule performance • Allows contractor-acquired long-lead fabrications/deliveries; phased delivery options
Stakeholders / Third Parties / Utility Relocations	• Applicable to heavy third party involvement and complex utility relocation effort • Metro maintains responsibility for utility identification and owns risk • Potential for adversarial relationships • Requires more coordination and involvement by Metro	• Applicable to fewer third party interfaces and lower risk utility relocation effort • Greater contractor role in coordinating third party interfaces and utility relocations • May or may not be less risk to Metro depending on risk sharing provisions
Right-of-Way	• Requires identification of all ROW requirements in advance of contractor mobilization	• Assumes contractor will have a role in finalizing ROW certifications • Assumes contractor will have input into staging and access requirements
Permits	• Metro will identify all permitting requirements	• Contractor will participate in defining permitting requirements
Value Engineering / Innovations	• VE performed by Metro and Designer	• Contractor will have opportunity to address innovative design solutions
Contract Type	• More applicable to unit rate contracting	• More applicable to firm fixed price contracting • Allows consideration of project life-cycle costs under DBOM and P3
Risk	• Metro will typically own all of the risk	• Some or all risk transferred to contractor
Metro Resources	• Typically requires more in-house technical staff	• Typically requires fewer technical staff for oversight function • Even less oversight when DBOM and P3
Environmental	• More applicable if greater risk of environmental hazards/unknowns	• Increased risk of delay claims for investigation/mitigation of environmental unknowns

Attachment C – "Short-Form" Scoring Matrix

To Score: Circle or highlight the most accurate ranking for each Parameter, then sum for Total Points at the end of this form.

Project Parameter	Discussion	Pts	Scoring Methodology
A. Size/Budget	Larger projects generally lend themselves to DB, but not always. Mega Projects with a desirable financing and/or Operations & Maintenance option, are candidates for other Alternative delivery methods like DBOM or P3.	0	$1 - $99 million (small)
		1	$100 - $499 million (medium)
		2	$500 - $999 million (large)
		3	$1 billion or greater (mega)
B. Project Type	Characteristics of the project type are generally related to horizontal versus vertical work elements, as well as the complexity of structural elements. Subsurface scope increases complexity; vertical scope generally requires more subcontractors and coordination.	0	Horizontal, all surface work
		1	Horizontal, w/ subsurface work
		2	Complex Horizontal or Basic Vertical.
		3	Vertical, w/ complex systems or structural elements
C. Complexity	Subjective assessment that essentially addresses the ease with which Metro may resolve complex design and construction issues prior to contractor involvement. Typically, traditional DBB favors projects where Metro can resolve complex issues beforehand. Complicating factors can be: technical complexity, hazardous material abatement, dewatering requirements, access issues, and potential litigation or political issues. Generally, DBB is better suited to brownfield projects and DB is better suited to greenfield projects.	0	Any 3 or more factors ("brownfield" includes pre-existing hazards and/or occupants on project site)
		1	Any 2 complicating factors
		2	Any 1 complicating factor
		3	No complicating factors involved ("greenfield" is clean and unoccupied project site)
D. Design Control	The level to which Metro intends to retain control of the design is key to the delivery selection. Projects where Metro wants to maintain complete control are better suited to DBB, but Metro also retains responsibility for the quality of the design and the risk of contractor claims for design issues. DB provides opportunity for contractor participation in constructability reviews, value engineering input, etc, but limits Metro's ability to influence design beyond the contracted performance specification.	0	Complete control with little to no flexibility
		1	Control desired over majority of design, with little flexibility
		2	Some design control needed, but much flexibility
		3	Minimal design control req'd with significant flexibility
E. Schedule	Time constraints on the project will influence project delivery in terms of the aggressiveness of the schedule. DBB delivery favors a less aggressive project duration and requires time for a fully developed design, schedule, procurement cycle, and construction; and generally, would require Metro-acquired long-lead items. DB delivery generally supports a more aggressive project duration and allows for contractor input/participation with regard to long-lead fabrications/deliveries, phased delivery options, and optimizing schedule performance.	0	Target completion date not firm or fixed.
		1	Target completion date fixed and penalties may apply for late completion.
		2	Either long-lead items or phasing are required
		3	Both long-lead items and phasing required (multiple year project).

Project Parameter	Discussion	Pts	Scoring Methodology
F. Stakeholders or 3rd Parties	Third parties are defined as any entity with the ability to influence the project, outside of the Metro Program Management Department. These entities include but are not limited to cities, utility companies, labor unions, community groups as well as Metro's OMB and Operations departments. The assessment generally focuses on the level of third-party involvement, difficulty in coordination, and the identification of any adversarial relationships. For example, slow and cumbersome permitting processes with cities points to DBB or very advanced DB. DBB assumes Metro will coordinate with all third parties, and DB assumes a greater level of contractor involvement.	0	Organized opposition to the project exists.
		1	Both community and business groups are involved.
		2	Either community or business groups will be involved.
		3	Only additional government agencies are involved.
G. Utility Relocations	The utility relocation effort weighs heavily in the delivery selection process. DBB delivery generally assumes that Metro is responsible for utility relocation identification and Metro retains the risk. DB delivery generally assumes greater responsibility with the contractor, but there is often a risk sharing provision in the contract. In any case, the primary consideration when scoring is the complexity of the utility relocation effort and the extent to which advanced utility relocation work can be done prior to award of the contract. Generally, areas of high risk (many unknowns) for utility relocations are better suited to DBB, due to the risk of more expensive change orders in the DB environment.	0	Significant utility impacts exist (i.e. railroads, military fuel pipelines, 911 trunk line, Army Corp, super funds, etc)
		1	Multiple utilities, includes privately owned utilities
		2	Limited relocations required, only local agency owned utilities
		3	Typical coordination with no utility relocations required
H. Right-of-Way Impacts	The right-of-way (ROW) assessment considers the actions required (acquisitions, easements, relocations, eminent domain) to assess the potential impact on the schedule. DBB delivery requires Metro to identify all ROW requirements in advance of contractor mobilization; DB delivery assumes the contractor will have a role in finalizing ROW certifications as well as providing input into staging and access requirements.	0	Condemnation, severance damages, relocations and/or protracted negotiation.
		1	Permanent fee title and/or easement acquisition required.
		2	Only temporary ROW required (TCEs and/or right-of-entry).
		3	No right-of-way required for the project.
I. Permitting	Federal, state, and local permitting requirements will vary from project to project. DBB delivery requires Metro to secure all permits; DB delivery assumes the contractor will participate in defining the permitting requirements.	0	Extensive regulatory permitting with mitigations
		1	Unique or extensive regulatory permitting, no mitigation.
		2	Typical regulatory permits required.
		3	No regulatory permits needed.

Project Parameter	Discussion	Pts	Scoring Methodology
J. Value Engineering/ Innovation Opportunities	Potential to identify Value Engineering (VE) and/or innovations for optimizing scope, cost, schedule, and operations/maintenance costs. DBB delivery assumes VE performed by Metro and its designer; DB delivery assumes the contractor will have additional opportunity to address innovative design solutions.	0	No opportunities for VE
		1	Design alternatives are limited
		2	Either innovation or VE opportunities
		3	Both innovation and VE opportunities
K. Cost Type	The contracting type influences project delivery in that unit rate contracting generally favors DBB and firm fixed price contracting generally favors DB. Project lifecycle costs may also be a consideration under DBOM and P3.	0	Unit cost (deliverable types defined; quantities indefinite)
		1	Cost-plus fixed fee (indefinite deliverables & quantities)
		2	Guaranteed Max Price (GMP) - sole source or negotiated amt.
		3	Firm fixed-price or Lump sum (finite quantity of deliverables and units)
L. Risk Management	This assessment focuses on the level to which Metro wishes to retain risk ownership. One end of the scale is when Metro owns all risk, more common in DBB delivery, and the other is where some or all risk is transferred to a third party, more common in DB, DBOM or P3 delivery.	0	All risks managed in-house; none transferable to 3rd party
		1	Most risks managed in-house; some transferable to 3rd party
		2	Some risks managed in-house; most transferable to 3rd party
		3	All or most major risks transferable to 3rd Party
M. Resource Availability	DBB typically requires more 'in-house' technical staff to review iterations of design by consultants, with some engineering and design being done by Metro staff. DB, DBOM and especially P3 requires less 'over-the-shoulder' design reviews, because the risks for design compliance and performance are assigned to the contractor/concessionaire.	0	All required design and management disciplines are available in-house
		1	Many or most disciplines are available in-house
		2	Some resources are in-house, but most are not available
		3	Very few or no resources available in-house
N. Environmental Requirements	If there are potentially many unknown below-grade environmental hazards (i.e. hazardous/contaminated soils, abandoned utilities containing lead or asbestos, or archeological sites), Metro may become liable for delay claims resulting from discovery, investigation and mitigations, which amongst other things will include large costs for 'idle' or demobilization/remobilization of construction resources and extended administrative staff and overheads.	0	Many potential unknown hazards and indeterminate clearances required
		1	Hazards identified in DEIS/DEIR but no LPA or PE yet
		2	EA/PE complete, but no ROD/FONSI yet
		3	ROD/clearances obtained

Short Form Scoring Metric **Total Points = _____**

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-21	Favors Traditional Design-Bid-Build
22-42	Favors Design-Build

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Attachment D – "Long-Form" Scoring Matrix

***Includes Supplemental Sub-parameters to augment discussion in the "Short Form" Scoring Matrix**

To Score: Circle or highlight the most accurate ranking for each Parameter, then sum for Total Points at the end of this form.

Project Parameter	Discussion	Pts	Scoring Methodology
A. Size/Budget	Larger projects generally lend themselves to DB, but not always. Mega Projects with a desirable financing and/or Operations & Maintenance option, are candidates for other Alternative delivery methods like DBOM or P3.	0	$1 - $99 million (small)
		1	$100 - $499 million (medium)
		2	$500 - $999 million (large)
		3	$1 billion or greater (mega)
A.1 Size (Footprint)	Project size is determined by project dollar value as well as physical dimensions or 'footprint'. A project that spans multiple jurisdictional boundaries compounds the complexities. There are no clear distinctions between DBB and DB in this regard as successful projects utilizing both deliveries have ranged greatly in size however, project footprint size needs to be considered in combination with other parameters such as schedule, resource availability, and risk aversion.	0	Located within a single parcel or jurisdiction
		1	Spans more than one parcel or jurisdiction
		2	Spans several parcels or jurisdictions
		3	Spans several parcels and jurisdictions
B. Project Type	Characteristics of the project type are generally related to horizontal versus vertical work elements, as well as the complexity of structural elements. Subsurface scope increases complexity; vertical scope generally requires more subcontractors and coordination.	0	Horizontal, all surface work
		1	Horizontal, w/ subsurface work
		2	Complex Horizontal or Basic Vertical.
		3	Vertical, w/ complex systems or structural elements
C. Complexity	Subjective assessment that essentially addresses the ease with which Metro may resolve complex design and construction issues prior to contractor involvement. Typically, traditional DBB favors projects where Metro can resolve complex issues beforehand. Complicating factors can be: technical complexity, hazardous material abatement, dewatering requirements, access issues, and potential litigation or political issues. Generally, DBB is better suited to brownfield projects and DB is better suited to greenfield projects.	0	Any 3 or more complicating factors ("brownfield" includes pre-existing hazards and/or occupants on project site)
		1	Any 2 complicating factors
		2	Any 1 complicating factors
		3	No complicating factors involved ("greenfield" is clean and unoccupied project site)
C.1 Agency Goals & Objectives	Agency goals can be described in broad terms as providing service to the community or achieving its growth goals. Agency goals can align with project delivery attributes or can be in conflict with them. Agency goals are different from project goals. Agency goals entail community goals, regulatory/legal requirements, diversity DBE/SBE goals, service goals, safety/security, etc.	0	Many (potentially conflicting) agency goals
		1	2 or more goals (conflicting)
		2	2 or more goals (non-conflicting)
		3	Single agency goal

Project Parameter	Discussion	Pts	Scoring Methodology
C.2 Competition	The choice of delivery method may affect the level of competition. A competitive market will result in more and/or better responses, and so if the choice of a certain delivery method reduces the number of qualified proposers/bidders it would be considered a disadvantage.	0	No local tech/service providers
		1	2 or less tech/service providers
		2	4 or less tech/service providers
		3	Many tech/service providers
D. Design Control	The level to which Metro intends to retain control of the design is key to the delivery selection. Projects where Metro wants to maintain complete control are better suited to DBB, but Metro also retains responsibility for the quality of the design and the risk of contractor claims for design issues. DB provides opportunity for contractor participation in constructability reviews, value engineering input, etc, but limits Metro's ability to influence design beyond the contracted performance specification.	0	Complete control with little to no flexibility
		1	Control desired over majority of design, with little flexibility
		2	Some design control needed, but much flexibility
		3	Minimal design control required with significant flexibility
E. Schedule	Time constraints on the project will influence project delivery in terms of the aggressiveness of the schedule. DBB delivery favors a less aggressive project duration and requires time for a fully developed design, schedule, procurement cycle, and construction; and generally, would require Metro-acquired long-lead items. DB delivery generally supports a more aggressive project duration and allows for contractor input/participation with regard to long-lead fabrications/deliveries, phased delivery options, and optimizing schedule performance.	0	Target completion date not firm or fixed
		1	Target completion date fixed and penalties may apply for late completion
		2	Either long-lead items or phasing are required
		3	Both long-lead items and phasing required (multiple year project)
E.1 Schedule	This parameter involves two aspects of a project schedule, (1) maintaining the project completion date (i.e. project required to support an imperative event like the Olympics) and (2) the ability to achieve schedule acceleration where appropriate ("fast-tracking" or "agile" concurrent project development for final design and construction).	0	Project completion imperatives
		1	Long-lead/early construction "Enabling Work"
		2	Complex integrated systems designs
		3	Multiple phased design/const (integrated) sub-Projects

Project Parameter	Discussion	Pts	Scoring Methodology
F. Stakeholders or 3rd Parties	Third parties are defined as any entity with the ability to influence the project, outside of the Metro Program Management Department. These entities include but are not limited to utility companies, labor unions, community groups as well as Metro's OMB and Operations departments. The assessment generally focuses on the level of third-party involvement, difficulty in coordination, and the identification of any adversarial relationships. DBB assumes Metro will coordinate with all third parties, and DB assumes a greater level of contractor involvement.	0	Organized opposition to the project exists
		1	Both community and business groups are involved
		2	Either community or business groups will be involved
		3	Only additional government agencies are involved
F.1 Third-Party Agreements	This parameter concerns each delivery method's impact on facilitating agreements with third parties that can include political entities, utilities, railroads, etc. Third parties may require the ability to examine 100% complete designs before a contractor is hired, which favors DBB. The DB process can move third-party agreements to an earlier point in the delivery process, often before the design is complete.	0	100% design required by Third Party prior to construction start
		1	Third Party imposed Design Criteria
		2	Third Party "in kind" contributions in lieu of cash
		3	Third Party providing ROW/access
F.2 DBE/SBE Diversity & Inclusion Goals	Certain project deliveries may be more conducive than others to depending on how work is packaged and sized. Generally, DBEs are better suited to prime on smaller packages or as part of a JV. In any case, Metro has the option of including DBE/SBE subcontractor percentage participation requirements.	0	Multiple smaller procurements
		1	DBE/SBE set-aside opportunity
		2	Qualified DBE/SBE not likely/possible
		3	DBE/SBE better managed by single prime
F.3 Labor Unions	The choice of delivery method may have an impact on labor usage and labor union issues. The legal protections for transit laborers are in place, such as Section 13(c) of the Federal Transit Act. Other agreements, such as the Davis-Bacon Act, Project Labor Agreement (PLA), and Construction Careers Policy (CCP) should also be taken into consideration when determining laborers' minimum wages in any delivery method.	0	Labor union(s) are imperative
		1	Labor union(s) likely
		2	Labor union(s) possible
		3	Labor union(s) not involved

Project Parameter	Discussion	Pts	Scoring Methodology
F.4 Stakeholder/ Community Input	The opportunities afforded by a particular delivery method for coping with community inputs are discussed below. A delivery method should leverage stakeholder and community input as much as possible to achieve project goals in a meaningful and transparent fashion.	0	Community involvement imperative
		1	Community involvement highly likely/desirable
		2	Community involvement possible but not required
		3	Community involvement not likely or required
F.5 Adversarial Relationships	Delivery methods define the relationships among Metro and the contracting parties. If the project delivery method encourages project parties to work together as a team to achieve the project goals and characteristics, it is considered a benefit. If the project delivery method increases the possibility of adversarial relationships, it is considered a detriment.	0	Likely conflict between Owner and Designer
		1	Likely conflict between Owner and Builder
		2	Likely conflict between Designer and Builder
		3	Likely conflict between Design/ Builder and Operator
G. Utility Relocations	The utility relocation effort weighs heavily in the delivery selection process. DBB delivery generally assumes that Metro is responsible for utility relocation identification and Metro retains the risk. DB delivery generally assumes greater responsibility with the contractor, but there is often a risk sharing provision in the contract. In any case, the primary consideration when scoring is the complexity of the utility relocation effort and the extent to which advanced utility relocation work can be done prior to award of the contract. Generally, areas of high risk (many unknowns) for utility relocations are better suited to DBB, due to the risk of more expensive change orders in the DB environment.	0	Significant utility impacts exist (i.e. railroads, military fuel pipelines, 911 trunk line, Army Corp, super funds, etc)
		1	Multiple utilities, includes privately owned utilities
		2	Limited relocations required, only local agency owned utilities
		3	Typical coordination with no utility relocations required
H. Right-of-Way Impacts	The right-of-way (ROW) assessment considers the actions required (acquisitions, easements, relocations, eminent domain) to assess the potential impact on the schedule. DBB delivery requires Metro to identify all ROW requirements in advance of contractor mobilization; DB delivery assumes the contractor will have a role in finalizing ROW certifications as well as providing input into staging and access requirements.	0	Condemnation, severance damages, relocations and/or protracted negotiation.
		1	Permanent fee title and/or easement acquisition required
		2	Only temporary ROW required (TCEs and/or right-of-entry)
		3	No right-of-way required for the project

Project Parameter	Discussion	Pts	Scoring Methodology
I. Permitting	Federal, state, and local permitting requirements will vary from project to project. DBB delivery requires Metro to secure all permits; DB delivery assumes the contractor will participate in defining the permitting requirements.	0	Extensive regulatory permitting with mitigations
		1	Unique or extensive regulatory permitting, no mitigation
		2	Typical regulatory permits required
		3	No regulatory permits needed
J. Value Engineering/ Innovation Opportunities	Potential to identify Value Engineering (VE) and/or innovations for optimizing scope, cost, schedule, and operations/maintenance costs. DBB delivery assumes VE performed by Metro and its designer; DB delivery assumes the contractor will have additional opportunity to address innovative design solutions.	0	No opportunities for VE
		1	Design alternatives are limited
		2	Either innovation or VE opportunities
		3	Both innovation and VE opportunities
K. Cost Type	The contracting type influences project delivery in that unit rate contracting generally favors DBB and firm fixed price contracting generally favors DBB. Project lifecycle costs may also be a consideration under DBOM and P3.	0	Unit cost (deliverable types defined; quantities indefinite)
		1	Cost-plus fixed fee (indefinite deliverables & quantities)
		2	Guaranteed Max Price (GMP) - sole source or negotiated amt.
		3	Firm fixed-price or lump sum (finite quantity of deliverables and units)
K.1 Cost Restrictions	This parameter includes several aspects of project cost, including funding restrictions, early and precise cost estimation, bid competition, and consistent control of project costs.	0	Quantity uncertainty
		1	Bid competition required
		2	Funding requires cost certainty before construction
		3	Funding requires cost certainty before design & construction
K.2 Life Cycle Costs	With DBB, Metro is in control of design and quality, and can tailor to a project's long-term lifecycle goals. DB has risk for increasing lifecycle costs mainly because the design-builder has a motive to decrease the initial costs of the project to bring it down to the agreed upon amount regardless of possible increases in the future operation and maintenance costs of the facility.	0	Design & construction quality significant to Operations costs
		1	Design/construction quality little/no impact to Operations.
		2	Innovative technology desired to save Operations cost
		3	Privatizing operations possible

Project Parameter	Discussion	Pts	Scoring Methodology
K.3 Construction Claims	The focus of this parameter is how each delivery method may expose Metro to potential conflicts and claims. If a delivery method can reduce exposure to construction claims, that delivery method is a favorable choice, and if it increases the possibility of construction claims, it is an unfavorable choice. DBB has the highest occurrence of claims and disputes. With DB, claims for design errors are reduced considerably, however, early pricing leaves Metro vulnerable to claims for scope that was missing in the RFP.	0	High confidence in design requirements; construction documentation
		1	Low confidence in stakeholder scope definition; complete design
		2	Design risks transferrable to Contractor
		3	Construction risks transferrable to Contractor
L. Risk Management	This assessment focuses on the level to which Metro wishes to retain risk ownership. One end of the scale is when Metro owns all risk, more common in DBB delivery, and the other is where some or all risk is transferred to a third party, more common in DB, DBOM or P3 delivery.	0	All risks managed in-house; none transferable to 3rd party
		1	Most risks managed in-house; some transferable to 3rd party
		2	Some risks managed in-house; most transferable to 3rd party
		3	All or most major risks transferable to 3rd Party
M. Resource Availability	DBB typically requires more 'in-house' technical staff to review iterations of design by consultants, with some engineering and design being done by Metro staff. DB, DBOM and especially P3 requires less 'over-the-shoulder' design reviews, because the risks for design compliance and performance are assigned to the contractor/concessionaire.	0	All required design and management disciplines are available in-house
		1	Many or most disciplines are available in-house
		2	Some resources are in-house, but most are not available
		3	Very few or no resources available in-house
N. Environmental Requirements	If there are potentially many unknown below-grade environmental hazards (i.e. hazardous/contaminated soils, abandoned utilities containing lead or asbestos, or archeological sites), Metro may become liable for delay claims resulting from discovery, investigation and mitigations, which amongst other things will include large costs for 'idle' or demobilization/remobilization of construction resources and extended administrative staff and overheads.	0	Many potential unknown hazards and indeterminate clearances required
		1	Hazards identified in DEIS/DEIR but no LPA or PE yet
		2	EA/PE complete, but no ROD/FONSI yet
		3	ROD/clearances obtained

Long Form Scoring Metric **Total Points = _____**

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-39	Favors Traditional Design-Bid-Build
40-78	Favors Design-Build

To Score: Circle or highlight the most accurate ranking for each Parameter, then sum for Total Points at the end of this form.

Project Parameter	Discussion	Pts	Scoring Methodology
A. Project Type	DBOM is typically less desirable for extensions to existing systems, mainly because of the integration needed in the operational phase. The evaluation in this regard is intended to assess if there will be increased systematic interface issues if O&M is undertaken by a separate private entity.	0	Interfaces with multiple existing alignments
		1	Interfaces with a single, older existing alignment
		2	Interfaces with a single, newer existing alignment
		3	Stand-alone, new alignment
B. Operational Quality & Safety	The operational quality and safety management perspectives are largely turned-over to the contractor under DBOM. The evaluation in this regard is intended to assess if Metro will be comfortable turning over first-line responsibility for these functions to a contractor.	0	Maintaining quality and safety management internally is imperative
		1	Maintaining quality and safety management internally is desirable
		2	Transferring quality and safety management will not negatively impact Metro
		3	Transferring quality and safety management may improve Metro's performance
C. Cost Certainty	Long-term operational costs can sometimes be more certain under a DBOM due to contract requirements that are established early-on. However, this often results in increased contingencies for the cost uncertainty that the bidder assumes. The evaluation in this regard is if Metro will be willing to accept higher contingencies in exchange for increased up-front cost certainties.	0	Reducing contingency is an imperative over cost certainty
		1	Reducing contingency is more important than cost certainty
		2	Cost certainty more important than reducing contingency
		3	Cost certainty is an imperative over reducing contingency
D. Cost Efficiencies	DBOM may offer a cost benefit through an expanded DB contract offering more opportunity for operational innovations to decrease costs. Including full O&M and lifecycle responsibilities under DBOM typically provides a cost advantage over time, including relative savings for private operator benefits, escalation trends, lifecycle maintenance, and other factors. The evaluation in this regard is to assess if Metro will see a potential cost savings as a net benefit compared to foregoing operational control.	0	Internal operational control is imperative over cost efficiency
		1	Maintaining operational control is more important than potential for cost efficiencies
		2	Potential for cost efficiencies is more important than maintaining operational control
		3	Cost efficiency is imperative over internal operational control

Project Parameter	Discussion	Pts	Scoring Methodology
E. Market Conditions & Competition	There are indications that market conditions and resource availability are tightening. The evaluation in this regard is to assess if Metro will have difficulty attracting quality contractor resources for outsourcing start-up and rail operations.	0	Tight Operations-provider marketplace with potential for no or poor industry response
		1	Tight Operations-provider marketplace but with some industry interest
		2	Average Operations-provider marketplace and industry interest
		3	Above average Operations-provider marketplace and industry interest
F. Schedule	The schedule has increased potential for acceleration under DBOM because designer, builder, and operator are a single entity and because there is a financial incentive to achieve the revenue service date (RSD) as soon as possible. The evaluation in this regard is to assess if there will be political or other imperatives to achieve the earliest completion date possible.	0	Internal operational control is imperative over earliest delivery
		1	Early completion pressures less likely to occur
		2	Early completion pressures more likely to occur
		3	Earliest possible delivery is imperative
G. Third Parties	Under DBOM the contractor would likely take more control of third-party agreements because it would remain responsible for a significant period of time after construction. The evaluation in this regard is to assess if Metro will be comfortable letting the DBOM contractor take the lead in some or all third-party agreement negotiations.	0	Maintaining control over third party agreements is imperative
		1	Metro may be better able to negotiate and administer third party agreements, with support from the Contractor
		2	Contractor may be better able to administer third party agreements, with support from Metro
		3	Contractor may be better able to negotiate favorable and timely third-party agreements

Project Parameter	Discussion	Pts	Scoring Methodology
H. SBE/DBE Goals	Shorter termed non-O&M contracts generally are better suited for SBE/DBE participation, but greater scope and timeframe can be as well. The evaluation in this regard is to assess if a larger combined DB and O&M contract would hinder Metro's SBE/DBE goals.	0	Limited SBE/DBE firms to service long term contracts with Operations scope
		1	Limited SBE/DBE firms to service either long term or Operations scope
		2	Available SBE/DBE firms to service long term contracts with Operations scope
		3	Available SBE/DBE firms to service long term contracts with Operations scope
I. Regulatory & Political	There could be a delay or cancellation based on political opposition to use of non-Metro labor for long-term O&M functions that are historically performed in-house. The evaluation in this regard is to assess if there will be regulatory, political, or legal challenges to privately contracted O&M?	0	Political and regulatory opposition is certain
		1	Political or regulatory opposition likely
		2	Political or regulatory opposition unlikely
		3	No political or regulatory opposition
J. Stakeholders/ Community Input	Under DBOM there would be increased difficulty to accommodate stakeholder-initiated changes related to operational considerations because of the cost of associated change orders in the design-build scenario. The evaluation in this regard is to assess the likelihood that stakeholders will try to influence operational performance requirements post-contract award.	0	Likely stakeholder opposition to performance specifications
		1	Few stakeholders generally supportive of Metro
		2	Most stakeholders generally supportive of Metro
		3	Performance specifications vetted and approved by stakeholders
K. Operations Interface	DB requires extensive scope management and design coordination with Operations as the design and construction progress. Under DBOM, this coordination may be more efficient because the designer, builder, and operator are one entity. The evaluation in this regard is to assess the likelihood that Metro Project Management and Operations divisions can work collaboratively to achieve the same efficiencies under DB as would be likely under a DBOM contract?	0	Strong collaborative history between PM and Ops
		1	Likely successful collaboration
		2	Likely strained collaboration
		3	Weak collaborative history between PM and Ops

Project Parameter	Discussion	Pts	Scoring Methodology
L. Financial Flexibility	During traditional operations, Metro controls maintenance budgets and retains the ability to reduce, increase, or reallocate. Under DBOM, Metro has reduced flexibility because it would be contractually locked into a long-term budget commitment that cannot be easily re-structured. The evaluation in this regard is to assess if Metro will be comfortable transferring this budget control to a private entity.	0	Maintaining budget control is imperative
		1	Maintaining budget control may help to address possible changing needs
		2	Transferring budget control may help reduce internal budget pressures
		3	Transferring budget control addresses internal financial considerations
M. Claims	DBOM minimizes claims exposure because the contractor is responsible for design, construction, and operations. However, this benefit only applies if the Contractor shows full competency and Metro has developed a solid Performance Specification. The evaluation in this regard is to assess if the reduced claims exposure can be realized.	0	Marketplace competencies not evident; accurate Performance Spec difficult to develop early-on
		1	Poor market response and/or post-award changes to Performance Spec likely
		2	Good market response and/or no or few post-award changes to Performance Spec likely
		3	Marketplace demonstrates strong capacity and capability; Performance Spec can be adequately developed
N. Risk	Risk transfer for DBOM is the same as DB. Risk, including as related to system integration, start-up, operation, and maintenance, is transferred to the Contractor – but at a cost. The evaluation in this regard is to assess if complex operational aspects make risk transfer less desirable due to cost.	0	Very complex operational requirements and system interfaces with potential for unacceptably high contingencies in risk transfer
		1	Complex operational requirements and system interfaces, but with risk sharing opportunities
		2	Routine operational requirements complexity, but with risk sharing opportunities
		3	Routine operational requirements complexity with low risk transfer exposure

Project Parameter	Discussion	Pts	Scoring Methodology
O. Agency Capability	If DBOM delivery is new and untested at an agency, there may be some capability concerns in terms of overseeing a long-term contract. Another measure is whether the agency possesses the internal capability to internally management operations and maintenance under DB. The evaluation in this regard is to assess if Metro will have the capability to internally manage operations and maintenance of the new alignment.	0	Demonstrated capability and no past experience with DBOM
		1	Demonstrated capability or no past experience with DBOM
		2	Emerging capability
		3	Smaller agency with little or no O&M experience
P. Agency Capacity	P.1 Transferring O&M responsibility often results in a cost savings, but with a risk of the Owner losing momentum in terms of workforce development. The evaluation in this regard is to assess if transferring O&M responsibility will ultimately be viewed as a detriment because workforce development opportunities are lost, resulting in a disadvantage to Metro when the O&M duties transfer back.	0	Staff attrition and future available resources are a concern
		1	Staff attrition is concerning but experienced replacement resources will likely be available
		2	In-house resources will be available for re-distribution within O&M with some outside replacement support
		3	Adequate in-house capacity and capability will be maintained and available when needed
	P.2 Administration of a large DB contract requires extensive Metro oversight, more so with an even larger DBOM contract. The evaluation in this regard is to assess if Metro will have the project management resources to undertake this additional scrutiny under DBOM.	0	Internal PM capacity is maximized and there is limited ability to bring in new resources
		1	Internal PM capacity is a challenge, but more Metro or consultant resources may be available
		2	Internal PM capacity is a challenge, but more Metro and consultant resources are available
		3	PM capacity is adequate to oversee large and long term DBOM contract

Project Parameter	Discussion	Pts	Scoring Methodology
	P.3 The contract administration effort will be extensive to oversee a long-term DBOM contract. The evaluation in this regard is if Metro VCM will have the internal capacity and capability for the required period of time.	0	Internal VCM capacity is maximized and there is limited ability to bring in new resources
		1	Internal VCM capacity is a challenge, but more Metro or consultant resources may be available
		2	Internal VCM capacity is a challenge, but more Metro and consultant resources are available
		3	VCM capacity is adequate to oversee large and long term DBOM contract
	P.4 Traditionally, commencement of a new rail line requires additional capacity and capability from Metro's Rail Operations. The evaluation in this regard is to assess if Rail Ops will have adequate internal resources to start-up and operate a new line.	0	Internal O&M capacity is maximized and there is limited ability to bring in new resources
		1	Internal O&M capacity is a challenge, but more Metro or consultant resources may be available
		2	Internal O&M capacity is a challenge, but more Metro and consultant resources are available
		3	O&M capacity is adequate
Q. Maintainability	To the extent that a DBOM contractor would be responsible for both operations and maintenance, it is more likely than not that it would provide a level of quality that is commensurate with ease of maintenance. This advantage comes with reduced Metro control of the operations and maintenance function and so requires a well-developed Maintenance Performance Spec. The evaluation in this regard is if Metro can prepare a Maintenance Performance Spec to achieve this end, or if it is more likely ease-of-maintenance would be better achieved through a straight DB contract.	0	Adequate Performance Spec difficult to develop early-on
		1	Adequate Performance Spec can be developed, but requirements result in likely reduced contractor flexibility and higher cost
		2	Metro is experienced Owner with capability to develop adequate Performance Spec
		3	Performance Spec can be developed in concert with contractor during design

Project Parameter	Discussion	Pts	Scoring Methodology
R. Sustainability	Under DBOM, the contractor would assume the risk of delivering on the life cycle cost saving goals intended through sustainable design and built into a DB contract - if it possesses sufficient familiarity with alternative maintenance procedures and systems controls. The evaluation in this regard is to assess if a private operator would have the capability to optimize sustainability goals.	0	Complex sustainability design features; concern with private operator sustainability competencies
		1	Some complexity in sustainability design features; concern with private operator competencies
		2	Some complexity in sustainability design features; but no concern with private operator competencies
		3	Straight-forward sustainability design features; but no concern with private contractor sustainability competencies
S. Contracting Vehicle	A basic consideration is if a contract template has been developed and in place to move forward with DBOM. The evaluation in this regard is if this template exists and has been proven; or if it requires development.	0	No DBOM contract template exists
		1	Contract template is under development
		2	Contract template is in place but untested
		3	Contract is in place and tested

DBOM Scoring Metric **Total Points = _____**

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-22	Favors Traditional DB
23-66	Favors DBOM

Attachment F – Construction Manager/General Contractor (CM/GC) Scoring Matrix

To Score: Circle or highlight the most accurate ranking for each Parameter, then sum for Total Points at the end of this form.

Project Parameter	Discussion	Pts	Scoring Methodology
A. Project Type	Complex projects may be more applicable to CM/GC because the collaboration between designer and constructor helps to achieve design solutions. The evaluation in this regard is to assess the likelihood of the project being straight-forward with few design and constructability concerns.	0	Small size project with few complexities
		1	Medium size project; design is easily defined
		2	Large size project with design complexities
		3	Complex large size or mega-project with likely design and constructability challenges; in-progress changes are likely
B. Schedule	Projects with sequencing, staging, and/or access challenges may be more applicable to CM/GC because the contractor and designer can collaborate on design solutions including bid packaging. CM/GC may be less appropriate for a project having a mandated completion date because Metro would lose flexibility for outside competitive bidding if GMP negotiations fail. The evaluation in this regard is to assess the likelihood of a CM/GC delivery having a positive influence on the overall schedule.	0	Schedule interfaces are not complex and there is no flexibility to extend the completion date
		1	Schedule interfaces are not complex
		2	Schedule interfaces are complex
		3	Schedule interfaces are complex and there will be flexibility to extend the completion date
C. Agency Capacity & Capability	Internal expertise is required to affectively negotiate GMPs and to assure designer and constructor work towards Metro's interests. The evaluation in this regard is to assess if Metro will have project management, estimating, and scheduling capacity and capability to properly oversee the CM/GC contract and negotiate cost-effective GMPs.	0	No previous CM/GC experience
		1	Some previous but unsuccessful CM/GC experience
		2	Some previous successful CM/GC experience
		3	Experienced in CM/GC contracting
D. Market Conditions & Competition	CM/GC requires the bidder to assemble a team to cover both construction management and construction. Some potential bidders not able to assemble this larger team. The evaluation in this regard is to assess if the marketplace can adequately respond to the larger combined procurement.	0	Tight marketplace with potential for no or poor industry response
		1	Tight marketplace but with some industry interest
		2	Average marketplace conditions and industry interest
		3	Above average marketplace conditions and industry interest

Project Parameter	Discussion	Pts	Scoring Methodology
E. Risk	Cost risk may greater under CM/GC because the contract is awarded, and then bids are "negotiated" for each work package. This effectively means no cost competition. This risk may be mitigated if construction efficiencies are achieved through increased designer/contractor collaboration under CM/GC that are ultimately reflected in the schedule. The evaluation in this regard is to assess recent industry experience and Lessons Learned if cost risk is greater under CM/GC compared to traditional DBB.	0	Difficulty negotiating equitable GMPs, and no evidence of greater construction efficiencies compared to DBB
		1	Difficulty negotiating equitable GMPs, but offset by evidence of greater construction efficiencies compared to DBB
		2	Successful GMP negotiation, but with no evidence of increased construction efficiencies
		3	Successful GMP negotiation, and evidence of increased construction efficiencies.
F. CM/GC Operating Guidance	CM/GC Operating Guidance needs to protect Metro's interests especially as related to the estimate reconciliation process, rules for accepting the contractor's package bid, and establishing a practical path-forward for competitive outside procurement if that becomes necessary. The evaluation in this regard is to assess the likelihood that Metro will have fully developed CM/GC Operating Guidance that assures Metro stays in control.	0	Operating Guidance does not exist
		1	Operating Guidance is emerging
		2	Operating Guidance is developed but untested
		3	Operating Guidance is developed and proven
G. Contracting Vehicle	A basic consideration is if a contract template has been developed and in place to move forward with CM/GC. The evaluation in this regard is if this template exists and has been proven; or if it requires development.	0	No CM/GC contract template exists
		1	Contract template is under development
		2	Contract template is in place but untested
		3	Contract is in place and tested

CM/GC Scoring Metric **Total Points = _____**

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-7	Favors Traditional Design-Bid-Build
8-21	Favors Construction Manager/General Contractor

To Score: Circle or highlight the most accurate ranking for each Parameter, then sum for Total Points at the end of this form.

Project Parameter	Discussion	Pts	Scoring Methodology
A. Project Type	Smaller and medium-sized projects and DBB projects are better suited for TODs, either an abutting TOD or one within the project footprint. Larger projects are better suited for contractor financial participation in the form of DBF or DBFOM, as there may be financial considerations that help to advance the project sooner as well as more opportunity to capitalize on profit-driven innovations. DB mega-projects are the best candidates for DBF or DBFOM. The evaluation in this regard is to assess the project size for P3.	0	Small sized DBB project with few or no TOD opportunities
		1	Small or medium size DBB project, with TOD opportunities
		2	Medium or large size DB project with need of private cash infusion
		3	Large DB mega-project with need of private cash infusion
B. Cost of Capital	B.1 The cost of capital is a consideration in determining if private financial participation is appropriate. The evaluation in this regard is to answer the question, "How likely is it that Metro's credit rating will be strong and Metro will have good access to low-cost capital?"	0	Very likely
		1	Somewhat likely
		2	Somewhat unlikely
		3	Very unlikely
	B.2 Conversely, private financing options generally carry higher cost of capital due to assumed risk by project investors. The evaluation in this regard is to answer the question, "How likely is it that the project will be funded through TIFIA, FFGA, SSGA or other source that would make private financing options less attractive?"	0	Very likely
		1	Somewhat likely
		2	Somewhat unlikely
		3	Very unlikely
C. Cost Efficiencies	In general, P3s often result in cost efficiencies including through a profit motive to reduce schedule delays. However, private participation often involves transfer of some or all project execution to a private entity with investor oversight more experienced in cost containment. These potential benefits come with a corresponding transfer of project control from the agency to the contractor. The evaluation in this regard is an assessment of Metro's comfort level giving up some control including transfer of line-level quality management?	0	Maintaining internal control including quality management is imperative
		1	Maintaining internal control including quality management is desirable
		2	Transferring internal control including quality management will not negatively impact Metro
		3	Transferring internal control including quality management may improve Metro's performance

Project Parameter	Discussion	Pts	Scoring Methodology
D. Schedule	D.1 The schedule is potentially accelerated when there is private financial participation because of the infusion of capital; and because a private contractor has incentive to expedite completion. The evaluation in this regard is to assess the likelihood there will be political or legal imperatives to achieve the earliest completion date possible?	0	There is no legal or political constrained completion date
		1	Early completion pressures less likely to occur
		2	Early completion pressures more likely to occur
		3	A legal or political mandate is in place that constrains completion date
	D.2 DBF and DBFOM would typically provide a schedule benefit because a contractor would bid and finance fixed-price, date-certain delivery; and who would also likely be incentivized through an award payment at revenue service. The evaluation in this regard is if Metro would have the capacity and capability to maintain the same level of schedule control, with a similar outcome.	0	Strong Metro record of completing projects ahead of schedule
		1	Metro often completes projects ahead of schedule
		2	Metro rarely completes projects ahead of schedule
		3	Metro does not have internal capacity and capability to achieve early completion
E. Risk	Risk sharing provisions vary, as defined in each contract. In general, DB involves more risk transfer compared to DBB, but even more so with DBF and DBFOM because of including the private financial commitment. The evaluation in this regard is the likelihood contractors will be willing to assume this additional risk without unacceptably high contingencies.	0	Very high likelihood that contractors will include unacceptably high contingencies for risk transfer
		1	High likelihood that contractors will include unacceptably high contingencies for risk transfer
		2	Low likelihood that contractors will include unacceptably high contingencies for risk transfer
		3	Very low likelihood that contractors will include unacceptably high contingencies for risk transfer

Project Parameter	Discussion	Pts	Scoring Methodology
F. Competition	There are indications that market conditions and resource availability are tightening. The evaluation in this regard is an assessment if Metro will have difficulty attracting quality contractor resources that also have the capacity for financial participation?	0	Tight marketplace conditions with potential for no or poor industry response
		1	Tight marketplace conditions but with some industry interest
		2	Average marketplace conditions and industry interest
		3	Above average marketplace conditions and industry interest
G. Agency Capacity & Capability	To be successful, P3s need to be contracted with an eye toward protecting Metro's interests and Metro needs to possess internal capacity and capability with experience in P3s to affectively monitor project execution according to contract requirements. The evaluation in this regard is an assessment if will have internal expertise and experience necessary to remain on equal footing with a P3 contractor or developer.	0	Metro has no P3 experience
		1	Metro has experience with at least one P3 contract
		2	Metro has experience with 2 or more P3 contracts
		3	Metro has extensive and successful P3 contracting experience
H. Stakeholder Influence	Under any DB or DBOM there is increased difficulty in accommodating stakeholder-initiated changes to both scope and operational considerations because of associated cost impacts. This risk exposure is greater under a P3 DBF or DBFOM because contractor profit goals may be impacted. The evaluation in this regard is an assessment of the likelihood that stakeholders will try to influence performance specifications post-contract award.	0	Likely stakeholder opposition to performance specifications
		1	Few stakeholders generally supportive of Metro
		2	Most stakeholders generally supportive of Metro
		3	Performance specifications vetted and approved by stakeholders
I. Contracting Vehicle	A basic consideration is if a contract template has been developed and in place to move forward with P3. The evaluation in this regard is if this template exists and has been proven; or if it requires development.	0	No P3 contract template exists
		1	Contract template is under development
		2	Contract template is in place but untested
		3	Contract is in place and tested

P3 Scoring Metric **Total Points = _____**

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-11	Favors Traditional DB or DBOM
12-33	Favors DBF or DBFOM

Metro

Attachment G – Public-Private-Partnership (P3) Scoring Matrix

Project Parameter	Discussion	Pts	Scoring Methodology
F. Competition	There are indications that market conditions and resource availability are tightening. The evaluation in this regard is an assessment if Metro will have difficulty attracting quality contractor resources that also have the capacity for financial participation?	0	Tight marketplace conditions with potential for no or poor industry response
		1	Tight marketplace conditions but with some industry interest
		2	Average marketplace conditions and industry interest
		3	Above average marketplace conditions and industry interest
G. Agency Capacity & Capability	To be successful, P3s need to be contracted with an eye toward protecting Metro's interests and Metro needs to possess internal capacity and capability with experience in P3s to affectively monitor project execution according to contract requirements. The evaluation in this regard is an assessment if will have internal expertise and experience necessary to remain on equal footing with a P3 contractor or developer.	0	Metro has no P3 experience
		1	Metro has experience with at least one P3 contract
		2	Metro has experience with 2 or more P3 contracts
		3	Metro has extensive and successful P3 contracting experience
H. Stakeholder Influence	Under any DB or DBOM there is increased difficulty in accommodating stakeholder-initiated changes to both scope and operational considerations because of associated cost impacts. This risk exposure is greater under a P3 DBF or DBFOM because contractor profit goals may be impacted. The evaluation in this regard is an assessment of the likelihood that stakeholders will try to influence performance specifications post-contract award.	0	Likely stakeholder opposition to performance specifications
		1	Few stakeholders generally supportive of Metro
		2	Most stakeholders generally supportive of Metro
		3	Performance specifications vetted and approved by stakeholders
I. Contracting Vehicle	A basic consideration is if a contract template has been developed and in place to move forward with P3. The evaluation in this regard is if this template exists and has been proven; or if it requires development.	0	No P3 contract template exists
		1	Contract template is under development
		2	Contract template is in place but untested
		3	Contract is in place and tested

Metro

Attachment G – Public-Private-Partnership (P3) Scoring Matrix

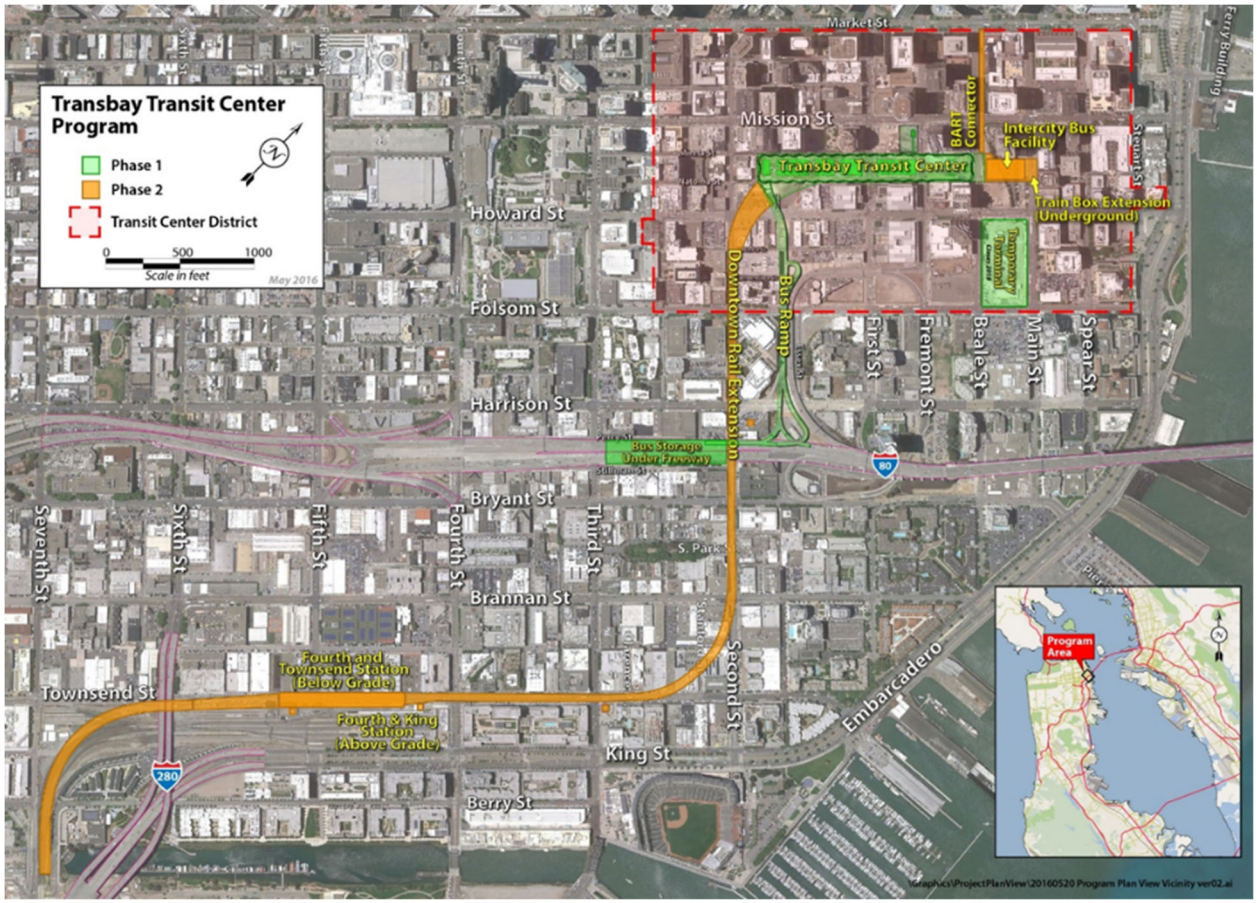
P3 Scoring Metric

Total Points = _____

Score Range	Recommended (Most likely to succeed) Project Delivery Method
0-11	Favors Traditional DB or DBOM
12-33	Favors DBF or DBFOM

Attachment 1
Transbay Program Description

The Transbay Program (Program) is an approximately $6 billion program to replace the former Transbay Terminal at First and Mission streets in San Francisco with a modern regional transit station that will connect eight Bay Area counties and the State of California through eleven transit systems: Alameda–Contra Costa Transit, BART (Bay Area Rapid Transit), Caltrain, Golden Gate Transit, Greyhound, Muni (San Francisco municipal bus lines), SamTrans (San Mateo County Transit), WestCAT (Western Contra Costa Transit) Lynx, Amtrak, Paratransit, and high-speed rail from San Francisco to Los Angeles/Southern California.



The Program is being constructed in two phases:

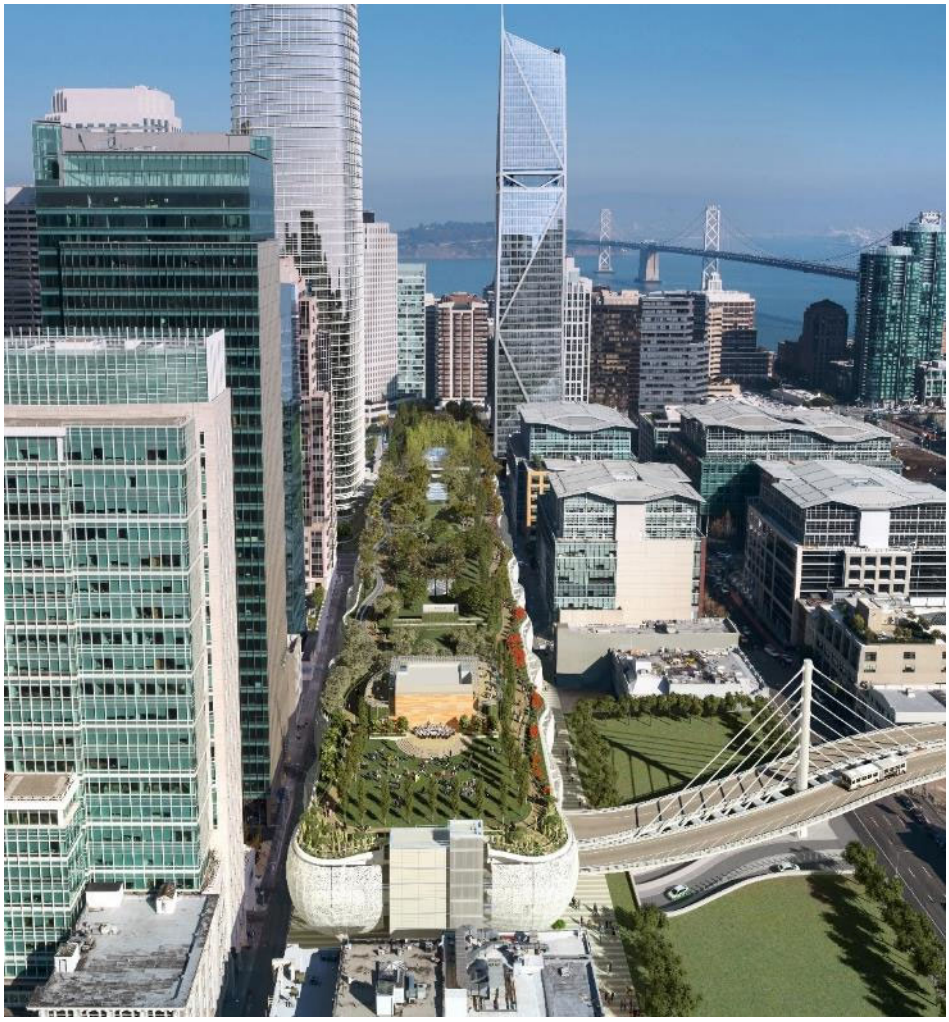
Phase 1 includes design and construction of the above-grade portion of the transit center, including a 5.4-acre park, retail areas, and a public art program; the core and shell of the two below-grade levels of the train station; a new bus ramp; a bus storage facility; and a temporary bus terminal. Phase 1 is nearly complete, and the transit center was opened to the public in August 2018.

The Downtown Rail Extension (DTX) tunnel, the build-out of the below-grade train station facilities at the transit center, a new underground station, and an intercity bus facility will follow as Phase 2 of the Program. The Phase 2 design is approximately 30% complete. Phase 2 is projected to complete in 2028.

Phase 1

Transit Center

The transit center is a 1.2-million-square-foot multimodal transit station that will house eleven transit systems and serve train and bus commuters, local area office workers, and residents of the emerging Transbay neighborhood. The building is composed of four levels above-ground and two levels below and contains active pedestrian, shopping, dining, and recreational areas. Major works of art integrated into the building's public spaces are designed to engage, stimulate, and enrich the experience of daily commuters and visitors. In 2017, salesforce.com bought the naming rights to the transit center, the rooftop park, and the rooftop amphitheater, among other components of the building. The transit center is now known as the "Salesforce Transit Center"; the park is called "Salesforce Park," and the amphitheater, "Salesforce Amphitheater."



Transit Center Square Footage by Level and Type

Level	Commercial Areas	Public Circulation	Vertical Circulation	Back of House	Transit	Open space	Total Square Footage
Train Platform			2,600	18,200	276,700		297,500
Lower Concourse			3,500	108,300	185,700		297,500
Ground	33,700	64,100	10,000	17,200	27,100		152,100
Second	57,900	5,400	10,400	11,400			85,100
Bus Deck		69,100	8,100	7,800	113,700		198,700
Rooftop Park	11,700	1,700	5,600	6,500		202,200	227,700
Total Square Footage	103,300	140,300	40,200	169,400	603,200	202,200	**1,258,600**

The main civic entrance to the transit center off of Mission Square (at Mission and Fremont streets) opens into the grand hall on the building's **ground level**, which serves as the primary access to the lower concourse and train platform levels below (in Phase 2) and the bus deck and rooftop park above. The ground level contains customer service amenities, including ticket vending machines, digital schedule boards, and touch-screen information kiosks.

A street-level bus plaza on the building's east end serves mainly Muni and Golden Gate Transit.

To the west is a two-block-long pedestrian retail area along Natoma and Minna streets between First and Second streets. Three pedestrian walkways cut through the building in this area, joining Minna to the Natoma pedestrian way, a pedestrian-only section of Natoma between Shaw Alley and Second Street. The Natoma pedestrian way is currently being extended from the project limits to Second Street by the City as part of its Second Street Improvements Project.

The **second level**, one floor above ground on either side of the grand hall, consists of three defined areas of retail and office space. Two areas dedicated to retail and food concessions will be located directly above the ground level pedestrian area between First and Second streets; these areas will be linked by a pedestrian bridge where Shaw Alley (one of three pedestrian walkways) transects the building. During Phase 1, support spaces (passenger waiting and ticketing) for Greyhound and Amtrak will occupy areas at the western end of the second level until an intercity bus facility is constructed in Phase 2. Offices are planned for the eastern end of the second level above the bus plaza between Beale and Fremont streets. This area of the second level is separated from the rest of the building and is be accessible from the Beale Street lobby and the bus plaza.

The **bus deck**, two floors above ground, is dedicated to bus transit agencies operating service across the bay—AC Transit, Muni, and WestCAT, as well as Greyhound and Amtrak until the completion of the intercity bus facility. The elevated bus deck connects directly to a bus ramp that leads to the San Francisco–Oakland Bay Bridge and an off-site bus storage facility.

The **rooftop park** atop the transit center is be a 1400-foot-long, 5.4-acre (202,200-square foot) urban oasis for commuters, office workers, and residents of the Transit Center District. Providing needed open space in an area of the City with few parks, the roof is accessible from ten entry points: six from the lower levels of the transit center, three from pedestrian bridges connected to the Salesforce Tower, 181 Fremont Tower, and Parcel F Tower, and a gondola from Mission Square. Active spaces include an amphitheater for 800 people, a restaurant and café, trails, and children's play areas. Diverse Bay Area ecologies from oak trees to open grass areas offer habitat to local flora and fauna. The "living" roof filters pollutants and improves the air quality of the neighborhood. Symbolic of the TJPA's commitment to environmental quality and sustainability, the park presents a unique opportunity for public education and engagement.

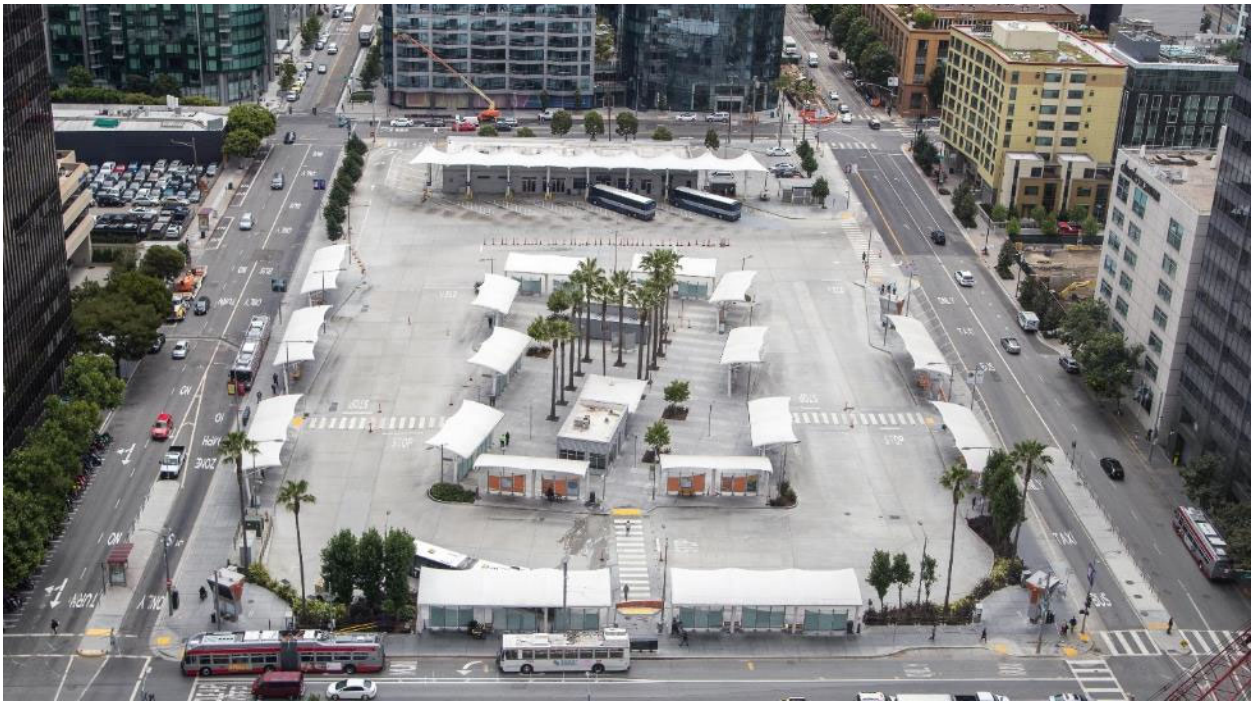
The park contains approximately 10,000 square feet of restaurant and café space. The restaurant, near the amphitheater at the western end of the park, contains both indoor and outdoor seating and is designed to blend into the surrounding park setting. The 1,200-square-foot café is located near the light column skylight near the center of the park. The circular glass building has been fully designed, but construction will be the responsibility of the TJPA's asset manager.

Bus Ramp
The bus ramp is a series of at-grade roadway and aerial structures that connects the Bay Bridge to the transit center and the bus storage facility. The bus ramp is used by bus transit agencies operating bus service across the bay. Inbound buses exit the Bay Bridge at Fremont Street, merge onto the bus ramp at a point near Harrison Street, and enter the transit center at the elevated bus deck level. In the outbound direction, the alignment splits, with one ramp leading to the bus storage facility via a bus link ramp and the other to the eastbound deck of the Bay Bridge. A turnaround in the inbound direction provides direct access to the bus link ramp and bus storage facility.

Bus Storage Facility
The bus storage facility be used primarily by AC Transit for weekday layovers between peak hour commutes. Bounded by Second, Third, Perry, and Stillman streets below the Interstate 80 west approach to the Bay Bridge, the facility includes AC Transit offices, storage, and restrooms. A visual and sound barrier wall screens portions of the facility from adjacent residential properties.

Loading and Passenger Drop-off and Pick-up
Areas on either side of the transit center for commercial loading and passenger drop-off and pick-up are planned along the north side of Natoma between Fremont and First streets and along the south side of Minna between First and Second streets.

Temporary Transbay Terminal
The Temporary Transbay Terminal serves more than 30,000 daily commuters and regional travelers during construction of the new transit center. Located on the block bounded by Howard, Folsom, Beale and Main streets, a few minutes' walk from the transit center site, the facility includes sheltered waiting areas with seating, electronic displays with real-time arrival/departure information, Clipper card add-value machines, and 24-hour security. AC Transit, WestCAT Lynx, Muni, Golden Gate Transit, SamTrans, and Paratransit and other shuttles operate in and around the perimeter of the terminal. Greyhound and Amtrak are based at its southern end near Folsom Street. The Temporary Terminal is expected to be decommissioned in 2019.



Phase 2

Phase 2 comprises the DTX tunnel, the build-out of the below-grade train station facilities at the transit center, a new underground station, and an intercity bus facility. Preliminary engineering (30% design) on the 2004 environmentally approved scope for the DTX began in 2005 and was completed in 2010. Further work was put on hold until additional funding could be committed to the project; however, the design was incrementally updated between 2010 and 2016 to meet new design criteria of the two rail operators, California High-Speed Rail Authority and Caltrain. A supplemental environmental analysis of the updated Phase 2 design was completed and certified by the TJPA Board of Directors in 2018. Funding to resume work on Phase 2 preliminary engineering was allocated in 2018 by the San Francisco County Transportation Authority, and work resumed in July 2018. In October, however, the SFCTA suspended the funding after fractures were observed in two steel girders in the transit center; the funding remains on hold until the SFCTA completes an evaluation of TJPA's management and delivery of the transit center and a review of alternative oversight and governance models for delivery of the DTX.

Transit Center

The lower concourse and train platform level will be built out and opened in Phase 2. The **lower concourse** will house rail ticketing, passenger waiting areas, and support spaces, and at its east end will connect to the intercity bus facility and a pedestrian tunnel leading to the Embarcadero BART/Muni station, approximately one block north of the transit center. In Phase 1, the lower concourse will house the janitorial and maintenance facilities and other back of house spaces such as mechanical, electrical, and plumbing equipment rooms and storage. Along with ticketing and passenger waiting areas for rail and support spaces, the lower concourse will contain approximately 60,000 square feet of leasable retail space.

The **train platform** will contain six tracks and three platforms for Caltrain commuter and high-speed rail service. Back-of-house support spaces will be built on the train platform level to support rail service.

Downtown Rail Extension

The DTX will extend Caltrain commuter rail from its current terminus at Fourth and King streets and deliver the California High-Speed Rail Authority's future high-speed service to the new transit center. The three-track, 1.3-mile rail extension (1.95 miles total) will be constructed principally below grade using cut-and-cover and mined tunneling methods underneath Townsend and Second streets. The design includes an underground station at Fourth and Townsend streets, utility relocations, rail systems work, and structures for emergency exit and ventilation at six locations along the alignment.

Intercity Bus Facility

The intercity bus facility, across the street from the east end of the transit center and between Beale and Main streets, will be dedicated to intercity bus services such as Greyhound and Amtrak. The main public entrances will be located along Beale and Natoma streets, and the building will include a bus canopy on its north side where a bus parking and passenger-loading zone are planned. The facility will house a passenger waiting area, ticketing counters, retail space, transit agency operations space, and mechanical space. An escalator and elevator located in the lobby will lead to the lower concourse of the transit center, giving passengers direct access to rail ticketing and waiting areas. An exterior escalator on Beale Street will descend to the transit center's lower concourse.

Taxi Staging Area
Taxis serving the intercity bus facility will queue along the north curb of a new section of Natoma Street to be built between Beale and Main and the west side of Main Street between Howard and Natoma. Taxis will pick up passengers on Natoma Street close to Beale Street.

BART/Muni Pedestrian Connector
The BART/Muni Pedestrian Connector will connect the east end of the transit center's lower concourse with the BART/Muni Embarcadero Station. The block-long pedestrian tunnel will provide passengers with a direct connection between the two stations. The tunnel will run down the center of the Beale Street right-of-way, entering the Embarcadero Station at the mezzanine level outside the prepaid lobbies of BART and Muni.

Fourth and Townsend Street Station
The new underground station at Fourth and Townsend streets will serve Caltrain commuters. The street level station entrances and exits along the north and south sides of Townsend Street will lead to two levels below grade: a concourse mezzanine and a train platform. The concourse level will accommodate passenger amenities such as ticketing machines, a staffed station agent booth, maps and schedule information, restrooms, and a bicycle shop and storage. This level will also house mechanical and electrical rooms and Caltrain staff areas. The train platform level will feature a center platform with one passing track on the south side.

Transit Center District

In 2003, the State of California began the process of transferring 12 acres of state-owned land (25 individual parcels) to the City and TJPA to be sold to help fund construction of the transit center and create a new transit-oriented neighborhood under the Transbay Redevelopment Plan and the Transit Center District Plan. The Transit Center District Plan, which covers most of the Transbay Redevelopment Area, is a comprehensive plan for development of 145 acres around the former Transbay Terminal and includes mechanisms to direct any increased development value to fund construction of the transit center in addition to other public improvements. The plan specifically allows for high-density development and the upzoning of certain parcels to generate revenues from a new special tax district, most of which have been pledged to the TJPA.

The emerging mixed-use neighborhood includes 4,500 units of housing (8,000 including neighboring Rincon Hill), 6–7 million square feet of office/commercial space, and 11 acres of open space.

The new open space includes:

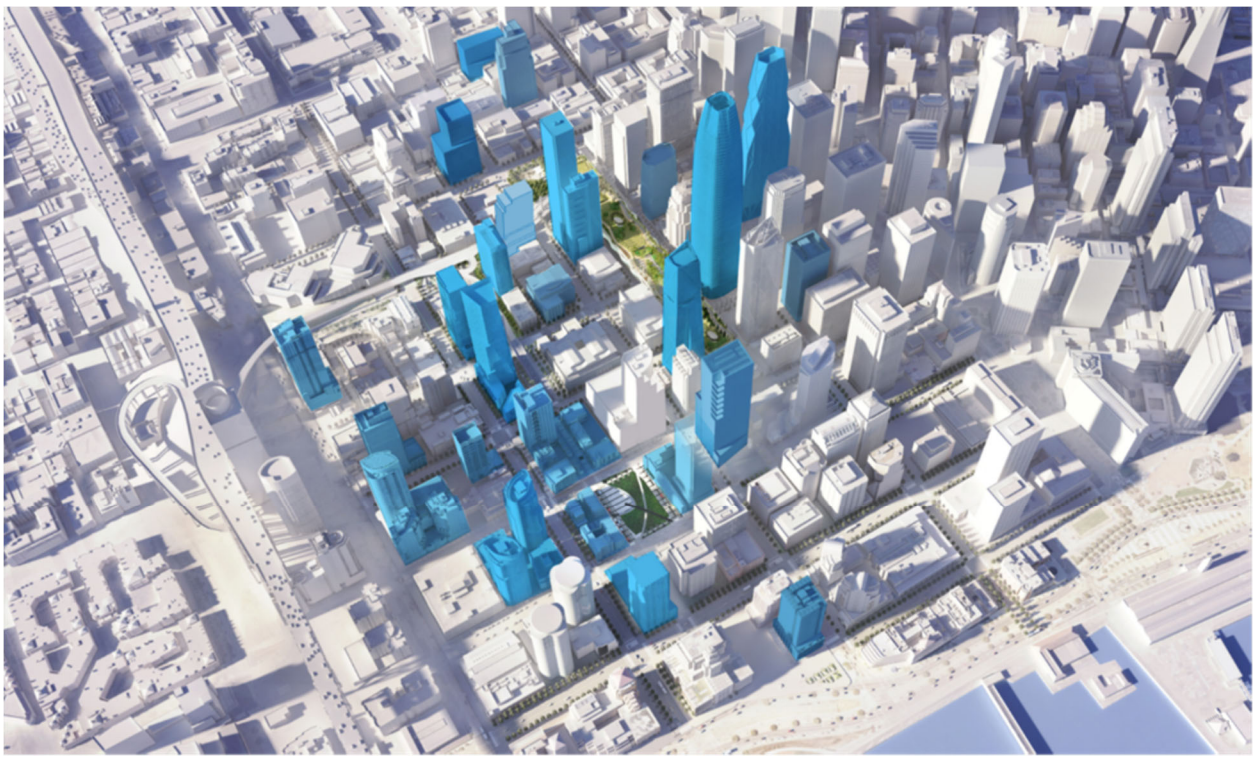
Salesforce Plaza
Formerly known as Mission Square, Salesforce Plaza is a new public space between the Salesforce Transit Center and the Salesforce Tower at Mission and Fremont streets. The landscaped square features a gondola leading to the rooftop park of the transit center.

Natoma Pedestrian Way
Natoma Street at the southwestern end of the transit center is a pedestrian zone and focal point of the transit center's retail area, extending from Second Street to a point just past the Shaw Alley pedestrian walkway. The streetscape creates an inviting destination for residents, visitors and commuters, featuring large planters with seating alongside tables and chairs throughout the area. Pedestrian routes to the Natoma pedestrian way will eventually include access from Second Street, a pedestrian walkway through Parcel F from Howard Street and the Under Ramp Park, and the three pedestrian walkways cutting through the retail area of the transit center from Minna Street.

Under Ramp Park
The Under Ramp Park will be a new 2.7-acre neighborhood park situated primarily under the elevated bus ramp and Fremont Street off-ramp along Clementina Street with approximately 25% of the site open to the sky. Spanning three city blocks—Harrison to Howard streets—and crossing two residential alleys, the park will create a strong pedestrian and bicycle link between the Rincon Hill neighborhood and the new transit center, foster community within the emerging neighborhoods, and become a downtown destination. As currently planned, the park's five distinct spaces will include a children's play area, a basketball court, a dog park, a beer garden, and a multilevel pavilion for cultural and retail activities.

Transbay Park
Transbay Park, situated between future housing on Blocks 2 and 4 of the Transbay Redevelopment Project Area, will be a new 1.3-acre park bounded by Beale Street, Main Street, and new extensions of Tehama and Clementina streets on the site of the current temporary terminal. Design goals for the park include net zero energy and water use, efficient use of materials including recycled materials if appropriate, and incorporation of amenities for a dense mixed-income neighborhood, including play areas for children ages 1 to 12, outdoor seating, and non-programmed open space for temporary events.

Howard Square
The Transit Center District Plan proposes a new ½-acre public open space on the northeast corner of Howard and Second streets. The square will become the southern gateway to the transit center after completion of the DTX.



Attachment 2
Phase 2 Program 2004–2018

2004–2007

The TJPA Board of Directors certified the Transbay Program's Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR), which identified the locally preferred alternative alignment for the Downtown Rail Extension (DTX).

The Federal Transit Administration issued the Record of Decision for the Program.

URS (AECOM) was awarded the Program Management/Program Controls contract.

Parsons was awarded the DTX design services contract (Phase 2). Preliminary engineering and coordination with stakeholders on the DTX project began.

The TJPA Board approved the Recommended Implementation Strategy for the Program involving a top-down construction methodology for the transit center that would construct the above-grade portion of the building and allow for simultaneous construction of the train box when adequate funding for Phase 2 became available.

2008–2010

The TJPA Board adopts the baseline budget for Phase 2.

Pelli Clarke Pelli Architects was awarded the design services contract for the transit center (Phase 1). Coordination with the Phase 2 team began.

Preliminary engineering on the 2004 environmentally cleared DTX alignment was completed to the 30% level.

The Program was awarded $400 million in federal stimulus funds to construct the train box in Phase 1; consequently, the construction sequence was changed to bottom-up.

2011–2014

California High-Speed Rail Authority approved various design variance requests for the DTX design.

The DTX design was partially updated, and changes were made to the below-grade transit center design to address the evolving design criteria and operations requirements of the rail operators, Caltrain and California High-Speed Rail Authority (CHSRA).

The intercity bus facility was added to the Phase 2 scope.

A full Phase 2 cost estimate (combining the cost estimates associated with the updated designs) was produced.

Preparation of a Supplemental EIS/EIR for the modified Phase 2 design began.

The Phase 2 management and design staff began coordinating with the San Francisco Planning Department on the Rail Alignment and Benefits (RAB) study, a multi-agency study of transportation and land use alternatives in southeast San Francisco. The RAB study included an evaluation of three alternative rail alignments into the transit center.

2015–2016

The Metropolitan Transportation Commission (MTC) completed a review of the Phase 2 cost estimate and recommended increasing the escalation rate, the contractor fee, and the project contingency and adding new scope: traffic decking, temporary utility relocation, turnback and maintenance-of-way tracks, and the BART/Muni Pedestrian Connector.

A Phase 2 cost estimate was produced to update the 2010 construction costs to current market rates and include the recommendations of the MTC peer review.

The San Francisco County Transportation Authority (SFCTA) Board of Commissioners considered a funding request of $6.7 million for Phase 2, but passed a motion deferring consideration pending further information and discussion. This funding would have allowed the TJPA to bring all Phase 2 elements to the 30% design level and complete the following: Phase 2 risk assessment, right-of-way appraisals, Phase 2 funding plan, ridership study, cost estimate peer review, and evaluation of project delivery method.

2017

In January, the SFCTA Board again deferred consideration of the funding request of $6.7 million for Phase 2 to a future meeting to allow the Planning Department to present an update on the RAB study at the same meeting.

In April, the SFCTA Board approved a modified funding allocation and limited the scope of work to only elements common to both the DTX and the proposed alignments in the RAB study. A second funding allocation for a tunnel options study was also approved.

The DTX design team began work on the limited scope: an update of the design of tunnel elements north of Townsend Street to the 30% design level, a tunnel options study to evaluate opportunities to reduce the impacts of cut-and-cover construction on city streets, and a rail operations study.

The rail operations study and the tunnel options study for the DTX Project were completed.

2018

The SFCTA oversaw a peer review of the rail operations study. The peer review concluded and stakeholders agreed that a three-track alignment is required to ensure reliable service on the DTX.

Five addenda to the tunnel options study report were completed. The addenda addressed refinements to tunneling concepts, the Fourth Street crossing, the Howard Street crossing, emergency ventilation/exiting, and cost/schedule.

The City completed the RAB Study and selected a preliminary recommended alignment, the Pennsylvania Avenue alignment, which comprises the environmentally cleared DTX and an extended tunnel under Pennsylvania Avenue. The City concluded that work on the DTX should not be delayed while environmental work and design are underway on the extended tunnel. The alignment was adopted by the SFCTA.

In April, the DTX design team completed to a 30% design level elements common to both the DTX alignment and the RAB Study alignments, in accordance with the scope of work approved by SFCTA in 2017.

In July, the SFCTA allocated $9.6 million funding to bring the tunnel design to a 30% design level along with the balance of the Phase 2 elements.

In October, the SFCTA suspended the Prop K funding for Phase 2 citing a loss of confidence in the TJPA after the Phase 1 cost overruns, pending lawsuits, and the closure of the transit center shortly after opening because of fractures discovered in two structural steel girders. The resolution called for an evaluation of TJPA's management and delivery of the transit center by the San Francisco Controller and a review of alternative oversight and governance models for delivery of the DTX by SFCTA staff.

In November, all design work and most Phase 2 management tasks were put on hold.

The Federal Transit Administration approved the Final SEIS on November 20, and a Notice of Availability was published in the Federal Register on December 7. The Final SEIR was certified by the TJPA Board of Directors on December 13, and a Notice of Determination was recorded on December 14.