**Independent Financial Advisor Report**
**To California High-Speed Rail Authority Regarding:**

# Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/ Marquardt Grade Separation

Project Finance Advisory Ltd.
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PFAL Project Finance Advisory Ltd.

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# Key Terms and Definitions

**AB 1889**: Assembly Bill No. 1889, Stats. 2016, ch. 774

**Authority:** California High-Speed Rail Authority

**BNSF:** BNSF Railway, owner of rail right-of-way at the Rosecrans/Marquardt Grade Separation Project site

**City of Santa Fe Springs:** Governmental agency with city limits around the RM Grade Separation Project and owner of roadway right-of-way

**Conventional Passenger Train Service**: Conventional rail service such as Metrolink and Amtrak service

**C&M Agreement:** Construction and Maintenance Agreement between Metro and BNSF, currently in draft form

**DB:** Design-Build

**DBB:** Design-Bid-Build

**FRA:** Federal Railroad Administration

**FTA:** Federal Transit Administration

**High-Speed Train Operation**: Authority high-speed train service as envisioned in the 2016 Business Plan and Ridership and Revenue Forecasting Technical Supporting Document to the 2016 Business Plan

**HSR:** High-Speed Rail

**Local Assistance:** As used in SB 1029 for use of funds for Item 2665-104-6043 of Section 2 of the Budget Act of 2012

**Los Angeles to Anaheim Segment:** The usable segment from Los Angeles Union Station and Anaheim Regional Transportation Intermodal Center on which lies the Rosecrans/Marquardt Grade Separation

**Metro:** Los Angeles County Metropolitan Transportation Authority, lead agency for implementation of the Rosecrans/Marquardt Grade Separation project

**RM Funding Plan:** Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation RM Funding Plan

**Phase 1:** California High-Speed Rail Program Phase 1, as defined in 2016 Business Plan, from San Francisco and Merced to Los Angeles and Anaheim

**PMFA:** Project Management and Funding Agreement between the Authority and Metro with terms and conditions governing the use of Prop 1A proceeds to be finalized and executed post Report

**Prop 1A:** Proposition 1A, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, (added by Stats. 2008, ch. 267 (AB 3034)), codified at Streets and Highways Code 2704, et seq.

**Report:** Independent report pursuant to California Streets and Highways Code 2704.08(d)(2) addressing the Rosecrans/Marquardt Grade Separation Project RM Funding Plan

**SB 1029:** Senate Bill No. 1029 Budget Act of 2012

**SoCal MOU:** Southern California Memorandum of Understanding between the Authority and seven partner agencies for the study, design, and construction of HSR in the Southern California Region

"**Operating and Maintenance Costs**," within the meaning of Streets and Highways Code section 2704.08, subdivision (d)(2)(D)) means: ongoing operating and maintenance costs, that is, the cost of running the trains and maintaining the infrastructure and rolling stock in a state of good repair. It does not include capital asset renewal (or lifecycle) costs, which is the cost of replacing or refurbishing worn out components at the end of their useful life.

"**The planned passenger service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy**" means: within a reasonable period of time after commencement of high-speed train operations on the usable segment, project revenues will reach an operating break-even point at which aggregate revenues up to that point in time equal Authority-borne operating and maintenance costs to that point in time and such revenues will continue to equal or exceed operating and maintenance costs thereafter.

"**Revenues**," within the meaning of Streets and Highways Code section 2704.08, subdivision (d)(2)(D)) means: fare box revenues and ancillary revenues. Fare box revenue is income from ticket sales. Ancillary revenues include other income the Authority may receive from sources related to the everyday business operations of

the high-speed rail, including but not limited to on-board sales (e.g., sales of foods or sundries), station-related revenues, advertising, and revenues from leases of excess or non-operating right-of-way parcels or areas, as well as areas above or below operating rights-of-way or of portions of property not currently being used as operating rights-of-way. Ancillary income does not include unexpected or “one time” events.

“**Suitable and ready for high-speed train operation**” means as stated in Assembly AB 1889 means: if the bond proceeds, as appropriated pursuant to Senate Bill 1029 of the 2011–12 Regular Session (Chapter 152 of the Statutes of 2012), are to be used for a capital cost for a project that would enable high-speed trains to operate immediately or after additional planned investments are made on the corridor or useable segment thereof and passenger train service providers will benefit from the project in the near-term.

# Disclaimer

Project Finance Advisory Limited ("PFAL") has performed an independent review of the Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation Project Funding Plan ("RM Funding Plan") as directed by the California High-Speed Rail Authority ("Authority") and as described in PFAL's executed task order with the Authority dated December 21, 2016.

This independent review was performed using documents and information provided by the Authority (listed in the Bibliography and body of this Report) and developed using currently accepted professional practices and procedures. PFAL, with the Authority's permission, has relied upon the accuracy and completeness of the documents and information provided by the Authority. The accuracy of the documents and information provided by the Authority and other publicly available material reviewed by PFAL in connection with this Report were reviewed for reasonableness but not independently verified by PFAL. PFAL does not assume responsibility for verifying such material.

This Report does not serve as an accounting audit. Furthermore, this Report should not be relied upon for any financing or investment decision. It is possible that there are other elements of risk associated with the RM Funding Plan beyond those presented in this Report.

Any financial estimates, analyses or other conclusions in the Report represent PFAL's professional opinion as to the general expectancy concerning events as of the evaluation date and are based solely upon the documents and information provided by the Authority and reviewed by PFAL. However, the accuracy of any financial estimate, analysis or other information set forth in the Report is dependent upon the occurrence of future events, which cannot be assured. Additionally, these estimates and analyses rely upon the assumptions contained therein, the accuracy of which remains subject to validation, further refinement and the occurrence of uncertain future events.

Estimates should not be construed as statements of fact. There may be differences between the projected and actual results because events and circumstances do not occur as expected.

The information and conclusions presented in this Report should be considered as a whole. Selecting portions of any individual conclusion without considering the analysis set forth in the Report as a whole may promote a misleading or incomplete view of the findings and methodologies used to obtain these findings.

# Executive Summary

Project Finance Advisory Limited ("PFAL") was appointed by the California High-Speed Rail Authority ("Authority") to provide independent consultant services following a competitive procurement process that concluded in December 2015. For the purposes of completing this report, the PFAL team includes sub-consultants David Evans and Associates, Inc. ("DEA"), Anrab Associates ("Anrab"), and The Elliott Consulting Group.

This independent consultant report ("Report") provides the PFAL-led team's review of the Los Angeles to Anaheim Usable Segment - Incremental Capital Investment (#1) Rosecrans/Marquardt Grade Separation Project Funding Plan ("RM Funding Plan") dated June 2017 developed by the Authority pursuant to SHC 2704.08(d)(1). The RM Funding Plan calls for $76.665 million of Proposition 1A ("Prop 1A") bond proceeds - as appropriated in Senate Bill ("SB") 1029 - for the funding of the Rosecrans/Marquardt Grade Separation Project ("RM Grade Separation Project") located in Santa Fe Springs, California.

PFAL's role is to fulfill the legislative requirement to perform an independent review of the RM Funding Plan to determine if it meets the criteria set forth in California Streets and Highways Code ("SHC") 2704.08(d)(2). Our findings, described in this report, address the following areas of investigation required under statute:

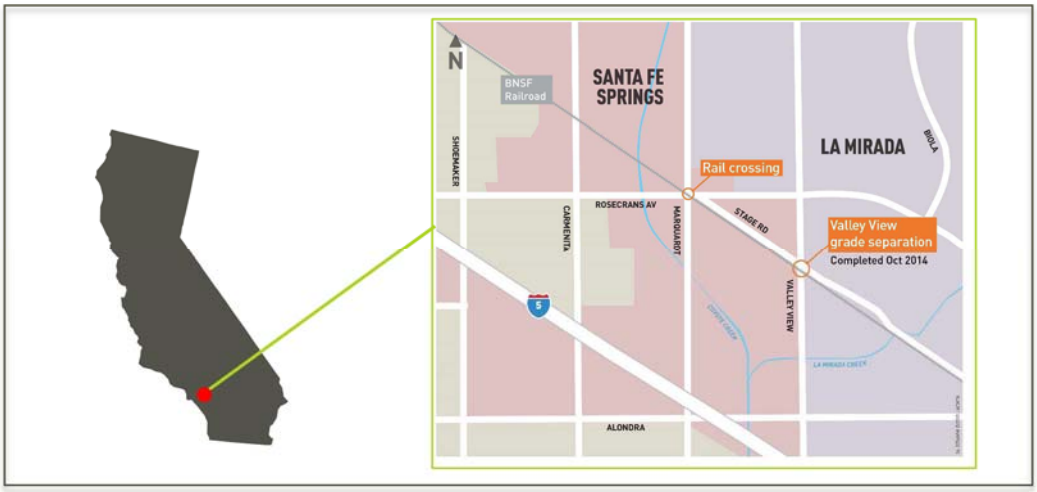
a) Construction of the corridor or usable segment thereof can be completed as proposed in the RM Funding Plan;
b) If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation;
c) Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service;
d) The planned passenger train service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy; and
e) An assessment of risk and the risk mitigation strategies proposed to be employed.

As an independent consultant, PFAL, and our team of sub-consultants, has a duty of care to California taxpayers to review the RM Funding Plan and to address the required indications listed above. In keeping with this responsibility, the analysis and conclusions in this Report are not prejudiced by any external interests; our conclusions are completely our own.

## RM Funding Plan Review and Analysis

The RM Funding Plan pertains to the Rosecrans/Marquardt Grade Separation Project ("RM Grade Separation Project"), located in Santa Fe Springs, California as seen in Figure 1.

*Figure 1: RM Grade Separation Project Location (source: Rosecrans/Marquardt Grade Separation Project Community Open House Meeting, March 1, 2016)*




The intersection of Rosecrans and Marquardt Avenues is currently an at-grade rail crossing on the Los Angeles to Anaheim corridor. The RM Grade Separation Project is intended to provide a new vehicle overpass at the intersection of Rosecrans and Marquardt Avenues to enable automobile traffic to travel over the rail corridor and provide unencumbered operations to the current passenger rail, current freight rail, and planned future high-speed rail operations. A more detailed project description is provided in Section 1.2.

The RM Funding Plan which is the subject of this report was developed by the Authority to satisfy the statutory requirements of SHC 2704.08(d)(1), comply with the appropriations in SB 1029, and fulfill the Authority's implementation plan as specified in the 2016 Business Plan. We summarize the Authority's positions described in the RM Funding Plan in Table 1.

*Table 1: RM Grade Separation Funding Plan Summary*

| | SHC 2704.08(d)(1) requirements | RM Funding Plan Summary |
|---|---|---|
| **a)** | Identification of the corridor or usable segment thereof, and the estimated full cost of constructing the corridor or usable segment thereof | The RM Grade Separation Project is situated on the Los Angeles to Anaheim Segment, which is defined as the Usable Segment in the RM Funding Plan. The Authority has identified the Los Angeles to Anaheim Segment as the defined Usable Segment and the RM Grade Separation as the focus of the RM Funding Plan reviewed by PFAL for this Report. |
| **b)** | Identification of the sources of all funds to be used and anticipated time of receipt thereof based on offered commitments by private parties, and authorizations, allocations, or other assurances received from governmental agencies | There are currently seven funding sources for the $155.3 million RM Grade Separation Project listed along with their anticipated time of receipt. |
| **c)** | Projected ridership and operating revenue report | The RM Funding Plan provides details of historical ridership for Metrolink and Amtrak service as well as description of the Authority's need to connect the Los Angeles to Anaheim segment to the Phase 1 System before high-speed train operations can begin as envisioned in the 2016 Business Plan's ridership and revenue forecasts. |
| **d)** | Construction cost projection including estimates of cost escalation during construction and appropriate reserves for contingencies | The total RM Grade Separation Project cost is estimated at $155.3 million, which includes a 20% construction contingency and a 10% unallocated contingency based on the 65% design level. |
| **e)** | A report describing any material changes from the plan submitted pursuant to subdivision (c) for this corridor or usable segment thereof | The Legislature made its appropriation of Prop 1A funds in SB 1029 without a SHC 2704.04(c) plan, thus there are no material changes to describe. |
| **f)** | A description of the terms and conditions associated with any agreement proposed to be entered into by the Authority and any other party for the construction or operation of passenger train service along the corridor or usable segment thereof | Summaries of the Southern California MOU, and desired terms for the Project Management and Funding Agreement ("PMFA") and draft Construction and Maintenance Agreements are provided. Key funding source agreements and terms are described in Appendix A of the RM Funding Plan. |

Besides the information included in the RM Funding Plan itself, PFAL requested, received, and reviewed a variety of additional documents and pieces of information including the 65% project design, specifications, project schedule, environmental documents, funding schedule, summary agreements, and risk assessment and register. Those documents were used in our analysis to form the conclusions described in this Report.

PFAL's review of the provided documentation and development of this Report, as it pertains to reviewing the RM Funding Plan against SHC 2704.08(d)(2), is limited in scope to the contents of the RM Funding Plan (and associated background information). Our role in preparing this Report is not to review the RM Funding Plan against SHC 2704.08(c) funding plans or the projects required to complete the overall high-speed rail system outlined in the 2016 Business Plan that were not included in the RM Funding Plan. This means:

- PFAL reviewed only the content of the RM Funding Plan, which that relates only to the RM Grade Separation Project and the ability of a high-speed train and associated electrification infrastructure (e.g., catenary) to fit within the envelope to be created under the RM Grade Separation Project. No other review or analysis of the Los Angeles to Anaheim segment (on which the RM Grade Separation Project is located) has been performed for the purposes of this Report.
- PFAL did not review the potential costs of the planned investments in the Los Angeles to Anaheim segment by the Authority such as the procurement of high-speed trainsets, electrification, signaling, or other capital projects required to connect the Los Angeles to Anaheim segment to the high-speed rail system because they are not included in the RM Funding Plan.
- Similarly, at the direction of the Authority, PFAL has not reviewed the projected high-speed rail revenues nor high-speed rail operations and maintenance cost implications for the Los Angeles to Anaheim segment as a stand-alone segment to form a view on potential operating subsidies in the future for high-speed rail operations because the Authority does not plan to run service in this corridor until it is connected to the rest of the high-speed rail system. However, PFAL has been tasked to review the projected Phase 1 revenues and operations and maintenance cost in a subsequent task order. Those conclusions will be summarized in a separate report to the Authority.

The approach PFAL implemented, further described in Section 1.1, to independently assess the criteria in SHC 2704.08(d)(2) is based on industry best practices, PFAL's previous roles of comparable assignments as independent financial advisor for the Federal Railroad Administration's Railroad Rehabilitation & Improvement Financing ("RRIF") program, the US Department of Transportation ("USDOT") and the USDOT's Transportation Infrastructure Finance and Innovation Act ("TIFIA") Program, as well as many other government agencies in the US and internationally.

The analysis and conclusions provided in this Report are based on our review of materials provided by the Authority. Our analysis and conclusions are based on our professional opinions and the opinions of sub-consultants to PFAL that specialize in passenger rail engineering and construction and complex transportation project

delivery. These subconsultants include David Evans and Associates, Inc., The Elliott Consulting Group, and Anrab Associates.

## Key Identified Risk Areas

This Report is based on the 65% level design documents made available to PFAL by the Authority during the course of PFAL's engagement for the review of the RM Funding Plan. Although we found the RM Grade Separation Project's 65% design, schedule and cost estimate generally follow best practices for a 65% design level, there are risk areas associated with ongoing planning of the project that can affect the outcome of the RM Grade Separation Project and the conclusions of this Report. These risk areas are detailed in Sections 2 and 6 and are summarized below:

**Risk Areas & Mitigation:**

- **Funding Risk Area:** Currently six of the seven funding sources which have been identified for the RM Grade Separation Project still require additional approval or finalized funding. The various approval stages required for roughly 80% of the RM Grade Separation Project funding introduces risks to the timing and certainty of the Project's sources of funds.

  **Mitigation:** Metro, the Authority, Caltrans, and/or the City of Santa Fe Springs are working to secure the necessary approvals for the remaining funds. At a 65% design level, it can be expected all funding sources are not committed. Viewed at a programmatic level, there is the ability to shift the sources and uses to match the evolving nature of the project. The Authority's proposed Project Management and Funding Agreement ("PFMA") includes mitigation measures to protect Prop 1A funds encumbered prior to construction in the event that funding sources are not secured for construction, but a decrease in project funding will require additional State or Federal[1] funds which could delay or jeopardize Metro's ability to fully fund the Project. Contingencies currently included in the budget should be sufficient for reasonable funding delays, but would not be sufficient if one or more sources is not secured.

- **Project Agreement Risk Area**: The PMFA and Construction and Maintenance Agreement ("C&M Agreement") are under negotiation, which are the main vehicles to protect the Authority's interest and deployment of

[1] Article V, Section 8 of the Draft Construction Agreement states Metro and BNSF are not responsible for costs above the stated project costs and will seek State and federal funds to pay for excess project costs.

Prop 1A funds. This report is based on the Outline of Desired Terms provided by the Authority on March 23, 2017, but these terms and conditions may change in the final agreement. Any deviations from the Outlines of Desired Terms and the final agreements will change the analysis and conclusions of this Report.

**Mitigation**: The Authority is working to negotiate and finalize the PMFA as well as link the PMFA to the final version of the C&M Agreement.

- **Guarantee of Operations Risk Area**: Despite contributing $76.665 million towards the RM Grade Separation Project, the Authority does not have an agreement to enable and guarantee high-speed rail operations through the project site, which is owned by BNSF. The necessary steps to guarantee operations in the corridor are under development by the Authority, but were not in place before the completion of this Report.

  **Mitigation**: The Authority provided a draft implementation approach dated February 1, 2017 demonstrating their plan to secure operations in the corridor. The approach includes completing environmental clearances, developing passenger rail and freight rail capacity analysis with stakeholders, developing a shared corridor operating plan with stakeholders, and agreeing to a common approach to signaling and communications with the multiple operators in the corridor.

- **Project Development Risk Area:** The RM Grade Separation Project is currently at 65% project design and will advance to a 100% project design following this Report. Our findings are based on the 65% project level design, which inherently is not complete and requires additional project development. Our review has determined the 65% project level development meets industry standards for design, cost estimation, and schedule for a design-bid-build ("DBB") procurement with the expectation of comprehensive development of the project management plan and risk management plan. PFAL noted the 65% level design incorporated the January 11, 2017 Geotechnical Report from Earth Mechanics, Inc. which included eleven borings, but existing buildings prevented access to a small portion of the RM Grade Separation Project site for further geotechnical investigation.

  **Mitigation:** Metro reported three additional borings will be performed and incorporated into the final design once the right-of-way access is available to identify any unknown underground conditions at the southwest corner of the RM Grade Separation Project site. The range of risk is currently captured in Metro's risk register for identification of utility relocations (fiber optics, oil line, communication, gas, and overhead electric) and the three additional borings. PFAL also noted the project management plan and risk management plan

are under development by Metro as the RM Grade Separation Project advances.

## Key Review Findings

The RM Funding Plan sets out to satisfy SHC 2704.08(d) for the commitment of $76.665 million of Prop 1A bond proceeds appropriated in SB 1029 to be used as a source of funding for the RM Grade Separation Project. The RM Funding Plan addresses each of the SHC 2704.08(d)(2) criteria. Table 2 summarizes PFAL's independent review of each component of SHC 2704.08(d)(2).

*Table 2: PFAL Summary Findings for SCH 2704.08(d)(2)*

| | SHC 2704.08(d)(2) requirements | Review Findings |
|---|---|---|
| **a)** | Construction of the corridor or usable segment thereof can be completed as proposed in the plan submitted pursuant to the RM Funding Plan | Our team has reviewed the documentation provided by the Authority in relation to the RM Grade Separation Project and concludes that that the RM Grade Separation Project, at the 65% project design level, meets industry standards for design, cost estimation, and schedule for a DBB procurement.<br><br>Notable exceptions to this are a more developed project management plan and risk management plan, which is currently under development by Metro.<br><br>It therefore can be reasonably concluded given the 20% construction contingency and 10% unallocated contingency and seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project could be completed as proposed in the RM Funding Plan. This conclusion is based on the 65% project design documents and subject to implementation of the environmental clearances and development of project management documents.<br><br>*See Section 2 for additional information.* |
| **b)** | If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation | The documents PFAL reviewed support the view that the RM Grade Separation Project is suitable and ready, as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers. It can also accommodate subsequent additional high-speed train capital improvement investments such as electrification, because the horizontal and vertical clearances under the RM Grade Separation Project are adequate for the planned speeds.<br><br>*See Section 3 for additional information.* |

| | SHC 2704.08(d)(2) requirements | Review Findings |
|---|---|---|
| **c)** | Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service | The RM Grade Separation Project will allow existing passenger service providers to operate during construction and following completion of the RM Grade Separation Project.<br><br>*See Section 4 for additional information.* |
| **d)** | The planned passenger train service to be provided by the Authority, or pursuant to its authority, will not require an operating subsidy | No high-speed rail service is contemplated as part of the RM Grade Separation scope until the Los Angeles to Anaheim corridor is connected to the rest of the Phase 1 system.<br><br>*See Section 5 for additional information.* |
| **e)** | An assessment of risk and the risk mitigation strategies proposed to be employed | Risks and risk mitigations were reviewed by risks to Metro and risks to the Authority as a funding partner. Though many of the RM Project Risks were identified by either Metro or the Authority, PFAL found:<br><br>• Metro has developed a preliminary risk register and risk management plan that will need to be updated as the RM Grade Separation Project design advances to ensure proper contingency levels are set and appropriate project controls are established and implemented.<br>• To mitigate the risks to Prop 1A funds, the Authority needs to execute the PMFA according to the proposed Terms and Conditions Memo to protect the use and potential repayment of Prop 1A Funds.<br><br>*See Section 6 for additional information.* |

# 1. RM Funding Plan Overview

## 1.1 PFAL REVIEW APPROACH & METHODOLOGY

At the direction of the Authority, PFAL initiated a review of the RM Funding Plan in accordance with a scope that aligns with the requirements of SHC 2704.08(d)(2) on December 21, 2016.

The RM Funding Plan was under development during the review process, and drafts of the RM Funding Plan were provided to PFAL on January 25, 2017, April 11, 2017, May 1, 2017, May 22, 2017 and a final draft provided May 31, 2017.

To verify the underlying assumptions and documents relied upon by the Authority to develop the RM Funding Plan, PFAL and its sub-consultants undertook an iterative process to pose questions and requests for clarification to the Authority with the Authority providing additional supporting information as needed.

To facilitate the review process, document and question requests were categorized by:

- Civil Works
- Capital Costs
- Construction Schedule
- Environmental
- Project Management
- Risk Management
- Legislation/Project Agreements
- Funding

The additional information requests included:

- Cost estimates
- Preliminary design and specifications
- Alternative Development Report
- Environmental permits and documentation
- RM Funding Plan sources and uses schedule
- Southern California Memorandum of Understanding
- Description and status of Authority Agreements with Metro
- Description of relevant LA Metro RM Grade Separation Project Agreements
- Third party agreements
- Real Estate Management Plan
- RM Grade Separation Project Management team and plan

- Risk report
- Description of the Authority and Metro PMFA (including oversight and review of the RM Grade Separation Project)

The information was provided to PFAL by the Authority as it became available. As a result, the information requests were met at various stages of the review. PFAL, and its sub-consultants, reviewed the material provided through the iterative information request described above for completeness, reasonableness based on industry experience, and conformance with industry best practices. If any additional clarification was required or risk areas identified, PFAL and their sub-consultants developed a register of questions to the Authority to seek explanation and clarification.

To expedite the process of clarifying open issues, PFAL and the Authority conducted two general funding plan meetings for PFAL to clarify open questions. The nature of the meetings was to facilitate the understanding of the RM Funding Plan in a factual manner that would aid PFAL's analysis and understanding.

Once the majority of supplemental information was provided and the draft RM Funding Plans were reviewed, the PFAL team, the Authority and Metro conducted a teleconference on May 9, 2017 to provide the Authority and Metro an opportunity to clarify potential risks areas identified by PFAL. The issues, resolutions and outcomes of the teleconference calls are incorporated into this Report.

The review of the documents and conversations as outlined above were limited to the scope of the RM Funding Plan for the purpose of this Report. PFAL's scope of work was to review the content of the RM Funding Plan and the RM Grade Separation Project's supporting documentation and information.

PFAL's independent report is structured to address the requirements of SHC 2704.08(d)(2) as set out in Table 3 below.

*Table 3: Report Structure to Address the Requirements of SHC 2704.08(d)(2)*

| Report Section | Approach |
|---|---|
| **Section 2** | Addresses requirements of SHC 2704.08(d)(2)(a) by reviewing the constructability of the RM Funding Plan by determining the reasonableness of the following items (separately and then in aggregate):<br>• procurement method<br>• construction schedule<br>• project management<br>• project cost<br>• funding |

| | |
|---|---|
| **Section 3** | Addresses requirements of SHC 2704.08(d)(2)(b). by reviewing the RM Grade Separation Project's ability to function as a foundation for HSR in the future while providing near-term benefit to other passenger rail services. |
| **Section 4** | Addresses requirements of SHC 2704.08(d)(2)(c) by reviewing the ability of passenger service providers to operate in the corridor after completion of the RM Grade Separation Project. |
| **Section 5** | Addresses requirements of SHC 2704.08(d)(2)(d). Because no stand alone high-speed rail service is contemplated by the Authority on the usable segment in this RM Funding Plan, PFAL is not providing an operating subsidy opinion in this Report. |
| **Section 6** | Addresses SHC 2704.08(d)(2)(e) by reviewing Metro's and the Authority's risk management plans for the RM Grade Separation Project. |

## 1.2 SUBJECT OF RM FUNDING PLAN

The RM Grade Separation Project is located in Santa Fe Springs, CA between Los Angeles Union Station and the Anaheim Regional Transportation Intermodal Center (Figure 2). The RM Grade Separation Project site is currently an at grade rail crossing at the intersection of Rosecrans Ave and Marquardt Ave. The railway corridor through the Rosecrans/Marquardt intersection is owned by BNSF and it serves approximately 60 freight trains and 52 passenger trains per day in addition to roughly 45,000 – 52,000 vehicles per day[2].

*Figure 2: RM Project Location (source: Community Open House Meeting, March 1, 2016)*


[2] Based on Los Angeles County Metropolitan Transportation Agency's January 18, 2017 Planning and Programming Committee Minutes - Attachment B and Metro's 2016 TIGER application.

The proposed RM Grade Separation Project is intended to result in a new vehicle offset overpass with connector roads that will allow automobile traffic to travel over the existing railway (Figure 3), which is expected to have safety and traffic flow improvements for both rail and vehicular traffic.

The overpass will raise Rosecrans Avenue over the existing railway and Marquardt Avenue. Marquardt Ave will no longer pass through the railway, and will go over the Rosecrans overpass via the connector roads (Figure 4). The completed RM Grade Separation Project will provide a grade separated crossing at the Rosecrans/Marquardt intersection. The project is currently at a 65% design which was completed in November 2016. The final 100% design is anticipated to be complete in February 2018. Metro is currently working to begin acquiring real estate for the Project and expects construction to begin the first quarter of 2020.

*Figure 3: RM Grade Separation Project Rendering*

*Figure 4: RM Grade Separation Project Overpass with Connector Roads Plan View*

Not included in the RM Grade Separation Project scope is the proposed Positive Train Control program, track improvements, electrification and other systems work or any other capital projects for high-speed train operations.

## 1.3 USE OF PROPOSITION 1A FUNDING

The 2016 Business Plan describes how the Authority intends to implement the Phase I system in Southern California, and advances the shared corridor approach from Los Angeles Union Station to Anaheim Regional Transportation Intermodal Center, which the Authority is designating as a usable segment as defined in Prop 1A. These funds were appropriated in SB 1029 as part of $500 million of Prop 1A proceeds for Southern California MOU project investments. AB 1889 further clarified the definition of suitable and ready for SB 1029 appropriations. Therefore, the Authority has determined that the use of $76.665 million Prop 1A funds as laid out in the RM Funding Plan for the RM Grade Separation Project is appropriate and considered in compliance with Prop 1A, the Southern California MOU, SB 1029 and AB 1889. Table 4 below shows the sources and uses of funds for the RM Grade Separation Project including the $76.665 million of Prop 1A proceeds.

*Table 4: RM Grade Separation Project Sources and Uses of Funds by Fiscal Year ($ 000s)*

| Sources | Prior to FY16/17 | FY16/17 | FY17/18 | FY18/19 | FY19/20 | FY20/21 | FY21/22 | Total |
|---|---|---|---|---|---|---|---|---|
| **Prop 1A**** | $ - | $ - | $18,693 | $16,472 | $20,000 | $19,500 | $2,000 | **$76,665** |
| **Measure R** | $2,558 | $4,500 | $6,000 | $4,442 | $5,500 | $3,500 | $ - | **$26,500** |
| **US DOT TIGER**** | $ - | $ - | $ - | $5,000 | $7,000 | $3,000 | $ - | **$15,000** |
| **Section 190**** | $ - | $ - | $7,500 | $7,500 | $ - | $ - | $ - | **$15,000** |
| **NHFP/CFIP**** | $ - | $ - | $135 | $6,500 | $1,500 | $ - | $ - | **$8,135** |
| **ITIP**** | $ - | $ - | $ - | $ - | $ - | $5,000 | $2,000 | **$7,000** |
| **BNSF**** | $ - | $ - | $ - | $ - | $7,000 | $ - | $ - | **$7,000** |
| **Total** | **$2,558** | **$4,500** | **$32,328** | **$39,914** | **$41,000** | **$31,000** | **$4,000** | **$155,300** |
| **Uses** | **Prior to FY16/17** | **FY16/17** | **FY17/18** | **FY18/19** | **FY19/20** | **FY20/21** | **FY21/22** | **Total** |
| **Project Approval / Environmental Document** | $750 | $925 | $295 | $ - | $ - | $ - | $ - | **$1,970** |
| **Plans, Specifications and Estimates** | $1,754 | $1,325 | $921 | $360 | $ - | $ - | $ - | **$4,360** |
| **Right of Way** | $54 | $2,250 | $31,112 | $31,669 | $ - | $ - | $ - | **$65,085** |
| **Construction** | $ - | $ - | $ - | $7,885 | $41,000 | $31,000 | $4,000 | **$83,885** |
| **Total** | **$2,558** | **$4,500** | **$32,328** | **$39,914** | **$41,000** | **$31,000** | **$4,000** | **$155,300** |

Notes:

1. These numbers are indicative, and may change depending on demand given there are not yearly maximum or minimum dollar thresholds set by the PMFA
2. Amounts shown in categories for uses of funds include professional services, contingency, and escalation.
3. ** Indicates that there are steps that remain to be completed to gain access to the funding source. Remaining approvals for project funding is further discussed in Section 2.8.
4. Source: Los Angeles County Metropolitan Transportation Agency. Rosecrans Marquardt Grade Separation Project Budget Cash Flow. May 22, 2017.

The discussion below focuses on the limits on the use of Prop 1A funds for the RM Grade Separation Project, additional information on the other sources of funds is in Section 2.8.

The requested $76.665 Prop 1A amount represents 50% of the $153.33 million eligible project costs that the Authority has determined are appropriate for funding (plans, specification, estimates; right-of-way; and construction) based on the 65% design cost estimate, which excludes $1.97 million of costs Metro has included that are not related to construction. As shown in Table 5, Prop 1A funds are anticipated to not exceed 50% of the eligible costs spent to date at any point in the project.

*Table 5: Percentage of Prop 1A dollars Compared to Eligible Costs Spent to Date*

| | Prior to FY16/17 | FY16/17 | FY17/18 | FY18/19 | FY19/20 | FY20/21 | FY21/22 | Total |
|---|---|---|---|---|---|---|---|---|
| **Prop 1A**** | $ - | $ - | $18,693 | $16,472 | $20,000 | $19,500 | $2,000 | **$76,665** |
| **Eligible Costs** | $1,808 | $3,575 | $32,033 | $39,914 | $41,000 | $31,000 | $4,000 | **$153,330** |
| **% of Prop 1A of Eligible Costs to Date** | **0%** | **0%** | **49.96%** | **45.47%** | **46.62%** | **50.00%** | **50.00%** | **50.00%** |

Though the maximum percentage of Prop 1A proceeds is capped by SHC 2704.08(a) at 50% of "total cost of construction", the maximum dollar amount is not. Therefore, the Authority, as required in SB 1029, is negotiating a Project Management and Funding Agreement ("PMFA") between Metro and the Authority to cap Prop 1A funding at $76.665 million. The PMFA Outline of Desired Basic Terms and Conditions restricts the use of Prop 1A funds to acquisition of land (pre-construction rights-of-way), construction, and construction-supporting items. It is possible, and contemplated by the Authority, that the use of Prop 1A funds for right-of-way may be encumbered prior to federal project level environmental clearances that are necessary before certain federal funds will be fully committed for expenditure.

The PMFA Outline of Desired Basic Terms and Conditions restricts use of Prop 1A funds being encumbered for construction until all other funds are fully committed. The Authority believes that this ensures that funds to that point are only spent on acquiring right-of-way that could be sold for market value, allowing Prop 1A funds to be recouped, should issues arise in finalizing the remaining funding commitments. While this is a reasonable approach, PFAL does not offer an opinion on the market value of the real estate being acquired nor its potential resale value.

PFAL interprets fully committed funding to indicate the funding sources have necessary board level approvals and executed funding agreements. As a result of the other funding source requirements (further described in Section 2.8), it is anticipated Prop 1A proceeds will not be used for construction-related costs until the RM Grade Separation Project obtains:

- NEPA clearance (a requirement of the TIGER funding agreement)
- Execution of the C&M Agreement (required for BNSF contributions)
- Approval of the Section 190 funding
- FHWA approval for the NHFP/CFIP funding
- CTC approval of the ITIP and NHFP/CFIP funding.

Metro and the Authority anticipate all other funding sources will be fully committed in 2018, ahead of the anticipated use of Prop 1A proceeds for construction activities.

# 2. Constructability

## 2.1 OVERVIEW

The PFAL team has completed a review of all requested documentation in relation to the 65% design level RM Grade Separation Project. In reviewing the constructability of the RM Grade Separation Project, the following key points were noted in our review of the RM Grade Separation Project documents:

- **Procurement Method:** The design-bid-build ("DBB") procurement method selected by Metro is a reasonable approach for delivering the RM Grade Separation Project given the design approvals required by BNSF. The DBB procurement approach places the onus on Metro for effective management of the RM Grade Separation Project. Effective project management depends as much on project leadership as it does on project management procedures. PFAL would expect that Metro assign a project manager with experience in managing in a multi-agency and private sector environment.
- **High Speed Rail Delivery Timeline:** High-speed rail service is expected to begin on the corridor in 2029. The RM Grade Separation Project, according to the Metro's 65% project design schedule, is planned to be completed in 2022, resulting in seven years of schedule float. With the exception of unlikely, extensive un-anticipated delays, we view the RM Grade Separation Project as highly likely to be delivered in time to enable high-speed rail operations. Furthermore, the 30% program contingency reported by Metro will help to mitigate any unplanned schedule delay costs.
- **Project Management Plan:** PFAL found the project management plan is largely focused on the design and engineering activities being undertaken by Biggs Cardosa Associates, Inc. and, as such, require further development for delivery of the RM project. However, it is common and expected these documents will advance as the project progresses. Metro has indicated that it will fully develop its project management plan that addresses items such as:
    - Metro's own organization to deliver the project
    - Project schedule
    - Cost management
    - The management of the procurement process
    - Contract management
    - Inter-agency coordination and the decision making process to avoid schedule delays and associated cost increases
    - Risk management

- Community relations during construction
- Project reporting

- **Geotechnical Investigations:** The geotechnical report for the 65% design is based on eleven borings from the January 11, 2017 Geotechnical Report by Earth Mechanics Inc. Metro reported that three additional borings will be incorporated into future designs once the right-of-way access is available to identify any unknown underground conditions at the southwest corner of the RM Grade Separation Project site. The range of risk is currently captured in Metro's risk register for identification of utility relocations (fiber optics, oil line, communications, gas, and overhead electric) and the three additional borings. PFAL was unable to verify a hazardous materials investigation was performed for the RM Grade Separation Project site.
- **Risk Identification and Quantification:** Risk mitigation strategies were identified to achieve a successful and on budget delivery, but will require further development, pro-active execution of the risk management plan, and a more comprehensive project management plan to successfully implement the mitigation strategies. As the risks register advances, PFAL expects Metro's risk quantification will be advanced and tied back to the RM Grade Separation Project's budget contingency.
- **Budget Contingency:** The quantification of the budget contingency at this stage appears to be based standard project practice on an allocated and un-allocated basis. PFAL would typically expect various project cost elements to vary as the project becomes more defined while contingency decreases as the design and construction issues are further developed and risks more completely defined. At the current 65% project design level a 20% construction contingency and 10% unallocated contingency is reasonable.
- **Delivery Cost Estimate:** We consider the cost estimate for the RM Grade Separation Project, including the unallocated contingency allowances to be sufficient given the application of the 20% construction and 10% unallocated contingency.
- **Funding:** Six of the seven RM Grade Separation Project funding sources still require additional approvals, which introduces additional risk to the timing of funds and certainty of complete project funding. Metro, the Authority, Caltrans, and/or the City of Santa Fe Springs are working to secure the necessary approvals for the remaining funds prior to construction activities.

This constructability evaluation of the RM Funding Plan only relates to the civil engineering and construction related elements of the RM Grade Separation Project. No evaluation of the constructability of the Los Angeles to Anaheim Segment was conducted at this time. Nor were track and systems such as signals, power and communications evaluated in this review as they are not included in the RM Grade Separation Project and RM Funding Plan.

**Conclusion**

Our review indicates that the RM Grade Separation Project appears to meet industry standards for a 65% design, cost estimation, and schedule for a design-bid-build procurement with the exception of hazardous material investigation, Real Estate Acquisition Plan, and development of the project management and risk management plans; all of which Metro is currently addressing for the next design stage. It therefore can be reasonably concluded at the 65% design level, a 20% construction cost contingency and 10% unallocated contingency that Metro reports it will continue to carry through final design, along with seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project can be completed as proposed in the RM Funding Plan. More confidence is expected to be gained as the design advances to the 100% design level and all project management documents become fully developed, but at the 65% design level there does not appear to be any “show stoppers” for the construction of this project given the points raised above and further detailed in the following sections.

## 2.2 PROCUREMENT

PFAL reviewed the procurement methodology to evaluate the applicability of the delivery method for the project to meet the intended schedule and budget. PFAL reviewed the RM Grade Separation Project 65% specifications developed by Biggs Cardosa Associates, Inc. dated November 18, 2016, Metro’s Project Delivery Selection Quick Reference Guide, and the RM Grade Separation Project schedule dated May 2, 2017 and confirmed the documents, construction advertisement milestone dates and proposed 100% design are in line with the proposed DBB procurement method.

The DBB procurement was chosen by Metro to reduce risks associated with the limited space available on the project site, the need for design agreements with multiple stakeholders, and BNSF requirement for design review as owner of the corridor. The decision to go with a DBB was further based on Metro’s Project Delivery Selection Procedure that is based on size, schedule, stakeholders, right-of-way, permits, contract type, risk, Metro resources and environmental permitting. For those reasons, PFAL team views the DBB approach as adequate and appropriate to deliver the RM Grade Separation Project.

The 65% specifications developed by Biggs Cardosa and Associates, Inc. dated November 18, 2016 are typical of 65% design level and include the majority of key items expected in a DBB specification, though some contractual terms such as insurance requirements are not yet defined. The undefined terms such as insurance

requirements will be defined as the RM Grade Separation Project advances to 100% design.

Though PFAL did not receive the requested past audits findings in time for this report, Metro's past experience and the requirements of the $15 million TIGER grant funding to follow procurement best practices should indicate Metro's ability to deliver the RM Grade Separation Project as a DBB assuming a project manager with experience managing multi-agency and private sector stakeholders is appointed.

## 2.3 SCHEDULE

The RM Grade Separation Project summary level schedule dated May 2, 2017 was provided for review and analysis. PFAL's review of the 65% design level summary schedule indicated the schedule effectively identifies critical path items based off the schedule's logic, sequence and activities. Our assessment is that project completion is highly likely to be achieved prior to high-speed rail operations in 2029 based on the planned schedule.

The RM Grade Separation Project completion date of 2022 has significant schedule float with respect to the commencement for high-speed rail operations in 2029. Therefore, schedule delay risk is unlikely to be significant concern. Schedule delay costs is the larger risk factor, not timing, for constructability of the RM Grade Separation Project. Costs associated with schedule delays can affect the overall project and should fully be quantified and mitigated in the project risk register. Utilities design and relocation activities, federal environmental clearance (a Finding of No Significant Impact is targeted by Metro) necessary for federal funding, right-of-way, and remaining negotiations of third party agreements are the relevant schedule drivers at the 65% design level. These factors are identified in the risk register but not quantified for their potential impact to the project cost. Upfront project delays such as federal environmental clearance and right-of-way acquisition can generate the highest cost impact. Best practice would dictate that Metro quantify the potential project delay costs in the risk register to gain greater confidence in the proposed cost contingency and escalation budget.

Based on reviewed information, we believe that management of the schedule risks such as utilities design and relocation activities, environmental clearance, right of way, and remaining negotiations of third party agreements for the RM Grade Separation Project as indicated within a fully developed risk management plan and register combined with the appropriate allocation of schedule float should support on time and within budget project performance. Best practice dictates that Metro should fully quantify schedule delay related costs, and confirm that adequate schedule contingency cost is allocated to the project, but an overall 30% contingency carried through final design should be reasonable to mitigate the schedule risk related cost.

## 2.4 PROJECT MANAGEMENT

The PFAL team reviewed the Final Project Management Plan ("PMP") for the RM Grade Separation Project dated February 6, 2016, Risk Management Plan dated October 20, 2016, Risk Register dated May 15, 2017, Draft Construction & Management Agreement dated March 17, 2017, and the PMFA Outline of Desired Basic Terms and Conditions dated March 23, 2017. In general, PFAL found the project management documents focused on the design and engineering activities currently underway and lagged in project delivery. However, it is expected these documents will advance as the project design progresses. Because the PMP will evolve as the RM Grade Separation Project develops, it should be considered a living document and not be considered final until the project nears completion. PFAL concludes that the following expected enhancement by Metro of theses project management documents can lead to successful completion of the RM Grade Separation project:

- Though some project organization information was provided, identification of Metro's organization to deliver the project, showing the direct and indirect project reporting structure, should be developed
- Development of a "Safety and Security" section that should reference a stand-alone Safety and Security Management Plan ("SSMP")
- Project schedule management – PFAL found the schedule in the PMP did not match the stand-alone project schedule dated May 17, 2017 provided for review. The PMP should be updated when new schedules are developed
- Cost Management, including procedures for early identification
- Procurement process management
- Contract management and change order procedures
- Document control
- Third party agreements, inter-agency coordination and the decision-making process to avoid schedule delays and associated cost increases
- Risk management
- Quality Management, the PMP should include or reference detailed quality management plans, processes and procedures for both design and construction

The RM Grade Separation Project, as a TIGER project, will also be subject to the requirements and assessment by the FTA. Those requirements include quality, safety and security, third party agreements, oversight criteria and the use of project management industry best practices.

A risk management plan ("RMP") provided by Metro, dated October 20, 2016, is lean and generic as compared to the level of project development, and should be further enhanced. The risk register provided by Metro, dated May 15, 2017, does capture

significant risks. Right-of-way risk is appropriately identified as a very high-risk item and as such, the development of a Real Estate Acquisition Plan ("RAMP") would suffice as another prudent management activity.

Force Account planning will be especially critical in the areas of design and construction that encroaches or occurs within the BNSF envelopes. Because BNSF should already be actively involved with design development, it is recommended that a Force Account Plan ("FAP") be developed and implemented. The Draft C&M Agreement provided by Metro does include substantial agreement information between Metro and BNSF. It includes BNSF flagging costs on a daily basis which are folded into the structural costs of the project. Because details on how the BNSF forces total costs were generated, it appears unclear whether sufficient funds have been allocated for BNSF forces throughout the project duration. Furthermore, BNSF appears to defer all design risks to Metro, which can be acceptable if BNSF reviews the design documents and provides comments as contemplated in the draft C&M. Finally, BNSF administrative costs are not specified in the agreement, potential unknown costs should be captured and quantified in the risk register and Metro should validate that sufficient contingency is allocated in the project budget.

## 2.5 ENVIRONMENTAL CLEARANCE

State environmental clearance is complete for the RM Grade Separation Project, but federal environmental clearance is still necessary for final commitment of federal funds. Metro is currently in the Environmental Assessment ("EA") phase for federal environmental clearance and expects to receive the issuance of a federal Finding of No Significant Impact ("FONSI") in December 2017. The RMP currently identifies potentially significant cost impacts if federal environmental clearance is not obtained for federal funding. PFAL noted the current mitigation listed in the risk register is to obtain a Categorical Exclusion ("CE"), which should be updated to match the risks and potential impacts of the current environmental process of obtaining an EA as opposed to a CE.

However, any schedule delay impacts associated with federal environmental clearance for the RM Grade Separation Project should not affect the high-speed operations planned to commence in 2029. Metro has indicated they believe sufficient cost contingency is incorporated into the project plan to compensate for these environmental risks. Cost impacts such as those caused by environmental clearance delays can be substantial due to materials and labor escalation that must be carried for the full project cost over the delay duration. PFAL believe that the 30% total program contingency Metro reports to be carrying on this DBB project should be sufficient to cover additional costs.

## 2.6 DESIGN

The 65% design package provided included plans, profiles, specifications, and other relevant design documents. The design package is complete and comprehensive as compared to projects developed to a similar level. The following findings and risks are developed as part of the design review process to determine constructability of the RM Grade Separation Project.

The grade separation overpass does not meet final minimum vertical clearance of 27 feet for a new structure based on California High-Speed Train Project Design Criteria. It does meet minimum vertical clearance of 24 feet for an existing structure for V < 125 mph. The Construction and Maintenance Agreement between Metro and BNSF specifies the clearances that have been agreed upon by the two entities. PFAL has been advised the Authority reviewed the 65% design and confirmed the design variance to accommodate the specified lower clearance is acceptable and workable.

As the design advances, the design elements should be captured and updated in the RMP and risk register to fully quantify project costs. The 20% construction contingency combined with the 10% unallocated contingency that Metro reports will be allocated to the project subsequent to final designs is likely to be sufficient to cover the total costs. However, as the design advances and additional information is obtained, full quantification of design risk costs should be correlated to the amount of contingency to provide increased confidence in this conclusion.

## 2.7 CONSTRUCTION COST

A 65% cost estimate summary dated December 15, 2016 was provided for review and summarized in Table 6. The 65% cost estimate includes a $155.3 million cost estimate for the RM Grade Separation Project. The 65% level estimate is in the Standard Cost Category ("SCC") format as typical for a 65% design level and appears reasonable provided that right-of-way, regulatory, utilities, and unforeseen site conditions risks are managed and reasonably mitigated. The 65% cost basis documentation dated January 4, 2017 provided by Metro provides a sound foundation and meets industry standards to estimate project costs on projects similar to the RM Grade Separation Project. Civil elements, utility relocation, demolition and right of way, and other components are captured in the cost basis. Many of the higher risk elements are incorporated into the risk register to support effective monitoring and mitigation.

Various cost items such as roadway, right of way, and others define a 20% construction contingency application with 10% unallocated contingency. These contingency levels should be adequate when combined an effective risk management process.

*Table 6: RM Grade Separation 65% Cost Estimate*

| Item Description | RM Grade Separation Cost |
|---|---|
| **Construction Costs (excluding construction contingency)** | $46,245,436 |
| **Construction Contingency** | $9,249,087 |
| **Metro Programs** | $2,774,726 |
| **Soft Costs** | $19,700,992 |
| **Unallocated Contingency** | $7,798,000 |
| **Escalation** | $10,764,670 |
| **ROW** | $47,500,000 |
| **ROW Contingency** | $11,307,835 |
| **Total** | **$155,300,000** |

*Note: The cost estimate does not include any financing costs*

## 2.8 PROJECT FUNDING

PFAL evaluated the availability of funds for the planning and construction as part of our analysis to determine the constructability of the RM Grade Separation Project. Metro's risk register ranked funding as the second highest risk to the RM Grade Separation Project, and PFAL concurs that this is a significant risk area.

Funding for the $155.3 million RM Grade Separation Project is a risk area due to the fact six of the seven identified funding sources require additional approval, finalized funding agreements or National Environmental Policy Act ("NEPA") clearance. At a 65% design level, it can be expected funds are not fully committed due to the programmatic nature of a 65% design level project. Due to the lack of committed funding, the timing and availability of the sources of funds is uncertain and may change as the project progresses. Therefore, PFAL considered the various approvals necessary for the funding sources, potential impact of a delay in funding, and potential impact of changes in the funding program for the RM Grade Separation Project.

Of the identified funding sources, only the $26.5 million Measure R funds are currently committed and available. Metro's Planning and Programming Committee approved the use of $35 million in Measure R funds towards BNSF grade separation

projects on September 18, 2013[3] and subsequently approved the $26.5 million in Measure R for the RM Grade Separation Project on January 18, 2017[4]. Of the remaining funding sources, the following agreements and requirements are under development by either Metro, the Authority, Caltrans or City of Santa Fe Springs:

- Prop 1A Bond Proceeds are subject to Authority Board approval of the RM Funding Plan, approval from the Department of Finance, and execution of the PMFA.
- The $15 million US Department of Transportation's ("US DOT") Transportation Investment Generating Economic Recovery ("TIGER") grant awarded in 2016 is still subject to NEPA clearance and finalizing grant agreement between Metro and the US DOT for the RM Grade Separation Project. NEPA clearance is expected in December 2017 and the finalized grant agreement is expected in 2018.
- NHFP/CFIP expected funding is dependent on completing the NHFP application (expected in the summer of 2017), approval by the FHWA of the State's application, followed by approval from the CTC to allocate the requested funds to the RM Grade Separation Project. NHFP/CFIP fund approval is anticipated in March 2018.
- ITIP expected funding requires the reprogramming of funds approved in the 2016 ITIP. CTC action is required to reprogram the funds and is expected in 2017.
- Section 190 requires the submission of an application led by City of Santa Fe Springs for the CTC to allocate the anticipated FY17/18 and FY18/19 Section 190 funds to the RM Grade Separation Project.
- BNSF's required funding contribution to be formalized in the Construction and Maintenance Agreements expected in summer of 2017. As noted in the RM Funding Plan, Metro will advance BNSF's share beyond the in-kind services and BNSF will repay Metro following completion of the of the RM Grade Separation Project according to Article V, Section 8(a) of the Draft C&M Agreement.

Due to the programmatic nature of a 65% design level project, it is likely the yearly cash flow presented in Table 4 will vary depending on actual project needs and funding requirements as the project advances into construction. PFAL noted the $7.5 million Section 190 funds programed for FY17/18 and FY18/19 will be an

[3] Los Angeles County Metropolitan Transportation Agency. Planning and Programming Committee Attachment B. September 18, 2013.
[4] Los Angeles County Metropolitan Transportation Agency. Planning and Programming Committee Attachment B. January 18, 2017.

unprecedented annual amount for Section 190 funds[5]. PFAL reviewed Section 190 annual fund recipient projects for the last 29 years, checked the status of the Section 190 funds with the CTC (the allocating body for those funds), and reviewed the relevant statute to determine if Section 190 funds could be made available as described in the RM Funding Plan. Though the RM Grade Separation is the highest ranked project and eligible for allocation up to $15 million in total, of the past three highest ranked projects, none has received more than $5 million per fiscal year. Of the remaining projects, only has received more than $5 million in one fiscal year. In any event, this Section 190 funds issue (i.e., whether only $5 million a year is allowed, or the $7.5 million the RM Funding Plan assumes) is only one of cash flow timing since the RM Grade Separation Project is eligible for $15 million. If the $15 million Section 190 funds are spread over three years instead of the assumed two years, other funding sources could be accelerated to compensate, as noted below.

Given the criticality funding required in FY18/19 to commence construction, PFAL contemplated two possible scenarios if eligible project costs increase despite cost mitigations developed by Metro (described in Section 2.7) or availability of funding is delayed in FY17/18 and FY18/19 based on precedent allocations of Section 190 funding.

If one or more project funding sources are delayed or reduced, the available sources of funds will need to be accelerated or spending pushed to later fiscal years. Since the PMFA Outline of Desired Basic Terms and Conditions does not specify limits of the total $76.665 million Prop 1A proceeds for right-of-way acquisition versus construction activities, it is possible more Prop 1A proceeds than outlined in Table 4 could be used for right-of-way acquisition (although the entire amount of Prop 1A funds would be capped at the $76.665 million total). Any acceleration of Prop 1A funds will be limited to the 50% restriction of project dollars spent at that point in time and early spending will only go toward right-of-way, which can be sold and funds recouped if the project does not go forward. In this scenario, other sources (such as Measure R) could also be accelerated to make up any funding delays.

As described in Section 6, Metro is developing a risk register and project management plan to ensure the project is delivered as proposed. In the unexpected event that costs exceed the proposed amounts, there currently are no plans to secure additional funding. Article V, Section 8(a) of the Draft C&M Agreement

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[5] Caltrans Funding Allocations for Section 190 (source: http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Safety/Rail/Rail_Crossings/Sec190Projects_201606.xls)

reiterates the need to pursue additional funding sources from the State, federal government or other sources, in the case of cost overruns beyond the project contingency but falls short of requiring Metro or BNSF to fund excess project costs over the current project cost estimate. Prop 1A funds will not be eligible to cover additional funding gaps due to the anticipated PMFA funding limit of $76.665 million and 50% restriction of project dollars spent. This highlights the need to execute the PMFA to protect the use of Prop 1A funds in the event of cost overruns, further addressed in Section 6.

# 3. Suitable and Ready for High-Speed Rail

As stated in Assembly AB ("AB") 1889, "Suitable and ready for high-speed train operation" means: "if the bond proceeds, as appropriated pursuant to Senate Bill 1029 of the 2011–12 Regular Session (Chapter 152 of the Statutes of 2012), are to be used for a capital cost for a project that would enable high-speed trains to operate immediately or after additional planned investments are made on the corridor or useable segment thereof and passenger train service providers will benefit from the project in the near-term."

The RM Funding Plan, the 65% design, 65% specifications, and associated documents provided by the Authority support the view the RM Grade Separation Project is suitable and ready as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers, such as Metro and Amtrak, by improving safety and reducing rail and roadway delays. The RM Grade Separation Project can also accommodate high-speed train capital improvement investments such as electrification to enable for high-speed train operations planned to commence in 2029.

The Authority has reviewed and approved the RM Grade Separation's 65% design for vertical and horizontal clearances to accommodate planned investments by the Authority to provide High-Speed Train Operations. The March 23, 2017 PMFA Outline of Desired Basic Terms and Conditions further outlines Metro's obligation to certify the vertical and horizontal clearances for the RM Grade Separation Project through substantial completion based on the Authority's review of the 65% design. Though some risks are associated with the tighter clearances associated with the RM Grade Separation Project, the RM Grade Separation Project's clearances should provide sufficient clearance for the Authority's planned high-speed train operations.

The RM Grade Separation Project will provide the initial step for the Authority's planned investment in the corridor as outlined in the 2016 Business Plan. The RM Grade Separation Project alone is not sufficient for high-speed train operations, but it is an element of the Authority's development plan to provide high-speed train operations in the Los Angeles to Anaheim corridor. The planned investments, not addressed in this RM Funding Plan, required for high-speed train operations in the corridor include construction of electrification and systems for the Los Angeles to Anaheim corridor. Once the planned investments are completed, the Authority should be able to run high-speed trains under the RM Grade Separation. Because the RM Funding Plan only pertains to the RM Grade Separation Project and not the proposed high-speed train operations in the Los Angeles to Anaheim corridor, detailed operating schedules were not reviewed or contemplated. However, the Authority

plans to develop a detailed shared corridor operating plan as part of future operating agreements. This may also include a finalized approach for signaling and communications with the other passenger train and freight operators.

In the near-term, the RM Grade Separation Project can provide improved safety and service to Metro and Amtrak due to grade separating automobile traffic from passenger train operations.

This conclusion is based on the 65% design and specification provided to PFAL, and is subject to change depending on the final specifications and designs of the RM project, environmental clearance for the Phase 1 high-speed rail system, future design of high-speed rail elements and a finalized shared corridor operating plan.

# 4. Passenger Service Compatibility

Based on the material PFAL reviewed to confirm the vertical and horizontal clearances, there are no expected impediments to the current passenger train service provided by Metro and Amtrak along the corridor due to the RM Grade Separation Project upon completion of the project. Some interruptions may occur during construction, but those construction interruptions will be limited to the construction phase and mitigated by the proposed precast construction method.

# 5. Operating Subsidy

Any high-speed train service contemplated by the Authority is outside the scope of the RM Funding Plan. Section C of the RM Funding Plan indicates the Authority will not operate stand-alone High-Speed Train Service in the Los Angeles to Anaheim Corridor until the Phase 1 system, as defined in the Authority's 2016 Business Plan, is completed. The Authority estimates the Phase 1 system will be operational by 2029. This is also reflected in the Ridership and Revenue Forecasting Technical Supporting Document to the 2016 Business Plan which assumes High-Speed Train Service in the corridor after the Silicon Valley to Central Valley Line is completed and subsequently extended to Los Angeles and Anaheim as contemplated in the complete Phase 1 service.

Since no standalone Authority High-Speed Train Service will be provided in the corridor as defined in the RM Funding Plan, no operating subsidy is contemplated by the Authority associated with the RM Grade Separation Project. We understand that passenger rail service provided by Metro and Amtrak in the corridor will not result in any unreimbursed operating or maintenance cost to the Authority.

# 6. Risks and Risk Mitigation Strategies

The risks and risk mitigation strategies for the RM Grade Separation Project can be categorized by risks to Metro and risks to the State of California via Proposition 1A contributions. This section will provide an analysis of the risk mitigations proposed by Metro and the Authority to address the identified risks associated with the RM Grade Separation RM Funding Plan.

## 6.1 METRO RISKS AND RISK MITIGATION STRATEGIES

Metro's Risk Management plan is very general, providing a level of detail commensurate with a planning level of project development. The RMP should be further developed and detailed to address risk mitigation activities and responsibilities appropriate for entry to final design. An updated risk register was provided to PFAL on May 15, 2017 for review. Metro further detailed risk items to address specific design, construction, and agency agreement issues, as well as procurement-related risks. Although many of the major risks are captured, we would expect to see a much more comprehensive risk register that captures a wider spectrum or project risks that correlates to a 65% design level. Metro should quantify risk impacts and should reconcile them to equal a total potential amount substantially less than the 30% of total contingency amount that Metro reports will be allocated to the project at 100% design. The risk items identified in the RMP and risk register are expected to be adequate given updated and ongoing management by Metro.

Metro has identified the high-risk areas requiring additional attention through project completion. Included is cost management, schedule management, design management, right-of way management, procurement management, and regulatory management. Risk-informed contingency assessment has not been completed for the components of the project budget, such as real estate, construction management services, and schedule. It is anticipated that a streamlined version of the risk-based cost approach would be applied to all aspects of the RM Project and that the resulting contingency values would be presented in cost monitoring reports. This approach would facilitate a more robust contingency management and evaluation process that could inform more precise cost estimates.

If the risk-informed process is fully implemented, and if the risks are properly managed moving forward, we assess that the RM Project can be completed within project schedule and budget. Similar federally funded projects may undergo similar Risk Assessments that are typically more robust. It is good management practice to manage risks prudently on complex projects of all sizes. Assuming Metro allocated

30% contingency at 100% design as indicated, the project budget is likely to be adequate to cover the identified project risks. Proper documentation and analysis would however increase confidence. The 30% contingency amount reported by Metro at final design is substantially more than that typically allocated on similar projects. Most allocate between 5% and 10% construction contingency once final design is completed. With a similar amount allocated to soft costs, depending upon project complexity.

## 6.2 PROP 1A RISKS AND RISK MITIGATION

The main mitigation of risk to Prop 1A funds and the State is through the PMFA. The Authority is currently negotiating the final terms of the PMFA, thus this analysis is based on the March 23, 2017 Outline of Desired Basic Terms and Conditions. Key terms identified in the Outline of Desired Basic Terms and Conditions include:

- **Maximum dollar cap:** the PMFA will cap the maximum dollar amount. The March 23, 2017 terms state the maximum amount is $76.885 million, which matches the current RM Funding Plan requested amount.
- **Vertical and horizontal clearance certification:** The Authority has approved the 65% design vertical and horizontal clearances for planned investments in the corridor and future high-speed rail operations. The PFMA request Metro to certify at waypoints to ensure these clearances are maintained. The waypoints have not been enumerated in the Outline of Desired Basic Terms and Conditions, but will need to be specified in the final agreement.
- **No guaranteed right to operate in corridor or access for future high-speed rail capital improvements:** The PMFA is an agreement between the Authority and Metro, and does not include BNSF, the owner of the railway. The Authority plans to develop a detailed shared corridor operating plan as part of future operating agreements, including a finalized approach for signaling and communications with the other passenger train and freight operators, but no operating rights for the Authority in the railway at the RM Grade Separation Project site will be guaranteed. But, the RM Grade Separation Project will not impede the Authority's planned investments or operations in the corridor.
- **Dedicated use of Prop 1A Funds:** The PMFA indicates right-of-way and construction activities are the only acceptable use of Prop 1A funds. It does not restrict the amount of Prop 1A funds used for either item.
- **Risk mitigation for right-of-way Prop 1A proceeds in project default:** The PMFA Outline of Desired Basic Terms and Conditions will require Metro to sell land acquired for the project to pay back Prop 1A bond proceeds if the

project does not proceed. This is a worst-case scenario protection in the event the RM Grade Separation Project is unable to be completed.

- **Fair Market Value Resale of Real Property:** The PMFA Outline of Desired Basic Terms and Conditions states real property will be sold at market value, per the California Constitution, and proceeds used to repay the used Prop 1A funds to the Authority. Sale of real property in a distressed scenario or in a volatile market may mean that 100% of expended funds may not be recovered. As a result, there is a risk all Prop 1A funds may not be repaid depending on the market value of the property.
- **Risk mitigation for construction Prop 1A proceeds in project default:** The PMFA Outline of Desired Basic Terms and Conditions requires all funding sources be committed "in a manner that is reasonably certain" before any Prop 1A construction dollars are used for the RM Grade Separation Project. Though there is no repayment mechanism if Prop 1A construction dollars are used and the project is not completed, the requirement for all funding to be in place indicates all environmental clearances, final project funding agreements, and project agreements are in place as well as the 100% design and cost contingencies which further reduce the project risks.

PFAL noted the current version of the PMFA Outline of Desired Basic Terms and Conditions did not address the C&M Agreement, nor will the Authority be party to the Construction & Maintenance Agreement. The Authority indicated the two documents will be linked to provide assurances for the design certification and construction, but no further details were provided.

# 7. Conclusions

Having completed our independent review of the RM Funding Plan, PFAL's conclusions are as follows:

| | SHC 2704.08(d)(2) requirements | Review Findings |
|---|---|---|
| **a)** | Construction of the corridor or usable segment thereof can be completed as proposed in the plan submitted pursuant to the RM Funding Plan | Our team has reviewed the documentation provided by the Authority in relation to the RM Grade Separation Project and concludes that that the RM Grade Separation Project, at the 65% project design level, meets industry standards for design, cost estimation, and schedule for a DBB procurement.<br><br>Notable exceptions to this are a more developed project management plan and risk management plan, which is currently under development by Metro.<br><br>It therefore can be reasonably concluded given the 20% construction contingency and 10% unallocated contingency and seven years of schedule float between the proposed RM Grade Separation Project completion date in 2022 and when the Authority plans to use the corridor in 2029, the RM Grade Separation Project could be completed as proposed in the RM Funding Plan. This conclusion is based on the 65% project design documents and subject to implementation of the environmental clearances and development of project management documents. |
| **b)** | If so completed, the corridor or usable segment thereof would be suitable and ready for high-speed train operation | The documents PFAL reviewed support the view that the RM Grade Separation Project is suitable and ready, as defined in AB 1889. The RM Grade Separation Project will generate near-term benefit for passenger rail providers. It can also accommodate subsequent additional high-speed train capital improvement investments such as electrification, because the horizontal and vertical clearances under the RM Grade Separation Project are adequate for the planned speeds. |
| **c)** | Upon completion, one or more passenger service providers can begin using the tracks or stations for passenger train service | The RM Grade Separation Project will allow existing passenger service providers to operate during construction and following completion of the RM Grade Separation Project. |
| **d)** | The planned passenger train service to be provided by the Authority, or pursuant to its | No high-speed rail service is contemplated as part of the RM Grade Separation scope until the Los Angeles to Anaheim corridor is connected to the rest of the Phase 1 system. |

| | SHC 2704.08(d)(2) requirements | Review Findings |
|---|---|---|
| | authority, will not require an operating subsidy | |
| **e)** | An assessment of risk and the risk mitigation strategies proposed to be employed | Risks and risk mitigations were reviewed by risks to Metro and risks to the Authority as a funding partner. Though many of the RM Project Risks were identified by either Metro or the Authority, PFAL found:<br>• Metro has developed a preliminary risk register and risk management plan that will need to be updated as the RM Grade Separation Project design advances to ensure proper contingency levels are set and appropriate project controls are established and implemented.<br>• To mitigate the risks to Prop 1A funds, the Authority needs to execute the PMFA according to the proposed Terms and Conditions Memo to protect the use and potential repayment of Prop 1A Funds. |

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16A Funston Avenue
The Presidio of San Francisco
San Francisco, CA 94129
415 580 5200
www.pfalimited.com