CITY OF LOS ANGELES
INTER-DEPARTMENTAL MEMORANDUM

Date: June 14, 2017

To: The Honorable City Council
c/o City Clerk, Room 395, City Hall
Attention: Honorable Mike Bonin, Chair, Transportation Committee

From: Richard Llewellyn, Jr., Interim City Administrative Officer
City Administrative Officer

Gary Lee Moore, City Engineer
Bureau of Engineering

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Department of Transportation

Subject: **REPORT BACK ON PRELIMINARY ENGINEERING, PROJECT SCHEDULE, AND NEW INDEPENDENT COST ESTIMATE FOR THE LOS ANGELES STREETCAR PROJECT (C.F. 11-0329-S12)**

I. SUMMARY

On June 19, 2015, the City Council authorized the Los Angeles Streetcar, Inc. (LASI) to competitively contract with a firm to conduct preliminary engineering (30%) using existing funds under LASI's control. It also directed the City Engineer, in coordination with the Los Angeles Department of Transportation (LADOT), to provide ongoing regular peer review of the engineering work, establish a project cost estimate target of $250 million or less inasmuch as the project is financially constrained and this amount was the maximum project cost eligible for federal Small Starts grant funding at the time, complete a final review of the engineering work, and report to Council on whether or not the preliminary engineering documents were formally accepted by the City Engineer, along with any major findings from the plans. In addition, the City Council authorized the City Engineer to hire a consultant to complete a third party cost estimate at the completion of the 30% preliminary engineering (C.F. 11-0329-S12).

As requested, this report back contains project updates on the preliminary engineering (30%) prepared by Mott MacDonald (MM), a new independent cost estimate prepared by Kimley-Horn (K-H), and a revised project schedule for the proposed Los Angeles Streetcar Project (Project) pursuant to Council instructions. The new project cost estimate is $274.2 million excluding finance charges or $290.7 million including finance charges. Overall the three most recent cost estimates prepared have resulted in a similar range from $278.0 million to $290.7 million, including finance charges. It is important to note that the Los Angeles Department of Water and Power (LADWP) has provided an all-inclusive cost estimate of $45 million for power relocation and the City Engineer is working to establish a memorandum of understanding based on the LADWP not-to-exceed cost estimate. Lastly, opportunities for cost savings estimated up to $20.8 million are identified in the report which include savings from the replacement of LADWP water infrastructure, a reduction in the number of station stops, a reduction in vehicle technical requirements, the leveraging of the use of the Maintenance and Storage Facility, and

integration with other street projects along the route all of which will be further explored as the project moves forward.

Currently the Request for Proposals for the Vehicle Procurement, the Final Design and the Construction Manager/General Contractor (CM/GC) (RFPs) are being prepared and anticipated to be ready for release, pending the City Administrative Officer's (CAO) report back on the financial plan.

The CAO released an alternative funding strategy in August 2016 which explored the feasibility of a public-private partnership (P3) to help the City address the projected construction funding shortfall. This report is pending review by the Council (C.F. No. 11-0329-S13). In the interim, it is recommended that additional funding options be explored prior to utilizing the P3 option. It should be noted that a P3 would follow a different procurement path than the CM/GC procurement method approved by the City Council in the Project Management Plan (PMP) (C.F. 11-0329-S7). It should also be noted that the schedule and cost may change using a P3 model.

Subsequent to the release of the P3 report, the passage of Measure M included $200 million in funding (2015 dollars $) for this project, with a ground breaking date of 2053. The timing of the release of these funds is critical to meeting the project schedule.

II. RECOMMENDATIONS

That the City Council:

1. RECEIVE and FILE the attached document entitled "Downtown Los Angeles Streetcar Project Independent Cost Estimate", dated June 01, 2017, prepared by Kimley-Horn (K-H) under contract to the Los Angeles Department of Public Works, Bureau of Engineering (BOE). (Attachment No. 1)
2. RECEIVE and FILE the attached document entitled "Los Angeles Streetcar Project Schedule", dated March 28, 2017, revising the project anticipated revenue start date from December 2020 to July 2021 under the CM/GC method.
3. AUTHORIZE the City Administrative Officer (CAO) to review the Community Facility District Tax (CFD) as a funding source for scheduled activities critical to proceeding with the Streetcar Project in fiscal year 2017/2018.
4. AUTHORIZE and INSTRUCT the LADOT to submit to the Metropolitan Transportation Authority Board a request on behalf of the City of Los Angeles to accelerate Measure M funding and / or additional funding sources to offset the project cost.
5. DIRECT the CAO, in coordination with the LADOT, and the Bureau of Engineering to report back within 30 days with a financing plan.

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III. KEY FINDINGS - PRELIMINARY ENGINEERING / PROJECT SCHEDULE / INDEPENDENT COST ESTIMATE

A. PRELIMINARY ENGINEERING (30% DESIGN)

Mott MacDonald (MM) was contracted by LASI to conduct preliminary engineering (30% Design) for the proposed Project, with ongoing regular peer reviews by the City Engineer, in coordination with the LADOT. The 30% Design documents were developed using accepted engineering practices; and with input from experiences gleaned from existing operating streetcar systems. The work complies with all applicable codes and standards. Based on the review of the final 30% Design, the City Engineer and the LADOT find the 30% Design acceptable, and recommends that the City accept the 30% Design submitted by MM for the Project.

The following provides a summary of the selected key findings from MM's 30% Design:

- The four Project alignment alternatives identified in the Environmental Documents were defined to a 30% level of design.
- The LA Streetcar is proposed to be within the existing roadway by creating a fixed transit guideway that will allow for a shared traffic condition.
- The Streetcar is designed to permit Streetcar operation up to the posted road speeds of 25 mph, with exception of the segment along Figueroa Street between 7th Street and 11th Street, where the posted speed limit is 30 mph. Based on the traffic modeling speed study simulation, the LA Streetcar will achieve an average operating speed (including stops) of approximately 6 mph during the afternoon peak hours.
- The Streetcar planned headways or time between streetcars at any particular stop are 7 minutes during peak hours, and 10 -15 minutes off-peak headways.

- The Project will require 6 vehicles for daily operations plus 2 additional spare vehicles.
- Vehicles will be articulated modern streetcars capable of operating in mixed-flow traffic that meet the California Public Utilities Commission (CPUC) requirements unless a waiver can be obtained. The waiver provides a competitive procurement opportunity for multiple vehicle manufacturers.
- The vehicles will be designed with low floors to be compliant with the American with Disabilities Act Accessibility Guidelines (ADAAG).
- The project is developed to comply with Federal Transit Administration's Buy America requirements to be eligible for Small Starts Funding.
- The Project was designed to be consistent with the LA Downtown Design Guide and Street Standards, The City of Los Angeles' Green Streets and Green Alleys Design Guidelines Standards, the National Association of City Transportation Officials(NACTO) Street Design Guide, and the Mobility Plan 2035.
- The Project design was coordinated with other major projects such as the Figueroa Corridor Streetscape (MyFig), the 7th Street Streetscape, and the Broadway Streetscape Master Plan.
- Utility protection and relocations were designed according to each interested agency's design criteria, standards and requirements, particularly the Los Angeles Department of Water and Power (LADWP) & the City's Bureau of Sanitation (BOS). It is expected that private utilities will provide design for work on their utilities.
- A subsurface investigation program using radar tomography was conducted on about 50% of the Project alignment. The study confirmed the need for radar tomography of the remainder of the Project alignment, in addition to potholing, in order to minimize potential unforeseen conditions. Completion of this activity could change the cost estimate.
- The LADWP increased the power utility conflict envelope to 21'-4" from 14'-0" which they had previously required. This new requirement resulted in doubling the number of power vaults needing to be relocated as depicted in the 30% design. The LADWP reconsidered their decision and reduced the number of vaults needing to be relocated after completion of 30% design. The Independent Cost Estimate takes this change into consideration.
- The Traction Electrification System (TES) provides electrical power to the Streetcars by means of the Traction Power Substations (TPSS) and Overhead Contact Systems (OCS).
- The four-identified alternative Maintenance Storage Facility (MSF) sites were designed to 15% design level. The MSF is approximately 19,500 square feet in floor area, and will house all maintenance, administration, and operations functions.
- The MSF site located at the west side of Broadway between 2nd and 3rd Streets, approximately 57,719 square feet in total lot area, was selected as the preferred site and the site at the southeast corner of 11th and Olive, approximately 51,197 square feet in total lot area, as the alternate. These two sites allow easy access to mainline and streetcar route for daily maintenance and storage capabilities.
- The Streetcar design considered as priority the safety of bicyclists during the operation of the Streetcar, assuring the best operation strategy that accommodates a multimodal transportation system strategies. Potential mitigation measures include bicycle signage, pavement delineation, a two-stage turn queue box, a bike box, bicycle signal phasing, alternate bicycle routes, bicycle education and the potential use of a flange filler where bikes cross the track, as a possible mitigation.
- The train control system was designed to provide the interface between Streetcar and traffic signals in mixed traffic operation. It will provide route setting and control at connecting points between the mainline and Streetcar layovers, and the MSF.

- The interface between the Streetcar and traffic signals will be via a Train-to-Wayside Communication (TWC) system. Embedded TWC detector loops will be placed in advance of designed intersections for transit signal priority (TSP) for turning vehicles.

B. PROJECT SCHEDULE

AECOM has provided a revised, updated LA Streetcar project schedule (Attachment No. 2). According to AECOM, the project is anticipated to start service in July 2021 which is revised from the previous revenue service date of December 2020. This revised project schedule (Attachment No. 2) was used by K-H to help develop the new Independent Cost Estimate. The estimated July 2021 project service start date by AECOM is based on the following assumptions:

- The project continues to be implemented under the CM/GC delivery method.
- Local funding will need to be identified /allocated for final project engineering and construction in summer 2017 for the following purposes:
  - $45 M for acquisition of the Maintenance and Storage Facility (MSF) and Traction Power Substation properties
    - October 2017: Council authority needed to negotiate purchase of property
    - January 2018: Council authority needed to purchase property
  - $4.3 M to begin Final Design and CM/GC design reviews
    - July 2017: Council authority required to release RFPs
    - November 2017: Council authority required to award contract
  - $9 M to award Streetcar vehicle contract
    - July 2017: Council authority required to release RFPs
    - April 2018: Council authority required to award contract
  - $4 M to begin LADWP power vault relocations
- Identification of a funding plan in the Summer of 2017.
- The FTA will award a $100 million Small Starts grant for the project in the Fall of 2018.
- The National Environmental Protection Act – Environmental Assessment process is anticipated to be complete by summer 2017.
- Design activities will begin in late 2017.
- Right of Way Acquisition for the Maintenance and Storage Facility and for the Traction Power Substations (TPSS) will be initiated by late 2017.

If pursued, under the P3 or Design-Build-Finance-Operate and Maintain (DBFOM) deliverymodel the project completion will be in Mid-2022.

C. INDEPENDENT COST ESTIMATE

Kimley-Horn (K-H) was contracted by BOE to prepare an independent cost estimate based on the preliminary engineering documents for the proposed LA Streetcar project. This cost estimate is based on the locally preferred alternative (LPA) route (7th Street Alignment without the Grand Ave extension) approved by the City Council and contained in the final environmental document for the Project.

The following provides a summary of the selected key findings from the K-H Independent Cost Estimate report:

- The total estimated project cost excluding finance charges is $274.2 million.
- The total estimated project cost including finance charges is $290.7 million.
- The K-H cost estimate is a preliminary Class C cost estimate based on a preliminary engineering level of design (30%), and includes an overall 25.8% project contingency.
- The cost estimate has been escalated based on the completion of construction and the start of service to the public in July 2021 using the CM/GC project delivery.
- MM and K-H have identified a number of potential cost reduction strategies ($20.9 M) that the City will evaluate during design as the project moves forward.
- The Grand Avenue Extension cost including finance charges is approximately $15.6 million.

IV. DISCUSSION

The Discussion section below provides additional details regarding the Preliminary Engineering, Project Schedule and Independent Cost Estimate and the status of the project.

A. PRELIMINARY ENGINEERING (30% DESIGN)

The 30% preliminary engineering documents are comprehensive in scope and contain a number of conservative assumptions that should result in favorable adjustments to the cost estimate in subsequent phases of design. The benefit of typical modern streetcar design methodology is the ability to be flexible with rigid rail-transit design criteria to fit highly constrained urban environments. There will be opportunity as design advances for additional value engineering.

The 30% preliminary engineering documents were reviewed by subject matter experts and stake holders from the BOE, LADOT, LASI, and Shiels Obletz Johnsen (SOJ) who are under contract to LASI. They were also reviewed by the Consultant Project Manager team (CPM) including AECOM, LTK, and ALTA who is under contract to LADOT. The review comments provided to the designer had been substantially addressed or acknowledged at the time of the final submittal.

Several categories of outstanding items remaining for resolution by the final designer, and are summarized below.

1. Outstanding Design Issues

Comments on the track alignment and other major cost drivers should be emphasized at the next stage of design, and during the transition to the final designer. Below are major themes that emerged from the 30% design reviews and responses to date:

a. Track and Roadway
   - The preliminary design meets the intent of the 30% engineering effort, but detailed grading design in coordination with various stakeholders and to meet technical requirements will drive decisions and cost as the design advances. The track horizontal and vertical alignments need to meet track criteria appropriate for a maximum number of modern streetcar vehicle types, while interfacing with parking lanes, bus routes, stop

platforms, bicycle crossings, street cross slopes, pedestrian/ADA requirements, curb ramps, street crowns, stop platforms, drainage, and other considerations in a complex urban environment.

- Appropriate sight distance for turning vehicles, especially at streetcar stops/canopies, will need to be resolved during final design.

b. Systems
   - It is understood that the traction power supply requirements for this system are greater due to the transformers required because of the high-voltage power distribution system in downtown. The size of the traction power substations is significantly larger than typical streetcar substations in other cities but that may be a unique feature of the downtown Los Angeles power system.
   - OCS pole placement in relationship to utility conflicts, ADA considerations, basements, etc., will be a major issue during final design. Wherever possible, building attachments and "joint-use" poles (such as traffic signals or street lights) should be pursued to save cost and reduce visual and physical obstructions within the right-of-way.
   - In general, the preliminary design for the traction power system components is greater in capacity and scale than comparable streetcar systems. This scope premium appears to be driven in part by the CPUC standards that are based on using a Siemens S70 vehicle. If a variance is approved by the CPUC, a number of vehicles could be used, which could reduce the necessity for light-rail-sized systems components.

c. Utilities
   - The 30% package meets the intent of the preliminary design contract, but ongoing negotiations and data collection including additional radar tomography/ground penetrating radar and potholing will continue to make this a major cost driver, and could result in revisions in the final design. Since relocations have been identified but not designed, in many cases secondary and tertiary conflicts will occur. Because of this, third party utility relocations by private franchises or by LADWP need to be closely coordinated within the constraints of the project schedule.

d. Maintenance & Storage Facility (MSF)
   - The MSF design is at an "advanced 15% design level" at two potential sites. Facility building sizes and programming requirements have been adjusted based on comments at the time of the 15% submittal. From a technical perspective, the 11th St. site between Olive and Hill Streets is less desirable due to the lack of a "yard lead" within the facility. Both the design and the right-of-way requirement for the facility appear to be conservative at this stage of design. This is appropriate given the uncertainty of the availability of specific sites.

B. PROJECT SCHEDULE

1. *Revised Project Schedule*

The updated LA Streetcar project schedule (Attachment No. 2) indicates the project is anticipated to start service in July 2021 which is revised from the previous revenue service date of December 2020.

It should be noted that the estimated Project schedule is fluid and subject to additional revisions throughout the life of the design and construction of the Project. Further, the estimated schedule assumes that the Project will be awarded federal Small Starts grant funding and that all

funding shortfalls will be resolved within 2017-18. As previously discussed, AECOM estimated that any delays to the Project schedule will result in a project cost increase of approximately $8 million to $10 million per year. Similarly, expediting the Project schedule would result in a similar level of Project cost savings.

C. INDEPENDENT COST ESTIMATE

Attachment No. 1 of this report is a document entitled "Independent Cost Estimate & Cost Methodology Report", dated June 1, 2017, prepared by the consultant Kimley-Horn. K-H was hired by BOE to provide an independent cost estimate based on the preliminary engineering (30% Design) prepared by MM, who were under contract to LASI for the Streetcar project independently from previous estimates for the Project.

The updated new cost estimate including finance charges developed by K-H shows a total project cost of $290.7 million to design and construct the streetcar using the locally preferred alternative (LPA) 7th St. route approved by the City Council and defined in the Project Development (PD) documentation provided to the FTA. The K-H cost estimate cited above is in escalated dollars to 2021 year of expenditure (YOE). As part of its report, K-H also prepared a cost estimate for potential inclusion of the Grand Avenue extension, if funding permits. This cost estimate of $306.3 Million is slightly higher than the LPA route. See the Attachment No. 3 for a map of the streetcar LPA route and the potential Grand Avenue extension.

1. Utility Relocation Costs

K-H has estimated that utility relocation costs, one of the largest line items in the Streetcar cost estimate, will be $57.9 million. As discussed below, this cost estimate is less than the $69.3 million for utility relocation costs completed in 2015 by AECOM. Mott MacDonald was able to refine the utility relocation cost estimate based on extensive discussions with the City's public utility agencies including LADWP and the Department of Public Works. In addition, based on the clarifications provided by the California Public Utility Commission, LADWP on March 14, 2017 proposed an estimated not to exceed cost of $45 million to install all new required electrical structures and associated conduits, including "hot conduit intercepts, hot conduit coring", and all associated cable relocation into and out of new existing conduits and structures. The cost estimate prepared by K-H includes the LADWP proposed amount.

All work to-date has relied on existing utility design plans and our subsurface investigation program using radar tomography that was conducted on about 50% of the Project alignment. The study confirmed the need for radar tomography of the remainder of the Project alignment, in addition to potholing, to minimize potential unforeseen conditions. The existence of unidentified utilities along the Streetcar route may increase the total construction cost estimate. With the exception of the LADWP power and the private utility relocations, the majority of the utility relocation work would be constructed by Streetcar construction contractor staff. For the utility scope of work, an overall contingency of 35% (25% allocated and 10% unallocated) was assumed to address these types of possible cost increases.

2. *Comparison to Previous Cost Estimates*

The new cost estimate by K-H is based on the MM preliminary engineering at the 30% design level as compared to the earlier cost estimate that was prepared by the AECOM that was based on a 5% design level. At 30% Design, a significantly greater amount of research and design were performed by MM. As illustrated in the table below, the new Kimley-Horn cost estimate for the 7th Street alignment without the Grand Ave extension (LPA) route is approximately $9 million more than the AECOM estimate prepared for the project in 2015. The AECOM cost estimates was based on the general contractor performing all utility relocation work and on the revenue service start date of December 2020. However, the cost estimate prepared by Kimley-Horn for the LPA route is based on the revenue service start date of July 2021 and most importantly all required electrical vaults will be relocated by LADWP, based on an all-inclusive cost proposal provided by LADWP in March 2017.

Streetcar Cost Estimates (Millions of Dollars)

7th Street w/o Grand Ave. Extension	**AECOM (1)(2) June 2015**	**Kimley-Horn (3) May 2017**
Base Project Costs*	$157.00	$172.40
Utility Costs	$69.30	$57.90
Facility Land Costs	$39.90	$43.90
Project Cost	$266.20	$274.20
Finance Charges	**$15.50**	**$16.50**
Total Project Cost including Finance Charges	$281.70	$290.70

** Base Project Costs include track and facility construction, vehicle and land acquisition, and professional services unrelated to utility relocation/replacement.*

Notes:
(1) Revenue service start date in December 2020.
(2) Includes relocation of 68 electrical Vaults by Contractor
(3) Revenue service start date in July 2021 and includes relocation of 83 electrical vaults by the LADWP

3. *Identified Opportunities for Cost Savings*

The preliminary engineering, the independent cost estimating, and consultant project management teams have identified the following cost saving amounts, stated in Year Of Expenditure Dollars (YOE $) and include unallocated contingency and finance charges.

a. LADWP Water Facilities: BOE and LADOT are working on an agreement with LADWP that would require LADWP to replace any of their utilities over 85 years old that would need to be replaced a part of the Los Angeles Streetcar project. If this agreement is made final, we estimate the following potential cost savings in total project cost savings (YOE$) based on the current level of design: - $3,000,000
b. Station Stops: There are currently a total of 23 Streetcar stops (primarily single-sided one-direction platforms). Typical modern streetcar practice is to have a stop every 2-3 city blocks. Based on this, the number of stops for the LA Streetcar could be reduced to 18-20 stops and still meet this standard, as well as reduce travel times. The estimated potential cost savings of -$275,000 per station that may be eliminated resulting in total project cost savings(YOE$): -$825,000 to - $1,375,000
c. Competitive Vehicle Procurement: Increasing competition in the vehicle procurement by reducing specific requirements such as CPUC and Buy America within the technical specification could have a positive impact on bid prices. If there were more vehicle options, the estimated potential cost savings: -$1,500,000.
d. Maintenance and Storage Facility (MSF) Development Rights: Leveraging the value of the MSF site by trading development rights (such as transfer of floor area rights or TFAR) or soliciting a joint development with the Streetcar facilities occupying the lower floors of a larger mixed-use development may reduce what is now a significant right-of-way (land) acquisition cost for the facility. The current estimate assumes full acquisition; however, if joint development opportunities are further explored, the estimated cost savings: -$15,000,000.
e. Several elements of the LA Streetcar will potentially be completed as part of other ongoing projects such as the MyFig, the Grand/Wilshire/7th St Improvements, and the Broadway Streetscape. During the final design phase, these completed elements will be identified and removed from the project scope of work.

4. *Optional Vehicle Onboard Storage System*

Vehicle onboard energy storage systems to allow wireless operation where feasible have been identified as an option in the LA Streetcar Vehicle Estimate that was provided by LTK consultant to AECOM based on the technical specifications prepared for the LA Streetcar's Vehicle Procurement RFP. The following potential project cost amounts are given in YOE $ and include unallocated contingency and finance charges: +$2,616,720.

5. *Additional Cost Drivers Identified in the Design Reviews*

1. Track Design
a. The 30% estimate includes a thickened, reinforced track slab for the full length of the

project. The cost/benefit of this conservative assumption, intended to allow for streetcar operations to continue while performing future underground utility work, should be revisited during final design. Unreinforced, plain concrete track slabs are common in recent modern streetcar projects. The selection of a rail type other than 115RE may also reduce the track slab thickness.

b. A restraining rail was not included in the 30% design or cost estimate. Restraining rails are typically provided for 115RE "tee" rail projects to provide additional derailment protection, and to better protect the flangeway around tight curves. The selection of a "groove" rail section such as girder or block rail will eliminate this requirement.
c. Related to the above, it is the opinion of the reviewers that the rail selection for this project should be reconsidered during final design.
d. Street reconstruction and other work should be minimized outside of the track guideway. This can be refined with detailed grading analysis during final design.
e. A significant number of track drains are included in the 30% design. Track drains are high maintenance, and are only necessary at low point "sags" to drain the flangeway and to drain switch machine boxes. In some low-rainfall locations (Tucson Streetcar, El Paso Streetcar, for example), track flangeway drains have been omitted from the project altogether.
f. The cost versus benefit of the 7th Street turnaround tracks should be considered. The relatively short length of the entire line might make this operational flexibility of limited value.

2. Federal Transit Administration (FTA): Federal funding which will lead to continuing FTA and Project Management Oversight Consultant (PMOC) management of the delivery of the project will have a variety of cost and schedule implications. Also, related "Buy America" procurement requirements will reduce competition and affect a variety of procurement decisions especially related to the vehicle, track, and systems components. These cost implications are currently included in the 30% estimate.

D. AVAILABLE FUNDING AND FINANCIAL PLAN

It is recommended that LADOT be authorized to submit to the Metropolitan Transportation Authority Board a request on behalf of the City of Los Angeles to accelerate Measure M funding and / or additional funding sources to offset the project cost. The CAO in coordination with the City Engineer and LADOT, will report back within 30 days with a financing plan.

Approved Funding Available

Other Funds

Approximately $14.3 million has been made available to date to support Streetcar pre-development work such as environmental, preliminary engineering, project management, and preparation of Vehicle Procurement, Final Design, and CM/GC Contractor RFPs. This amount includes approximately $10 million in funding from the former CRA/LA, $1 million in City Measure R local return funds and $3.3 million in transfers of floor-area rights (TFAR) funds approved by the City Council.

Community Facilities District (CFD)

In December 2012, the voters approved the Mello-Roos (CFD property tax assessment). The City has authority to issue up to $85 million in bonds and to levy the taxes. . The terms of the CFD require that three conditions be met before the issuance of bonds. The CAO is seeking further guidance from outside Bond Counsel as to whether or not these conditions have been reasonably satisfied. Refer to the Background Section of this report for further detail.

Anticipated Funding

FTA Small Starts Grant

The LA Streetcar entered into the Project Development (PD) process with the FTA for a federal Small Starts capital grant for the project on February 28, 2014. On September 9, 2016, the City Council authorized the LADOT to submit a FTA Small Starts Grant Application for the LA Streetcar project (C.F. 11-0329-S14). Based on feedback received, the LADOT is currently preparing a new FTA Small Starts Grant Application which will be ready for submittal in summer 2017. The FTA Small Starts grant funding program establishes a maximum total project cost cap of $300 million. The new Streetcar cost estimate of $290.7 million places the project under the $300 million Small Starts cap by $9.3 million. Prior to submitting the FTA Small Starts Grant Application, the City needs to demonstrate to the FTA how the City plans to fund the project without a funding shortfall before requesting the FTA to evaluate and rate the project for potential grant funding.

Assuming an FTA grant is secured, the project will have a projected $91.4 million shortfall for the Streetcar project (Locally Preferred Alternative route). The table below summarizes the projected funding shortfall.

Projected Streetcar Funding Shortfall

CRA/LA, Measure R, TFAR Funds (1)	CFD Funds	FTA Small Starts Grant (2)	Total Funding	Total Project Cost (3)	Funding Shortfall
$14.3M	$85 M	$100.0 M	$199.3 M	$ 290.7 M	**-$ 91.4 M**

Notes:

(1) -Project funding ($10 million in funding from the former CRA / LA, $1 million in City Measure R local return funds and 3.3 million in TFAR approved by the City Council and currently being expended to support Streetcar pre-development work such as engineering and project management services.

(2)- FTA Small Starts grant application will be submitted in September 2017 for approval, and funds may be made available starting October 2018 on a reimbursement basis.

(3)- Project Cost including Finance Charges.

Measure M

The Los Angeles County Measure M approved on November 8, 2016 includes $200 million in funding (2015 dollars $) for this project, with a groundbreaking date of 2053. Measure M

includes a provision that allows funding to be accelerated with an amendment and approval by a 2/3's vote of the Metro Board. As part of the financial plan to fund the construction shortfall, it is anticipated that Measure M funds be explored and incorporated into the financial plan.

Prior to the passage of Measure M, the CAO explored potential P3 opportunities to address the projected construction shortfall primarily with the use of the CFD and the FTA Small Starts Grant. The financial advisor, Ernst and Young Infrastructure Advisors (EYIA) estimated that an annual availability payment for 30 years is $19.90 million under a Design-Build-Finance-Operate and Maintain (DBFOM) model. Approximately $7.10 million annually is the unfunded portion which required further exploration. This estimate was based on a project cost estimate of $266.2 million.

V. BACKGROUND

The Project would construct and operate a Streetcar route in Downtown Los Angeles, along a loop up to 3.8 miles. The Project route would run along 1st Street, Broadway, 11th Street, Figueroa Street, 7th Street, and Hill Street. A Grand Avenue Extension is considered as a design option, west on 1st Street from Hill Street, then south on Grand Avenue to a terminal point north of 2nd Street (Attachment No. 3). The Streetcar would travel through several neighborhoods or districts within the Central City Community Plan area of the City including: Civic Center, Bunker Hill, Historic Core, Jewelry District, Financial District, South Park, Fashion District, and LA Live and the Convention Center. Electrically powered Streetcars would traverse the alignment with stops every 2-3 blocks. Traction Power substations (TPSS) would supply power to the Streetcar's overhead contact systems (OCS).

Based on further development of the Project design, the number and placement of passenger boarding platforms and traction power substations are subject to final determination. A Maintenance and Storage Facility (MSF) site would also be constructed as part of the Project.

A. Environmental Review

The City Council, at its meeting on July 9, 2010, authorized the Community Redevelopment Agency (CRA) to enter into an agreement with Metro to prepare the federally required National Environmental Protection Act (NEPA) Environmental Assessment (EA) and California Environmental Quality Act (CEQA) documentation for the Streetcar (CF 10-0937). As part of this agreement, Metro was also tasked with preparing the planned FTA Small Starts grant application for the Streetcar. Regarding the environmental review process, the City's Department of Public Works, Bureau of Engineering (BOE) is the Lead Agency under CEQA. The FTA and LADOT are the Lead Agencies under NEPA.

The Draft Environmental Impact Report (EIR) was released to the public on June 24, 2016. After a 45-day review, several additional comments were received from individuals in the neighboring community, public agencies, local businesses, and from non-profit organizations. A Public Hearing was held to receive input on the Draft EIR findings from the Public on July 12, 2016 at the Ron Deaton Auditorium. The review period ended on August 8, 2016. The Final EIR was published on October 24, 2016, approved by the Planning and Land Use Management Committee (PLUM) on

November 22, 2016 and the City Council on November 29, 2017 (C.F. No. EIR-16-011-BE). The City Council approved the Project as described in the Final EIR and the following project alternatives:

a. Locally Preferred Alternative (LPA) - 7th Street Alignment without Grand Avenue Extension (Alternative 3).
b. Inclusion of Grand Avenue Extension (Alternative 2) as an optional addition to the project, as long as it can be built within the budgetary constraints and requirements.
c. Maintenance and Storage Facility (MSF) site located at the west side of Broadway between 2nd and 3rd Streets (EIR Site 4).
d. MSF site located at the southeast corner of 11th and Olive (EIR Site 2) as alternate to EIR Site 4, should ultimate approval of that location be deemed appropriate.

The Draft National Environmental Protection Act (NEPA)-Environmental Assessment (EA) was completed and reviewed by the FTA and currently is being finalized. The FTA Finding of No Significant Impact is anticipated in summer 2017.

B. Community Facilities District (CFD)

The City Council and Mayor enacted Ordinance No. 182192 (CF 11-0329-S6) which approved the special CFD election to levy a special tax for the purposes of issuing up to $85 million in bonds to fund construction of the Streetcar. The elections were certified by City Council on December 12, 2012 with 72.9% of the ballots cast supporting the formation of the CFD. The terms of the CFD require that three conditions must be satisfied before bonds can be issued:

1. Certification of compliance with the California Environmental Quality Act (CEQA)
2. Acceptance into Project Development with the FTA
3. Financial Plan
    a. Commitment from the entity that will operate the Streetcar for a minimum of 30 years, that it is willing and financially able to take on that responsibility; and
    b. A financial plan for the project that meets the FTA Small Starts Program requirements for a financial plan.

The conditions listed above are under review by outside Bond Counsel as to whether they have been satisfied in order to activate the CFD.

C. Measure R Operating Fund Commitment

The City Council, at its meeting on March 6, 2013, committed to spend $294.73 million in City Measure R 15% Local Return funds for Streetcar operations (C.F. 11-0329-S7). The City Council approved a 30-year operational plan with funding programmed over a 23-year period from FY2017 through FY2039, based on an opening year Streetcar operation cost of $6.8 million ($5.9 million subsidy), with an assumed cost escalation of 3% annually.

D. Project Delivery & Management Plan

The City Council, at its meeting on September 17, 2013, approved a project delivery method (Construction Management / General Contractor aka CM/GC) and summary project management

plan (amended) as recommended by the CAO, BOE and LADOT for the Streetcar project (C.F. 11-0329-S7). The City Council also requested the Office of the City Attorney to prepare and present an ordinance allowing the Department of Public Works to let Construction Manager / General Contractor (CM/GC) contracts for the delivery of the LA Streetcar project pursuant, to a competitive proposal method. The Office of the City Attorney on May 23, 2017 prepared and submitted an ordinance (CF 11-0329-S7), allowing the Department of Public Works to let CM/GC contracts for the delivery of the LA Streetcar Project pursuant to a competitive sealed-proposal method consistent with City Charter Section 371. The ordinance is pending review by the Council.

E. FTA Small Starts Grant Process

LADOT submitted a request, dated December 3, 2013, for the FTA to evaluate the Streetcar project for entry into the PD phase of the federal Small Starts grant process under MAP 21. LADOT was notified by the FTA in a letter dated February 28, 2014 that the project had been approved to enter PD. Entry into PD does not constitute a commitment that any FTA funds will be approved for the project. On September 9, 2016, the City Council authorized the LADOT to submit a FTA Small Starts Grant Application for the LA Streetcar project (C.F. 11-0329-S14). LADOT is anticipating completing the NEPA-EA review process in late summer 2017, and providing the FTA with required information for evaluation and rating to complete PD and be ready for a construction agreement. The Fixing America's Surface Transportation (FAST) Act approved in December 2015 has increased the maximum project cost from $250M to $300M under the FTA Small Starts Grant Program and has also increased the maximum grant amount from $75M to $100M. The project is below $300 million and eligible for a Small Starts grant.

F. ***Measure M***

Measure M's approval by the voters programs $200 million (in 2015 dollars) in sales tax funding for the Project in the following fiscal years 52/53 to 56/57. The (escalated) year-of-expenditure breakdown for Measure M Streetcar funds is $27.3M in FY52/53, $84.4M in FY53/54, $144.9 in FY54/55, $238.8M in FY55/56, and $74.6M in FY 56/57, for a total of $570.1 million.

This funding can be accelerated with an amendment by the Metro Board as described in the ordinance language cited below:

> Section 11. Amendment b. By two-thirds (2/3) vote, the Metro Board of Directors may amend the "Schedule of Funds Available" columns listed in Attachment A to accelerate a project, provided that any such amendments shall not reduce the amount of funds assigned to any other project or program as shown in the "Measure _ Funding 2015$" column of Attachment A or delay the Schedule of Funds Available for any other project or program. Metro shall hold a public meeting on proposed amendments prior to adoption. Metro shall provide notice of the public meeting to the Los Angeles County Board of Supervisors, the city council of each city in Los Angeles County, and the public, and shall provide them with a copy of the proposed amendments, at least 30 days prior to the public meeting.

G. Public-Private Partnership

The CAO explored a P3 project delivery model (C.F. No. 11-0329-S13) to address the projected construction shortfall. The City's financial advisor, EYIA estimates that the City's annual availability

payment for the LA Streetcar project, delivered through a P3 strategy is $19.90 million for thirty years. This analysis is based on: a project cost estimate of $266.20 million; that the CFD approved by voters would provide up to $85 million; that an allocation of $100 million in FTA Small Starts Grant program would be made; and that the previously Council committed Measure R Streetcar Operations and Maintenance (O&M) funds and additional project related revenues (farebox, advertising, and naming rights) will be available to contribute about $12.80 million towards the $19.90 million availability payment.

Given these assumptions, EYIA estimates that $7.10 million of the annual availability payment remains unfunded and requires the identification of on-going revenue or an alternative funding strategy.

VI. FISCAL IMPACT

The General Fund impact is unknown at this time as a comprehensive financial plan has not yet been fully developed. The actions in this report will provide authority to seek potential funding options to offset the construction shortfall with special funds as part of developing the financial plan.

RS:RS

ATTACHMENTS

1. Downtown Los Angeles Streetcar Project Independent Cost Estimate Executive Summary, dated June 01, 2017
2. Los Angeles Streetcar Project Schedule, dated March 28, 2017.
3. Figure 1.1 Locally Preferred Alternative Map

LOS ANGELES STREETCAR

30% Design Independent Cost Estimate

Prepared for:

ENGINEERING
CITY OF LOS ANGELES

Prepared by:

Kimley»Horn
Expect More. Experience Better.

Table of Contents

MEMORANDUM – FINAL

To: **Reza Shahmirzadi, P.E., S.E.**
Program Manager
City of Los Angeles - Downtown Los Angeles Streetcar Division
Bureau of Engineering, Department of Public Work

From: **Robert D. Blume, P.E.**
Edgar Torres, P.E.
Kimley-Horn and Associates, Inc.

Date: **June 1, 2017**

Subject: **Los Angeles Streetcar 30% Design Independent Cost Estimate**

Summary

The Independent Cost Estimate and breakdown for the downtown streetcar 7th and 9th Street Alternatives, in Year of Expenditure dollars, are as follows:

7th Street Alternative Alignment without Grand Avenue Extension	**$290.7 million**
Project Cost	$274.2 million
Finance Charges	$ 16.5 million
7th Street Alternative Alignment with Grand Avenue Extension	**$306.3 million**
Project Cost	$288.7 million
Finance Charges	$ 17.6 million
9th Street Alternative Alignment without Grand Avenue Extension	**$299.1 million**
Project Cost	$282.2 million
Finance Charges	$ 16.9 million
9th Street Alternative Alignment with Grand Avenue Extension	**$314.1 million**
Project Cost	$296.5 million
Finance Charges	$ 17.6 million

Updated information provided by Los Angeles Bureau of Engineering (LABOE), Los Angeles Department of Transportation (LADOT), and Los Angeles Streetcar Inc (LASI) was incorporated into the Independent Cost Estimate and documented below.

Background

Kimley-Horn, in support of the City of Los Angeles (LACITY) as part of TOS No. 109, was tasked with developing an independent cost estimate (ICE) for the Downtown Los Angeles Streetcar. As part of this task, Kimley-Horn utilized plans developed by LA Streetcar Inc. and its consultants Mott MacDonald and MDG. Kimley-Horn's Independent Cost Estimate reflects the Final 30% Streetcar Plans dated 3/20/2017 as noted below.

Methodology/Assumptions

The Kimley-Horn team utilized a quantity take-off approach to the 30% Plans provided by Mott MacDonald—with additional information provided by their Basis of Design and engineering documentation, listed in **Appendix A**. Kal Krishnan Consulting Services (KKCS) provided cost estimators for developing unit costs based on the cost line items provided by LASI. The following methodology was used to complete the cost estimate:

SCC 10 – Guideway & Track Elements

- SCC section 10.13 includes temporary and permanent noise dampening.

SCC 20 – Stations, Stops, Terminal, Intermodal

- Plans show one TVM & one Validator on every platform; however, LACITY has expressed a desire for these to be on the vehicles. Per the direction of LACITY, we have priced three TAP validators and one TVM per vehicle and have included them in SCC section 50.06.
    - *ICE reflects assumptions made by LACITY and not what is shown in plans*

SCC 30 – Support Facilities: Yards, Shops, Administrative Buildings

- Developed cost estimates for both maintenance facilities; the higher cost facility (Hill Street) was used.
- Estimate includes broken out equipment costs based on 15% MSF programming documentation provided by LASI and MDG.

SCC 40 – Site Work & Special Conditions

- Utility cost estimates followed the 30% plans as closely as possible. Plans were supplemented by the Basis of Design report (by Mott MacDonald). Where relocations were not clearly understood, or defined, Kimley-Horn utilized Utilities Rules of Practice from other operating (and designed) streetcar systems.
- The quantity of LADWP vaults to be relocated reflects the number provided by LADWP in their Power System Infrastructure Replacement Estimate provided by LADWP on 3/14/2017.
- Per standard LADWP practice, replaced water lines are to be abandoned in place. Portions of abandoned water lines in conflict with track section may be removed as part of excavation.
- Conservative assumptions regarding utility relocations, between alternatives containing or not containing the Grand Extension, were utilized as plans were not specific on alternative differentiation.
- Improvements along 7th Street are assumed to be completed by others.

Methodology/Assumptions (cont.)

- The cycle track along the westbound approach of the intersection of 11th St and Figueroa St was priced as shown on the plans. There is an additional risk to cost based on the current concept for cyclist crossing the streetcar tracks.

SCC 50 – Systems

- OCS plans do not include layouts or spacing of poles, so it was assumed that there would be poles every 120 feet, 6 poles around every curve, and 3 poles at every turnout.
- Draft Communication and Train Control Systems Plans show full fiber network with communications cabinets at every station. Per the direction of LACITY, we have priced the conduit, pull boxes, and mainline fiber; options for a wireless network is not precluded.

SCC 60 – ROW, Land, Existing Improvements

- See **Appendix B** for assumptions made by Overland, Pacific & Cutler.
- Rights-of-access costs were added for the 2 driveways identified as being removed at the Broadway & Olympic Intersection.
- Parcel areas were based upon legal descriptions and deeds of the properties.

SCC 70 – Vehicles

- Siemens S70 were assumed as it is the only streetcar vehicle currently approved by CPUC for operation in California.
- Year of expenditure vehicle cost was built based on the Draft Streetcar Estimate provided by LACITY on April 4th, 2017.

SCC 80 – Professional Services

- Project Development = 9%
- Project Management for Design and Construction = 6%
- Construction Administration and Management = 9%
- Professional Liability = 2%
- Legal, Permits, etc. = 3%
- Surveys, Testing, etc. = 3%
- Start Up = 2%
- Base Year Total SCC Professional Services = 34%

SCC 100 – Finance Charges

- Based on the information provided by LACITY, Ernst & Young developed finance costs based on two scenarios: 1) $15.336 million for a $266.2 million project; and 2) $17.573 million for a $281.6 million project.
- Based on this information, for the Alternatives without Grand Avenue, a finance cost was estimated using 6% of Year of Expenditure Dollars and proportionally distributed over three years 2018-2020 based on the Funding Milestones Summary provided by LACITY on April 5th, 2017.

Methodology/Assumptions (cont.)

- For the Alternatives with the Grand Avenue extension, per the direction of LACITY, a finance cost of $17.6 million was proportionally distributed in finance charges over three years 2018-2020 based on the Funding Milestones Summary provided by LACITY on April 5th, 2017.

Inflation and Construction Cost Distribution

- The construction costs were distributed to each year based on the Funding Milestones Summary sheet provided by LACITY on April 5th, 2017.
- The following assumptions were made:
    - Utility costs were split evenly between FY18-20.
    - Vehicle costs were attributed to the FY 18-21 based on the Funding Milestones Summary and vehicle manufacturing reimbursement practices.
    - Unallocated Contingency was attributed proportionally to the FY of expenditure.

Due to the preliminary stage of the project, this estimate includes an average weighted allocated contingency of approximately 14.4%, as well as an unallocated contingency of 11.4%. The total contingency as a percentage of base year dollars without contingency is approximately 25.8%.

Potential Project Feature

The following potential project cost amounts are given in YOE $ and include unallocated contingency and finance charges.

Vehicle Onboard Energy Storage System:

Vehicle onboard energy storage systems have been identified as an option in the Streetcar Vehicle Estimate provided by LACITY on May 22nd, 2017.

Potential Total Project Cost YOE $	$2,616,720

Potential Project Risks

Interlocking Switches:

Currently at the intersections of Broadway/7th and Hill/7th the plans are showing two power switches at each intersection that would allow for the streetcar to run two separate loop options. These power switches may require an interlocking to ensure that switches would never be able to allow opposing directions of travel; however, interlocking is not shown on the plans or in any of the supporting documents. The city will review this in final design and take this in to consideration.

Cost Saving Strategies

The following cost savings amounts are given in YOE $ and include unallocated contingency and finance charges.

LADWP Replacing Water Lines Over 85 Years Old:

LADOT is working on an agreement with LADWP that would require LADWP to replace any of their utilities over 85 years old that would need to be replaced as part of the Los Angeles Streetcar project. If this agreement is made final, the following cost savings is estimated based on the current level of design:

Potential Cost Savings in Total Project Cost YOE $	$3,000,000

Alternative Vehicle Selection Options:

Currently, the only vehicle approved by CPUC for selection in California is the Siemens S70 vehicle. Since there is only one vehicle option, there is no competition in pricing vehicles. If there were more vehicle options, the following cost savings is estimated:

Potential Cost Savings in Total Project Cost YOE $	$1,500,000

Reducing the Number of Stations:

Currently, there are 23 proposed streetcar stations. There have been discussions of reducing the overall number of stations. A reduction in the number of stations would also provide cost savings in loss of goodwill costs (not included in estimate below).

Potential Cost Savings in Total Project Cost YOE $	$275,000/Station

Joint Development:

Land acquisition for the Maintenance Facility is one of the major cost drivers for the Los Angeles Streetcar. A joint development approach would allow for the incorporation of a mixed-use project, or the anticipation of development rights being sold or leased. The current estimate assumes full acquisition; however, if joint development opportunities are further explored, the following cost savings is estimated:

Potential Cost Savings in Total Project Cost YOE $	$15,000,000

- Issues and Considerations
    - The above cost savings estimate is preliminary. For a more detailed analysis, the Kimley-Horn team would require the MSF site plans be designed to a level that either shows the joint development, or allows for the future addition of joint development.
    - Joint development may present issues between the design and operations of the MSF site and the design and operations of the development.
    - Prior to submitting to FTA including joint development, the plans need to be designed to a level to show this as a viable option.

Cost Saving Strategies (cont.)

Radar Tomography:

Mott MacDonald conducted a utilities investigation using radar tomography on a portion of the project. The results showed a high degree of variation between what was communicated via as-built plans received from utility owners, and the radar tomography. For that reason, they have suggested radar tomography be conducted on the remainder of the corridor in the final design phase of the project. Although this will be an additional cost in the final design phase, we have included it as a cost savings because of the benefit it will provide in narrowing down the utility relocations and the cost savings it has the potential to provide in the construction phase of the project.

ROBERT BLUME, *P.E.*

EDGAR TORRES, *P.E.*

APPENDIX A – List of Items Received

Items Received

From Mott MacDonald 30% Plans Submittal:

- 30% LA Streetcar Drawings
- LA Streetcar Utility Conflict Matrix
- LA Streetcar Basis of Design
- LA Streetcar Bicycle Travel Memo
- LA Streetcar Drainage Report
- LA Streetcar Ground Grid Report
- LA Streetcar Outline of Specs
- LA Streetcar Preliminary Geotechnical Memo
- LA Streetcar Rail Selection Memo
- LA Streetcar Track Structure Memo
- LA Streetcar Traction Power Load Flow Analysis
- LA Streetcar Traction Power Substation Site Visit Report
- X-TW-ALGN-30pcnt – 30% Design Alignments & Profiles
- X-V-TOPO – Existing topography and surface
- X-V-TOPO-PL1 – Existing topography and surface at MSF Site 1

From Mott MacDonald Post 30% Plans Submittal:

- Cost Estimate Line Item List
- LA Streetcar 30% Draft Cost Estimate List of Assumptions
- Maintenance and Storage Facility Plans

From Mott MacDonald Final 30% Plans Submittal:

- Final 30% LA Streetcar Drawings
- Draft 30% Maintenance and Storage Facility Plans
- Draft 30% Train Control and Communication Systems Plans
- Train Control and Communications Report
- LA Streetcar Review Comments Matrix
- LASI Utility Conflict Matrix
- Final Basis of Design
- Updated Preliminary Geotechnical Memo
- Final Drainage Report
- Updated Bicycle Travel Memo
- Updated Outline of Specs
- Updated Rail Selection Memo
- Updated Track Structure Memo

APPENDIX A (cont.)

- Updated Signalization Plans
- Utilities Investigation (Radar Tomography) Draft Report

From LACITY:

- Final Environmental Impact Report

APPENDIX B – Summary of Assumptions used in Pricing ROW

The following assumptions were utilized for MSF and TPSS parcels in this analysis:

- Highest and best use is the most reasonable, probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The following was assumed for each current property use in analysis of comparable sales:
  - Existing Parking Lots – Commercially vacant land suitable to develop multi-story commercial buildings similar to adjacent land uses.
  - Jewelry Store / Commercial Retail – Current use is assumed as highest and best use.
- A contingency of 10% of the total estimates costs was utilized due to unknown information such as access to profit and loss statements, leases and land use agreements, cooperation of land owners, and unforeseen future market increases.
- Assumed no permanent easements or Temporary Construction Easements for partial acquisition.
- Limited analysis of severance damages (reduction of value to the remainder based upon the severance of the property or construction of the project) for partial acquisition was provided as design information is very limited, further analysis may be required at more complete stages of design.
- Jewelry store parcel (TPSS#2) assumed parcel is insufficient to develop in post TPSS conditions, assume remnant is uneconomic and parcel is a full acquisition.
- Parking and Taco shop parcel (TPSS#3), it is not feasible to save the taco shop thus assumed elimination of the taco shop. Assumed elimination of one access (one way in and one way out) due to remaining width. In the after TPSS condition, the development of this parcel is limited.
- Estimated relocation assistance values based on historical data on similar past projects and tenants / occupants are eligible for relocation benefits per the Uniform Relocation Act.
- Assumed all vacant buildings will be occupied with tenants similar to historical occupancies and are eligible for relocation assistance and loss of business goodwill.
- Assumed cost for curative improvements to re-align parking, access, and other permanent impacts to reduce severance damages / maintain good public relations shall be paid to the owner in lieu of constructed by the project.
- Potential loss of business goodwill should generally remain in the following ranges:
  - Full acquisition parking lots – $500,000 to $3,000,000
  - Partial acquisition parking lots – $50,000 to $200,000
  - Full acquisition of commercial improved buildings – $250,000 to $1,000,000

  Income Approach should be the methodology used to establish loss of business goodwill upon review of profit and loss statements for each business, and market conditions.
- Demolition costs are based on past experience demolishing buildings / sites in the Long Beach and Los Angeles Area on similar properties to remove all improvements on site. Environmental remediation was not considered and assumed unnecessary based on current land use.

APPENDIX B (cont.)

The following assumptions were utilized for the driveway closures in this analysis:

- Highest and best use is the most reasonable, probable and legal use of vacant land or an improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The following was assumed for each current property use in analysis of comparable sales:
    - Existing Parking Lots – Commercially vacant land suitable to develop multi-story commercial buildings similar to adjacent land uses.
- A contingency of 20% of the total estimates costs was utilized due to unknown information such as access to profit and loss statements, leases and land use agreements, cooperation of land owners, and unforeseen future market increases. Additionally, this is a very unique acquisition considering no land is transferred and the taking is only constituted from the loss of two driveways in which involves more subjective analysis of comparable sales than traditional acquisition analysis.
- Assumed no property acquisition required of any kind (i.e. Temporary Construction Easements, Permanent Easements, Fee Acquisition).
- Limited analysis of severance damages (reduction of value to the remainder based upon the severance of the property or construction of the project) was based upon comparing land values of similar properties within the Los Angeles area with access similar to existing conditions to access in proposed conditions.
- Current circulation would require use of both driveways on each Broadway Avenue and Blackstone Court. It was assumed with the closure would require realignment of the access lane connecting the two access lanes parallel to Olympic Boulevard currently aligned with the Olympic Boulevard driveway entrance to directly adjacent and parallel to Broadway Avenue. This would result in approximately $20,000 of improvements for paving, striping, and lighting, and additionally result in the loss of two parking stalls permanently.
- Potential loss of business goodwill should generally remain in the following ranges:
    - Total estimated potential loss of business goodwill – $200,000 to $300,000

  Income Approach should be the methodology used to establish loss of business goodwill upon review of profit and loss statements for each business, and market conditions.
- Demolition costs and environmental remediation was not considered as there is no demolition or ground disturbance required for this property.
- Escalation of 12% was based upon current market analysis reports from Loopnet from 2015-2017.

Attachment A

LADWP POWER SYSTEM INFRASTRUCTURE REPLACEMENT ESTIMATE

June 14, 2017

Mr. Reza Shahmirzadi
Principal Civil Engineer
Bureau of Engineering
1149 South Broadway, 6th Floor
Los Angeles, CA 90015-2213
Mail Stop 1149/610

Dear Mr. Shahmirzadi:

Subject: LA Streetcar Estimate for the Los Angeles Department of Water and Power (LADWP) Power Relocations

This is in response to your request for an all-inclusive cost letter concerning power relocations that would be necessary for the LA Streetcar Project.

Estimate:

LADWP performs all conduit and cable relocations based on safety regulations of CPUC GO-143B. (18 inch clearance between Streetcar dynamic envelope and truck)

Relocate: 83 structures at $600,000 each	$49.8M
Install: 13 structures at $100,000 each	1.3M
Credit: Structure cost differential (83 @ $6,000 each)	(500.0K)
Credit: 6 structures by LADWP at $600,000 each	(3.6M)
Credit: 2 miles of cable replacement	(2.0M)
Total cost to LA Streetcar:	**$45.0M**

Note: As related to this project, LADWP plans to relocate and upgrade 21 additional structures that comply with the required California Public Utilities Commission's General Order 143B conflict envelope but do not meet LADWP working clearances and safety regulations.

21 structures at $600,000/structure = $12.6M borne by LADWP.

Exceptions to "not-to-exceed" cost:

- Any modification to established assumptions. To date, actual track slab data, surcharge data, catenary design, and dynamic envelope of streetcar have not been available to LADWP for review and/or comment.

- Delays caused by parties other than LADWP and its contractors may result in change orders and additional cost which will be the responsibility of the Los Angeles Bureau of Engineering (BOE).

- Note: No U-Permit or Street Damage Restoration fees were included in the above estimate and is assumed that this cost will be absorbed by BOE.

- Encountering hazardous soils, artifacts, unidentified active and/or abandoned facilities, railroad track/ties, or job rescheduling in order to accommodate LADWP system emergencies for the greater good of the City of Los Angeles.

- Construction start and end time restrictions and street closure restrictions imposed by the Los Angeles Department of Transportation and/or the BOE precluding LADWP's construction as scheduled.

- Final and comprehensive field verification to confirm if there are more or less structures to be considered. These issues could introduce additional conflicting structures. The final relocation scope of work will be confirmed upon completion of LADWP's detailed design phase and the number of structures may vary up or down to some extent.

- Anticipated business owner claims of lost revenue due to limited street access, parking, and other construction activities which potentially deter customers

- Finally at the conclusion of final designs, if there needs to be a change in scope (including the addition or reduction of the number of structures) the estimate will be adjusted accordingly.

LADWP will continue to work with BOE to refine the scope of work. All cable and conduit work will be performed by LADWP or our contracted workforce. It is expected that a Memorandum of Understanding between BOE and LADWP will be completed prior to the start of detail design.

If you have any questions, please contact Mr. Wayne E. Hinkson at (213) 367-6002.

Sincerely,

Marvin D. Moon
Director of Power Engineering

WEH:hh/jr/mw
c: Mr. Wayne E. Hinkson

Attachment B

DRAFT STREETCAR [VEHICLE] ESTIMATE

	A	B	C	D	E	F
1	**STREETCAR ESTIMATE - DRAFT**					
2	Comments:					
3	1	The Engineer's Estimate will be provided when the RFP, including technical specifications and price forms, is final.				
4	2	Both alternatives are Buy America Compliant				
5	3	Both alternatives assume that the Contractor provides 1) Radio equipment, 2) AVL equipment (such as NextBus), 3) traffic light priority emitter, 4) fare collection equipment (one TVM and three validators).				
6	4	Both alternatives Include 10% contingency.				
7						
8	**Alternative 1 - GO143B Compliant**					
9	#	Qty*	Item	Unit	Unit Price ($)	Subtotal ($)
10		[1]	[2]	[3]	[4]	[5] = [1]x[4]
11	1	8	**Streetcar**	Each	$ 4,250,217	$ 34,001,736
12	2				**Sub-Total** (Streetcars only)	**$ 34,001,736**
13	3	1	System Support (Management, engineering, testing, training, manuals, field support, warranty)	Lump Sum	$ 7,336,101	$ 7,336,101
14	4	1	Set of Spare Parts (5.75% of total car price)	Lump Sum	$ 1,955,100	$ 1,955,100
15	5	1	Set of Special Tools (0.25% of total car price)	Lump Sum	$ 85,004	$ 85,004
16	6	8	Portable Test Units (PTU)	Each	$ 10,000	$ 80,000
17	7	1	Maintenance Workstation	Lump Sum	$ 25,000	$ 25,000
18	8	1	Cab Controls Mock-up (Full-size mock-up of the Cab Console, adjacent controls, and overall proportions of the cab end to convey overall cab size and relevant sight lines).	Lump Sum	$ 46,513	$ 46,513
19	9				**TOTAL** (Streetcars w Support)	**$ 43,529,454**
20	10	8	**Option** - Onboard Energy Storage System (OESS) with Support	Lump Sum	$ 327,090	$ 2,616,720
21	11		**TOTAL** (with Support and Option)			**$ 46,146,174**
22						
23	**Alternative 2 - GO143B Non-Compliant (ASME-RT1 Compliant)**					
24	#	Qty*	Item	Unit	Unit Price ($)	Subtotal ($)
25		[1]	[2]	[3]	[4]	[5] = [1]x[4]
26	1	8	**Streetcar**	Each	$ 4,284,365	$ 34,274,920
27	2				**Sub-Total** (Streetcars only)	**$ 34,274,920**
28	3	1	System Support (Management, engineering, testing, training, manuals, field support, warranty)	Lump Sum	$ 5,478,733	$ 5,478,733
29	4	1	Set of Spare Parts (5.75% of total car price)	Lump Sum	$ 1,970,808	$ 1,970,808
30	5	1	Set of Special Tools (0.25% of total car price)	Lump Sum	$ 85,687	$ 85,687
31	6	8	Portable Test Units (PTU)	Each	$ 10,000	$ 80,000
32	7	1	Maintenance Workstation	Lump Sum	$ 25,000	$ 25,000
33	8	1	Cab Controls Mock-up (Full-size mock-up of the Cab Console, adjacent controls, and overall proportions of the cab end to convey overall cab size and relevant sight lines).	Lump Sum	$ 46,513	$ 46,513
34	9				**TOTAL** (Streetcars w Support)	**$ 41,961,661**
35	10	8	**Option** - Onboard Energy Storage System (OESS) with Support	Lump Sum	$ 327,090	$ 2,616,720
36	11		**TOTAL** (with Support and Option)			**$ 44,578,381**
37						

C

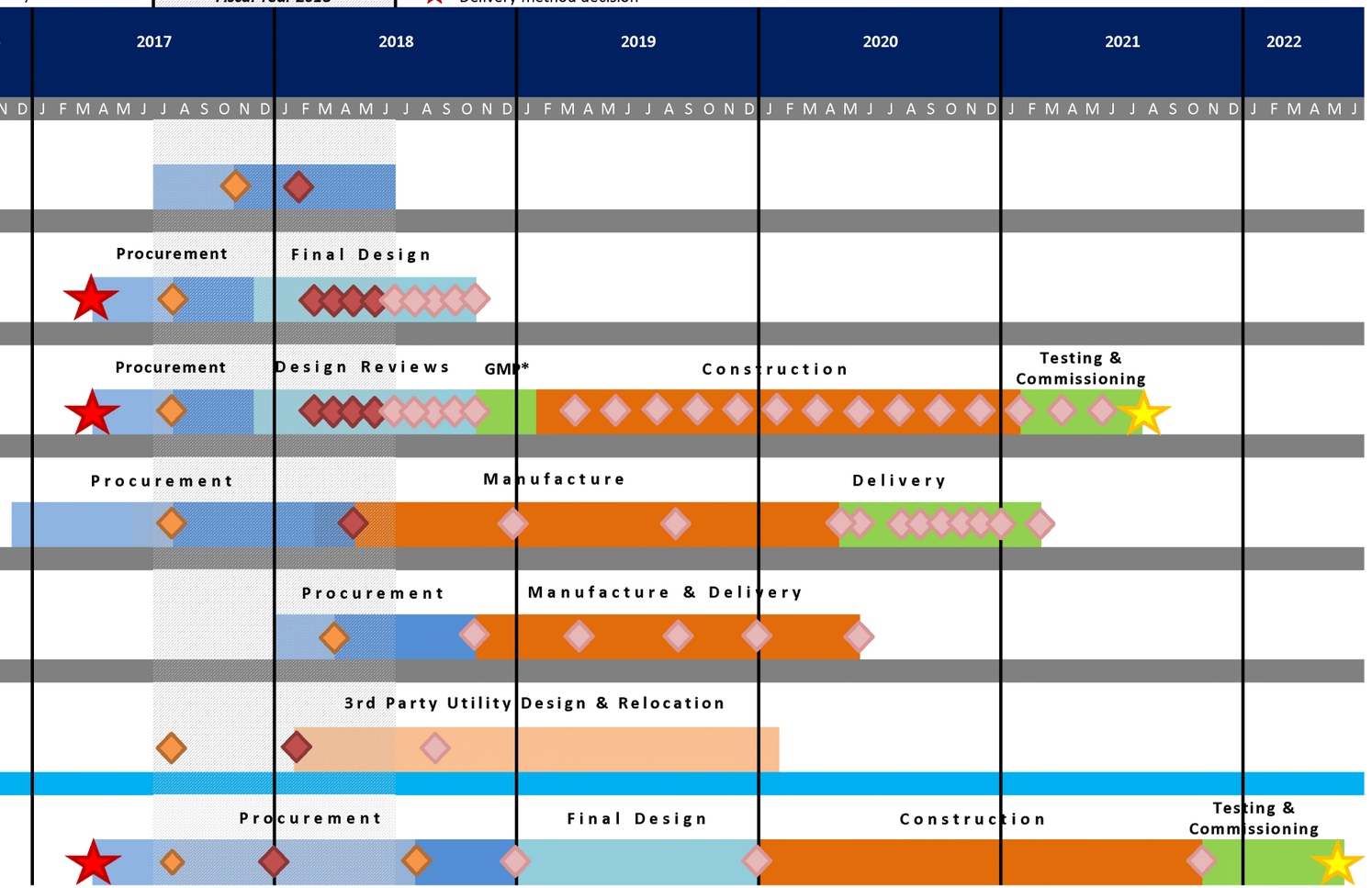
Attachment C

FUNDING MILESTONE SUMMARY

LA Streetcar - Funding Milestone Summary

Council action (budget process) that authorizes release of RFP and identifies funding
FY18 Payment
Future Payments
Revenue service begins
Delivery method decision

	Schedule	Assumed Contract Value / FY 2018 Total *$62.3M*
Maintenance & Storage Facility Site Acquisition		
identify funding (budget process), property appraisal, etc.	o 7/17-10/17	*$45M*
Initial offer (assume payment) - $45.6M	o 10/17	
Negotiation, court Process, & possession	o 10/17-6/18	***$45M***
Final Design		
Prepare RFP	o 4/17-7/17	*$9M*
Council identify funding (budget process) and release RFP	o 7/17	
Contract NTP	o 11/17	***$4M***
Assume payment of first invoice - $1.0M	o 2/18	
Construction Manager/General Contractor (CM/GC)		
Prepare RFP	o 4/17-7/17	*$122M*
Council identify funding (budget process) and release RFP	o 7/17	
Contract NTP	o 11/17	***$0.3M***
Assume payment of first invoice - $0.1M	o 2/18	
Vehicle		
Prepare RFP	o 12/16-6/17	*$45M*
Council identify funding (budget process) and release RFP	o 7/17	
Contract NTP. Assume first milestone payment – $9.0M	o 4/18	***$9M***
Advance Material Procurement		
Prepare RFP	o 1/18-3/18	*$15M*
Council identify funding (budget process) and release RFP	o 3/18	
Contract NTP	o 10/18	***$0M***
3rd Party Utilities Design & Construction		
Design Reimbursement to LADWP		*$6M*
		$4M
P3 Delivery (option replaces "Final Design" & "CM/GC" above)		
Council authorize CAO-EYIA PHII services	o 7/17	***$1.135M*** *(EYIA Phase II and III services)*
Prepare RFP	o 8/17-7/18	
Council identify funding (budget process) and release RFP	o 7/18	
Contract NTP & assume first funds transfer	o 12/18	



** GMP: "Guaranteed Maximum Price" - negotiation with CM/GC Contractor*

3/28/2017

Attachment D-1

7TH STREET WITHOUT GRAND AVE EXTENSION

MAIN WORKSHEET – BUILD ALTERNATIVE

MAIN WORKSHEET - BUILD ALTERNATIVE

(Rev.18, May 2016)

City of Los Angeles — Today's Date 6/1/17

Restoration of Historic Streetcar in Downtown Los Angeles - 7th Street without Grand Avenue Extension — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**3.34**	11,703	1,163	**12,866**	**$3,852**	**12%**	**5%**	**14,318**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway: At-grade in mixed traffic	3.34	5,038	504	5,541	$1,659			6,167
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded		3,965	397	4,362				4,854
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)		2,625	263	2,888				3,213
10.13 Track: Vibration and noise dampening		75		75				83
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**23**	3,012	452	**3,464**	**$151**	**3%**	**1%**	**3,882**
20.01 At-grade station, stop, shelter, mall, terminal, platform	23	3,012	452	3,464	$151			3,882
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	3.34	19,814	1,981	**21,796**	**$6,526**	**20%**	**8%**	**24,214**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility		12,003	1,200	13,203				14,668
30.03 Heavy Maintenance Facility				0				0
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track		7,811	781	8,593				9,546
40 SITEWORK & SPECIAL CONDITIONS	3.34	37,818	7,597	**45,415**	**$13,597**	**43%**	**17%**	**49,738**
40.01 Demolition, Clearing, Earthwork		955	96	1,051				1,151
40.02 Site Utilities, Utility Relocation		28,595	7,149	35,743				39,146
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		444	44	488				535
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		250	38	288				315
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		1,387	4	1,391				1,523
40.07 Automobile, bus, van accessways including roads, parking lots		2,667	267	2,933				3,213
40.08 Temporary Facilities and other indirect costs during construction		3,521	0	3,521				3,856
50 SYSTEMS	3.34	19,704	3,169	**22,873**	**$6,848**	**21%**	**9%**	**25,572**
50.01 Train control and signals		2,138	374	2,512				2,809
50.02 Traffic signals and crossing protection		3,950	494	4,444				4,968
50.03 Traction power supply: substations		5,700	570	6,270				7,010
50.04 Traction power distribution: catenary and third rail		5,076	1,244	6,320				7,065
50.05 Communications		1,460	211	1,671				1,868
50.06 Fare collection system and equipment		1,380	276	1,656				1,851
50.07 Central Control				0				0
Construction Subtotal (10 - 50)	3.34	92,051	14,362	**106,413**	**$31,860**	**100%**	**40%**	**117,724**
60 ROW, LAND, EXISTING IMPROVEMENTS	3.34	36,254	5,438	**41,692**	**$12,483**		**16%**	**43,907**
60.01 Purchase or lease of real estate		30,077	4,512	34,588				36,426
60.02 Relocation of existing households and businesses		6,177	927	7,104				7,481
70 VEHICLES (number)	**8**	35,171	3,454	**38,625**	**$4,828**		**15%**	**42,854**
70.01 Light Rail	8	34,364	3,436	37,800	$4,725			41,939
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		120	18	138				153
70.07 Spare parts		687		687				763
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	3.34	35,648	5,347	**40,996**	**$12,274**	**39%**	**15%**	**44,816**
80.01 Project Development	9%	9,577	1,437	11,014				12,040
80.02 Engineering (not applicable to Small Starts)								
80.03 Project Management for Design and Construction	6%	6,385	958	7,342				8,027
80.04 Construction Administration & Management	9%	9,577	1,437	11,014				12,040
80.05 Professional Liability and other Non-Construction Insurance	2%	2,128	319	2,447				2,676
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	3%	3,192	479	3,671				4,013
80.07 Surveys, Testing, Investigation, Inspection	3%	3,192	479	3,671				4,013
80.08 Start up	2%	1,596	239	1,836				2,007
Subtotal (10 - 80)	3.34	199,124	28,602	**227,726**	**$68,181**		**86%**	**249,301**
90 UNALLOCATED CONTINGENCY				**22,773**			**9%**	**24,930**
Subtotal (10 - 90)	3.34			**250,499**	**$75,000**		**94%**	**274,231**
100 FINANCE CHARGES				**15,046**			**6%**	**16,454**
Total Project Cost (10 - 100)	3.34			**265,545**	**$79,504**		**100%**	**290,685**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				14.36%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				11.44%				
Total Contingency as % of Base Yr Dollars w/o Contingency				25.80%				
Unallocated Contingency as % of Subtotal (10 - 80)				10.00%				
YOE Construction Cost per Mile (X000)								$35,247
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$74,201
YOE Total Project Cost per Mile (X000)								$87,031

Attachment D-2

7TH STREET WITHOUT GRAND AVE EXTENSION

INFLATION WORKSHEET

INFLATION WORKSHEET

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 7th Street without Grand Ave — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars	Double-Check Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	12,866	12,866	0	0	0	0	0	0	0	0	0	0				5,146	7,719		0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	3,464	3,464	0	0	0	0	0	0	0	0	0	0				1,559	1,039	866	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	21,796	21,796	0	0	0	0	0	0	0	0	0	0				9,808	11,988		0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	45,415	45,415	0	0	0	0	0	0	0	0	0	0			11,914	16,267	16,750	484	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	22,873	22,873	0	0	0	0	0	0	0	0	0	0				6,862	15,249	762	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	41,692	41,692	0	0	0	0	0	0	0	0	0	0			41,692				0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	38,625	38,625	0	0	0	0	0	0	0	0	0	0			9,000	10,369	10,369	8,888	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	40,996	40,996	0	0	0	0	0	0	0	0	0	0			14,398	14,398	7,199	5,000	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	22,773	22,773	0	0	0	0	0	0	0	0	0	0			7,701	6,441	7,031	1,600	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	15,046	15,046	0	0	0	0	0	0	0	0	0	0	0	0	5,283	4,270	4,503	990	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	265,545	265,545	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**89,989**	**75,119**	**81,847**	**18,590**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inflation Rate			0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.004	0.024	0.005	0.000	0.018	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Compounded Inflation Factor			1.270	1.228	1.186	1.146	1.107	1.070	1.034	1.029	1.005	1.000	1.000	1.018	1.053	1.090	1.128	1.168	1.208	1.251	1.295	1.340	1.387	1.435	1.486	1.538	1.591	1.647	1.705
YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	14,318		0	0	0	0	0						0	0	0	5,609	8,708	0	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	3,882		0	0	0	0	0						0	0	0	1,699	1,172	1,011	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	24,214		0	0	0	0	0						0	0	0	10,691	13,524	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	49,738		0	0	0	0	0						0	0	12,547	17,730	18,896	565	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	25,572		0	0	0	0	0						0	0	0	7,479	17,202	890	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	43,907		0	0	0	0	0						0	0	43,907	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	42,854		0	0	0	0	0						0	0	9,478	11,302	11,697	10,377	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	44,816		0	0	0	0	0						0	0	15,163	15,694	8,121	5,838	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	24,930		0	0	0	0	0						0	0	8,109	7,020	7,932	1,868	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	16,454		0	0	0	0	0	0	0	0					5,564	4,654	5,080	1,156											
Total Project Cost (10 - 100)	290,685		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**94,768**	**81,878**	**92,334**	**21,705**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Attachment E-1

7TH STREET WITH GRAND AVE EXTENSION

MAIN WORKSHEET – BUILD ALTERNATIVE

MAIN WORKSHEET - BUILD ALTERNATIVE

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 7th Street with Grand Avenue Extension — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**3.76**	14,064	1,396	**15,460**	**$4,112**	**13%**	**6%**	**17,266**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway: At-grade in mixed traffic	3.76	6,369	637	7,006	$1,863			7,824
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded		4,470	447	4,917				5,491
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)		3,125	313	3,438				3,839
10.13 Track: Vibration and noise dampening		100	0	100				112
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**24**	3,320	498	**3,818**	**$159**	**3%**	**1%**	**4,316**
20.01 At-grade station, stop, shelter, mall, terminal, platform	24	3,320	498	3,818	$159			4,316
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	3.76	19,814	1,981	**21,796**	**$5,797**	**19%**	**8%**	**24,214**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility		12,003	1,200	13,203				14,668
30.03 Heavy Maintenance Facility				0				0
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track		7,811	781	8,593				9,546
40 SITEWORK & SPECIAL CONDITIONS	3.76	39,527	7,742	**47,269**	**$12,572**	**41%**	**17%**	**51,794**
40.01 Demolition, Clearing, Earthwork		1,171	117	1,288				1,411
40.02 Site Utilities, Utility Relocation		28,883	7,221	36,103				39,559
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		527	53	580				635
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		250	38	288				315
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		1,557	4	1,561				1,711
40.07 Automobile, bus, van accessways including roads, parking lots		3,101	310	3,411				3,738
40.08 Temporary Facilities and other indirect costs during construction		4,038	0	4,038				4,424
50 SYSTEMS	3.76	23,154	3,695	**26,849**	**$7,141**	**23%**	**10%**	**30,017**
50.01 Train control and signals		2,407	421	2,828				3,162
50.02 Traffic signals and crossing protection		4,110	514	4,624				5,169
50.03 Traction power supply: substations		7,600	760	8,360				9,346
50.04 Traction power distribution: catenary and third rail		6,077	1,494	7,571				8,464
50.05 Communications		1,580	230	1,810				2,023
50.06 Fare collection system and equipment		1,380	276	1,656				1,851
50.07 Central Control				0				0
Construction Subtotal (10 - 50)	3.76	99,879	15,313	**115,191**	**$30,636**	**100%**	**41%**	**127,606**
60 ROW, LAND, EXISTING IMPROVEMENTS	3.76	35,892	5,384	**41,275**	**$10,978**		**15%**	**43,468**
60.01 Purchase or lease of real estate		30,521	4,578	35,099				36,963
60.02 Relocation of existing households and businesses		5,371	806	6,176				6,504
70 VEHICLES (number)	**8**	35,204	3,454	**38,658**	**$4,832**		**14%**	**42,891**
70.01 Light Rail	8	34,364	3,436	37,800	$4,725			41,939
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		120	18	138				153
70.07 Spare parts		720		720				799
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	3.76	38,589	5,788	**44,377**	**$11,803**	**39%**	**16%**	**48,521**
80.01 Project Development	9%	10,367	1,555	11,922				13,035
80.02 Engineering (not applicable to Small Starts)								
80.03 Project Management for Design and Construction	6%	6,911	1,037	7,948				8,690
80.04 Construction Administration & Management	9%	10,367	1,555	11,922				13,035
80.05 Professional Liability and other Non-Construction Insurance	2%	2,304	346	2,649				2,897
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	3%	3,456	518	3,974				4,345
80.07 Surveys, Testing, Investigation, Inspection	3%	3,456	518	3,974				4,345
80.08 Start up	2%	1,728	259	1,987				2,173
Subtotal (10 - 80)	3.76	209,563	29,939	**239,502**	**$63,697**		**86%**	**262,486**
90 UNALLOCATED CONTINGENCY				**23,950**			**9%**	**26,249**
Subtotal (10 - 90)	3.76			**263,453**	**$70,067**		**94%**	**288,734**
100 FINANCE CHARGES				**16,052**			**6%**	**17,573**
Total Project Cost (10 - 100)	3.76			**279,504**	**$74,336**		**100%**	**306,307**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				14.29%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				11.43%				
Total Contingency as % of Base Yr Dollars w/o Contingency				25.72%				
Unallocated Contingency as % of Subtotal (10 - 80)				10.00%				
YOE Construction Cost per Mile (X000)								$33,938
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$70,058
YOE Total Project Cost per Mile (X000)								$81,465

Attachment E-2

7TH STREET WITH GRAND AVE EXTENSION

INFLATION WORKSHEET

INFLATION WORKSHEET

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 7th Street with Grand Avenue — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars	Double-Check Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	15,460	15,460	0	0	0	0	0	0	0	0	0	0				6,184	7,730	1,546	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	3,818	3,818	0	0	0	0	0	0	0	0	0	0				1,145	1,336	1,336	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	21,796	21,796	0	0	0	0	0	0	0	0	0	0				9,808	11,988		0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	47,269	47,269	0	0	0	0	0	0	0	0	0	0			12,034	17,059	17,617	558	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	26,849	26,849	0	0	0	0	0	0	0	0	0	0				8,055	17,899	895	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	41,275	41,275	0	0	0	0	0	0	0	0	0	0			41,275				0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	38,658	38,658	0	0	0	0	0	0	0	0	0	0			9,000	10,380	10,380	8,897	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	44,377	44,377	0	0	0	0	0	0	0	0	0	0			15,551	15,551	7,775	5,500	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	23,950	23,950	0	0	0	0	0	0	0	0	0	0			7,786	6,818	7,473	1,873	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	16,052	16,052	0	0	0	0	0	0	0	0	0	0	0	0	5,425	4,590	4,860	1,177	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	279,504	279,504	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**91,072**	**79,590**	**87,059**	**21,783**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inflation Rate			0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.004	0.024	0.005	0.025	0.018	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Compounded Inflation Factor			1.302	1.258	1.216	1.175	1.135	1.096	1.059	1.055	1.030	1.025	1.000	1.018	1.053	1.090	1.128	1.168	1.208	1.251	1.295	1.340	1.387	1.435	1.486	1.538	1.591	1.647	1.705
YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	17,266		0	0	0	0	0						0	0	0	6,740	8,720	1,805	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	4,316		0	0	0	0	0						0	0	0	1,248	1,507	1,560	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	24,214		0	0	0	0	0						0	0	0	10,691	13,524	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	51,794		0	0	0	0	0						0	0	12,674	18,594	19,875	652	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	30,017		0	0	0	0	0						0	0	0	8,779	20,192	1,045	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	43,468		0	0	0	0	0						0	0	43,468	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	42,891		0	0	0	0	0						0	0	9,478	11,314	11,710	10,389	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	48,521		0	0	0	0	0						0	0	16,377	16,950	8,772	6,422	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	26,249		0	0	0	0	0						0	0	8,200	7,432	8,430	2,187	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	17,573		0	0	0	0	0	0	0	0					5,713	5,003	5,483	1,374											
Total Project Cost (10 - 100)	306,307		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**95,909**	**86,751**	**98,213**	**25,434**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Attachment F-1

9TH STREET WITHOUT GRAND AVE EXTENSION

MAIN WORKSHEET – BUILD ALTERNATIVE

MAIN WORKSHEET - BUILD ALTERNATIVE

(Rev.18, May 2016)

City of Los Angeles — Today's Date 6/1/17

Restoration of Historic Streetcar in Downtown Los Angeles - 9th Street without Grand Avenue Extension — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**3.32**	12,469	1,239	**13,709**	**$4,129**	**13%**	**5%**	**15,263**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway: At-grade in mixed traffic	3.32	5,029	503	5,532	$1,666			6,159
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded		3,940	394	4,334				4,826
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)		3,425	343	3,768				4,195
10.13 Track: Vibration and noise dampening		75		75				84
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**23**	3,418	513	**3,931**	**$171**	**4%**	**1%**	**4,408**
20.01 At-grade station, stop, shelter, mall, terminal, platform	23	3,418	513	3,931	$171			4,408
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	3.32	19,814	1,981	**21,796**	**$6,565**	**20%**	**8%**	**24,226**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility		12,003	1,200	13,203				14,675
30.03 Heavy Maintenance Facility				0				0
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track		7,811	781	8,593				9,551
40 SITEWORK & SPECIAL CONDITIONS	3.32	38,534	7,759	**46,293**	**$13,944**	**42%**	**17%**	**50,723**
40.01 Demolition, Clearing, Earthwork		1,000	100	1,100				1,205
40.02 Site Utilities, Utility Relocation		29,243	7,311	36,554				40,051
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		437	44	481				527
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		250	38	288				315
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		1,419	3	1,422				1,558
40.07 Automobile, bus, van accessways including roads, parking lots		2,645	264	2,909				3,187
40.08 Temporary Facilities and other indirect costs during construction		3,541	0	3,541				3,879
50 SYSTEMS	3.32	20,185	3,250	**23,435**	**$7,059**	**21%**	**9%**	**26,213**
50.01 Train control and signals		2,141	375	2,516				2,814
50.02 Traffic signals and crossing protection		4,270	534	4,804				5,373
50.03 Traction power supply: substations		5,700	570	6,270				7,013
50.04 Traction power distribution: catenary and third rail		5,239	1,285	6,524				7,298
50.05 Communications		1,454	211	1,665				1,862
50.06 Fare collection system and equipment		1,380	276	1,656				1,852
50.07 Central Control				0				0
Construction Subtotal (10 - 50)	3.32	94,421	14,742	**109,163**	**$32,880**	**100%**	**40%**	**120,832**
60 ROW, LAND, EXISTING IMPROVEMENTS	3.32	36,254	5,438	**41,692**	**$12,558**		**15%**	**43,928**
60.01 Purchase or lease of real estate		30,077	4,512	34,588				36,443
60.02 Relocation of existing households and businesses		6,177	927	7,104				7,485
70 VEHICLES (number)	**8**	35,171	3,454	**38,625**	**$4,828**		**14%**	**42,875**
70.01 Light Rail	8	34,364	3,436	37,800	$4,725			41,959
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		120	18	138				153
70.07 Spare parts		687		687				763
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	3.32	37,115	5,567	**42,683**	**$12,856**	**39%**	**16%**	**46,666**
80.01 Project Development	9%	9,825	1,474	11,298				12,353
80.02 Engineering (not applicable to Small Starts)								
80.03 Project Management for Design and Construction	6%	6,550	982	7,532				8,235
80.04 Construction Administration & Management	9%	9,825	1,474	11,298				12,353
80.05 Professional Liability and other Non-Construction Insurance	2%	2,183	327	2,511				2,745
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	3%	3,275	491	3,766				4,118
80.07 Surveys, Testing, Investigation, Inspection	3%	3,275	491	3,766				4,118
80.08 Start up	2%	2,183	327	2,511				2,745
Subtotal (10 - 80)	3.32	202,961	29,202	**232,164**	**$69,929**		**85%**	**254,302**
90 UNALLOCATED CONTINGENCY				**25,430**			**9%**	**27,855**
Subtotal (10 - 90)	3.32			**257,594**	**$77,589**		**94%**	**282,157**
100 FINANCE CHARGES				**15,472**			**6%**	**16,929**
Total Project Cost (10 - 100)	3.32			**273,066**	**$82,249**		**100%**	**299,087**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				14.39%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				12.53%				
Total Contingency as % of Base Yr Dollars w/o Contingency				26.92%				
Unallocated Contingency as % of Subtotal (10 - 80)				10.95%				
YOE Construction Cost per Mile (X000)								$36,395
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$77,172
YOE Total Project Cost per Mile (X000)								$90,086

Attachment F-2

9TH STREET WITHOUT GRAND AVE EXTENSION

INFLATION WORKSHEET

INFLATION WORKSHEET

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 9th Street without Grand Av — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars	Double-Check Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
10 GUIDEWAY & TRACK ELEMENTS (route miles)	13,709	13,709	0	0	0	0	0	0	0	0	0	0				5,483	8,225		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	3,931	3,931	0	0	0	0	0	0	0	0	0	0				1,769	1,179	983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	21,796	21,796	0	0	0	0	0	0	0	0	0	0				9,808	11,988		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	46,293	46,293	0	0	0	0	0	0	0	0	0	0			12,185	16,567	17,054	487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	23,435	23,435	0	0	0	0	0	0	0	0	0	0				7,030	15,623	781	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	41,692	41,692	0	0	0	0	0	0	0	0	0	0			41,692				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	38,625	38,625	0	0	0	0	0	0	0	0	0	0			9,000	10,369	10,369	8,888	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	42,683	42,683	0	0	0	0	0	0	0	0	0	0			15,073	15,073	7,537	5,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	25,430	25,430	0	0	0	0	0	0	0	0	0	0			8,538	7,240	7,884	1,768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	15,472	15,472	0	0	0	0	0	0	0	0	0	0	0	0	5,395	4,420	4,650	1,007	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	273,066	273,066	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**91,883**	**77,761**	**84,509**	**18,914**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inflation Rate			0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.004	0.024	0.005	0.000	0.018	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Compounded Inflation Factor			1.270	1.228	1.186	1.146	1.107	1.070	1.034	1.029	1.005	1.000	1.000	1.018	1.054	1.091	1.129	1.168	1.209	1.251	1.295	1.341	1.387	1.436	1.486	1.538	1.592	1.648	1.706	1.765	1.827	1.891	1.957
YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
10 GUIDEWAY & TRACK ELEMENTS (route miles)	15,263		0	0	0	0	0						0	0	0	5,980	9,284	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	4,408		0	0	0	0	0						0	0	0	1,929	1,331	1,148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	24,226		0	0	0	0	0						0	0	0	10,696	13,530	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	50,723		0	0	0	0	0						0	0	12,838	18,067	19,249	569	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	26,213		0	0	0	0	0						0	0	0	7,667	17,633	913	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	43,928		0	0	0	0	0						0	0	43,928	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	42,875		0	0	0	0	0						0	0	9,483	11,307	11,703	10,382	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	46,666		0	0	0	0	0						0	0	15,881	16,437	8,506	5,841	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	27,855		0	0	0	0	0						0	0	8,996	7,896	8,898	2,065	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	16,929		0	0	0	0	0	0	0	0					5,684	4,820	5,248	1,177															
Total Project Cost (10 - 100)	299,087		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**96,811**	**84,798**	**95,383**	**22,094**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Attachment G-1

9TH STREET WITH GRAND AVE EXTENSION

MAIN WORKSHEET – BUILD ALTERNATIVE

MAIN WORKSHEET - BUILD ALTERNATIVE

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 9th Street with Grand Avenue Extension — Yr of Base Year $ 2017

Application for Small Starts Grant — Yr of Revenue Ops 2021

	Quantity	Base Year Dollars w/o Contingency (X000)	Base Year Dollars Allocated Contingency (X000)	Base Year Dollars TOTAL (X000)	Base Year Dollars Unit Cost (X000)	Base Year Dollars Percentage of Construction Cost	Base Year Dollars Percentage of Total Project Cost	YOE Dollars Total (X000)
10 GUIDEWAY & TRACK ELEMENTS (route miles)	**3.76**	14,156	1,406	**15,561**	**$4,139**	**13%**	**5%**	**17,326**
10.01 Guideway: At-grade exclusive right-of-way				0				0
10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)				0				0
10.03 Guideway: At-grade in mixed traffic	3.76	5,660	566	6,226	$1,656			6,932
10.04 Guideway: Aerial structure				0				0
10.05 Guideway: Built-up fill				0				0
10.06 Guideway: Underground cut & cover				0				0
10.07 Guideway: Underground tunnel				0				0
10.08 Guideway: Retained cut or fill				0				0
10.09 Track: Direct fixation				0				0
10.10 Track: Embedded		4,471	447	4,918				5,476
10.11 Track: Ballasted				0				0
10.12 Track: Special (switches, turnouts)		3,925	393	4,318				4,807
10.13 Track: Vibration and noise dampening		100		100				111
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	**24**	3,574	536	**4,110**	**$171**	**3%**	**1%**	**4,609**
20.01 At-grade station, stop, shelter, mall, terminal, platform	24	3,574	536	4,110	$171			4,609
20.02 Aerial station, stop, shelter, mall, terminal, platform				0				0
20.03 Underground station, stop, shelter, mall, terminal, platform				0				0
20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.				0				0
20.05 Joint development				0				0
20.06 Automobile parking multi-story structure				0				0
20.07 Elevators, escalators				0				0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	3.76	19,814	1,981	**21,796**	**$5,797**	**19%**	**8%**	**24,226**
30.01 Administration Building: Office, sales, storage, revenue counting				0				0
30.02 Light Maintenance Facility		12,003	1,200	13,203				14,675
30.03 Heavy Maintenance Facility				0				0
30.04 Storage or Maintenance of Way Building				0				0
30.05 Yard and Yard Track		7,811	781	8,593				9,551
40 SITEWORK & SPECIAL CONDITIONS	3.76	40,028	7,887	**47,915**	**$12,743**	**41%**	**17%**	**52,520**
40.01 Demolition, Clearing, Earthwork		1,187	119	1,306				1,432
40.02 Site Utilities, Utility Relocation		29,516	7,379	36,895				40,442
40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments		524	52	577				632
40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks		250	38	288				315
40.05 Site structures including retaining walls, sound walls				0				0
40.06 Pedestrian / bike access and accommodation, landscaping		1,546	3	1,549				1,698
40.07 Automobile, bus, van accessways including roads, parking lots		2,966	297	3,262				3,576
40.08 Temporary Facilities and other indirect costs during construction		4,038	0	4,038				4,426
50 SYSTEMS	3.76	24,131	3,927	**28,058**	**$7,462**	**24%**	**10%**	**31,384**
50.01 Train control and signals		2,029	355	2,384				2,667
50.02 Traffic signals and crossing protection		4,430	554	4,984				5,575
50.03 Traction power supply: substations		7,600	760	8,360				9,351
50.04 Traction power distribution: catenary and third rail		7,111	1,753	8,864				9,915
50.05 Communications		1,580	230	1,810				2,024
50.06 Fare collection system and equipment		1,380	276	1,656				1,852
50.07 Central Control				0				0
Construction Subtotal (10 - 50)	3.76	101,703	15,737	**117,440**	**$31,234**	**100%**	**41%**	**130,065**
60 ROW, LAND, EXISTING IMPROVEMENTS	3.76	36,956	5,543	**42,499**	**$11,303**		**15%**	**44,778**
60.01 Purchase or lease of real estate		30,521	4,578	35,099				36,981
60.02 Relocation of existing households and businesses		6,435	965	7,400				7,797
70 VEHICLES (number)	**8**	35,204	3,454	**38,658**	**$4,832**		**13%**	**42,912**
70.01 Light Rail	8	34,364	3,436	37,800	$4,725			41,960
70.02 Heavy Rail				0				0
70.03 Commuter Rail				0				0
70.04 Bus				0				0
70.05 Other				0				0
70.06 Non-revenue vehicles		120	18	138				153
70.07 Spare parts		720		720				799
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	3.76	39,342	5,901	**45,244**	**$12,033**	**39%**	**16%**	**49,441**
80.01 Project Development	9%	10,570	1,585	12,155				13,283
80.02 Engineering (not applicable to Small Starts)								
80.03 Project Management for Design and Construction	6%	7,046	1,057	8,103				8,855
80.04 Construction Administration & Management	9%	10,570	1,585	12,155				13,283
80.05 Professional Liability and other Non-Construction Insurance	2%	2,349	352	2,701				2,952
80.06 Legal; Permits; Review Fees by other agencies, cities, etc.	3%	3,523	528	4,052				4,428
80.07 Surveys, Testing, Investigation, Inspection	3%	3,523	528	4,052				4,428
80.08 Start up	2%	1,762	264	2,026				2,214
Subtotal (10 - 80)	3.76	213,204	30,636	**243,841**	**$64,851**		**85%**	**267,196**
90 UNALLOCATED CONTINGENCY				**26,720**			**9%**	**29,279**
Subtotal (10 - 90)	3.76			**270,560**	**$71,957**		**94%**	**296,475**
100 FINANCE CHARGES				**16,054**			**6%**	**17,573**
Total Project Cost (10 - 100)	3.76			**286,614**	**$76,227**		**100%**	**314,048**
Allocated Contingency as % of Base Yr Dollars w/o Contingency				14.37%				
Unallocated Contingency as % of Base Yr Dollars w/o Contingency				12.53%				
Total Contingency as % of Base Yr Dollars w/o Contingency				26.90%				
Unallocated Contingency as % of Subtotal (10 - 80)				10.96%				
YOE Construction Cost per Mile (X000)								$34,592
YOE Total Project Cost per Mile Not Including Vehicles (X000)								$72,111
YOE Total Project Cost per Mile (X000)								$83,523

Attachment G-2

9TH STREET WITH GRAND AVE EXTENSION

INFLATION WORKSHEET

INFLATION WORKSHEET

(Rev.18, May 2016)

City of Los Angeles — Today's Date **6/1/17**

Restoration of Historic Streetcar in Downtown Los Angeles - 9th Street with Grand Avenue — Yr of Base Year $ 2017

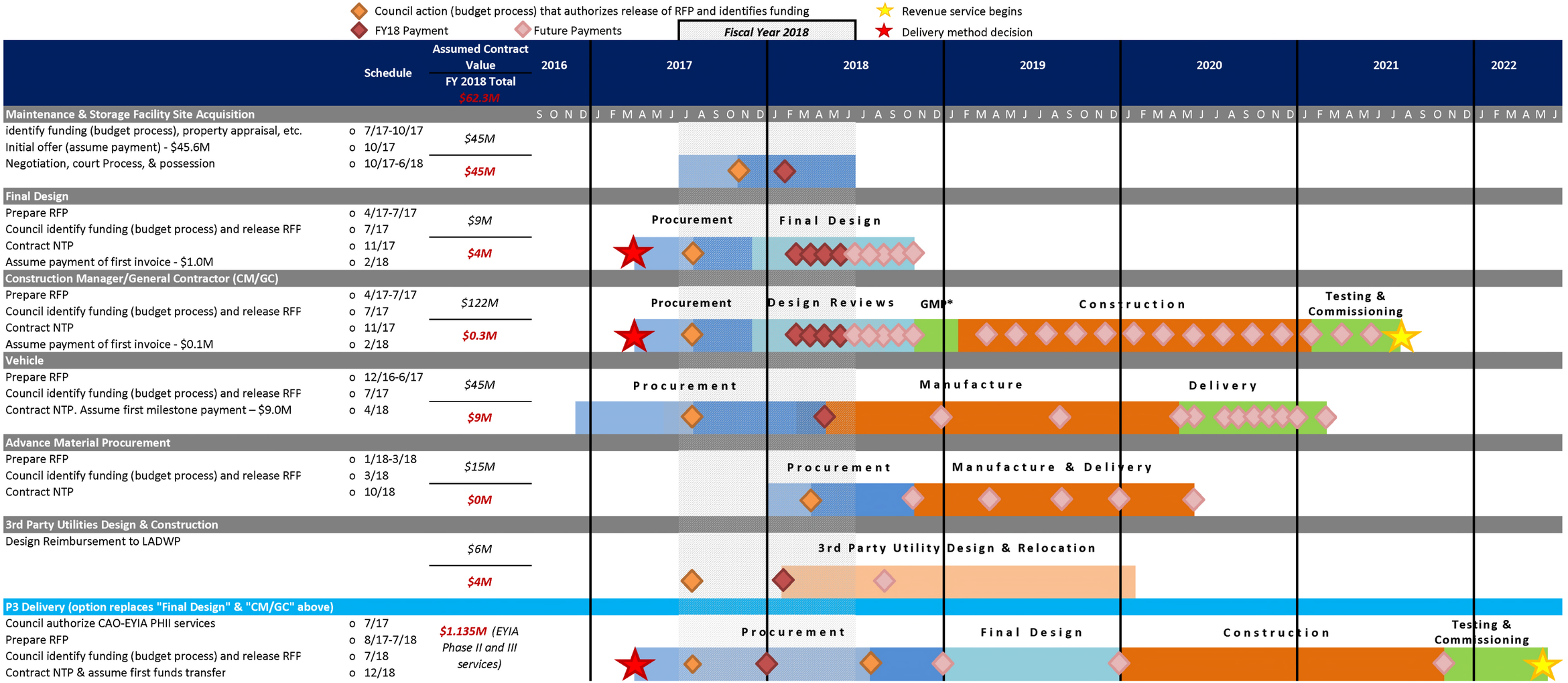
Application for Small Starts Grant — Yr of Revenue Ops 2021

Insert comments, notes, etc.

BASE YEAR DOLLARS (X$000)	Base Yr Dollars	Double-Check Total	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	15,561	15,561	0	0	0	0	0	0	0	0	0	0				6,225	9,337		0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	4,110	4,110	0	0	0	0	0	0	0	0	0	0				1,850	1,233	1,028	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	21,796	21,796	0	0	0	0	0	0	0	0	0	0				9,808	11,988		0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	47,915	47,915	0	0	0	0	0	0	0	0	0	0			12,298	17,257	17,808	551	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	28,058	28,058	0	0	0	0	0	0	0	0	0	0				8,417	18,705	935	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	42,499	42,499	0	0	0	0	0	0	0	0	0	0			42,499				0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	38,658	38,658	0	0	0	0	0	0	0	0	0	0			9,000	10,380	10,380	8,897	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	45,244	45,244	0	0	0	0	0	0	0	0	0	0			16,097	16,097	8,049	5,000	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	26,720	26,720	0	0	0	0	0	0	0	0	0	0			8,755	7,674	8,492	1,798	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	16,054	16,054	0	0	0	0	0	0	0	0	0	0	0	0	5,465	4,628	4,948	1,012	0	0	0	0	0	0	0	0	0	0	0
Total Project Cost (10 - 100)	286,614	286,614	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**94,114**	**82,337**	**90,941**	**19,222**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Inflation Rate			0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.004	0.024	0.005	0.000	0.018	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
Compounded Inflation Factor			1.270	1.228	1.186	1.146	1.107	1.070	1.034	1.029	1.005	1.000	1.000	1.018	1.054	1.091	1.129	1.168	1.209	1.251	1.295	1.341	1.387	1.436	1.486	1.538	1.592	1.648	1.706
YEAR OF EXPENDITURE DOLLARS (X$000)	YOE Dollars		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
10 GUIDEWAY & TRACK ELEMENTS (route miles)	17,326		0	0	0	0	0						0	0	0	6,788	10,538	0	0	0	0	0	0	0	0	0	0	0	0
20 STATIONS, STOPS, TERMINALS, INTERMODAL (number)	4,609		0	0	0	0	0						0	0	0	2,017	1,392	1,200	0	0	0	0	0	0	0	0	0	0	0
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	24,226		0	0	0	0	0						0	0	0	10,696	13,530	0	0	0	0	0	0	0	0	0	0	0	0
40 SITEWORK & SPECIAL CONDITIONS	52,520		0	0	0	0	0						0	0	12,958	18,819	20,100	644	0	0	0	0	0	0	0	0	0	0	0
50 SYSTEMS	31,384		0	0	0	0	0						0	0	0	9,179	21,112	1,093	0	0	0	0	0	0	0	0	0	0	0
60 ROW, LAND, EXISTING IMPROVEMENTS	44,778		0	0	0	0	0						0	0	44,778	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70 VEHICLES (number)	42,912		0	0	0	0	0						0	0	9,483	11,320	11,716	10,394	0	0	0	0	0	0	0	0	0	0	0
80 PROFESSIONAL SERVICES (applies to Cats. 10-50)	49,441		0	0	0	0	0						0	0	16,961	17,554	9,084	5,841	0	0	0	0	0	0	0	0	0	0	0
90 UNALLOCATED CONTINGENCY	29,279		0	0	0	0	0						0	0	9,224	8,369	9,585	2,101	0	0	0	0	0	0	0	0	0	0	0
100 FINANCE CHARGES	17,573		0	0	0	0	0	0	0	0					5,758	5,047	5,585	1,183											
Total Project Cost (10 - 100)	314,048		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**99,162**	**89,789**	**102,643**	**22,455**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

LA Streetcar - Funding Milestone Summary

Attachment No. 2

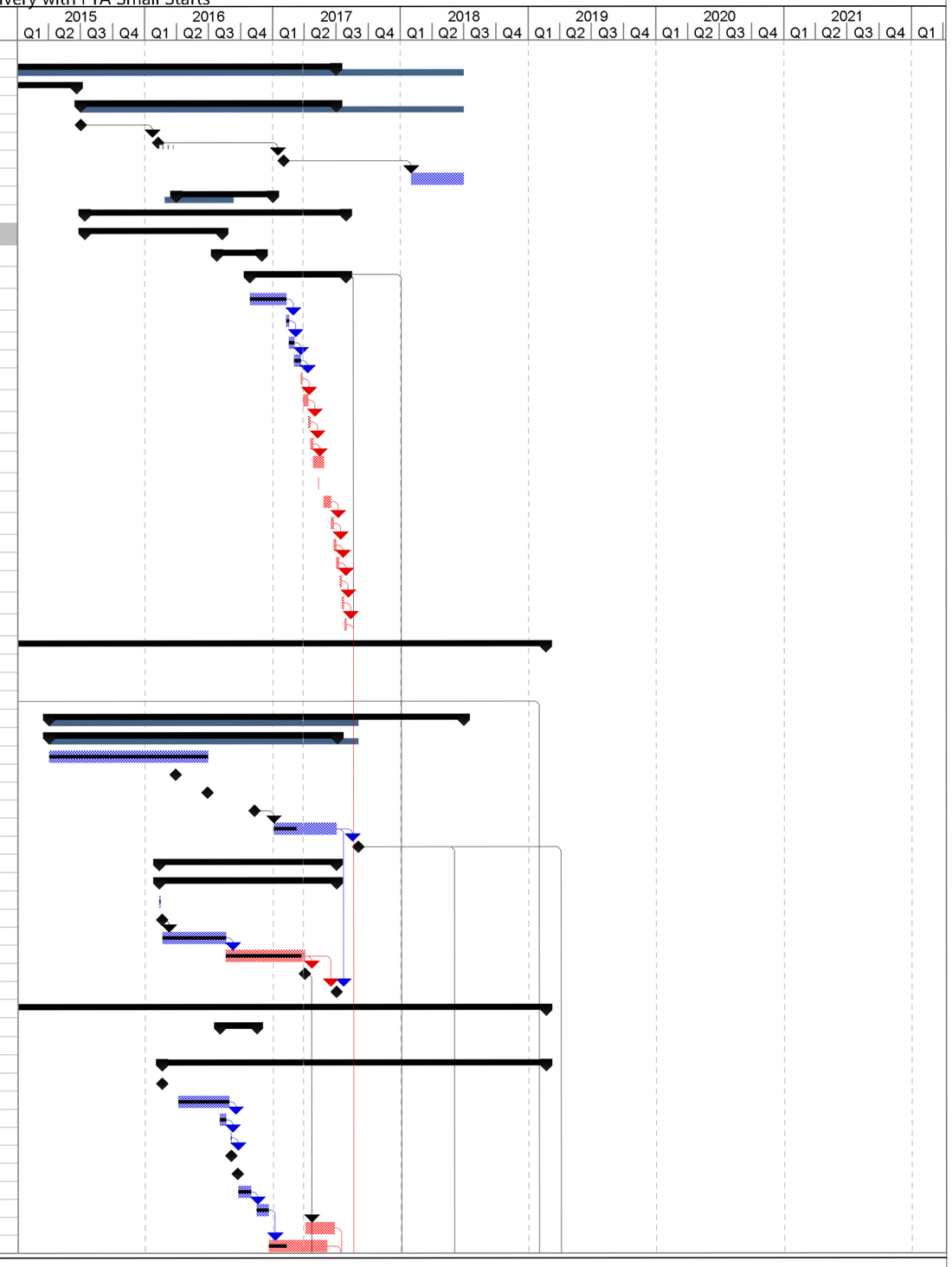


** GMP: "Guaranteed Maximum Price" - negotiation with CM/GC Contractor*

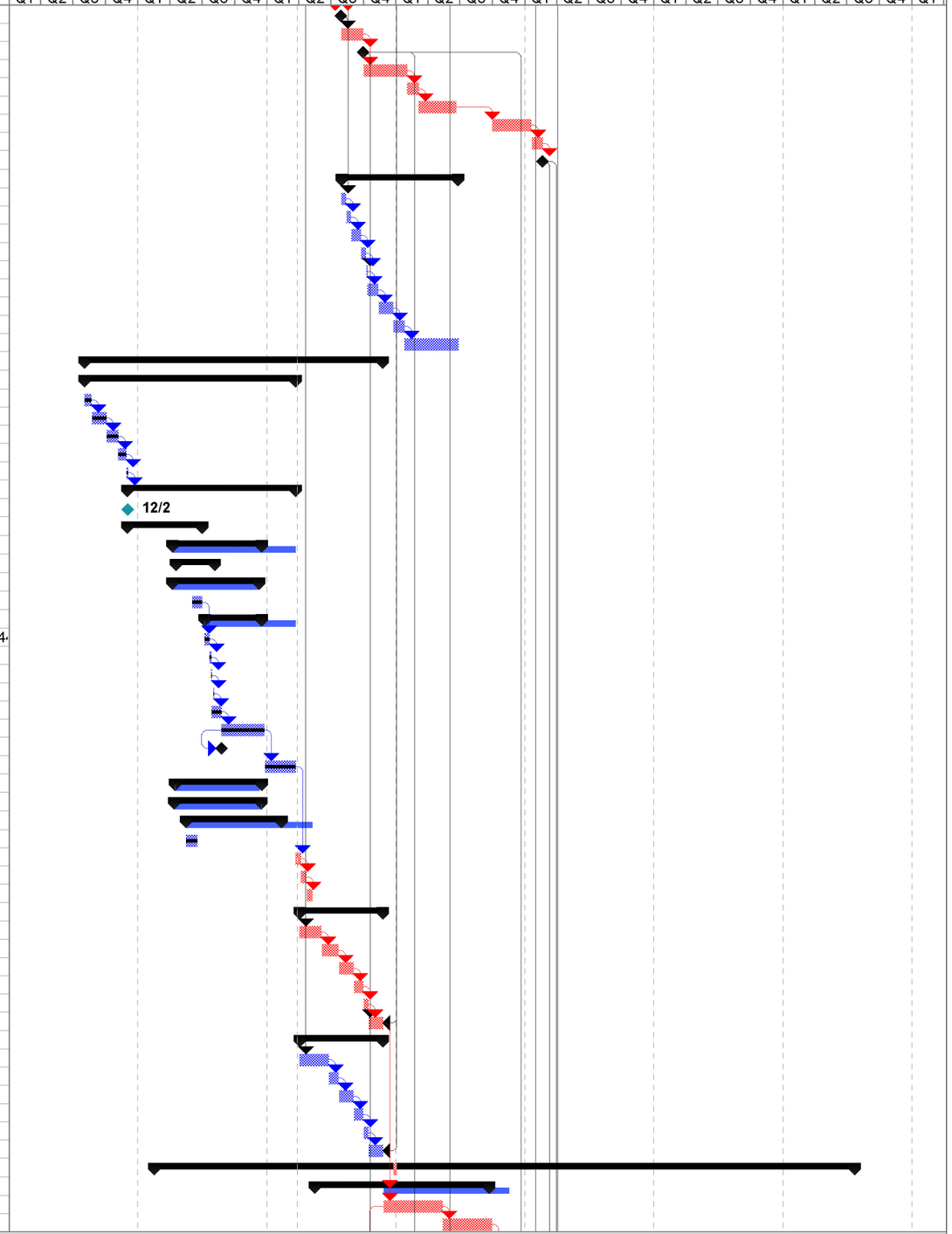
3/28/2017

DRAFT - LA Streetcar Master Schedule - CM-GC Delivery with FTA Small Starts

ID	Task Name	Duration	Start	Finish	Predecessors
1	**TASK GROUP 1- ADVANCED CONCEPTUAL ENGINEERING**	**444 days**	**Thu 4/26/12**	**Wed 1/15/14**	
31	**TASK GROUP 2 - CITY COUNCIL REPORTS / APPROVAL**	**866 days**	**Mon 3/10/14**	**Fri 6/30/17**	
32	**Project Manager Onboarding / Independent Cost Estimate**	**463 days?**	**Wed 9/11/13**	**Fri 6/19/15**	
42	**CAO P3 Reports**	**524 days**	**Wed 7/1/15**	**Fri 6/30/17**	
43	Present CAO Report # 1 (Financial Advisor) to LA City Council	157 days	Thu 7/2/15	Fri 2/5/16	
44	Present CAO Report # 2 (EY P3 Report) to LA City Council	229 days	Mon 2/8/16	Mon 1/30/17	43
45	Present CAO Report #3 (RFP Report)to LA City Council	260 days	Wed 2/1/17	Tue 1/30/18	44
46	Present CAO P3 Contract Award	108 days	Wed 1/31/18	Fri 6/29/18	45
47	**FTA Rating Report**	**199 days**	**Thu 3/31/16**	**Sat 12/31/16**	
51	**TASK GROUP 3 - ENVIRONMENTAL DOCUMENTATION**	**536 days?**	**Mon 7/13/15**	**Fri 7/28/17**	
52	Update Technical Documents and Complete Draft EIR	281 days?	Mon 7/13/15	Mon 8/8/16	
216	Final EIR + Findings + MMRP (Preparation & Approval)	93 days	Mon 7/25/16	Tue 11/29/16	
221	NEPA Process + FTA FONSI	197 days?	Thu 10/27/16	Fri 7/28/17	
222	Prepare Administrative Draft EA	14.8 wks	Thu 10/27/16	Tue 2/7/17	
223	Staff Review & Approval of Administrative Draft EA	1 wk	Wed 2/8/17	Tue 2/14/17	222
224	Revision of Admin Draft EA based on Staff Review	2 wks	Thu 2/16/17	Wed 3/1/17	223
225	Final Revision to draft EA	13 days	Thu 3/2/17	Mon 3/20/17	224
226	FTA Review of Administrative Draft EA	4 days	Tue 3/21/17	Fri 3/24/17	225
227	Prepare EA Revisions	2.2 wks	Mon 3/27/17	Mon 4/10/17	226
228	FTA Final Review & Approval to Circulate Draft EA	1 wk	Tue 4/11/17	Mon 4/17/17	227
229	Respond to Final FTA Comments and Prepare for Circulation	5 days?	Tue 4/18/17	Mon 4/24/17	228
230	NEPA Public Review Period	4.6 wks	Tue 4/25/17	Thu 5/25/17	229
231	Public Hearing	1 day?	Wed 5/10/17	Wed 5/10/17	
232	Prepare Administrative Final EA	3.2 wks	Thu 5/25/17	Thu 6/15/17	
233	Staff Review & Approval of Administrative Draft EA	1 wk	Fri 6/16/17	Thu 6/22/17	232
234	Prepare Final EA and FONSI	5 days?	Fri 6/23/17	Thu 6/29/17	233
235	Project Team Approval of Administrative Final EA and FONSI	6 days?	Fri 6/30/17	Fri 7/7/17	234
236	FTA Review of Administrative Final EA	1 wk	Mon 7/10/17	Fri 7/14/17	235
237	Prepare Final EA Revisions & Dtaft FONSI	1 wk	Mon 7/17/17	Fri 7/21/17	236
238	FTA Final Review & Approval of FONSI	1 wk	Mon 7/24/17	Fri 7/28/17	237
239	**TASK GROUP 4 - FUNDING**	**1978 days**	**Mon 7/11/11**	**Tue 2/19/19**	
240	**Community Facilities District (CFD)**	**680 days**	**Mon 7/11/11**	**Fri 2/28/14**	
241	Successful Vote for Community Facilities District	18 mons	Mon 7/11/11	Mon 12/3/12	
242	**Funding Requirements Met (FUNDING MILESTONE)**	0 days	Fri 2/28/14	Fri 2/28/14	241,265
243	**Measure M / P3 Agreement**	**849 days**	**Wed 4/1/15**	**Fri 6/29/18**	
244	**Measure M**	**590 days**	**Wed 4/1/15**	**Mon 7/3/17**	
245	Work with Metro Board on Measure M	324 days	Wed 4/1/15	Mon 6/27/16	
246	Metro Board Approval of Measure M - Draft	1 day	Mon 3/28/16	Mon 3/28/16	
247	Metro Board Approval of Measure M - Final	1 day	Mon 6/27/16	Mon 6/27/16	
248	November Ballot Initiative - Pass or Fail	1 day	Tue 11/8/16	Tue 11/8/16	
249	Secure Metro Board Approval to Accelerate Funds	129 days	Tue 1/3/17	Fri 6/30/17	248
250	**If approved, the earliest date Measure M funds may become available**	0 days	Fri 9/1/17	Fri 9/1/17	249
251	**P3 Agreement**	**364 days**	**Wed 2/10/16**	**Fri 6/30/17**	
252	**Phase I: Financial Advisor Report**	**364 days**	**Wed 2/10/16**	**Fri 6/30/17**	
253	Financial Advisor's Council Approval	3 days	Wed 2/10/16	Fri 2/12/16	
254	Execute FA Contract	1 day	Thu 2/18/16	Thu 2/18/16	
255	Financial Advisor's Report	129 days	Fri 2/19/16	Wed 8/17/16	254
256	Executive Committee Review	163 days	Thu 8/18/16	Fri 3/31/17	255
257	Decision to continue to pursue CM/GC delivery	0 days	Fri 3/31/17	Fri 3/31/17	256
258	Abandon P3 delivery (contingent on Measure M acceleration)	0 days	Fri 6/30/17	Fri 6/30/17	256,249
259	**FTA Small Starts Grant**	**1704 days**	**Thu 8/2/12**	**Tue 2/19/19**	
260	**Small Starts Application**	**76 days**	**Tue 8/2/16**	**Mon 11/14/16**	
265	**Entry into Small Starts Project Development (Step 1)**	**117 days**	**Thu 9/19/13**	**Fri 2/28/14**	
270	**FTA Small Starts Grant Agreement (Step 2)**	**785 days**	**Thu 2/18/16**	**Tue 2/19/19**	
271	Executive Streetcar Committee Approval to go to City Council	1 day	Thu 2/18/16	Thu 2/18/16	
272	Prepare small starts application and risk assessment	105 days	Mon 4/4/16	Fri 8/26/16	
273	Request approval to submit project for rating and grant agreement	13 days	Mon 8/1/16	Wed 8/17/16	272
274	City Council hearing for approval to submit for rating	1 day	Thu 9/1/16	Thu 9/1/16	273
275	Submit to FTA for rating	6 days	Fri 9/2/16	Fri 9/9/16	274
276	LADOT Withdrew Application	0 days	Wed 9/21/16	Wed 9/21/16	
277	AECOM Proposal to Prepare New SSG Application	26 days	Thu 9/22/16	Thu 10/27/16	
278	LADOT to Issue NTP	25 days	Mon 11/14/16	Fri 12/16/16	277
279	AECOM to Prepare FTA Financial Plan	60 days	Mon 4/3/17	Fri 6/23/17	257
280	AECOM to Prepare Small Starts Application	120 days	Mon 12/19/16	Fri 6/2/17	278

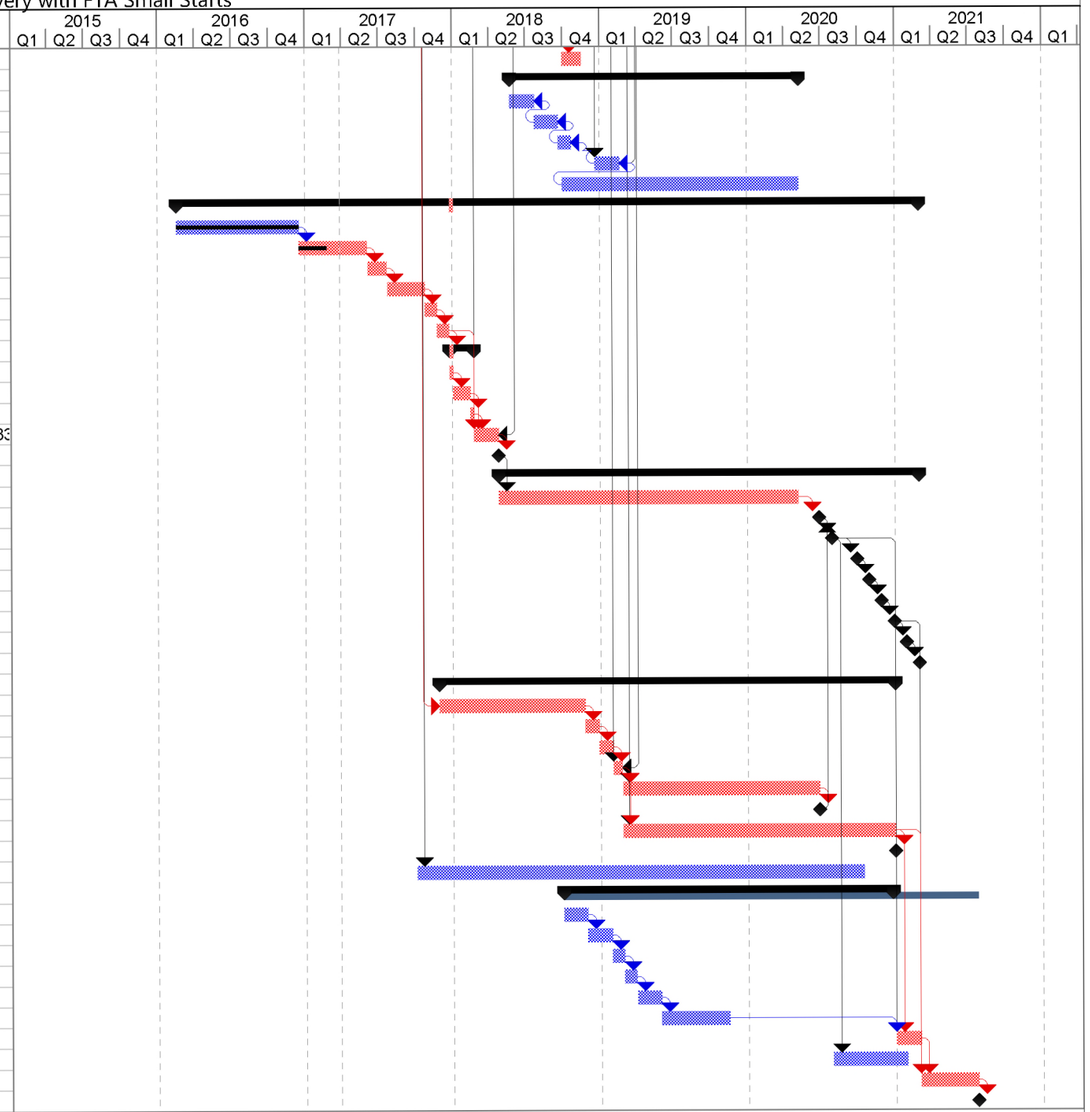


ID	Task Name	Duration	Start	Finish	Predecessors
281	Submit to FTA for preliminary rating	0 days	Fri 7/28/17	Fri 7/28/17	280,279,238
282	FTA review of application for preliminary rating	45 days	Mon 7/31/17	Fri 9/29/17	281
283	FTA preliminary "Medium" or better rating	0 days	Fri 9/29/17	Fri 9/29/17	282
284	FTA review of application for funding	89 days	Mon 10/2/17	Thu 2/1/18	282
285	Project inclusion in Federal FY 2019 budget	22 days	Fri 2/2/18	Mon 3/5/18	284
286	Complete FTA's roadmap of checklist project readiness items to FTA's	76 days	Tue 3/6/18	Tue 6/19/18	285
287	FTA Prepares Grant Agreement (FY '19)	80 days	Mon 10/1/18	Fri 1/18/19	286
288	Congressional Review	22 days	Mon 1/21/19	Tue 2/19/19	287
289	**Start receiving Grant Funds (FUNDING MILESTONE)**	0 days	Tue 2/19/19	Tue 2/19/19	288
290	**TASK GROUP 5 - ROW ACQUISITION**	**236 days**	**Mon 7/31/17**	**Mon 6/25/18**	
291	Prepare R/W Maps and Legal Description	10 days	Mon 7/31/17	Fri 8/11/17	221
292	Prepare Title Reports	10 days	Mon 8/14/17	Fri 8/25/17	291
293	Prepare Appraisal	20 days	Mon 8/28/17	Fri 9/22/17	292
294	Appraisal Review	10 days	Mon 9/25/17	Fri 10/6/17	293
295	Prepare Offer Letter (Contingent on FTA "Medium" Rating)	3 days	Mon 10/9/17	Wed 10/11/17	294,283
296	Negotiations	22 days	Thu 10/12/17	Fri 11/10/17	295
297	Resolution Hearing Notice	30 days	Mon 11/13/17	Fri 12/22/17	296
298	Resolution of Necessigy Hearing	23 days	Mon 12/25/17	Wed 1/24/18	297
299	Complete Court Process for Possession	108 days	Thu 1/25/18	Mon 6/25/18	298
300	**TASK GROUP 6 - PRELIMINARY ENGINEERING**	**606 days**	**Mon 8/3/15**	**Fri 11/24/17**	
301	**Preliminary Engineering**	**429 days**	**Mon 8/3/15**	**Wed 3/22/17**	
302	Prepare RFP	15 days	Mon 8/3/15	Fri 8/21/15	
303	Release RFP	30 days	Mon 8/24/15	Fri 10/2/15	302
304	Review Proposals	24 days	Mon 10/5/15	Thu 11/5/15	303
305	Interview	16 days	Fri 11/6/15	Fri 11/27/15	304
306	Award Contract	3 days	Mon 11/30/15	Wed 12/2/15	305
307	**Preliminary Engineering - HMM Schedule**	**342 days**	**Wed 12/2/15**	**Wed 3/22/17**	**306**
308	Notice to Proceed	1 day	Wed 12/2/15	Wed 12/2/15	
309	**PHASE I 15% Advanced Conceptual Design**	**152 days**	**Wed 12/2/15**	**Thu 6/30/16**	
403	**PHASE II 30% Preliminary Design**	**182 days**	**Fri 4/8/16**	**Fri 12/16/16**	
404	**Task 1 - Survey**	**80 days?**	**Mon 4/18/16**	**Fri 8/5/16**	
410	**Task 2 - 30% Preliminary Design**	**177 days**	**Fri 4/8/16**	**Fri 12/9/16**	
450	Structural Review	20 days	Fri 6/3/16	Thu 6/30/16	431SS+40 days
451	**Task 2a: 30% Design Interim Review**	**117 days**	**Fri 7/8/16**	**Fri 12/16/16**	
452	Internal Review (IDR+MR)	10 days	Fri 7/8/16	Thu 7/21/16	413,415,418,434,438,4
453	30% Design Submittal Compilation	3 days	Fri 7/22/16	Tue 7/26/16	452
454	30% Design Submission	1 day	Wed 7/27/16	Wed 7/27/16	453,482
455	Submittal Review Workshop	1 day	Tue 8/2/16	Tue 8/2/16	454
456	Consolidated Review Comments	20 days	Thu 7/28/16	Wed 8/24/16	455
457	Designer Review and Action Response	88 days	Thu 8/25/16	Fri 12/23/16	456
458	Design Comment Resolution Meeting	1 day	Thu 8/25/16	Thu 8/25/16	457SS+5 days
459	30% Final Design Submittal	63 days	Mon 12/26/16	Wed 3/22/17	457
460	**Task 3 - Traffic Engineering**	**177 days**	**Fri 4/15/16**	**Fri 12/16/16**	
476	**Task 4 - Project Management and Administration**	**179 days**	**Tue 4/12/16**	**Thu 12/15/16**	
494	**BOE ICE at 30% Design**	**196 days**	**Mon 5/16/16**	**Fri 2/10/17**	
495	Negotiate Estimating Contract	24 days	Mon 5/16/16	Thu 6/16/16	
496	Prepare independent Cost Estimate	10 days	Thu 3/23/17	Wed 4/5/17	459
497	LADOT / BOE Review of ICE / ICE Revisions	12 days	Thu 4/6/17	Fri 4/21/17	496
498	Submit PE & ICE Report to the City Council	11 days	Mon 4/24/17	Mon 5/8/17	497
499	**Final Design RFP**	**170 days**	**Mon 4/3/17**	**Fri 11/24/17**	
500	Prepare RFP	45 days	Mon 4/3/17	Fri 6/2/17	257
501	City Council Process & Release RFP	35 days	Mon 6/5/17	Fri 7/21/17	500
502	Advertisement	30 days	Mon 7/24/17	Fri 9/1/17	501
503	Review Proposals	20 days	Mon 9/4/17	Fri 9/29/17	502
504	Interview	10 days	Mon 10/2/17	Fri 10/13/17	503
505	City Council Process, Award Contract, & Issue NTP	30 days	Mon 10/16/17	Fri 11/24/17	221FF,504,283
506	**CM/GC RFP**	**170 days**	**Mon 4/3/17**	**Fri 11/24/17**	
507	Prepare RFP	60 days	Mon 4/3/17	Fri 6/23/17	257
508	City Council Process & Release RFP	20 days	Mon 6/26/17	Fri 7/21/17	507
509	Advertisement	30 days	Mon 7/24/17	Fri 9/1/17	508
510	Review Proposals	20 days	Mon 9/4/17	Fri 9/29/17	509
511	Interview	10 days	Mon 10/2/17	Fri 10/13/17	510
512	City Council Process, Award Contract, & Issue NTP	30 days	Mon 10/16/17	Fri 11/24/17	511,221FF
513	**TASK GROUP 7 - FINAL DESIGN, CONSTRUCTION, START-UP**	**1420 days?**	**Tue 2/16/16**	**Fri 7/23/21**	
514	**Final Design**	**354 days**	**Tue 5/16/17**	**Fri 9/21/18**	**505**
515	60% Design & Team Review	120 days	Mon 11/27/17	Fri 5/11/18	505
516	90% Design & Team Review	100 days	Mon 5/14/18	Fri 9/28/18	515



DRAFT - LA Streetcar Master Schedule - CM-GC Delivery with FTA Small Starts

ID	Task Name	Duration	Start	Finish	Predecessors
517	100% Design & Team Review	35 days	Mon 10/1/18	Fri 11/16/18	516
518	**Advance Procurement of Materials**	**512 days**	**Thu 5/24/18**	**Fri 5/8/20**	
519	Prepare RFB(s)	43 days	Thu 5/24/18	Tue 7/24/18	520SF
520	Release RFB(s)	43 days	Tue 7/24/18	Fri 9/21/18	521SF
521	Open Bids	22 days	Fri 9/21/18	Tue 10/23/18	522SF-43 days
522	Council Process & Award Contracts	43 days	Fri 12/21/18	Tue 2/19/19	523SF,289FF,283
523	Manufacture/Delivery of Materials	420 days	Mon 10/1/18	Fri 5/8/20	
524	**Vehicles**	**1316 days?**	**Tue 2/16/16**	**Mon 3/1/21**	
525	Preliminary Vehicle Research - PE & AECOM	219 days	Tue 2/16/16	Thu 12/15/16	
526	Prepare RFP for Vehicle Manufacturer	121 days	Fri 12/16/16	Fri 6/2/17	525
527	Council Process & Release RFP	35 days	Mon 6/5/17	Fri 7/21/17	526
528	Prepare Proposals	66 days	Mon 7/24/17	Mon 10/23/17	527
529	Review Proposals	22 days	Tue 10/24/17	Wed 11/22/17	528
530	Interview	22 days	Thu 11/23/17	Fri 12/22/17	529
531	**Best & Final Offer**	**44 days**	**Mon 12/25/17**	**Thu 2/22/18**	**530**
532	Prepare & Issue BAFO Docs	7 days	Mon 12/25/17	Tue 1/2/18	
533	Proposer Prepare BAFO	30 days	Wed 1/3/18	Tue 2/13/18	532
534	Review BAFOs	7 days	Wed 2/14/18	Thu 2/22/18	533
535	Council Process & Award Contract	43 days	Fri 2/23/18	Tue 4/24/18	530,250FF,533,534,283
536	Vehicle Manufacturer NTP	0 days?	Tue 4/24/18	Tue 4/24/18	535
537	**Manufacture and Delivery of Vehicles**	**744 days**	**Wed 4/25/18**	**Mon 3/1/21**	
538	Manufacture	530 days	Wed 4/25/18	Tue 5/5/20	536
539	Deliver Vehicle 1	0 days	Fri 6/26/20	Fri 6/26/20	553,538
540	Deliver Vehicle 2	0 days	Tue 7/28/20	Tue 7/28/20	539FS+22 days
541	Deliver Vehicle 3	0 days	Mon 9/28/20	Mon 9/28/20	540FS+44 days
542	Deliver Vehicle 4	0 days	Wed 10/28/20	Wed 10/28/20	541FS+22 days
543	Deliver Vehicle 5	0 days	Fri 11/27/20	Fri 11/27/20	542FS+22 days
544	Deliver Vehicle 6	0 days	Tue 12/29/20	Tue 12/29/20	543FS+22 days
545	Deliver Vehicle 7	0 days	Thu 1/28/21	Thu 1/28/21	544FS+22 days
546	Deliver Vehicle 8	0 days	Mon 3/1/21	Mon 3/1/21	545FS+22 days
547	**CM/GC Contract & Construction**	**809 days**	**Mon 11/27/17**	**Thu 12/31/20**	
548	Participate in Design Review Meetings	259 days	Mon 11/27/17	Thu 11/22/18	515SS
549	Prepare GMP (Guaranteed Maximum Price)	25 days	Fri 11/23/18	Thu 12/27/18	548
550	Program Manager Review of GMP & Award	25 days	Fri 12/28/18	Thu 1/31/19	549
551	Execute Construction Contract	16 days	Fri 2/1/19	Fri 2/22/19	250FF,242,550
552	**Construct MSF**	350 days	Mon 2/25/19	Fri 6/26/20	551,289
553	Substantial Completion (MSF)	0 days	Fri 6/26/20	Fri 6/26/20	552
554	**Construct Project**	484 days	Mon 2/25/19	Thu 12/31/20	551,289
555	Substantial Completion	0 days	Thu 12/31/20	Thu 12/31/20	554
556	Private Utilities Design and Construction	792 days	Mon 10/2/17	Tue 10/13/20	283
557	**Operations and Testing**	**584 days**	**Mon 10/1/18**	**Thu 12/24/20**	
558	Prepare RFP	43 days	Mon 10/1/18	Wed 11/28/18	
559	Council Processs & Release RFP	43 days	Thu 11/29/18	Mon 1/28/19	558
560	Review Proposals	22 days	Tue 1/29/19	Wed 2/27/19	559
561	Interview	22 days	Thu 2/28/19	Fri 3/29/19	560
562	Council Process & Award Contract	43 days	Mon 4/1/19	Wed 5/29/19	561
563	Prepare Safety Certifications and Standard Operating Procedures	120 days	Thu 5/30/19	Wed 11/13/19	562
564	On-Site Testing & Startup/Acceptance	43 days	Fri 1/1/21	Tue 3/2/21	540,563,554
565	Dynamic Testing/Acceptance	132 days	Wed 7/29/20	Thu 1/28/21	540
566	Simulated Revenue Service Testing	103 days	Wed 3/3/21	Fri 7/23/21	544,554,564
567	**Revenue Service Begins**	0 days	Fri 7/23/21	Fri 7/23/21	566



City of Los Angeles Department of Public Works,
Bureau of Engineering

Figure 1-1. Locally Preferred Alternative