Van Ness Avenue: What Lies Beneath

JUNE 2021

City and County of San Francisco

Civil Grand Jury | 2020–2021

About the Civil Grand Jury

The Civil Grand Jury is a government oversight panel of volunteers who serve for one year. It makes findings and recommendations resulting from its investigations.

Reports of the Civil Grand Jury do not identify individuals by name. Disclosure of information about individuals interviewed by the jury is prohibited.

California Penal Code, section 929.

2020–2021 Jurors

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Executive Summary

The Van Ness Corridor Transit Improvement Project (Van Ness Project) and the delays it has incurred illustrate organizational shortcomings the City and County of San Francisco (the City) faces in delivering major public works projects. In particular:

1. Planning and design processes failed to capture the scope of the project adequately.
2. Contracting processes failed to instill accountability.
3. Ongoing project management failed to remediate problems efficiently and effectively.

These shortcomings created opportunities for mistakes years before breaking ground and throughout the construction process, and many of them were foreseeable and avoidable. The City should take action to address these shortcomings to prevent similar failures in future projects.

Background

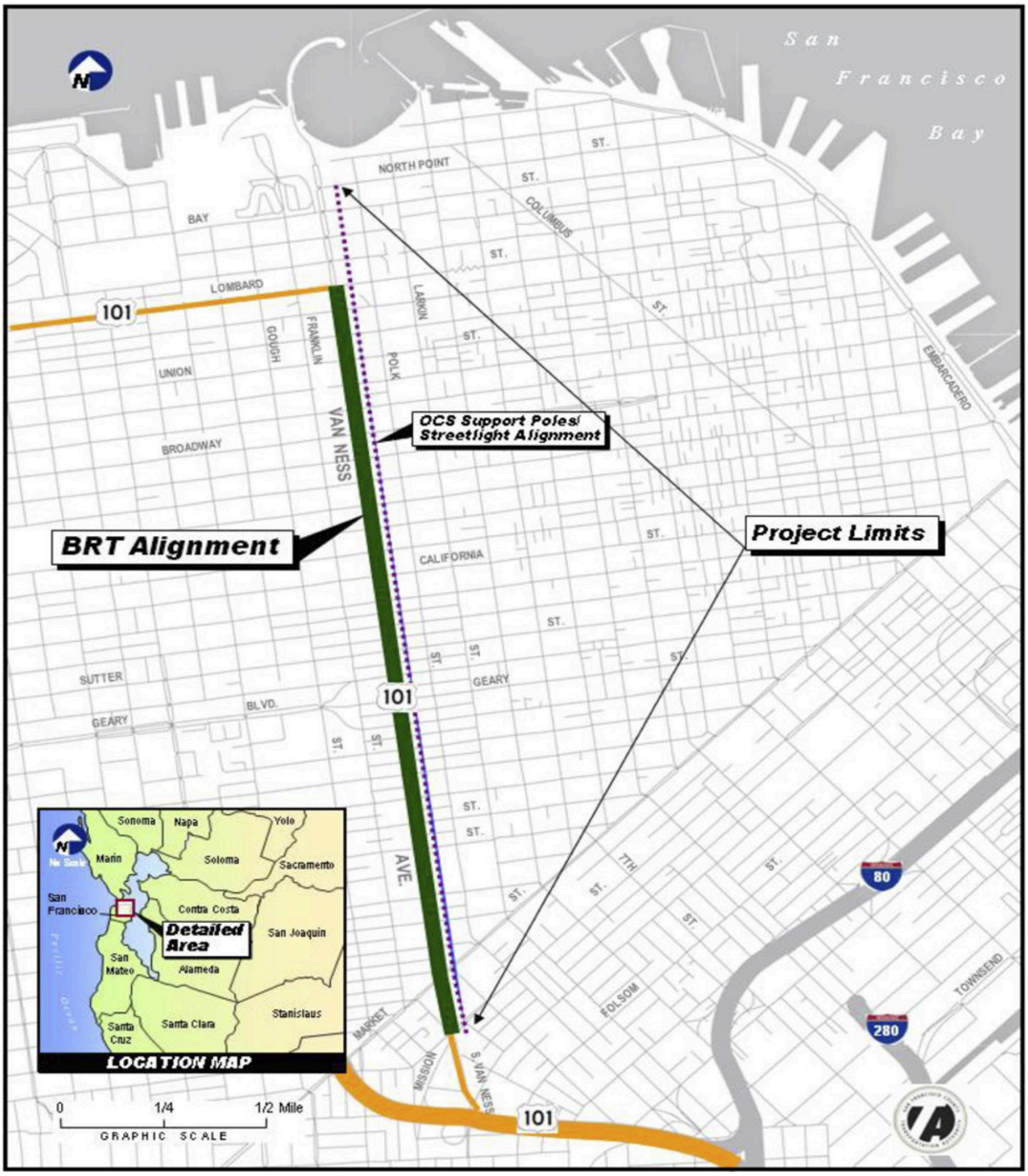
The Van Ness Avenue corridor serves as both a vital connector of San Francisco neighborhoods and a regional link for travel between Marin, San Francisco, and San Mateo Counties. Van Ness Avenue is one of the busiest north-south corridors in the City, spanning two miles from Lombard Street to Mission Street. In 2003, 75% of San Francisco voters approved Proposition K, a sales tax to provide rapid transit service on Van Ness Avenue.[1]

In September 2013, the Board of Supervisors, acting as the San Francisco County Transportation Authority Commission, unanimously approved the Van Ness Bus Rapid Transit Project (BRT), the core of the Van Ness Project. The overall cost to revive this aging corridor is approximately $346 million.

[1] Department of Elections, "November 4, 2003 Consolidated Municipal Election," *City and County of San Francisco*, https://sfelections.sfgov.org/results-summary-nov-2003

Figure 1 below illustrates the location of the project:

Figure 1. Location of Van Ness BRT



The stated goals of the project were to:

- Improve the level of service for existing transit passengers
- Establish an efficient north-south link in San Francisco's transit network
- Create an identity of the Van Ness corridor through landscaping and urban design that integrates transit infrastructure with adjacent land uses
- Develop standards for implementing Bus Rapid Transit Services citywide[2]

[2] San Francisco County Transportation Authority, *Van Ness BRT Feasibility Study*, Section 1.1. PDF file. https://www.sfcta.org/sites/default/files/2019-02/Van%20Ness%20BRTFeasibilityStudy_Dec_2006.pdf

Bus Rapid Transit is designed to have better capacity and reliability than a conventional bus system. The system includes roadways that are dedicated to buses and gives priority to buses at intersections where they interact with other traffic. Design features of the system are intended to reduce delays caused by passengers boarding or leaving buses or paying fares. It combines the capacity and speed of a rail transit system with the flexibility, lower cost, and simplicity of a bus system.

Upon breaking ground in 2016, the project was expected to be completed by the end of 2019. This timeline included a complete replacement and movement of underground utilities, but shortly after breaking ground, many issues with this replacement were discovered. As of the release date of this report, the expected completion date has been extended into 2022.

The Civil Grand Jury's interest in examining the Van Ness Project stemmed from the continued delay. This is not the first major transportation project in San Francisco to experience such a significant delay, and the Jury's investigation sought to identify any underlying deficiencies in the process that could be remedied for future projects.

Methodology

The Civil Grand Jury (the Jury) traced the history of the Van Ness Project from inception to current status, including a review of various plans, studies, environmental impact reports, and funding sources. The Jury held a series of interviews with City officials and employees from various departments. Non-City employees involved in the project in various capacities were invited to respond to inquiries as well.

The Jury also reviewed numerous public documents related to the project, including board meeting minutes, the City's Capital Plan, contracts and contract modifications, and various directives and memoranda of understanding. This included an examination of more detailed project documents provided by interviewees, such as utility drawings, maps, timelines, and specifications. Further guidance from various state, federal, and private sources of information, such as earlier Civil Grand Jury reports, as well as industry standards for construction, contracting, and underground work, and safety protocols for infrastructure projects were also reviewed.

All of these sources of information were used to validate and verify statements made during interviews to provide a detailed view of the history and timeline of the project. Facts that the Jury could corroborate from multiple sources were then used to determine the findings and recommendations included in this report.

For purposes of reviewing project costs, the Jury considered both the initial construction contract, originally valued at $193 million, and the full project budget, originally estimated at $309 million, which includes internal costs, allocation from budget contingencies, and other items. The full project budget is presented in Appendix A.

Discussion

The Van Ness Project is a case study in how mistakes can compound through the course of a major project. For purposes of this investigation, the Jury reviewed the history of the project in three phases:

1. Project planning and design, between 2004 and 2014
2. Contracting and preconstruction, between 2014 and 2016
3. Construction, since 2016

The City missed multiple opportunities throughout the first two phases to identify and minimize the risks inherent in a project of this complexity and magnitude. These misses resulted in significant delays during the third phase.

Missed opportunities include the following:

- Project design—the impacts of key design decisions were not explored adequately
- Contracting—the contracting process did not value technical expertise sufficiently
- Preconstruction—the preconstruction deliverables were not established and evaluated appropriately

These missed opportunities impacted the construction phase adversely, to the point that the City was unable to manage the project effectively after ground was broken.

As a result of these missteps, the total cost of the project has increased from $309 million (including $28 million of contingency budgets) to a current estimate of $346 million, an increase of 12% overall and 23% exclusive of contingencies. This cost increase includes both construction costs (additions to the primary contract) and ongoing costs incurred directly by the City as a result of the extended project timelines (e.g., dedicated personnel costs). The duration of construction has also increased from three years to nearly six years.

Project Planning and Design

San Francisco Municipal Transportation Agency (SFMTA) has told the public repeatedly that aged underground utilities caused the project delays. While this is technically true, it fails to acknowledge that adequate assessment of the utilities during the planning and design phase of the project would have resulted in a more accurate project timeline and would have avoided setting unrealistic completion dates. Despite extensive study and analysis on the project as a whole, design choices for the Van Ness BRT were made without adequate knowledge of Van Ness Avenue's subsurface infrastructure.

Initial Feasibility and Project Design

The Van Ness Project was part of the 1995 Four Corridor Plan[3] created by the San Francisco County Transportation Authority Commission, and Proposition K's specified expenditure plan included Bus Rapid Transit on Van Ness Avenue.[4] After passage of Proposition K in 2003, the SFMTA began formal planning for the project.

While multiple City agencies participated in the Van Ness Project, SFMTA became the formal project owner. SFMTA completed their feasibility study in 2006 followed by a draft Environmental Impact Report (EIR)[5] in 2011. This draft report identified three possible designs:[6]

1. Side-lane BRT with street parking
2. Center-lane BRT with right-side boarding and dual medians
3. Center-lane BRT with left-side boarding and a single median

Design options were circulated for public review and comment over a seven-week period in 2011. As part of the approval process for the Environmental Impact Report, the National Environmental Policy Act requires selection of a Locally Preferred Alternative, and the center lane right-side boarding design was selected. As a result of the public review and comment period, the chosen design was modified slightly from one of the draft design options.

Once the design selection was made, it was incorporated into the final Environmental Impact Report which was approved in 2013. This design choice would have significant implications for the project.

Impact of Center-Lane BRT Design

Construction was scheduled to begin in October 2016 with substantial completion by October 2019, but the choice of the center-lane BRT rendered the original project timeline infeasible before construction even began. Water and sewer lines were located in the center of Van Ness Avenue, and if they were left in place below the BRT lanes, future maintenance on these lines could not be performed without significant disruption to BRT service.

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3 San Francisco County Transportation Authority, *The Four Corridor Plan*, PDF file. https://ia800400.us.archive.org/21/items/fourcorridorplan95sanf/fourcorridorplan95sanf.pdf

4 City and County of San Francisco, *Legal Text of Proposition K*, PDF file. http://www.amlegal.com/pdffiles/sanfran/2003-11-04-PropK.pdf

5 Environmental impact assessments ensure that considerations of possible environmental impacts of a proposed project are considered and mitigated. The report is a technical tool that identifies, predicts, and analyzes impact on the physical environment as well as social, cultural, and health impacts.

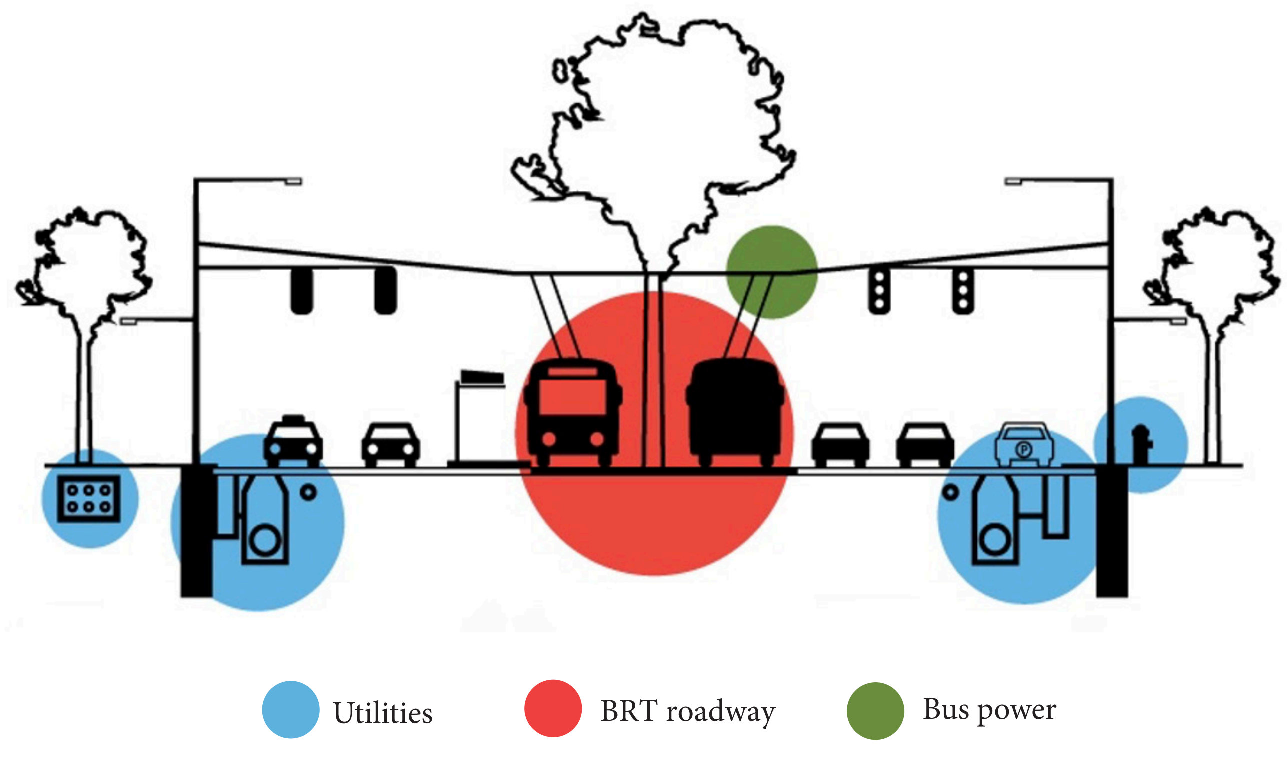
6 Both the National Environmental Policy Act and the California Environmental Quality Act require consideration of a range of reasonable alternatives, including a no-build alternative.

Future maintenance would be complicated because:

1. In order to perform repairs and maintenance on the water and sewer lines, technicians would have to dig through the newly-constructed BRT lanes, and this would take the BRT out of service.
2. The overhead contact system[7] would need to be deenergized or removed temporarily due to Occupational Safety and Health Administration (OSHA) requirements for a 20-foot overhead clearance when working near a power line.[8]

The overhead contact system is illustrated in Figure 2 below. The Van Ness BRT buses will run on electrical power, and the lines supplying the power to the buses are located directly above the BRT lanes. With the side-lane BRT design, the electrical lines would also be on the side, and work on the original water and sewer lines under the center median could be performed without affecting the overhead lines.

Figure 2. Overhead Contact System in a Center-Lane BRT Design[9]



These two complications thrust the Water, Power, and Sewer divisions of the San Francisco Public Utilities Commission (SFPUC) into a larger role in the overall project. SFPUC's work plan at the time included maintenance of the water system, but there was no near-term plan for maintenance or replacement of the sewer lines.

7 The overhead lines and wires used to transmit electrical energy to buses.

8 Occupational Safety and Health Administration, *Laws and Regulations, Standard 1926.1408*, https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1408

9 San Francisco Municipal Transportation Agency, *Construction Phases*, https://www.sfmta.com/projects/van-ness-improvement-project

Had the side-lane BRT design been selected, there would not have been an immediate need to move both the water and sewer lines. SFMTA determined, however, that the long-term goals of the Van Ness Project would be better achieved through the center-lane design, despite the need to move the existing water and sewer lines. Long-term benefits of the center-lane design include elimination of conflicts with right-turning vehicles and bicycles, exclusive signaling for transit vehicles, and improvement of pedestrian crossings through breaking up the wide street. Additionally, improved access to underground utilities located under the side lanes will make SFPUC repairs and maintenance less disruptive to traffic in the future. So while the side-lane BRT would have prevented the subsequent issues with the underground infrastructure, SFMTA determined that it would have reduced the benefits of the BRT considerably.

Ultimately, SFMTA's selection of the center-lane design required relocation of the water and sewer infrastructure, and this complication was not addressed adequately during the planning process. While the 2006 feasibility study mentioned the center location of the sewer lines,[10] it did not acknowledge that the sewer lines would need to be moved to allow for future repairs and maintenance.

Another oversight in the planning and design process was that the status of the underground infrastructure was largely unknown. The critical resource for underground work is a utility map which shows the location and identification of pipes, lines, and cables buried below the ground. Determining the accuracy of the utility map is a key component in planning a large-scale construction project like Van Ness. There are multiple ways to identify what is underground, such as potholing, ground-penetrating radar, and simply walking along the street and noting critical indicators, such as manhole covers. This assessment did not occur during the planning phase of the project, and much of it was not even done until after construction actually started.

Methods for Derisking the Underground Work

Derisking is the process of making a project more predictable by reducing the possibility that something can go wrong. In a construction project of this complexity and magnitude, derisking should begin as early in the process as possible. In regard to the underground work in particular, there are three methods of derisking that could have been performed during planning and design. These include:

1. Potholing
2. Ground-penetrating radar
3. Surface inspection

[10] San Francisco County Transportation Authority, *Van Ness BRT Feasibility Study*, Section 2.4.1. PDF file. https://www.sfcta.org/sites/default/files/2019-02/Van%20Ness%20BRTFeasibilityStudy_Dec_2006.pdf

Potholing is the practice of digging a series of test holes to expose underground utilities in order to ascertain their horizontal and vertical locations. This practice is generally viewed as an essential phase of underground construction and is a critical step in assessing the accuracy of utility maps. It is most useful when performed during the planning and design phases of a construction project. SFPUC requested exploratory potholing well in advance of construction, a standard practice on their own projects, but it did not occur during the planning phase for the Van Ness Project.

Ground-penetrating radar is a less-invasive means of assessing the accuracy of utility maps. This method uses radar pulses to image the subsurface and is particularly useful in identifying underground utilities. While ground-penetrating radar was done eventually, it was well after construction started and only after it became evident that the utility maps were inaccurate.

Surface inspection is a third method for determining accuracy of the utility map. This includes walking up and down the road and comparing the utility indicators, such as manhole covers or removable plates, to the map. For example, a significant finding during construction was a large Pacific Gas & Electric (PG&E) vault located between Vallejo Street and Pacific Avenue. This vault was not identified on the City's utility map. However, this could have been identified as an inaccuracy on the map by walking along the street, seeing a manhole cover, and noting that it was not on the map.

Extensive assessment of the utility map during the planning process, using any method, would have yielded a more accurate project plan.

Contracting and Preconstruction

In recent years, the Construction Manager/General Contractor (CMGC) model has gained traction as an approach to manage increasingly complex public-sector construction projects. Multiple modes of transportation have entered roadways, cities have become more densely populated, infrastructure has aged, and regulations have become more stringent. The CMGC engagement model is intended to drive innovation, improve design quality, control costs, and optimize construction schedules by introducing expert input at all stages of the project while also providing continuity in the form of a single contractor relationship.

The CMGC process includes two phases:

1. Design and preconstruction
2. Construction

During the design and preconstruction phase, the contractor partners with the project owner to identify risks, refine the project design and schedule, and provide cost projections. Once the design and preconstruction phase is complete, the contractor and project owner negotiate a price for the construction contract, and the construction phase begins, with the same contractor typically serving as the contractor during the construction period.

The City began using the CMGC model in 2007, specifically with building projects undertaken by San Francisco Public Works, including the Academy of Sciences and the rebuild of San Francisco General Hospital. In fact, the 2014–15 Civil Grand Jury praised the City's use of the CMGC model to deliver major construction projects on time and within projected budgets.[11] Before the Van Ness Project, however, a CMGC contract had not been used on a transportation infrastructure project or on any project that involved multiple City agencies.

SFMTA chose the CMGC model for the Van Ness Project even though they had not used it before, and their inexperience with this type of contract led to the potential benefits (stemming from the close relationship between the City and contractor) being minimized, and the potential sticking points (stemming from a reliance on flexibility and good faith as opposed to exacting specifications) being exacerbated.

In particular, industry best practices recommend engaging with the contractor as early as possible in the design process, and preferably when the design is no more than 30% complete. In the case of the Van Ness Project, City engineers continued design work while the bidding process for the CMGC contractor was taking place, and the design was closer to 70% complete by the time the preconstruction contract was awarded. As a result, the selected contractor had much less input into the project design than the CMGC approach intended, thereby minimizing the advantages of this contract model.

Bidding and Contract Selection

A CMGC contract for design and preconstruction is awarded typically on either a qualifications-based selection process or a best-value selection process. The industry standard is the qualifications-based process, where construction cost is not a criterion for contract selection.[12] For the Van Ness Project, however, SFMTA used the best-value selection process. The selection rubric provided a total of 180 possible points, where 120 were allocated to technical qualifications and 60 were allocated to price.[13] This allocation was, in fact, enough to result in the selection of the bid that was not the most technically qualified.

SFMTA received preconstruction bids from two teams of contractors. Each team included the general contractor as well as subcontractors that would be responsible for the largest components of the project. Most notably, these teams included the subcontractors slated to perform the underground utility work. Walsh Construction (Walsh), the eventual winner of the preconstruction bid, included Synergy Project Management (Synergy) as their subcontractor for the underground work.

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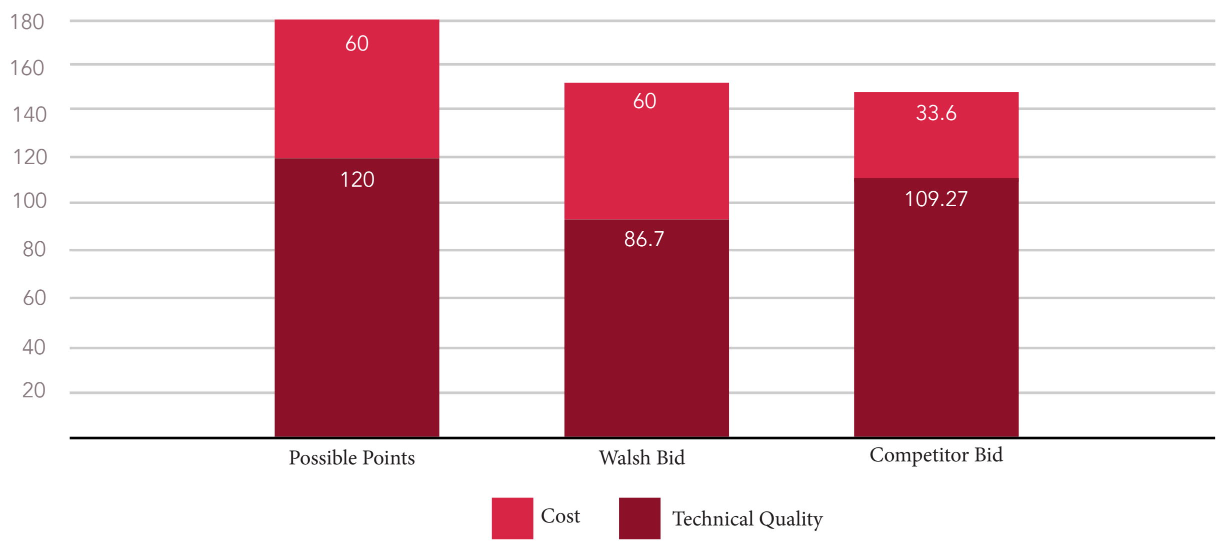
11 City and County of San Francisco Civil Grand Jury, *San Francisco's City Construction Program: It Needs Work*. PDF file. https://civilgrandjury.sfgov.org/2014_2015/14-15_CGJ_Report_SF_Construction_Program_It_Needs_Work_7_16_15.pdf

12 Associated General Contractors of America and the National Association of State Facilities Administrators, *CM/GC Guidelines for Public Owners*. PDF file. https://www.agc.org/sites/default/files/Files/Programs%20%26%20Industry%20Relations/CM_GC_Guidelines.pdf

13 The cost bid included the contractor's price for the preconstruction period as well as their fixed fee for the construction period.

Walsh scored lower in technical qualifications but submitted the lower bid in terms of cost ($10.4 million in fixed fees versus $18.5 million). This $8.1 million difference in the preconstruction cost bid was just enough to result in Walsh earning the overall higher score on SFMTA's rubric. Walsh was therefore awarded the preconstruction contract and ultimately the entire construction contract, valued initially at $193 million. A summary of the scoring is presented in Figure 3 below, and the full scoring is presented in Appendix B.

Figure 3. Preconstruction Bid Scoring



SFMTA's use of the best-value selection process resulted in selecting a contractor who was, in SFMTA's own evaluation, less technically qualified, based on a bid that comprised less than 5% of the construction contract value and around 3% of the total project cost. Ironically, even this "best-value" point allocation was only allowed through a special legislative allowance approved by the Board of Supervisors.[14] Outside of the Van Ness Project, the City's Administrative Code at the time required cost to be weighted at 65% or greater of the total scoring.[15] While this has since been amended to allow cost considerations to be weighted as low as 40%, this requirement is still not in line with industry best practice.

[14] City and County of San Francisco, *Ordinance 255-14*, https://sfbos.org/ftp/uploadedfiles/bdsupvrs/ordinances14/o0255-14.pdf

[15] City and County of San Francisco, *Administrative Code Section 6.68*, https://codelibrary.amlegal.com/codes/san_francisco/latest/sf_admin/0-0-0-2999#JD_6.68

Preconstruction Processes and Deliverables

The expected outcome of the preconstruction phase was a defined set of deliverables consisting of various design and timeline-projection artifacts as well as cost estimates for the actual construction work. These deliverables did not, however, include significant on-the-ground derisking or validation as is expected in the industry.[16] Given the inherent risk associated with the underground work, based primarily on the complexity of the Van Ness corridor and the age of the utilities, failure to include an accurate assessment of the underground infrastructure during the preconstruction phase was another missed opportunity for the City.

The possibility of undisclosed utilities was recognized during preconstruction via a risk register, a tool used to identify potential risks, rank them, and determine mitigation strategies. But undisclosed utilities were identified as only a moderate risk despite the relative age and complexity of the Van Ness corridor. The City's only accompanying mitigation strategy was the allocation of additional contingency dollars.[17] This was the last chance to introduce potholing or an equivalent method that could have uncovered the reality of the underground utility situation, but the cited mitigation strategy did not include any actual derisking work.

In fact, discrepancies of all magnitudes existed between the utility maps and the actual underground infrastructure, and these were not discovered until construction began.

Walsh did complete the deliverables as they were defined. This included production of the construction artifacts, a construction plan, and successful community outreach and permit management. In particular, their work in dealing with the complexities of CalTrans policies was extremely noteworthy.[18] These are all valuable outputs of the CMGC model. Unfortunately, these deliverables were insufficient to prepare for the work that was ahead. A summary of all preconstruction deliverables is provided in Appendix C.

Walsh's performance during the preconstruction phase was deemed sufficiently satisfactory to proceed with the full construction contract. While the City could have put the construction work out for a separate bid, it chose not to, as is customary with the CMGC model. After negotiations, the City approved a modification to the preconstruction contract adding $193 million to its value and formally naming Walsh as the general contractor.[19]

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16 American Society of Civil Engineers, *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data*. PDF file. http://www.dot.ga.gov/PartnerSmart/utilities/Documents/ASCE%2038-02.pdf

17 On a scale of zero to five, with zero being no risk and five being the highest risk, undisclosed utilities were assigned the following: probability of occurring = 3, impact to cost = 2, and impact to schedule = 2.

18 A portion of Van Ness Avenue is part of US Route 101, and thus under the jurisdiction of CalTrans which must approve all work conducted on that section of the corridor.

19 San Francisco Municipal Transportation Agency, *Resolution No. 180821-115*. PDF file. https://www.sfmta.com/sites/default/files/agendaitems/2016/8-16-16%20Item%2011%20Contract%20Amendment%20-%20Van%20Ness%20Project.pdf

Construction Contract

An additional complication arose from the way that costs were shared between City departments, and this resulted in a significant delay to the project. Although SFPUC is the owner of the underground utilities, it was not involved sufficiently in the decisions made during the contracting phases of the project. SFMTA, as the project owner, entered into the construction contract on behalf of itself and SFPUC.

After the contract was signed, SFMTA entered into a cost-sharing arrangement with SFPUC. Under the terms of the arrangement, SFPUC became responsible for an estimated $54 million of the project costs related to streetlight, water, and sewer replacement.[20] Because of this arrangement, SFPUC assumed a more prominent interest in directing how these funds would be spent.

As noted previously, Walsh's chosen subcontractor for the underground work was Synergy, and this became a point of contention. SFPUC engineers had estimated the cost of the underground work at $16 million. Synergy's bid, however, was for $20 million, and the City was unable to settle on a mutually acceptable price between SFPUC and Walsh for its chosen subcontractor. Walsh decided to remove Synergy from the project and rebid the work rather than agree to perform this work for $16 million. With construction ready to proceed, Walsh was now without a subcontractor to perform this core work causing an immediate delay in the project.

Unfortunately, this decision backfired. When the work was rebid, only one subcontractor submitted a bid for the entirety of the underground work, and this bid was much higher than Synergy's $20 million bid. Left without any other choice, Walsh awarded the work to Ranger at a cost of $30 million.[21] This $10 million increase decimated Walsh's expected profit on the contract and set the stage for a series of disputes between Walsh and the City that took years of disagreement, haggling, mediation, and legal action to resolve.

The delay in the start of construction while Walsh searched for a new subcontractor was significant. Originally, the construction work on underground utilities was projected to begin in February 2017, but it actually started in October 2017 due to this complication. Even more devastating was the damage to the relationship between Walsh and the City, which ran counter to the partnership the CMGC model intended to create.

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20 City and County of San Francisco Public Utilities Commission, *Resolution 17-0234*. PDF file. https://sfpuc.sharefile.com/share/view/s0a2c9058d6941e7a

21 Synergy became ineligible to rebid due to its inability to obtain sufficient bonding. Walsh covered the bonding in the initial bid but not in the rebid.

Construction

The result of the missteps in the planning, design, contracting, and preconstruction phases became evident once construction began. Inadequate management of the project during the construction phase further exacerbated these mounting issues, and avoidable problems continued to plague the project. The issues became more and more difficult to resolve as a result of the deteriorating relationship between Walsh and the City.

Construction Delays at the Outset

As discussed previously, the City failed to assess the underground infrastructure sufficiently, so that as soon as Walsh broke ground, it became evident that some of the utility maps were inaccurate. Once Walsh realized they could not rely on the utility maps, they approached the City with a contract modification to perform potholing.

This became another significant point of contention, with the City arguing that potholing was required per the contract and Walsh arguing that the needed potholing was much more substantial than what was specified in the contract. The disagreement ultimately came down to the technical specifications in the contract which used the terms "exploratory" and "incidental" interchangeably.

This was resolved eventually through professional mediation and a contract modification, and the time taken to resolve this dispute delayed the project further.

Differing site conditions were found on virtually every block of the project, to the point that almost no work could be performed until the potholing disagreement was resolved. Walsh proceeded with digging on each block in hopes of finding a zone where construction could proceed. As a result, multiple blocks were torn up and the flow of traffic disrupted, but no tangible progress was being made. This did not go unnoticed by the public, most notably residents and businesses along the corridor.

As a stop-gap measure while mediation and negotiations were taking place, Walsh used ground-penetrating radar to assist in identifying the location of the underground utilities. While helpful, this was not an adequate substitute for advance potholing because the ground-penetrating radar was not sophisticated enough to distinguish between utility lines and densely-packed soil.

Project Management

It is possible that the impact of the failures to foresee problems could have been mitigated with effective and flexible project management once the problems actually arose. Unfortunately, this did not happen. As a result of the now-contentious relationship between Walsh and the City and a lack of in-the-field City presence during early phases of construction, the City had difficulties managing shifting conditions within the parameters of the CMGC contract.

After the subcontractor re-bidding episode and resulting delays, Walsh had seen its profit margin erased almost entirely by the time the project started and, therefore, was unwilling to absorb further risk. When practical issues came up—for instance, when poorly-documented utility lines were discovered—the contractor's incentive was to pause work while it pursued contract modifications to ensure compensation for the unplanned work. In turn, the City generally allowed this to happen by focusing on adjudicating and upholding the letter of the contract rather than prioritizing expeditious or creative workarounds.

Instead of the productive partnership with aligned incentives promised by a CMGC contract model, the City and Walsh had lost trust in each other, and progress on the actual task at hand was the casualty of their distraction. Compounding these problems, Walsh's project management team saw significant turnover in the early phases of the project, with three different project managers at the helm between preconstruction and mid-2019. Between that churn and the City not having a clear point person in the field, there was no opportunity for personal trust to form at the individual level.

As arguments over specific technical complications accumulated, Walsh eventually requested creation of a formal Dispute Resolution Board. Ongoing disagreements were eventually resolved through the dispute resolution process, and only after both Walsh and the City agreed to additional in-the-field support did construction begin proceeding at a reasonable pace.

An additional failure in project management arose over the provision of pedestrian monitors. Similar to the disagreement over potholing, the dispute over pedestrian monitors stemmed from ambiguous language in the contract. The contract failed to make the appropriate distinction between traffic flaggers and pedestrian monitors. One is focused on controlling the flow of vehicles, and the other is focused on the safety of foot traffic. As a result, Walsh was required to provide traffic flaggers per the contract but not pedestrian monitors.

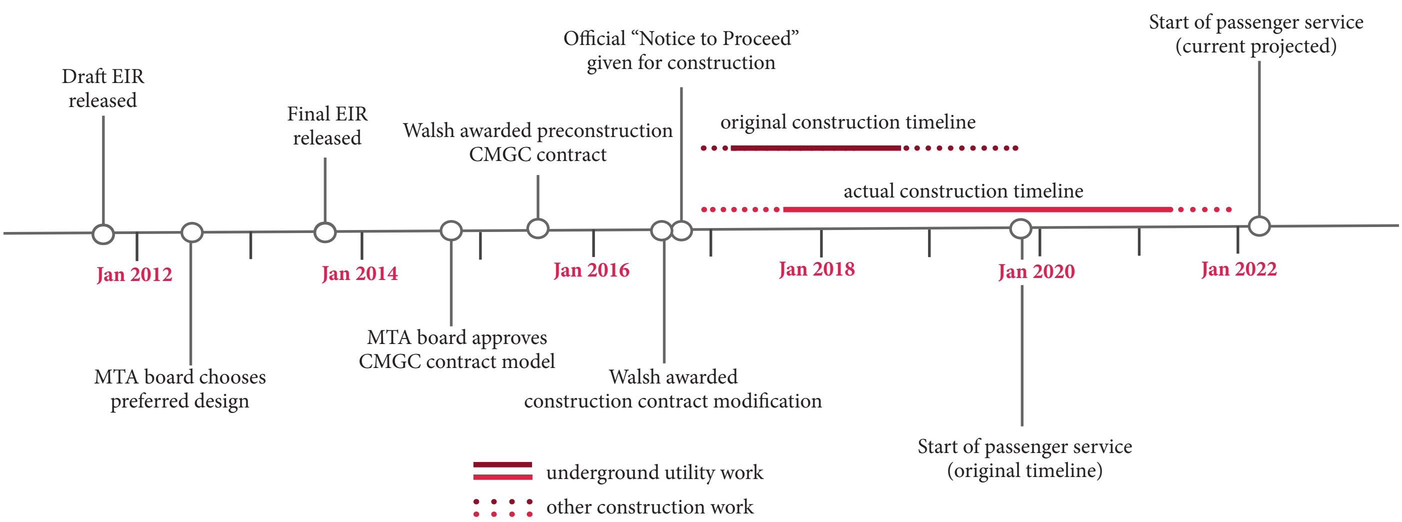
During the negotiation of the construction contract, the City agreed to provide the pedestrian monitors but then failed to do so. When the need for them became apparent for safety reasons, Walsh provided the monitors and then sought a contract modification to be paid for them. This is yet another disagreement that took years to resolve, and while it seems relatively minor in relation to the entire project, it is another example of a disagreement that could not be resolved in a timely manner.

Details of the construction contract and subsequent modifications are presented in Appendix D.

Final Project Timeline

Both the original timeline and the current projected timeline for the Van Ness Project are presented in Figure 4 below, and the full timeline is presented in Appendix E.

Figure 4. Abridged Timeline of the Van Ness Improvement Project



Conclusion

Given the importance and prominent visibility of the corridor, the Van Ness Project has been watched closely by the public from its beginning. The ongoing delay in project completion and the multiple reported completion dates have damaged the public's confidence in SFMTA to keep its promises. It is understandable that a project of this magnitude and complexity would take many years to plan and construct. But the missteps during the planning and preconstruction phases that eventually impacted construction adversely affected users of the roadway as well as residents and businesses along the corridor.

The Jury identified multiple missed opportunities to predict the cost and duration of the project accurately. Mistakes that happened early in the planning and design phases were compounded as the project progressed. While it is true that the unexpected condition of the underground infrastructure is the primary cause of the delay, more work could have been done to anticipate what actually lay beneath the surface, and much of the delay could have been avoided.

Although it is too late to correct these deficiencies on the Van Ness Project, the City should take steps to ensure the same mistakes do not occur in the future. The Jury's findings and recommendations are listed below.

Findings

F1. The delays in completion of the Van Ness BRT Project were caused primarily by avoidable setbacks in replacement of the water and sewer infrastructure.

F2. The potential impact of utility replacement on the cost and duration of the overall project was given insufficient consideration in the initial planning process.

F3. The potential impact of utility replacement was known to City engineers to be a major risk but was only considered a moderate risk and assigned no mitigation strategy in the official risk register.

F4. Project timelines could not be estimated accurately because documents did not reflect the extent and location of underground utilities accurately.

F5. The evaluation rubric for preconstruction contract bids weighted cost too heavily, as compared to technical expertise, even after project-specific legislation allowed for a lower weight to be assigned to cost.

F6. Practical work during preconstruction that could have derisked the subsequent construction phase of the project was insufficient.

F7. Review of preconstruction deliverables did not sufficiently measure the contractor's preparedness for construction, which resulted in both inaccurate cost estimates and timelines.

F8. The effectiveness of the CMGC contract was greatly reduced because the general contractor was brought into the design process too late.

F9. Underspecification in technical requirements led to additional costs for work that could have been predicted and included in the original contract.

F10. Contention over underspecified or unclear contract terms and technical requirements led to a deterioration in the relationship between the City and Walsh, the general contractor.

F11. The removal of Synergy, the underground subcontractor, from the project, partially as a result of poor cost estimates, contributed to the deterioration of the relationship between Walsh, the general contractor, and the City.

F12. The contentious relationship between Walsh, the general contractor, and the City made it difficult to resolve problems as they arose, despite close collaboration being one of the potential advantages of the CMGC contract.

F13. Lack of an in-the-field point of contact between Walsh and the City during early stages of construction led to delays and increased costs on the project.

F14. Confusion related to the contractual requirements for pedestrian monitoring contributed to the deterioration of the relationship between Walsh, the general contractor, and the City.

Recommendations

R1. By June 2022, the City should adopt a policy that all capital project feasibility plans include an itemized assessment of risks to project timelines and costs, which must be accompanied with specific procedures that will be undertaken to mitigate those risks early in the project.

R2. By June 2022, the City should adopt a policy that all capital project sponsors publish, before proceeding to the construction phase, an itemized assessment of derisking activities actually performed.

R3. By June 2022, the Board of Supervisors and SFPUC should review and update policies and regulations to ensure that detailed as-built documentation of both private and public utilities is filed after all underground projects (whether undertaken by SFPUC, another City agency, or a private enterprise), with sufficient resolution and precision to allow accurate design of any future work.

R4. The Board of Supervisors should direct all City departments to adopt a policy that all projects that involve underground work in the City's main corridors include, as part of the design process, the use of exploratory potholing, or another equivalent industry best-practice to identify unknown underground obstructions adhering to CI/ASCE 38-02 ("Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data") Quality Level A. This policy should take effect for all contracts signed after January 1, 2022, and the work should be required to be performed before final construction terms or prices are agreed to.

R5. By June 2022, and before entering into future CMGC relationships, the Board of Supervisors should direct all City departments to adopt, publish, and enforce in all future contracts industry-standard best practices for management of CMGC projects.

R6. The adopted CMGC management policy should specifically include the industry best practice of awarding the contract before project design continues past 30% completion.

R7. By June 2022, the Board of Supervisors should amend Section 6.68 of the Administrative Code to remove the mandatory cost criterion in awarding CMGC contracts.

R8. SFMTA should establish a policy for review of technical quality of preconstruction and design deliverables, to be used in all CMGC or design contracts signed after January 2022, including in-the-field validation of key assumptions of site conditions by City engineers.

R9. Beginning January 1, 2022, SFMTA should assign to every CMGC project a dedicated in-the-field contractor liaison to facilitate collaborative problem resolution, and sufficient support staff to monitor actual progress and site conditions.

R10. By June 2022, the City should adopt a policy that any public communication about a planned or in-progress capital project that includes disruption of public services or right-of-way should include itemized assessments of risk to projected costs and duration.

R11. Beginning immediately, and in all future capital or maintenance projects that require pedestrian monitors, the City should ensure that associated costs are either specifically included in the primary construction contract, or explicitly planned for and funded by the City, before construction begins.

Request for Responses

Pursuant to Penal Code sections 933 and 933.05, the Civil Grand Jury requests responses as follows:

From these City agencies within 60 days:

- From the Office of the Mayor:

  Findings 1,2,3,4,5,6,7,8,9,10,11,12,13,14

  Recommendations 1,2,3,4,5,6,7,8,9,10,11

- From the General Manager of San Francisco Public Utilities Commission:

  Findings 1,2,3,4,6,8,9,11

  Recommendations 1,2,3,4,5

- From the San Francisco Public Utilities Commission:

  Findings 1,2,3,4,6,8,9,11

  Recommendations 1,2,3,4,5

- From the San Francisco Municipal Transportation Agency:

  Findings 1,2,3,4,5,6,7,8,9,10,11,12,13,14

  Recommendations 1,2,4,5,6,7,8,9,10,11

- From the Office of the SFMTA Board of Directors:

  Findings 1,2,3,4,5,6,7,8,9,10,11,12,13,14

  Recommendations 1,2,4,5,6,7,8,9,10,11

From the following governing body within 90 days:

- From the Board of Supervisors:

  Findings 1,2,3,4,5,6,7,8,9,10,11,12,13,14

  Recommendations 1,2,3,4,5,6,7,8,9,10,11

Invited Responses

The Civil Grand Jury invites responses from the below City agency as follows:

- From San Francisco Public Works:

  Findings 1,2,3,5,6,8

  Recommendations 1,2,4,5,6,7

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Appendix A

Total Project Budget (At Beginning of Construction)

Description	Amount
Environmental phase	$6,000,000
Civil engineering phase	8,900,000
Design phase	17,800,000
Construction phase:	
Construction contract	193,000,000
Contingency for design errors and omissions	1,200,000
Shared contingency	16,100,000
SFMTA-specific contingencies	10,500,000
Owner-furnished during construction	10,600,000
Owner soft costs during construction:	
SFMTA/SFPW project/construction management	21,100,000
SFMTA/SFPW engineering support	7,100,000
SFMTA operations	400,000
SFMTA outreach	1,000,000
Consultant services	1,500,000
Bus substitution	8,000,000
Startup and testing	2,200,000
Buses	4,000,000
Total project budget[22]	$309,400,000

22 This was the working budget until the contingency funds were exhausted. As of the release date of this report, the expected total project budget has increased to $345,900,000. This is largely the result of additional owner soft costs incurred from the project delay.

Appendix B

Preconstruction Bid Scoring

Proposer	Written Proposal	Oral Presentation	Price	Total
Available Points	90	30	60	180
Walsh Construction	69.53	17.17	60	146.70
Van Ness Corridor Constructors	82.27	27	33.6	142.87
Per the Request for Proposals, SFMTA assigned a score of 60 to the lowest proposed price. Total points for the other proposer were calculated by dividing the higher price into the lowest price in order to determine a percentage. That percentage was then multiplied by 60 in order to arrive at the points awarded for that higher price.				

Appendix C

Preconstruction Deliverables

Task Order Number	Task	Description
5	Supplemental Archeological Mitigation Plan	Prepare a Supplemental Archeological Mitigation Plan acceptable to the California State Historic Preservation Office.
7	Value Engineering Report	Provide, and submit a written report of value engineering and constructability recommendations based on the 65% Design drawings in Appendix P.1 [of the preconstruction contract] and the 95% final design drawings.
8	Construction Plan	Submit a preliminary and a final Construction Plan to SFMTA. The preliminary plan will be reviewed by all interested parties and used to establish the final plan. In each plan, the CM/GC shall address proposed construction phasing; staging; sequencing of work; duration of work within work zones; field office needs; parking requirements during construction; construction equipment storage and use of public roadways; coordination of work with the public, including utility disruptions; protection of private and public properties; dirt/debris mitigation; storm water drainage management; temporary facilities; construction zone pedestrian and vehicular traffic management, including signage; noise and vibration control; work hours, including number of shifts and weekend work; temporary road closures or detours; emergency vehicle provisions; maintaining access to all properties; public and worker safety protections; construction restrictions during special events; and security and maintenance of construction work zones. The final plan will be used as a basis for establishment of the Guaranteed Maximum Price (GMP) and the management of the construction following Notice to Proceed (NTP)
9	Construction Recycling Plan	Submit a report in compliance with San Francisco's construction recycling ordinance, identifying materials that may be cost-effectively recycled during construction, including an estimate of potential cost increases or decreases from the baseline estimate (Recycling Plan).
11	Contracting Plan (SBE)	Work with SFMTA to finalize a Contracting Plan that maximizes Small Business Enterprise (SBE) opportunities, in accordance with the SBE program identified in Appendix B [of the preconstruction contract]. Prepare for implementation of the SBE Trucking Set-Aside program. Include a proposed management plan to oversee SBE program implementation.
12	Long-Lead Items	Identify any long-lead items immediately after completion of 100% final design so that the milestone schedule can be met.
13	Contracting Plan (Construction)	Work with SFMTA to finalize and submit a Contracting Plan for accomplishment of all construction, including systems work. Recommend packaging of the work to facilitate bidding and award of trade contracts. The Contracting Plan shall at a minimum present the number of packages, a description of the scope of work for each package, the sequence and schedule for procurement, the Engineer's Estimate for each trade work package, and an outreach plan. With respect to work that the CM/GC and Core Subcontractors will be performing, explain how competitive pricing will be accomplished.

Appendix C (continued)

Preconstruction Deliverables

Task Order Number	Task	Description
14	CPM Schedule	Prepare, submit, and maintain for SFMTA approval a detailed, baseline, cost-loaded Critical Path Method (CPM) schedule using Primavera 6 that can be integrated into the SFMTA's Capital Projects Control System. The schedule will be used for schedule management during design and construction, and progress payments during construction.
16	Cost Estimate	Prepare and submit to SFMTA construction cost estimates of the 65% and 95% final design and construction documents. If SFMTA's preliminary construction cost estimate is exceeded, identify feasible cost-reducing options, including projected cost savings offset with any additional design costs, to bring construction costs within SFMTA's budget.
17	Safety Plan	Prepare and submit for SFMTA approval a public and worker safety plan (Safety Plan), in cooperation with and subject to approval by SFMTA's Safety Division, for use during construction.
18	QA/QC Plan	Prepare and submit for SFMTA approval a Project-specific Quality Assurance Process/Quality Control Plan, in compliance with SFMTA's QA/QC program, for use during construction, as explained in the Technical Specifications.
19	HazMat Plan	Prepare and submit for SFMTA approval a plan to handle both anticipated and unanticipated hazardous materials that may be encountered during construction (HazMat Plan).
20	Workforce Development Plan	Work with SFMTA to finalize a Workforce Development Plan in accordance with SFMTA's workforce training and hiring program requirements, including a construction management trainee plan.
21	Stormwater Plan	Prepare and submit a plan to manage stormwater runoff during construction in accordance with the requirements of all applicable federal, state and local governing agencies, including Caltrans and the City's PUC (Stormwater Plan).
22	Safety Certification Plan	Work with SFMTA as requested to prepare a Safety Certification Plan for use during and for closeout of construction.
23	Risk Management Plan	Work with SFMTA to prepare and submit a Risk Management Plan, including risk identification, allocation and mitigation. This first draft of the Plan shall be based on 65% drawings and the final draft shall be based on 95% drawings. Review site conditions, site surveys, and soils reports. Advise the SFMTA as to anticipated site challenges (other than those that would properly be addressed through CM/GC means and methods) and recommended mitigation measures.

Appendix D

Contract and Contract Modifications

Contract Modification Number	Date Approved	Description	Dollar Amount	Additional Time
Original Contract		Preconstruction services	$800,000	
1	August 16, 2016	Construction services	$193,027,555	5 years
2	August 21, 2018	Changes to Overhead Contact System and trolley/light pole foundations	$4,463,161	0
3	July 5, 2018	Creation of Dispute Resolution Board (DRB)	$0	0
4	September 28, 2018	Revision to plan specifications for sewer, water, landscaping, traction power, streetlights, and roadway	$3,376,341	0
5	October 16, 2018	Traffic signal modifications	$2,606,044	0
6	April 13, 2019	Extra field work for various items, specification changes to sewer system, and amendment of DRB process	$4,013,224	0
7	July 16, 2019	Resolution of claims related to delays resulting from water and sewer work	$4,819,650	279 days
8	August 20, 2019	Provision for potholing	$1,709,202	0
9	February 18, 2020	Design changes to sidewalk gradings and catch basins	$633,003	0
10	May 19, 2020	Design changes to sewer, water, traction power, sidewalk, and scheduling services	$2,187,655	0
11	July 24, 2020	Allowance for Safe Work Practices due to COVID-19	$282,000	0
12	December 15, 2020	Provision for pedestrian monitors	$2,589,381	0
		Current contract cost with modifications	**$220,507,216**	

Appendix E

Project Timeline

Date	Description
November 2003	Proposition K is passed at the ballot
December 2006	Feasibility Study on Van Ness BRT completed
October 2011	Draft EIR released
May 2012	MTA Board officially chooses preferred design
September 2013	Final EIR approved
October 2014	MTA Board approves using CMGC contract model
July 2015	Walsh awarded preconstruction CMGC contract
August 2016	Walsh awarded construction contract modification
October 2016	Official "Notice to Proceed" given for construction
December 2016	Construction actually begins
February 2017	Construction to begin on underground utilities (original projection)[23]
October 2017	Construction actually begins on underground utilities
November 2018	Underground utility construction to finish (original projection)
October 2019	Substantial completion of construction (original projection)
Late 2019	Start of passenger service (original projection)
February 2021	Underground utility construction actually finishes
January 2022	Substantial completion of construction (current projection)
Early 2022	Start of passenger service (current projection)

23 Highlighted cells represent projections made at the time construction began.