TO:          BOARD OF DIRECTORS

THROUGH:    ARTHUR T. LEAHY
            CHIEF EXECUTIVE OFFICER

FROM:       BRYAN PENNINGTON
            EXECUTIVE DIRECTOR, ENGINEERING AND CONSTRUCTION

SUBJECT:    WESTSIDE PURPLE LINE EXTENSION (PLE)
            NOVEMBER 2014 BOARD ITEM 36
            CONTRACT C1055 – CONTRACT MODIFICATION AUTHORITY
            INCREASE DUE TO UTILITIES DIFFERING SITE CONDITIONS

ISSUE

At the November 6, 2014 Construction Committee, Board members raised questions regarding the amount of Contract Modification Authority (CMA) and contingency required to deal with increases in utility relocation contracts due to unforeseen or differing site conditions.

BACKGROUND

Previously, utility relocations for major MTA rail transit projects were included in the main construction contract. In this historic approach to construction implementation, delays arising from unforeseen or differing site conditions during the course of the utility work, often had a magnifying effect on the schedule or cost impact on the main contract. For the three major contemporary rail transit projects, (Crenshaw/LAX, Regional Connector and Purple Line Extension), based on the above lessons learned, the utilities are being relocated in advance of the main (design-build) contracts, under separate early contracts.

These Advance Utility Relocation (AUR) contracts are being used to reduce the overall project schedules and reduce potential risks to the subsequent design-build contracts for construction of the stations, tunnels and ancillary infrastructure. While the AUR approach significantly reduces risk, schedule delays and cost impacts to the overall transit project, the advance utility relocation contracts still experience similar levels of
direct impact due to unforeseen or differing utility site conditions, leading to cost growth beyond the original low bid-contract price for the AUR contract. Other public sector agencies share similar experience and, historically, the increased costs are often in excess of the 10% MTA Board-approved CMA.

Questions have been raised as to whether there are any additional “Lessons Learned” which could be implemented to further control costs or schedule impacts and avoid or reduce the number of changes on current and future utility work.

DISCUSSION

Traditionally, MTA utilizes a firm-fixed price, low-bid type procurement for the utility contracts. In order to prepare the contract documents, MTA and our consultants gather all known available as-built drawings from the private and public/city utility owners that record the type and location of their respective underground utility infrastructure — in the case of Contract C1055, beneath Wilshire Boulevard. This “as-built” information is relied upon by MTA in preparation of our lump sum/low bid/firm fixed price bid documents, although MTA undertakes various additional due diligence investigation of the existing utilities. The contractors also rely on this information that is provided in our bid documents to prepare their competitive bid prices, which generally include limited contingencies for risks. In addition, and based on experience, MTA carries appropriately high levels of contingency within the overall Project budget-line items for utilities, by this means sufficient contingencies are allocated to cover anticipated changes due to unknown risks. These contingency amounts carried within the overall project budget are generally significantly in excess of 10% of the contract award amount (i.e. significantly in excess of the 10% CMA) for the AUR contracts. However, in accordance with MTA Procurement Policies, the initial Contract Modification Authority (CMA) is established in the amount of 10% of the contract award value to allow staff to issue contract modifications within the Board-delegated authority.

Although staff adopt a CMA of 10% in accordance with Procurement policy, it is necessary to carry contingency significantly in excess of 10% because during construction it is not uncommon to find that the existing condition is different to that on the as-built utility drawings because of mapping inaccuracies, additions and utility rearrangements done over the course of decades that have not been updated or accurately reflected in the available “as-built” drawings. These differences create the need for contract modifications on MTA utility relocation contracts often with an aggregate value above the 10% CMA authorized at the award of the contract. These modifications have caused the need to request approval of additional Contract Modification Authority, sometimes on multiple occasions.

When considered in the context of the overall projects, these added costs are small compared to the overall project contingencies. In the case of Contract C1055, the $1.4 million CMA is relatively small amount when considered in the context of the Purple Section 1 overall Life Of Project (LOP) budget of $2.77 billion.
CURRENT PROGRESS AND LESSONS LEARNED

As mentioned above, due to the known inaccuracy of the “as-built” information, various means of due diligence are undertaken to verify the actual utility location, including potholing and ground penetrating radar methods are used to physically verify the location of known utilities during design or locate suspected unknown utilities that are encountered during construction. However, these methods are not fool-proof and, in the case of unmapped or abandoned utilities, their locations are not known or anticipated and the verification process after they are encountered is difficult to achieve because it involves additional digging or trenching.

Differing site conditions, when encountered during construction, must be dealt with in a timely manner to reduce utility shutdowns, traffic impacts as well as potential cost and overall schedule impacts not only to the AUR contract, but for the separate major follow on design-build contract. To minimize these impacts, staff and the contractor implement construction management mitigation plans to provide timely resolution of changes caused by differing site conditions. These mitigations include the development of combined work plans, the use of multiple construction crews, re-sequencing of work, additional potholing in advance of construction, extended construction work hours when beneficial and adding nighttime engineering staff to observe the existing underground conditions and make any needed engineering changes to the work in real time based on any encountered differing site conditions to provide more accurate utility profiles. It should be noted that to avoid impact on rush hour traffic, city departments often require that utility work take place only between the peak periods. This provides an overall work shift from 9.30 am to 3.30 pm – allowing for set up and take down, this provides an actual work shift of between 4 and 5 hours so even relatively minor differing conditions can create fairly significant impacts. Two of the Purple Line Extension AUR contracts are working at night to avoid the peak traffic hour restrictions and provide for a more efficient work shift.

NEXT STEPS.

Utility Investigation.

It is unlikely that there will be much, if any, improvement in the accuracy of the as-built utility information provided by private and public utility agencies for the foreseeable future. Staff will investigate the efficacy of undertaking additional investigation. There are two types of investigation; physical investigations such as potholing or trenching and; non-penetrative investigations such as ground penetration radar, In terms of non-penetrative means, staff are not aware of any new or emerging technology but have been in the process for several months of setting up small pilot investigation projects to investigate any possible improvements in existing technology.
Contract Models

There are a variety of contractual approaches and risk strategies that could be used in theory. Over the years, MTA has focused on the approach used on Contract C 1055 and as outlined immediately below. This is considered to provide MTA with the most cost effective approach overall. However, staff will review to see if there is a better approach, with some of the potential alternative approaches also outlined below.

1. Lump Sum/Low Bid/Firm Fixed Price. This approach represents a level of risk share between MTA and the contractor. For within-scope work, there is incentive for the contractor to work diligently and efficiently, while any unforeseen conditions are at Metro’s risk.

The CMA that is delegated by the MTA Board to staff is essential to allow changes to be performed in a timely manner. However, if the CMA is exhausted, timely replenishment is required to avoid major construction delays. Therefore, based on the history of utility changes, the MTA Procurement Policy may need to be revised to increase the Contract Modification Authority to cover costs associated with unknown, abandoned utilities and other differing site conditions to an amount more in line with historical final change order costs. An alternative is to add provisional sums into the contract, although there are pros and cons associated with this approach.

2. 100% Risk Transfer to the Contractor. Alternatively, future Metro AUR contracts could transfer the risk of all unknown and abandoned utilities and differing site conditions to the contractor. However, under lump sum contracts, this will likely result in much higher initial bid award dollar amounts to cover the transfer of all risk from Metro to the contractor. If all of these risks are not encountered by the contractor, then the dollar values in the bids are not recoverable by the MTA and the contractor might reap a major “windfall” profit. It is likely that very few bidders would participate in such a procurement. Utility contracting is generally very risky and, consequently, there are a limited number of companies who bid on MTA contracts. Generally utility contractors are smaller contractors and are often not in a position to carry large deficits in their cash flow resulting from unforeseen costs.

3. Time and Materials. This approach eliminates all risk from the contractor as MTA would take all risk. This contracting methodology provides no incentive for the contractor to minimize cost or schedule or to find work-arounds to minimize one or both. This would attract a relatively large number of bidders as all of their costs would be compensated by Metro but it is likely that the final contract cost would increase correspondingly.

From experience, Metro prefers the Lump Sum/Low Bid/Firm Fixed Price approach (although that is not to say that staff should not continue to keep this matter under review). It provides the optimum consideration of cost, the number of bidders and
fairness to the contracting parties. This is the contracting approach taken on the PLE C1055 AUR Contract in which the 100% design drawings are prepared on behalf of MTA by the Engineering Consultant using all of the available utility information provided by private and public/city utility owners and additional due diligence. The contractor is compensated only after going through the stringent change order process for only those merited changes as they occur.

ATTACHMENTS

A. Status of Current PLE Advance Utility Relocation (AUR) Contracts
B. Typical Advance Utility Relocation Activities
C. Construction Management of Differing Site Conditions – Contract C1048 Wilshire/La Brea AUR
D. Re-sequencing Scope Modification (Sound Wall) – Contract C1055 Wilshire/Fairfax AUR
Westside Purple Line Extension Project
Status of Current Advance Utility Relocation (AUR) Contracts

Contract C1048 Wilshire/La Brea Advanced Utility Relocation
• Contract C1048 Awarded: May 13, 2013; NTP: August 1, 2013
• Contract C1048 Substantial Completion: October 27, 2014.
• Contract C1048 is currently in Close-out.
• No future Contract Modification Authority is required.

Contract C1055 Wilshire/Fairfax Advanced Utility Relocation
• Contract C1055 Awarded March 31, 2014
• Progress To Date: Approximately 16% complete
• Forecast Substantial Completion: October 18, 2015
• Current Contract Modification Authority must be increased.

Contract C1056 Wilshire/La Cienega Advanced Utility Relocation
• Notice of Intent to Award: Issued September 26, 2014
To reduce the potential schedule and cost risks to the critical path construction activities, three Advance Utility Relocation contracts being performed to relocate water, power and sewer lines in advance of the major station and tunnel construction contract.
The differing site condition required an 8 feet deeper excavation and more time and materials.
Westside Purple Line Extension Project
Re-Sequencing Scope Modification (Sound Wall)
Contract C1055 Wilshire/La Cienega AUR

• Although the site is not considered a construction site by the LAPD Noise Commission, a sound wall was constructed around the contractor staging and laydown yard, shared by four contractors.

• The sound wall which would have been constructed by the fourth contractor was constructed earlier by the second contractor in response to community requests.

• Additional Contract Modification Authority was required for Contract C1055 to transfer the scope from the fourth contractor (C1045).

• A deductive Change Order will be issued to Contract C1045 and the credit amount will be returned to the Project Contingency for use during the construction of the Westside Purple Line Project.

Sound Wall constructed by the C1055 Contractor at the Wilshire/Crenshaw site.