

## **SWLRT MnDOT Peer Review Report**

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Prepared for: Met Council SWLRT Green Line Project Team

Report Dated: December 30, 2022

### **Introduction**

The Minnesota Department of Transportation (MnDOT) conducted a Peer Review of the Southwest Light Rail Transit (SWLRT) project (also known as the METRO Green Line Extension.) MnDOT performed this Peer Review pursuant to a June 2022 Memorandum of Understanding (MOU) between MnDOT and Metropolitan Council (Council), the project owner, and was signed in June of 2022. This Peer Review provides recommendations to improve the SWLRT project outcomes and improve future transit guideway projects that are planned in the Twin Cities metropolitan region.

The Peer Review addressed construction methods, change order process, contractor oversight, project organization, procurement process, and specifications on the Civil Construction contract (Number 15P307A) only. MnDOT did not review any other contracts to construct the SWLRT project. In accordance with the MOU, this review is not an all-encompassing audit.

The SWLRT project will connect Minneapolis with the communities of Eden Prairie, Hopkins, Minnetonka, and St. Louis Park. There will be 16 new transit stations, 2 tunnels, and 14.5-miles of light rail track. The project is funded by the Federal Transit Administration (FTA), Hennepin County, Counties Transit Improvement Board (CTIB), Hennepin County Regional Rail Authority (HCRRA), State of Minnesota, and multiple municipalities. The Council awarded the Civil Construction contract to the Lunda/McCrossan Joint Venture (LMJV) on November 15, 2018, for \$799,514,338.22. The contract was advertised on October 30, 2017, with bids opened on May 3, 2018. The start date of the contract was December 27, 2018 and had an original completion date of October 31, 2022.

The Council and LMJV entered into a settlement agreement on March 17, 2022 and established a new completion date of September 13, 2025. The contract cost was also re-baselined to \$1,005,935,493.06 and the current cost is \$1,027,602,210.51 as of December 12, 2022.

### **Review Collaboration**

MnDOT began the peer review with a formal information request provided to the SWLRT project team. All requested information was promptly summarized and submitted.

Starting on July 12, 2022, MnDOT, the Council and Hennepin County began meeting monthly to discuss ongoing information requests and responses. Through these meetings, MnDOT gained insight to the many issues affecting the project and discussed with the Council recommendations for changes to be made on this project as well as future Council projects.

As part of this review, MnDOT personnel joined the SWLRT project team on guided site visits to fully understand the complexities of the construction effort. The first site visit took place on August 1, 2022 and additional personnel visited on future occasions.

Finally, MnDOT conducted informal interviews with several parties associated with the project. These parties include consultants, outside legal counsel, and Council personnel on other projects.

### **Section 1 - Letting and Re-letting and Award Review**

The initial letting of the Civil Construction contract was advertised on February 14, 2017 and had a letting date (bid opening) of August 15, 2017. This resulted in all four bids being rejected. All bids were rejected on September 20, 2017 because they were unresponsive and/or exceeded the anticipated costs of the project and there were also concerns with quality management requirements which caused the Council to reject all bids and resolicit new bids.

There was apparent confusion by the bidders associated with the quality management requirements. In multiple cases, project personnel from a single consulting firm appeared on both the quality control as well as the quality assurance sides of the management plan and the Council deemed that to be a conflict of interest.

The contract was re-advertised on October 30, 2017, and re-let on May 3, 2018. This resulted in two bids being submitted. The Council awarded the contract on November 15, 2018.

This project included funding from several agencies, including local funds (city and county) as well as funding from the Federal Transit Authority (FTA). As described to MnDOT, the project required FTA approval through the issuance of a Letter of No Prejudice which allowed construction to begin utilizing local funds and that those costs be eligible for reimbursement from FTA once a Full Funding Grant Agreement is executed between the FTA and the Council. The contract could only be awarded after the Letter of No Prejudice was received from FTA to maintain this eligibility.

This contract includes a maximum allowable duration from letting to Award of 90 days. At the time of letting, it was assumed that this duration was adequate time to obtain a Letter of No-Prejudice from the FTA. The timeline of approving the funding is at the full discretion of the FTA and ultimately took 120 days. As a result, the Council requested the bidders to extend their bid twice, which they agreed to.

### **Opinion/Recommendations**

MnDOT maintains a maximum duration from letting date to award date of 33 days. The SWLRT Civil contract was awarded to LMJV more than 6 months after the original letting date.

While MnDOT understands that funding delays contributed to the duration, MnDOT considers 6 months to be an excessively long duration from letting to award date. Without definitive direction, it is difficult for a contractor to plan its work, confirm sub-contractors and secure necessary materials. This extended duration – coupled with uncertainty about whether the contract would ultimately be awarded – likely created many project management and procurement challenges before the project even began.

## **Section 2 - Schedule Review**

MnDOT met with the SWLRT project team on December 13, 2019 to discuss project issues and Critical Path Method (CPM) Schedule review. At that point – more than a year before MnDOT agreed to undertake this Peer Review – the project did not have an approved baseline schedule. Following that meeting, MnDOT strongly urged the project team to pursue and approve a baseline schedule as soon as reasonably possible. A re-baselined schedule was ultimately approved as part of the settlement agreement and was dated March 17, 2022.

### **Opinion/Recommendations**

As described above, the delay in awarding the Civil Construction contract eventually impacted the contractual start date and, in turn, the planned schedule. Additionally, as described to MnDOT by the SWLRT project team, the contractor failed to comply with submitting schedules in a timely manner due to frequent change orders and the resulting unknown schedule impacts from the beginning of the project.

MnDOT uses a well-established set of specifications when using CPM schedules on a project. Under MnDOT's specification, acceptance of the **First Preliminary Schedule** is a condition of Notice to Proceed 1 (NTP1). The purpose of the Preliminary Schedule is to show that the contractor understands the contractual milestones and plans to complete the project within the contractually required interim and final completion dates.

**Baseline Schedule** acceptance is a condition of Notice to Proceed 2 (NTP2). The purpose of the Baseline Schedule is to establish how the Contractor plans to complete all of the contracted work. The Baseline Schedule must include the entire scope of work in detail. Any delay in acceptance of the Baseline Schedule and NTP2 not caused by the Department (e.g., late or incomplete submissions by the contractor, repeat resubmissions due to failure to properly address comments made by the Engineer, etc.) is considered a non-excusable delay. In general, while the timeline of the preliminary and baseline schedules can vary, they must stay in this strict order and construction cannot begin without an accepted Baseline Schedule and agreement by both MnDOT and the contractor. As an enforcement measure, MnDOT specification includes provisions allowing the withholding of completed work payments if the contractor is delinquent in Baseline Schedule and progress update schedule submittals.

Starting construction without a Baseline Schedule is a significant risk. With no agreed-upon schedule, it is difficult for a project owner to gauge whether the timeline is reasonable and constructable and it creates significant challenges to identifying and assessing delays and the potential impact of extra work. Ultimately, absent a schedule to review, the project owner really has no ability to understand how the contractor plans on building the project.

MnDOT recommends always ensuring a Baseline Schedule is established and the utmost consideration be given to progress update schedule requirements and review.

## **Section 3 - General Conditions and Lump Sum Contract**

### **3a - General Conditions of the Contract**

MnDOT's review of the General Conditions (Project Specifications) primarily focused on Contract Changes. Article 9 ("Changes of the Work") lays out the pre-letting framework and process for requests and acceptance of changed work. These processes are later mimicked in the post-letting establishment of the "Change Order Procedure" which will be addressed below.

Article 10 (“Change in Contract Price”) details the methodology of price adjustments and mechanisms for payment through unit prices or lump sum negotiation. This contract is devoid of unit pricing (with the exception of the items listed in 3b below) and is based on Lump Sum.

Article 10.4 goes on to define “Cost of the Work” as the sum of the costs incurred and paid by the contractor in the proper performance of the work. Essentially, the change in the contractor’s financial position, inclusive of Material, Labor, and Equipment.

The contractor’s overhead cost and profit is detailed in Article 10.5 (“Inclusions”) and 10.6 (“Determination of Cost”). These project specifications explain the allowable methods to establish mark-up and include a contractual mark-up of 15% on labor and 5% on both material and equipment. The contractor interpreted that these mark-ups *only* applied to Time and Material (Force Account) Changes, while the Council believed the intent was that these mark-ups applied to *all* changes, including Lump Sums – but the Council also conceded the ambiguity. With the differing opinion of interpretation, the selected method was 10.6.1, which allows negotiation of a “mutually acceptable fixed fee” to cover overhead and profit.

The Council and the contractor mutually agreed upon a mark-up of 23% applied to Labor, Material, and Equipment. The subsequent renegotiation, as part of an overall cost and schedule settlement agreement, resulted in modified mark-ups of 21% for Labor, 15% for Materials, and the use of “Bluebook Rental Rates” for equipment.

### **3b - Lump Sum Contract**

This project is essentially a Lump Sum Contract. With the exception of twenty (20) bid items which include mobilization, payment/bonds, insurance, contaminated soils, and 15 items all associated with deep foundations (piling), the entire civil construction contract was let as a lump sum bid item.

### **Opinion/Recommendation**

The decision to establish a fixed mark-up for change orders is a sensible one. It provides a streamlined approach to change orders and helps limit the amount of negotiation required for each change order. As acknowledged by the Council, the ambiguity in the contractual language created differing interpretations on mark-ups. The language as written in the special provisions allows the Council full latitude to negotiate the mutually acceptable fixed fee, which they did. This contract would have benefitted from simplified contractual language citing inclusions, exclusions and where and what mark-ups apply to changed work.

MnDOT projects are let with a Statement of Estimated Quantities (SEQ) in tab format in the plans. That information is then transitioned into bid items at the time of letting and incorporated into the contract as the Bid Form. A contract of this size and complexity would typically include hundreds or thousands of bid items to encompass all the work. The cost of Change Orders would benefit from the inclusion of competitively bid unit prices. For Lump Sum Contracts to be administered most successfully, the project needs to be clear and well defined with limited changes. This is not the case for the SWLRT project.

Aside from the bidding purpose of the items, Contract Unit Price (CUP) is used for changes to the contract. MnDOT contracts require the use of a CUP (where applicable) and provide appropriate pricing because the values were established in a competitive bidding environment prior to letting. The absence of bid prices in the SWLRT project forces all change orders to be administered through Lump Sum and altogether removes competitive pricing from the changed work.

MnDOT understands that it is industry standard for transit projects to be let as a Lump Sum Contract because they typically have many transit stations associated with transit projects. As it was described to MnDOT, there was concern that the numerous transit stations included in this project would result in an astronomical number of items that would need to be included to construct the transit stations and make the use of bid items unfeasible. However, the remaining civil work would be ideal for bid items and MnDOT recommends the Council consider using a combination of bid item pricing for civil work and Lump Sum pricing for transit station buildings.

For contracts or portions of contracts that must remain as Lump Sum, establishing a bidding requirement whereby the contractors submit cost breakdowns to support the Lump Sum at the time of letting would be beneficial. MnDOT also uses a "Bid Escrow" process where the contractor submits sealed bidding documents to the owner. As these documents are then reviewable in the event a dispute arises during construction, this process could be beneficial to the Council in the future.

#### **Section 4 - Change Order Procedure and "ICE" Protocol Documents**

These procedural documents were provided by the Council and they act as procedural project controls for the SWLRT project. Change Order Procedure (TSD-50-08) includes definitions, roles and responsibilities and is the first reference and definition of the Independent Cost Estimate (ICE). This document also identifies personnel and the steps required to fulfill the intent of the procedure. Finally, the document lays out signatory authority based on dollar value of the change.

ICE Protocol "DTP-13" further defines the ICE and identifies references to origins. Once an ICE is initiated, the ICE will be prepared by one of two parties. The ICE can be prepared "internally" by the Southwest Project Office (SPO) or it can be sent to the Advanced Design Consultant (ADC) to be evaluated.

DTP-13, as prepared for the project by the ADC, has a clear outline of process and follows the steps of Estimate Origination, Checking, Back-checking, Corrections and Verification. Included as such, the effort to complete the changed work is "broken down" by establishing take-offs (quantities, work scopes) that is then inputted into estimating software. The software is designed to use specified parameters, including labor, materials, Equipment, Production rates and accessibility/constructability, which in turn creates an estimate of the work.

#### **Opinion/Recommendation**

MnDOT understands that ICEs performed by the SPO are generally smaller, while larger ICEs were sent to the ADC, but there are no clear guidelines for how to make this determination.

The protocol for ICEs prepared by the ADC appears to be heavily dependent on computer assumptions and estimating software. Estimating software is a valuable tool in determining cost changes, but assumptions must be based on "real life" conditions.

MnDOT believes that the ICE protocol would benefit from a requirement to visit the site of the changed work, as well as establishing a formal evaluation of the complexity and site-specific constraints/challenges for each change.

## **Section 5 - ICE Discrepancies and Correspondence**

### **5a - ICE Discrepancies**

The project has a history of large discrepancies between the ICE and contractor-provided pricing for changes. The ICE has regularly resulted in much lower costs, resulting in concerns from the Council that it does not fully consider the complexities and special constraints on the changed work. It also removes any “human element” of estimating by simply imputing values in software programs and proceeding with the output.

Conversely, the ADC has alleged that the Council is not adequately negotiating the costs associated with the changes and simply approving the Contractor’s figures. The ADC has also made suggestions that the negotiating team be changed to include personnel with more “tough and skilled” negotiating experience (AECOM letter dated July 1, 2021).

### **5b - Definition of Independent**

An additional strain on the project stems from a fundamental disagreement between parties on the definition of “Independent” in Independent Cost Estimate. The ADC’s definition is based on their own document (“C-3 Checking and Verification Procedure”) which identifies independent as “parties who maintain a level of objectivity” and establishes the position that no other input shall be considered in the ICE.

The Council has based the definition of “independent” on Federal Transit Authority’s (FTA) Best Practices Procurement Manual (BPPM) citing several examples and goes on to establish the position that “independent” means it is separate from the contractor’s estimate but is not free from input of the owner.

As a result of these disagreements, the Council has made requests to the ADC to modify ICE submittals in order to more accurately consider constructability of the changed work. In response, the ADC has made claims that the Council is “threatening the integrity of the ICE” by directing them to change estimates. The ADC then began to include disclaimers in their ICEs, noting that cost was established “as directed by the Council.”

### **5c - Cost Reconciliation**

An internal memo from the ADC, dated April 23, 2020, identifies modifications to the ICE process and outlines a procedure for “Side-by-Side Cost Comparison & Summary Narrative” in which owner and contractor come together to compare figures of cost, effort and production in order to reconcile the difference and establish cost of the changed work.

## **Opinion/Recommendation**

MnDOT understands that the ADC participated in some, but not all, of the cost reconciliation meetings. As described to us, when the ADC-led ICE and the contractor’s estimate were considered comparable early upon review, the ADC would be included in the cost reconciliation meetings. If the ICE presented a larger discrepancy and the Council deemed the ICE to be mis-scoped or lacking consideration of the complexities, the Council would reconcile the scope differences from the contractor’s estimate on their own behalf.

It is not uncommon in the industry for an owner to solely pursue the negotiation of the cost reconciliation using the ICE document as guidance. However, there is also an obvious value to ensuring the parties that prepared the ICE are present to justify any assumptions or considerations and defend their viewpoints.

Unfortunately, due to the poor relationship between the Council and the ADC – and their mutually eroded confidence in each other to perform project duties – collaboration continually decreased.

Moving forward, we recommend taking actions to remedy those differences and restore trust between the parties to ensure fair pricing and collaboration.

### **Section 6 - ICE Conflict of Interest**

Historically, for transitway projects, the Engineer of Record (EOR) acts as the primary designer of the work as the Advanced Design Consultant (ADC). On this project, the same consultant – AECOM – is also creating ICEs, which could be viewed as presenting an organizational conflict of interest.

When establishing an ICE, a significant number of high dollar changes would reflect poorly on the quality of the original design, which in this case was prepared by the same consultant. While MnDOT is making no assertions of this, it is plausible that an ICE preparer would want to limit perceptions of poor-quality design and be inclined to limit the scope of the changed work. The EOR would potentially be unable to render impartial advice or assistance, and that perception can exist regardless.

### **Opinion/Recommendation**

MnDOT recognizes that it is not uncommon in the transit industry to have a single design consultant perform the duties of both the EOR and the ICE. This can result in benefits to the cost and schedule for the project owner – and additionally, when done correctly, one could argue it creates a line of continuity between design and construction that the group is already well versed in the intricacies of the project.

MnDOT does not allow the EOR to provide construction administration services on the same project, which would include an ICE.

To eliminate any possible conflicts of interest, MnDOT makes the strong recommendation that the Council should not have a single consultant acting in both the EOR and ICE roles.

### **Section 7 - Primary Impacts to Schedule and Cost**

There are three project elements that have resulted in significant cost overruns and projects delays:

- a. Corridor Protection Barrier
- b. Kenilworth Tunnel Corridor
- c. Eden Prairie Transit Center

#### **7a - The Corridor Protection Barrier**

Also known as the “Crashwall”, this element involves constructing a concrete barrier wall between freight rail and light rail traffic in Minneapolis. Without the wall, the freight railroad would prohibit LRT from operating in the corridor. The protection of this corridor was a known issue at time of letting. The Crashwall was intended to be included in the original contract, however, the extensive environmental review and freight railroad design approval process would have caused significant impacts and delays to the letting/award, so the Council decided to proceed without including the Crashwall work and address the Crashwall later through a contract change order. In doing so, the Council planned a contingency of \$25 million to complete the Crashwall. Initial submittals of the ICE and Contractor’s pricing resulted in figures of \$35,113,389 and \$104,584,486 respectively, far exceeding the Council’s estimated use of contingency.

As documented in the “Summary of Negotiations” dated March 12, 2020, the cost reconciliation process identified numerous errors and discrepancies and the subsequent revised pricing for the ICE and Contractor were \$36,604,905 and \$82,604,905 respectively. The remaining large difference indicates the ICE and the contractor’s estimates were established based on substantially differing assumptions of the changed work. This again points to the inherent value of having appropriate personnel present during cost reconciliation meetings. There is a benefit to hearing the approach taken by the other parties in their cost estimate and ask clarifying questions, rebut their approach, or even recognize shortcomings in their own estimate. This is a routine practice performed by MnDOT when using the Construction / Manager General Contractor (CMGC) project delivery method.

### **Opinion/Recommendation**

Ideally, the Crashwall should have been included in the original contract. We understand that time delay and many unknowns were present at the time, including an excessively robust, deep foundation design using drilled shafts as required by the Railroad.

Because of the very large cost of the change, MnDOT recommended evaluating the feasibility of letting this portion of work as a separate contract in discussions with the SWLRT project team. The Council indicated that they had considered this as an option, but quickly realized the addition of a new contractor in a very tight corridor on tight timeline would prove to be both time and cost prohibitive and proceeded with the approach to add the work through a change order.

The Crashwall change order negotiation occurred more than two years after the bids were opened for the project. As outlined in the Council’s “CBP Executive Summary and What If Analysis”, BNSF Railroad required strict analysis and approval before the Council could proceed with execution of a change order for the work. Additionally, mid analysis and relatively late in the process, BNSF made the determination that initial design (“Denver Model”) was inadequate and demanded a new design (“California Model”), which was much more robust.

The delay in the design as well as the actual construction of the expanded Crashwall scope added to the time and cost of the changed work. However, MnDOT agrees that letting this portion as a separate contract was indeed unfeasible in that it would have been both time and cost prohibitive.

### **7b - Kenilworth Corridor**

Construction of the light rail in the City of Minneapolis Kenilworth corridor was planned and designed from the time of letting to be an underground shallow tunnel having sheetpile retention system walls. Once in construction, it was determined that geotechnical properties were not as originally assumed and 485 feet of the 2,870-foot sheetpile retention system wall design was changed to a complex secant wall system. This change resulted in a significant cost increase and impact to the schedule. Through conversations with project personnel, we understand this late determination and change was a result of inadequate subsurface soil investigation prior to letting.

### **Opinion/Recommendation**

Extensive and proper investigation of subsurface conditions must be performed prior to design, especially in cases of complex work, tight corridors, and close to existing structures. This practice substantially decreases unknowns and reduces large and costly changes in work.

MnDOT understands that the Council did contract with a consultant to perform a peer review for constructability specific to the Kenilworth Corridor, but we would recommend future consideration of multi-party constructability reviews, including construction contractors, during the design to determine if subsurface conditions and design are reasonable.

### **7c - Eden Prairie Transit Center**

The Eden Prairie Transit Center was originally included in the Project scope. In an effort to control costs, it was deferred from the Project in 2015 and later added back in as changed work after local funding was secured.

### **Opinion/Recommendation**

We understand the Council removed this large item at the beginning of the project with an intent to control costs. However, by not including this significant element in the original contract as let, the project does not benefit from lower and more reasonable pricing that is usually a result of competitive bidding.

If all efforts are exhausted to include in the project as let, the Council should consider letting portions of the work as additive alternate work scopes. Doing so would require the contractor to provide a competitive bid on the work while the Council would have the latitude to decide if the work should be performed or omitted.

MnDOT acknowledges that this was a decision of time and cost. As outlined in the Council's "EPTCS Executive Summary and What If Analysis", after being removed from the original scope, the cost of the design for the Eden Prairie Transit Center was funded by the City of Eden Prairie with the full intent of having the station being constructed. However, at the time of letting the only allowable funding source would be local funds, which were not yet in place.

### **Section 8 - Contract Administration/Conclusion**

The project is complex, with multiple parties represented for budgeting, cost participation, permits, and more. The current status of the project, facing substantial cost increases and delays, does not appear to be a result of a single event or point of culpability. Rather, a combination of numerous factors – as well as permitting and regulatory scenarios – combined to compound the negative issues on the project.

Through the course of MnDOT's Peer Review, the Council project team has been very forthcoming and transparent. They generally have good documentation and they provided significant justification for decisions made. Further, the SWLRT project team has been proactive in soliciting review by outside professional services. Even with the potential to reflect poorly upon themselves, they have welcomed these outside reviews and in turn confirmed their commitment to deliver a fair and equitable project.

There are always opportunities for changes to limit and mitigate the negative impacts on this and future projects and improve transparency and accountability. There is a substantial benefit from employing both internal and external personnel with significant experience on multiple large complex projects. On projects of this magnitude and complexity, it is important that these personnel with construction experience are involved during the final design and specifications development process to provide review and recommendations.

Finally, MnDOT recommends that contributors and consultants should be carefully selected to ensure likeminded commitment to collaboration and maintaining positive working relationships.