Agenda
Village of Glen Ellyn
Capital Improvements Commission Meeting
Tuesday, August 8, 2023
7:00 PM
Glen Ellyn Civic Center, Room 301

*Any individual with a disability requiring a reasonable accommodation in order to participate in a meeting should contact The Village of Glen Ellyn ADA Coordinator, 630-469-5000, at least five (5) business days in advance of the next scheduled meeting. All matters on the Agenda may be discussed, amended, and acted upon.*

**A. Call to Order**

**B. Public Comment**

**C. Approval of Minutes**

1) Motion to approve the July 11, 2023 Capital Improvements Commission Meeting Minutes

**D. Current Business**

1) Metra Station Value Engineering/Station Design/Next Steps

**E. Trustee's Report**

**F. Other Business**

**G. Public Works Report**

**H. Project Report**

1) Engineering Project Report Dated August 4, 2023

**I. Adjournment**

**Glen Ellyn Capital Improvements Commission**
535 Duane Street
Glen Ellyn, IL 60137

Meeting 8/8/2023 7:00 PM
Department: Public Works
Department Head: Dave Buckley
Category: Minutes
Prepared By: Rich Daubert

**AGENDA ITEM (ID # 2023-803)**

**DOC ID: 2023-803**

# Motion to approve the July 11, 2023 Capital Improvements Commission Meeting Minutes

**Statement of the Issue:**
The draft meeting minutes for the July 11, 2023 Capital Improvements Commission Meeting are attached hereto for review and consideration of approval.

**Analysis:**

**Budget Impact:**

**Contribution to Strategic Plan**

**Action Requested:**

**Attachments:**
1. CIC Meeting Minutes July 11 2023 - Draft

DRAFT

Village of Glen Ellyn

Meeting Minutes
Village of Glen Ellyn
Capital Improvements Commission
Regular Meeting
July 11, 2023
7:00 PM
Glen Ellyn Civic Center Room 301

**Board or Commission:** Capital Improvements

**Date:** July 11, 2023

**Meeting:** Regular

**Called to Order:** 7:01 p.m.

**Quorum:** Yes

**Adjourned:** 8:46 p.m.

**Member Attendance:**

| | | |
|---|---|---|
| Steve Szymanski | Chair | Present |
| Joel Baldin | Commissioner | Present |
| Arthur Foerster | Commissioner | Absent |
| Orion Galey | Commissioner | Present |
| Michael Lindquist | Commissioner | Present |
| John MacDonald | Commissioner | Present |
| Adil Saeed | Commissioner | Present (arrived 7:32) |
| Jill Ziegler | Commissioner | Absent |
| Rocco Zucchero | Commissioner | Present |
| Donna Jean Simon | Trustee Liaison | Present |
| Richard Daubert | Staff Liaison/Professional Engineer | Present |

**Also Present:**

| | |
|---|---|
| Elisa Pollina | Recording Secretary |
| Dave Buckley | Public Works Director |
| | |
| | |

## A. CALL TO ORDER

The July 11, 2023 meeting of the Capital Improvements Commission was called to order by Chairman Szymanski at 7:01 p.m. at the Glen Ellyn Civic Center.

Chairman Szymanski introduces newly appointed Commissioner John MacDonald to the CIC. Commissioner MacDonald notes he has lived in Glen Ellyn since 1983, has seven children including

three which still live in Glen Ellyn. He notes he has served on the Glenbard West Boosters and has experience in project and program management. The CIC welcomes Commissioner MacDonald.

**B. PUBLIC COMMENT** – None

**C. APPROVAL OF MINUTES**

**APPROVAL OF JUNE 13, 2023 CAPITAL IMPROVEMENTS COMMISSION MEETING MINUTES**

MOTION TO APPROVE MINUTES FROM JUNE 13, 2023 CAPITAL IMPROVEMENTS COMMISSION MEETING

MOTION BY: Commissioner Lindquist
SECOND BY: Commissioner Baldin
AYES: Szymanski, Baldin, Galey, Lindquist, MacDonald, Zucchero (Saed not yet present at meeting)

RESULT: UNANIMOUS APPROVAL

**D. CURRENT BUSINESS** – None

**E. TRUSTEE'S REPORT** – Trustee Simon notes that she is having one-on-one meetings with Village Trustees to discuss the value engineering associated with the Metra Station Project so they are informed and are able to take action in a timely manner. Trustee Simon notes that the Board is still working on the Comprehensive Plan with a vote on the plan anticipated in August. She notes that there is a lot of sustainability initiatives included in the plan which will likely impact the CIC. She adds that last night the Village Board met to discuss the housing study. There is a need to manage and preserve some of the historical buildings in Glen Ellyn as well as restore and improve some of the buildings from the 1950's. Commissioners Galey and Zucchero inquired about what was reviewed and discussed concerning these matters. Trustee Simon noted there was also discussion on whether we want to keep building larger homes or restore the homes we have. The Board also discussed whether we want to keep allowing developers to purchase multiple lots as to consolidate them and build a larger home. The study also identified the need for more starter homes in Glen Ellyn. Trustee Simon noted that this study needs to be reviewed from a fundamental perspective and will be reviewed such in the future.

**F. OTHER BUSINESS** – Engineer Daubert reports there is a Development Project that Public Works Engineering has been involved with. PJ Murphy is working on developing 7 new homes along Hill Avenue across from the Glen Oak Country Club. The project will include reconstructing Hill Avenue to ensure appropriate stopping sight distance due to the addition of driveways on Hill Avenue. He notes that the Country Club previously installed a water main extension fronting the development and it was not installed at the correct depth. As a result, a significant stretch of the water main will need to be replaced at a lower elevation with the cost being approximately $170,000. He notes that this will need to go before the Village Board for approval and that we need to sort out who is responsible for covering the costs of the work. He notes that there is also a conflict with communication facilities

which is delaying the construction of Hill Avenue. He notes that Hill Avenue was to be completed and reopened to traffic by early August but this will be significantly delayed due to the utility issues.

Engineer Dauber notes that we are also working on a traffic study for the intersection of Lorraine and Chesterfield. There is currently no marked and signed crosswalk of Lorraine Road at Chesterfield. It was previously removed due to past staff concerns with safety but residents are requesting its reinstatement. He notes we are taking a fresh look at this.

**G. PUBLIC WORKS REPORT** – Public Works Director Buckley reports the 4th of July Parade was a great success. We had a new parade route this year and the feedback we received was very positive. We are filling two of the three Public Works vacancies. We have a seasonal employee filling one of the full-time positions and we extended another offer that has been accepted for a second full-time position. We still have one vacancy to fill. We are working on our budget for next year that is due in a few weeks. The Village hired a company to conduct a compensation and classification study. All job descriptions, duties and pay will be reviewed. We have been losing a lot of employees to other communities for better pay. We are hoping this study will help with retention. The IEPA visited us yesterday to review our water system and we passed their inspection.

**H. PROJECT REPORT** – Engineer Daubert reports on the CBD Streetscape and Utility Improvement Project. He notes that the Phase 1 work on Hillside Avenue was completed however cracks developed in concrete panels immediately adjacent to the crosswalks with the repairs are to be completed as soon as next week. He notes that much progress has been made on Phase 2 of the project. The contractor is focusing on constructing the roadway on Main Street and Pennsylvania Avenue. He notes that on the south block of Main Street, there is approximately four weeks of utility work to be completed with the south Main Street roadway construction work advancing after. Engineer Daubert reviews the updated progress schedule with the CIC noting that we anticipate we will be able to fully open Main Street to traffic and parking in late October.

Engineer Daubert notes that the Taft Avenue street lighting project completion is delayed to at least mid-September due to material issues with the street light poles.

The Crescent Boulevard resurfacing project is officially on the August 4th State Letting; however, the State has yet to post the Project Plans and Special Provisions. Staff is also waiting the final local agency agreement from the State so it can be presented to and approved by the Village Board. We are targeting July 24th for this item.

On the Hill Avenue Utility Improvements, the IEPA water main permit was issued on June 23rd with the IEPA water pollution control for the sanitary sewer improvements still outstanding along with the DuPage County Stormwater Certification. This will be a 2024 project that we need to carefully coordinate due to the work on Crescent Boulevard and Hill Avenue.

Train Stations Pedestrian Tunnel - The Value Engineering exercises were completed last month with CDM Smith working on the draft report. We should receive this report on Friday. We are working on scheduling a meeting with Metra to discuss the platforms that they should be paying for in full. Phase II Engineering track survey is completed. Next month we need to determine where we go from here from the design side and how we will work through affirming the architectural style of the new depot. Trustee Simon adds the Trustees should set some parameters before we get started. She notes that CDM Smith is looking at a potential new design that will be less expensive. Director Buckley adds

we need to be conscious of the timeline because there are funding deadlines. Metra also sets the calculation of a minimum size for the station. They won't accept it if it is not the minimum and the funding will not be available. Engineer Daubert adds the bulk of the costs are from site improvements not the station itself.

Engineer Daubert discusses the Village's recent applications for CMAQ and STP Shared Funding for the Metra Station Project. He notes that unfortunately, the Village's applications were not granted funding. Staff is pursuing due diligence with CMAP into an oddity though with respect to Elmhurst being programmed for $8M in additional funding for its Train Station/Underpass project with Glen Ellyn actually scoring a tad higher than Elmhurst in both CMAQ and CRP. This could be due to Elmhurst being further along with their project readiness than Glen Ellyn as well as the timing of when Elmhurst will theoretically be ready for funding to be obligated. Daubert notes that with respect to the STP Shared fund, the Village's project is at the top of the contingency list. This basically means that if additional funding becomes available, Glen Ellyn's project could get funded. We have another opportunity in a year and a half to resubmit our application. We are reviewing the scoring and recommended programs but in talking to CMAP about strengthening our application for the next call, project readiness, outside funding, and cost are three areas that we could improve upon. While not the news we wanted to report, this is a good reason to review project costs and keep the design moving forward as we have a project that is scoring high in CMAQ and STP calls and right on the cusp of securing additional funding. As a reminder, we have another shot at CMAQ and STP Shared funding in 2025. Staff will continue to have discussions with CMAP to look into the 2024-2028 Program and identify if additional funding can be found for Glen Ellyn's project.

Construction Maintenance Programs – The board approved the sidewalk/concrete repairs and roadway patching. We are also doing a pilot program with new materials for the pavement markings on concrete streets.

**I. ADJOURNMENT** – Commissioner MacDonald motions and Commissioner Saed seconds to adjourn the meeting. The motion is unanimously approved and meeting adjourned at 8:46 p.m.

**Submitted by Elisa Pollina, Recording Secretary**
**Reviewed by Richard Daubert, Professional Engineer**

**Glen Ellyn Capital Improvements Commission**
535 Duane Street
Glen Ellyn, IL 60137

Meeting 8/8/2023 7:00 PM
Department: Public Works
Department Head: Dave Buckley
Category: Discussion Item
Prepared By: Rich Daubert

**AGENDA ITEM (ID # 2023-804)**

**DOC ID: 2023-804**

# Metra Station Value Engineering/Station Design/Next Steps

**Statement of the Issue:**
Please see the attached memorandum and its associated attachments pertaining to this agenda item.

**Analysis:**

**Budget Impact:**

**Contribution to Strategic Plan**

**Action Requested:**

**Attachments:**
1. 1 - August 8 CIC Memo on Metra Station Value Engineering and Station Design
2. 2 - CDM Smith Memo
3. 3 - Value Engineering Report
4. 4 - PowerPoint Presentation

# MEMORANDUM

**TO:** Capital Improvements Commission

**FROM:** Rich Daubert, Professional Engineer

**DATE:** August 4, 2023

**RE:** Metra Station and Multimodal Access Improvements
Value Engineering/Station Design/Next Steps

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## INTRODUCTION

As the Capital Improvements Commission is aware, a major focus of the ongoing engineering for the Metra Station project is Value Engineering to optimize the project value. CDM Smith led Value Engineering Exercises with members of the Village Board, CIC, Plan Commission, and Staff in June. Engineering staff has been working with CDM Smith to refine the draft Value Engineering Report. The latest draft is attached for the CIC's reference.

The ink is still drying on the Value Engineering Report, but in the interest of time and high-level decision-making needs, staff wishes to discuss the report with the CIC and get the CIC's input on the Value Engineering decision points associated with the Station Design, Plaza, and any other major design critical elements the CIC may wish to provide direction on. In addition, staff wishes to secure input and direction on the Architectural Design of the depot.

## SUBJECT

As noted in this month's engineering project activity report, the Value Engineering Exercises as well as CDM Smith's concurrent review of estimated cost escalation and project contingencies yielded approximately $6.4M in project cost reductions. Having said that, the past project cost estimates did not include underground utility work costs to the tune of $2.9M; although those are associated with the streetscape improvements and not the totality of the Metra Station Project. Regardless, staff has directed CDM Smith to update the project cost estimate to reflect the inclusion of the utility work.

It is particularly important to note that Staff and CDM Smith are continuing to scrutinize the project platform design and associated construction costs, especially in the context that the platform work should be fully funded by Metra. With platform costs currently estimated at $6.7M, this would essentially yield a $2.7M reduction in the Village's share of construction costs. Staff accordingly has a meeting with Metra scheduled for August 8th to further vet this and identify the most appropriate path forward with the platforms.

Other items that require further scrutiny are the land use permission costs from UP (currently estimated at $1M) as well as the cost of Construction Engineering Services for the project.

CDM Smith and Staff will be present at the August 8th CIC Meeting to present on the attached memorandum, Value Engineering Report, and PowerPoint presentation concerning the Value Engineering. What will also be discussed is how we efficiently work forward with affirming the design of the depot in terms of Architectural style.

## ACTION REQUESTED

CIC input and direction is sought on the following:

1. Do we reduce the depot size by approximately 600 SF and simplify the depot design to result in a ~$2.5M cost savings? See CDM Smith Memo and VE Report including pages 34-35 for further context. There will be inconsistencies in cost reductions in the summaries given they were completing during the exercise. Go with the $2.5M cost savings figure.
2. Do we dial back the plaza space/excavation to save ~$570K? See CDM Smith Memo and VE report including pages 58-59 for further context. This needs to be fine tuned as we work with the Landscape Architect and consider accessibility needs for the ADA spaces.
3. While the Village Board will ultimately approve the design of the depot, what is the CIC's recommendation concerning the Architectural design of the Depot? Do we press forward with making alterations to the current concept plan or review alternative design styles such as Tudor, Prairie, others? See CDM Smith Memo for further context.

Any other input is welcomed such as on the assumed C&M/Lease Agreement Costs, Construction Engineering, Contingency and Escalation Assumptions, and other items as members of the CIC may have input on.

## ATTACHMENTS

CDM Smith Memo
Value Engineering Report
PowerPoint Presentation

## Memorandum

*To:* *Rich Daubert, PE*

*From:* *Sarah Sutherlin, AIA*

*Date:* *08.04.2023*

*Subject:* *Glen Ellyn Metra Station and Multimodal Access Improvements Project – Value Engineering and Next Steps*

Please see below status summaries and recommended next steps:

- Value Engineering
- Grant Funding
- Station Design

### Value Engineering (VE)

The VE workshop held during the week of June 12, 2023 resulted in the identification and assessment of a host of value engineering proposals that were discussed by the VE team which included members from CDM Smith (Design Consultant and VE facilitation lead), Village staff, and several Village Officials. The VE proposals were then vetted for feasibility and potential to improve project outcomes without impacting the function of the station nor the project components deemed necessary for meeting the grant funding stipulations. Cost implications were discussed throughout the VE workshop and several proposals identified considerable cost savings.

With respect to the cost savings, the recommended strategies for value engineering yield a cursory estimated construction cost reduction of approximately $6.4 million. The term 'cursory' is used as CDM Smith and Village Staff are continuing to review ways to reduce platform costs as well as develop a better understanding of what UPRR will entertain in terms of construction & maintenance/lease agreements. Recommended VE strategies include:

- Better aligning the station size with new Metra requirements.
- Decreasing the grading requirements on the north side of the tracks while maintaining a balance with the desired function of the plaza and underpass access.
- Examining specific line-item costs for reduction, including the platforms and construction management.

Additionally, ideas were generated that added value to the project without substantially affecting project cost. Strategies include:

- Making the interface with Crescent Boulevard more inviting for pedestrians.
- Examining sustainable components especially with regard to stormwater management and natural lighting.
- Using durable materials including within the landscaping to decrease future maintenance costs.

Please refer to the VE report for additional detail on the VE proposals discussed and their overall impact on project value and cost.

## Funding Status

Glen Ellyn has pursued a multi-pronged grant strategy to fund the Metra station and multimodal access improvements project. The project team has focused on applying for a diversified set of grant opportunities, maximizing federal grant awards and supplementing the required federal match with other state grant sources to further minimize Glen Ellyn's local project cost. As such, Glen Ellyn has secured over $23.4M in grants for this project from a diversified set of funding sources. This currently includes:

- $14.4M in CMAQ funding
- $5M in ICC Grade Crossing Protection Program funding
- $4M in Metra contributions

During Phase I, Glen Ellyn applied to the Congestion Mitigation and Air Quality (CMAQ) grant program in 2018 and was awarded $14.4M for construction and construction engineering. CMAQ funding is federal funding and requires a 20% local match (either state or local dollars).

To fund the pedestrian tunnel construction, Glen Ellyn applied to the ICC Grade Crossing Protection Fund grant program, a state funded program. The Village was successful in securing an additional $2M in to fund construction of the tunnel, the maximum allowable funding for a pedestrian tunnel at the time. Recently, the Illinois General Assembly lifted this cap on funding for pedestrian tunnels and Glen Ellyn applied for additional ICC Grade Crossing Protection Funds at the end of 2022. Glen Ellyn was recently awarded an additional $3M in GCPF, for a total of $5M in funding.

Additionally, Glen Ellyn has been leveraging its partners, particularly Metra, to secure additional funding for construction. Metra has initially committed to $4M in funding of the project. Finally, local Surface Transportation Program (STP) funds that are programmed through DMMC were explored. DMMC recently changed their programming guidance to no longer allow funding of transit facilities, however funds may be available for roadway work.

As costs have increased on the project, Glen Ellyn has actively pursued a dynamic and multi-pronged grant strategy to offset rising costs. Glen Ellyn recently applied for a new round of CMAQ and Shared STP grant funding through another grant application. While the Village was not successful during this latest grant application, it was the top scored transit facility in the Shared STP grant program and was also very competitively scored in the CMAQ grant program. One of the components that is considered in awards under these programs is project readiness, and as this project is still in Phase I, it was a factor in awarding additional funds, with lower scoring projects receiving funding over Glen Ellyn's project. The project is on the STP Shared Fund Contingency List for an additional $10.8M in funding. Additionally, CMAQ grants are open every other year, on the odd years. CMAP has traditionally prioritized project readiness and project advancement during their programming exercises. As such, Glen Ellyn has a strong opportunity to re-apply for funds in 2025 once Phase I is completed. There may also be an opportunity to continue to collaborate with CMAP on opportunities to increase the existing CMAQ award through the project cost increase process.

To mitigate the impact of escalating costs throughout the construction market, holding to the project schedule is one of the most effective measures of controlling costs increases due to inflation, and it also decreases the risk of the loss of grant funding due to sunset dates. More explicitly, the Village's CMAQ funds need to be obligated (project awarded) by September 30, 2026.

## Station Design

*Project History*

The current design being developed in Phase II engineering is a result of a multi-discipline investigations conducted during preliminary engineering (Phase I). The Phase I process was comprised of concurrent and coordinated engineering studies, environmental reviews, and public involvement and stakeholder outreach that resulted in identifying a preferred alternative (project). Value Engineering is its own process typically performed towards the end of Phase I or after Phase I is complete. Phase I studies are currently substantially complete, and we are now in process of integrating the VE recommendations into the preferred alternative so that Phase II construction documents can be developed. This process is required for any project that uses federal funding and typically results in designs that are supported by the general public, local stakeholders, local governments and resource review agencies.

The proposed station design (see rendering next page) is based on the 1926 Chicago, Aurora, and Elgin Railroad station (see photograph next page). The similarity can be seen in the entrance arches, roof slopes, and stone facade. Other notable buildings within the Glen Ellyn Historic Districts were also referenced for design details to create a harmonious look and feel within the downtown. These attributes were used as a starting point for engaging stakeholders throughout the Phase I process.

The 1926 Glen Ellyn station, seen looking southwest across Main Street on March 28, 1957.
Photo by P. Stringham, from the collection of William Raia

The proposed Glen Ellyn station style, seen looking southwest across Crescent Blvd.
Conceptual rendering by CDM Smith.

This design of the project (including station, tunnel, parking lots, streets, plaza and sidewalks) and the associated architectural style has been developed, presented, and reviewed in a variety of engagement settings over the life of Phase I. Updates to the overall project design were incorporated based on rigorous input from a variety of stakeholders including Glen Ellyn residents and Businesses, Village staff, local and regional resource agencies (IHPA, State Historic Preservation Officer, etc.). Public input on the design and functionality were solicited through a variety of public workshops, on-line surveys, and Village Committee and Board presentations.

The following is a snapshot of the public and stakeholder engagement efforts during Phase I:

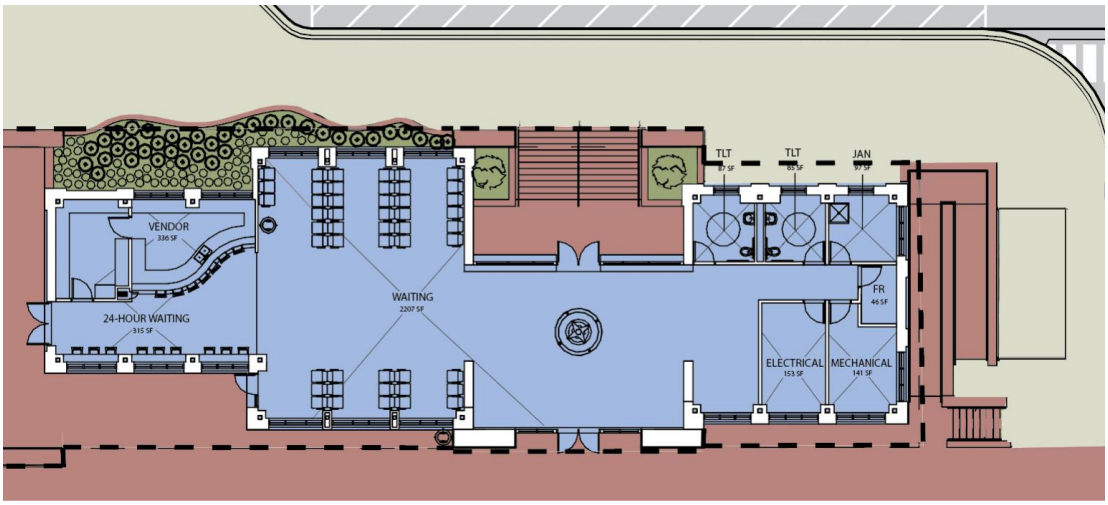
- Public Outreach
    - An extensive public outreach survey was conducted in 2017 that received over 800 responses. The results of this survey indicated that improved outdoor waiting space and a pedestrian tunnel crossing were desired.
    - At a workshop held on 08/02/2017, a public workshop was held in Glen Ellyn. Discussion of the building style was facilitated through images of other stations and a sketch of the proposed station layout. The results of that workshop indicated that the aesthetics of La Grange Metra station (see photograph next page) were desirable, which closely resembles the style of the 1926 Glen Ellyn station.
- Capital Improvements Commission (CIC)
    - At a workshop held on 10/10/2017, the project was presented including results of the public outreach, conceptual drawings, and project scope alternatives.
- Board of Trustees
    - At a workshop held on 01/16/2018, the project was presented including results of the public outreach, conceptual renderings, and project scope alternatives. Alternatives included new vs. renovated station, and a limited scope option that included the underpass. The board voted for Alternative A, which became the basis for the design developed during Phase I.
- Historic Preservation Commission (HPC)
    - At a meeting held on 06/21/2018 the project was presented to HPC including project renderings. It was determined by the required cultural review of the existing 1965 Colonial Revival station by Illinois State Historic Preservation Office (SHPO) that it is eligible for listing on the National Register of Historic Places (NRHP). The commission reached unanimous support of the proposed project with no concerns with the demolition of the existing station. The commission noted that the project will be more fitting with Glen Ellyn's Historic District.

La Grange Metra Station
Built 1901.

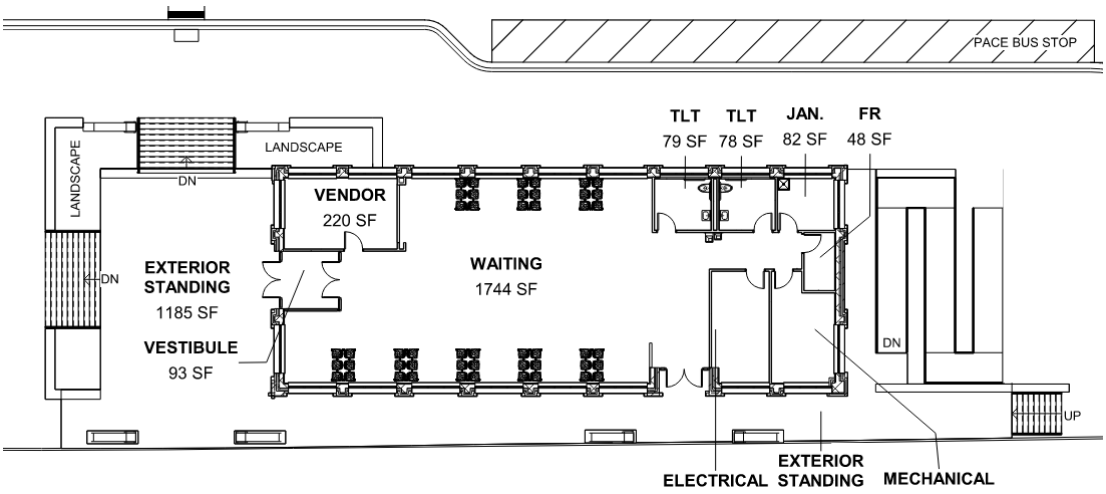
.
Existing Glen Ellyn Train Station, looking Northwest.
Historical Photo c. 1967.

*Proposed Revisions*

Based on the VE workshop, proposed revisions to the station design concept include reducing station size to better align with new Metra standards, as published post-pandemic in 2022. This cost reduction is based on a simplified footprint and maintaining the same general architectural style. The revised conceptual floor plan meets the new Metra standards for standing, seating, heated, and covered waiting areas, which are based on current 20-year ridership projections from Metra to accommodate future growth. It also accommodates a small vendor area inside the station. This design reduces the footprint by approximately 600 SF, an increase from the existing station of approximately 1,000 SF. It reduces the cost from previous estimates by approximately $1.5M (before application of mark-ups, contingency, and escalation) and $2.5M after application of markups. Refer to the floor plan diagrams below.




Previous conceptual floor plan – approx. 3,600 SF




Revised conceptual floor plan – approx. 3,000 SF

The proposed revision also considers making the interface with Crescent Boulevard more inviting for pedestrians. Better integrating the station into the Crescent Boulevard fabric will amplify the value of the station as a focal point for the community. The main entrance is relocated to align with Forest Avenue, creating a visible pedestrian access point, and the Eastern accessible ramp is reconfigured to provide a more clear and convenient circulation path from the Pace Bus Stop to the platform for pedestrians, including those with disabilities.

*Next Steps*

The station design will be developed throughout the Phase II process. Important considerations include the use of durable materials throughout to decrease future maintenance costs, and implementation of sustainable strategies to reduce operational costs and impact on the environment. Design decisions driven by these functional requirements can greatly influence the design character and expression of the station. Elements that may be developed include the application of different façade materials in different ratios, specific window styles and ornament. Site design elements such as pedestrian connections and landscaping will also be developed further, including consideration of alternate pavement textures or materials at the Crescent Boulevard/Forest Avenue intersection to define the area as a special pedestrian zone.

The level of detail as presented in the conceptual floor plans and renderings will be reviewed by the Village as part of the 10 percent design package submitted later this year. This design phase will also include initiating the zoning process with input from the Architectural Appearance Commission, Historic Preservation Commission, Plan Commission, and presentation to the Village Board. To continue the design process along the planned project schedule, it is recommended that the Value Engineering recommendations be approved, and the general design concept be maintained from Phase I, with specific design decisions to be reviewed at project milestones. This will prevent further cost escalation due to schedule delays and any additional design costs due to rework and alternatives development.

# VALUE ENGINEERING DRAFT REPORT

## Glen Ellyn Metra Station

## Village of Glen Ellyn, Illinois

August 4, 2023

Rev00

CDM Smith

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# 1 Executive Summary

During the week of June 12, 2023, a Value Engineering (VE) team conducted a workshop examining the proposed Glen Ellyn Metra Station project. This was a structured workshop following the VE process outlines by SAVE International. (This process is also the process used by multiple federal departments including the Federal Transit Administration and the Federal Highway Administration). While VE workshops almost always result in improved value for the projects under study, this workshop was undertaken specifically because the estimated cost of the project has grown, potentially increasing the local funding share of the project to be borne by the Village of Glen Ellyn.

## 1.1 Project Description

The subject project for this Value Engineering study is the Glen Ellyn Metra Station and Multimodal Access Improvements Project. The project includes the station building, vehicular parking, bicycle parking, sidewalks, boarding platforms, a pedestrian tunnel under the Metra tracks, stairs, ramps, landscaping, roadway improvements and utility replacement.

## 1.2 Summary of Value Engineering Proposals

VE Proposals fell in the subject areas of:

- Better aligning the station size with Metra requirements.
- Decreasing the grading requirements on the north side of the tracks while maintaining a balance with the desired function of the plaza.
- Using durable materials (including within the landscaping) to decrease future maintenance costs.
- Making the interface with Crescent Boulevard inviting for pedestrians.
- Examining sustainable components especially with regard to stormwater management and natural lighting.
- Holding to the project schedule (to the extent possible) to prevent further escalation of project costs due to inflation and also to decrease the risk of the loss of grant funding if some grants were to sunset.
- Examining specific line-item costs for reduction, including the platforms and construction management.

## 1.3 Cost Data

Cost data was primarily based on the ten percent opinion of probable cost. This ten percent opinion of probable cost means a cost estimate based on the conceptual plans using general unit cost information such as cost per square foot of sidewalk or cost per square foot of building. At the ten percent design level, detailed quantities are not yet available. The cost estimate at this stage is

intended to provide a range or an informed order of magnitude. At this stage, the estimate should not be viewed as an "engineer's estimate" that is prepared during final design just before bidding. For the platforms, the cost data had been supplied by Metra. During the workshop, the VE team developed several recommendations that would lower the project cost. In addition, the platform replacement cost was examined using an independent estimate (based on recent cost data from a similar Chicago-area project). See Section 9 of this report for further discussion.

A summary of the cost reduction possible if incorporating the value engineering proposals is below.

## Previous opinion of probable cost:

| Item | 2022 Cost | Contingency | Escalation | Totals |
|---|---|---|---|---|
| Station Depot | $6,445,945 | $1,289,175 | $1,392,211 | $9,127,331 |
| Platform and Warming Shelters | $9,104,923 | $1,820,965 | $1,966,504 | $12,892,392 |
| Plaza | $756,630 | $151,324 | $163,419 | $1,071,373 |
| Underpass Including Ramps and Stairs | $8,658,834 | $1,731,748 | $1,870,156 | $12,260,738 |
| Roadway, Parking, Site Work | $3,873,975 | $774,787 | $836,711 | (*) $5,485,472 |
| **Construction Subtotals** | (**) $28,840,000 | (**) $5,768,000 | (**) $6,229,000 | **(**) $40,837,000** |
| (*) Utility Replacement | included in total | included in total | included in total | (*) 2,900,000 |
| **Revised Construction Subtotal** | | | | **$43,737,000** |

*(*) For consistency the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed. The Rough Order of Magnitude (ROM)of that work is $2.9 million.*

*(**) Construction Subtotals have been rounded to the nearest $1,000.*

## Summary of VE cost reductions:

| Item | 2022 Cost | Contingency | Escalation | Totals |
|---|---|---|---|---|
| Station Depot | $4,892,000 | $978,000 | $766,000 | $6,636,000 |
| Platform and Warming Shelters | $7,857,000 | $1,571,000 | $1,230,000 | $10,658,000 |
| Plaza | $757,000 | $151,000 | $118,000 | $1,026,000 |
| Underpass Including Ramps and Stairs | $8,659,000 | $1,732,000 | $1,355,000 | $11,746,000 |
| Roadway, Parking, Site Work | $3,624,000 | $724,800 | $567,084 | (*) $4,915,884 |
| **Construction Subtotals** | $25,883,000 | $5,177,000 | $4,050,000 | **(*) $34,981,884** |
| (*) Utility Replacement | included in total | included in total | included in total | (*) 2,900,000 |
| **Revised Construction Subtotal** | | | | **$37,881,884** |

*(*) For consistency the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed. The Rough Order of Magnitude (ROM)of that work is $2.9 million.*

The sum of value engineering proposals yields an estimated reduction of $5.8 million - construction cost, or approximately 14%. These scope reductions do not impact the function of the station, nor the required scope components related to the grant funding.

The total grant funding (rounded) was $20.4 million (including the Metra component for the platforms). Following the original cost estimate, an additional $3 million dollars was recently awarded, to increase the total outside funding to $23.4 million. Note that there are additional and/or increased grant funding being pursued for this project.

## 1.4 Value Engineering and Transit Projects

Value Engineering for a transit project has complexities beyond the scope of the project itself. Decisions made based on the VE workshop typically have potential to impact station-area businesses (or station-area development), customer satisfaction, and ultimately attraction of customers to the station to use the Metra service. Unlike a VE study for an industrial project (where the owner is only interested in costs and benefits to the company), transit projects have benefits (and potentially impacts) that do not belong to the owner of the project. In the case of the Glen Ellyn Metra Station project, one very interesting aspect is the benefit of the pedestrian tunnel beyond simply Metra ridership. The tunnel has the potential to benefit traffic patterns, parking patterns, and pedestrian flow to and from businesses on either side of the Metra and Union Pacific Railroad tracks.

## 1.5 Recommended Value Engineering Proposal

The VE workshop generated 47 ideas during the creativity phase of which about half were advanced into VE proposals. In the final phase 14 proposals were recommended for incorporation into the project or for further evaluation during the design phase.

There were three main VE recommendations that generated more than nominal cost reductions.

- Aligning the station size, covered areas, and warming shelters based on Metra's revised requirements. A potential cost reduction of approximately $1.5 million (before application of mark-ups, contingency, and escalation) and $2.5 million (including application of mark-ups, contingency, and escalation) is estimated.
- Scaling back the grading for the north plaza while preserving the function of the plaza including providing improved connectivity to Crescent Boulevard. A potential cost reduction of approximately $250K (before application of mark-ups, contingency, and escalation) and $569K (including application of mark-ups, contingency, and escalation) is estimated.
- Limiting the scope of the construction engineering based on personnel needs (rather than a straight percentage calculation). A potential cost reduction of $562K is estimated.

## VE Related Cost Reductions Summary

| Item | 10 PCT OPC | VE Adjustments | Cost Reduction |
|---|---|---|---|
| Station Depot - 2022 Cost | $6,445,945 | $4,892,000 | $1,553,945 |
| Platform and Warming Shelters – 2022 Cost | $9,104,923 | $7,857,000 | $1,247,923 |
| Roadway, Parking, Site Work - 2022 Cost | $3,873,975 | $3,624,000 | $249,975 |
| Design Contingency & Escalation | $11,997,000 | $9,192,800 | $2,804,200 |
| **Construction Subtotals** | | | **$5,856,043** |
| Construction Engineering | $4,062,500 | $3,500,000 | $562,000 |
| **Project Totals** | | | **$6,418,043** |

Since these cost reduction items also affect other markups that are based on percentages, the estimated total reduction in construction cost based on the VE recommendations is estimated to be $5.8 million. When the potential cost reductions of limiting the scope of the construction engineering is included there is an anticipated reduction of approximately 6.4 million dollars to the project.

# 2 Value Engineering Overview

***Value Engineering is not simply a cost-cutting exercise. Value Engineering is a function-based, multi-disciplinary approach to find the best value for a project without sacrificing the project's basic function and requirements. For transit projects, capital costs are intertwined with multiple project goals, and, because of this, care must be taken when removing or reducing capital cost elements.***

Value Engineering (VE) is often viewed as "cost cutting," a means to reduce capital cost when a project has run over budget. Projects run over expected cost for a variety of reasons ranging from the addition of project elements by a multitude of stakeholders to fluctuation of market prices, including for key materials and labor. For the last two years, inflation in the construction industry has been common across the country for all types of projects.

For transit projects and, in this case, specifically a transit station, capital costs are intertwined with, at minimum:

- Customer service and convenience,
- Rail operations,
- Ease of maintenance and cost of future operations (e.g., energy use),
- Ability to support surrounding development,
- Ability to support future growth, and
- Safety and security.

Beyond functions, transit stations have requirements including those related to the railroad and those related to accessibility.

Simple cost cutting on this project without an understanding of how the ***system*** functions – how all the parts function together to address project goals and requirements – can result in undesirable consequences. As an example, capital cost could be reduced by using an open-air shelter instead of an enclosed building. While this would reduce up-front construction cost, this would certainly be viewed as impacting customer comfort. A true VE study (using functional analysis) examines how such a capital cost reduction would potentially have negative effects on the attraction of customers, perceived customer service, and likely the impact on supporting station-area development.

## 2.1 Value Definition

The definition of "value" should be kept in mind when conducting VE workshops to help maintain a balanced outcome.

$$Value = \frac{Function}{Cost}$$

In other words, while a lower cost for the same function improves value, if a lower cost results in a decreased function, then the value may not be improved. (*Note that the formula represents the value concept. Converting some functionality, such as aesthetics, sustainability, or resilience, into dollars for a mathematical comparison is not the intent.*)

Function can include maintainability, operability, attraction of customers (transit riders), customer convenience, customer comfort, safety, security, aesthetics (including station architecture, landscaping, and art), reliability, transfer time (affecting total travel time), ability to respond to incidents, sustainability, resiliency, and so forth. Cost includes capital cost and operating & maintenance costs. Cost should, basically, keep life-cycle costs in view (as part of asset management); however, precise calculation of life-cycle costs is typically not possible during a time-constrained VE workshop. Cost cutting solely to reduce up-front construction cost typically has consequences down the line.

## 2.2 Value Engineering Process

VE studies follow phases as outlined by the Society of American Value Engineers (SAVE, now SAVE International). This process is the identical process recommended by federal agencies including FTA, FHWA, and USACE.

### 2.2.1 Pre-Workshop Phases

In addition to the creation of a Job Plan specific to the VE topic, two phases of the VE process occur prior to the workshop.

- Project identification
- Team formation

The pre-workshop phase also included the logistics for the workshop itself. (During and following the Covid-19 pandemic, VE workshops carried out virtually have been found to be just as effective as in-person workshops, with the added benefit of reduction in VE study cost, the ability to tap into national resources if needed, and greater flexibility in scheduling.)

Pre-study project identification includes a definition of the study scope and objectives. Typically, the client may provide points of emphasis or may provide aspects of the project which are constrained. As an example, if the pedestrian tunnel under the Metra tracks is tied to a portion of the grant funding, then installation of a tunnel is a project constraint.

The VE study scope may include, but is not limited to:

- Tunnel
- ADA access to station, platforms, parking, and multi-modal transfer area
- Station
- Bicycle parking
- Constructability
- Impact to rail operations during construction
- Risk (related to perceived Contractor risk impacting bid prices)
- Stormwater management
- Sustainability goals
- Potential Resiliency improvements

Elements that may constrain VE recommendations include, but are not limited to:

- ADA laws
- ICC grade protection
- Historic designations (from SHPO)
- Grant requirements

Several principles of **team formation** feed directly into successful VE studies. First, studies tend to be more successful if the team has a mix of some persons with agency and area familiarity plus persons with "fresh eyes" on the project. Persons with a mix of geographic experience help "cross pollinate" ideas based on experience from other similar agencies or projects. VE workshops flow better when the participants are "big picture" thinkers, able to examine the entire system from the vantage point of different disciplines. For VE Studies, recent research indicates participants identify themselves as "lead adaptors," comfortable with examining ideas which are outside of the status quo.

Finally, the range of team members should cover the disciplines needed for the subject of the study. For this workshop, the disciplines include, but may not be limited to:

- Station architecture
- Multi-modal (bus, bicycle, walking, vehicular)
- Construction and constructability
- Rail operations (related to Metra operations during construction)
- Stormwater and sustainability
- ADA requirements
- VE facilitator
- Cost estimator (non-workshop support, background support during evaluation and development)
- Administrative (support, non-technical participant)

Other participants may be added based on review of the job plan. While VE team members are typically experienced, VE teams sometimes include one "junior" member who may benefit from the VE workshop experience. See Section 3 of this report for listing of team members.

This VE workshop was held using a virtual platform (Microsoft Teams).

Project information basically consisted of the existing materials at the time of the VE study. These materials also included planning documents. Understanding constraints related to the funding grants was important. Some materials were sent to participants one week ahead of the workshop. Participants were expected to review the information prior to the start of the workshop, if possible. Supplemental material related to the VE process was distributed during the week prior to the workshop.

### 2.2.2 Workshop Phases

Up to six VE phases can occur within the workshop, although the phase in the last bullet point often follows the workshop, especially when the workshop is held virtually.

- Information phase
- Functional analysis phase
- Creativity phase
- Evaluation phase
- Development phase
- Reporting/Presentation

**Information phase:** This is the review of plans and any other available materials pertinent to the VE study. Beyond simply review by VE team members, usually a designer who is thoroughly familiar with the plans makes a presentation. The information phase can also include direction from the client, especially in regard to perceptions of constraints that may not be found in the planning documents.

**Functional Analysis phase:** Review of high-cost components, high worth items, cost-worth mismatches, and the basic functions for the study subject. Function analysis helps separate "must have" from "nice to have." Functional analysis primes the participants for the creativity phase. Functional analysis also sometimes allows visioning of "simple and elegant solutions" rather than attaching Band-Aids to address individual concerns. Certain project elements could address multiple functions, improving function and decreasing cost. Conversely, other project elements may be identified with relatively high cost and questionable value. The latter may be good candidates to evaluate during the workshop.

**Creativity phase:** Also called brainstorming, this is the generation of many potential ideas for improving project value (which often involves reducing up-front construction cost).

**Evaluation phase:** Review of ideas to narrow to a list of the best recommendations for value improvement. Evaluation can take many forms including pairs analysis (which looks at ideas with similar function two at a time), matrix analysis, benefit-cost calculations, or other forms. The evaluation types should be left to the team since a variety of methods may be appropriate. A variety of evaluation types helps address bias (of various forms) which can creep into the VE study. Evaluation is typically iterative with the Development phase.

**Development phase:** Development of enough detail to further evaluate and provide reasonable assurance the recommendations can be implemented. It is not uncommon to find out, upon development of further details, that a seemingly good idea turns out to be impractical for implementation. (Note that some VE studies end up confirming the original design. The outcome of VE studies is not known at the onset of the study.)

**Reporting and Presentation:** As mentioned above, it is possible to prepare a draft report and provide a presentation during the workshop. However, this is usually done when the workshop is conducted in person, full time, across five days. The culmination of the workshop is a presentation of VE recommendations. For virtual workshops, the draft report and presentation usually occur during the weeks following the workshop.

### 2.2.3 Post-Workshop Phases

Following the workshop, the draft report would be revised, VE recommendations would be reviewed for approval, and a final VE report developed. Note that the report remains draft until

the client confirms the recommendations. The recommendations then would be passed to the design team for incorporation.

# 3 Team Members

The VE Team needs to include persons who have appropriate experience to cover the disciplines used on this project. Team members should be experienced, be "big picture" thinkers, be able to view the project from multiple vantage points and have availability to fully participate without distraction.

As stated above, the disciplines tied to this project include, but are not necessarily limited to:

- Station architecture
- Multi-modal access (bus, bicycle, walking, vehicular)
- Roadways, parking lots, and utilities
- Tunnels and geotechnical engineering
- Construction and constructability
- Rail operations (related to Metra operations during construction)
- Stormwater and sustainability
- ADA requirements

Because of the existing station area development, experience in urban planning may be useful.

In addition to covering the disciplines, the team will have a facilitator:

- Tom Williams, PE, VMA (Value Methodology Associate certification number 201202038) – Tom has facilitated over a dozen VE studies in four states. Six studies have included rail transit with several of these including stations and station areas.

The team will also have a cost estimator and administrative support in the background to the workshop. Additionally, to help junior staff develop, one intern has been included on the team.

For this size study, a team (in the workshop) of six to eight (including the facilitator) would be appropriate and manageable. (*Note that the team expanded beyond this originally estimated number of workshop team members*.)

**Value Engineering Team**

| Name & Agency/Firm | Subject Matter | Summary Biography |
|---|---|---|
| Tom Williams, PE, VMA<br>CDM Smith | Facilitator | Discipline Leader for Rail Transit at CDM Smith with 42 years of experience. Tom has facilitated over a dozen VE studies in four states. Six studies have included rail transit with several of these including stations and station areas. |
| Sarah Sutherlin, AIA, LEED AP<br>CDM Smith | Architecture | Discipline Leader for Transit Architecture at CDM Smith; licensed architect with 15 years' experience, recent experience with major transit projects including rail and bus facilities. |
| Robert Cheval, AIA, PMP<br>CDM Smith | Architecture, Building Systems, CDM Smith Project Manager | Senior Project Manager at CDM Smith with 17 years' experience as a Licensed Architect. Experience includes municipal buildings and CTA facilities. Experience also includes utility tunnel reconstruction. |

| Name & Agency/Firm | Subject Matter | Summary Biography |
|---|---|---|
| Antonio (Tony) Cerda, PE, PMP<br>CDM Smith | Roadway | Over 30 years of experience in transportation design and managing complex highway transportation projects. |
| Jared Wendorf, PE, PMP<br>CDM Smith | Civil | Senior Civil Engineer and Project Manager at CDM Smith; 15 years' experience including structures and rail transit; lead civil design on over 50 design and construction projects. |
| Mahmood Khwaja, PE<br>CDM Smith | Tunnel, Geotechnical (Limited Availability) | Senior Geotechnical-Structural Engineer with 29 years of experience including transit projects. Experience includes ground improvements and foundation design. |
| Hong Yang, PE, GE<br>CDM Smith | Tunnel, Geotechnical | Sr. Geotechnical Engineer with over 30 years of experience in geotechnical and tunnel engineering on subway, light trail, and water projects. |
| Sam Smith<br>CDM Smith | Intern | Transportation intern. Sam will also be available to perform research into VE ideas generated. |
| Martin (Marty) Scott, AICP<br>Village of Glen Ellyn | Zoning | Director of Community Development with a few decades of experience. The department handles zoning, planning, building, development engineering, and fire/life safety. Experience includes downtown redevelopment and associated streetscape concept planning. |
| Robert J. Schmidt<br>Village of Glen Ellyn | Building Official | 20+ years in the private sector architectural design, including the build end of the business prior to transitioning to municipal public service in 2013. |
| Dave Buckley<br>Village of Glen Ellyn | Public Works | Glen Ellyn Public Works Director. 33 years with the Village of Glen Ellyn (17 years Recreation and 16 years Public Works). Involvement with this train station project since inception. |
| Mark Franz<br>Village of Glen Ellyn | Village Manager | Mark Franz has been the Glen Ellyn Village Manager since 2011. He holds more than 27 years of municipal experience. |
| Derek Peebles, PE<br>Village of Glen Ellyn | Landscape Architecture | (Observer) Civil Engineer with over two decades of experience with transportation management in the municipal realm. |
| Richard Daubert, PE<br>Village of Glen Ellyn | Project Manager | Village Engineer with 20 years of experience in the planning, design, and construction of roadway, sewer, water, and transit infrastructure projects as well as extensive experience in the entitlement, permitting, and construction of private development projects. |
| Steve Szymanski<br>Village of Glen Ellyn | Capital Improvements Commission Chair | Stephen Szymanski is the Chair of the Capital Improvements Commission (CIC), an advisory body to the Village of Glen Ellyn Board of Trustees. He has 42 years of experience within a major industry. |
| Tim Loftus<br>Village of Glen Ellyn | Plan Commission Chair, VE Reviewer | Forty years of experience in the field of Construction Project Management and Plant & Facilities Construction & Maintenance. Facilities included a Fortune 10 corporation, Big 10 and Division 1 Universities and a U.S. Department of Energy laboratory. Current Chair of the Glen Ellyn Plan Commission, former Chair of the Glen Ellyn Historic Preservation Commission and member of the Glen Ellyn Architectural Review Commission. |
| Trustee Donna Jean Simon | Village Trustee | Donna Jean Simon was elected trustee in 2023. She has lived in Glen Ellyn since 1982. Her previous work experience included practice as an attorney in real estate and corporate law. |
| Trustee Steve Thompson | Village Trustee | Steve Thompson was elected as Village Trustee in 2019. He has been a resident of Glen Ellyn since May 2000. He is an active volunteer in the Glen Ellyn Chamber of Commerce. Trustee Thompson holds a Bachelor of Arts degree in Political Science from Creighton University. |
| Ramesh Nair<br>Vistara | Cost Estimating | Cost estimating experience includes both CTA and Metra projects with a wide variety of scope. |

Note: The assembled team brought over *380 years* of experience to bear on this project. Almost all team members were able to attend all meetings with a few exceptions.

# 4 Schedule

The following schedule was based on team availability. A full 40-hour workshop was not deemed necessary for the size of this project. Microsoft Teams invitations were sent to participants for the following dates and times.

- June 12 – 1:30-4:00PM – Kick-off, Information Phase, start Function Phase
- June 13 – 11:00AM-4:00PM (with break 12:30-1:30PM) – Complete Function Phase / Creativity Phase / Begin Evaluation Phase
- June 14 – 9:00-11:30AM – Continue Evaluation Phase / Begin Development Phase
- June 15 – 9:00-11:30AM – Continue Development Phase / Iterate (as necessary) with Continued Evaluation
- June 16 – 9:00-11:30AM – Complete Development Phase / Consolidate Recommendations

Breaks were provided as needed by the team and as we reached natural breaking points. Team members needing to step away for calls or short meetings were accommodated.

Almost all team members were able to review materials provided in the week prior to the workshop.

# 5 Information Phase

## 5.1 Workshop Introduction

The workshop started with an opportunity for Village leaders to provide observations and concerns. Some of the comments included:

- One major concern is overall cost. While some elements (streetscaping, platforms) may be addressed using other funds, the gap between the estimate and the available grant funding is substantial.
- The look and feel of the station and station area is important.
- The size and scope (related to cost) are of concern. Should not build bigger than we need to. Aim toward the actual requirements, not exceeding the requirements. (And make sure we have the current data related to requirements.)
- While the station should not be overbuilt, building the station and site "correctly" (meaning how it functions, not just as a train station but as a connector within the Village) is important. The station will be a focal point of downtown for decades to come.
- Residents generally want the project!

- Additional sources of funding may be possible.
- Note that there are historic elements to this project.
- Don't forget the future operating and maintenance costs, even costs such as snow removal from the parking lots.
- Also don't forget about sustainability (and measures of sustainability such as LEED rating).
- Safety and security (for the station and pedestrian tunnel) needs to be a key consideration. This will be a user concern and a Village Police concern.
- The existing station is currently undersized (per Metra standards for the 2018 ridership).
- The existing station has condition issues leading to maintenance and repair costs.
- The existing station does not provide the level of accessibility desired. Remember that accessibility extends to those with strollers and also the aging population.
- Drop off and pick up areas do not currently exist.
- The station is in the "heart of downtown" and affects the character. The image – both the station building and the landscaping – is important.
- The project is connected to other projects such as the U.S. Bank site development.
- The new station needs to protect the commuters from the elements. This includes snow and rain, but also means providing shade in the summer.
- Beyond natural light in the station building, also considered operable windows (such as the previous casement windows) to allow natural ventilation in the station.
- Minimizing, to the extent possible, the impacts to adjacent businesses during construction is important. Ensuring access to the businesses remain open is vital.

## 5.2 Review of 10% Design Information

Informational materials were provided in the week prior to the workshop for participants to become familiar with the study topic and general project background. Materials were reviewed during the information phase. This project does have constraints, some related to the grant funding and some related to agency requirements. As an example, Metra has a formula for square foot requirements for train stations and platforms based on passenger volumes.

Laws and codes also constrain via requirements. An example is ADA requirements. Building codes are another example.

For reference, inbound Metra weekday ridership in 2018 averaged 1,888. In 2023 (post-Covid), ridership on the UP-West Line has come back to near 54% of the 2018 levels.

# 6 Functional Analysis Phase

Functional analysis starts with some basic questions. What are the high-cost components of the project? What elements are perceived as high worth? What elements carry high risk? Are there value mismatches?

## 6.1 High-Cost Components

Based on the opinion of probable cost prepared at the 10 percent design level, the following were identified as high-cost contributors:

- The station building (22% of construction cost) and specifically, the station size.
- Passenger boarding platform replacement with warming shelters (32% of construction cost)
- Pedestrian tunnel with ramps and stairs (30% of construction cost)
- Road, Parking, and Site (13% of construction cost)
- Ornateness of any elements (e.g., lighting, planters) can result in higher cost.

## 6.2 High Worth Component

The #1 component identified as high worth by workshop participants was the pedestrian underpass. This feature not only increases pedestrian safety but also improves connectivity and traffic patterns downtown:

- This allows pedestrian flow unrelated to Metra boardings, including between parking and businesses.
- Changes the traffic patterns and parking demand.
- Improves train access (especially when tracks are blocked).
- Provides connectivity for economic development, including connecting directly with the U.S. Bank property project.

## 6.3 Higher Risk Factors

What project elements carry higher risk to the Contractor or to cost variation?

- Pedestrian tunnel, including monitoring track elevations. Note that UPRR will play a significant role in controlling the pace of the work.
- Sub-elements of the tunnel can also be high risk, including grouting.
- Utilities, including fiberoptic lines.
- Stormwater management (since if larger volumes are required, more area or more volume underground will be needed).
- Lead service lines (for water).

- Platforms (including contractor coordination and flagging).

## 6.4 Value Mismatches

A value mismatch can be something that has high cost but a low perceived value, or a high perceived value but a relatively low cost. Value mismatches with high cost are typically targets to examine in a VE study. Items identified included:

- Vendor space – since competing vendors (such as Dunkin' and Starbucks) are across the street.
- Need for a temporary station (and associated costs).
- The platform (replace existing asphalt platforms with concrete platforms)

## 6.5 Functional Analysis and Basic Function

A transit station has multiple functions. The station in the Village of Glen Ellyn is no different. In fact, the station and station area have roles in the community that many transit stations do not. The team identified:

- Connect Commuters
- Transport Commuters
- Staging Point for Commuters
- Support Equitable Modes of Transportation (part of CMAQ grant scoring)
- Shelter Commuters (in the main building, in warming shelters, under stairway/ramp canopies) – applicable to snow, rain, shade (in summer sun).
- Provide a Focal Point for Downtown
- Provide Open Space / Gathering Space / Community Space
- Project Image of Glen Ellyn (both historic and future)
- Act as a Landmark
- Serve High School Students (related to gathering space, lunch destination)
- Provide Entry Point into Glen Ellyn
- Contribute (positively) to the Image of the Village
- Encourage Use of the Illinois Prairie Path
- Provide Safety and Security
- Facilitate Events (e.g., Polar Express)

- Provide Amenities (e.g., Coffee Vendor, restrooms)
- Support Multi-Modal Access (including vehicular, vespa, bicycle)
- Provide Bicycle Parking Amenities (e.g., covered bike parking, overflow bike parking)
- Allow for Charging of EV
- Manage Curbside Demand
- Replace Utilities / Repair Aging Infrastructure
- Provide Streetscape Anchor
- Contribute to the Identity of Downtown
- Support the Village's Strategic Plan
- Support Mixed-Use Development
- Provide a Continuity Function
- Provide Opportunity to Unite the North and South Historic Districts
- Support Heritage Tourism
- Contribute to Sustainability
- Encourage People to Live in Glen Ellyn (i.e., Competitiveness in the Suburban Market)

A basic function is a function, without which, the project cannot be successful. The basic function of a Metra station is:

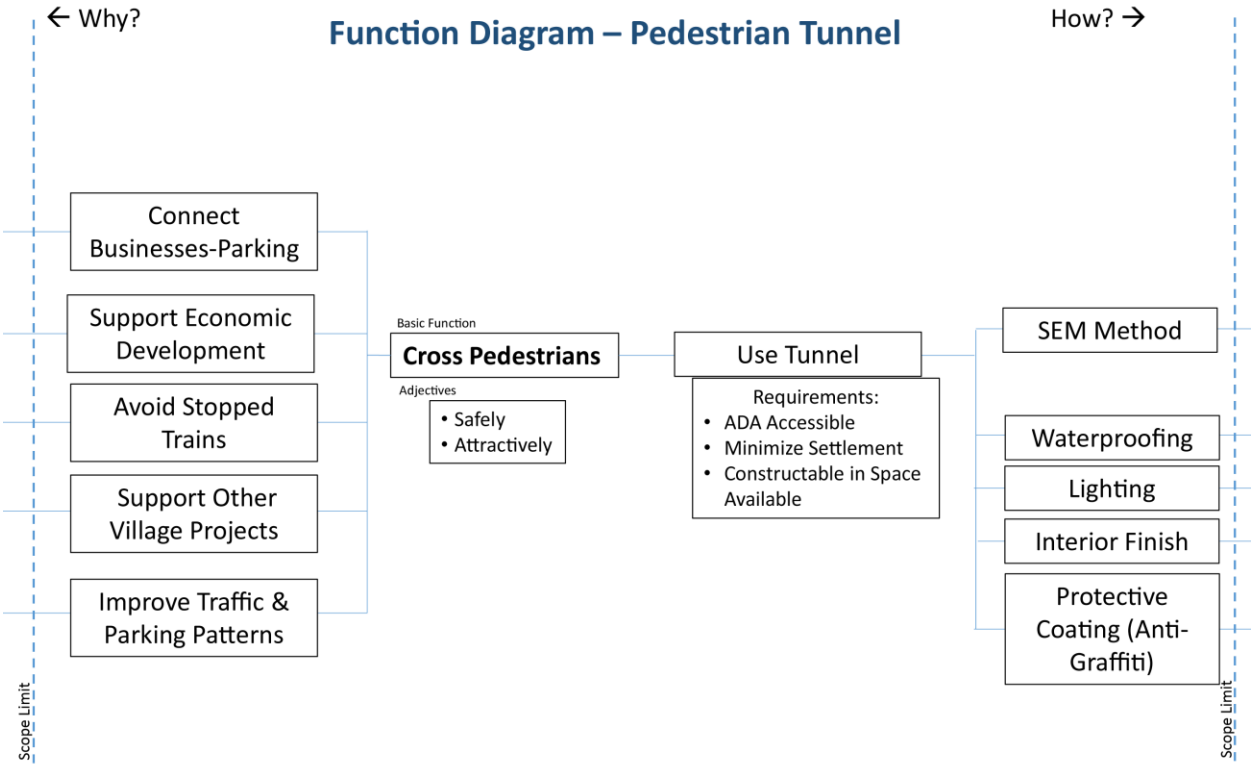
**Provide for Boarding/Alighting Trains**

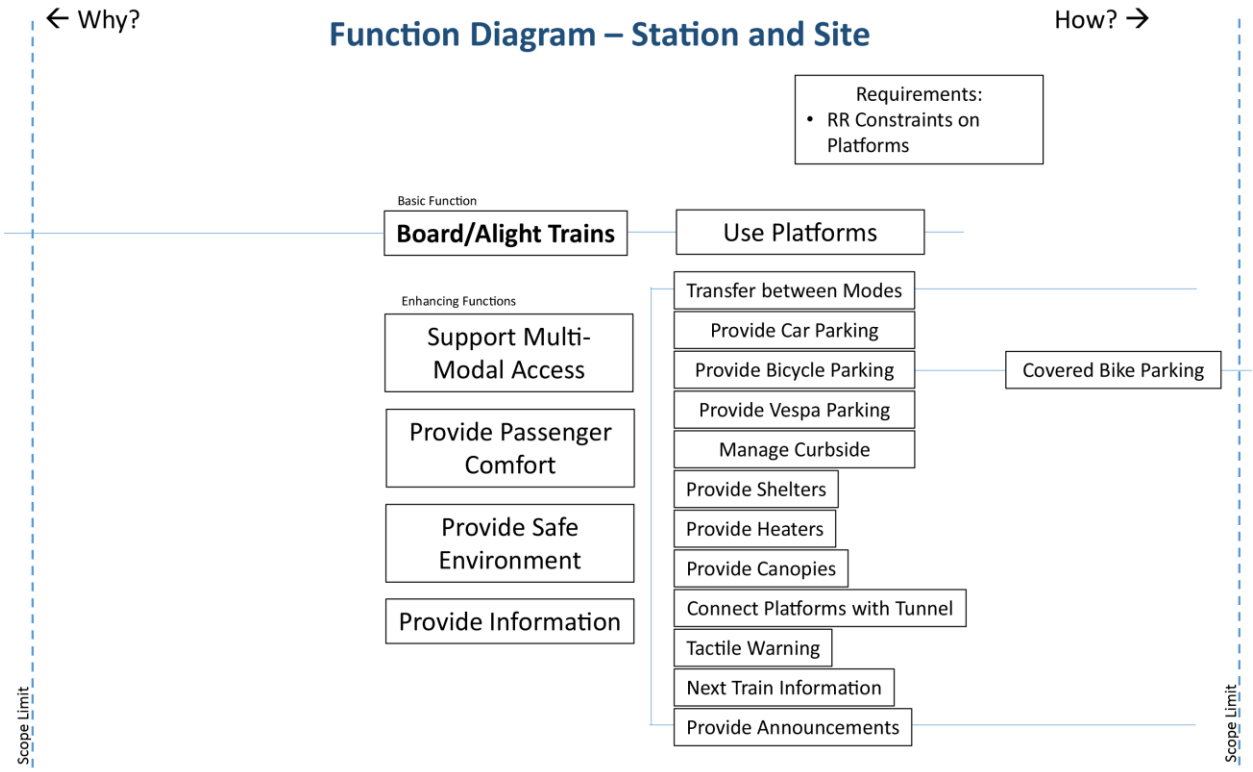
While this is the basic function, it cannot be overstated that the secondary (or enhancing) functions are vital to the success of the station and station area project. The Village (as with many communities along the Metra lines) can be considered a "train town." Historically, many aspects of the Village grew up around the train station. As such, the station and station area are a focal point, contributing in many ways beyond simply the downtown Chicago commuters' boarding point.

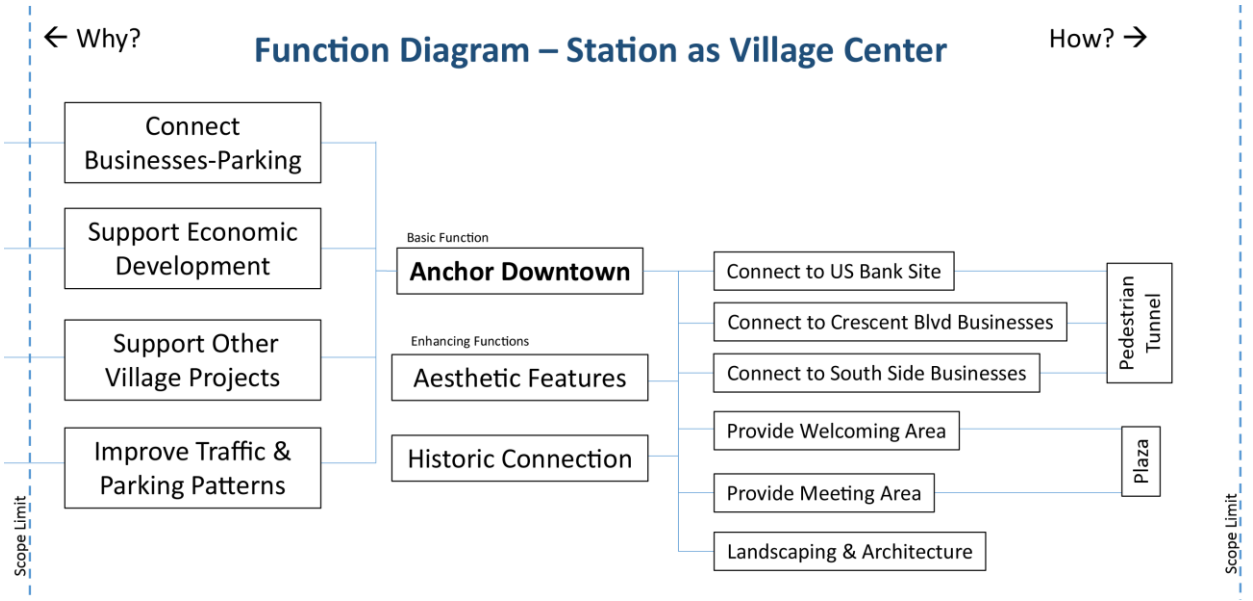
In many VE studies, the secondary or enhancing functions become targets for cost reduction. With this study, a number of the secondary functions are as important, if not more important than the basic function.

See the following three figures related to function. The first is just the function of the pedestrian tunnel. The second is the basic function of a train station. The third became the most important function in this study: recognizing the station and station area as a centroid for the Village of Glen

Ellyn. *(This aspect made this particular VE study more interesting and more complex than almost all past VE studies in which this facilitator has been involved.)*






# 7 Creativity Phase

The Creativity Phase is also called Brainstorming. The objective is to create ideas that will add to the value of the project. Value is often increased by decreasing cost, but value may also be

increased by improving functions without an increase in cost (or at minor or negligible increase in cost).

During the creativity phase, the participants were asked not to evaluate any of the ideas. (Evaluation during the phase tends to slow the creation of ideas.)

The creativity phase started using "stream of thought," meaning that team members just listed ideas in no particular order. After the creation of ideas slowed, then some probing questions were asked to direct thinking toward certain topical areas. After a list was created, the ideas were then sorted (to place related ideas next to each other for evaluation).

**Stream of Thought Ideas**

1. Consider alternatives to the tunnel – e.g., overpass, ramp (like Maggie Daley connection)
2. Align interior and exterior size with requirements from Metra. The exterior size includes those waiting areas under the roof (but not circulatory areas with a roof).
3. Look at minimal station to meet requirements – then debate what to include in addition to the minimum.
4. For temporary station, use an enclosed warming shelter. (This applies to the warming shelter on the inbound side of the tracks.)
5. Are both warming shelters needed? Do they need heaters?
6. Assess platform sizes / Do we even need new platforms?
7. Better interface with land uses along Crescent Boulevard.
8. Remove canopy over pedestrian tunnel (ramps, stairs)
9. Consider ramping/garden landscape entryway rather than stairs (that may be perceived as "sterile")
10. Create interconnection of US Bank site and site/tunnel
11. Landscaping needs to be durable, native – need to withstand the salt, wind, etc. (easy maintenance)
12. Wood frame building versus masonry (Note: Metra standards may address building materials.)
13. Consider a prefabricated, modular building for the station.
14. Evaluate need for reconstructing parking. (Identified as 14N for north side and 14S for south side.)
15. Use permeable pavers for parking spaces (sustainability for stormwater)

16. Explore historic nature – Note that the current design (as shown in renderings) is based on reflecting the original Chicago, Aurora, and Elgin Railroad station which was a "mission style." The similarity can be seen in the entry arches.
17. Create efficient passenger drop-off/pick-up (so people don't line up or wait in cars)
18. Minimizing excavation – get rid of some street level plaza, minimize access points (single focal point)
19. Leave existing platforms (unless Metra/UPRR are fully contributing)
20. For tunnel, make finished tunnel more interesting.
21. Skylights in tunnel
22. Different crossing pavement for Crescent – set apart as pedestrian.
23. Stick to simple, basic materials to keep cost down.
24. Eliminate Vendor Space (and let people use Vendors on Crescent).
25. Facilitate use of vendors on Crescent by adding "Next Train" signs.
26. Renovate and restore existing station building (Note: a report had been prepared separately on this topic. Information from the report can be used to evaluate.)
27. Eliminate the 24-hours (No Trains run 1:27AM-4:50AM)
28. Use sustainable materials.
29. Skylights in the station
30. Other lighting technique in the station – light shelves, daylight harvesting.
31. Eliminate planters (simplify landscaping and retaining walls)
32. Use geothermal (building), solar panels, or others to offset operational cost (Geothermal study later in contract)
33. Are there further grant opportunities (e.g., related to sustainability)?
34. Use more durable materials to decrease life-cycle cost.
35. Precast platform sections with electrical heaters
36. Potential for heated ramps/stairs to decrease snow removal maintenance cost.
37. Precast box culvert for tunnel (cut and cover)
38. Precast box culvert (box jacking method)
39. Jack and bore pipe tunnel – 14-ft diameter.

40. Modular block walls for retaining walls.
41. Use planters as "rain gardens" for stormwater from station roof.
42. Do we need two bathrooms? Do we need any bathrooms? (May be building code requirement)
43. Consolidate ramps.
44. Continue Aggressive Schedule to prevent further escalation.
45. Evaluate the $4M placeholder for Construction Management
46. Early release bid packages (e.g., to relocate storm sewer, relocate fiber)
47. Packaging – do we want one GC or do we want separate packages. Tunnel and building are likely to be different subs if there was one prime. Can platforms be removed (to eliminate the GC profit/overhead) to a future Metra/UPRR project?

# 8 Evaluation and Development Phases

Three sub-phases were used in evaluation.

**First**, the list of VE ideas was reviewed to see if any should be eliminated right off the bat. Reasons may include, for instance, the fact that past research was done or that the Village does not have responsibility for the mentioned item. The ideas eliminated by inspection were:

- (Idea #1) Consider alternatives to the tunnel – e.g., overpass, ramp (like Maggie Daley connection). This was eliminated because a past study was done related to using an overhead structure with elevators on both sides of the tracks. Over UPRR, the railroad clearance required is 23'-4". This leads to considerable stairs up one side and down the other. The overpass was not preferred by Metra nor the historic reviewers.
- (Idea #14N) Evaluate need for reconstructing parking on north side. This was eliminated primarily because, for accessibility, parking needs to be reconfigured.
- (Idea #35) Precast platform sections with electrical heaters. This was eliminated because the maintenance of the platforms, including snow removal, is UPRR's responsibility. The electric heaters would add capital and operating cost to the project.
- (Idea #42) Do we need two bathrooms? Do we need any bathrooms? Evaluating the need for the restrooms was eliminated because building codes had already been reviewed. With the number of patrons using the station, two bathrooms are required.

The **second phase** was iterative with development. The VE ideas listed below required only brief development. Those requiring more detailed development are included in Appendix A.

- (Idea #43) Consolidate ramps. After development, this was eliminated. Based on topology (elevation of Crescent Boulevard), top of rail elevation, and ADA requirements, the sum total of the originally proposed ramps cannot be reduced by consolidation. However,

investigation did show the importance of minimizing the depth of the tunnel floor. (Every 30 inches more of depth means the ramp would be 70 feet longer including landings, adding to travel distance and cost.) In other words, the tunnel type is interconnected with ramp and stair costs.

- (Idea #16) Architectural Style. No development was required because the Architectural Style had been previously recommended by Historic Preservation Commission and the Glen Ellyn Historical Society but discussion at the VE workshop did yield some highlights. The proposed station was based on a reflection of the Chicago, Aurora, and Elgin Railroad station, the version rebuilt in 1926. This was Mission Style. The style is intended to (1) be complimentary to building styles up to the 1960s (including the style along the Prairie Path), and (2) provide a transition from the north historic district (which has multiple Tudor Revival buildings) to the south historic district. Caution should be taken to not duplicate the style of other stations (such as Wheaton). *Note that there is still discussion and debate regarding whether this Mission Style architecture is in keeping with the Crescent Boulevard location.*

The second Glen Ellyn station, seen looking southwest across Main Street on March 28, 1957. This station was rebuilt in 1926.
*Photo by P. Stringham, from the collection of William Raia*

- (Item #5) Per Metra standards, a minimum of one warming shelter on each side with heaters is required. See the write-up for Items 2, 3, and 4 combined for the area.

- (Item #6) Regarding platform lengths, the weekday boardings and alightings indicate the existing platforms are shorter than desired per Metra standards. However, in discussion with Metra, lengthening the platforms will not be required. First, lengthening the platforms would extend the platforms over Park Boulevard or Main Street (or both). Second, lengthening to the west would place additional length of platform in a curved track section, which is not desirable. As the existing platform lengths are already shorter than desired in Metra standards, decreasing the length would not likely be acceptable.

- (Item #8) Regarding canopies over the stair and ramps, preventing rain and snow from falling on the ramps and stairs and then (rain) flowing downward toward the tunnel floor is desired. (Of course, providing a more pleasant experience for Metra riders is also desired.) This stated, if design, the area of the canopies should be examined (so as not to over design) and the materials should be examined (to keep within the architectural context of the station and station area, but use lower cost and lower life-cycle cost as possible.)

- (Item 14S) Regarding parking lot reconstruction on the south side of the tracks, a review of this option indicates this is feasible in part. A portion of the south parking will be reconstructed for the ramp construction and implementation of two-way flow adjacent to the ramp and where Forest Avenue intersects the parking. Somewhat in the centerline of the parking, a utility trench will be used to install new storm sewer. While reconstruction is not critical to the function of the parking, the required work will leave the parking lots as a "patchwork." Not only will the appearance be potentially undesirable, but the future maintenance of the parking surface will be staggered with some pavement surface needing maintenance in the next several years while the new portions will not require maintenance for 10 to 12 years (on average). As little capital cost would be saved with the patchwork approach, the VE team's recommendation was to bring the south lots up to a new condition with this construction. While this slightly increases the up-front capital cost, the overall maintenance cost (including disruption to customers using the parking) will be decreased for the life cycle.

- (Item #19) Metra's contribution to the project is intended to cover the cost of replacing platforms. The estimated cost has escalated with the recent sharp rise in construction costs. One option to decrease overall project cost and decrease the net cost to the Village is to leave the platforms as is. (Metra could replace in the future.) A second option is to coordinate with Metra regarding funding the full replacement cost of the platforms.

- (Item #20) Related to the pedestrian tunnel interior finish, the approach is highly dependent on the tunnel construction method. With a jack-and-bore steel pipe, the interior finish would typically be a painted liner yielding a smooth surface. (Typically, a white surface is used for good light reflectivity.) With a box-jack, the interior surface of the precast concrete box is a smooth, concrete finish. A painted liner is also typically applied to protect the surface. With the SEM method, the interior is typically a shotcrete (sprayed concrete) surface which has a random, textured surface (unless intentionally smoothed in a second operation). A painted liner could be applied to the textured surface yielding an interesting, rough-hewn surface. Otherwise, concrete can be smoothed, or additional material (such as tile) added. In summary, the interior finish and the cost of the finish or liner is dependent on the tunnel type.

- (Item #23) One way to reduce cost is to use basic, durable materials for which repair, maintenance, and replacement use standard techniques. The following list provides a comparison related to parking or plaza surfaces. These are examples and are representative of Chicago-area costs. An observation is that the lower the cost, the lower the durability or lower the aesthetic value. Unit costs include material, labor, and equipment. The values should not be viewed as "quotes" since values are dependent on quantities, site conditions, bidding competitiveness, and other factors.
    - Asphalt parking lot surface - $40-45 per square yard
    - Concrete sidewalk (5") on 6" of aggregate - $9-12 per square foot
    - Concrete drive (6") on 6" of aggregate - $12-15 per square foot
    - Parking or plaza surface of concrete paving bricks – approx. $30-32 per square foot
    - Observe that concrete (more durable) carries a higher cost than asphalt, thicker concrete (more durable) has a higher cost than thinner, and the most aesthetic carries additional cost.
    - Concrete can be stamped or tinted to improve aesthetics at a lower cost than installation of pavers.
    - Plazas can use even a higher design level such as granite paving stones, of course at an even higher cost.
- (Item #26) This VE idea related to rehabilitating and expanding the existing station (as opposed to constructing a new station building). This idea was not developed further because it was the subject of a past cost comparison. The result was that, while the rehabilitation option carried a small initial capital cost savings, the savings was not enough to offset life-cycle cost increases. The higher future costs included both energy (related to the lower energy efficiency of the existing station building) and maintenance (since, after completion, the Village still would have an older building to maintain). The past study led to the determination that a new station building, fully integrated into the landscaping, plazas, and ADA improvements, was the preferred option.
- (Item #28) This VE idea was to use more sustainable materials. The word "sustainable" carries a wide range of potential meanings. At first thought, this might mean use renewable resources, such as wood. It may also mean using local materials for which transportation cost (and energy use) is lower than transporting from a great distance. It may also mean examination of the entire life cycle of a product. (As an example, for this latter item, the use of solar panels may seem sustainable, but the manufacture involves mining rare earth minerals, typically overseas – in other words, the manufacturing process is not very sustainable. Another example, electric vehicles seem very sustainable, but at the end of life for batteries, the disposal process is not very sustainable.)

All that said, for the station building, development of VE idea #12 looked at the use of wood and wood laminates for the building material. The wood laminated option can have the same cost as traditional masonry, but use of wood laminated framing greatly restricts future modification to the building.

Much of the remainder of the project includes concrete, steel, and asphalt. Although energy intensive in original manufacturing, steel and asphalt are easily and commonly recycled. Concrete is often crushed to make aggregate.

In summary, when the choice of material does not make a capital cost or life-cycle cost difference, selecting sustainable materials (or local materials with low energy use for transportation) is preferred. However, when the use of sustainable materials increases the capital cost – especially when one goal of this VE study was to reduce capital cost – then use of these materials is not preferred.

- (Item #31) Because of the cost, one idea was to eliminate or reduce the landscaping planters. The brick veneer seat walls add capital cost to the project. As with other elements, the only objective is not cost reduction. The plaza and station must be welcoming. Nice landscaping and high-quality design tend to be welcoming (and, indeed, transit-oriented development studies have shown the importance of high-quality design). Also, seat walls serve a dual purpose, providing a place for people to sit to enjoy coffee, lunch, or conversation, or just a place to sit while waiting for their mode of transportation. The recommendation is to, in the design phase, review where the seat-wall planters contribute to the welcoming nature of the station area and where a different, less expensive wall might be used to contain the landscaping. See VE Item #40 in the Appendix for examples of modular block walls used in landscaping.

- (Item #32A) Note that a study of the feasibility of geothermal heating for the station is already part of the proposed design scope. A recommendation will be provided separate from this VE study.

- (Item #34) The VE suggestion was to use more durable materials to decrease life-cycle cost. In the research for the station structural system (Items #12 and #13), materials were discussed. For the public spaces in the station, the materials required are based on durability. No additional durability is required.

- (Item #36) This VE idea, similar to heated platforms (for train boarding), is to provide heated ramps and stairs. Heated surfaces increase the cost of construction, the cost of operations (through higher energy cost), and the cost of maintenance (since snowmelt systems increase maintenance requirements). The main ramps and stairs are under shelter. While the canopies above do not prevent blowing snow or refreeze of snow melt, the canopies do decrease the snow removal requirements. With emphasis on reducing overall project cost, increasing the cost with a snowmelt system is not desirable. However, recognize there is interaction and trade-off between the canopies (over stairs and ramps) and use of a snowmelt system. Further study may be required. The Village of Glen Ellyn, on average, receives 20 to 23 snow events per year. While up-front cost and life-cycle cost may increase for the snow melt system, there may be a corresponding decrease in snow

removal cost and a decrease in concrete maintenance caused by the use of salt. See a description of a glycol snowmelt system in the Appendix (under Item #36).

For the remainder of the VE Ideas, see the Appendix for more detailed descriptions and assessments.

The **final phase** of evaluation was undertaken when considering the final recommendation list after VE ideas were more fully developed. On the last day of the VE workshop, the team walked through each idea to confirm the ideas to carry forward. These are listed here:

VE Ideas Recommended for Incorporation or Further Evaluation in Design

- Align the interior and exterior size with Metra requirements (and check the size regarding accommodation of future growth). [Estimated cost reduction of $1M.]
- Better interface with the land uses along Crescent Boulevard including highlighting the pedestrian nature of crossings. [Neutral or minor cost change.]
- In the design phase, examine the canopy areas and types over stairs and ramps for potential additional savings. [No cost assessment at this time.]
- Move the station entrance stairs to the west arch across from Forest Avenue. [No change in cost.]
- Ensure the landscaping includes a mix with native, durable, and salt-resistant plants (in order to decrease maintenance cost). [No change in capital cost.]
- Improve curb-side management for passenger drop-off and pick-up. [Minor cost change (less than $1500) to a bit more moderate change (near $35,000).]
- Stick to basic, durable materials that don't require specialized future maintenance. [Keeps the cost low and also keeps the life-cycle cost low.]
- Coordinate with Metra to eliminate 24-hour station requirement. [Decreases maintenance cost.]
- In the design phase, use architectural techniques to bring natural light into the station. [Neutral or minor capital cost change. Some reduction in lighting cost.]
- Seek additional grant funding. This may be related to specific components including those related to sustainability. Regarding timing, some grant applications require further design before the application can be submitted.
- Utilize landscaping adjacent to the station for stormwater management. [Neutral or minor cost change. Improves stormwater sustainability.]
- Assess jack-and-bore versus sequential excavation method for pedestrian tunnel. Select based on lowest overall cost, lower contractor risk, and potential impact to schedule.

Determination could not be made at this time without additional geotechnical information.

- Continue to advance project to keep on schedule. This is to prevent additional inflation from increasing the cost further. [Each year of delay adds a million dollars or more to the project cost.]
- For the Construction Engineering (CE) phase, limit the construction oversight role to the basic staffing and hours needed (as opposed to costing based on a typical percentage).

Further development of all these recommendations can be found in the Appendix.

# 9 Opinion of Probable Cost (OPC)

For the VE workshop, the opinion of probable cost used was the 10-percent estimate prepared in 2022, escalated to 2025 (which is the estimated mid-point of construction), and previously reviewed by the Village. This initial cost information is show here (with rounded values).

### *10PCT OPC Cost Summary*

| Item | 2022 Cost | Design Contingency (20%) | Escalation (to 2025) | Totals |
|---|---|---|---|---|
| Station Depot | $6,445,945 | $1,289,175 | $1,392,211 | $9,127,331 |
| Platform and Warming Shelters | $9,104,923 | $1,820,965 | $1,966,504 | $12,892,392 |
| Plaza | $756,630 | $151,324 | $163,419 | $1,071,373 |
| Underpass Including Ramps and Stairs | $8,658,834 | $1,731,748 | $1,870,156 | $12,260,738 |
| Roadway, Parking, Site Work | $3,873,975 | $774,787 | $836,711 | $5,485,472 |
| **Construction Subtotals** | (**) $28,840,000 | (**) $5,768,000 | (**) $6,229,000 | (*) (**) $40,837,000 |
| Phase I Engineering | | | | $762,754 |
| Phase II Engineering | | | | $3,971,481 |
| C&M/Lease Agreement | | | | $1,000,000 |
| Construction Engineering (CE) | | | | $4,062,500 |
| **Project Total** | | | | **(*) $50,633,735** |
| (*) Utility Replacement | | | | (*) $2,900,000 |
| **Revised Project Total** | | | | **$53,533,735.00** |

*(*) For consistency the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed. The Rough Order of Magnitude (ROM)of that work is $2.9 million.*

*(**) Construction Subtotals have been rounded to the nearest $1,000.*

Several pertinent observations regarding the costs include:

- It is vital to understand that at ten-percent conceptual design, the opinion of probable cost is not an "engineer's estimate" that is prepared at the 90- or 100-percent phase of design. Detailed design has not been prepared for many aspects of the project. Unit costs are generally more "planning level," that is, based on general areas and quantities, not based on detailed line-item quantities. This type of estimate is a Rough Order of Magnitude Estimate which evaluates a project's level of effort and cost. Generally, this is used for estimating a project budget. More detailed estimates using unit costs and planned quantities will be performed as the design process advances.

- Escalation from 2022 to 2025 values used 18 percent. This was based on the high rate of cost escalation for transportation construction projects in the last 18 months. This rate should be examined in more detail since multiple cost estimating sources state inflation is cooling off. From 2021 to 2022, average construction inflation was 8 percent with some

materials being much higher. From January 2022 to January 2023, the rate was observed to be reduced to 4.9 percent. The forecast annual average for 2023 is 3.8 percent. The actual rate for any specific project depends on materials. Steel cost is seeing a slight downward trend while cement is still increasing. *Using a 13 percent projection for inflation, the construction cost would be reduced by $2.5 million.* Note in the discussion for VE Item #44 that further schedule slip will continue to cause cost escalation due to inflation.

- Contingency is a cost component related to risks and future unknowns. During conceptual design, the contingency accounts for elements not fully designed. As an example, the cost for parking lots may be based on typical cost per square yard or even typical cost per parking space. Later design may determine that the stormwater management system carries more cost than expected. The design contingency accounts for this more advanced design. Contingency is also to account for the unpredictable bid environment. Material prices, contractor bid amounts, and perceived risk by the contractor will create fluctuations in the cost that cannot be accurately predicted. Note that contingency is typically adjusted based on risk for each line item. (For instance, utility relocations almost always carry higher risk of unknowns and, therefore, should carry a higher contingency value.)

- The platforms (without the warming shelters, demolition, and other associated items) make up an estimated $6,732,000 of the cost. Upon detailed review of the cost, the estimate includes wood headers, anchor bolts and rods, trench drain, lighting, conduits, and other components. In other words, the platform cost is not simply the 6-inch concrete slab with tactile warning tiles.

The following two sections provide details on the VE recommendations. The first shows the cost reduction related to VE recommendation incorporation. The second provides a summary of an independent assessment of platform costs.

## 9.1 Incorporation of VE Recommendations

There were three main VE recommendations that generated more than nominal costs reductions.

- Aligning the station size, covered areas, and warming shelters based on Metra requirements. A potential cost reduction of approximately $1.5 million (before application of mark-ups, contingency, and escalation) and 2.5 million (including application of mark-ups, contingency, and escalation) is estimated.

- Scaling back the grading for the north plaza while preserving the function of the plaza including providing the connectivity to Crescent Boulevard. A potential cost reduction of approximately $250K (before application of mark-ups, contingency, and escalation) and $569K (including application of mark-ups, contingency, and escalation) is estimated.

- Limiting the scope of the construction engineering based on personnel needs (rather than a straight percentage calculation). A potential cost reduction of $562K is estimated.

Since these cost reduction items also affect other markups that are based on percentages, the estimated total reduction in construction cost based on the VE recommendations was $5.8 million. When the potential cost reductions of limiting the scope of the construction engineering is included there is an anticipated reduction of approximately 6.4 million dollars to the project, please refer to the VE Related Cost Reductions Summary.

***VE Related Cost Reductions Summary***

| Item | 10 PCT OPC | VE Adjustments | Cost Reduction |
|---|---|---|---|
| Station Depot - 2022 Cost | $6,445,945 | $4,892,000 | $1,553,945 |
| Platform and Warming Shelters – 2022 Cost | $9,104,923 | $7,857,000 | $1,247,923 |
| Roadway, Parking, Site Work - 2022 Cost | $3,873,975 | $3,624,000 | $249,975 |
| Design Contingency & Escalation | $11,997,000 | $9,192,800 | $2,804,200 |
| **Construction Subtotals** | | | **$5,856,043** |
| Construction Engineering | $4,062,500 | $3,500,000 | $562,000 |
| **Project Totals** | | | **$6,418,043** |

## 9.2 Independent Assessment of Platform Costs

The 10PCT OPC Cost Summary(shown above) includes a cost for the new platforms excluding the warming shelters of $6,732,000 including escalation and contingency. Because this value (in comparison to the number of square feet of platform) appears high, an independent assessment of platform costs was performed.

In digging into details, the platform cost includes many components that are not itemized in the summary line item. The cost needs to account for the following (which may not be a complete list):

- Demolition of existing platforms (in stages to allow continued passenger boardings and alightings during construction phases)
- Disposal of the demolished materials
- New bedding and compaction
- Wood headers (which face the tracks) including bolts and anchor rods
- Forming, reinforcement steel, and placement of concrete
- Tactile warning tiles
- Joint seals
- Trench drains
- Lights, conduits, control panel and service
- Equipment
- Labor
- Flagging

In addition to the detail above, the cost must take into account a low productivity rate (including the need to keep portions of the platform open for boarding and alighting during construction) and an inefficiency related to pausing work as trains passed by the station in either direction.

Based on an independent assessment, the platform cost is expected to be approximately $1.0 M including escalation and contingency.

The design team along with Village staff continue to review alternatives to reduce the platform costs to this project including engagement with Metra to align Metra's contribution with their operational needs.

## 9.3 Summary of Cost Adjustments

Including an adjustment in the escalation rate, the VE recommendations, and an adjustment related to the platforms, the opinion of probable cost post-VE is:

***Adjusted 10PCT OPC Summary***

| Item | 2022 Cost | Design Contingency (20%) | Escalation (to 2025) | Totals |
|---|---|---|---|---|
| Station Depot | $4,892,000 | $978,000 | $766,000 | $6,636,000 |
| Platform and Warming Shelters | $7,857,000 | $1,571,000 | $1,230,000 | $10,658,000 |
| Plaza | $757,000 | $151,000 | $118,000 | $1,026,000 |
| Underpass Including Ramps and Stairs | $8,659,000 | $1,732,000 | $1,355,000 | $11,746,000 |
| Roadway, Parking, Site Work | $3,624,000 | $724,800 | $567,000 | (*) $4,915,884 |
| **Construction Subtotals** | $25,789,000 | $5,156,800 | $4,036,000 | **(*) $34,981,884** |
| Phase I Engineering | | | | $762,754 |
| Phase II Engineering | | | | $3,971,481 |
| C&M/Lease Agreement | | | | $1,000,000 |
| Construction Engineering (CE) | | | | $3,500,000 |
| **Project Total** | | | | **(*) $44,311,884** |
| (*) Utility Replacement | | | | (*) $2,900,00 |
| **Revised Project Total** | | | | **$47,211,884** |

*(*) For consistency the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed. The Rough Order of Magnitude (ROM)of that work is $2.9 million.*

The combination of the three components yields an estimated reduction in construction cost of $6.4 million see the VE Related Cost Reductions Summary. The scope reductions did not impact the function of the station, nor the required components related to the grant funding.

The total grant funding (rounded) was $20.4 million (including the Metra component for the platforms). Since the original cost estimate, an additional $3 million dollars was awarded, for a total of $23.4 million. Note that additional and/or increased grant funding is being pursued for this project up through advertisement for construction.

# 10 Presentation and Accepted Recommendations

<<To be determined if a presentation is required.>>

The draft VE report documents the flow of the study, ideas generated, and ideas recommended after evaluation and development.

For agencies required to report VE results, one measure is the ratio of cost reduction to the cost of the study. For this VE study, only including the VE recommendations, the ratio was 19.8-to-1.

<<Accepted Recommendations will be added after decision-maker input>>

# Appendix – Value Engineering Proposals

This appendix includes development of most of the VE ideas that are not included in the body of the report. Development sheets are included whether the idea was recommended or not (including for the purpose of documentation). The intent of included ideas which were not recommended is two-fold. First, the development sheet serves to document the findings. Second, there may be ideas which later may be reconsidered, perhaps because additional grant funding becomes available (or grant funding specific to certain goals such as sustainability).

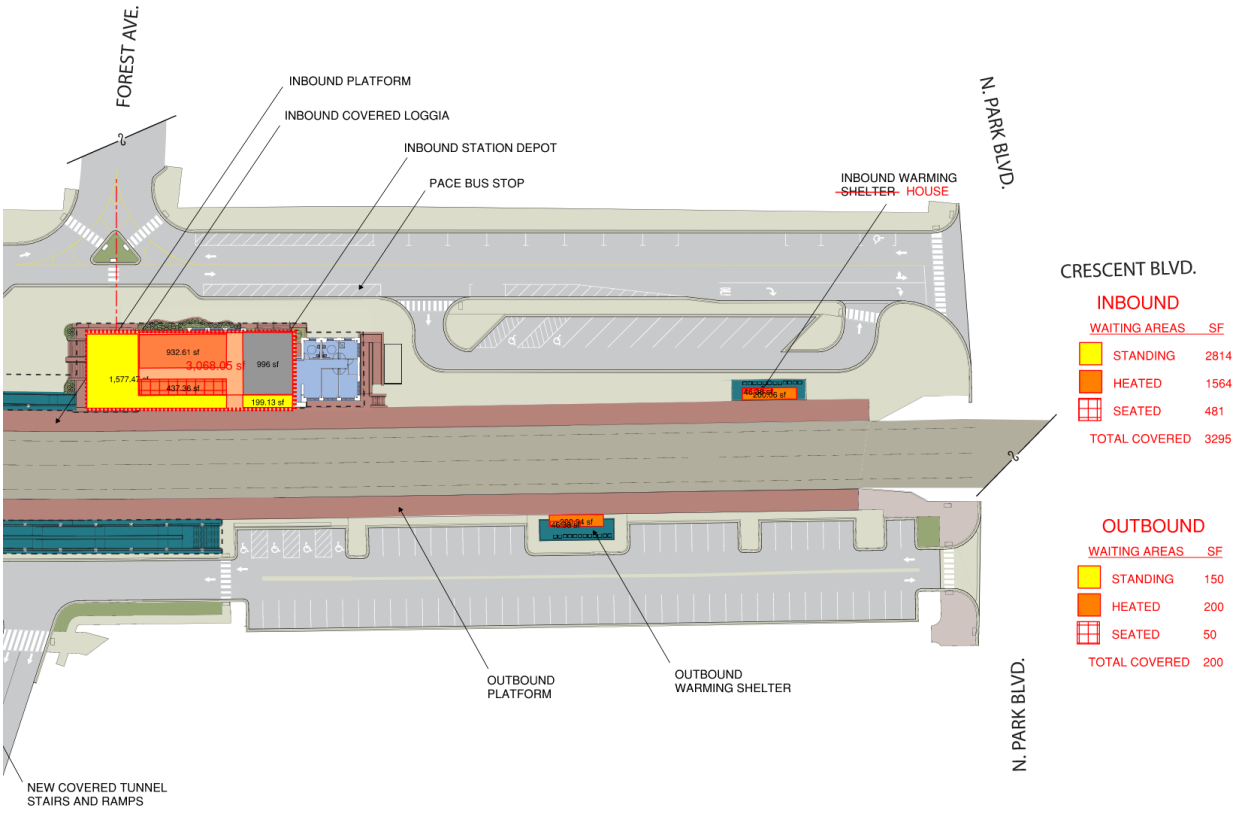
Each proposal includes a summary. Some ideas have additional reference materials or photographs.

Note that the proposals are intended only to be a summary. Time was constrained to the single week of study in the workshop. Research for each item could not be exhaustive.

## Value Engineering Proposal No. 2, 3, 4, and 24 - Station Square Footage

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Align interior and exterior waiting area size with Metra requirements. |

Description: The proposed alternate design contains the minimum waiting areas per Metra standards, lessening the interior and exterior covered areas at the inbound depot, and reducing the size of the warming shelters on either side of the tracks. The proposed alternate design also does not include the vendor space (approximately 200 SF per guidelines), which would need to be negotiated with Metra. The inbound warming house is intended to be used as a temporary station and eliminate that requirement as well, if approved by Metra.




Original Design: Conceptual design from Phase I was approximately 3,600 interior SF, with approximately 7,600 SF under the cover of the station roof. Warming shelters were approximately 500 SF each.

Alternate Design: Alternate proposed design contains approximately 3,000 interior SF, with approximately 5,000 SF under the cover of the station roof. Warming shelters are approximately 200 SF each.

| | |
|---|---|
| | For comparison, the interior SF of the existing station is just under 2,000 SF, with approximately 3,000 SF under the cover of the station roof, and approximately 200 SF unheated canopies on the platforms. |
| Advantages: | The primary advantage to this proposal is a reduction of cost due to reduction of built square footage. |
| Disadvantages: | Disadvantages of reduction in seating area and square footage would be risking an undersized station in the future, dependent on ridership trends. |
| Discussion: | Refer to Metra guidelines for the required areas. Requirements are based on boardings. Suggest a sensitivity analysis be conducted to see the impact on requirements if the boardings increased more rapidly than projected. (I.e., How much additional area would be required if the number of boardings increased 10% higher than projected?)<br><br>Regarding the vendor space, eliminating the vendor space may have ramifications outside of capital cost. First, with the vendor (and with the customers utilizing the vendor), additional "eyes" are inside the station, providing a higher level of security. Second, the presence of the vendor likely discourages some inappropriate activity which, in turn, decreases maintenance costs. Finally, there may be a contractual and public image component related to the vendor.<br><br>The VE recommendation is to align the station size per new Metra standards while allowing some cushion for future growth. The vendor space should ***not*** be eliminated. |
| Summary: | Estimated cost increase in Design Phase: Dependent on village stakeholder/public involvement in revising design<br>Estimated capital cost change: Up to $1M reduction depending on final design<br>Estimated schedule change: Dependent on village stakeholder/public involvement in revising design |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 7 and 22 - Crecent Boulevard Integration

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 16, 2023 |
| **Summary Description:** | Better interface with land uses along Crescent Boulevard<br>and<br>Different crossing pavement for Crescent – set apart for pedestrians |
| Description: | Under current conditions the station feels set apart from adjacent land uses to the north along Crescent Boulevard. Part of this separation is due to the elevation difference between Crescent and the station, and the design of the staircase access at front which provides friction in access. The alternative to the staircase being a long walk around to access ramps. Better integrating the station into the Crescent Boulevard fabric will amplify the value of the station as a focal point for the community.<br><br>Furthermore, in keeping with transit-oriented design principles around commuter train stations, walking and biking access to the station should be a priority. Use of alternate pavement materials and/or color pavement for the area in front of the station will provide a cue to drivers that they are entering a special zone, and equalize the environment for peds/bikes. |
| Original Design: | The current design addresses the elevation difference (based upon renderings), but still does not convey a sense of integration with the adjacent land uses. Sidewalk at station frontage is narrow. And standard asphalt street represents a ped/bike division at the station frontage. |
| Alternate Design: | Review the station design with an eye toward integrating with the north side Crescent Blvd uses.<br><br>Review potential pavement materials that can provide the psychological/visual cue that it is a multimodal zone, but are still cost effective and will have longevity. |
| Advantages: | Advantages are greater synergy between the station and the surrounding uses. Creating a desirable public space vs. a series of disconnected spaces. |
| Disadvantages: | Disadvantages are any impacts upon vehicle flow, of elevating ped and bike access at the Crescent Boulevard frontage along the station – although Crescent is not a major thoroughfare and traffic volumes are lower than at many downtown stations along Metra lines – representing an opportunity. A disadvantage of alternate pavement material is increased installation cost and potential maintenance cost or longevity. Need research on best available practices. Noting that Dutch model liberally uses colored pavement throughout to the purpose of safety and clarity in communication about the context of areas. |
| Discussion: | No additional discussion. Not at all flushed out in this treatment. Just presenting the general idea versus exact solutions. |

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| Summary: | Estimated cost increase in Design Phase: None/Negligible<br>Estimated capital cost change: Minor related to crosswalk details<br>Estimated schedule change: None |

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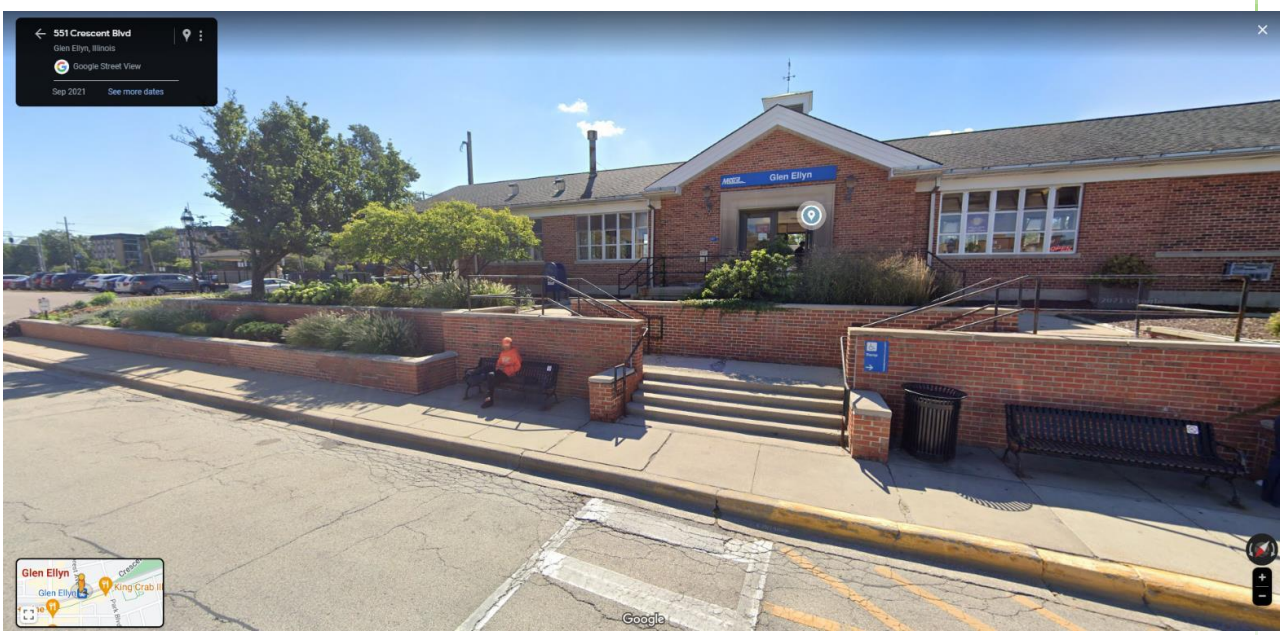
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Crescent Boulevard looking East. (Source: Google Streetview)

Notice that the retaining walls, while nice materials and landscaping, make access to the station building more difficult, less porous. The walls, narrow sidewalk, and roadway act as a divider from the businesses and activity on the north side of the road.

Crescent Boulevard at Forest Avenue looking East. (Source: Google Streetview)



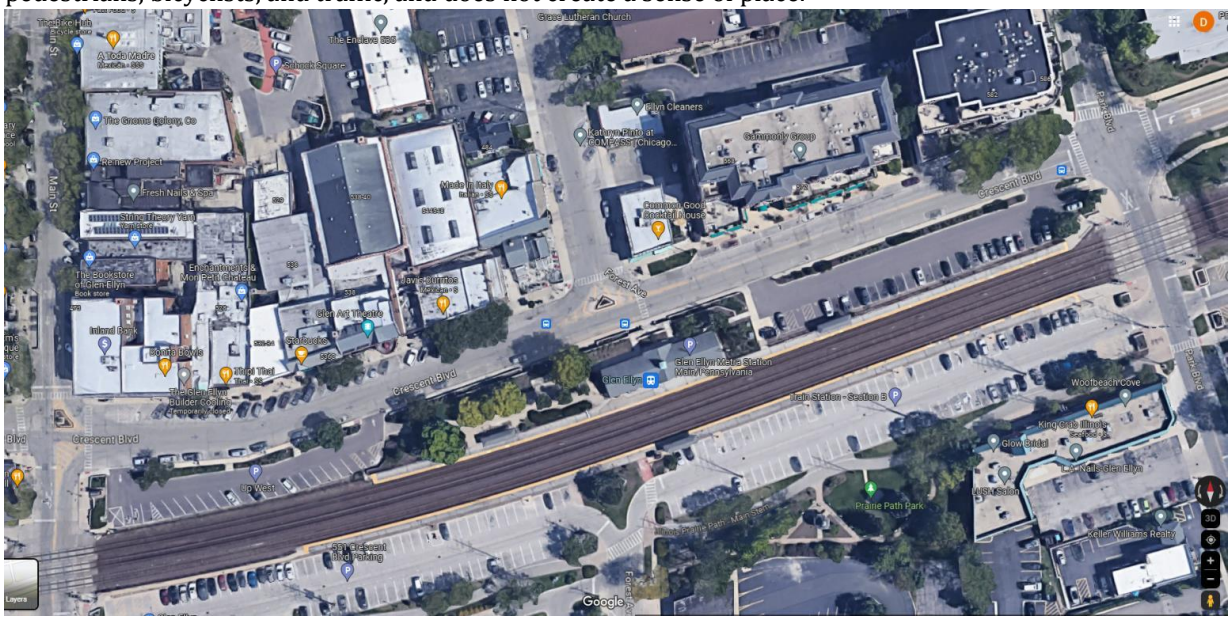

A view of the existing station entrance from Crescent Boulevard. (Source: Google Streetview)

Note that while the existing stairway is a nice aesthetic design (with landscaping), it adds friction between station and Crescent. The sidewalk along Crescent it too narrow to be inviting.

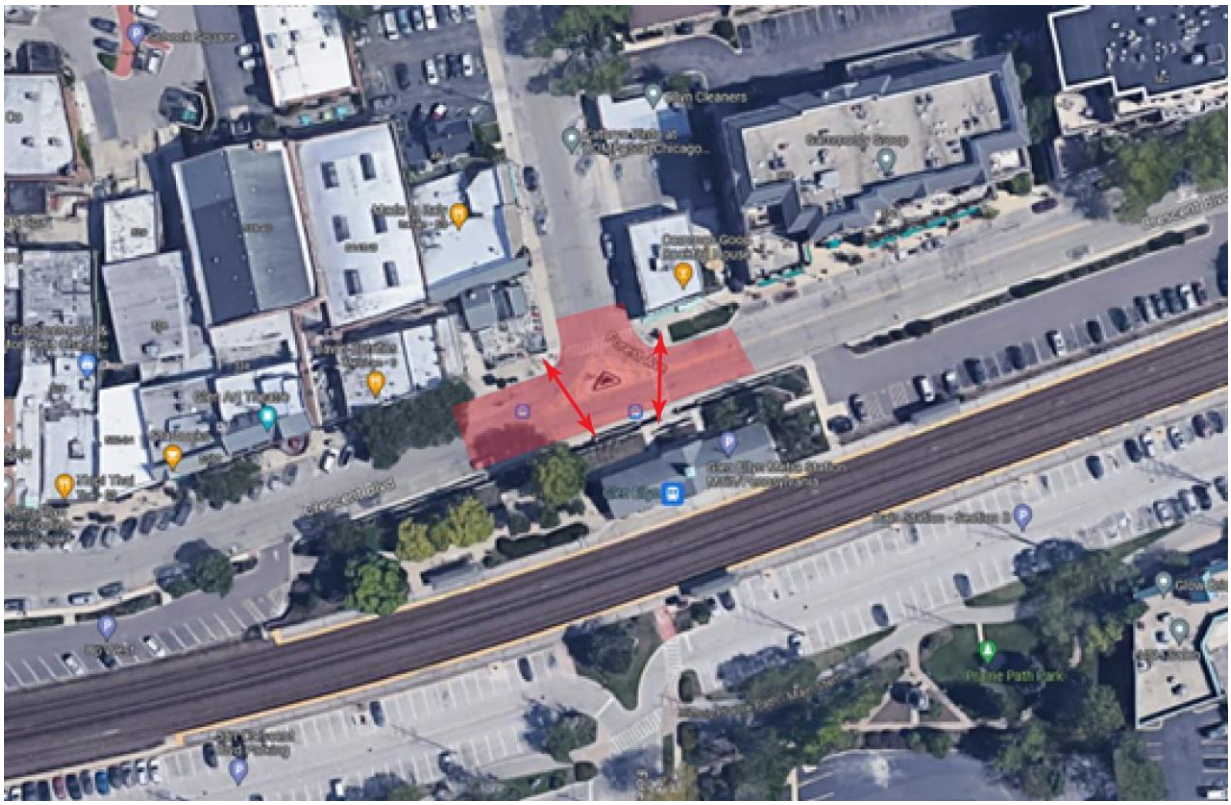
The station entrance based on a concept rendering.

While some aspects of the rendering may not reflect the 10% conceptual design, the rendering does appear to still include a narrow sidewalk between a wall and traffic. (Actual sidewalk width in the design is 13 feet.) This design, while aesthetically pleasing does little to better integrate uses and function.. The placement of the stairs from the station exit somewhat directs people out into the street. (There is not a connection to

"place" when exiting the station building.) Additionally, the roadway layout and material does not equalize pedestrians, bicyclists, and traffic, and does not create a sense of place.




Existing Conditions. (Source: Google Maps)



In and approaching the Crescent Boulevard/Forest Avenue intersection, use alternate pavement texture, material and/or color to define the area and provide drivers a cue that they are entering a special (pedestrian) zone. This zone is to better connect the station to the adjacent land uses. It is important to create a sense of place for people (as opposed to defining the road for use by cars).

Before image: Note the crosswalks are barely visible and worn. Little conveyance to drivers that this intersection is also used by pedestrians.

After image: Installed in 2015, note the more visible crosswalks with a pattern. Note this was reinstalled in 2021 because of pavement resurfacing. Photos are available to show the new appearance and the wear after one year. This pattern used inlayed thermoplastic so that snowplows did less damage to the pavement markings.

A “street print” installation that highlights the intersection.

Lessons can be learned from other countries. Netherlands, for example, uses colored pavement to establish context, identify appropriate users, and enhance aesthetics. As this project is a Federal Aid project, need to be cognizant of Federal guidelines, including MUTCD. The current MUTCD version limits the use of color (red for bus lanes and green for bike lanes). A new version of MUTCD is expected soon and the hope is that it will provide greater flexibility from the start with various crosswalk and pavement treatments.

See examples of shared streets including:

Argyle Street (in Chicago)

Shared street in Batavia

Also see examples of other surface coatings and pavement markings.

Sample surface coating product:
https://www.pavementsurfacecoatings.com/decorative-surfaces/

Sample inlaid pavement marking treatment products:
https://www.gallagherasphalt.com/streetprint/
https://www.outdoordesign.com.au/news-info/duratherm-asphalt-surfacing/5482.htm

## Value Engineering Proposal No. 9 - Station Entryway Ramping / Garden Landscape

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| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Consider ramping/garden landscape entryway rather than stairs (that may be perceived as "sterile") |
| Description: | This item relates to reviewing an alternative to the stairway entrance along Crescent Boulevard which leads from street level up to the main entrance to the Depot. |
| Original Design: | See screen shot below. |

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| Alternate Design: | Move main entrance to the west near Forest Avenue as to capitalize on the stairs at that location as well as the ramps to the underpass and platform levels. The existing main entrance pictured above could in turn be eliminated. See attached mark up of site plan for some rough thoughts. Planters could be utilized to frame the stairway entrance to the depot on the street side. A ramp leading to the main entrance door would be challenging to keep along Crescent Boulevard given the grade differential between Crescent and the Depot Floor which is 7 feet. The ramp would be on the order of 100' long and take up significant real estate along the north side of the building. |
| Advantages: | Keeps main entrance more proximate to the underpass as well as the ramps leading from the plaza level to the platform level. |

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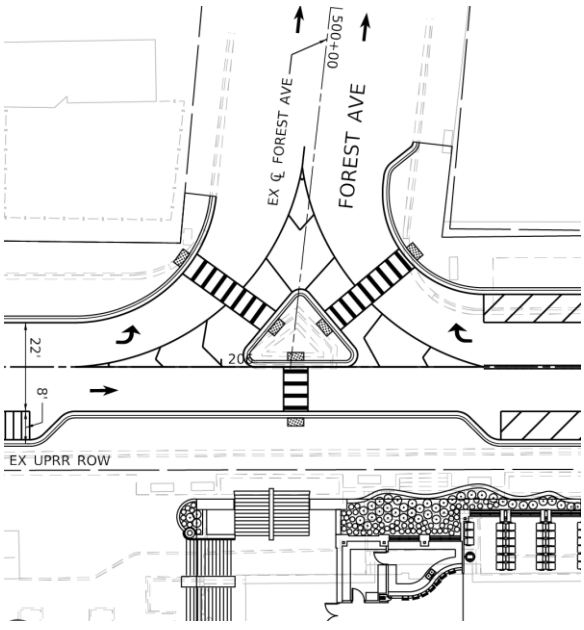
| | Eliminates staircase on Crescent thereby resulting in cost savings.<br><br>Could free up usable space in the depot and thereby allow for reducing the footprint, simplifying the floor plan, and roof line which would support reducing the project cost.<br><br>Clarifies entrance point which would be more central to the kiss and ride and bus stop lanes. |
| Disadvantages: | Less flexibility in terms of points of ingress/egress.<br><br>Could reinforce drop offs at Forest/Crescent in such a manner as to bock the thru lane.<br><br>Some may prefer current design from an aesthetic standpoint.<br><br>If as part of this modification we shifted the depot to the west, this would compromise some of the plaza area. |
| Discussion: | This matter really needs to be reviewed along with reviewing the size of the depot and its architectural design character. |
| Summary: | Estimated cost increase in Design Phase: Reviewing additional conceptual alternatives will result in added costs and could get significant depending on the number of floor plans and renderings that are requested, and the amount of time invested by the design team and staff. Need to affirm our desire and then consult with CDM Smith on Scope and Fee.<br><br>Estimated capital cost change: Needs more vetting but the ROM estimate provided as part of the reduction in the footprint of the depot was a good starting point at say $1M savings and could be bolstered say by another $400K with the revisions. Having said that, adding a ramp to the main entrance would result in added costs. Ramp could easily approach $250K given its size.<br><br>Estimated schedule change: Could add 3-6 months to design timeline to look at various alternatives including vetting any Metra concerns with significant design exception requests. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

The recommendation from the VE team is to move the entry stairs to the west arch, aligned with Forest Avenue. This is depicted in the plan view to the right. Unless this move requires examination of alternatives by multiple parties, the schedule change should be minor.

Note that this change works in conjunction with other VE ideas #7 and #22. This change also would allow simplification of the station building layout (not shown), further reducing cost.



## Value Engineering Proposal No. 10 - US Bank Interconnection

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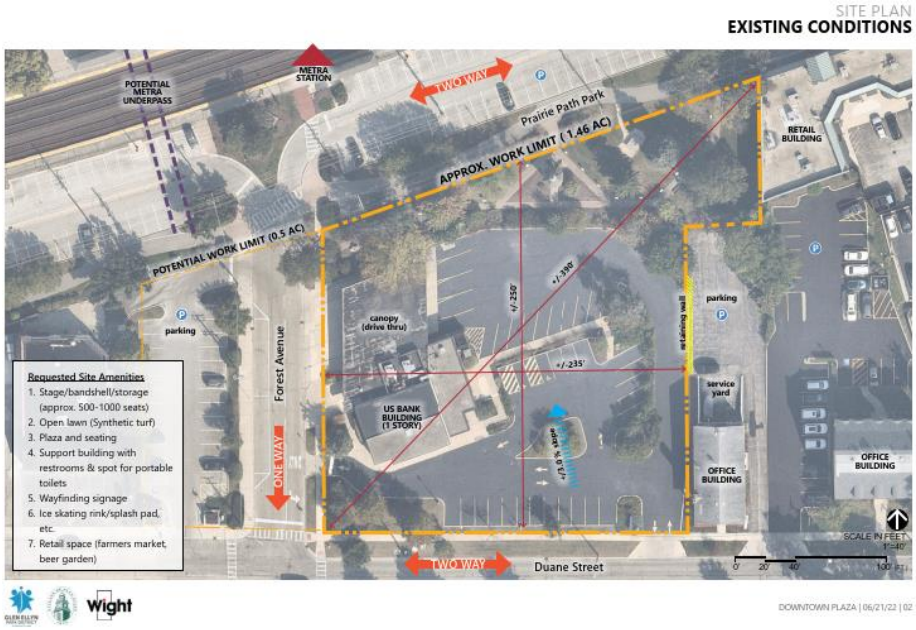
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Create interconnection of US Bank site and site/tunnel |
| Description: | The US Bank site was purchased by the Village of Glen Ellyn (VoGE) with the goal of selling it to the Glen Ellyn Park District (GEPD) to develop an event/park space in the Central Business District. Interviews of site development firms was conducted jointly by GEPD and VoGE. Included in the negotiations on the sale of the property (including 2 other passive park's maintenance and development leased to GEPD by VoGE) was the improvements to Forest Ave to enhance the US Bank event space uses while meeting the needs/design of the Metra Train Station and parking lots. Site Design awarded contract for development of the US Bank property. (https://www.site-design.com/ )<br><br>VoGE views this space as a premier location for events/green space to attract more people (residents and visitors) to the downtown Glen Ellyn, providing economic impact. |

*Note:*



Original Design: What did the design as presented depict?

Design was for typical roadway treatments and to convert Forest Avenue to 2-way traffic (currently one way south bound) as well as redesign of Forest/Duane parking lot to provide a Kiss and Ride option on the south side of the UPRR.

Alternate Design: What is proposed differently? Added? Removed? Changed?

Consideration of incorporating elements to the roadway and/or parking lot design that are both aesthetically and functionally synergistic with the park/event space.

- Permeable pavers
- Flex street
- Transition into parking lot for overflow
- Connect IPP, Event Space and pedestrian tunnel traffic

Advantages: Describe the advantages.

Interconnection of the projects to provide a better experience for US Bank event space programs and users (Forest and Forest/Duane lot)

Better aesthetics for those using the pedestrian tunnel travelling through the event space (on forest or through the park)

Move Sunday Farmer's Market to Forest (no need to close a parking lot)

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| Disadvantages: | Describe disadvantages in any category.<br><br>Increased cost (pavers, elements needed to protect event and parking area from Forest vehicle traffic)<br><br>Timing of construction of the two projects may create inefficiencies for both projects<br><br>Possible impact to the optimum functionality of the roadway/parking lot for train station purposes |
| Discussion: | Provide any additional discussion for a future reader to understand and evaluate the recommendation.<br><br>There is a balance between 2 projects that have different goals in adjacent space. Both of these projects have been intensely discussed by elected officials of VoGE and GEPD. There may need to be significant coordination with design and construction for any of the proposed improvements to be implemented. |
| Summary: | Estimated cost increase in Design Phase: (Unknown)<br>Estimated capital cost change: (Unknown)<br>Estimated schedule change: (None) |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 11 – Landscaping Durability

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | **Landscaping Durability** |
| Description: | The landscaping around the station must be native and durable while also being low maintenance. Choosing plants native to the area creates a connection with the people who live in that area and is sustainable, because the plants would not need to travel a far distance from where they originate to the station. Plants that are durable to the Midwest weather allow for low maintenance. |
| Original Design: | Plant list not specified at 10%. |
| Alternate Design: | Add in durable, native, and low maintenance plants. |
| Advantages: | Having plants that are durable to the weather reduces maintenance cost. Using plants that are native to the area greatly decreases pollution related to transport to the site by not needing to be transported long distances. Individual plant species advantages listed below for three examples. |
| Disadvantages: | N/A |
| Discussion: | Examples of native, hardy plantings: |

Bald Cypress Tree: Is tolerant to salt and its roots to do not tend to cause damage, it is also native to Illinois.

*Achillea Millefolium* (Common Yarrow): Is a wildflower native to Illinois that is salt tolerant and has deep roots. Deep roots allow it to withstand high winds and does not require a lot of water resulting in lower maintenance.

*Agastache Foeniculum* (Hyssop – various varieties): Native to Illinois, drought resistant, salt tolerant, deep roots. Attractive to pollinators.

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| Summary: | Estimated cost increase in Design Phase: None |

Estimated capital cost change: None or negligible
Estimated schedule change: None

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| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Note: Salt tolerance behind planter walls at the plaza level may not be required. Planter walls tend to prevent runoff with deicing chemicals into the landscaping. The exception may be near the platforms where broadcasting of salt may throw salt directly into landscaping beds.

Note: The examples show on the previous page are only intended as representative. For final design, plantings are typically outlined in specifications with any requirements. Most specifications include a list of acceptable species (or prohibited species).

Illinois Native Plants (gardenia.net)

## Value Engineering Proposal No. 12, 13 - – Station Construction Types

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| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Analysis of different construction types for the station |

Description: Proposed alternate construction types evaluated include Wood Framed (Type V-B), Mass Timber (Type IV), Insulated Concrete Forms (ICF), and Structural Insulated Panels (SIP).

Original Design: Conceptual design was masonry and steel construction (Type II-B): concrete masonry unit (CMU) backup with drainage cavity, insulation, and masonry/stone veneer exterior. The roof structure would be steel framed.

Alternate Design:

Wood Framed: Wood stick framed construction with interior and outboard insulation, drainage cavity, and masonry/stone veneer. The roof would also be wood framed.

Mass Timber: Mass timber structure with fire treated wood framed or insulated panel exterior walls with insulation and masonry/stone veneer. The roof would also be timber framed. Typically, today this construction type would be done with laminated timber, an engineered wood consisting of layers of wood glued together, not whole heavy timber sections, due to material availability.

ICF: Modular system of concrete-filled hollow foam blocks, with masonry/stone veneer. The roof structure would be steel framed.

SIP: Panels with insulating foam core sandwiched between OSB facings, with masonry/stone veneer. SIPs can also be used for the roof structure.

Example wall sections of each type are shown below for reference.

Advantages/ Disadvantages:

SIPs and ICFs are high-performance modular building systems, advantages being an airtight, well-performing thermal envelope that could result in operational cost savings. Also being modular construction systems, they can result in construction schedule savings. The cost savings realized by these systems are more significant on larger projects, and specialized trades may drive up costs and negate that cost savings. SIPs are typically only used in residential and light commercial construction and are susceptible to pest and moisture damage as well as offering lower fire resistance. ICF offers very high durability and fire resistance. Between the two modular systems analyzed here, ICF would be recommended.

Wood framed buildings are typically the least expensive alternative and could result in project cost savings as well as schedule savings. However, wood stick-framing is typically only used in residential and light commercial construction and is susceptible to pest and moisture damage and is more suited to lower ceiling spaces. Mass timber construction is a wood framed construction method using larger timbers or laminations. A more durable, aesthetically pleasing, and fire-resistant solution than stick framing, it is also more expensive, similar to the baseline masonry construction cost. Laminated timber structures also have very

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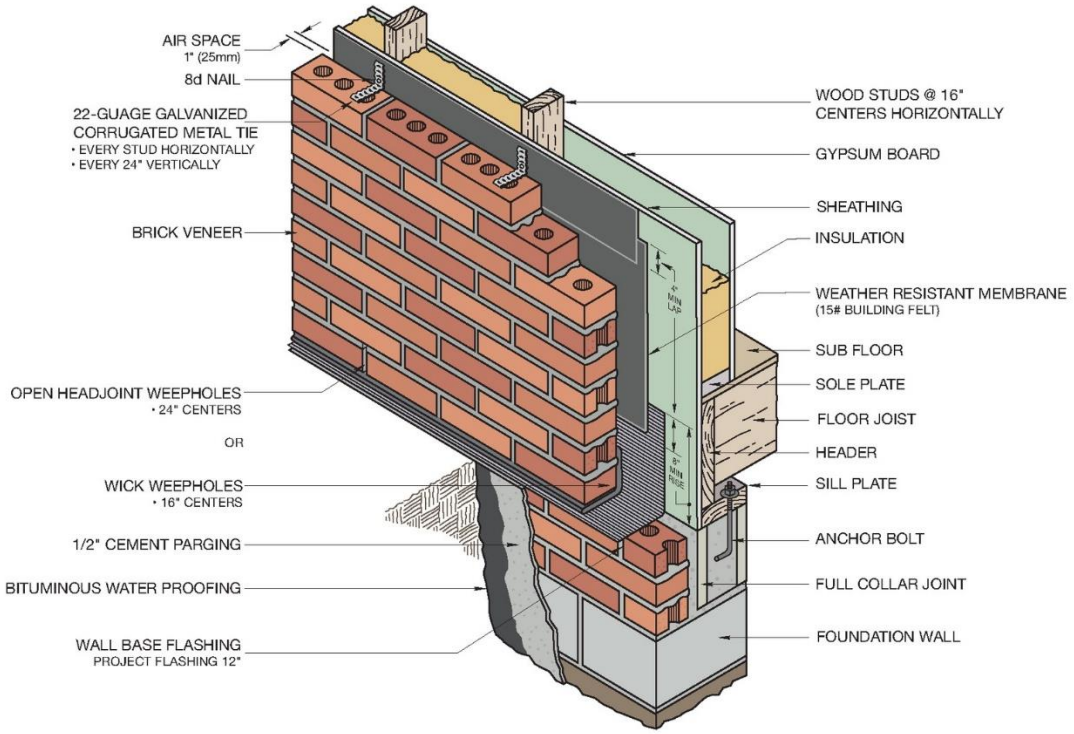
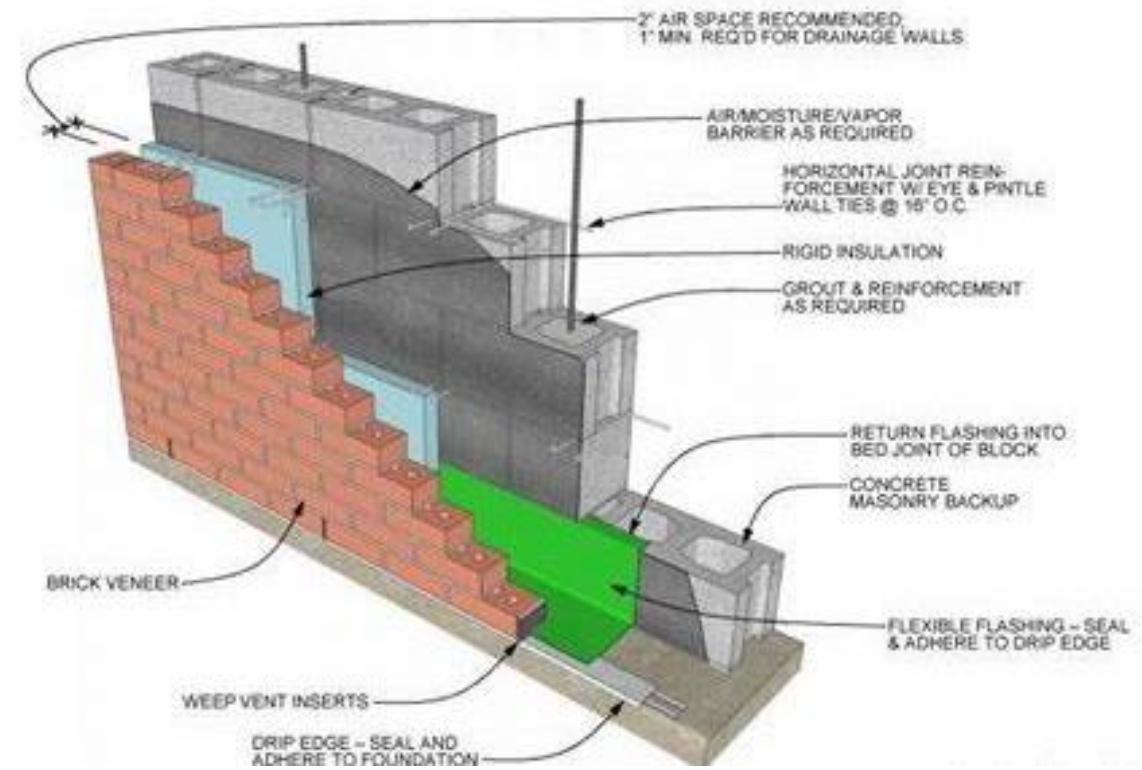
| | specific design coordination needs which reduces the flexibility of making any changes to the building in the future. Wood framing is less energy intensive to manufacture than steel, making it a more sustainable solution. Between the two wood systems analyzed here, mass laminated timber would be recommended.<br><br>The baseline masonry construction system is durable, made with readily available trades and materials, and reduces the number of trades on the job. If design was simplified and/or larger, some of the alternative construction types would be more beneficial. |
| Discussion: | Metra guidelines encourage the use of stone, brick and precast masonry for the exterior material, and allows use of masonry (CMU), wood, or metal framed construction as backup. Interior finishes in passenger areas should be brick or tile for durability, regardless of structure type.<br><br>Typical code implications of construction type include sprinkler requirements, fire-rating requirements, and limitations for allowable area. For Assembly use (A-3) in a sprinklered 1-story building, all allowable areas are over the proposed station area. A Village of Glen Ellyn amendment requires sprinkler systems for the station regardless of construction type. The fire-rating requirements of Mass Timber construction include rated exterior bearing walls. Masonry and Wood framed construction do not require fire ratings. Based on this initial analysis it appears that all proposed construction types would be technically feasible. |
| Summary: | Estimated cost increase in Design Phase: Some increase in design fee would be expected for revising construction types that may necessitate team changes to engineers specialized in that building type, and/or reassessing design fee.<br>Estimated capital cost change: Varies, see discussion. ***Note that for the relatively small building size of the station, the traditional masonry construction would likely be the least cost.***<br>Estimated schedule change: Varies, see discussion. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

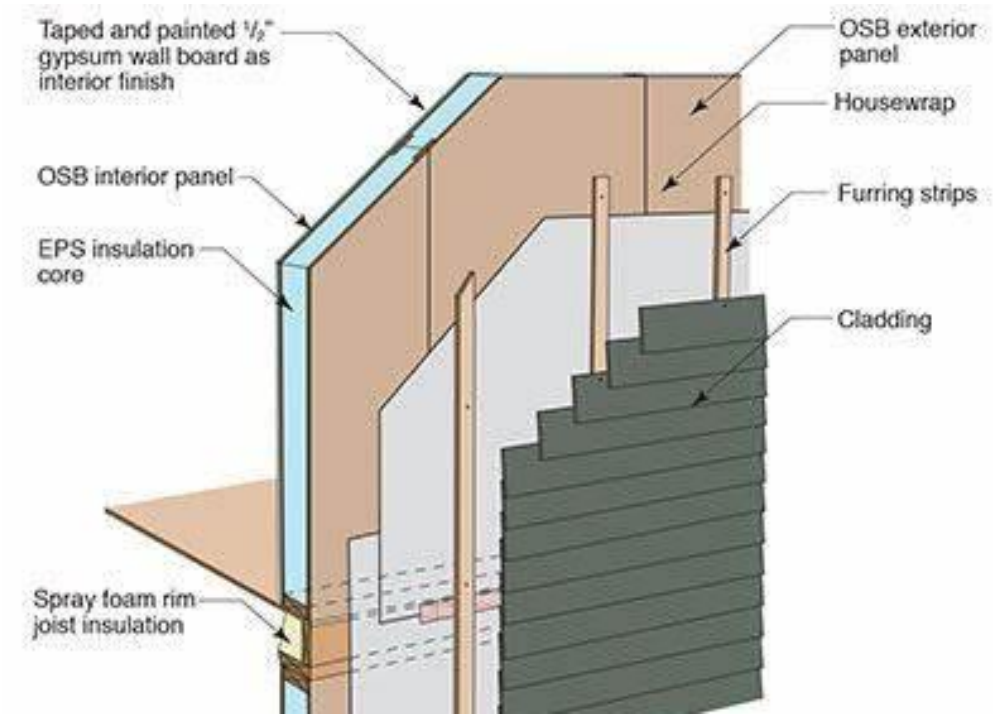
Wood Framed:



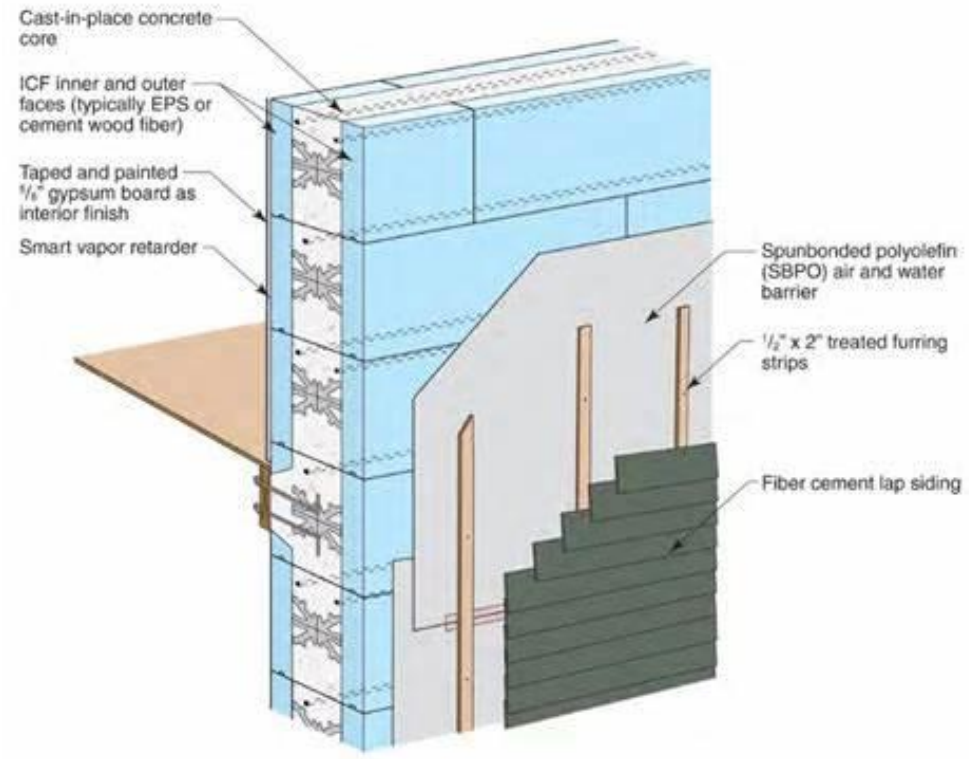

Masonry:



Structural Insulated Panel (SIP):

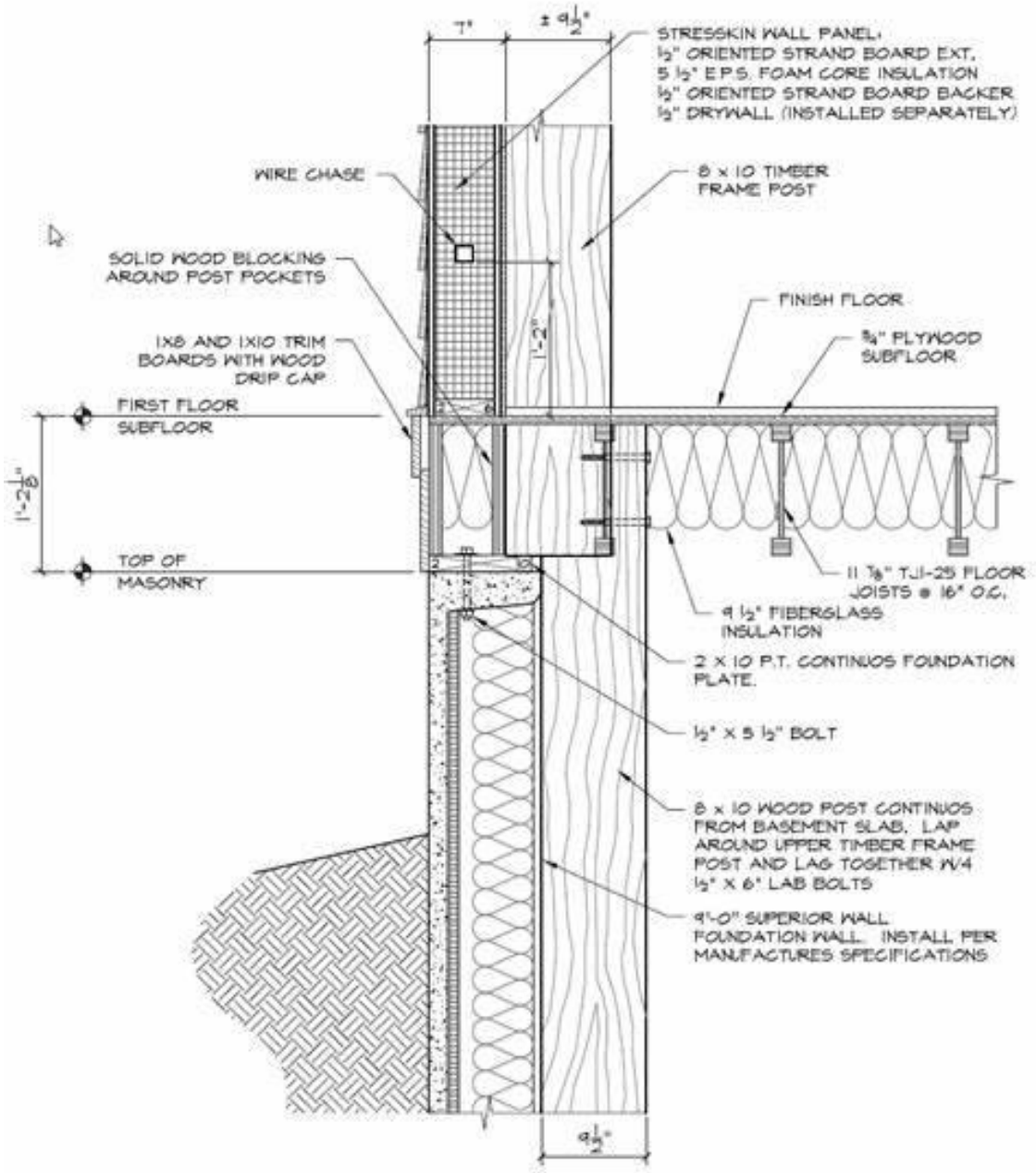



Insulated Concrete Form (ICF):




*Heavy Timber:*

Mass Timber (including Glue Laminate Timber):




**Vinyl or wood cladding is shown in representative wall sections, however brick veneer may be used in all*

## Value Engineering Proposal No. 15 - Permeable Pavers

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 15, 2023 |
| **Summary Description:** | Use Permeable Pavers for Parking Space and Plazas |
| Description: | Permeable pavers can be used on sidewalks, parking spaces, and other hard landscape features. (Note that pavers are not recommended for the driving aisles of parking lots.) |
| Original Design: | This level of detail was not included in the 10% concept drawings. |
| Alternate Design: | Incorporate permeable pavers in the appropriate areas of the project. |
| Advantages: | Stormwater capture by permeable pavement can mitigate a portion of volume and peak runoff mitigation requirement. Past studies indicate a portion of the cost of pavers is offset by the decrease in inlets and piping.<br><br>Also aesthetic benefit. Customer benefit in that puddles do not form.<br><br>Can also use an under-paver stormwater management system (in ground). |
| Disadvantages: | Can be costly, requires different maintenance than traditional pavement. See photo for typical snow removal equipment. |
| Discussion: | While pavers can add cost when only looking at the pavement cost, since the pavers reduce stormwater runoff, use of pavers can reduce the cost of other stormwater infrastructure, such as inlets and storm sewers. The pavers especially can be valuable if the decrease in impervious surface prevents the need for expensive stormwater detentions (especially underground detention).<br><br>Note that some grants may be used for this stormwater benefit. If a grant was secured to pay for the installation of pavers, this can be reconsidered. |
| Summary: | Estimated cost increase in Design Phase: None or minor<br>Estimated capital cost change: Add~$65-70K for parking in north to lots<br>Estimated schedule change: None or minor |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Typical equipment used for snow removal with pavers:

Some Chicago-area unit costs (with material, labor, and equipment) – *only for comparison*:

- 5" sidewalk with 6" stone base: $9-12/sq ft
- 6" concrete driveway with stone base: $11-13/sq ft
- Pavers (in parking lot application): ~$30/sq ft
- HMA parking lot on stone base: ~$40/sq ft

## Value Engineering Proposal No. 17 – Passenger Loading Zone

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | **Passenger Loading Zone Installation** |
| Description: | Create/Designate Additional Passenger Drop-Off and Pick-Up Areas. |
| Original Design: | The original design had the passenger drop off area as an indented curb design on Crescent Blvd (on the in-bound side of the tracks). A passenger loading zone (for pick-up, on the out-bound side of the tracks) is curbside along Forest south of the tracks. |
| Alternate Design: | See exhibits for potential added area. See advantages/discussion for the basis. Two of three potential added areas would be by using signage only (creating a time-based separation of loading and parking). One potential area could utilize an indented curb. |
| Advantages: | If drop-off and particularly pick-up areas are overflowing, drivers then may wait in areas creating traffic or pedestrian safety concerns. (For instance, double-parking or waiting curbside in an intersection.) Recognizing that constrained parking means people will be dropped off and picked up at the station, provide additional space (or monitor use of the space and be prepared to expand if necessary). |
| Disadvantages: | Approximately seven parking spaces would be designated for a two-hour window as "active loading/unloading." On Crescent, this could be negatively viewed by businesses along Crescent. |
| Discussion: | Curb space is a valuable asset. Curbside management has been a growing topic of interest (and topic of webinars) in the last five years and even more so during and since the pandemic. Curbside management, depending on the location, may need to address goods delivery, food trucks, parking, passenger loading (including Uber and Lyft), bicycle access, food delivery, and more.<br><br>As parking is constrained for the Glen Ellyn Metra Station (as demonstrated by the number of persons on the waiting list for station parking permits), passenger drop-off and pick-up will continue. While improved bicycle facilities (including bicycle parking at the station) may offset some of the rise in drop-off demand for days with pleasant weather, the demand will not likely decrease.<br><br>Curb space should be managed for the public good. Fortunately, curb space demand at a Metra station tends to have distinct peaks associated with train departure and arrival times. By using the same space for different purposes at different times, the cost of managing the curb space can be minimal. (Note this temporal separation is already done by closing portions of parking for the weekend farmers' market.)<br><br>This time separation likely already occurs in the PM peak period. Since some cars would have already left parking spaces, some drivers awaiting an arriving train to pick up a rider likely already use a vacated parking space to |

wait. Much like a cell phone lot at an airport, this practice should be encouraged (along with a prohibition on idling vehicles more than a few minutes). (Signage already indicates a parking permit is not required after 11:00 AM.)

See the exhibits below for potential additions to drop-off and pick-up zones. The times vary based on whether the need is on the in-bound side (for drop-off, tending to be shorter wait times) or out-bound. Management of curbside space involves data collection. The adequacy of drop-off and pick-up space should be monitored seasonally to determine if adjustments are required.

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| Summary: | Estimated cost increase in Design Phase: None or Negligible.<br>Estimated capital cost change: From minimal (cost of signs and installation ~$1500) to cost of an indented curb area (~$32,000).<br>Estimated schedule change: None. |

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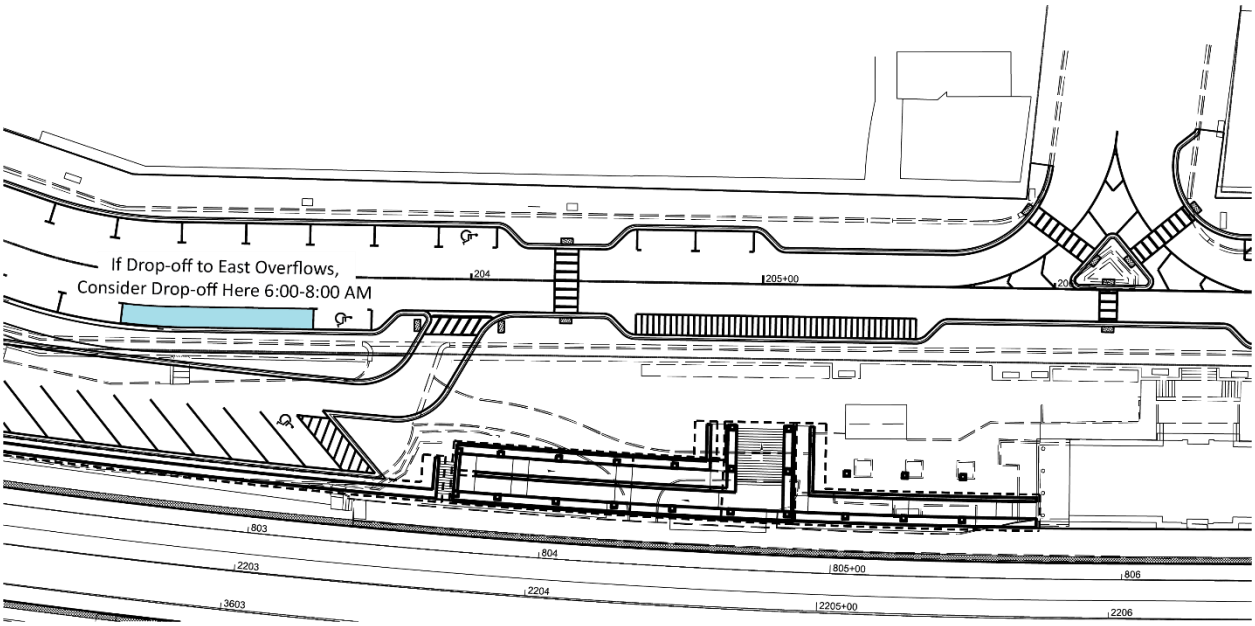
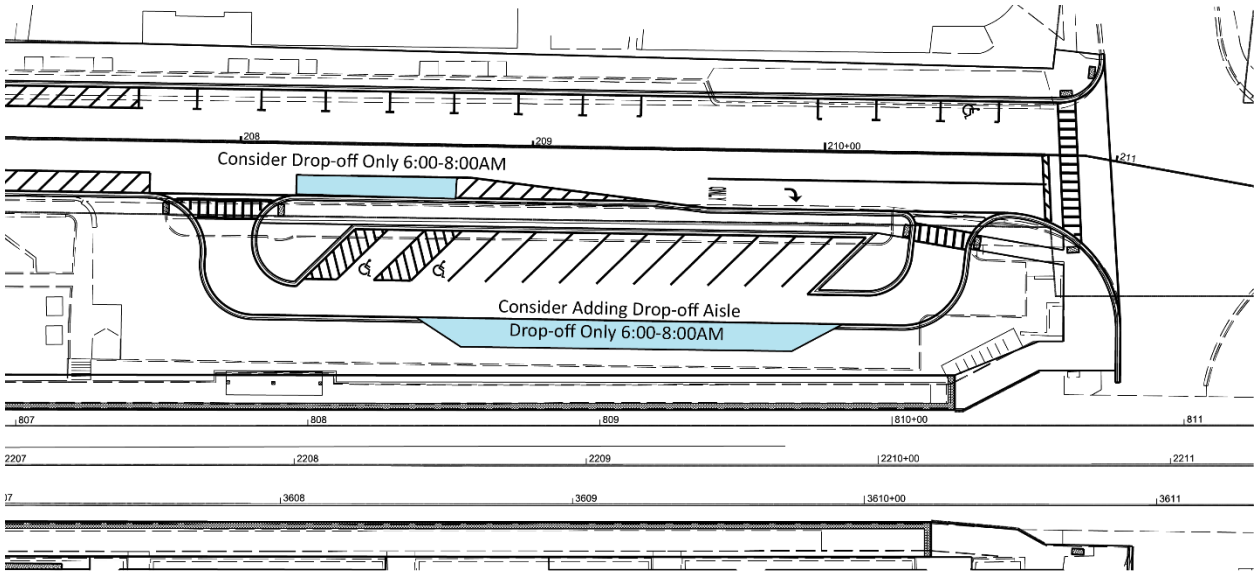
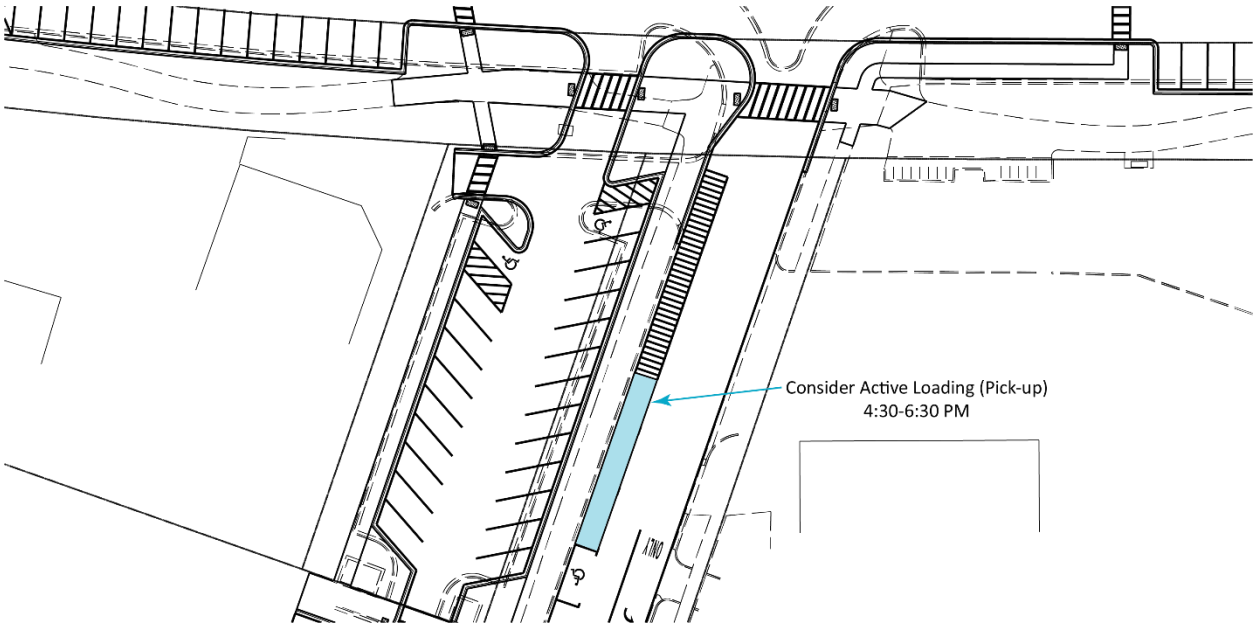
|---|---|
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |




If the curb-side drop-off space directly at the proposed plaza begins to overflow (which may present a pedestrian crossing or traffic flow issue), consider (a) time restrictions (e.g., active unloading only), and/or (b) expansion of drop-off curb space to the area shown in blue.




Again, if the drop-off space to the west overflows, consider (a) adding more space curbside (that reverts to parking after 8:00 AM), and/or (b) creating a curb inset within the parking lot. This latter space may be more popular for those who need more time to unload. Also, the platform could be accessed from the east end rather than from the stairs at the station.



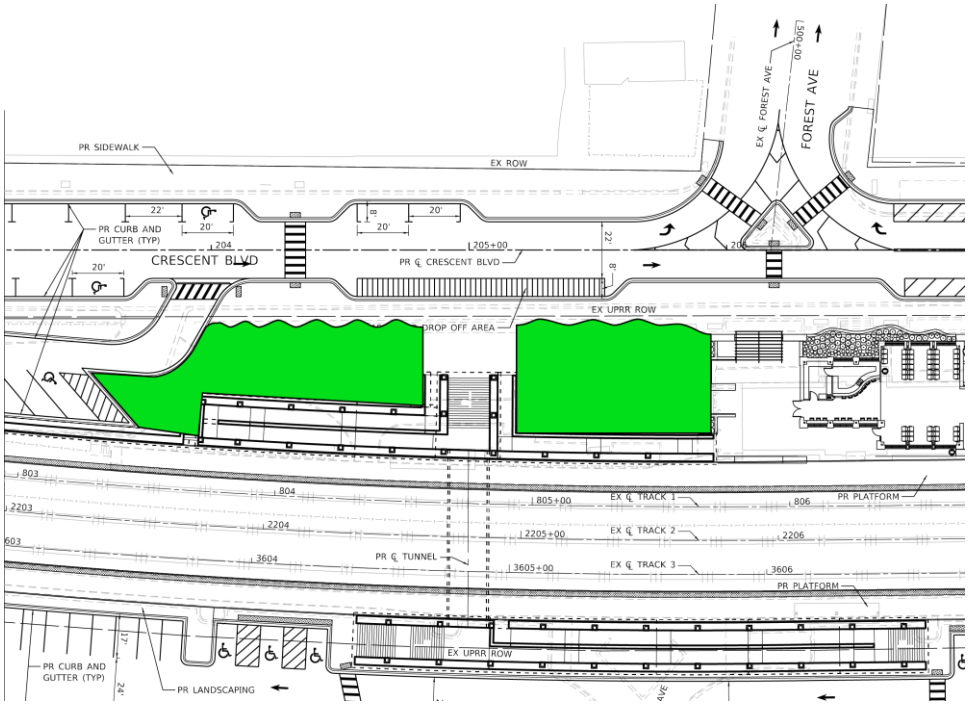

For pick-up, the more popular spaces will be on the outbound side of the tracks. If the designated space proves inadequate (as "line ups" tend to occur in the PM peak), the three parking spaces to the south can be designated for active loading from 4:30-6:30 PM. Note that the suggested times for both drop-off and pick-up are based on the density of train departure and arrival times specific to the Glen Ellyn Metra Station.

See ITE.org (under Complete Streets and Curbside Management Resources) for more information on curbside management.

## Value Engineering Proposal No. 18 – Minimizing Excavation

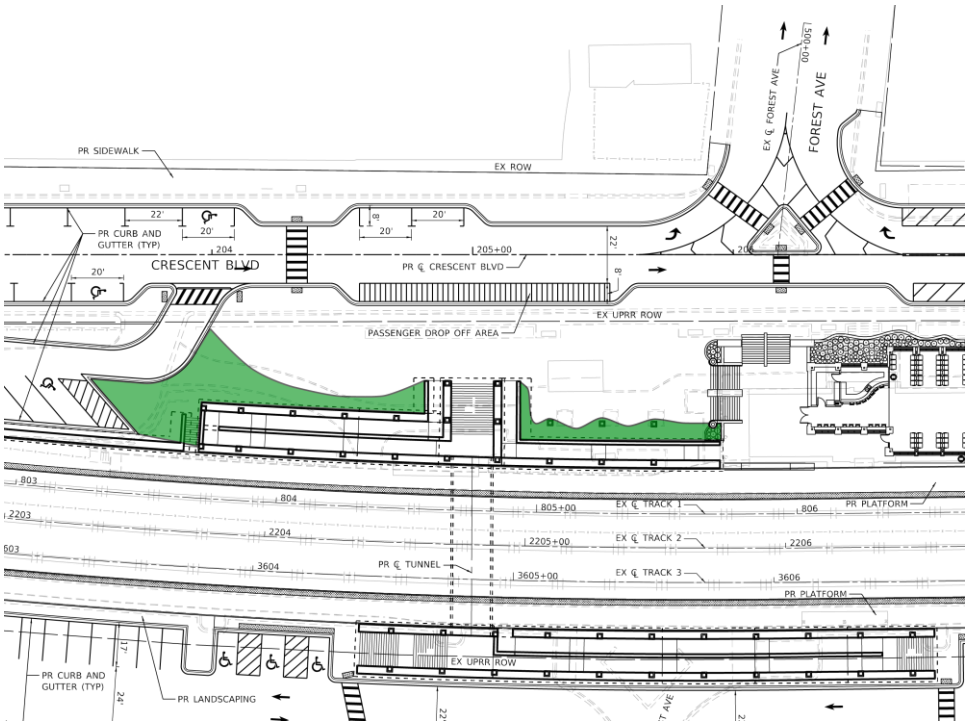
| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Minimizing excavation – get rid of some street level plaza, minimize access points (single focal point) |
| Description: | Eliminate the street level plaza area to minimize excavation and cost of pavement elements. |
| Original Design: | Mass excavation to create plaza area with pavement, planters, bike racks, as a general amenity space. |
| Alternate Design: | Minimize excavation to create gradual slope up from Crescent towards the platforms. Make this a green space with landscaping and trees in lieu of a paved area with the aforementioned amenities. |
| Advantages: | ROM cost reduction - $800K - $1M<br><br>Reduction in impervious/more green space with park like setting<br><br>Reduced capital cost. |
| Disadvantages: | Loss of Plaza and amenities<br><br>Will need additional retaining walls and they will create a cavernous feeling between Crescent Boulevard and the underpass. Ties back to prior concerns about ensuring the site feels open and safe. |
| Discussion: | At least one Board Member expressed desire of eliminating the plaza given the US Bank site conversion to a park. Not sure they're one in the same. We could also look at still mass grading to keep the open feeling but creating a green/landscaped area in lieu of pavement. That could still yield a significant savings of say $300K. |
| Summary: | Estimated cost increase in Design Phase: Additional retaining wall design and grading plan costs say $30K.<br><br>Estimated capital cost change: Significant savings could approach $800K - $1M. However, balancing a reduction in grading with the need for plaza elements (related to various project goals), a value of $250K was used for the cost reduction.<br><br>Estimated schedule change: Minor. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

***See exhibits on the following page***. Note that exhibits are schematic in nature only, intended to convey the two concepts discussed above.




(Above) Depiction of minimization of excavation. The wavy planter wall is intended to duplicate the pattern of the planter to the east of Forest Avenue. The issue with this minimal case is that a "cavern" appearance is created from Crescent Boulevard. Additionally, no plaza is created.

(Below) Depiction of a balanced approach. By constructing a portion of the plaza (with associated excavation), some cost savings is realized, but the openness of the plaza creates the desired interface with Crescent Boulevard. This is the recommended option.



## Value Engineering Proposal No. 21 – Light Harvesting Tunnel

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Light Harvesting for Tunnel |
| Description: | Rather than light the pedestrian tunnel during sunny days using lighting, harvest daylight and direct that light into the tunnel using fiberoptic strands. |
| Original Design: | At 10% design, no details had been developed for tunnel lighting. |
| Alternate Design: | Use collectors to harvest sunlight. The light is then transmitted using fiber optic strands to point lighting in the tunnel.<br><br>While there are a number of residential and commercial brands, see the images of one collector on the following page. Note that the fiberoptic cables can transmit light more than 200 feet, so transmitting the length of the tunnel is within the limit of this sort of product. |
| Advantages: | Natural light during the daytime would be pleasing and save energy. |
| Disadvantages: | • Light harvesting using fiberoptic is still considered an emerging technology.<br>• One report indicated the "pay back" period based on energy savings was over 100 years.<br>• There is no easy location to mount the collector or collectors. (Directly adjacent to the platforms are the tunnel headwalls.) |
| Discussion: | Based on difficulty in finding a protected location to mount collectors, the added cost, the technical unfamiliarity (for contractors), and the lengthy payback period, this option is not recommended. LED lighting in the pedestrian tunnel with modern light controls is a lower cost, lower risk option. This lighting is required anyway for non-daylight times.<br><br>Note there are other potential types such as light tubes. However, these cannot be placed in the railroad tracks/ballast area and doubtful if they can be placed in the platforms. Additionally, methods that require penetrations through the tunnel (including tunnel waterproofing) may cause structural or maintenance issues. |
| Summary: | **Not recommended.** |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Rooftop collector on a commercial office building.

The collector focuses sunlight to fiberoptic strands which can be directed to multiple locations in the building. Smaller versions in residential applications have been used to bring daylight into closets or other interior rooms. Fiberoptic strands can carry light for hundreds of feet with little loss.

## Value Engineering Proposal No. 25 – Next Train Displays

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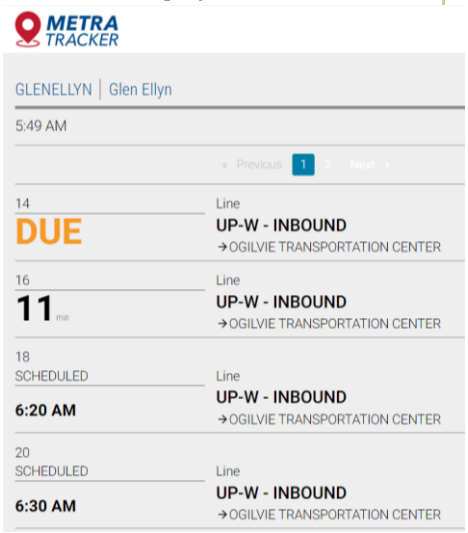
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | "Next Train" Displays |

Description: To encourage use of existing businesses on Crescent Boulevard for coffee and food while waiting for trains, either have a next train display on Crescent Boulevard or have businesses (e.g., Starbucks, Dunkin') mount a next train display inside.

Beyond just Metra, existing data consolidation sites can show Pace bus and Uber/Lyft. (In downtown Chicago, bikeshare locations and number of bikes available are shown in addition to Metra and CTA times.)




Original Design: Not addressed in the 10% conceptual plan.

Alternate Design: By providing next train information at vendors (especially on Crescent Boulevard, the inbound side of the tracks), customers can be better informed about when to leave the business.

Advantages: This is suggested if the vendor space within the station is removed. Customers may be encouraged to utilize the station-area businesses with good arrival time information.

Disadvantages: Businesses may not be interested. With mobile devices, this next train formation may be redundant (meaning many customers have this information readily available on their smart phones).

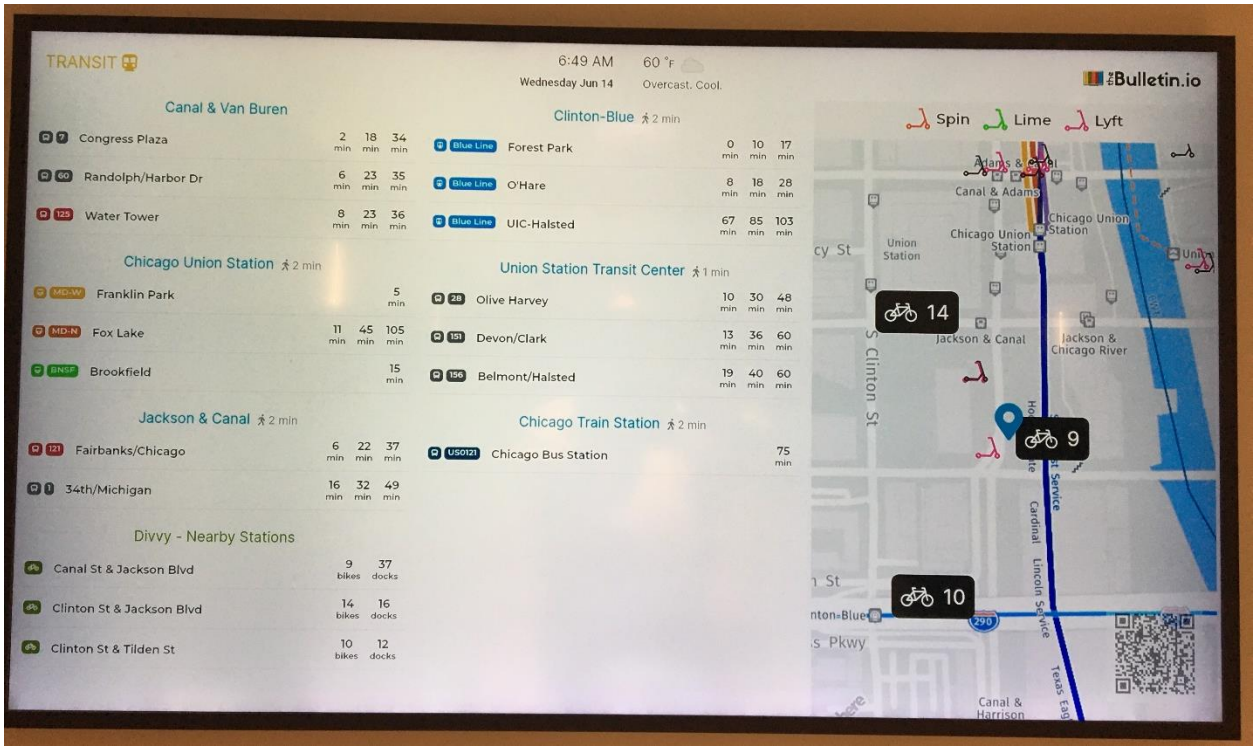
Discussion: Best way to implement may simply be to make owners aware of the available technology. If they are interested and they believe it may help generated a larger customer base, they can implement.

*Not recommended as a project cost or task.*

Summary:
Estimated cost increase in Design Phase: None
Estimated capital cost change: None to project
Estimated schedule change: None

Review:
☐ Accept and include in project
☐ Further study needed
☐ Reject for this project

Combined Transit Display at a Downtown Chicago Apartment Building




From a website “Bulletin.io.” Displays Metra, CTA, bikeshare locations, and even locations of individual scooters. This screen cycles with advertising and announcements.

## Value Engineering Proposal No. 27 – Eliminate 24-hour Station Operation

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Eliminate 24-Hour Station Operation |
| Description: | Although space requirements would not likely change, propose coordinating with Metra and the Glen Ellyn Police Department regarding closing the station building, at minimum, during late night hours. |
| Original Design: | Metra standards call for the station or a portion of the station to be open 24-hours. |
| Alternate Design: | Since the station is not staffed 24-hours, having the station open around the clock is a perceived security issue. Propose closing, at minimum, when trains are not operating. Closed hours can be adjusted, as presently, during the winter season. |
| Advantages: | Improved security. Decreased risk of late-night vandalism. Likely decrease cleaning cost. |
| Disadvantages: | This may be a customer inconvenience in cooler or colder weather when waiting for a train or waiting to be picked up at the station. |
| Discussion: | On weekdays, the last outbound Metra train is scheduled for 1:27AM. The first inbound train is scheduled for 4:50AM. At minimum, between these times, no station-related activity should be taking place. The closed hours should likely start earlier in the evening, except perhaps during winter weather, since outbound trains are generally spaced at one-hour intervals and alighting passengers are heading directly to cars or meeting their rides.<br><br>The existing station is not open 24-hours. |
| Summary: | Estimated cost increase in Design Phase: None – only Metra Coordination<br>Estimated capital cost change: None – does not affect required area.<br>Maintenance/Operating Cost: Slight decrease (not estimated)<br>Estimated schedule change: None |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 29 – Station Skylights

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Design Skylights in the Roof |
| Description: | Further expansion of the description as necessary here. |

*Examples of Skylight Installations*

*Example of Hail Damaged Skylight at the CTA Kedzie Bus Garage*

| | |
|---|---|
| Original Design: | The original design included a pitched roof, no skylights. |
| Alternate Design: | Design skylights in the roof of the station. |

| | |
|---|---|
| Advantages: | More Natural Light is let into the building.<br><br>The interior space seems larger.<br><br>Creates opportunity to utilize daylight harvesting controls to save electricity used for lighting during sunny days. |
| Disadvantages: | Creates an opportunity for leaks to occur.<br><br>During hail events the skylight could be severely damaged<br><br>Allows for heat to escape during the winter increasing heating costs. |
| Discussion: | I worked in the CTA Facilities Maintenance Engineering department. Part of my responsibilities was to inspect the roofs and exterior walls of all the facilities in the CTA system. I averaged 60+ structures a year including the large bus and rail maintenance facilities.<br><br>I can tell you that skylights are great in the beginning of their life cycles. They provide natural light as advertised. I also can say about 15-20 years into their life cycle that they turn into a constant maintenance headache. Most of the skylights I came across in the 15+ year old range were leaking or had sustained some kind of damage most likely from hail or other falling debris.<br><br>Daylight harvesting sensors are finicky and must be carefully designed, calibrated, and maintained to get the full benefit.<br><br>http://lightingcontrolsassociation.org/2006/03/13/why-do-daylight-harvesting-projects-succeed-or-fail/<br><br>Based on potential maintenance issues as the skylight age, this item is **not recommended.** The team believed there are better alternatives to bringing in natural light with much less risk related to future maintenance.<br><br>***Note:*** For windows, especially if clerestory windows are used, make windows openable for air circulation. |
| Summary: | Estimated cost increase in Design Phase: (Minimal Design Cost Implications if any)<br>Estimated capital cost change: (Increase in Cost)<br>Estimated schedule change: (Minimal Schedule Impact Assuming a Modular "off the shelf" system is selected) |
| Review: | *(Not recommended for consideration)*<br><br>☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 30 – Passive Solar Optimization

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 16, 2023 |
| **Summary Description:** | Use building features to (1) decrease heat load in summer and (2) bring in natural light in the winter. |
| Description: | The roof overhang will naturally decrease heat load when the sun angle is high. When the sun angle is low, light shelves will help bring natural light into the station. Other features may also be used. |
| Original Design: | At 10% design, this level of detail has not been developed. |
| Alternate Design: | Use light shelves in the design. |

Light shelves bounce light off the shelf further into the interior of the building.

| | |
|---|---|
| Advantages: | The roof overhang (for reducing summer heat load) and light shelves are passive measures to decrease energy use. Studies show user satisfaction is higher with greater incorporation of natural lighting. Passive daylighting features combined with lighting technology has been measured to reduce lighting cost by up to 70%. (All buildings, site orientation, and climate setting are different.) |
| Disadvantages: | Light shelves may need to be strategically placed related to architectural appearance. |
| Discussion: | Other passive measures are possible. Suggest allowing the architecture team to incorporate those appropriate for this building and the building orientation. |

| | |
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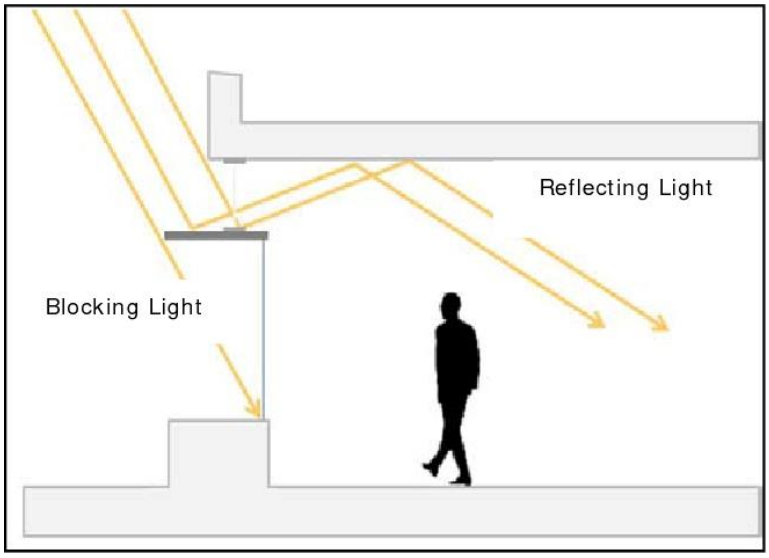
| Summary: | Estimated cost increase in Design Phase: Negligible.<br>Estimated capital cost change: Negligible.<br>Estimated change in operating cost: Minor (related to cost of cooling and cost of lighting) – not able to quantify.<br>Estimated schedule change: None. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |




An exterior light shelf can both block light causing a heat load and reflect light to provide natural lighting.

## Value Engineering Proposal No. 32B – Solar Panels

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Use of Solar Panels |
| Description: | Further expansion of the description as necessary here. |
| Original Design: | Design did not utilize solar panels. |
| Alternate Design: | Utilize Solar Panels |

Advantages:

Solar energy is a renewable energy source.

Solar energy can reduce the electrical utility bill via ComEd net-metering.

There are potentially grant programs available to help fund these types of installations.

Disadvantages:

There is a high initial cost.

Solar Energy is dependent upon the sun.

Solar Energy Storage is expensive. (In many applications, the owner elects not to store energy during the day to utilize at night.)

Solar panels are susceptible to supply chain issues.

The world needs more diverse solar panel supply chains to ensure a secure transition to net zero emissions - News - IEA

Solar Panels or (PV) panels require rare earth minerals a part of their manufacturing process which is a detrimental effect on the environment and because of their scarcity presents supply chain issues.

| | |
|---|---|
| | Are rare earths used in solar panels? – pv magazine International (pv-magazine.com)<br><br>A Scarcity of Rare Metals Is Hindering Green Technologies - Yale E360 |
| Discussion: | The allure of utilizing PV panels is an exciting opportunity. The most successful projects that I am aware of collect solar energy and sell it back to ComEd via a net-metering. (Electrical room size would likely increase for the equipment needed to distribute and sell back.)<br><br>There is an increase in initial cost on the design and construction side.<br><br>Despite (PV) panels being designated a "green" technology their manufacturing creates a negative environmental effect due to the mining operations required to obtain the rare earth mineral needed to build them.<br><br>Not So "Green" Technology: The Complicated Legacy of Rare Earth Mining (harvard.edu)<br><br>**Recommendation: While renewable energy is important, the added capital cost is an obstacle to the use of solar panels. If grant funding can fund the majority of additional cost, this idea may be considered. Without grant funding, implementation of solar panels may not be affordable with this project.** |
| Summary: | Estimated cost increase in Design Phase: (There would be an increase in design costs)<br>Estimated capital cost change: (Increase in Cost)<br>Estimated schedule change: (A risk of a severe schedule impact is high due to lead times and supply chain issues) |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 33 – Potential Funding Sources

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 13, 2023 |
| **Summary Description:** | Potential Funding Sources |
| Description: | List of Potential Funding Sources to Explore |
| Original Design: | N/A |
| Alternate Design: | N/A |
| Advantages: | N/A |
| Disadvantages: | N/A |
| Discussion: | CMAQ – Submit a cost increase request to CMAQ for additional funding to cover funding short fall due to inflation. The timing of this will need to be coordinated. Preferably this will occur after the 60% estimate at the earliest.<br><br>Metra Funding – The funding previously committed by Metra was meant to cover the platforms and other UPRR force account work. A recommended strategy is for the Village to get a commitment from Metra to fund the platforms and all UPRR force account work to simplify the funding and coordination process.<br><br>ICC – Submit a cost increase request from ICC later on in the design process.<br><br>DuPage County Water Quality Improvement Program Grant – Work with Jackie and the civil team to see if permeable pavers, bioswales, drywells, etc. can be utilized in this project and are eligible for this grant. Deadline was 1/6/2023. Check to see if there will be another NOFO. |

Illinois Clean Energy Grant - The Illinois Clean Energy Community Foundation supports projects in categories where incentives are determined on a case-by-case basis: Solar Thermal, Biomass, Advancing Renewable Energy, and Emerging Technologies.

The Foundation gives priority to projects that:

Feature a strong education and outreach component, including permanent educational signage, displays, and other publicity materials

“renewable energy resources” includes energy from wind, solar thermal energy, photovoltaic cells and panels,

Funding for Solar Thermal is limited to up to $100 per square foot of collector area or up to 50% of the project cost, whichever is less.

Smart Energy Design Assistance Center (SEDAC) – Reach out to SEDAC to see if they can help partner with Nicor or other utilities to see if funding can be secured for geothermal installations. They also have funding available for PV Panels.

| | |
|---|---|
| Summary: | Estimated cost increase in Design Phase: (Minimal Design Cost Implications if any)<br>Estimated capital cost change: (Increase in Cost)<br>Estimated schedule change: (Minimal Schedule Impact Assuming a Modular "off the shelf" system is selected) |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

DuPage County Water Quality Improvement Program Grant

Water Quality Improvement Program (dupagecounty.gov)

Illinois Clean Energy Grant -

Other Renewables – Illinois Clean Energy Community Foundation

SEDAC

Incentives & Funding Opportunities – SEDAC | Smart Energy Design Assistance Center at The University of Illinois, Urbana-Champaign

## Value Engineering Proposal No. 36 – Snowmelt Systems

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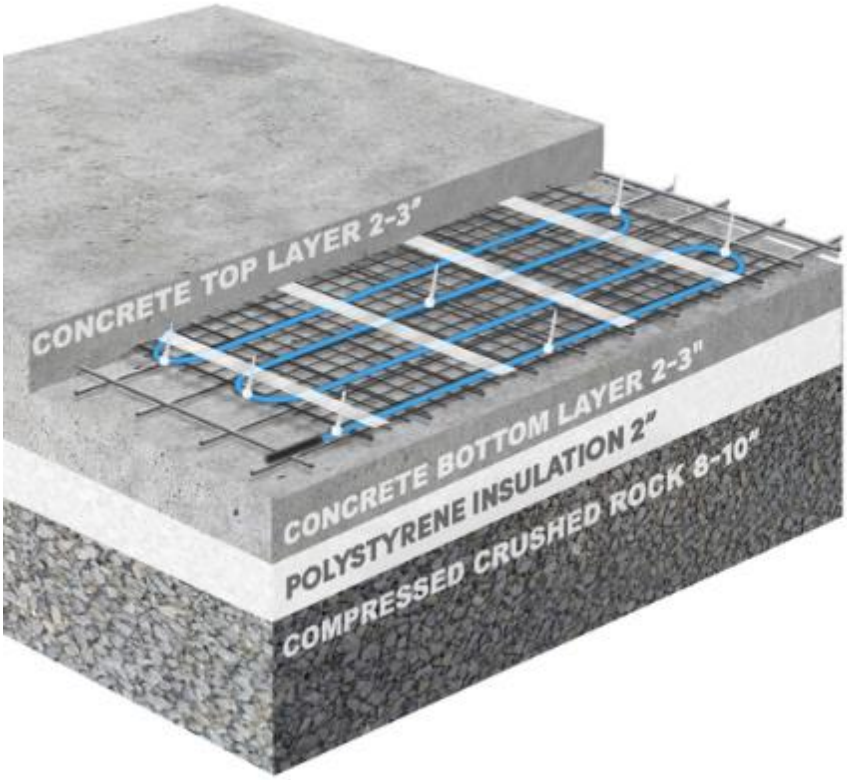
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 16, 2023 |
| **Summary Description:** | Snowmelt System for Stairs and Ramps |
| Description: | Installing Hydronic or Electric heating system at stairs and ramps. |
| Original Design: | No detail related to potential snowmelt at 10% design. |
| Alternate Design: | Add radiant floor heating systems at stairs and ramps. The intent is to increase safety (by preventing snow accumulation and refreeze of melt water), decrease the snow removal cost, and decrease salt damage to the concrete stairs, ramps, and adjacent walls. (Decreased salt usage also has an environmental benefit.) |
| Advantages: | 1. Minimize accidents due to slippery surfaces. 2. Reduce snow removal - Lower maintenance labor cost. 3. Reduce the use of salt, sand and potentially the canopy coverage area. |
| Disadvantages: | 1. Short life expectancy: only 15 – 20 years. 2. Increase cost of utility bills – more costly for Electric heated system. 3. Manual operation (on/off) before and after snowing (unless automated or partially automated). 4. Heating system is under pavement surfaces and hard to be replaced or repaired. 5. May create an issue where stairs or ramps transition to an unheated plaza or walkway. 6. Additional boiler and space are needed for Hydronic heated system. 7. With blowing snow, some snow removal is typically still required. |
| Discussion: | Clearly an added capital, operations, and future maintenance cost. Direct calculation of savings based on reduced snow removal cost, improved safety, and reduced concrete deterioration based on decreased salt use is not possible. Life expectancy of snowmelt systems is an issue since replacement means replacement of the stairs and ramps. |
| Summary: | Estimated cost increase in Design Phase: Minor change.<br>Estimated capital cost change: May approach $1M (including all ADA ramps, stairs, and supporting boiler room and boiler system if the hydronic option is selected).<br>Estimated schedule change: Some additional installation time, but not detrimental to the construction schedule. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Hydronic floor heated System – glycol is circulated in the tubes.




Electric floor heated System

Heated Railway Platforms tested to avoid ice accident (Minnesota case study)

UK Heated Eurostar Platform

*Note that while there are multiple locations in Chicago with snowmelt systems, these systems tend to be at hotel or condo building entrances. These systems are ground level and have a much small area than platforms, stairs, ramps, and plazas at commuter rail stations. [There is a snowmelt system for an apartment building on Hubbard Street in Chicago. It is effective and generally can keep pace with the rate of snow fall. It is a ground-level system. However, no capital cost or energy cost information is available for this system for comparison.*

## Value Engineering Proposal No. 37 – Precast Box Culvert for Pedestrian Tunnel Construction

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|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 13, 2023 |
| **Summary Description:** | Precast box culvert for tunnel (Cut and Cover) |
| Description: | A tunnel under the UPRR tracks will be constructed to serve as pedestrian crossing for the Project. One of the possible tunnel construction methods is to use precast box culvert method. The ground will be open cut; reinforced concrete box structures (segments) will be placed and assembled to form the tunnel; and tunnel will be backfilled; and the ground and surface will be restored. |
| Original Design: | The original design, at only 10%, does not have this level of detail. |
| Alternate Design: | None. |
| Advantages: | As the tunnel structure will be precast (pre-fabricated) off site, and the ground will be opened up, the construction can be performed rapidly. The cost will also be relatively low. Tunnel geometry can be designed to the requirements thus maximize the space use. |
| Disadvantages: | The open cut of ground for tunnel construction will very likely require the UPRR operations to be shut down during the construction; the project vicinity will also need to be closed. |
| Discussion: | A similar pedestrian underpass at Springfield MA was constructed using the precast box method. "*The precast underpass was installed over a six-day period between August 9–14, 2020 when the railroad line was taken out of service".*<br><br>Unless UPRR operations can be shut down for several days for tunnel construction, this method will unlikely be acceptable.<br><br>For this reason, a precast box using cut-and-cover is ***not recommended*** for this project. UPRR has indicated this sort of closure, even for just two days, would not be allowed.<br><br>Three other options have been evaluated as options. |
| Summary: | Estimated cost increase in Design Phase: No.<br>Estimated capital cost change: Minimal.<br>Estimated schedule change: None. |
| Review: | *(Not recommended for consideration)*<br><br>☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

The underpass at Springfield MA was constructed using the precast box method.

https://trainsinthevalley.org/springfield-underpass/

## Value Engineering Proposal No. 38 – Box-Jacking Method for Pedestrian Tunnel Construction

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Box-jacking method for tunnel construction |
| Description: | The box-jacking tunneling method involves installation of precast reinforced concrete boxes as the tunnel, and the boxes are either made on-site or prefabricated and transported to the jobsite. The boxes are positioned where they will be installed and slowly pushed into place by high-powered hydraulic jacks. At the same time, excavation equipment is used from within the box to remove the soil in its path. To help it slide into place, each box section is lubricated on the outside. |
| Original Design: | Although not detailed in the 10% design, a technical memo had been prepared recommended the Sequential Excavation Method. |
| Alternate Design: | Box-jacking is the use of large jacks to push a precast concrete box through the embankment. This is similar to jack-and-bore for a steel pipe, except the concrete box is more substantial. |
| Advantages: | • Causes minimum disruption to UPRR traffic and operation.<br>• The tunnel dimensions can be better matched to the desired internal size. (There is not excess space as with a cylindrical steel pipe.)<br>• The inside finish can be prepared at the pre-casting plant. Additionally, conduits and insets for lighting can be cast into the box sections. |
| Disadvantages: | The logistics and equipment required for the method could be extensive; the areas to be used as construction platform (launch pit and receive pit) could be large. Special attention is required for the waterproofing of the joints. The jacking equipment required is larger than required for a jack-and-bore steel pipe. |
| Discussion: | Given the limited area in the project site available to be used as construction worksite, the method will need further evaluation. The existing loose/weak soils may pose challenges to maintain excavation face stability and mitigation measures may be required. This latter point is related to risk of settlement of the UPRR tracks during the box-jacking operation. |
| Summary: | Estimated cost increase in Design Phase: No.<br>Estimated capital cost change: Minimal.<br>Estimated schedule change: None. |

| | |
|---|---|
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Example: Workers execute the box-jacking method in Florida (03/28/2021). This is much larger in scale than would be used for a pedestrian tunnel.

Source: https://www.rtands.com/track-construction/watch-brightline-executes-box-jacking-method-under-s-r-528/ (accessed 06/14/2023)

*Box jacking takes larger jacks and creates larger jacking forces that the jacking of a steel pipe.*

## Value Engineering Proposal No. 39 – Jack and Bore Method for Pedestrian Tunnel Construction

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Jack and bore pipe for tunnel construction |
| Description: | The jack and bore tunneling method is used to construct tunnels under existing structures like roadways and railways. Powerful hydraulic jacks push well designed pipes through the ground behind a shield. Whilst the pipe is pushed through the earth, excavation/boring takes place within the shield to remove the soils. |
| Original Design: | Although not detailed in the 10% design, a technical memo had been prepared recommended the Sequential Excavation Method. |
| Alternate Design: | Jack-and-bore a large (14' diameter) pipe from a jacking pit on one side of the railroad tracks to a receiving pit on the other side. |
| Advantages: | No disruption to traffic or pedestrians; minimum surface disruption above the tunnel. |
| Disadvantages: | The logistics and equipment required for the method could be extensive; the areas to be used as construction platform (launch pit and receive pit) could be large. The circular shape of the pipe (tunnel) may result in deeper tunnel and larger volume of soil to be removed, thus it will be less efficient for tunnel space use. |
| Discussion: | Given the limited area in the project site available to be used as construction worksite, the method will need further evaluation. |
| Summary: | Estimated cost increase in Design Phase: No.<br>Estimated capital cost change: Minimal.<br>Estimated schedule change: None. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Example: Fossil Creek Trail BNSF Pedestrian Tunnel (July 2016 – January 2017)
Source: https://www.fcgov.com/utilities/what-we-do/fossil-creek-tunnel (Accessed 06/14/2023)

The Taylor Avenue pedestrian tunnel placed using jack-and-bore.

From the start of jacking to the breakthrough was less than 48 hours.

## Value Engineering Proposal No. N/A – SEM Method for Pedestrian Tunnel Construction

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Sequential Excavation Method (SEM) for tunnel construction |

*Although this is the proposed method at the time of the VE study (so not a VE idea), this description has been included in the report for comparison with the other methods.*

| | |
|---|---|
| Description: | The SEM tunnelling method is considered a mining or "hand" tunneling method. It is characterized by the sequential removal of ground material followed by the installation of initial tunnel support. Pre-support measures may often times need to be provided to protect the next advance before excavation and installation of initial support measures take place. Methods like pipe arch/canopy are among commonly used techniques for pre-support to improve the ground ahead. |
| Original Design: | Although not detailed in the 10% design, a technical memo had been prepared recommended the Sequential Excavation Method. |
| Alternate Design: | None. |
| Advantages: | The method would cause minimum disruption to UPRR traffic and operation and surroundings. The tunnel excavation geometry can be made of composite curves thus increase the efficiency of the tunnel cross section. Settlements can be under control through carefully designed construction methods and sequences. The logistics requirements would be less extensive than the jacking methods. |
| Disadvantages: | The construction duration may be relatively long. Cost can be relatively high. |
| Discussion: | The required areas for worksite may be smaller than those required for the jacking methods. The SEM is an "observational" method; versatile toolbox measures can be implemented when unfavorable ground conditions (such as soft/weak soils) are known to exist or encountered. |
| Summary: | Estimated cost increase in Design Phase: No.<br>Estimated capital cost change: Some.<br>Estimated schedule change: None. |

| | |
|---|---|
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

SEM tunnel example: Virginia General Assembly Building Pedestrian Tunnel, Richmond, VA

Source: http://www.bradshawcc.com/projects/408/view/ (Accessed 06/14/2023)

Progress may be 1 to 3 days per 3-ft of advancement. As stated in the description above, the schedule for this method is relatively long. After completion of the tunnel, the finishing of the tunnel lining still would need to be completed. This method would likely take one to two months from the start of the sequence (not including preparatory work) to breakthrough.

## Value Engineering Proposal No. 40 – Retaining Wall Options

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | **Modular Block Walls for Retaining Walls** |

Description: Retaining walls serve numerous purposes; erosion control, creating more usable space, and from a visual standpoint they add beauty. Modular Block walls opposed to natural stone or timber allows for more options (shapes, colors, sizes, textures, and patterns), easier installation, environmentally friendly, and they are long lasting.

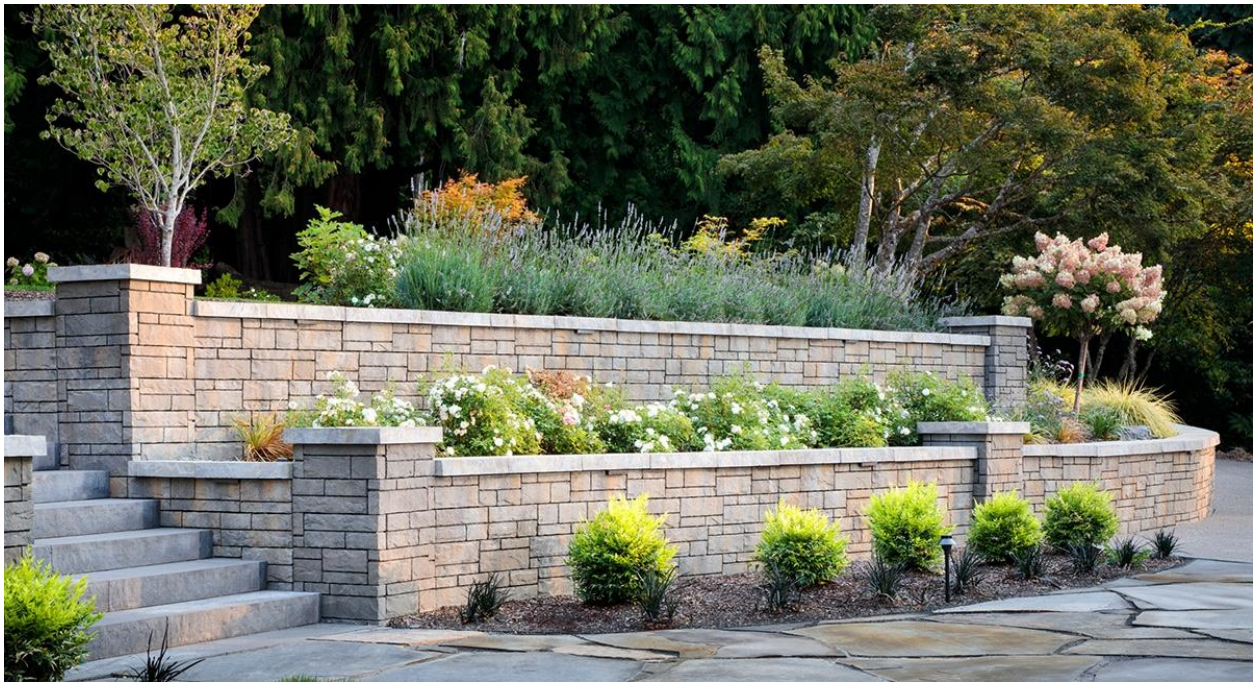
Original Design: The original design calls for the use of normal lateral retaining walls (cast in place). Typically, these walls would have a brick veneer and seating caps (meaning a level, concrete cap on the wall where people can sit).

Alternate Design: Use of Modular block walls for retaining walls. (Note: There are locations where cast-in-place walls are still required including at the headwall area for the pedestrian tunnel.)

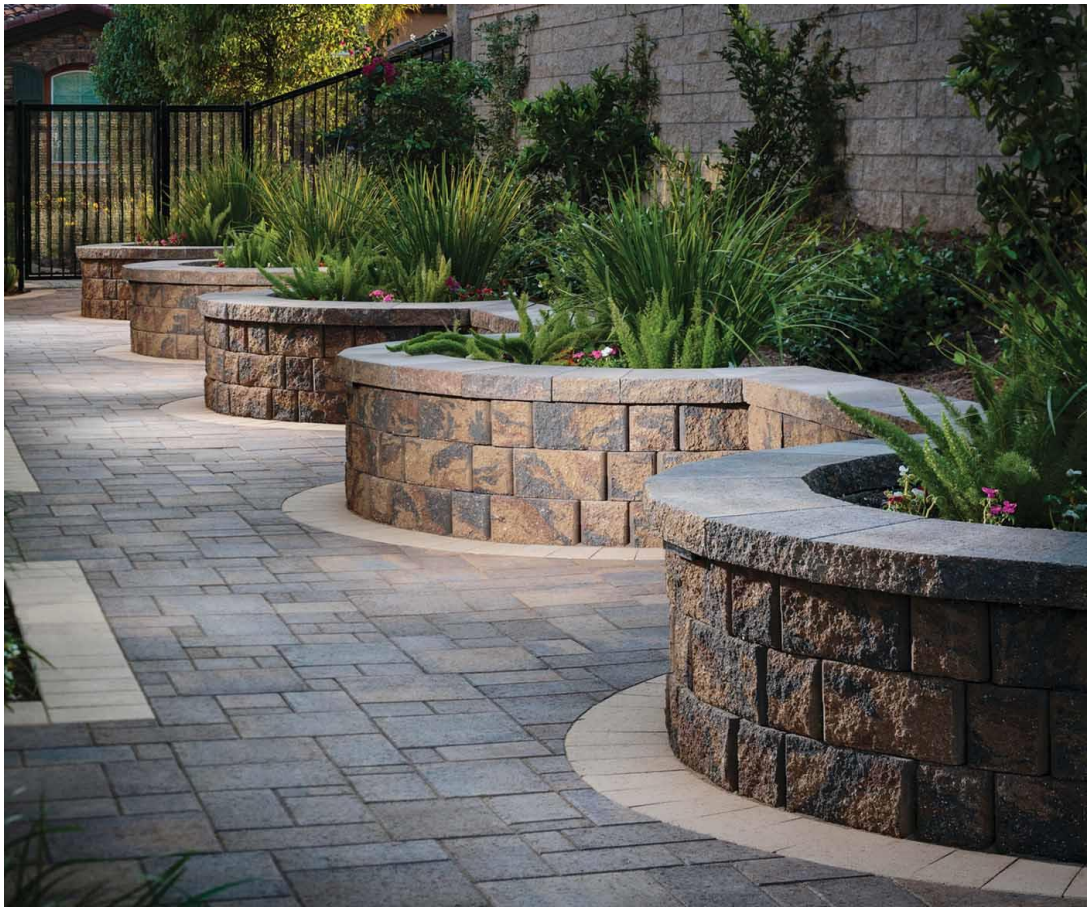
Advantages: Comparing Modular block retaining walls versus natural stone or rock; natural rock retaining walls are more labor intensive and costly to install. Comparing Modular to Timber, modular walls are not chemically treated whereas Timber releases chemicals into the ground that can end up harming surrounding vegetation. Timber has a much shorter life span compared to other wall options. Compared to cast-in-place walls, modular block walls typically cost less and take less time to install. Overall Modular construction offers better quality structures, while being less expensive and easier to install than other options.

Disadvantages: There may be an architectural mismatch between brick veneer seat walls and the modular block landscaping walls.

Discussion: The use of block walls will be limited. The walls may only be appropriate as low-height separation of landscaping from the plaza, although the following two example images show potential flexibility.



Modular block walls can include seat walls and can be adapted to various landscaping requirements.



Modular block walls can follow curved patterns in keeping with many desired landscaping requirements.

| | |
|---|---|
| Summary: | Estimated cost increase in Design Phase: None expected.<br>Estimated capital cost change: Modular block walls typically are lower cost than cast-in-place, brick-veneer walls. However, in small quantities, a significant reduction in cost may not be realized.<br>Estimated schedule change: None. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

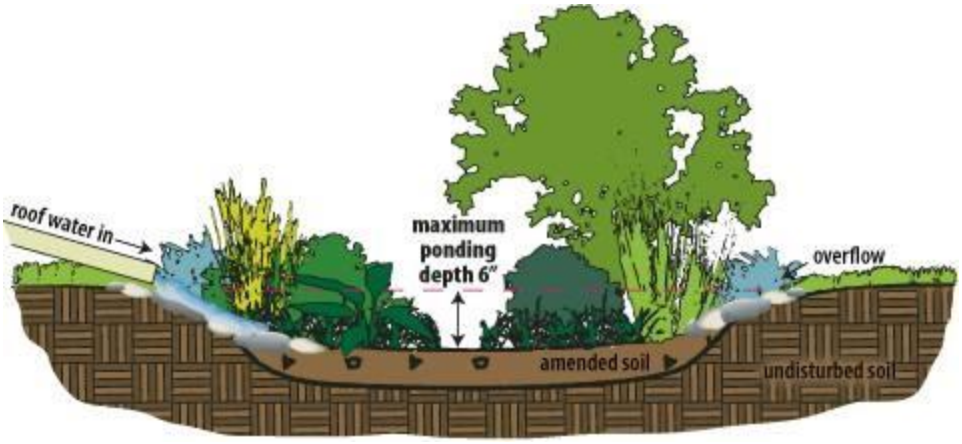
Note: The largest obstacle may be potential mismatch of wall appearances in different portions of the project area.

In combination with the option to reduce required excavation on the north side, modular block walls may be ideal if terracing is needed within the landscaping.

## Value Engineering Proposal No. 41 – Landscape Stormwater Management Options

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Use Landscaping near Station Building for Stormwater Management |
| Description: | In residential applications, this idea is termed "rain gardens." It is the design and use of the landscaping to act as stormwater detention, allowing slow release, use of plants, evaporation, and infiltration to ground water (or slow release to the storm sewer system). |
| Original Design: | The 10% design concepts do not provide this level of detail. |
| Alternate Design: | Design of the landscaping to contribute to stormwater management to the practical extent possible. Planters would typically still have stormwater overflow inlets since, periodically, rainfall intensities will exceed the design storage possible at the site. |
| Advantages: | Some decrease in landscaping irrigation requirements. Decrease in release rate and potentially release volumes for stormwater management design. Cost is typically minimal to route roof drainage to the planters. |
| Disadvantages: | Few cited in literature review if well designed and built. Landscaping must be maintained and managed (as with all the streetscape landscaping). |
| Discussion: | Rain gardens are commonly promoted as a simple and aesthetic means for residential properties to be involved in sustainability related to stormwater management. Directing stormwater to the groundwater has multiple benefits compared to routing to a storm sewer system. See literature on the topic for more detail.<br><br>This is an example of a sustainability ("Green") item which, nowadays, is typically important for public perception of the project and owner. |
| Summary: | Estimated cost increase in Design Phase: Minimal – may require involvement of Landscape Architect with experience in stormwater management.<br>Estimated capital cost change: Minimal if used in landscaping adjacent to the station building.<br>Estimated schedule change: None |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

Rain Garden Typical Section




Note that this can be accomplished within planter walls. Bottom must be open to the ground or have an underdrain feature to slowly release water to the storm sewer system.

The USEPA has a website with links and resources:

https://www.epa.gov/soakuptherain/soak-rain-rain-gardens#:~:text=Planted%20with%20grasses%20and%20flowering,song%20birds%20and%20other%20wildlife.

## Value Engineering Proposal No. 45 - Construction Engineering

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 14, 2023 |
| **Summary Description:** | Evaluate the $4M placeholder for Construction Management |
| Description: | Construction Engineering was estimated at $4M. Revisit ways to reduce cost. |
| Original Design: | Assumed as 10% of construction cost |
| Alternate Design: | Estimate based on number of engaged professionals and time. Assume 1.0 FTE Con. Eng. 5 (say $65/Hr) and 1.0 FTE Asst. RE (say $40/Hr) for site civil, 1.0 FTE Con. Eng. 6 (say $70/Hr) and 1.0 FTE Asst. RE (say $40/Hr) for depot/shelters for 2.0 years of which that payroll with overhead and profit (2.8X payroll) would be ~$2.5M. Need to add in material testing allowance ($75K), part time project manager ($290K), vehicle charges ($135K), misc. reimbursables ($100K).<br><br>Total would be ~$3.5M – 3.1M. |
| Advantages: | Reduced Phase III cost by $500-$900K. |
| Disadvantages: | Do not want to streamline staffing too much to the point where inspections and project management are compromised.<br><br>Did not include items that some may want such as time lapse imagery, extensive PR, some firms may not like having limited senior management staff but this has worked for the Village on other projects. |
| Discussion: | TBD. |
| Summary: | Estimated cost increase in Design Phase: None.<br>Estimated capital cost change: Significant could approach $900K.<br>Estimated schedule change: None. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

## Value Engineering Proposal No. 46 & 47 - - Landscape Stormwater Management Options

| | |
|---|---|
| Project: | Glen Ellyn Metra Station |
| Date: | June 15, 2023 |
| **Summary Description:** | Bidding Strategy and Packaging |

Description: To accomplish the project at the lowest possible cost while maintaining quality and schedule.

Original Design: Package all work into one bid (except platforms by UPRR). The opinion of probable cost at 10% is $34.2M (Construction Only). At 10%, the actual cost is likely from 10% under to 25% over this opinion ($30.8M to $42.8M). These figures do not include reductions based on the VE workshop.

Alternate Design: The team should consider splitting the project into multiple bids, work packages, and methods of design, delivery, and construction.

Potential ways to split up the work are listed below:

1. Early Out package 1 could include utility work (water/sewer/fiber/electric) completed as part of a larger utility contract the Village typically puts out each year.
2. Package 2 could include platforms (by Metra/UP) completed separately from the main project
3. Package 3 could be the pedestrian tunnel, either standalone or with the ramps/stairs/etc. to be usable.
4. Package 4 could be building, warming shelters, remaining landscaping, retaining walls, etc.
5. Package 5 could be streets/parking lots.

Advantages: The advantage of doing this is cost, and potentially some overall savings on schedule.

Disadvantages: The disadvantages include:

1. Longer project overall, longer disruption to the area.
2. Multiple prime contracts would need to coordinate, and this usually leads to some “finger pointing” between them.
3. Construction Management would be more challenging and potentially more expensive.
4. There may be some final restoration work needed at the end of all of the contracts.
5. Funding would need to be reviewed to ensure this does not affect funding.
6. More time/money would be needed in design to package the projects this way, including time for front end specs, bidding, bid evaluations, etc.

| | |
|---|---|
| Discussion: | The VE team discussion stated:<br>• Because this has a federal funding component, all aspects using federal funding need to be one contract.<br>• It would be possible to break out non-participating items is, by breaking them out separately, there was some advantage related to total cost, overall schedule, or decreasing disruption.<br>• Advanced relocation of the fiberoptic cable is a possibility for a separate (advanced) work phase as this would decrease risk for the major work components. |
| Summary: | Estimated cost increase in Design Phase: This will increase design costs<br>Estimated capital cost change: This could decrease capital costs<br>Estimated schedule change: Schedule change to be determined.<br><br>***Recommendation:*** Use **one contract** except potential advanced utility relocation or separate non-federal components only if further examination during the design phase indicates a time, cost, or disruption advantage. |
| Review: | ☐ Accept and include in project<br>☐ Further study needed<br>☐ Reject for this project |

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# Glen Ellyn Metra Station + Multimodal Access Improvements Program (MSMIP)

## Value Engineering and Next Steps

August 8, 2023

CDM Smith

# Value Engineering

## VE Goals

- Reassess and confirm project needs and scope
- Increase the value of the project

$$Value = \frac{Function}{Cost}$$

## Participants

- Glen Ellyn staff, Village officials
- CDM Smith core project team, subject matter experts

## Value Engineering

$$Value = \frac{Function}{Cost}$$

# Project Priorities

- Cost-efficient design
- Look and feel of the station as a focal point of downtown
- Future operations and maintenance costs
- Accessibility
- Sustainability
- Safety & Security
- Connection to downtown
- Shelter for passengers

# Value Engineering

## High Cost Components

- ❖ Station Building (including temp station)
- ❖ Platforms
- • Pedestrian Tunnel
- ❖ Site Work

## High Worth Components

- • Pedestrian Tunnel
  - • Improves pedestrian accessibility, safety, connection to downtown, traffic patterns and economic development
- ❖ Identified Value Mismatches

# Value Engineering

## Cost Reduction

- Align station square footage with new Metra Standards
- Reduce excavation at plaza
- Limit construction engineering scope
- Platform cost re-assessment

## Cost-Neutral Value Adds

- Improve pedestrian interface at Crescent Boulevard
- Examine sustainable components related to stormwater management and natural lighting
- Use durable materials that decrease future maintenance costs

# Value Engineering

## VE related cost reduction summary

- Reduction of $6.4 million project cost
- Additional reductions are being explored

| Item | 10 PCT OPC | VE Adjustments | Cost Reduction |
|---|---|---|---|
| Station Depot - 2022 Cost | $6,445,945 | $4,892,000 | $1,553,945 |
| Platform and Warming Shelters – 2022 Cost | $9,104,923 | $7,857,000 | $1,247,923 |
| Roadway, Parking, Site Work - 2022 Cost | $3,873,975 | $3,624,000 | $249,975 |
| Design Contingency & Escalation | $11,997,000 | $9,192,800 | $2,804,200 |
| Construction Subtotals | | | $5,856,043 |
| Construction Engineering | $4,062,500 | $3,500,000 | $562,000 |
| **Total Project Cost Reduction** | | | **$6,418,043** |

# Value Engineering

## 10PCT OPC Cost Summary

| Item | 2022 Cost | Design Contingency (20%) | Escalation (to 2025) | Totals |
|---|---|---|---|---|
| Station Depot | $6,445,945 | $1,289,175 | $1,392,211 | $9,127,331 |
| Platform and Warming Shelters | $9,104,923 | $1,820,965 | $1,966,504 | $12,892,392 |
| Plaza | $756,630 | $151,324 | $163,419 | $1,071,373 |
| Underpass Including Ramps and Stairs | $8,658,834 | $1,731,748 | $1,870,156 | $12,260,738 |
| Roadway, Parking, Site Work | $3,873,975 | $774,787 | $836,711 | $5,485,472 |
| **Construction Subtotals** | $28,840,000 | $5,768,000 | $6,229,000 | **$40,837,000** |
| Phase I Engineering | | | | $762,754 |
| Phase II Engineering | | | | $3,971,481 |
| C&M/Lease Agreement | | | | $1,000,000 |
| Construction Engineering (CE) | | | | $4,062,500 |
| **Project Total** | | | | **$50,633,735** |
| (*) Utility Replacement | | | | $2,900,000 |
| **Revised Project Total** | | | | **$53,533,735** |

*(*) For consistency, the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed.*

# Value Engineering

## Adjusted 10PCT OPC Summary

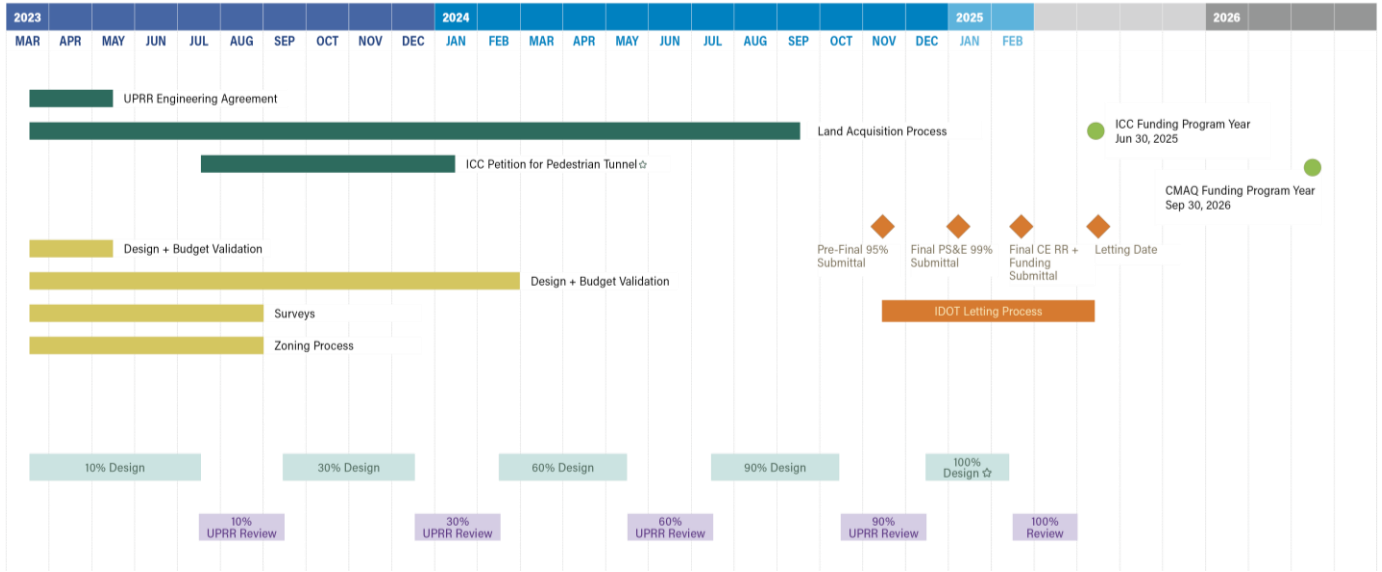
| Item | 2022 Cost | Design Contingency (20%) | Escalation (to 2025) | Totals |
|---|---|---|---|---|
| Station Depot | $4,892,000 | $978,000 | $766,000 | $6,636,000 |
| Platform and Warming Shelters | $7,857,000 | $1,571,000 | $1,230,000 | $10,658,000 |
| Plaza | $757,000 | $151,000 | $118,000 | $1,026,000 |
| Underpass Including Ramps and Stairs | $8,659,000 | $1,732,000 | $1,355,000 | $11,746,000 |
| Roadway, Parking, Site Work | $3,624,000 | $724,800 | $567,000 | $4,915,884 |
| **Construction Subtotals** | $25,789,000 | $5,156,800 | $4,036,000 | **$34,981,884** |
| Phase I Engineering | | | | $762,754 |
| Phase II Engineering | | | | $3,971,481 |
| C&M/Lease Agreement | | | | $1,000,000 |
| Construction Engineering (CE) | | | | $3,500,000 |
| **Project Total** | | | | **$44,311,884** |
| (*) Utility Replacement | | | | $2,900,00 |
| **Revised Project Total** | | | | **$47,211,884** |

*(*) For consistency, the costs of the utility replacements in Crescent Boulevard and the streetscapes and utility replacement scope on Park Avenue was not included in the "Construction Subtotal" and "Project Total" because it was not part of the scope when the previous estimate was completed.*

# Value Engineering

## Impact of delays

- Grant sunset dates (award by 9/30/2026)
- Adversely impacts “project readiness” which impacts funding opportunities
- Construction cost escalation
  - Currently +/- 5% to 6% per year
  - Negates some or all of cost reductions from VE Study



## Grant Status

Glen Ellyn has secured
**$23.4M**
in grant funding

## Prior Funding Commitments

- $14.4M CMAQ
- $2M ICC
- $4M Metra

## Additional Awards in 2023

- $3M ICC Grade Crossing Protection Program

## Potential Future Funding

- CMAQ/Shared STP
  - Top scored transit facility in Shared STP
  - On contingency list for additional **$10.8M**
  - Reapply in 2025 once design is advanced
- Metra contribution alignment (UP force account work)

# Station Design

## Project History

- Public Outreach
- Stakeholder Engagement
- Historic Preservation Committee Support

## Value Engineering Revisions

- Align station square footage with new Metra Standards
- Improve pedestrian interface at Crescent Boulevard / Forest Ave

## Next Steps

- Board Workshop
- Value Engineering Approval
- 10% Design Package

# Station Design

1926 Glen Ellyn Station – Design Inspiration

CDM Smith Conceptual Rendering

## Project History

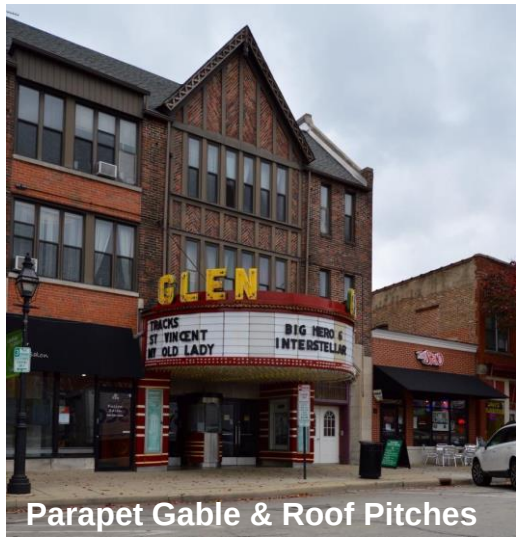
- Public Outreach
  - Public Workshop
  - Survey with over 800 responses
- Stakeholder Engagement
  - Capital Improvements Commission
  - Board of Trustees
  - Historic Preservation Commission provided letter of support noting the project will be more fitting than existing station within Glen Ellyn's Historic District
  - Consulting Parties

# Station Design

Harmonious design elements and materials with other notable downtown buildings

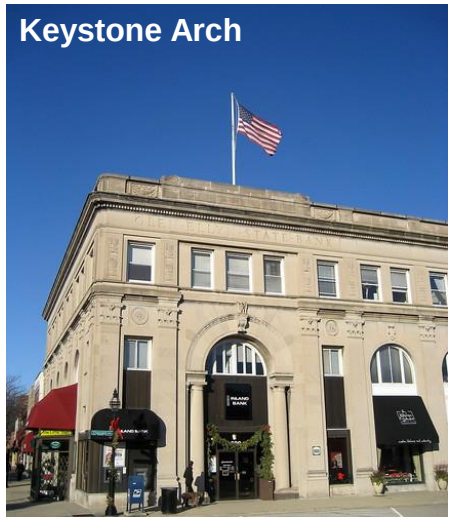
CDM Smith Conceptual Rendering

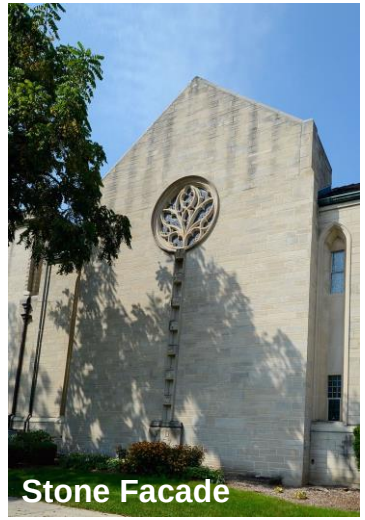
## Design References

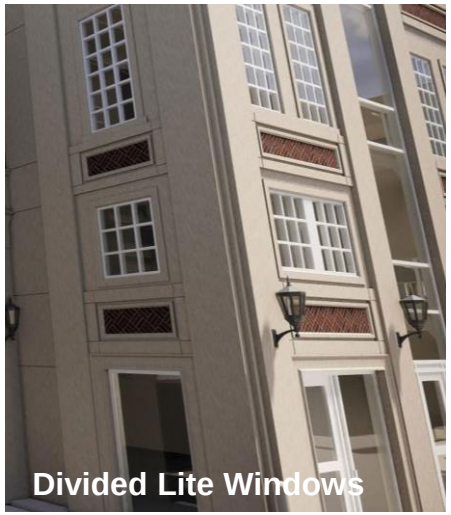


Parapet Gable & Roof Pitches

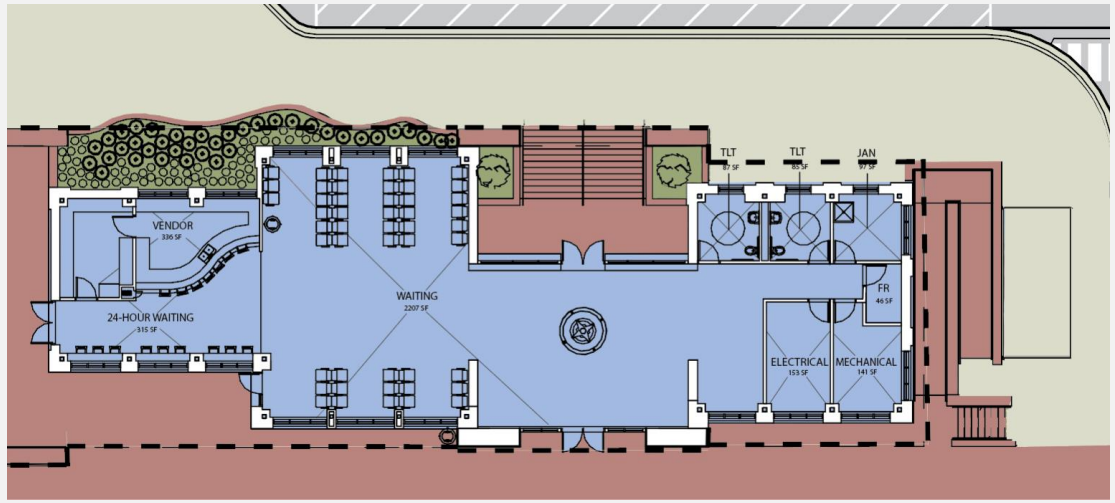
Limestone & Brick


Keystone Arch

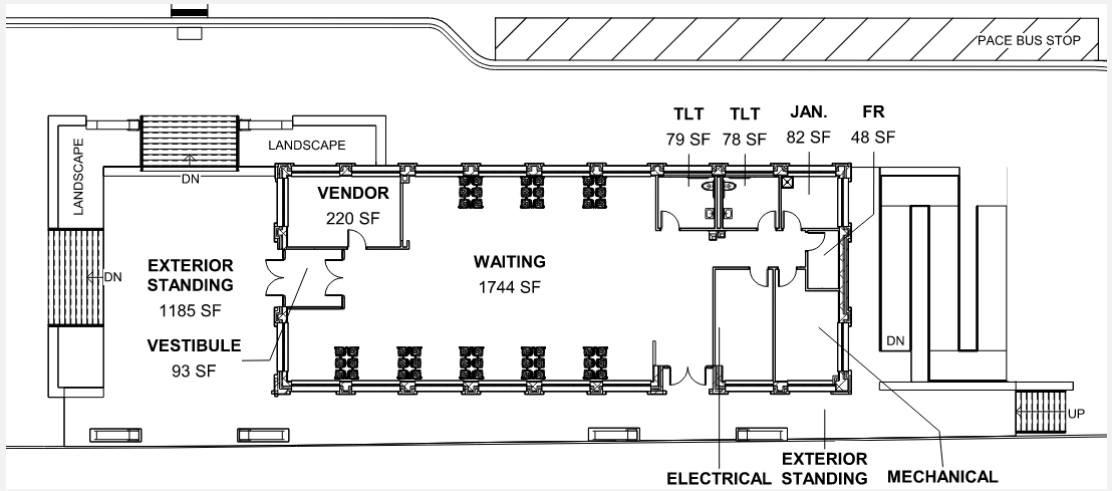

Stone Facade


Divided Lite Windows

# Station Design




**Previous conceptual station layout – Approx. 3,600 SF**

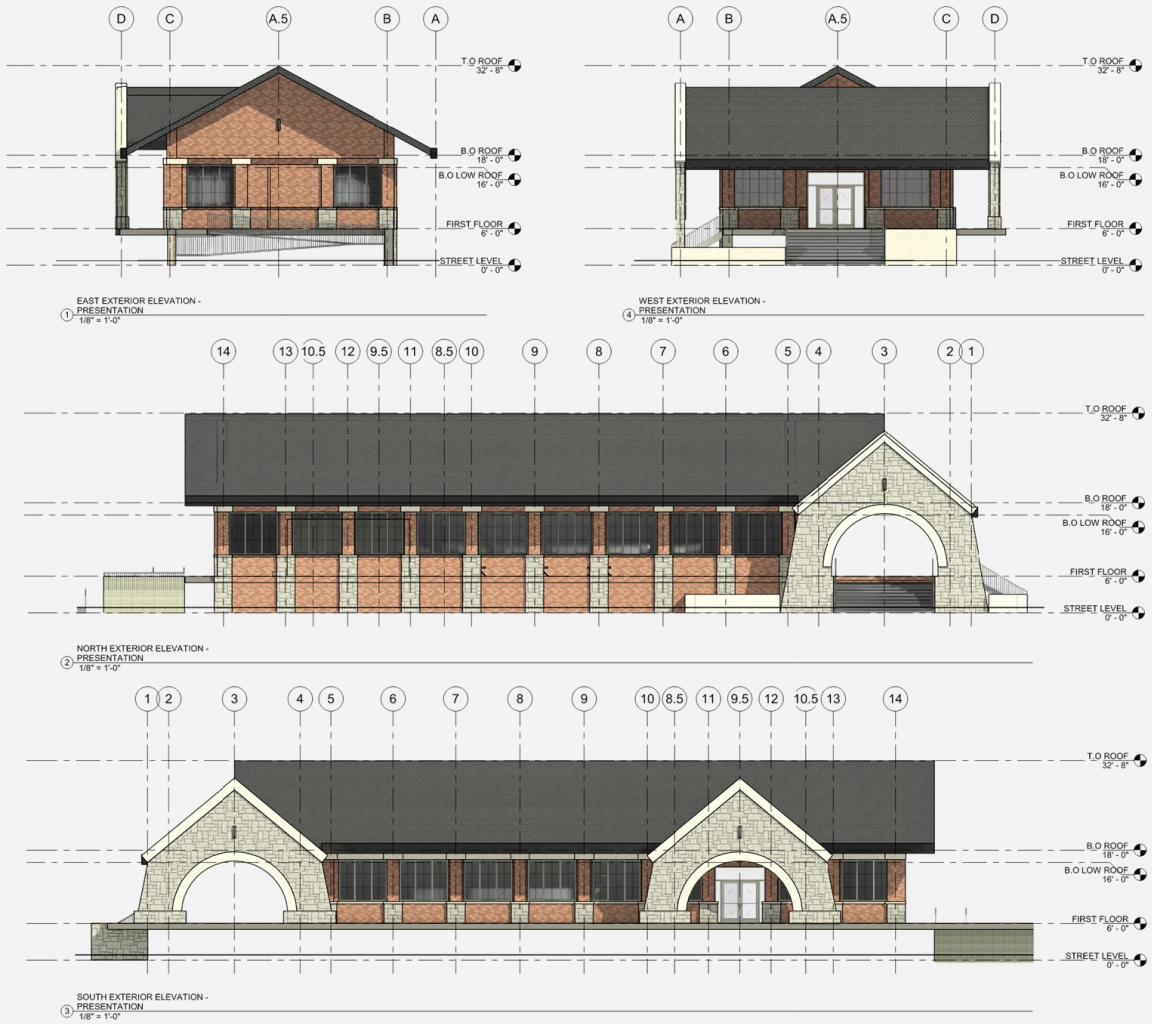



**Conceptual reduced station layout – Approx 3,000 SF**

## Value Engineering Revisions

- Alignment with new Metra Standards
  - Waiting area requirements published post-pandemic in 2022, using current growth projections from Metra
  - Reduction of 600 SF and a simplified footprint in the same architectural style result in $2.5M savings
- Improve pedestrian interface at Crescent Boulevard / Forest Ave
  - Align entrance with Forest Ave
  - Improved access from Pace Bus stop

# Station Design




## Next Steps

- Value Engineering Acceptance
  - Capital Improvements Commission Review
  - Board Workshop
  - Acceptance of VE Proposals

- 10% Design Package Review
  - Zoning process
  - Architectural Appearance Commission
  - Historic Preservation Commission
  - Plan Commission
  - Village Board

**Glen Ellyn Capital Improvements Commission**
535 Duane Street
Glen Ellyn, IL 60137

Meeting 8/8/2023 7:00 PM
Department: Public Works
Department Head: Dave Buckley
Category: Report
Prepared By: Rich Daubert

**AGENDA ITEM (ID # 2023-805)**

**DOC ID: 2023-805**

# Engineering Project Report Dated August 4, 2023

**Statement of the Issue:**
The Public Works Engineering Division Project Activity Report Dated August 4, 2023 is attached hereto for review by the Capital Improvements Commission.

**Analysis:**

**Budget Impact:**

**Contribution to Strategic Plan**

**Action Requested:**

**Attachments:**
1. Engineering Project Report 8-4-23

August 4, 2023

# ***ENGINEERING DIVISION PROJECT ACTIVITY REPORT***

## ***CONSTRUCTION PROJECTS IN PROGRESS***

***CBD STREETSCAPE AND UTILITY IMPROVEMENTS – Phase 1 –*** *Contractor:* ***A Lamp Concrete Contractors***
(Project No. 15006; Value of Construction Contract = $5,704,293)

Repair of two cracked concrete panels on Hillside Avenue, one on each side of Main Street, were replaced in July. That marked the final roadway reconstruction item for the Phase 1 Streetscaping work. The Police Department is working on the required amendments to the municipal code to no longer reflect the section of Hillside Avenue between Main Street and Glenwood Avenue as a one-way street. It is understood that this matter will be brought before the Village Board on August 28th. This will allow the applicable signage to be unbagged and final pavement markings for the two-way conversion to be completed.

A walk-through of the entire Phase 1 project area is being scheduled to generate a final punch list. In addition, a walk-through and training are being scheduled in coming weeks before acceptance of the irrigation system that was installed as part of the project. As indicated previously, there is a one-year warranty on the plantings. The plantings adjacent to the Apex 400 building are still to be added by the Developer in accordance with their approved permit plans.

***CBD STREETSCAPE AND UTILITY IMPROVEMENTS – Phase 2-3 –*** *Contractor:* ***A Lamp Concrete Contractors***
(Project No. 15006; Value of Construction Contract = $16,298,499

The major milestones in the Phase 2-3 construction over the past month include pouring of the curb/gutter/carriage walk and paving of the asphalt binder course along the north side of Pennsylvania Avenue and the north block of Main Street; the relatively rapid completion of the underground work along the south block of Main Street; and the beginning of underground work on Crescent Boulevard.

This coming month we expect to see the pouring of curb/gutter/carriage walk and paving of the asphalt binder course along the south half of Pennsylvania Avenue (Prospect to Main) and the south block of Main Street (Crescent to Pennsylvania); completion of underground work along Crescent Boulevard, and the start of furniture zone work (soil cells, electrical conduits, street light foundations, irrigation, planter foundations, etc.) throughout the project area.

With Nicor out of the way of the Phase 2 roadway segments, a new schedule was able to be established for the remaining 2023 work. This schedule is being shared with project stakeholders and the general public. In order to accelerate the work and attempt to meet the original November 1 substantial completion date for the 2023 project elements, overtime and Saturday work by the contractor are being approved on a week-to-week basis where it benefits the overall project schedule. In order to address some expressed business community concerns, a special Village

Board Workshop Meeting has been scheduled for Monday, August 7 to go over the project schedule and discuss existing business support programs as they may apply to downtown businesses.

Nicor is planning to come back into town to complete their new gas main and services installation for the Phase 3 project area, beginning in mid-August with a target completion of the first week of October. The remaining work primarily consists of new main and services along Park Boulevard (Crescent to Pennsylvania), Pennsylvania Avenue (Park to Main) and along Forest Avenue for a short distance on each side of Pennsylvania. It is important to note that the gas main work needs to be completed to ensure sufficient gas delivery capacity for the downtown during cold weather months when gas demand will increase.

New gas main and services will be installed through a combination of directional boring and open cut trenching. Village staff is working with Nicor on means to minimize traffic impacts at the busy Park/Crescent intersection as well as the Phase 3 area in general. Notices are in the process of being distributed to adjacent property owners. This portion of main replacement will be the last currently planned replacement within the downtown.

*Curb & gutter and asphalt binder course in place at the north block of Main Street (photograph taken from Pennsylvania Avenue looking north on Main Street)*

***2023 UTILITY AND ROADWAY IMPROVEMENTS PROJECT –*** *Contractor:* ***R.W. Dunteman***
(Project No. 23002; Value of Construction Contract = $4,377,900)

This project involves the rehabilitation of approximately 6.85 centerline miles of streets throughout the Village of Glen Ellyn, generally located in Arboretum Estates East, Amber Ridge, Brentwood Place, Deerglen Estates, Glen Ellyn addition to Prospect Park, Glen Park Subdivision, Saddlewood, Stacy Woods, and other various streets. The project was awarded to the R.W. Dunteman Company of Addison, IL at the May 22nd Village Board Meeting. V3 Companies was also retained to perform Construction Engineering Services for the Project. The project preconstruction meeting was held on June 9th and included discussions on the project approach and schedule. A project notification letter was then mailed to approximately 750 adjoining properties on June 13th. While the scope of the project is primarily basic resurfacing, staff held a project informational meeting on June 27th to overview the project and answer any resident questions. The project started in force the week of June 26th, beginning with concrete sidewalk removal and replacement. Asphalt surface was paved in the Arboretum Estate East neighborhood the week of July 17th with a few issues encountered relating to the poor base in the recently annexed area that resulted in additional costs for undercuts in multiple spots. Concrete removal and replacement is nearing completion in the Glen Park, Brentwood Place, and Amber Ridge Subdivisions, with landscape prepping and possible pavement milling targeted to begin the week of August 7th. The contractor is also scheduled to start work in areas on the north side of town (Deer Glen, Saddlewood, Stagecoach, Muirwood, Lenox, Grand/Oak) the week of August 7.

***2022 STREET IMPROVEMENTS PROJECT –*** *Contractor:* ***R.W. Dunteman***
(Project No. 22002; Value of Construction Contract = $2,880,474)

This project involved the rehabilitation of approximately 3.4 centerline miles of various streets throughout the Village of Glen Ellyn including Baker Hill Drive, Carleton Avenue, Colcord Place, Crescent Drive, DuPage Boulevard, Phillips Avenue, and the Raintree Subdivision. All work has been completed except for an issue with the rideability of the land bridge joints on Nicoll Way. Village staff has been corresponding with the contractor in writing and held several meetings regarding an acceptable resolution to the land bridge issues. Staff recently came to an agreed scope and cost-shared price to re-pave over the joints, saw them back out, and then re-fill the joints with joint sealer. Staff has directed the contractor to proceed with this work, which is anticipated to be completed in conjunction with upcoming surface paving as part of the above 2023 Utility and Roadway Improvements Project. Current schedule estimates for that project results in this work being targeted for the last week in August or first week in September. Once completed, this project will proceed to close-out.

***TAFT AVENUE LIGHTING INSTALLATION PROJECT –*** *Contractor:* ***Utility Dynamics Corporation***
(Value of Construction Contract = $135,056)

This project will provide lighting improvements on Taft Avenue between Park Boulevard and Nicoll Way. The project scope includes the installation of approximately 1,740 linear feet of directionally drilled conduit, eight light poles and luminaires, two handholes, a new street controller, the installation of a new electric service, tree protection, soil and erosion control, parkway restoration, and final wiring and testing. ComEd installed the meter on April 26th and completed the electrical service connection between the controller and the transformer on May 4th. The light poles and luminaires, which were ordered by the Village several months ago, have been

delayed due to a quality control issue with the castings. The fixtures and poles have a tentative shipping date of September 1st and Utility Dynamics is ready to install them as soon as they arrive. Completion of the project is now targeted for September 15th.

## ***PRIVATE DEVELOPMENT PROJECTS INVOLVING SIGNIFICANT PUBLIC IMPROVEMENTS***

***Glen Estates Subdivision***

This project involves the construction of a 7-lot single family residential subdivision on the north side of Hill Avenue between Cumnor Avenue and Golf Avenue. The project involves fully reconstructing Hill Avenue and lowering the roadway and parkways to ensure sufficient stopping sight distance for vehicles traveling along Hill Avenue and needing to stop for vehicles exiting and entering the new residential driveways on Hill Avenue.

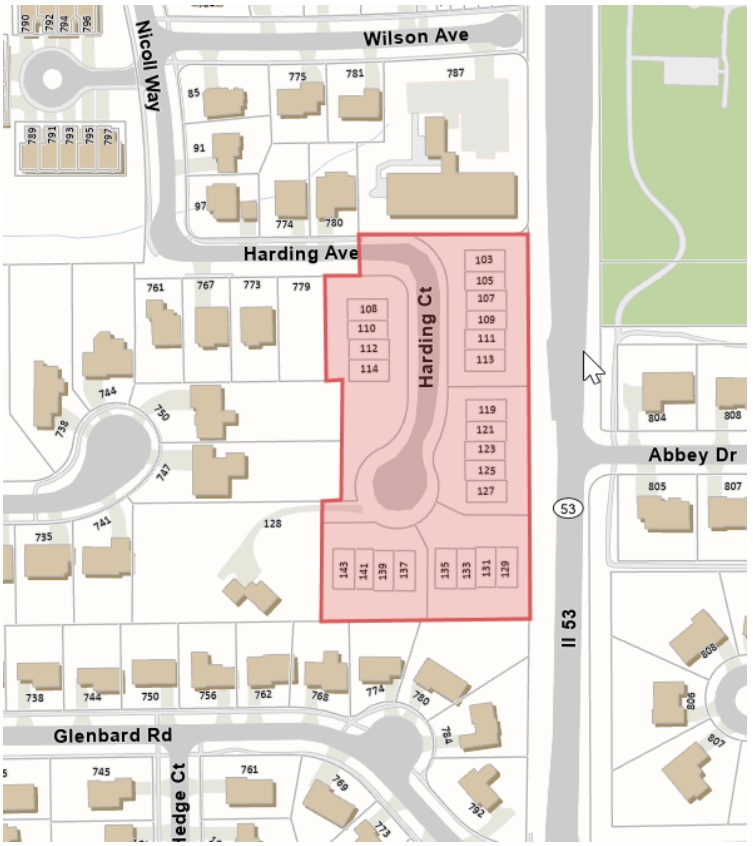
The work on Hill Avenue started in earnest on June 19th with the roadway being closed to through traffic along Hill Avenue. Detours are posted. The pavement has been removed, mass excavation completed, sanitary sewer main and services have been installed, and the on-site storm sewer improvements have been installed. The Contractor was continuing to work on rebuilding both Cumnor Avenue and Golf Avenue as part of the project. However, along Hill Avenue, two major issues were encountered: insufficient water main depth and dry utility conflicts. Prior to these conflicts being encountered, the goal was to complete work on Hill Avenue and reopen it to traffic by the week of July 31st.

Engineering staff has been involved in assisting the Developer with resolving the utility conflicts. Specifically, staff pushed on MCI/Verizon to remove their fiber cable and relocate it to a more proper location. The fiber optic cable was removed on Tuesday, August 1st which will allow the Developer's underground Contractor to resume work on the storm sewer installation and then allow the roadway work to resume. After back and forth with the Developer, the underground storm sewer work will resume on Monday, August 7th. The Developer and Staff are hopeful that the reconstruction of Hill Avenue can then commence on August 16th with Hill Avenue to be reopened by the second week of September.

With respect to the shallow water main issue, staff worked with the Developer's Engineer to develop plans and submit an IEPA permit for replacing approximately 380 feet of water main on Hill Avenue which was improperly installed as part of the Glen Oak Country Club's water main extension project. Work cannot commence on the water main until the IEPA permit is in place. Further complicating the matter, the Village Board has directed staff to further investigate and document the matter with an independent party. This is to ensure the Village has the best possible chance to recoup the costs to rectify the water main elevation issue.

***Harding Glen Townhomes***

This project involves the construction of a 23-unit town home just east of the intersection of Harding Avenue and Nicoll Way (near the major intersection of Illinois Route 53 and Pershing Avenue). The project will include a 450 foot extension of Harding Avenue via the construction of a cul-de-sac. Utility improvements include sanitary sewer main extension, water main extension, storm sewer/drainage improvements, as well as dry utility gas, electric, and communication. The development is slowly advancing towards construction with dry utility installation permits having been submitted to Public Works Engineering. Material submittals have also been submitted to Public Works with Engineering having reviewed and approved most items except for the structure castings and water main items. Engineering has requested that a preconstruction meeting be scheduled with Community Development Staff, the Developer, Contractors, and Utilities.




## ***CONSTRUCTION PROJECTS IN CLOSEOUT***

***UTILITY AND ROADWAY IMPROVEMENTS PROJECT 20001 – PHASE II*** *– Contractor:* ***R.W. Dunteman***

(Project No. 20001; Value of Construction Contract = $4,508,341)

This phase of the project involved the rehabilitation of roadways in the central-west portion of the Village including: Windsor Avenue (Sawyer to Hillside), Sawyer Avenue (Lorraine to west Village Limit), Chesterfield Avenue (Lorraine to west Village Limit), Dawn Avenue (Hillside to Duane), Kenilworth Avenue (Hillside to Duane), Duane Street (Kenilworth to Lorraine) and one street located in the east area of the Village, Carleton Avenue (DuPage to south end). The scope of the work included sanitary sewer main line repairs and service line replacement, water main and service line replacement, storm sewer/drainage improvements, and varying levels of roadway rehabilitation.

The Contractor has completed all work including the resurfacing of Duane Street/Lawrence Avenue between Hillside and Lorraine. The project punch list is also complete except for some dying sod which will need to be addressed in the fall due to the extreme drought and heat. The Engineer is otherwise working with the Contractor to agree on final quantities for the project which will allow for preparing a final balancing change order.

***GLEN ELLYN/IL AMERICAN WATER INTERCONNECT–*** *Contractor:* ***Archon Construction***
(Value of Construction Contract = $219,068)

This project involved the construction of an emergency use interconnection between the Village and Illinois American Water Company (ILAWC) distribution systems, near Glenbard South High School. The interconnection will improve reliability and reduce the water outage areas for the respective utilities in the event of water main breaks. The water main installation work including the punch list is now complete. Materials finally came in for the SCADA/Telemetry equipment with the fabrication and installation work imminent.

***NORTH PARK BLVD. / MAIN STREET IMPROVEMENTS –*** *Contractor:* ***R.W. Dunteman***
(Project No. 13001; Value of Construction Contract = $2,945,000)

Staff and the Resident Engineer have addressed all of IDOT's requests with project closeout in the court of IDOT District 1 Materials.

***TAYLOR AVENUE PEDESTRIAN TUNNEL*** *– Contractor:* ***"D" Construction***
(Project No. 15009; Value of Construction Contract = $3,052,793)

The revised final pay estimate has been transmitted to the State for processing.

# *ENGINEERING PROJECTS*

***MULTIYEAR UTILITY AND ROADWAY IMPROVEMENTS*** *– Engineer:* ***AECOM***

This project involves the design of utility and roadway improvements programmed for 2023 and 2024 as well as future federal aid eligible roadway projects. Design, competitive bidding, and award of the 2023 Utility and Roadway Improvements project is complete. A separate construction update is provided under construction projects in progress.

AECOM continues to work on the design of the 2024 Utility and Roadway Improvements Project based on staff direction provided to the firm in June.

Staff is working with the State and DuPage Mayors and Managers Conference on set up of the projects which will involve the use of Motor Fuel Tax/Rebuild Illinois and potential future federal funding.

***CRESECENT BOULEVARD RESURFACING PROJECT –*** *Engineer:* ***Primera Engineers***

This project involves the rehabilitation of Crescent Boulevard between Lake Road and approximately the east Village Limit (approximately 1.2 centerline miles). Rehabilitation will be in the form of a mill and overlay (resurfacing) of the roadway as well as sidewalk removal and replacement including bringing the sidewalk ramps up to ADA standards. Also included with the project is the construction of new sidewalk on the south side of Crescent Boulevard from Lee to Riford and on the north side of Crescent Boulevard from Crescent Drive to 950 Crescent which is approximately 385' east of Cumnor Avenue.

The Village Board approved execution of a local agency agreement with the State at their July 24th meeting. An award of a contract with V3 Companies for Construction Engineering Services was made concurrently at this meeting. Bids for this project's Construction contract were opened on August 4th, with preliminary results listed below. Please note that at the time of this report, these results have not yet been screened by IDOT or Village staff.

| Bidder | Total Bid |
|---|---|
| **K-Five Construction Corporation of Westmont, IL** | **$1,620,837.88** |
| A Lamp Concrete Contractors, Inc. of Schaumburg, IL | $1,654,959.35 |
| R.W. Dunteman Company of Addison, IL | $1,687,000.00 |
| Plote Construction, Inc. of Hoffman Estates, IL | $1,775,665.50 |
| **Final Engineer's Estimate (Primera Engineers)** | **$2,014,610.50** |
| Alliance Contractors, Inc. of Woodstock, IL | $2,022,273.85 |

Staff will review bids made as part of this letting, and barring any objectional items, will make advise the State to award the construction contract. The low bid will be concurred with the Village Board at the August 28th regular Board Meeting. It is also anticipated that a separate resolution will be presented to the Board allowing for the use of Rebuild Illinois Grant (Motor Fuel Tax Fund) dollars on all eligible portions of the project. Staff is aiming to work with the contractor to complete the bulk of the project in spring of 2024, but it may depend on how quickly the State awards the contract. This strategy is currently preferred to avoid running into weather-related challenges in late 2023. In either scenario, Staff will work to distribute notifications to corridor residents in advance of construction activities. As with all major Village construction projects, a public meeting will be held to provide construction related details and ensure open lines of communication with residents and other interested parties.

***HILL AVENUE UTILITY IMPROVEMENTS*** *– Engineer:* ***Walter E. Deuchler Associates***
(Project No. 00511)

This project involves the construction of sanitary sewer and water distribution system improvements on Hill Avenue between Golf Avenue and the East Branch of the DuPage River. The improvements will ultimately result in the Village's water main being continuous and looped along both Hill Avenue and Crescent Boulevard. Also, this will allow the Village to serve the fronting properties on Hill Avenue with potable water service.

The IEPA water main permit was issued on June 23rd. The IEPA water pollution control permit for the sanitary sewer improvements was issued on July 10th. Still outstanding is the DuPage County Stormwater Certification/Permit.

***TRAIN STATION / PEDESTRIAN TUNNEL*** *– Engineer:* ***CDM Smith/KMI Architects***
(Project No. 16016)

A working draft of the Value Engineering Report was transmitted to staff on July 14th. CDM Smith and Staff agreed that there were further details to sort out concerning the report. An updated draft was transmitted to staff on July 28th. The latest draft is being fine-tuned to provide further clarity on the cursory estimated cost savings. In summary, the report has identified that reducing

the size of the depot by approximately 600 square feet/simplifying the design, minimizing grading/plaza improvements, scrutiny of the platform costs, and scrutiny of construction engineering services could yield an estimated $6.4M in project cost reduction. However, further investigation needs to be made into platform costs. CDM Smith and Staff will be meeting with Metra on August 8th to start further investigations into platform cost reduction. Staff will be presenting on this matter to the CIC on August 8th.

The State did get back to staff on the draft Memorandum of Agreement concerning demolition of the depot. However, the majority of the MOA comments staff and CDM Smith previously provided were not addressed. Staff has requested a meeting with IDOT and FHWA to discuss.

Phase II Engineering continues to move along with survey subconsultant Jorgenson having completed survey work south of the tracks and now working north of the tracks. Track survey work was completed by American Surveying. CDM Smith has requested UP track work survey records. 10% design work is anticipated to start in mid-September.

## ***CONSTRUCTION MAINTENANCE PROGRAMS***

Public Works seeks the best vendor prices for various annual municipal and utility maintenance and operations activities. This effort includes local bidding of projects or joint purchasing initiatives, including the Municipal Partnering Initiative (MPI), a consortium of DuPage County communities.

| Project | 2023 Estimated Glen Ellyn Cost* | Status |
|---|---|---|
| 2023 Sidewalk and Concrete Street Repairs | $301,901 | This annual program includes repairs to deteriorated or damaged sidewalk and concrete roadway infrastructure and the installation of new sidewalk throughout the Village. Schroeder and Schroeder replaced approximately 10,000 square feet of sidewalk in May. New sidewalk excavation on Park Row between Crescent Blvd is completed with the sidewalk concrete placement to be completed the week of August 7th. Phase 2 of the Sidewalk Program will take place in September and will involve concrete street patching and additional sidewalk removal and replacement. Budget breakdown: $150,000 Sidewalk Replacement, $62,500 New Sidewalk Installation, $49,401.20 Concrete Patching, and $40,000 Concrete Restoration Contract (Water/Sewer). |

| Project | 2023 Estimated Glen Ellyn Cost* | Status |
|---|---|---|
| | | <br>Park Row Sidewalk Excavation |
| 2023 Asphalt Roadway Patching | $212,425 | The 2023 Asphalt Roadway Patching contract was awarded to low-bidder, Schroeder Asphalt Services, at the June 26th Village Board Meeting. The project scope includes roadway patching throughout the Village (Capital Fund - $172,750), Reno Center Lot and Newton Lot patching (Water and Sewer Fund - $32,200), and Village Links parking lot patching (Enterprise Fund – $7,475). Patch locations are determined by staff utilizing the Village's Pavement Management System Data and field inspections. Schroeder Asphalt Services plans to begin patching in September. |
| 2023 Pavement Markings | $102,444 | The annual contract line striping contract was awarded to Superior Road Striping (SRS) on April 24th. SRS began refreshing pavement markings on May 15th and completed the work within a week. Target areas for refreshed pavement markings were school zone intersections, several Roosevelt Road intersections, Lambert Rd. (double yellow long lines, intersections, and the bike lanes), and double yellow long lines on Main, Ellyn, Parkside, Crescent, Duane, Kenilworth, Sunset, Riford and the Baker Hill subdivision. The original contract had a "Not to Exceed" value of $85,176; however, extra striping work required a change order, which resulted in the addition of $9,443.90 to the contract price. The scope of the Lambert Rd. re-striping job changed once the double yellow thermoplastic lines were refreshed. PW crews had re-painted the bike lanes in 2022 so they were not included in the '23 project; however, once the other pavement markings were refreshed on Lambert it was decided that the bike lanes should be reinstalled using reflective, thermoplastic materials for an additional cost of $8,653.75. Several crosswalks and stop bars in the vicinity of schools and crossing guard stations were added to the project and also contributed to the extra pavement line striping cost.<br>The Board awarded a contract to Countryman, Inc., for $4,824 to install an alternative material, MMA (methyl methacrylate), at three test locations on concrete streets that have historically had issues with marking longevity: the Crescent Boulevard parking stalls by GBW, the Hill and Main St. crosswalks and stop bars, and two applications |

| Project | 2023 Estimated Glen Ellyn Cost* | Status |
|---|---|---|
| | | of "SCHOOL" on Hill near Bryant Ave. Installation date: July 7, 2023.<br>In April and May, the Streets Division refreshed pavement markings along Crescent, between Main and Forest, and will continue to refresh crosswalk and stop bar pavement markings with paint in various locations this summer. |
| 2023 Crack Sealing | $36,750 | The 2023 Asphalt Roadway Patching contract was awarded to low-bidder, SKC Construction, Inc. at the June 26th Village Board Meeting. This year's program targets candidate locations using Pavement Condition Index (PCI) Study data and visual inspections. SKC plans to crack seal Village streets in September. |
| 2023 Asphalt Surface Rejuvenation | $101,348 | The Board awarded a contract to CAM (Corrective Asphalt Materials) on April 24th.in the not to exceed amount of $101,348. Candidate locations for rejuvenation includes streets that have been resurfaced in the previous one to three years. The unit price for Reclamite® is $0.99/SQ YD and represents a 5.3% increase from the 2021/2022 price. CAM will be applying Reclamite® to streets starting on August 8th. The work is anticipated to take 3 days to complete. |
| 2023 Sanitary Sewer Lining and Repairs | $500,000 | This year's program will provide for sanitary sewer lining and repairs throughout the Village including within the Street Improvements Project Areas. Proposed locations are currently being identified by staff. |

*All costs are rounded to nearest dollar.

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