



## **INFORMATIONAL MEMORANDUM**

**TO: Transportation & Infrastructure Services Committee**  
**FROM: Hari Ponnekanti, P.E., Public Works Director/ City Engineer**  
**BY: Adam Cox, P.E., Transportation Project Manager**  
**DATE: March 18, 2022**  
**SUBJECT: 42<sup>nd</sup> Ave S Bridge Replacement Project -Type, Size, and Location Report**

### **ISSUE**

Update the Council and answer questions asked at the February 14, 2022 Committee of the Whole meeting regarding the Type, Size, and Location (TS&L) report for the 42<sup>nd</sup> Ave S Bridge Replacement project and seek Council direction. Staff recommends the 42<sup>nd</sup> Ave S steel girder alternative due to community feedback.

### **BACKGROUND**

At the October 26, 2020 Committee of the Whole meeting, Council members were presented with the option to move the 42<sup>nd</sup> Ave S Bridge Replacement project forward with the selection of 30% Plans and Estimate (P&E) or the 100% ad-ready Plans, Specifications, and Estimate (PS&E). Included in the 30% P&E was a description of the TS&L report and the two conceptual alternatives for the replacement of the 42<sup>nd</sup> Ave S Bridge:

1. Replace the bridge in its current location; or
2. Replace the structure at S 124<sup>th</sup> St.

Both alternatives are eligible for funding as the new structure will remain in the same corridor. On November 02, 2020, Council directed staff to move forward with the 30% P&E as part of TranTech’s original contract and re-examine alternatives for 100% PS&E once additional funding was secured.

The intent of starting the 30% P&E was to make the replacement project more competitive for the federally funded Local Bridge Program’s (formerly known as BRAC) call for projects that was announced in late 2020, with the due date for the application in February 2021. The City Council adopted funding for the 42<sup>nd</sup> Ave S Bridge as its top state and federal legislative priority. In June 2021, the City was awarded \$1.5M in federal contingency funding from the Puget Sound Regional Council (PSRC) to be applied toward the design phase, and in July 2021, the Local Bridge Program awarded \$12M for the design and construction phases of the 42<sup>nd</sup> Ave S Bridge Replacement Project. These funds will cover all design expenses and move the project well into construction.

Staff conducted the initial consultant selection process for the project in accordance with the Washington State Department of Transportation (WSDOT) Local Agency Guideline (LAG) manual to ensure the selected consultant would be approved by WSDOT and expenses would be eligible for federal grant reimbursement throughout the project. Given that federal protocol was adhered to during the selection process, WSDOT Local Programs Department determined that TranTech is an approved consultant to perform the design work without the need to readvertise or reinterview design consultants, a process that would take a minimum of three months. The ability to move forward with 100% design through the existing contract with TranTech provided the City with costs savings and prevented project delays. The supplemental agreement was issued to TranTech in October 2021 to reach 100% ad ready PS&E enabling future construction bidding. The bid ready PS&E is still on schedule to be completed by the third quarter of 2023.

### **HISTORICAL TIMELINE**

2017	City applied for and did not receive state funding for local bridge replacement
2019	City applied for and did not receive state funding for local bridge replacement
2020	City adopts 42 <sup>nd</sup> St. Bridge Replacement as top state and federal legislative priority
February 2020	Council approves \$1M for 30% design
May 2020	Advertisement for design is published

August 2020	TranTech Engineering, LLC selected
November 2020	Council Awarded 30% Design (Type, Size, Location) to TranTech
June 2021	PSRC Funds Awarded
June 2021	Local Bridge Program Funds Awarded
October 2021	Council Awarded 100% Design to TranTech
December 2021	Draft TS&L submitted for Public Works Engineers for Review
December 15, 2021	Bridge Strike
February 2022	Project included in the State Transportation Package for \$17M in funding and is currently being considered by the legislature
February 14, 2022	Committee of the Whole Discussion on TS&L report
March 21, 2022	TISC Discussion on TS&L report

As part of the 30% P&E, TranTech was tasked with creating a TS&L report to give the City alternatives for replacement of the 42<sup>nd</sup> Ave S Bridge. The TS&L report is an industry design standard that allows the agency to receive multiple alternatives and weighs all outcomes when selecting a structure for replacement. During the TS&L process, TranTech and its subcontractors have used their best engineering judgement to create an accurate report that lines up with the City's best interests when replacing the structure. All four alternatives presented are using the same cross section configuration with 12 ft wide travel lanes, a concrete pedestrian barrier, and a 10 ft wide ADA-approved pedestrian walkway. The differences between the structures are: 1) the structure location; and 2) material used for girders. All four alternatives are eligible for federal funding and grants as they are in the same corridor as the current structure. All alternatives provided below have inherent pros and cons and the comparison matrix found in the draft TS&L report illustrates all the weighted variables and provides a professional rating of each element.

Due to the complexity of each replacement option and the limited scope of work in preparation of the TS&L, each option has had a constructability review at a cursory level. This allows the design team to explore multiple avenues without wasting time focusing on one option that would not be the preferred structure for this project. There are still multiple unknowns that will be investigated during the design process. Once a replacement is selected, TranTech can then focus their efforts to creating a safe, dependable structure that has a design life of 100+ years.

The following alternatives to be considered for the 42<sup>nd</sup> Ave S Bridge replacement are:

- **Alternative 1: New 42<sup>nd</sup> Ave S Bridge with Steel Girders**  
Replace the structure in its current location with the main span consisting of steel girders.
- **Alternative 2: New 42<sup>nd</sup> Ave S Bridge with Concrete Girders**  
Replace the structure in its current location with the main span consisting of concrete girders.
- **Alternative 3: New S 124<sup>th</sup> Street Bridge with Steel Girders**  
New structure at S 124<sup>th</sup> St with the main span consisting of steel girders.
- **Alternative 4: New S 124<sup>th</sup> Street Bridge with Concrete Girders**  
New structure at S 124<sup>th</sup> St with the main span consisting of concrete girders.

## ANALYSIS

Council was presented the four alternatives for the 42<sup>nd</sup> Ave S Bridge replacement at the February 14, 2022 Committee of the Whole meeting. At that meeting, Council had the opportunity to ask City staff and TranTech Engineering staff technical questions about the proposed locations of the 42<sup>nd</sup> Ave S and S 124<sup>th</sup> St replacement locations.

City staff also presented the same presentation at the February 22, 2022 Allentown meeting and gave the opportunity to have community members ask questions regarding the bridge locations. Also at the Allentown meeting, a 3D model was present to allow attendees to observe the 42<sup>nd</sup> Ave S and S 124<sup>th</sup> St alignments from multiple firsthand angles. Many comments and questions were

expressed during the Allentown meeting. The attached table has multiple questions asked by council and community. Please see photographs with the questions/comments written down and posted onto the available boards at the community meeting.

### **PROPOSED NEXT STEPS**

Public Works staff will continue to share and answer comments/questions regarding the 42<sup>nd</sup> Ave S Replacement and gather additional feedback at the monthly Allentown Community Meeting on March 22, 2022 and other community outreach meetings. City staff currently has a video and survey available on the City's website for Tukwila residents, businesses, and daily users to give their feedback on the bridge location selection. City staff will return to Council at the March 28, 2022 Committee of the Whole with the results of the City wide survey and comments from the Allentown meeting to seek Council's direction regarding the selection of the replacement option.

Ad ready 100% plans, specifications, and estimate (PS&E) is still on schedule to be completed in the 3<sup>rd</sup> quarter of 2023 with obligation of construction funds in 2024. City staff will update to the Council after the construction bid results are obtained. Project completion is still estimated in late 2025.

### **FINANCIAL IMPACT**

Based on location preference, the final construction costs will vary. The difference between the 42<sup>nd</sup> Ave S steel girder alternative and the 124<sup>th</sup> S St steel girder alternative is approximately \$2,868,537 (approximately 12%). The Washington State Legislature passed the \$17 billion Move Ahead WA transportation package, which included \$17 million for the replacement of the 42nd Avenue Bridge. The City of Tukwila has also received funding from PSRC and the State Local Bridge program, totaling an additional \$13.5million. According to current engineering estimates, the City now has enough funds to complete the 42nd Avenue Bridge replacement.

### **RECOMMENDATION**

The attached TS&L triple bottom line matrix recommends the steel girder S 124th St as the preferred option. However, staff recommends 42nd Ave S steel girder alternative due to community feedback. Staff seeks Council direction on the preferred location of the 42<sup>nd</sup> Ave S/ 124<sup>th</sup> Street bridge replacement at the March 28, 2022 Committee of the Whole meeting.

**ATTACHMENTS:** 2021 CIP, Pg 9 Revised  
Council Questions and Answer Presentation  
[Draft Type, Size, and Location Report](#)  
42<sup>nd</sup> Ave S and S 124<sup>th</sup> St Bridge Renderings

# CITY OF TUKWILA CAPITAL PROJECT SUMMARY

2021 to 2026

**PROJECT:** 42nd Ave S Bridge Replacement

Project No. 91810404

**DESCRIPTION:** Design and construct a replacement structure for the existing 42nd Ave S Bridge near the Tukwila Community Center. Council approved 30% design with City funding of \$1M in 2020, remaining scheduled in 2022.

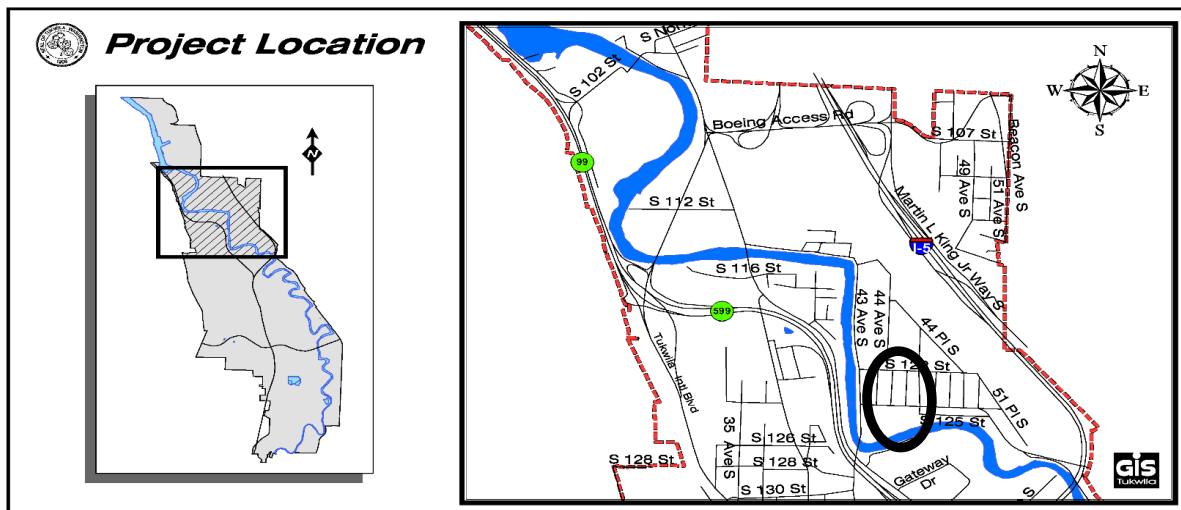
**JUSTIFICATION:** The current bridge has a sufficiency rating of 7.6 (out of 100), is load restricted for AASHTO Type 3 trucks and is structurally deficient. Truck speed was reduced to 15 mph in 2018.

**STATUS:** In 2017 and 2019, Bridge Replacement Advisory Committee (BRAC) funding was submitted, but not awarded. Staff will apply for future BRAC funding during the next call. Applying for STP funding in 2020 for \$1.5m for design.

**MAINT. IMPACT:** New bridge.

**COMMENT:** STP funding has 13.5% match requirement. BRAC funding would be at 80% match for up to \$12 million. Project partners may include FMSIB & BNSF Railroad as they have over 1,800 trips a day on the 42nd Ave S Bridge and it is the only ingress/egress available for their intermodal yard. Also State TIB for \$3M.

FINANCIAL (in \$000's)	Through		Estimated							TOTAL
	2019	2020	2021	2022	2023	2024	2025	2026	BEYOND	
<b>EXPENSES</b>										
Design	19	200	878	248	2,355					3,700
Land (R/W)					200					200
Const. Mgmt.					288	1,380	1,390			3,058
Construction						9,500	9,500			19,000
<b>TOTAL EXPENSES</b>	<b>19</b>	<b>200</b>	<b>878</b>	<b>248</b>	<b>2,843</b>	<b>10,880</b>	<b>10,890</b>	<b>0</b>	<b>0</b>	<b>25,958</b>
<b>FUND SOURCES</b>										
Awarded PSRC Grant				248	1,252					1,500
Awarded WSDOT Grant					302	5,698	6,000			12,000
Proposed Grants						5,000	3,429			8,429
Solid Waste Utility Tax			650	700	700	710	720	549		4,029
City Oper. Revenue	19	200	228	(700)	589	(528)	741	(549)	0	0
<b>TOTAL SOURCES</b>	<b>19</b>	<b>200</b>	<b>878</b>	<b>0</b>	<b>1,289</b>	<b>10,880</b>	<b>10,890</b>	<b>0</b>	<b>0</b>	<b>25,958</b>



City of Tukwila



# 42<sup>nd</sup> Ave S Bridge Replacement Update

March 2022



# Questions and Answers from the 2/14 COW (1 of 6)

- Who makes the ultimate decision for bridge type and location?
  - Council makes the decision for the replacement location
- Is an EIS study required for the 42<sup>nd</sup> Ave S Replacement?
  - An EIS is not required for the bridge replacement. However environmental permits will be filed for the replacement.
- Would a traffic signal be placed at S 124<sup>th</sup> and 42<sup>nd</sup> Ave S intersection?
  - A Traffic signal is not warranted at the S 124<sup>th</sup> St and 42<sup>nd</sup> Ave S intersection.
- Allentown Community has concerns about truck speed on S 124<sup>th</sup>.
  - City staff will evaluate the traffic conditions and implement traffic calming in the Allentown Neighborhood.
- Bridge alternatives are not decided at the 2/14 COW?
  - Correct, Council will only discuss bridge alternatives.
- Will the same information be shared at the next upcoming Allentown meeting?
  - Yes, same information will be presented at the Allentown meeting.

# Questions and Answers from the 2/14 COW (2 of 6)

- What do the scores on the matrix fully represent.
  - City staff receive definitions from TranTech regarding the category and weighted numbers
- Will the Allentown meeting be advertised as 42nd Ave and S 124th?
  - Yes, the project has been labeled 42nd Ave S and S 124th St replacement
- What is the cost difference between the most expensive and least expensive option?
  - The difference is \$4,453,879 or approximately 20% of the total amount.
- What material lasts longer, steel or concrete?
  - Both steel and concrete have a 75+ year design lifespan.
- Why is Council being presented the different materials if both have the same life span?
  - City staff wanted to present Council all the alternatives for the bridge replacement.
- Is the 500-year flood verses the 100-year flood all elevation based?
  - Yes, the S 124 St bridge elevation is higher than the 42nd Ave S location.

# Questions and Answers from the 2/14 COW (3 of 6)

- Why was the 42nd Ave S Bridge constructed in the current location and not at S 124th St.
  - The 42nd Ave S Bridge was constructed in 1949, with no evidence on why that location was selected
- What is the traffic flow at 42nd Ave S and Interurban Ave and S 124th St and Interurban Ave?
  - According to the traffic flow analysis, the current level of service (LOS), taken prior to the strike, at the intersection of 42nd Ave S and S 124th St is a “B” and the LOS at 42nd Ave S and Interurban Ave S is a “C”. If the bridge is replaced at 42nd Ave S (its existing location), the 2040 traffic calculations state that the LOS at 42nd Ave S and 124th Ave S would remain a “B” and the 42nd Ave S and Interurban Ave S would increase to a “D”. If the bridge is replaced at 124th Ave S, the projected LOS at S 124th and Interurban Ave is a “B” with a signalized intersection, and LOS at 42nd Ave S and 124th Ave S would remain a “B”. In this calculation, “A” is a better LOS and “D” is a worse LOS.
- What is community’s the feedback?
  - The Allentown community has indicated they prefer the 42nd Ave S alternative. City wide survey is available for residence and users of the bridge to leave their feedback.
- Do not lose sight that the bridge replacement does not stop the truck reroute study.
  - Correct, this is the 42nd Ave S Bridge replacement project that runs parallel with the Allentown Truck Reroute project.



# Questions and Answers from the 2/14 COW (4 of 6)

- What time was the 2/22/2022 Allentown meeting at?
  - The Allentown meeting was conducted at 5:30 pm on 2/22/22 at the Tukwila Community Center.
- Can truck traffic be limited once new bridge is constructed?
  - The new structure will be constructed to the WSDOT Bridge Design Manual LRFD standards and without an engineering study to illustrate the impacts to the infrastructure from trucks, restrictions cannot be enforced.
- Can the City of Tukwila be involved with the selection process?
  - Yes, residents can answer the survey posted on the City's website to provide feedback
- How far does the 42nd Ave S corridor extend?
  - The 42nd Ave S corridor extends the length of 42nd Ave S and the new structure is required to connect Interurban Ave to 42nd Ave S.
- Is 48th Ave outside of the current corridor?
  - 48th Ave is not in the 42nd Ave S corridor.
- What is the length of the current structure and length of the future structure?
  - The current 42nd Ave S Bridge has 220 ft main span. The proposed 42nd Ave S Bridge has a main span of 250 and the S 124th St has a main span of 220 ft.

# Questions and Answers from the 2/14 COW (5 of 6)

- Will the old structure be used for the temporary bridge during construction of the new 42nd Ave Bridge?
  - The old superstructure could be used as the temporary structure during construction.
- How much additional space is needed to construct the S124th St bridge and which properties would be affected?
  - TranTech is providing cross sectional of the S 124th St and 42nd Ave S intersection.
- Will the property's at 42nd Ave S and S 124th St be impacted?
  - There will be impact to property's during construction.
- Have the homeowners been contacted about the intersection?
  - Properties owners have been contacted during the Allentown meeting.
- Will the Allentown meeting be virtual or in-person
  - The Allentown meeting was in-person at the TCC on 2/22/22.

# Questions and Answers from the 2/14 COW (6 of 6)

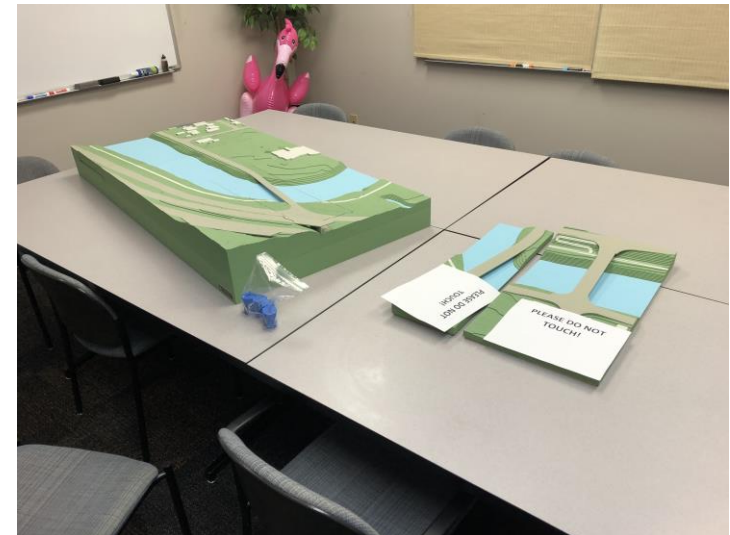
Item	42nd Ave S Steel	42nd Ave S Concrete	S 124th Ave Steel	S 124th Ave Concrete
<b>Cost</b>	\$24,372,157	\$25,957,499	\$21,503,620	\$22,962,950
<b>Design life</b>	75+ years	75+ years	75+ years	75+ years
<b>Design Timeline</b>	Complete 3rd Quarter 2023	Complete 3rd Quarter 2023	Complete 3rd Quarter 2023	Complete 3rd Quarter 2023
<b>Construction Timeline</b>	approx. 275 working days	approx. 275 working days	approx. 253 working days	approx. 253 working days
<b>Seismic Design</b>	Rated for a 1,000 year return event earthquake	Rated for a 1,000 year return event earthquake	Rated for a 1,000 year return event earthquake	Rated for a 1,000 year return event earthquake
<b>Traffic Flow</b>	Same traffic configuration	Same traffic configuration	New added signal at S 124th and Interurban Ave	New added signal at S 124th and Interurban Ave
<b>Annual Maintenance Costs</b>	\$2,000/year	\$1,000/year	\$2,000/year	\$1,000/year
<b>Right-of-way</b>	City owned ROW	City owned ROW	City owned ROW and small improvements to Northeast and Southeast corners at S 124th and 42nd Ave S Intersection	City owned ROW and small improvements to Northeast and Southeast corners at S 124th and 42nd Ave S Intersection

# Is a Transportation Impact Analysis (TIA) required?

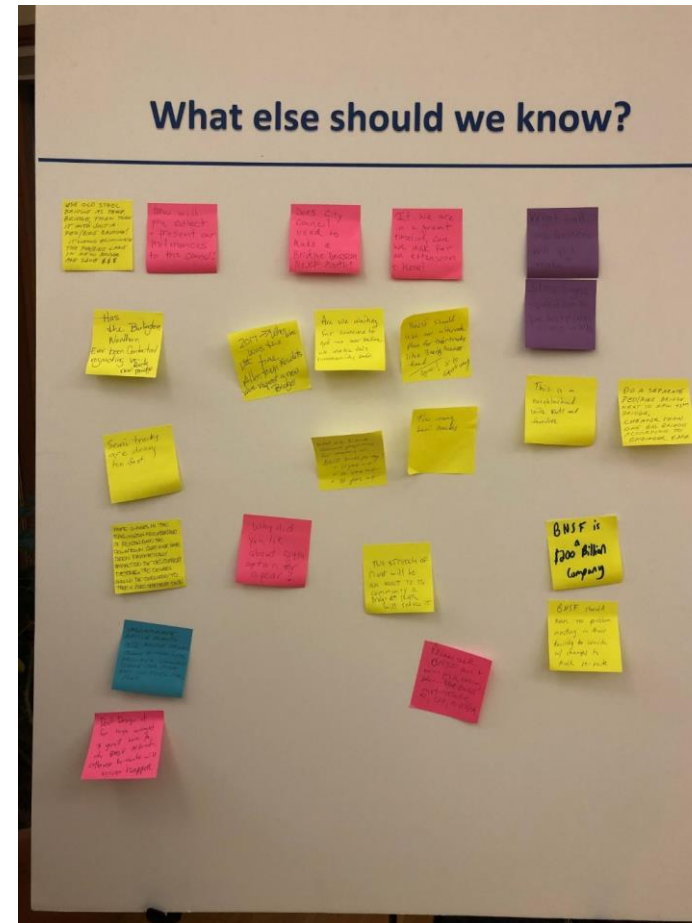
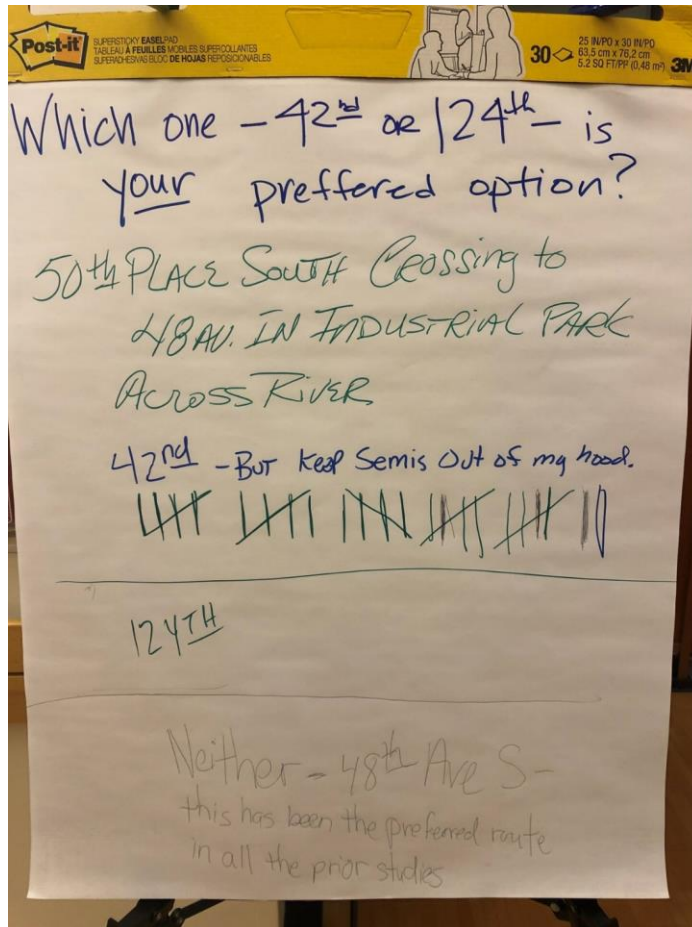
- A TIA is not required for this project as the new bridge structure does not generate new or additional traffic. TIA's are required for new developments (I.E. shopping centers, housing developments...) as traffic patterns will change. The proposed replacement of the 42<sup>nd</sup> Ave S Bridge will see the same traffic.
- A traffic analysis was performed as part of the TS&L and studied the level of service (LOS) at the affected intersections with today's traffic volume and traffic volumes in 2040.
- Please refer to page 129 of the TS&L for the traffic analysis.

# 2/22/2022 Allentown meeting

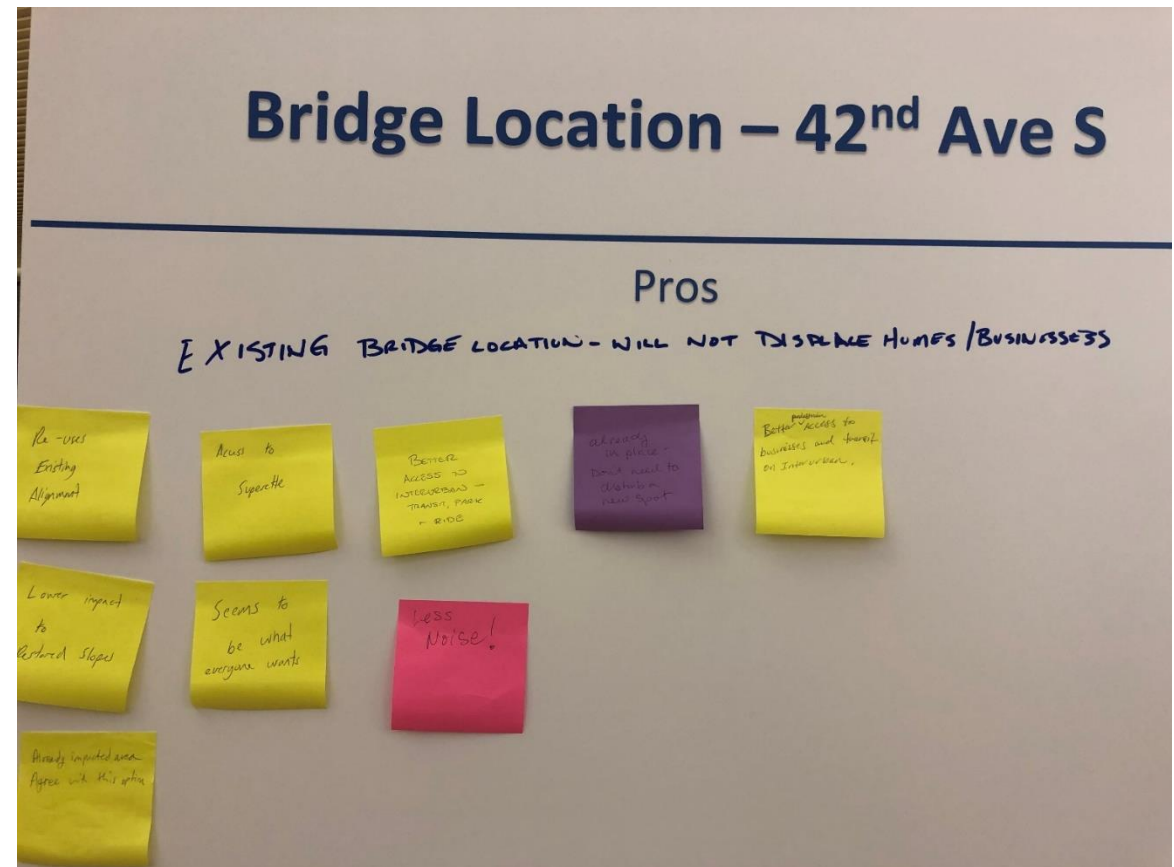
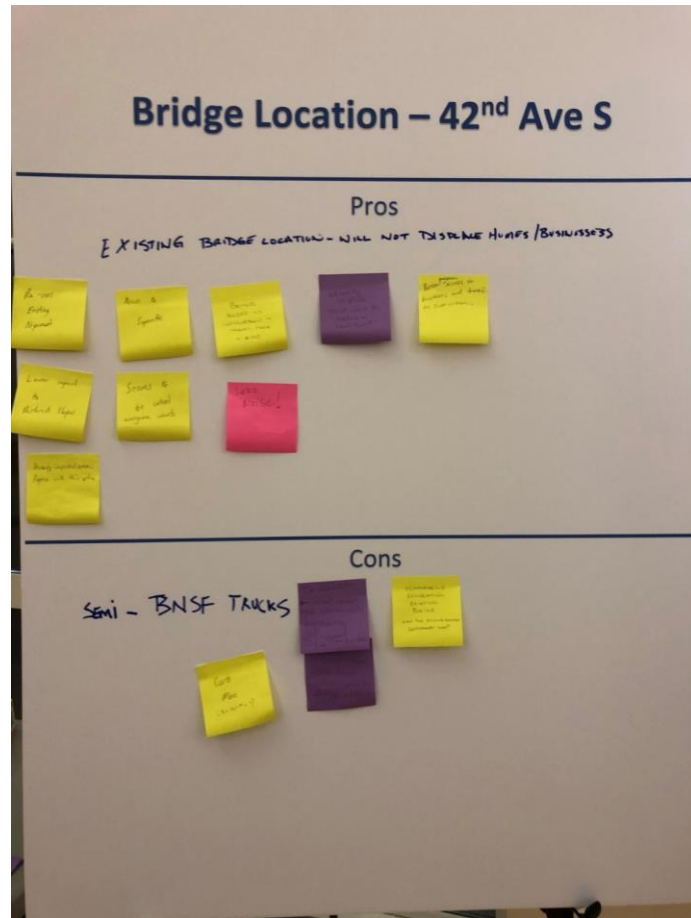
- Staff conducted an Allentown meeting on Tuesday, February 22<sup>nd</sup> at the Tukwila Community Center.
- A 3D model was present for attendees to visualize both alignments. Please see the photograph below of the 3D model
- There were approximately 45 individuals that attended the Allentown meeting. The City received 27 votes for the preferred location. Please see the next slides with total votes and comments left by attendees.
- Please see the next slides of input given at the Allentown meeting



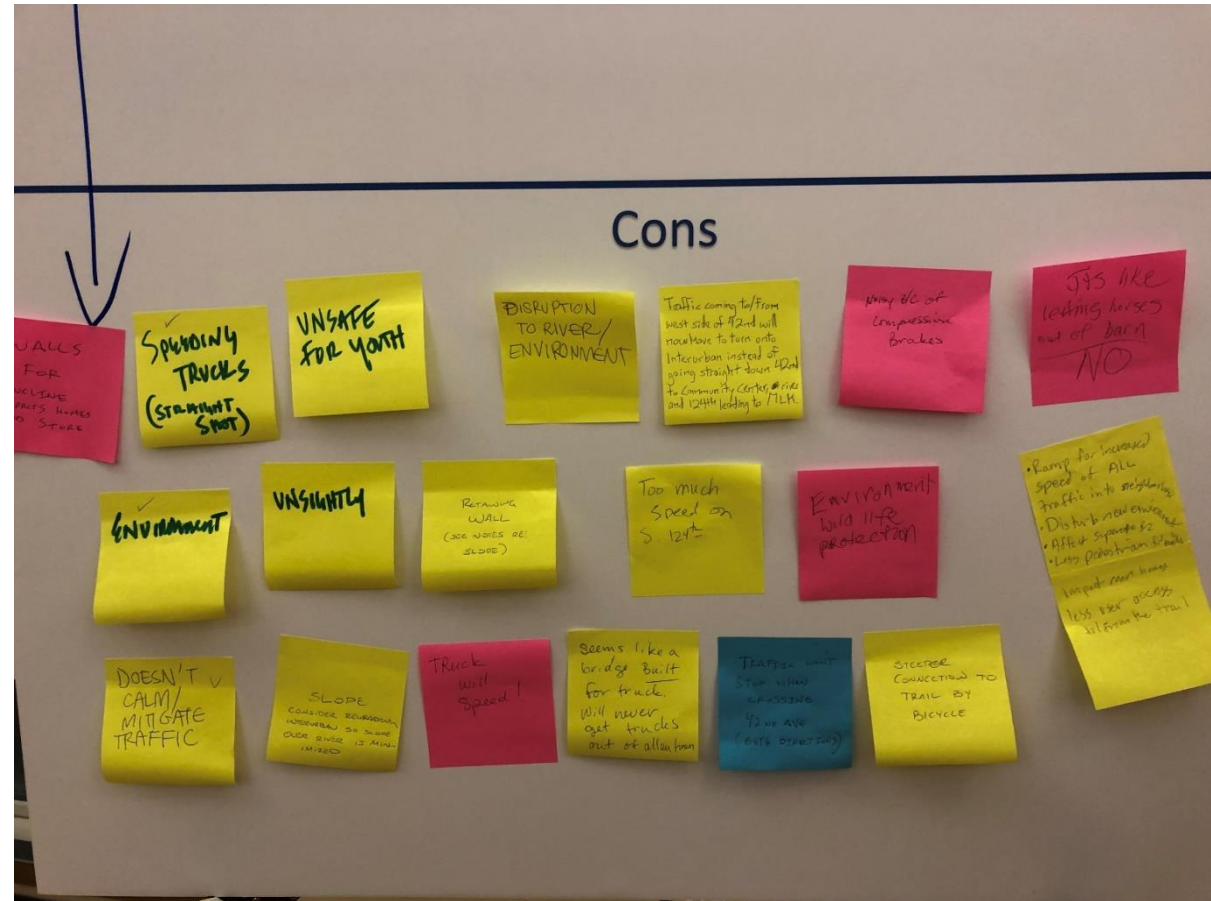
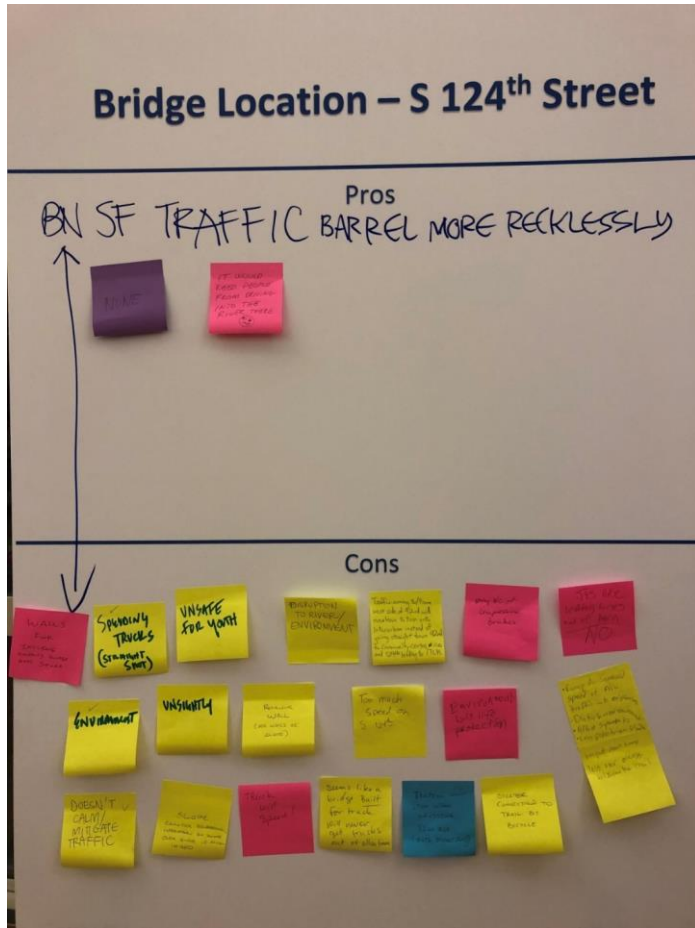
# Input from the 2/22/2022 Allentown meeting



# Input from the 2/22/2022 Allentown meeting



# Input from the 2/22/2022 Allentown meeting





# Pros & Cons

## 42<sup>nd</sup> Ave S Alignment

- Pros
  - Familiar traffic pattern
  - No impacts to private property
  - Allentown residents preferred option
- Cons
  - Possible hydrological/scour issues
  - Temporary structure during construction required and impact to the splash park
  - Most expensive option

## S 124<sup>th</sup> Street Alignment

- Pros
  - Best hydrological placement and flood rating
  - Traffic control during construction
  - Least expensive option
- Cons
  - Unfamiliar traffic pattern
  - Potential impacts to private property
  - Allentown residents do not prefer this option
  - Residents feedback that the trucks will barrel through 124<sup>th</sup>
  - Residents feedback that possible environmental and wildlife disturbance
  - Adverse affects on the superette store

# Recommendation

**Staff recommends 42nd Ave S steel girder alternative due to community feedback.**

**42<sup>nd</sup> Ave S Bridge Renderings**



42nd Ave S Bridge Elevation Looking North Rendering



42nd Ave S Bridge Elevation Looking North Rendering

**S 124<sup>th</sup> Street Bridge Renderings**



S 124th St Bridge Looking East Rendering



S 124th St Bridge Elevation Looking North Rendering