

# Memo

Date: Wednesday, December 23, 2020

Project: US14A/US85 Deadwood Box Corridor Study

To: Study Advisory Team

From: HDR

Subject: Initial Concept Elimination from SAT Meeting #3

## Introduction

Study Advisory Team (SAT) Meeting No. 3 was held on December 18, 2020 and eleven build concepts were presented and additional concept ideas were identified. The concepts were discussed resulting in an agreement for concepts to be presented to the public and a few concepts that were considered for elimination. This memo was prepared to document the discussions that occurred during the meeting including the additional concept ideas and concepts that were eliminated from further analysis.

## Additional Drainage Structure Concept Ideas

Two variations of a drainage structure tunnel were discussed as potential additional concepts. The concept ideas are listed below along with their merits and drawbacks. Rough alignments for these two options can be found at the end of this memo.

- 1) **Concept 6a:** Tunnel the drainage structure under the hillside between Sherman Street and the existing box outlet
  - Advantages
    - Future maintenance to the box and tunnel on the north end would have minimal impacts to traffic.
    - A CLOMR will likely not be required.
  - Drawbacks
    - Similar to Concepts 1b, 1d, and 2c, moving the north end of the channel to the east of its existing location complicates the constructability. These options would require extensive excavation to create the new channel. While constructing the new channel, shoring of the existing structure or adjacent buildings would be required in some areas due to the destabilization of the existing box. These options may require a long traffic closure along the existing US14A/US85 route for construction of the crossover point between the existing and new channel. During this time, traffic would likely need to be routed along Upper/Lower Main Street.
    - Impacts to one building.
    - Tunnel may not be deep enough or have enough cover on the west side. Open cut may be necessary for some of the tunnel excavation, further scaring the hillside.

- Expected high costs of construction due to tunneling.
  - Soils in the hillside are unknown. Reinforcement of the tunnel and ongoing maintenance within a tunnel may be difficult if required.
  - Recommendation: The drawbacks outweigh the benefits. Due to the impacts to a building, the expected high construction costs of tunneling, and the complications to constructability, it is recommended that Concept 6a is not pulled forward into the Initial Analysis of Concepts Report and should be eliminated from further analysis.
- 2) **Concept 6b:** Reroute drainage structure under US85 between Powerhouse Park and Center Street and tunnel the drainage structure under the hillside between Miller Street and to the north of the existing box outlet
- Advantages
    - Minimal impacts to traffic except for the crossing at US85. Box reroute and tunnel can be built almost completely offline of the existing drainage system except for the termination points.
    - Future maintenance to the box and tunnel would have minimal impacts to traffic.
  - Drawbacks
    - Elongates the underground portion of the channel by an additional 1,000 feet. The existing box is approximately 2,000 feet and this option would increase that to approximately 3,000 feet. Due to the significant change to the box inlet and length, a CLOMR may be required.
    - Potential impacts to a total of 6 buildings. The elevation of the drainage structure between Powerhouse Park and Center Street would be the same as the foundations and basements of the buildings the box would need to go underneath. This would impact the buildings the box would need to go under and potentially the surrounding buildings as well.
    - Soils in the hillside are unknown. Reinforcement of the tunnel and ongoing maintenance within a tunnel may be difficult, if required.
    - Tunnel and rerouted box alignment is well outside of the study area. The study would be delayed if this concept is considered for further analysis.
    - Expected high costs initially for construction due to tunneling, high long-term maintenance costs, and property acquisitions.
  - Recommendation: The drawbacks outweigh the benefits. Due to the potential impacts to six buildings, the expected high construction costs of tunneling, and the possibility of a CLOMR, it is recommended that Concept 6b is not pulled forward into the Initial Analysis of Concepts Report and should be eliminated from further analysis.

## Concepts Eliminated from Further Analysis

The following build concepts presented within the Initial Analysis of Concepts Report are recommended to be eliminated from further analysis.

### 1) **Concept 3a:** Overpass

- Reasons for eliminating include:
  - Construction of two structures - drainage structure and the overhead highway structure. The SAT was not in favor of the high cost of building both of these structures when only a drainage structure replacement is needed.
  - Additional costs associated with the 2 structures.
  - High long-term maintenance costs: Concept 3a tied with Concept 4a for the highest maintenance costs and is estimated to have \$3.7 million in maintenance costs over the next 30 years.
  - Snow removal and icing concerns on the bridge/overpass and concerns with public safety.
  - Utility impacts due to the construction of the high embankment, retaining walls, abutments, and piers associated with the bridge.
  - Concerns with the affect the bridge will have on the viewshed.
- Ultimately, the SAT agreed that this concept should be eliminated from further analysis due to the snow removal considerations, high comparative costs, and high utility impacts.

### 2) **Concept 4a:** Tunnel

- Reasons for eliminating include:
  - This is the most expensive concept, with an estimated total cost of \$154 Million, almost 2.6 times higher than the least expensive build concept.
  - This concept is expected to impact 7 buildings, four of which are historic.
  - Concept 4a tied with Concept 3a for the highest maintenance costs. This concept is estimated to have a total of \$3.7 million in maintenance costs over the next 30 years.
  - This concept ranked the second lowest in the evaluation matrix within the Initial Analysis of Concepts Report.
- Ultimately, the SAT agreed that this concept should be eliminated from further analysis due to the building impacts and high comparative costs.

### 3) **Concept 5a:** Highway on Local Network

- Reasons for eliminating include:
  - This is the second most expensive concept, with an estimated total cost of \$110 Million, almost 1.8 times higher than the least expensive build concept.
  - This concept is expected to impact 39 buildings, 25 of which are historic.
  - This concept is estimated to have the third highest amount of maintenance costs, a total of \$3.3 million in maintenance costs over the next 30 years.



- Ultimately, the SAT agreed that this concept should be eliminated from further analysis due to the building impacts, high comparative costs, and significant safety implications of introducing high traffic volumes to a neighborhood roadway.