# Appendix K Stopping Sight Distance

# memo

to **Schaun Valdovinos MS PE P. Eng, COWI**

from **Dave Rodgers PE LEED AP, Jennifer Lathrop RLA**

re **Totem Lake Pedestrian Bridge – Stopping Sight Distance**

date **March 24, 2017**

The purpose of this memorandum is to document the line of sight of vehicles from the west approaching the intersection of Totem Lake Boulevard and NE 124th ST (the intersection) with a new bridge.

## Existing conditions:

Vehicles approaching the intersection from the west are climbing a slight grade on Totem Lake Blvd and flat on NE 124th Street. The signal heads on both approaches are on the far side of the intersection and there are no advance signals. Totem Lake Boulevard curves slightly approaching the intersection from the west.

## Future Projects:

There are some future roadway modification projects in the vicinity with unknown timelines. Two which are most applicable are adding a southbound lane to 124th Ave NE and reconstructing Totem Lake Boulevard. Puget Sound Energy has a transmission line extension planned for this area and they have been coordinating with city staff and they are aware of these projects. It is currently envisioned those projects would occur after the bridge has been designed. With any signal pole and head movement and installation of power poles, the line of sight should be analyzed with the bridge and abutments as they are designed or constructed.

## Stopping Sight Distances (SSD):

AASHTO Policy on Geometric Design of Highways and Streets Chapter 3 Elements of Design provides guidance on Stopping Sight Distance. In Chapter 3.2.2 Stopping Sight Distance, there are two tables for identifying SSD, one for Grades (3-2) and one for Level Roadways (3-1).

**Assumptions:**

- Passenger Driver Eye Height 3.50 ft.
- Truck Driver Eye Height 7.60 ft.
- Brake reaction time 2.5 sec.
- Deceleration rate 11.2 ft./sec*2
- Design speed equal to posted speed of 35 MPH
- NE 124th Street grade is flat (Table 3-1)
- Totem Lake Blvd grade is approximately 3% upgrade (Table 3-2)
- Traffic light is at approximately 20' above ground
- Lowest Bridge Elevation is 16' above grade (worst case)

Using the assumptions above, the tables indicated:

- stopping sight distance of 237 feet for Totem Lake Blvd
- stopping sight distance of 250 feet for NE 124$^{th}$ Street

The next step in the analysis was to create a profile of the roadways with the proposed bridge structure and analyze the line of sight to signal heads. See attached profiles.

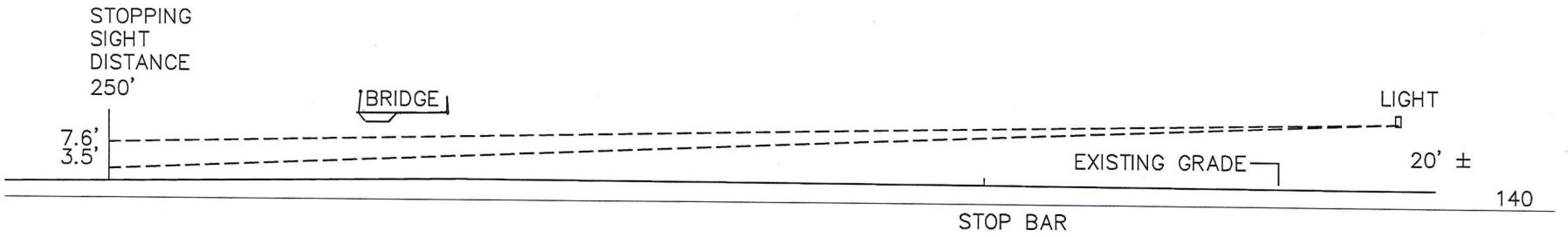
Horizontally, the bridge supports are being planned outside the existing right of way and do not limit the stopping sight distance.

For both approaches, the bridge is not a limiting factor in the line of sight for stopping sight distance.

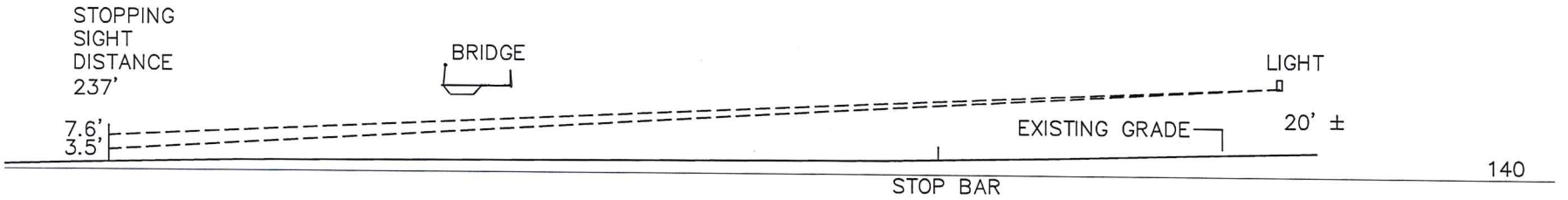
**Conclusions:**

The bridge deck and supports are not limiting factors in the stopping sight distance for NE 124th Street approaching from the west and Totem Lake Blvd approaching from the west.

Future electrical distribution projects, road widening projects, and traffic signal revisions should take into account the signal head locations in relation to approaching vehicles line of sight.




NE 124TH ST.




TOTEM LAKE BLVD

JOB NO: 15094 – JAL/DR
DATE 3/9/2017
SCALE 1"=30' H/V

# TOTEM LAKE COORIDOR
# STOPPING SIGHT DISTANCES

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