Exhibit B-61: HDR Memorandum: Grip Road Gravel Pit Traffic Impact Analysis by County Staff (May 14, 2020)

Memo

Date: Thursday, May 14, 2020

Project: Concrete Nor'West Grip Road Gravel Pit Project

To: Michael Cerbone, Assistant Director, Skagit County Planning and Development Services

From: Kevin Stankiewicz, PE

Subject: Grip Road Gravel Pit Traffic Impact Analysis by County Staff

Copy to: Hal Hart, Joe Amaro, John Cooper, Forrest Jones and Paul Randall-Grutter, Skagit County; Rona Spellecacy, HDR; project file

Introduction

This memo is a review of the Concrete Nor'West Grip Road Gravel Pit project traffic impact analysis in the "Prairie Road/Grip Road Intersection Study" memo dated 2017, performed by County staff member Given Kutz.

Traffic Counts

The original 2016 traffic counts referred to in the "Prairie Road/Grip Road Intersection Study" memo (2017) were roadway segment Average Daily Traffic counts, according to County staff. The 2016 peak hour turning movements were estimated by County staff based on the intersection leg ADT counts. A comparison of the estimated 2016 turning movement volumes to the actual 2013 and 2019 turning movement counts, provided by the applicant, showed that the turning movement volumes are similar. The total peak hour entering volume estimate of 213 vehicle in the year 2016 is more than the actual 204 vehicles entering in the year 2013 and is almost the same as the counted 212 vehicles entering in the year 2019.

Level of Service Calculations

The Prairie Road/Grip Road intersection level of HCS service calculations, produced by Given Kutz of Skagit County, (referred to in the "Prairie Road/Grip Road Intersection Study" memo 2017) were inspected. This memo contains the analysis of the following four scenarios:

- Existing
- Existing plus 46 trucks a day
- Existing plus 30 trucks an hour
- 25 Year (2041) plus 30 trucks an hour

The alignment of the Prairie Road/Grip Road intersection is not represented correctly in the HCS analysis. It appears that in this analysis, northeast bound Prairie Road is analyzed as eastbound and lines up with northwest bound Grip Road that is analyzed as westbound. Then southwest bound Prairie Road becomes southbound. This means that what are actually northeast bound through trips on Prairie Road are incorrectly are analyzed as left turns and what are actually southwest bound Prairie Road through trips are incorrectly are analyzed as southbound right turns. The roadway and volume directions were

correct in the original Synchro software files, but were incorrectly changed when the Synchro files were converted to HCS software files.

Furthermore, westbound Grip Road left turns onto Prairie Road are incorrectly analyzed as westbound through trips, and eastbound Prairie Road right turns are incorrectly analyzed as eastbound through trips in HCS. As a result, in this HCS analysis the eastbound (left turn) Prairie Road and southbound Prairie Road (right turn) have to yield to the westbound (through) Grip Road traffic, instead of the correct configuration where westbound (left turn) Grip Road traffic has to yield to through traffic on Prairie Road. There are different capacity factors for left turns, through movements and right runs, based on empirical studies. Turn movements must also yield to through movements at a "T" intersection like the Prairie Road/Grip Road intersection. The wrong movement orientation would mean the some movements that should be free flowing must incorrectly yield, and that other movements that should yield are incorrectly free flowing.

The volumes, once oriented the right way, seem similar to the 2013 and 2019 counts, except the eastbound Prairie Road through to Grip Road seems low (24 in HCS versus 39 in 2013 count and 51 in 2019 count) and the southbound Prairie Road right turn onto Prairie Road seems high (60 in HCS versus 42 in 2013 count and 34 in 2019 count).

The "Grip Road Gravel Pit Preliminary Traffic Information" memo, by Garry Norris at DN Traffic Consultants in February 2016, states that the Grip Road Gravel Pit will produce 46 trips per day, with eight trips in the peak hour (four per direction); however, in the existing plus 46 trucks a day scenario HCS file only three trips in each direction were added to westbound Grip Road and eastbound Prairie Road. Also the truck percentage was incorrectly increased on the eastbound Prairie Road left turn onto Prairie Road, instead of eastbound through to Grip Road.

The "Grip Road Gravel Pit Maximum Daily Truck Traffic" memo, by Garry Norris at DN Traffic Consultants in November 2016 states that the Grip Road Gravel Pit could produce a maximum of 60 trips in the peak hour (30 per direction); however, in the existing plus 30 trucks an hour scenario HCS file only fifteen trips in each direction were added to westbound Grip Road and eastbound Prairie Road.

The year 2041 plus 30 trucks an hour scenario HCS file is flawed because it is built off of the flawed existing plus 30 trucks an hour scenario. The County determined the two percent annual growth rate based on the measured growth in traffic on Prairie Road. Prairie Road counts northeast of Grip Road show ADT of 1,461 in the year 2014 and an ADT of 1,583 in the year of 2018. This growth is approximately two percent per year.

Sight Distance

The sight distance for Grip Road left turn to Prairie Road from stop (entering sight distance) should be adjusted to account for the combination truck (dump truck and trailer) that will serve the Grip Road Gravel Pit, per AASHTO time gaps. County staff did adjust the sight distance for Grip Road left turn to Prairie Road (from stop), based on AASHTO combination truck time gaps, after the memo was written. The adjusted sight distance is 676 feet.

Findings and Recommendations

The Prairie Road/Grip Road intersection traffic operations analysis under several scenarios, although flawed, showed that the expected project traffic will not have any significant impact to the level of service of the Prairie Road/Grip Road intersection.

The applicant should reanalyze the sight distance calculation taking into account the large combination trucks generated by the project. The county should require the design and installation of the applicant and County proposed flashing warning signs at all locations with insufficient stopping or entering sight distance, at both the Prairie Road/Grip Road and at the Project Access Road/Grip Road intersections.