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CC:	
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The purpose of this memorandum is to document the traffic forecasts assumptions and the preliminary traffic analysis for the Knik Arm Crossing.

Forecasts

Traffic forecasts were determined by the transportation demand model.

New a.m. and p.m. peak hour traffic counts were collected on September 15th and October 11th, 2005.

The daily increments were assigned to a.m. and p.m. peak hour projections by applying a calculated "K-factor". A K-factor is basically the percentage relationship between traffic volumes experienced in a peak hour versus traffic volumes experienced over the course of a day. The existing K-factor was calculated for the a.m. and p.m. peak hours by dividing the existing peak hour traffic volumes by existing average daily traffic values obtained from the Alaska DOT at three different locations within the study area. The existing K-factor was calculated to be 7 percent for both the a.m. and p.m. peak hours, that is, 7 percent of the daily traffic experienced within the study area can be expected during one peak hour of the day. The study area where this K-factor was calculated currently experiences an even distribution of traffic flow over the course of the day. However, if the Knik Arm Crossing is constructed, the tendency towards commuter traffic patterns is likely, such that the a.m. and p.m. peak hours will experience substantially more traffic than the other hours of the day. As a result, a K-factor of 10 percent was used to produce a more conservative analysis, and because it represents a more typical commute pattern.

During a typical peak hour in a commuting situation, one direction of travel is typically higher than the other direction to reflect commuters coming into the City in the morning, and leaving in the evening. In order to estimate what the inbound versus outbound traffic flows (directional split) would be on the proposed Knik Arm Crossing during the a.m. and p.m. peak hour hours, the existing directional split along the Ingra-Gambell Couplet, east of Bragaw Street, was determined. The existing traffic flows for the a.m. peak hour were determined to be 81 percent into the city and 19 percent out of the city. For the p.m. peak hour, the existing values were 29 percent in and 71 percent out. Again, if the commuter traffic pattern is likely with a KAC, an unbalanced flow would occur. However, because of associated Port MacKenzie traffic (which was assumed to occur more spread out during the day), a more typical directional split will be experienced. As a result, the percentages that were applied to the peak hour traffic flows northbound and southbound for the Knik Arm alternatives were 60 percent in and 40 percent out for the a.m. peak hour and 40 percent in and 60 percent out for the p.m. peak hour. These directional splits were applied only to the northern links of the Knik Arm crossing, north of Bluff Drive, with the remainder of the system anticipated to experience a more balanced flow.

2010 and 2020 forecasts for the No Action, Degan, and Erickson alternatives were generated by interpolating link volumes between 2003 (existing data) and 2025 (modeled data – note: traffic forecasts from the project model were developed for both 2025 and 2030). 2010 (opening year) and 2020 (mid-year) link volumes were calculated as a weighted average of 2003 and 2025 link volumes. 2030 (design year) forecasts were used directly from the transportation model.

In year 2030, two alternatives were analyzed; the Degan alternative and the Erickson alternative. The assumptions of K-factor and directional factors were as described above. Descriptions of the alternatives can be found the *Transportation System* Technical Report and modeled volumes for 2025 and 2030 can be found in the Transportation Modeling Report (Appendix I)

Alternatives Analysis

There were 2 Knik Arm Crossing alternatives analyzed:

1. Degan Street Alternative
2. Erickson Street Alternative

There were several roadway modifications and/or improvements that were assumed to occur as part of the development of the alternatives, or were identified to be done as part of adopted plans. The following improvements were assumed in the Baseline analysis:

- For alternative 1, the intersection at Ocean Dock Road/Port Access Road was assumed to be a T-intersection with Port Access Road being stop controlled.
- For alternative 2 and 3, the intersection at Hollywood/Loop Road was assumed to include a left-turn pocket, through lane, and a shared through/right-turn lane for both the north and south approaches. In addition, the left-turn movements were assumed to be protected (green arrow) compared to the existing protected/permitted left turn phasing (green arrow/yield on green ball).
- For all of the alternatives, the intersection of Ocean Dock Road/Port Access Road was assumed to be signalized.

There were several other roadway modifications that were needed to mitigate the intersections which operated below LOS D.

- The intersections along 3rd Avenue with Ingra -Gambell Street s will become signalized
- For the Degan Alternative, an additional southbound through lane will be needed through the intersection of Loop Road and Erickson Street.

Figure 1 Shows the channelization and traffic control for the no action condition.

Figure 2 Shows the channelization and traffic control for the Action Alternatives. Note that intersection five improvements apply to the Degan Alternative only. All other intersections are identical for either the Degan or Erickson Alternatives.

The attached table shows the results of the analysis.