

# VINE RD. AT HOLLYWOOD RD. INTERSECTION IMPROVEMENTS

Project No.: 18CR02/ CFHWY00463/ 0001627

## DESIGN STUDY REPORT

ALASKA  
DEPARTMENT OF TRANSPORTATION  
AND PUBLIC FACILITIES

PREPARED BY: BHKPT Engineering  
2900 Spirit Dr.  
Anchorage, AK 99508

April 1, 2021

*Revised May 2019*



NOTICE TO USERS

This report reflects the thinking and design decisions at the time of publication. Changes frequently occur during the evolution of the design process, so persons who may rely on information contained in this document should check with the Alaska Department of Transportation and Public Facilities for the most current design. Contact the Design Project Manager, Jayme Perkins, at (907)-529-0990 for this information.

PLANNING CONSISTENCY

This document has been prepared by the Alaska Department of Transportation and Public Facilities according to currently acceptable design standards and Federal regulations, and with the input offered by the local government and public. The department's Planning Section has reviewed and approved this report as being consistent with present community planning.

CERTIFICATION

The Alaska Department of Transportation and Public Facilities hereby certify that this document was prepared in accordance with Section 520.4.2 of the current edition of the department's Highway Preconstruction Manual.

The department has considered the project's social and economic effects upon the community, its impacts on the environment and its consistency with planning goals and objectives as approved by the local community. All records are on file with the Central Region - Design and Engineering Services Division, Highway Design Section, 4111 Aviation Avenue, Anchorage, AK 99502.

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John R. Linnell, P.E.  
Preconstruction Engineer

Date

Todd Vanhove  
Chief, Planning

Date

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## LIST OF ACRONYMS

AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ATM	Alaska Traffic Manual
ATMS	Alaska Traffic Manual Supplement
ATV	All-Terrain Vehicle
BMP	Best Management Practices
CFR	Code of Federal Regulations
DEC	Alaska Department of Environmental Conservation
DOT&PF	Department of Transportation and Public Facilities
EPA	Environmental Protection Agency
ESCP	Erosion Sediment Control Practices
GCI	General Communication Inc.
HMA	Hot Mix Asphalt
HPCM	Alaska Highway Preconstruction Manual
HSIP	Highway
ITS	Intelligent Transportation Systems
KGB	Knik Goose Bay
MEA	Matanuska Electric Association
MOA	Municipality of Anchorage
MPH	Miles Per Hour
MTA	Matanuska Telephone Association
M&O	Maintenance and Operations
NCHRP	National Cooperative Highway Research Program
PER	Preliminary Engineering Report
PIP	Public Information Plan
ROW	Right-of-Way
SOA	State of Alaska
SSD	Stopping Sight Distance
SWPPP	Storm Water Pollution Prevention Plan
TCE	Temporary Construction Easement
TCP	Traffic Control Plan
TIA	Traffic Impact Analysis
TOP	Transportation Operations Plan
USCS	Unified Soil Classification System
USFS	United States Forest Service
USGS	United States Geological Survey

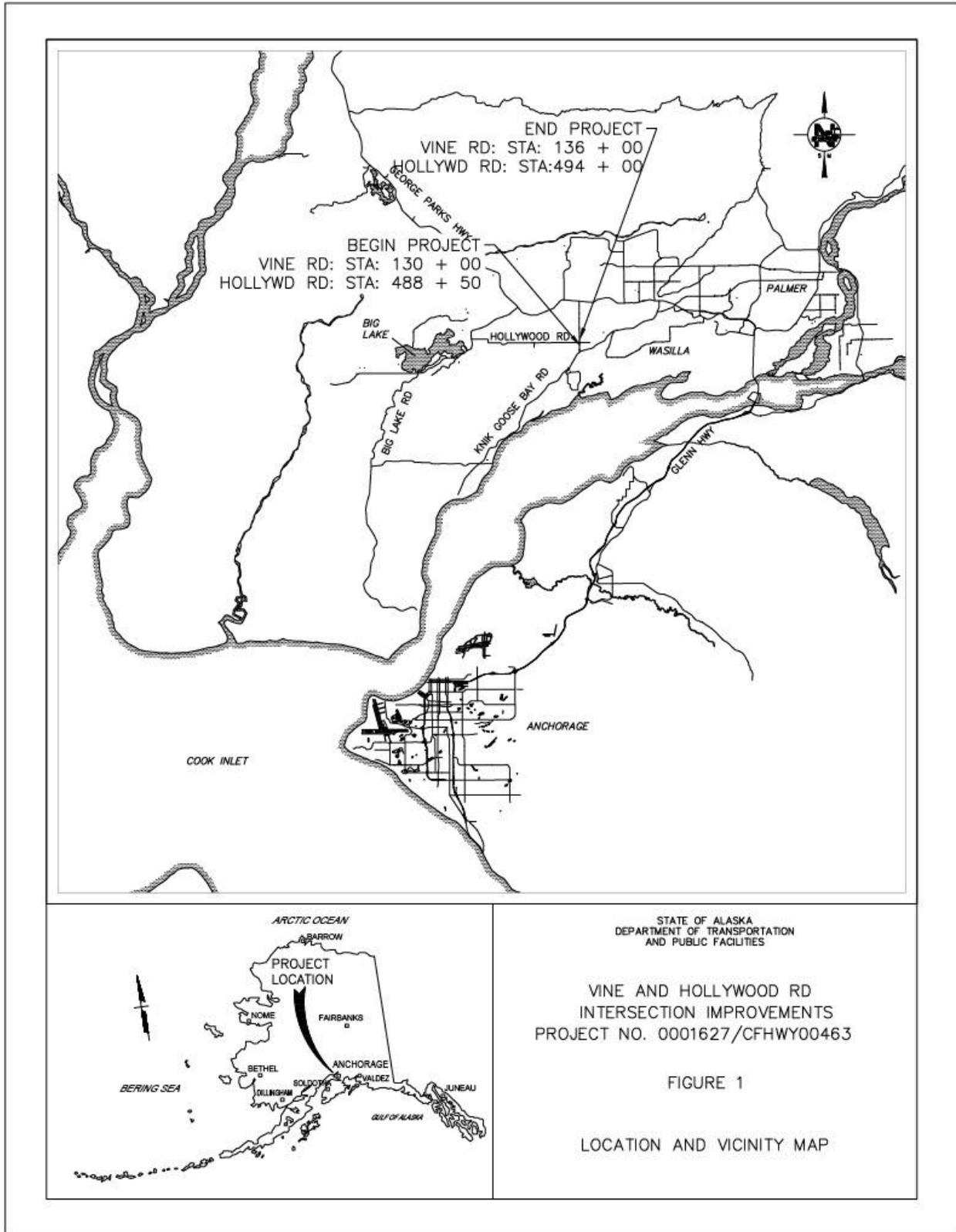


Figure 1: Location and Vicinity Map

## **1.0 PROJECT DESCRIPTION**

Included is the project location, description, existing facilities, land use, and the purpose and need of this Intersections Improvement Project.

### **1.1 Project Location and Description**

The Vine and Hollywood Road Intersection Improvements Project, proposed by the Alaska Department of Transportation and Public Facilities (DOT&PF), is located at Longitude 61.541941° N and Latitude 149.603889° W. It is within the Matanuska-Susitna Borough (MSB) of Wasilla, Alaska, and is approximately 360 ft. (109 m) above sea level. The intersection is around 3,170 ft. (0.6 mi) north of Knik Goose Bay Road. See Figure 1 for Location and Vicinity Map.

Currently, Vine Road is a two lane minor arterial road running north-south, which intersects Hollywood Road, a two lane minor collector road running east-west. Traffic at this intersection is controlled by stop signs on the west and east sides of Hollywood Road. Vine Road has a posted speed limit of 45 mph through the intersection. Hollywood Road has posted speed limits of 45 mph west of Vine Road and 25 mph east of Vine Road. This intersection has been the product of multiple vehicle crashes, the majority of which could have been prevented and/or decreased in severity by an alternative intersection design. DOT&PF performed a Traffic Impact Analysis (TIA) at this intersection from 2009-2013. It showed that throughout this time period, there were 12 traffic accidents that could have been prevented by improvements to the intersection. In 2014, after the aforementioned study period, improvements were made to Vine Road alone, which have led to increased traffic movement through the intersection, thus increasing the likelihood and/or severity of future vehicle crashes. The proposed design alternative includes implementing a roundabout at the current location of the intersection of which contains a single 14 ft. wide lane, an 11 ft. truck apron, and an inscribed circle diameter of 130 ft. The entry lane width is designed to be 16 ft. wide, and the approaching lanes will need to be widened to 14 ft. to accommodate the roundabout. The current pedestrian sidewalk will be realigned with the roundabout, and additional crosswalks will be placed and marked in the design. The existing roadway will be resurfaced, and drainage will be improved. There will be relocation and construction of affected utilities, signage, stripage and revegetation when construction is complete.

## 1.2 Existing Facilities and Land Use

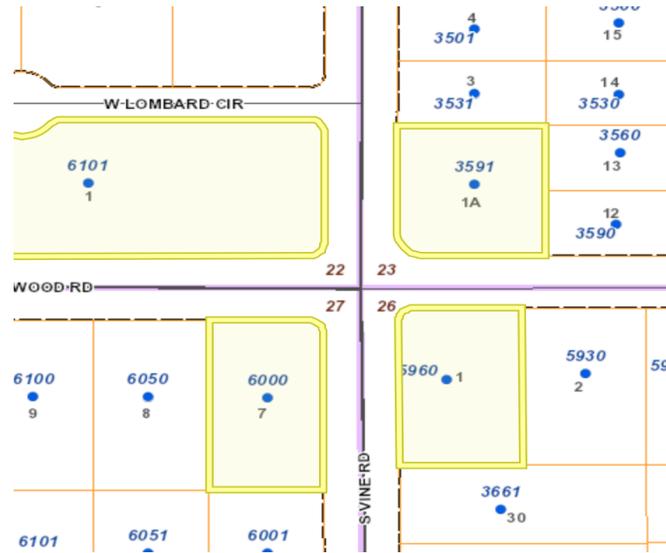


Figure 2: Surrounding Effected Lots

Table 1: Surrounding Property Values

Parcel	Acreage	Land Value	Bldg. Value	Total Value
3591	0.92	\$ 29,700	\$ 49,300	\$ 79,000
5960	0.92	\$ 32,000	\$ 224,000	\$ 256,000
6000	0.93	\$ 25,000	\$ 7,000	\$ 32,000
6101	3.13	\$ 32,900	\$19,900	\$ 52,800

For this section of the report, **1.2**, refer to the above Figure 2 and Table 1.

1st quadrant: Lot #3591

This is a 0.92 acre lot valued at around \$30,000. This lot contains what appears to be multiple abandoned buildings and a large parking area. There are two entrances/exits off of Hollywood Rd. just east of the intersection and two entrances/exits off of Vine Rd. just north of the intersection.

The existing utilities in this quadrant are overhead electric lines operated by MEA, underground communication lines operated by MTA, and an underground gas line operated by ENSTAR.

There are no pedestrian facilities in this quadrant.

2nd quadrant: Lot #6101

This is a 3.13 acre lot valued at \$33,000. This lot can be accessed from a dirt road just west of the intersection off of Hollywood Rd. or by taking Lombard Circle which is located just north of the intersection off of Vine Rd. An All-Terrain Vehicle (ATV) trail travels north and south through the east side of the lot and along the west side of Vine Rd. ATVs either round the corner to the south side of the lot and continue west bound along the north side of Hollywood Rd. or they often cross the intersection here and head south bound into the 3rd quadrant and connect to the ATV trail there, or vice versa.

The existing utilities in this quadrant are overhead electric lines operated by MEA, underground communication lines operated by MTA, underground fiber optic lines operated by GCI, and underground gas lines operated by ENSTAR.

There are no pedestrian facilities in this quadrant.

3rd quadrant: Lot #6000

This is a 0.93 acre lot valued at \$25,000. This lot contains a drive thru coffee shop called “Hollywood Espresso” and a driveway that travels around the shop, with one entrance and exit off of Vine Rd. south of the intersection. The pedestrian sidewalk also travels through this quadrant and ends at Vine Rd. south of the intersection and just north of the entrance/exit to the coffee shop. An ATV trail travels through the north side of the lot, south of Hollywood Rd., and continues around to the east side of the lot, continuing southbound along the west side of Vine Rd. ATVs often travel from the 2nd quadrant and cross the intersection into the 3rd quadrant and vice versa. ATVs also cross the intersection from this quadrant east to the 4th quadrant.

The existing utilities in this quadrant are overhead electric lines operated by MEA, underground communication lines operated by MTA, underground fiber optic lines operated by GCI, and underground gas lines operated by ENSTAR.

In this quadrant, there is a sidewalk that travels along the south side of Hollywood Rd. This sidewalk begins to the west approximately at Goose Bay/Knik Elementary school and travels in the east direction towards the intersection ending at the west side of Vine Rd. at the intersection. The main source of

pedestrians along this sidewalk is community members from Goose Bay/Knik Elementary School. This sidewalk does not currently lead to a marked crosswalk of any sort in the current intersection and also does not continue on the east side of Vine Rd. and into the fourth quadrant.

#### 4th quadrant: Lot #5960

This is a 0.92 acre lot valued at \$32,000. This lot contains a residential building with the entry/exit to the driveway just east of the intersection, off of Hollywood Rd. There is some ATV action along this portion of Hollywood Rd. These ATVs often cross the intersection and head West into the 3rd quadrant and vice versa.

The existing utilities in this quadrant are overhead electric lines operated by MEA and underground gas lines operated by ENSTAR.

There are no pedestrian facilities in this quadrant.

### **1.3 Purpose and Need**

The purpose of this project is to develop an intersection that reduces the number of vehicle crashes and crash severity, increases pedestrian safety, and provides adequate capacity to accommodate future traffic growth. This project will be constructed in conjunction with the Vine Road Improvements Project, which will reconstruct Vine Road between Knik-Goose Bay Road and Hollywood Road. The two intersection alternatives feasible at this location are a signalized intersection or a roundabout. Factors to consider in the design include impacts to private property, utility relocations, future traffic growth, vehicle turning movements, pedestrian safety, and cost. The project will result in an alternatives analysis including up to 10% design for each alternative.

### **2.0 DESIGN STANDARDS AND GUIDELINES**

Design standards and guidelines that apply to the Vine and Hollywood Road Intersection Improvements Project are contained in the following publications:

#### Standards:

- A Policy on Geometric Design of Highways and Streets (PGDHS), 6<sup>th</sup> Edition, AASHTO, 2011.
- Roadside Design Guide (RDG), 4<sup>th</sup> Edition, AASHTO, 2011.
- Alaska Highway Preconstruction Manual (HPCM), DOT&PF, 2005 as amended.
- Alaska Highway Drainage Manual (AHDM), DOT&PF, 2006.
- The Alaska Traffic Manual (ATM), consisting of the Manual on Uniform Traffic Control Devices (MUTCD), 2009 as amended, U.S. DOT, FHWA) and the Alaska Traffic Manual Supplement (ATMS), DOT&PF, 2016.
- ADA Standards for Transportation Facilities, DOT, 2006.
- ADA Standards for Accessible Design, DOJ, 2010.

- Recommended Practice for Roadway Lighting (RP-8-14), ANSI / IES, 2014.
- Highway Capacity Manual (HCM), 5<sup>th</sup> Edition, TRB, 2010.
- Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT < 400), AASHTO, 2001.

Guidelines:

- Proposed Accessibility Standards for Pedestrian Facilities in the Public Right-of-Way (PROWAG), U.S. Access Board, 2011.
- Roundabouts: An Informational Guide , 6th Edition , NCHRP Report 672, 2010  
Appendix A contains the project Design Criteria and Design Designation.

### **3.0 DISCUSSION OF ALTERNATIVES**

The following five design alternatives, including the no-build alternative, were analyzed as part of the Preliminary Engineering Report (PER) and Environmental Document, in order to determine which would satisfy the needs and requirements of the project.

#### **3.1 First Alternative**

The first alternative is a no-build alternative.

#### **3.2 Second Alternative**

Initially, a single lane roundabout or traffic signal was proposed to mitigate crashes and improve safety at this intersection. The study conducted by DOT indicated that the roundabout option had a higher safety benefit in comparison to the traffic signal. Both of these options would have required the widening of the existing roads. Widening for a roundabout would impact adjacent properties and utilities, while a traffic signal would only impact utilities. The roundabout, which had a higher cost, was the preferred alternative based on the higher safety benefit and benefit to cost ratio.

#### **3.3 Third Alternative**

Place the center of the roundabout at the current location of the intersection. Under this alternative, the center of the roundabout would remain at the current location of the stop sign controlled intersection that currently exists. This design would not require much earthwork as the current roads (Vine and Hollywood) would not need to be realigned. This design however would have a potential interference with the surrounding utilities, drainage, and the two structures in the third and fourth quadrants. This design would also affect the sidewalk that travels east and west along Hollywood Road. This design would have minimal impact on surrounding utilities.

#### **3.4 Fourth Alternative**

Move the center of the roundabout north of the current location of the intersection. Under this design, the center of the roundabout would be relocated in the northern direction. This design would interfere with

the structure located in the first quadrant, but would not affect the structures in the third and fourth quadrants. Hollywood Road would need to be realigned, and the SSD for vehicles traveling southbound on Vine Road towards the roundabout would shorten. This design would also accumulate more costs for earthwork when cutting and filling along Vine Road. This design would impact surrounding utilities.

### **3.5 Fifth Alternative**

Place the center of the roundabout at the current location of the intersection and raise elevation. Under this design, the center of the roundabout would remain at the current location of the existing intersection. It would then be raised in elevation. This would create more of a flat traveling surface along Vine Road. This would decrease the SAG curve to where the roundabout is located right now and the Crest curve that begins at the top of Vine Road. This would create better sight for drivers approaching the roundabout both southbound and northbound along Vine Road. This design would have minimal impact on the surrounding utilities. This design would require an extensive amount of cut and fill.

## **4.0 PREFERRED ALTERNATIVE**

The preferred design alternative is the second alternative which includes; implementing a roundabout at the current location of the intersection of which contains a circulatory road width of 20 ft , a 13 ft truck apron, and has an inscribed circle diameter of 130 ft. The entry lane width is designed to be 16 ft wide and the approaching lanes will remain the same as the existing road width of 14 ft. The current pedestrian sidewalk will be realigned with the roundabout and additional crosswalks will be placed and marked in the design. The existing roadway will be resurfaced and drainage will be improved. There will be relocation and construction of affected utilities, new signage, stripage and revegetation when construction is complete. This alternative was selected because this alternative had the least impact on the surrounding utilities and properties. This alternative also requires little to no realignment of the existing roads.

## **5.0 TYPICAL SECTIONS**

The preferred alternative is a single lane roundabout with specifications mentioned in the preferred alternative. The typical sections are provided in Appendix B.

## **6.0 HORIZONTAL AND VERTICAL ALIGNMENT**

Provided are the horizontal and vertical alignments for the new roundabout design.

### **6.1 Horizontal Alignment**

The roadway centerline was created from the existing historic as-built plans of Vine Rd. at Hollywood Rd. intersection. The center of the roundabout was placed at the center of the current intersection to have minimal impacts to the utilities and the surrounding private properties. The curve radii and respective superelevations are designed to meet current design standards for the project's 45 mph design speed. This strategy was implemented to avoid adding any new curves.

## **6.2 Vertical Alignment**

The project is to build a roundabout at the intersection of Vine Rd. and Hollywood Rd. Vine Rd. is located on the north and south sides of the intersection. Similarly, Hollywood Rd. is located on the east and west side of the intersection. The design speed for Vine Rd. is 45 mph, whereas the design speed for West Hollywood Rd. is 25 mph. Both Vine Road and Hollywood Road match the existing vertical geometry with no modification sections. Similarly, it is outside the scope of the project to upgrade all profile curves to meet the required design speed.

## **7.0 EROSION AND SEDIMENT CONTROL**

The project includes temporary and permanent measures to control or prevent erosion and sedimentation during and post project construction. The contractor will prepare a Storm Water Pollution Prevention Plan (SWPPP) prior to construction that conforms to the DOT&PF Best Management Practices (BMPs) for Erosion and Sediment Control in accordance with the DOT&PF contract specifications and follows the guidelines of the Erosion and Sediment Control Plan (ESCP) provided to the contractor. The contractor will submit the SWPPP for approval by the Construction Project Engineer. The contractor will conduct construction activities in accordance with the approved SWPPP. Appropriate erosion and siltation controls will be used and maintained in optimal condition during construction and all other exposed soils/fills will be permanently stabilized. Temporary BMPs will remain in place until permanent erosion and sediment control measures are in place and soil is permanently stabilized.

## **8.0 DRAINAGE**

There will be no widening, change in vertical grade, no significant change to current drainage patterns or discharge point

## **9.0 SOIL CONDITION**

For Vine Rd. at Hollywood Rd. Intersection Improvements project, a geotechnical report is being developed. Mostly, the findings were made from the site visit that our group of engineers with geotechnical engineers conducted. Similarly, some findings were discovered with the help of Google Earth maps. The soil is made up of silt, sand, and gravel. This soil condition is also called as having Tanana earth, where the soil is poorly drained and contains permafrost less than 5 feet below the surface of the soil.

Soils are classified using the USCS (Unified Soil Classification System). Generally, the project's existing roadway and upland areas include varying layers of Gravel with Silt and Sand (GP-GM), Silty Sand with Gravel (SM), and Sand with Silt and Gravel (SP-SM). Solid bedrock was encountered in multiple locations, typically covered by 5 ft. of weathered bedrock and/or soil overburden.

## **10.0 ACCESS CONTROL FEATURES**

N/A

## 11.0 TRAFFIC ANALYSIS

For the expansion of the Knik Goose Bay Elementary School, located on Hollywood Road just west of Vine Road, a Traffic Impact Analysis (TIA) was completed in 2007. The TIA recommended intersection improvements. Traffic volumes at the intersection have steadily increased which has created more conflicts and has the potential to increase crashes. A roundabout analysis was done and proposed mitigating the number of crashes.

There were 17 total crashes at the intersection during the 2009-2013 study period. 12 of the crashes would be mitigated by the proposed improvement. Of the 12, 7 were property damage only, 4 were minor injuries, 1 major injury, and 0 fatal crashes. The other 5 crashes were single vehicle and would not be mitigated by the proposed improvement. Crashes susceptible to mitigation include 8 angle and 4 rear ends. The remaining crashes were run off the road or animal related. The possibility to mitigate 12 of the 17 crashes was sufficient evidence for intersection improvements at the site.

The decision to implement intersection improvements, led to further traffic analysis of the intersection by AKDOT&PF in November of 2017. This analysis included turning movement volumes collected throughout a typical school day, the time of the week traffic volumes at the intersection are highest. From this traffic analysis, peak hour traffic data was gathered to be used in the determination of an intersection design. Two possible intersection designs were considered, a traffic light and a roundabout. As it had been determined that the intersection design would be a roundabout this traffic analysis data was utilized to determine roundabout specifications. Utilizing the methods proposed in the NCHRP roundabout information guide and the peak hour data gathered, it was determined that a single lane roundabout would be sufficient to accommodate the daily traffic volumes in all cases. Furthermore the installation of a roundabout would decrease both angle and rear end crashes.

## 12.0 SAFETY IMPROVEMENTS

The proposed improvements are consistent with the Alaska Strategic Safety Plan, Roadway Strategies: Engineering, Strategy 2-Action 2.5: Implement infrastructure projects to address intersection crashes.

According to the Moose-Vehicle Collision Ranking 2006-2010 developed by AKDOT&PF, the intersection at Vine and Hollywood Rd. is not located within either the 75 or 95 percentile threshold areas and as a result of such does not need to pursue any additional safety improvements in respect to such.

Lighting will be installed around the perimeter of the roundabout in accordance with the guidelines presented in the NCHRP roundabout information guide. Lighting will provide sufficient illumination to make drivers entering from each leg aware of the roundabout.

## 13.0 RIGHT-OF-WAY REQUIREMENTS

Preliminary research in 2013 indicated a very narrow ROW (33 ft.) on the south end of the project area near KGB (Knik Goose Bay) Road. The ROW widens to 100 feet north of Birch Cove Drive, approximately 1,000 ft. north of KGB Road. We will need to acquire additional land for the project. The effort will require title reports, updates, plats, and other data research being performed as part of Phase 2. Anticipated need to purchase 5 partial and 15 total acquisitions. 2020 current status of ROW impacts:

- 13 partial parcel
- 7 full parcel acquisitions

- 2 business
- 10 residential relocations

The existing Right of Way (ROW) utilized by Vine Road at Hollywood Road is technically a permanent easement granted by the United States Forest Service (USFS). However, there are some private properties nearby the intersection so additional ROW is required. The road easement is narrower. It was found that additional permanent ROW will not be necessary to construct this project. However, temporary access will be required at multiple locations to reconstruct approaches to current design standards. The project is also pursuing a Temporary Construction Easement (TCE) to access a narrow strip of USFS land adjoining the DOT&PF ROW boundary. The TCE will facilitate more efficient embankment construction in close proximity to the existing ROW limit. For temporary reconstruction access, there is not a requirement of a mutual agreement between SOA government agencies.

#### **14.0 PEDESTRIAN AND BICYCLE FACILITIES**

The project will require adjustments to the sidewalk that is located on the southwest side of the intersection. The majority of the sidewalk will not be obstructed, except where it merges with the intersection. Crosswalks and pedestrian crossing signage will be added to the roundabout.

#### **15.0 UTILITY RELOCATION AND COORDINATION**

Utility companies with facilities in the project limits include Enstar owning and operating natural gas in the area, MEA owning and operating overhead electrical transmission in the area, and MTA and GCI owning and operating underground telecommunications in the area. Utilities will require relocation and agreements will need to be developed, at select locations throughout the project, to address the following conflicts:

- Partial relocation of MEA’s electrical pole line north of Hollywood Rd., supported by telephone poles on both the west and east sides of Vine Rd.
- Partial relocation of Enstar’s gas lines on the west, south and east sides of the intersection
- Partial relocation of MTA’s underground telecommunication lines on the west and north sides of the intersection

##### **15.1 Matanuska Electric Association**

MEA’s overhead electric line will have to be partially relocated via the telephone poles on the northeast and northwest sides of Vine Rd. to accommodate road widening.

##### **15.2 ENSTAR Gas Company**

ENSTAR’s facilities crossing Vine Rd. will be in conflict, and the 6-in. plastic distribution pipeline on the west side of Vine Rd. from Spinnaker Dr. through Hollywood Rd. will have to be relocated to accommodate road widening.

##### **15.3 Matanuska Telephone Association**

MTA's underground telecommunication line running across the north side of Vine Rd. and the west side of Hollywood Rd. will have to be partially relocated to accommodate road widening.

#### **15.4 GCI Telecommunications**

GCI's 144-ct fiber optic cable will not be in conflict and will not have to be relocated.

### **16.0 PRELIMINARY WORK ZONE TRAFFIC CONTROL**

The HPCM, Section 1400.2 sets forth the criteria for determining if a project is to be classified as a "Significant Project" for purposes of determining the level of effort required in developing a TMP (Traffic Management Plan). This project meets the definition of "Significant" and therefore requires a TMP. The TMP herein addresses delays and queuing times by limiting road closures to night time on weekdays only. Components of the TMP that are required include a Traffic Control Plan, Public Information Plan, and Transportation Operations Plan.

#### **16.1 Traffic Control Plan (TCP)**

The Contractor will develop a TCP during construction, to safely guide and protect the traveling public in work zones, in accordance with the ATM and the project specifications. The plan will be assessed and approved by the Construction Project Engineer and the Traffic Control Engineer.

The contractor is responsible for providing advance notice to the public, including local businesses, residents, and road travelers, of construction activities that could cause delays, detours, or affect access to adjacent properties.

#### **16.2 Public Information Plan (PIP)**

A PIP will be developed prior to beginning construction that will specify the ways and means that the contractor will use to inform the public of upcoming activities that will impact local stakeholders, the roadway users, and public entities. The PIP will contain measures to inform stakeholders of project scope, expected work zone impacts, closure details, and recommended action to avoid impacts and changing conditions during construction. Measures to disseminate information include:

- Contractor's Worksite Traffic Supervisor
- Department's Construction section thru the department's 511 system
- Department's Navigator website
- Television, Radio, and/or newspaper
- Other location-specific communication tools

The traveling public should not be caught unaware by any closures, detours, delays, night work, or any potentially disruptive activity.

#### **16.3 Transportation Operations Plan (TOP)**

The department will coordinate with relevant public agencies and event organizers, and incorporate means and methods for minimizing traffic impacts with the contractor not covered by the TCP or the PIP within the project plans.

## 17.0 STRUCTURAL SECTION AND PAVEMENT DESIGN

The pavement structural section to be used throughout the roundabout construction consists of 24 inches of borrow, Material Type A, followed by 3 inches of aggregate base course, grading D-1, followed by 3 inches of hot mix asphalt, Type II: Class A.

## 18.0 COST ESTIMATE

The complete cost estimate breakdown can be found in Appendix F.  
The project cost estimate is as follows:

Preliminary Engineering	\$	94,000
Right-of-Way	\$	30,000
Utility Relocation	\$	677,400
Construction	\$	1,753,000
<hr/>		
Total	\$	2,555,000

## 19.0 ENVIRONMENTAL COMMITMENTS AND CONSIDERATIONS

Unusual circumstances or significant environmental impacts are not involved for the construction of this project. The contractor will be required to prepare and implement a SWPPP in accordance with section 7. The contractor will be responsible for obtaining all necessary permits and clearance for materials sites, disposal sites, and staging areas unless DOT&PF has obtained all necessary permits.

## 20.0 BRIDGES

No bridges are within the project limits.

## 21.0 EXCEPTIONS TO DESIGN STANDARDS

There are no exceptions to design standards for this project.

## 22.0 MAINTENANCE CONSIDERATIONS

Maintenance will remain the responsibility of the State of Alaska and the local DOT&PF Maintenance and Operations Station located at Palmer M&O Station.

The project will increase maintenance efforts by snow removal, pavement overlays, and signage and striping.

Maintenance efforts will be reduced due to reconstructing deficient embankment structural sections, replacing roadside hardware, restoring roadside ditches, and replacing electrical poles.

### **23.0 ITS FEATURES**

There are no Intelligent Transportation Systems (ITS) features within the project limit.

# APPENDIX A

## Approved Design Criteria and Design Designation

### DESIGN DESIGNATION CHECKLIST

Project Name: Vine Rd Improvements: Knik Goose Bay Rd to Hollywood Rd

Project: CFHWY00323

	<u>Initial</u>	<u>Date</u>
1. DD reviewed by Matt Murphy, Highway Data Manager	<u>MM</u>	<u>9/20/18</u>
2. DD reviewed by the area planner.	<u>MW</u>	<u>9/24/18</u>
3. DD reviewed by Todd Vanhove, Chief of Planning	<u>TN</u>	<u>9.24.18</u>
4. DD reviewed, approved and signed by Preconstruction Engineer. Return original signed DD to Matt Murphy.	<u>Ⓟ</u>	<u>9/25</u>
5. Highway Data distribute copies.	_____	_____
6. Original DD kept in the binder in Highway Data	_____	_____

The growth factors for this design designation were calculated based on historical traffic data. Highway Data reviewed the historical Annual Average Daily Traffic (AADT) volumes within the project limits, as well as at a nearby Continuous Count Station (CCSs).

Within the Project Limits, there are four traffic links. The chart labeled "Vine HWood AADTs" shows the volumes from 1998 to 2017. (These include both actual AADTs based on data collected that year, and estimated AADTs when a count was not collected.) The corresponding graph shows the plotting of the AADTs on the three links, as well as corresponding linear regression trendline formulas.

The "PWH CCS" is the nearest CCS to the project. The attached page for this site includes historical AADTs as well as the graph and trendline for the CCS.

The "Growth Rate Calculation" table shows the growth rate calculated from each graph. The growth rate is calculated using the linear regression trend line for the graph. Typically, Highway Data recommends using growth rates calculated from CCSs due to the large amount of year-round historical data available from these sites, however the CCS used in this project is far enough away from the actual project that it didn't seem accurate to use its growth rate alone for the project.

The growth rates for the four segments of the project were all extremely high, demonstrating the population growth in the Mat-Su area in recent years. However, these growth rates are not sustainable for a 20 year AADT projection as development in the area slows. Historically, Highway Data does not recommend using a growth rate above 2% in design designations, and in other recent design designations for projects in the Mat-Su that had higher growth rates based on historical data, 2% has been the growth rate used to predict future AADTs. This rate generally allows for a reasonably robust prediction of traffic volume but also takes into account the ebb and flow of population growth and land use due to economic changes in the area.

The "Traffic Volume Projections" table shows the projected traffic for each traffic link based on the 2% growth rate. Finally, the 2017 class data was obtained from a station on Hollywood Road and a station on Vine Road, respectively.

Four design designation forms were completed for this project, as the AADTs for each portion of the intersection was different enough that one design designation for the project, or one per road, did not seem sufficient. The Design Hourly Volume (DHV) and the Directional Distribution were obtained from the four short term count stations within the project limits. The Peak Hour Factor is the default value for urban roadways.

Matt Murphy  
Highway Data Manager  
Transportation Data Programs  
Program Development

State Route Number: 160101 Route Name: Vine Rd (Wasilla)

Project Limits: Vine Road: S of Hollywood Rd / HS/P: Vine Rd at Hollywood Rd /intersection /mprovements

State Project Number: CFHWY00323 Federal Aid Number: 1605

Project Description: Vine Rd Improvements: Knik Goose Bay Rd to Hollywood Rd

Design Functional Classification:

Urban Arterial    Rural Arterial    Major Collector    Minor Collector    Local

New Construction - Reconstruction:  Rehabilitation (3R):  Other \_\_\_\_\_

Project Design Life (years): 5  10  20  25  Other \_\_\_\_\_

	Existing Year	Construction Year	Mid-Life Year	Future Year
	2017	2021	2031	2041
ADT	6399	6926	8443	10292
DHV	10.5 %	10.5 %	10.5 %	10.5 %
Peak Hour Factor	0.92	0.92	0.92	0.92
Directional Distribution	60/40	60/40	60/40	60/40
Percent Recreational Vehicles	N/A	N/A	N/A	N/A
Percent Commercial Trucks	6.38 %	6.38 %	6.38 %	6.38 %
Compound Growth Rate	2.00 %	2.00 %	2.00 %	2.00 %
Pedestrians (Number/Day)	N/A	N/A	N/A	N/A
Bicyclists (Number/Day)	N/A	N/A	N/A	N/A

Design Vehicles for Turning: \_\_\_\_\_

Design Vehicle Loading: HS15  HS20  HS25  Other: \_\_\_\_\_

Equivalent Axle Loads: \_\_\_\_\_

APPROVED  Regional Preconstruction Engineer      DATE 9/25/18

Figure A-1: Design Criteria for Vine Rd.: S. of Hollywood Rd./HSIP Vine Rd. at Hollywood Rd. Intersection Improvements.

State Route Number: 160101 Route Name: Vine Rd (Wasilla)

Project Limits: Vine Road: N of Hollywood Rd

State Project Number: CFHWY00323 /00436 Federal Aid Number: 1605

Project Description: Vine Rd Improvements: Knik Goose Bay Rd to Hollywood Rd /HSIP Vine Rd at Hollywood Intersection Improvements

Design Functional Classification:

Urban Arterial     Rural Arterial     Major Collector     Minor Collector     Local

New Construction - Reconstruction:  Rehabilitation (3R):  Other \_\_\_\_\_

Project Design Life (years): 5  10  20  25  Other \_\_\_\_\_

	Existing Year	Construction Year	Mid-Life Year	Future Year
	2017	2021	2031	2041
ADT	3350	3626	4420	5388
DHV	12.0 %	12.0 %	12.0 %	12.0 %
Peak Hour Factor	0.92	0.92	0.92	0.92
Directional Distribution	60/40	60/40	60/40	60/40
Percent Recreational Vehicles	N/A	N/A	N/A	N/A
Percent Commercial Trucks	6.38 %	6.38 %	6.38 %	6.38 %
Compound Growth Rate	2.00 %	2.00 %	2.00 %	2.00 %
Pedestrians (Number/Day)	N/A	N/A	N/A	N/A
Bicyclists (Number/Day)	N/A	N/A	N/A	N/A

Design Vehicles for Turning: \_\_\_\_\_

Design Vehicle Loading: HS15  HS20  HS25  Other: \_\_\_\_\_

Equivalent Axle Loads: \_\_\_\_\_

APPROVED  Regional Preconstruction Engineer      DATE 9/29/18

Figure A-2: Design Criteria for KGB to Hollywood Rd./HSIP Vine Rd. at Hollywood Rd. Intersection Improvements.

State Route Number: 170077 Route Name: Hollywood Rd (Wasilla)

Project Limits: Hollywood Rd: W of Vine Rd

State Project Number: CFHWY00323 /00463 Federal Aid Number: 1605

Project Description: Vine Rd Improvements: Knik Goose Bay Rd to Hollywood Rd /HISP Vine Rd at Hollywood Intersection Improvements

Design Functional Classification:

Urban Arterial  Rural Arterial  Major Collector  ~~Minor Collector~~  Local

New Construction - Reconstruction:  Rehabilitation (3R):  Other \_\_\_\_\_

Project Design Life (years): 5  10  20  25  Other \_\_\_\_\_

	Existing Year 2017	Construction Year 2021	Mid-Life Year 2031	Future Year 2041
ADT	2729	2974	3686	4389
DHV	12.5 %	12.5 %	12.5 %	12.5 %
Peak Hour Factor	0.92	0.92	0.92	0.92
Directional Distribution	55/45	55/45	55/45	55/45
Percent Recreational Vehicles	N/A	N/A	N/A	N/A
Percent Commercial Trucks	5.99 %	5.99 %	5.99 %	5.99 %
Compound Growth Rate	2.00 %	2.00 %	2.00 %	2.00 %
Pedestrians (Number/Day)	N/A	N/A	N/A	N/A
Bicyclists (Number/Day)	N/A	N/A	N/A	N/A

Design Vehicles for Turning: \_\_\_\_\_

Design Vehicle Loading: HS15  HS20  HS25  Other: \_\_\_\_\_

Equivalent Axle Loads: \_\_\_\_\_

APPROVED  Regional Preconstruction Engineer DATE 9/25/18

Figure A-3: Design Criteria for Hollywood Rd. W. of Vine Rd./HISP Vine Rd. at Hollywood Rd. Intersection Improvements

State Route Number: 170077 Route Name: Hollywood Rd (Wasilla)

Project Limits: Hollywood Rd: E of Vine Road

State Project Number: CFHWY00323 /00463 Federal Aid Number: 1605

Project Description: Vine Rd Improvements: Knik Goose Bay Rd to Hollywood Rd /HSIP Vine Rd @ Hollywood Intersection Improvements

Design Functional Classification:

Urban Arterial  Rural Arterial  ~~Major Collector~~  Minor Collector  Local

New Construction - Reconstruction:  Rehabilitation (3R):  Other: \_\_\_\_\_

Project Design Life (years): 5  10  20  25  Other: \_\_\_\_\_

	Existing Year 2017	Construction Year 2021	Mid-Life Year 2031	Future Year 2041
ADT	644	697	850	1036
DHV	15.9 %	15.9 %	15.9 %	15.9 %
Peak Hour Factor	0.92	0.92	0.92	0.92
Directional Distribution	55/45	55/45	55/45	55/45
Percent Recreational Vehicles	N/A	N/A	N/A	N/A
Percent Commercial Trucks	5.99 %	5.99 %	5.99 %	5.99 %
Compound Growth Rate	2.00 %	2.00 %	2.00 %	2.00 %
Pedestrians (Number/Day)	N/A	N/A	N/A	N/A
Bicyclists (Number/Day)	N/A	N/A	N/A	N/A

Design Vehicles for Turning: \_\_\_\_\_

Design Vehicle Loading: HS15  HS20  HS25  Other: \_\_\_\_\_

Equivalent Axle Loads: \_\_\_\_\_

APPROVED  Regional Preconstruction Engineer DATE 9/25/13

Figure A-4: Design Criteria for Hollywood Rd. E. of Vine Rd./HSIP Vine Rd. at Hollywood Rd. Intersection Improvements

Vine Rd. at Hollywood Rd. Intersection Improvements Design Study Report 25

# APPENDIX B

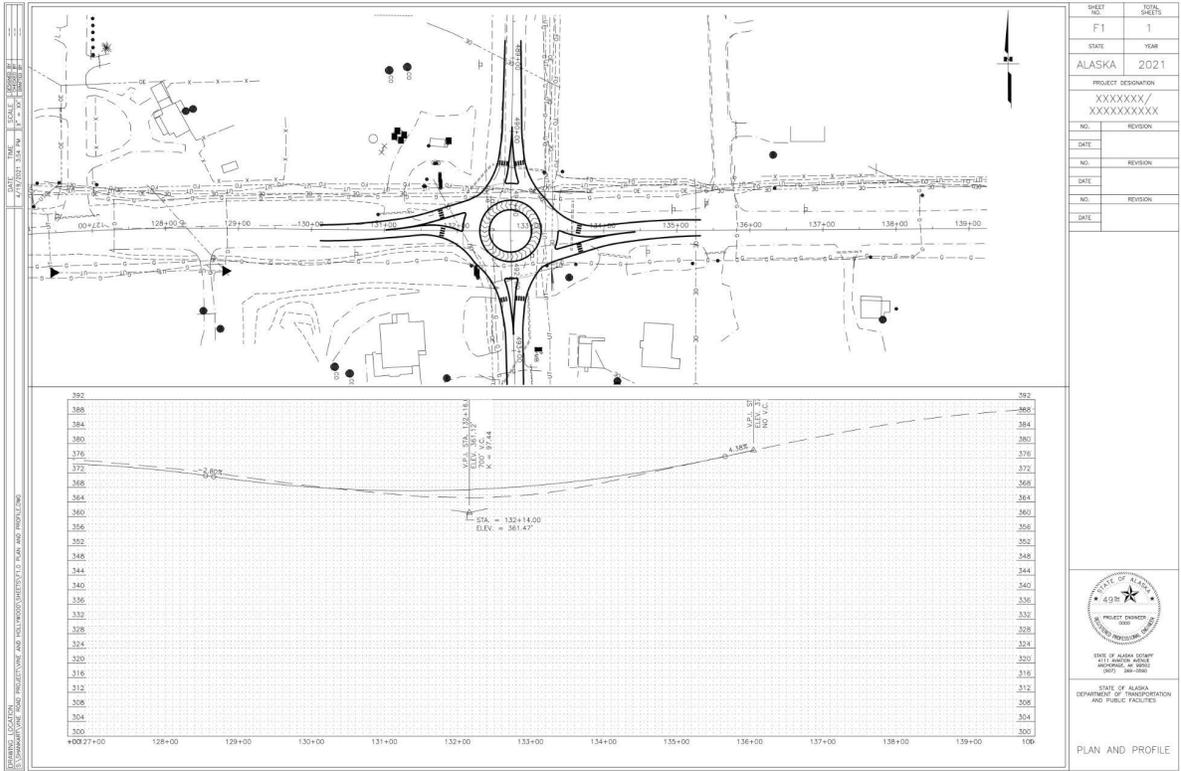
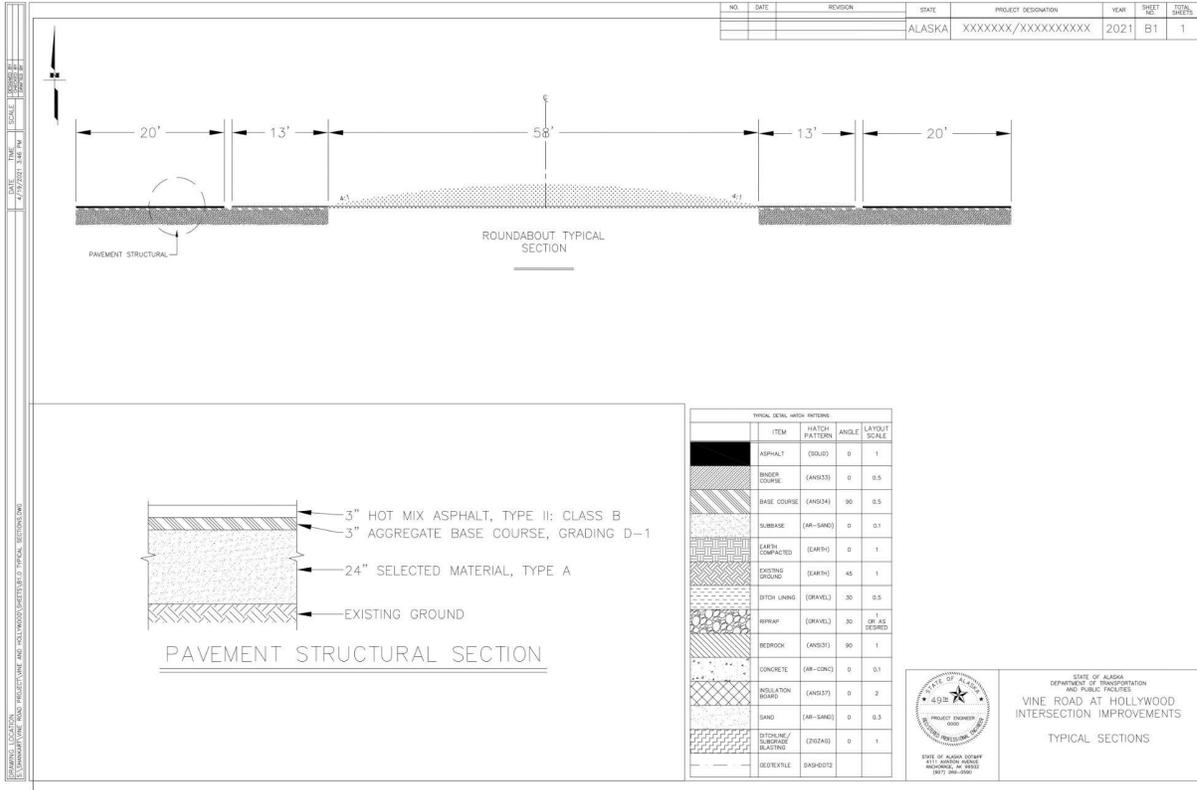


Figure B-1. Vine and Hollywood Plan Profile



*Figure B-2. Typical Sections*

## APPENDIX D

### Traffic Analysis

**Turning Movement Peak Hour Data (3:15 PM)**

Start Time	Vine SB Southbound					Hollywood WB Westbound					Vine NB Northbound					Hollywood EB Eastbound					Int. Total				
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru		Left	U-Turn	Peds	App. Total
3:15 PM	11	26	0	0	0	37	1	4	6	0	0	11	4	28	44	0	0	76	22	0	3	0	0	25	149
3:30 PM	16	29	4	0	0	49	2	7	2	0	0	11	4	20	58	0	0	82	23	0	0	0	0	23	165
3:45 PM	12	29	3	0	0	44	0	3	4	0	0	7	1	19	53	0	0	73	66	13	12	0	0	91	215
4:00 PM	15	26	1	0	0	42	4	3	4	0	0	11	6	28	48	0	0	82	53	8	13	0	0	74	209
<b>Total</b>	<b>54</b>	<b>110</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>172</b>	<b>7</b>	<b>17</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>15</b>	<b>95</b>	<b>203</b>	<b>0</b>	<b>0</b>	<b>313</b>	<b>164</b>	<b>21</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>213</b>	<b>738</b>
<b>Approach %</b>	<b>31.4</b>	<b>64.0</b>	<b>4.7</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>17.5</b>	<b>42.5</b>	<b>40.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>4.8</b>	<b>30.4</b>	<b>64.9</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>77.0</b>	<b>9.9</b>	<b>13.1</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total %</b>	<b>7.3</b>	<b>14.9</b>	<b>1.1</b>	<b>0.0</b>	<b>-</b>	<b>23.3</b>	<b>0.9</b>	<b>2.3</b>	<b>2.2</b>	<b>0.0</b>	<b>-</b>	<b>5.4</b>	<b>2.0</b>	<b>12.9</b>	<b>27.5</b>	<b>0.0</b>	<b>-</b>	<b>42.4</b>	<b>22.2</b>	<b>2.8</b>	<b>3.8</b>	<b>0.0</b>	<b>-</b>	<b>28.9</b>	<b>-</b>
<b>PHF</b>	<b>0.844</b>	<b>0.948</b>	<b>0.500</b>	<b>0.000</b>	<b>-</b>	<b>0.878</b>	<b>0.438</b>	<b>0.607</b>	<b>0.667</b>	<b>0.000</b>	<b>-</b>	<b>0.909</b>	<b>0.625</b>	<b>0.848</b>	<b>0.875</b>	<b>0.000</b>	<b>-</b>	<b>0.954</b>	<b>0.621</b>	<b>0.404</b>	<b>0.538</b>	<b>0.000</b>	<b>-</b>	<b>0.585</b>	<b>0.858</b>
<b>Lights</b>	<b>52</b>	<b>104</b>	<b>8</b>	<b>0</b>	<b>-</b>	<b>164</b>	<b>7</b>	<b>17</b>	<b>16</b>	<b>0</b>	<b>-</b>	<b>40</b>	<b>15</b>	<b>88</b>	<b>192</b>	<b>0</b>	<b>-</b>	<b>295</b>	<b>157</b>	<b>19</b>	<b>25</b>	<b>0</b>	<b>-</b>	<b>201</b>	<b>700</b>
<b>% Lights</b>	<b>96.3</b>	<b>94.5</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>95.3</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>-</b>	<b>-</b>	<b>100.0</b>	<b>100.0</b>	<b>92.6</b>	<b>94.6</b>	<b>-</b>	<b>-</b>	<b>94.2</b>	<b>95.7</b>	<b>90.5</b>	<b>89.3</b>	<b>-</b>	<b>-</b>	<b>94.4</b>	<b>94.9</b>
<b>Buses</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>-</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>-</b>	<b>11</b>	<b>20</b>
<b>% Buses</b>	<b>1.9</b>	<b>0.9</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>1.2</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>3.4</b>	<b>-</b>	<b>-</b>	<b>2.2</b>	<b>3.7</b>	<b>9.5</b>	<b>10.7</b>	<b>-</b>	<b>-</b>	<b>5.2</b>	<b>2.7</b>
<b>Single-Unit Trucks</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>-</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>17</b>
<b>% Single-Unit Trucks</b>	<b>1.9</b>	<b>3.6</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>2.9</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>7.4</b>	<b>2.0</b>	<b>-</b>	<b>-</b>	<b>3.5</b>	<b>0.6</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.5</b>	<b>2.3</b>
<b>Articulated Trucks</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-</b>	<b>0</b>	<b>1</b>
<b>% Articulated Trucks</b>	<b>0.0</b>	<b>0.9</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-</b>	<b>-</b>	<b>0.0</b>	<b>0.1</b>
<b>Bicycles on Crosswalk</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>
<b>% Bicycles on Crosswalk</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Pedestrians</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>-</b>
<b>% Pedestrians</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

*Figure D-1. Peak Hour Traffic Analysis*

	Vine SB			Vine NB			Hollywood EB			Hollywood WB		
	Right	Through	Left									
<b>Vehicles During Peak Hour</b>	<b>54</b>	<b>110</b>	<b>8</b>	<b>15</b>	<b>95</b>	<b>203</b>	<b>164</b>	<b>21</b>	<b>28</b>	<b>7</b>	<b>17</b>	<b>16</b>
<b>PHF</b>	<b>0.92</b>											
<b>Flow Rates (pc/h)</b>	<b>59</b>	<b>120</b>	<b>9</b>	<b>16</b>	<b>103</b>	<b>221</b>	<b>178</b>	<b>23</b>	<b>30</b>	<b>8</b>	<b>18</b>	<b>17</b>
<b>Percent Heavy Vehicles</b>	<b>3</b>											
<b>f<sub>HV</sub></b>	<b>0.971</b>											
<b>Flow Rates with Heavy Vehicle Adjustments (veh/h)</b>	<b>60</b>	<b>123</b>	<b>9</b>	<b>17</b>	<b>106</b>	<b>227</b>	<b>184</b>	<b>24</b>	<b>31</b>	<b>8</b>	<b>19</b>	<b>18</b>
<b>Roundabout Volume, Entry Flow Rates (pc/h)</b>	<b>193</b>			<b>350</b>			<b>238</b>			<b>45</b>		
<b>Roundabout Volume, Circulating Flowrates (pc/h)</b>	<b>264</b>			<b>64</b>			<b>150</b>			<b>365</b>		
<b>Roundabout Volume, Exiting Flowrates (pc/h)</b>	<b>146</b>			<b>325</b>			<b>307</b>			<b>49</b>		
<b>Entering and Circulating Flowrates (pc/h)</b>	<b>457</b>			<b>414</b>			<b>388</b>			<b>410</b>		
<b>Entry Lane Capacity (pc/h)</b>	<b>868</b>			<b>1060</b>			<b>973</b>			<b>784</b>		
<b>Entry Lane Capacity with Heavy Vehicle Adjustments (veh/h)</b>	<b>842</b>			<b>1029</b>			<b>944</b>			<b>762</b>		
<b>Volume to Capacity Ratio</b>	<b>0.23</b>			<b>0.34</b>			<b>0.25</b>			<b>0.06</b>		
<b>Control Delay (s/veh)</b>	<b>5.4</b>			<b>5.2</b>			<b>5.1</b>			<b>5.0</b>		
<b>Lane LOS Level of Service by Volume to Capacity Ratio</b>	<b>A</b>			<b>A</b>			<b>A</b>			<b>A</b>		
<b>95% Queue</b>	<b>0.89</b>			<b>1.54</b>			<b>1.01</b>			<b>0.19</b>		

*Figure D-2. Roundabout Analysis*

The information in this report is compiled for highway safety planning purposes. Federal law prohibits its discovery or admissibility in litigation against state, tribal or local government that involves a location or locations mentioned in the collision data. 23 U.S.C. § 409; 23 U.S.C. § 148(g); *Walden v. DOT*, 27 P.3d 297, 304-305 (Alaska 2001).

## APPENDIX F

COST ESTIMATE						
ITEM NO.	PAY ITEM	PAY UNIT	PAY PRICE (\$)	QUANTITY	AMOUNT	Notes
201.0003.0000	CLEARING AND GRUBBING	ACRE	\$ 10,000.00	2	\$ 20,000.00	10% ADDED CONTINGENCY
202.0002.0000	REMOVAL OF PAVEMENT	SY	\$ 3.00	5500	\$ 16,500.00	10% ADDED CONTINGENCY
202.0004.0000	REMOVAL OF CULVERT PIPE	LF	\$ 30.00	500	\$ 15,000.00	
203.0003.0000	UNCLASSIFIED EXCAVATION	CY	\$ 10.00	6500	\$ 65,000.00	10% ADDED CONTINGENCY
203.0005.0000	BORROW, TYPE A	TON	\$ 15.00	6500	\$ 97,500.00	
301.0001.0000	AGGREGATE BASE COURSE, GRADING D-1	TON	\$ 40.00	750	\$ 30,000.00	
306.0001.0000	ATB	TON	\$ 100.00	750	\$ 75,000.00	
306.0002.0000	ASPHALT BINDER, GRADE PG 64-40	TON	\$ 700.00	40	\$ 28,000.00	Assumed 5.5% of HMA Weight
401.0001.0000	HOT MIX ASPHALT, TYPE II: CLASS B	TON	\$ 135.00	750	\$ 101,250.00	
603.0001.0000	CSP 24"	LF	\$ 100.00	700	\$ 70,000.00	
604.0005.0000	Inlet, Type A	EA	\$ 8,000.00	4	\$ 32,000.00	One inlet at each roundabout corner
608.0001.0000	Concrete Sidewalk, 4 Inches Thick	SY	\$ 120.00	120	\$ 14,400.00	Sidewalk at each crosswalk
608.0006.0000	Curb Ramp	EA	\$ 3,000.00	4	\$ 12,000.00	One at each roundabout corner
608.2013.D004	Concrete, Type V, 4 Inches Thick, Colored and Pattern Imprinted	SY	\$ 200.00	300	\$ 60,000.00	
609.0002.0000	Curb and Gutter	LF	\$ 50.00	1,500	\$ 75,000.00	
615.0001.0000	Standard Sign	SF	\$ 120.00	150	\$ 18,000.00	
515.0002.0000	REMOVE EXISTING SIGNS	EA	\$ 1,000.00	5	\$ 5,000.00	
618.0002.0000	SEEDING	LB	\$ 250.00	60	\$ 15,000.00	10% ADDED CONTINGENCY
620.0001.0000	TOPSOIL	SY	\$ 10.00	2500	\$ 25,000.00	10% ADDED CONTINGENCY
621.2010.0000	Roundabout Center Island Landscaping	LS	ALL REQ'D	1	\$ 120,000.00	
639.0006.0000	APPROACH	EA	\$ 2,500.00	5	\$ 12,500.00	
640.0001.0000	MOBILIZATION/DEMobilIZATION	LS	ALL REQ'D	1	\$ 90,715.00	8% of pay items
641.0001.0000	EROSION/ POLLUTION CONTROL	LS	ALL REQ'D	1	\$ 136,072.50	6% of pay items
642.0001.0000	CONSTRUCTION SURVEYING/ SURVEY PARTY	LS	ALL REQ'D	1	\$ 45,357.50	4% of pay items
643.0002.0000	TRAFFIC MAINTENANCE/ FLAGGING/ CONTROL	LS	ALL REQ'D	1	\$ 136,072.50	15% of pay items
660.0004.0000	Highway Lighting System Complete	LS	ALL REQ'D	1	\$ 50,000.00	
670.0100.0000	MMA Pavement Markings	LS	ALL REQ'D	1	\$ 40,000.00	
				<b>SUBTOTAL</b>	<b>\$ 1,405,367.50</b>	
	Construction Engineering (DOT Staff)				\$ 281,073.50	Assumed 20%
	ICAP				\$ 66,754.96	Assumed 4.75%
				<b>TOTAL</b>	<b>\$ 1,753,195.96</b>	
<b>UTILITIES</b>						
	OVERHEAD ELECTRIC; PHASE 1 POLE	EA	\$ 100,000.00	3	\$ 300,000.00	
	UNDERGROUND COMMUNICATION	FT	\$ 300.00	250	\$ 75,000.00	
	FIBER OPTIC	FT	\$ 200.00	110	\$ 22,000.00	
	UNDERGROUND GAS; 6" PLASTIC	FT	\$ 250.00	670	\$ 167,500.00	
				<b>SUBTOTAL</b>	<b>\$ 564,500.00</b>	
	UTILITY OVERHEAD				\$ 112,900.00	Assumed 20%
				<b>TOTAL</b>	<b>\$ 677,400.00</b>	
	<b>ROUNDABOUT</b>			<b>TOTAL</b>	<b>\$ 2,450,000.00</b>	

*Figure F-1: Bid Schedule*

## **APPENDIX J**

### **Design Memos**

At this time, no significant design changes were made after the approval of this document. The final as-built plans for this project will be available in Central Files within the Highway Design Section (4111 Aviation Avenue, Anchorage, AK 99502).