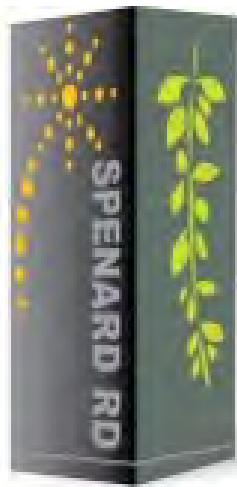


SPENARD ROAD RECONSTRUCTION
PHASE II
HILLCREST DRIVE TO BENSON BOULEVARD
PM&E PROJECT NO. 03-22b



SPENARD ROAD
Reconstruction

DRAFT
DESIGN STUDY REPORT

JANUARY 2016

Prepared by:



5300 A Street
Anchorage, AK 99518
(907) 272-5451

Prepared for:



Municipality of Anchorage
4700 Elmore Road
Anchorage, AK 99507

**Spenard Road Reconstruction Phase II
Hillcrest Drive to Benson Boulevard
MOA Project No. 03-22b**

Prepared For:

Municipality of Anchorage
Project Management and Engineering Department
4700 Elmore Road, Anchorage, AK 99507

Prepared By:

Lounsbury & Associates, Inc.
Surveyors Engineers Planners
5300 A Street, Anchorage, AK 99518

January 2016

**PRE-FINAL DESIGN STUDY REPORT
SPENARD ROAD RECONSTRUCTION PHASE II
HILLCREST DRIVE TO BENSON BOULEVARD**

Prepared by:

James Sawhill, P.E.
Project Manager
Lounsbury & Associates, Inc.

Date

Recommended:

John Smith, P.E.
Project Manager
Project Management & Engineering Department

Date

Approved:

Stephanie Mormilo, P.E.
Municipal Traffic Engineer
Traffic Department

Date

Kent Kohlhase, P.E.
Acting Municipal Engineer
Project Management & Engineering Department

Date

J.W. Hansen
Director
Project Management & Engineering Department

Date

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. Persons who may rely on the information contained in this document should consult with the Municipality of Anchorage, Project Management & Engineering Department for the most current design. Please contact Mr. John Smith, Project Manager at 343-8422 for this information.

TABLE OF CONTENTS

NOTICE TO USERS	I
TABLE OF CONTENTS	II
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION.....	1
2.1 EXISTING FACILITIES	1
2.2 PURPOSE AND NEED	7
2.2.1 Purpose	7
2.2.2 Need	7
3.0 DESIGN STANDARDS.....	7
3.1 PROJECT DESIGN CRITERIA.....	7
3.1.1 Street Design Criteria	7
3.1.2 Pathway Design Criteria.....	7
3.1.3 Drainage Evaluation and Design Criteria	8
3.1.4 Public Transit Design Criteria.....	8
3.1.5 Compliance with Adopted Plans and AMC Title 21.....	8
3.2 EXCEPTION TO STANDARDS.....	8
3.3 TRAFFIC PROJECTIONS	8
4.0 PUBLIC INVOLVEMENT.....	9
4.1 DOOR-TO-DOOR PERSONAL INTRODUCTION	9
4.2 PROJECT WEB SITE	9
4.3 NEWSLETTERS AND OTHER PRINT MEDIA.....	10
4.4 MEETINGS	10
4.4.1 Public Meetings.....	10
4.4.2 Citizens’ Liaison Committee, Citizens Advisory Group, and Project Advisory Committee Meetings.....	10
4.4.3 Business and Property Owners’ Meetings	11
4.4.4 Community Council Meetings.....	11
4.5 DISPLAY ADVERTISING	11
4.6 PUBLIC COMMENT.....	11
5.0 DESIGN CONSIDERATIONS.....	15
5.1 SAFETY IMPROVEMENTS.....	15
5.2 RIGHT-OF-WAY.....	15
5.3 PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES	15
5.3.1 Pedestrian and Bicycle Facilities.....	16
5.3.2 Transit Facilities.....	16
5.4 ACCESS CONTROL	16
5.5 PARKING.....	16
5.6 ENVIRONMENTAL CONSTRAINTS	16
6.0 TRAFFIC ANALYSIS	16
6.1 FUTURE TRAFFIC VOLUMES.....	17
6.2 EXISTING TURNING MOVEMENTS.....	17
6.3 FUTURE TURNING MOVEMENTS	17
6.4 2014 EXISTING LEVEL-OF-SERVICE	17
6.5 2017 AND 2037 LEVEL-OF-SERVICE	17
7.0 DESIGN RECOMMENDATION	19
7.1 GENERAL ALIGNMENT	20

7.2	PEDESTRIAN FACILITIES	20
7.3	27 TH AVENUE INTERSECTION REALIGNMENT.....	20
7.4	PARKING.....	20
7.4.1	On Street Parking.....	20
7.4.2	Private Parking.....	21
7.4.3	Public Parking.....	21
7.5	LIGHTING.....	21
7.6	SIGNALIZED INTERSECTIONS.....	21
7.7	MAINTENANCE CONSIDERATIONS.....	21
8.0	LANDSCAPING AND AMENITIES	25
8.1	EXISTING LANDSCAPING	25
8.2	PROPOSED AMENITIES	25
8.2.1	Landscaping.....	25
8.2.2	Streetscape Amenities	25
8.3	PROPOSED LANDSCAPING OUTSIDE THE RIGHT OF WAY	26
9.0	DRAINAGE	27
9.1	EXISTING FACILITIES	27
9.1.1	Storm Drain Inspection.....	27
9.2	HYDROLOGY AND HYDRAULIC ANALYSIS	27
9.2.1	Water Quality Treatment	27
10.0	SOILS AND PAVEMENT DESIGN.....	28
10.1	PROJECT SETTING	28
10.2	EXISTING STRUCTURAL SECTION.....	28
10.3	EXISTING SUBSURFACE CONDITIONS.....	28
10.4	PAVEMENT SECTIONS	29
11.0	UTILITY IMPACTS	29
11.1	ILLUMINATION.....	29
11.2	ELECTRIC	29
11.3	TELECOMMUNICATION FACILITIES.....	30
11.4	CABLE TV.....	30
11.5	NATURAL GAS	30
11.6	WATER	30
11.7	SEWER.....	31
12.0	RIGHT OF WAY.....	31
13.0	ESTIMATE OF PROBABLE COST.....	32
APPENDICES.....		1
APPENDIX A		A
DESIGN CRITERIA.....		A
APPENDIX B		B
COMPLIANCE MATRIX		B
APPENDIX C		C
PUBLIC INVOLVEMENT		C
APPENDIX D		D
PLAN & PROFILE – BUILD ALTERNATIVE		D
APPENDIX E		E

TRAFFIC PROJECTIONS.....	E
APPENDIX F.....	F
LEVEL OF SERVICE ANALYSIS	F
APPENDIX G.....	G
LANDSCAPE AND STREETScape AMENITIES.....	G
APPENDIX H.....	H
EXISTING UTILITIES	H
APPENDIX I.....	I
RIGHT OF WAY.....	I
APPENDIX J.....	J
COST ESTIMATE.....	J
APPENDIX K.....	K
2002 TRAFFIC AND SAFETY ANALYSIS ADOT&PF (ON CD).....	K
APPENDIX L.....	L
2002 ENGINEERING ANALYSIS REPORT ADOT&PF (ON CD).....	L
APPENDIX M.....	M
LEVEL OF SERVICE WORKSHEETS (ON CD).....	M
APPENDIX N.....	N
DRAINAGE STUDY (ON CD).....	N
APPENDIX O.....	O
GEOTECHNICAL REPORT (ON CD).....	O

TABLE OF FIGURES

Figure 2-1 Project Location	2
Figure 2-2 Existing Typical Sections	3
Figure 2-3 Existing Roadway Configuration and ROW.....	5
Figure 2-4 Corridor Zoning	6
Figure 7-1 Proposed Typical Sections.....	23
Figure 7-2 3-Lane Alternatives	24

TABLE OF TABLES

Table 4-1 Comment and Response Summary	11
Table 6-1 2017 Peak Hour LOS	18
Table 6-2 2027 Peak Hour LOS	18
Table 6-3 2037 Peak Hour LOS	19
Table 13-1 Cost Estimate.....	32

1.0 EXECUTIVE SUMMARY

An executive summary will be included in the final version.

2.0 INTRODUCTION

The Spenard Road project design process started in 2003 as a Highway Safety Improvement Project (HSIP) to address pedestrian, bicycle, and motorist safety issues. It has been delayed for a variety of reasons including public concerns and funding. This Design Study Report (DSR) is the formal documentation of the Spenard Road Reconstruction engineering effort. The DSR was developed to evaluate alternatives, provide recommendations, and forward the project to the design phase. Previous project phases have included a *Traffic and Safety Analysis*¹ and an *Engineering Analysis Report*². To address safety concerns, these studies recommended the current 4-lane road between Northern Lights Boulevard and Hillcrest Drive be converted to a 3-lane section, one lane in each direction with a continuous two-way left turn lane (CTWLTL). This phase of the project will move this safety recommendation forward. Proposed improvements include:

- Reducing the existing roadway width,
- Reconstructing the structural section and pavement resurfacing,
- Improving drainage facilities,
- Enhancing pedestrian, bicycle, and transit facilities,
- Upgrading traffic signals and street illumination and,
- Incorporating landscape, hardscape, and parking amenities.

Figure 2.1 shows the project location.

2.1 EXISTING FACILITIES

Spenard Road is one of the older roadways in Anchorage. It started out as a trail in the early 1900's, leading from the original Anchorage Townsite south towards Lakes Spenard and Hood. Today, Spenard Road is a minor arterial as classified in the *Official Streets and Highways Plan*³ (OSH&P). From Benson Boulevard to Hillcrest Drive, Spenard is a four-lane undivided two-way roadway. This section of Spenard Road consists of a 48-foot wide roadway (face-of-curb to face-of-curb). Figure 2.2 shows the existing typical sections.

¹ Spenard Road: Hillcrest Drive to Minnesota Drive – Channelization and Pedestrian Facilities Improvement, Traffic and Safety Analysis. Alaska Department of Transportation and Public Facilities, June 2002.

² Spenard Road: Hillcrest Drive to Minnesota Drive – Channelization and Pedestrian Facilities Improvement, Engineering Analysis Report. Alaska Department of Transportation and Public Facilities, June 2002.

³ Official Streets and Highway Plan, Municipality of Anchorage Department of Community Planning and Development, December 1996.



5300 A Street
Anchorage, Alaska 99518
(907) 272-5451 Fax: 272-9065

3161 E. Palmer-Wasilla Hwy, #2
Wasilla, Alaska 99654
(907) 357-9129 Fax: 357-9140

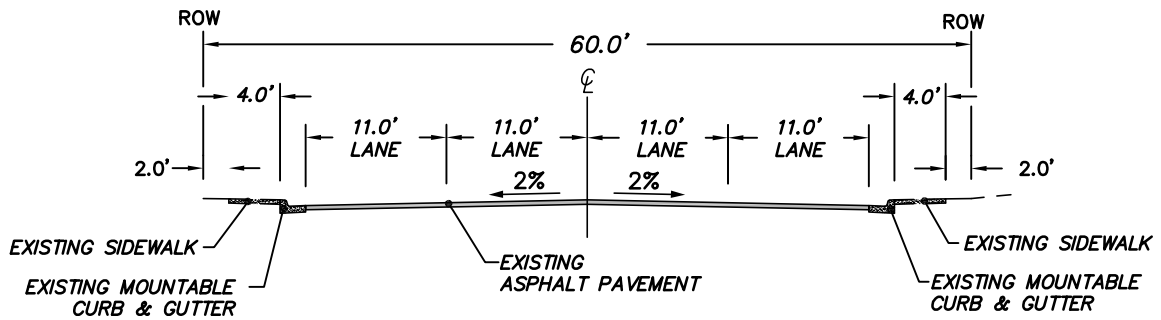
SPENARD ROAD RECONSTRUCTION PHASE II
HILLCREST DR. TO BENSON BLVD.
MOA Project No. 03-022B
LOCATION AND VICINITY MAP

DRAWN BY: DAJ
CHECKED BY: JWS

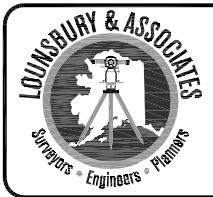
FIGURE 2.1

DATE: 1/8/2016
SCALE: 1"=700'

2.1



**SPENARD EXISTING TYPICAL SECTION
HILLCREST DRIVE TO BENSON BOULEVARD**



5300 A Street
Anchorage, Alaska 99518
(907) 272-5451 Fax: 272-9065

3161 E. Palmer-Wasilla Hwy, #2
Wasilla, Alaska 99654
(907) 357-9129 Fax: 357-9140

**SPENARD ROAD RECONSTRUCTION PHASE II
HILLCREST DR. TO BENSON BLVD.
MOA Project No. 03-022B
EXISTING TYPICAL SECTION**

DRAWN BY: DAJ
CHECKED BY: JWS

FIGURE 2.2

DATE: 1/8/2016
SCALE: N/A

2.2

There are ten intersections with cross streets along the project corridor. Three of these intersections are signalized: Benson Boulevard, Northern Lights Boulevard, and Fireweed Lane. Many of the minor side street intersections are offset 50-100 ft. In addition to the cross streets, numerous driveways of varying width serve adjoining businesses that front Spenard Road.

There is a 4-foot wide sidewalk on the west side of Spenard Road between 30th Avenue and Benson Boulevard. There is no sidewalk on the east side. A 4-foot wide sidewalk exists between Benson Boulevard and Hillcrest Drive on both sides of the street. At the major, and some minor intersections, curb ramps exist but do not meet current Americans with Disabilities Act (ADA) standards. In all cases, the pedestrian walks immediately adjacent to the traffic. There is no shoulder providing a buffer between the travel lane and the sidewalk. There are no bicycle facilities along Spenard Road.

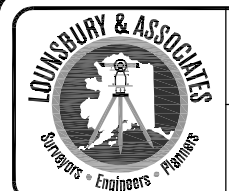
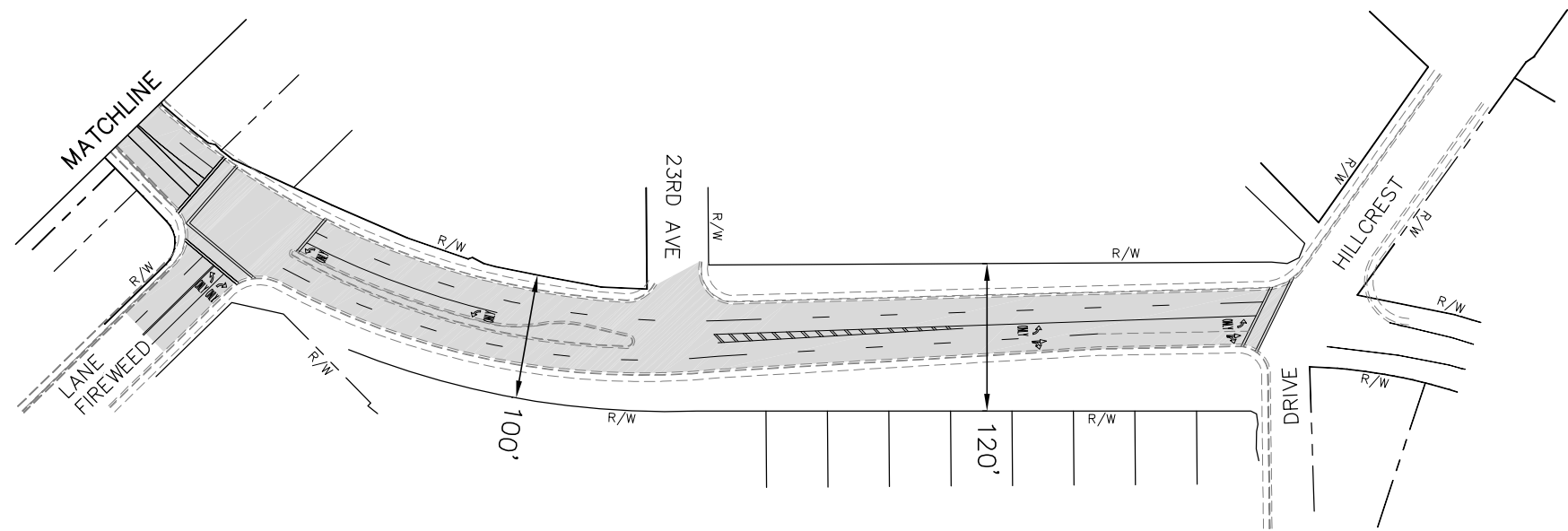
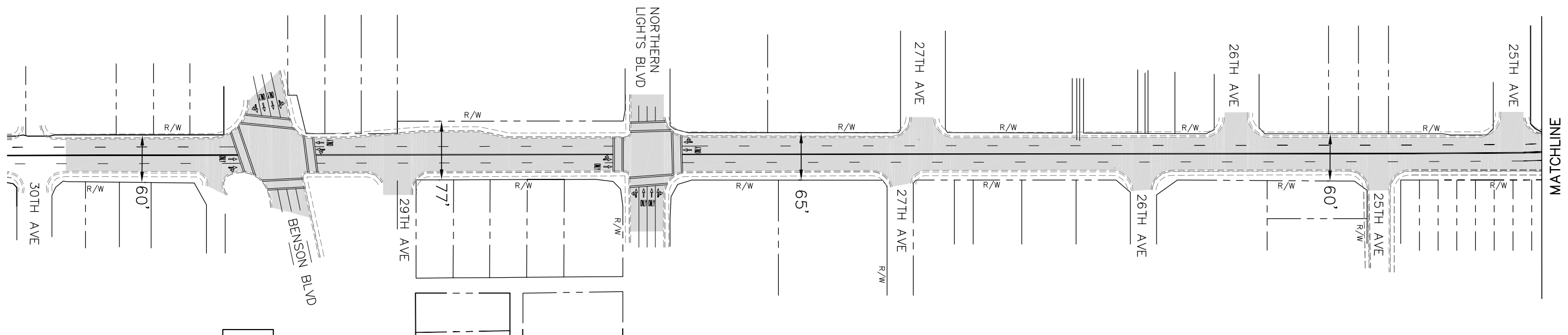
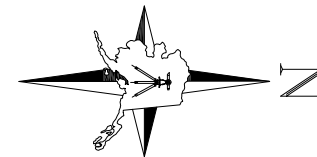
The People Mover provides public transportation along Spenard Road from Minnesota Drive to Hillcrest Drive. This section of Spenard Road has one of the highest public transportation usages in Anchorage. There are currently ten bus stops along the project corridor with a vast majority of the stops not meeting current ADA or municipal standards. Many stops consist only of a People Mover sign attached to a utility pole.

Right-of-way (ROW) width ranges from 60 ft. to 120 ft. Figure 2.3 shows the existing roadway configuration and ROW widths. Right-of-way information is based on Municipality of Anchorage grid maps.

The roadway has a posted speed limit of 35 mph.

Spenard Road serves numerous abutting businesses and surrounding neighborhoods. Land use along Spenard Road is commercial, zoned B-3, General Business District. In addition, there are areas near Spenard Road zoned R-2M, R-3, and R-4, all Multi-family Residential. Figure 2.4 illustrates the corridor zoning.

The project is not expected to have any long term impact on projected land use in the vicinity. The land use along the corridor is B-3. This project will support the General Business District and encourage redevelopment.



5300 A Street
Anchorage, Alaska 99518
(907) 272-5451 Fax: 272-9065

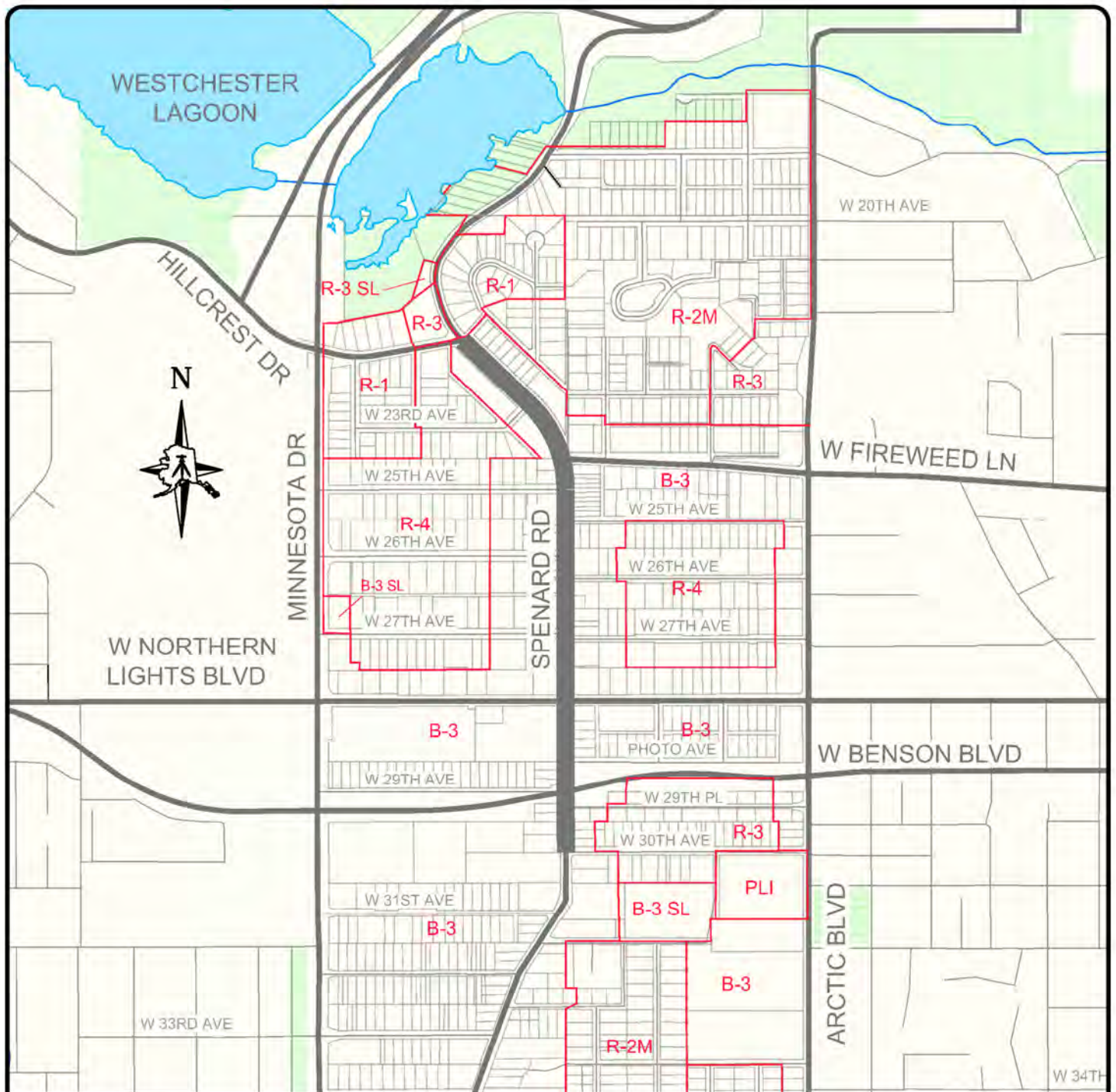
3161 E. Palmer-Wasilla Hwy, #2
Wasilla, Alaska 99654
(907) 357-9129 Fax: 357-9140

SPENARD ROAD RECONSTRUCTION PHASE II
HILLCREST DR. TO BENSON BLVD.
MOA Project No. 03-022B

EXISTING LANE CONFIGURATION/ROW WIDTH

DRAWN BY: DAJ	FIGURE 2.3	DATE: 1/8/2016
CHECKED BY: JWS		SCALE: 1"=700'

2.3



LEGEND:

PLI-p	Public Lands and Institution District-Park	R-4	Multiple-Family Residential District
R-1	One-Family Residential District	B-3	General Business District
R-2M	Multiple-Family Residential District	-SL	Special Limitations by Ordinance
R-3	Multiple-Family Residential District		



5300 A Street
Anchorage, Alaska 99518
(907) 272-5451 Fax: 272-9065

3161 E. Palmer-Wasilla Hwy, #2
Wasilla, Alaska 99654
(907) 357-9129 Fax: 357-9140

**SPENARD ROAD RECONSTRUCTION PHASE II
HILLCREST DR. TO BENSON BLVD.
MOA Project No. 03-022B
CORRIDOR ZONING**

DRAWN BY: DAJ
CHECKED BY: JWS

FIGURE 2.4

DATE: 1/8/2016
SCALE: 1"=700'

2.4

2.2 PURPOSE AND NEED

2.2.1 Purpose

The purpose of this project is to reconstruct Spenard Road to current Municipality of Anchorage minor arterial standards and enhance safety for drivers, non-motorized users, and transit riders while accommodating traffic to the year 2037.

2.2.2 Need

Spenard Road needs to be reconstructed to improve roadway elements such as structural section, pavement, driveways, curb cuts, lighting, drainage, sidewalks, and curb ramps that do not meet current MOA and national standards. Safety is a concern along Spenard Road. Many locations have a high accident rate. The Spenard Road corridor also supports one of the highest pedestrian and transit uses within the MOA. Current pedestrian and transit facilities along the corridor are minimal and do not meet current standards. The improved corridor must accommodate the year 2037 traffic levels at an acceptable level of service.

3.0 DESIGN STANDARDS

The objective of establishing project design standards and criteria is to promote a safe, functional, and durable roadway. The design criteria listed below provide the design standards adopted for this project. Applicable criteria are presented in Appendix A.

3.1 PROJECT DESIGN CRITERIA

3.1.1 Street Design Criteria

The Spenard Road project will be completed according to standards established by the Municipality of Anchorage *Design Criteria Manual*⁴ (DCM). The DCM references the latest edition of the American Association of State Highway Transportation Officials (AASHTO) *Green Book*⁵. Work will also be required within Alaska Department of Transportation and Public Facilities' (ADOT&PF) right-of-way. The Alaska Preconstruction Manual (PCM) design procedures will be used in these areas. In the event of conflict between the DCM, PCM, and the Green Book, DCM provisions will prevail.

3.1.2 Pathway Design Criteria

The construction of multi-use pathways along Spenard Road will be completed according to the standards established by the DCM, *Areawide Trails Plan*⁶, and

⁴ Design Criteria Manual, Municipality of Anchorage, Project Management and Engineering, January 2007.

⁵ American Association of State Highway Transportation Officials (AASHTO). A Policy on Geometric Design of Highways and Streets. Washington D.C.

⁶ Areawide Trails Plan, Municipality of Anchorage, Department of Community Planning and Development, April 1997.

AASHTO's *Guide for the Development of Bicycle Facilities*⁷. Design considerations will also reflect the Americans with Disabilities Act.

3.1.3 Drainage Evaluation and Design Criteria

Design standards and procedures for urban drainage will be determined according to the criteria established by the DCM. Water quality stipulations will be based on a 2-year, 6 hour storm. Pipe size requirements will be based on a 10-year, 24 hour storm.

3.1.4 Public Transit Design Criteria

The bus stops along Spenard Road will be evaluated according to the criteria established by the DCM and MOA Transit Guidelines.

3.1.5 Compliance with Adopted Plans and AMC Title 21

The Spenard Road Reconstruction project must consider adopted plans and comply with their provisions as much as feasible. The following plans will be considered:

- Anchorage Bowl Comprehensive Plan 2001
- West Anchorage District Plan, 2012
- Spenard Corridor Technical Report, April 2011
- Interim 2035 Metropolitan Transportation Plan (MTP)
- Official Streets and Highway Plan (1996, Amended 2005)
- Anchorage Pedestrian Plan, 2007
- Anchorage Bicycle Plan, 2010

An adopted plans compliance matrix is included in Appendix B.

3.2 EXCEPTION TO STANDARDS

Two design waivers have been identified for the project:

- The continuous left turn lane will be 13 feet wide. The DCM recommends 14 feet wide.
- The minimum grade of the road will be 0.4%. The DCM recommends 0.5% minimum grade.

Design waivers will be prepared and submitted to the Municipal Engineer for review and approval.

3.3 TRAFFIC PROJECTIONS

A twenty-year design life is standard for a roadway reconstruction project. Traffic projections were developed for the design year 2037. This study reviewed historical traffic data and the Anchorage Metropolitan Transportation Solutions (AMATS) forecast model.

⁷ Guide for the Development of Bicycle Facilities, American Association of State Highway Transportation Officials, Washington D.E., 1999.

See Section 6.0 Traffic Analysis for future traffic volume projections.

4.0 PUBLIC INVOLVEMENT

Public involvement is conducted to gain local insight, identify issues and solutions, and develop an understanding of a project's purpose and need. The public involvement plan for this project outlined a process to support development of a context sensitive solution for Spenard Road. Public involvement activities are discussed below and outlined in Appendix C Chronology of Public Involvement Activities. For completeness, the chronology begins with the Highway Safety Improvement Program project started in 2000. The chronology, and this section, also reference MOA planning documents providing guidance for Spenard Road Reconstruction project development such as the New Title 21, the MOA Bicycle Plan, and the West Side District Plan.

The paragraphs below summarize the public involvement completed during the design phase of the project.

4.1 DOOR-TO-DOOR PERSONAL INTRODUCTION

Several times during project development, the project team walked the corridor to inform adjacent businesses, in writing and in person, about the project.

- In August 2005, the project team walked the project corridor to introduce the project to the residents and businesses along the corridor via a bi-lingual (English/Korean) flyer announcing the project and containing project team contacts.
- In August 2006, the project team walked the one-way couplet corridor area providing a fact sheet about the couplet and to discuss the change with residents and businesses along that corridor. This flyer was also mailed to property owners and businesses.
- In September 2007, an interim safety project, initiated by the MOA, changed traffic patterns in the vicinity of Cope Street, Photo Avenue and REI. The team distributed a flyer announcing the interim safety project and its changing traffic patterns to residents and businesses along Northern Lights Boulevard, the north side of Benson Boulevard, the shopping center, and Spenard Road.
- In November, 2015, the project team's corridor walks and flyer announced the intent to restart the project, begin final design and intent to construct the project in 2017. The notice also provided notice of field work to be conducted by land surveyors. The flyer was mailed to residents, businesses and property owners in the area between Minnesota Drive and Arctic Boulevard bounded on the north by Chester Creek and the south by 31th Avenue.

4.2 PROJECT WEB SITE

A website was established (www.midtownroads.com) to provide project information, team contacts, updates to the public and provide a portal for public comments and

feedback. The website content includes meeting notices, meeting summaries, and project documents.

4.3 NEWSLETTERS AND OTHER PRINT MEDIA

The project team communicated to area stakeholders in newsletters, flyers, display advertising, and correspondence. The most recent communication was the November 2015 newsletter mailed to area stakeholders (approximately 2670 addressees) to announce the restart of the project.

- In October 2013 a newsletter and a letter to property owners along the corridor provided status of the project.
- Four other newsletters with information about the project were mailed out from 2000 to 2005.

For a full list of the project communications, refer to the Public Involvement Chronology in Appendix C.

4.4 MEETINGS

The project team convened many meetings to gain public comment during project development. The meetings took many forms such as public meetings or open house meetings, individual meetings with stakeholders and advisory group meetings. These are summarized below. A full list of meetings is in the Public Involvement Chronology in Appendix C.

4.4.1 Public Meetings

Public open house meetings were held to present the project and to seek the public's input concerning the project. Public open house meetings were held January 9, 2001, November 7, 2001, and on November 17, 2005.

4.4.2 Citizens' Liaison Committee, Citizens Advisory Group, and Project Advisory Committee Meetings

The project team twice invited stakeholders to participate in advisory groups.

A 15 member Citizens' Advisory Group (CAG) consisting of corridor stakeholders was established and convened for four meetings. The team presented background about the project, issues, and discussed possible solutions. The CAG met on January 17, 2006, May 16, 2006, June 20, 2006, and August 8, 2006.

A Citizens' Liaison Committee (CLC) of corridor stakeholders met with the team to discuss issues and possible solutions. The committee provided feedback to the project team that is reflected in the project design. They met on February 13, 2013, January 7, 2014, and February 13, 2014. The group will be asked to review this draft Design Study Report and provide feedback.

4.4.3 Business and Property Owners' Meetings

One-on-one meetings were held throughout the project with property owners and businesses along the project corridor to discuss impacts to their business and how the impacts can be mitigated. Additional meetings are anticipated during final design.

4.4.4 Community Council Meetings

The project lies within or adjacent to three community councils – Spenard, Midtown, and North Star. In addition, the project has regional significance so the umbrella council organization, the Federation of Community Councils, was also included in public information distributions. The team communicated to council and federation members via email to announce the project public meetings, website updates and other events. The project team attended council meetings in advance of planned events.

4.5 DISPLAY ADVERTISING

Display advertising was placed in Anchorage Daily News, Alaska Dispatch News, and/or Anchorage Press announcing public meetings.

4.6 PUBLIC COMMENT

The project team received comments at project events, via email, in handwritten comment sheets, and by telephone throughout the project. The table below summarizes issues raised in public comments and the team's responses to them.

Table 4-1 Comment and Response Summary

Comment Category	Comment	Response
Bicycle Safety	Some commenters preferred a bike lane on the street to a pathway shared with pedestrians. Both of these bike facilities would provide a needed connection to the bike path at Westchester lagoon.	8-foot multi-use pathways are planned for both sides of the road. Four foot shoulders, including the gutter pan, have been provided from 27th Avenue to Hillcrest Drive which do not meet standards for a bike lane, but does provide some on street space for bicyclist.
Bicycle Safety	Commenters requested there be either enough space for a parallel-parked vehicle to open their door without hitting a bicyclist or include back-in angle parking to avoid this conflict zone.	Locations with parallel parking design will meet current design standards and dimensions. The arterial road classification prohibits use of back-in angle parking in the corridor.

Comment Category	Comment	Response
Buses	Provide bus turnouts at bus stops so buses don't hold up traffic.	Several turnouts are included in the project design.
Traffic laws	Make it illegal to not let a bus back into traffic.	Changing traffic laws is out of scope of this project.
Business	Commenters encouraged/supported any improvements that promote the town center envisioned in the Comprehensive Plan.	Noted.
Business Impacts, Access	Commenters concerned that proposed medians would limit business access.	Medians are planned at three intersection locations: Fireweed Lane, Northern Lights, and Benson Boulevard. They are required to limit left turning movements across queued traffic at intersections.
Business Impacts, Parking	Provide signs to direct folks to public parking in the area.	Where applicable, the signage will be included.
Business Impacts, Parking	Consider both customer and employee parking in planning the project. Ideas to facilitate increasing parking included back-in angle parking and creating a parking district with coordinated maintenance.	Both customer and employee parking is being considered.
Business Impacts, Parking, Hillcrest Drive to Fireweed Lane	Research and consider the parking reserve on Spenard Road between Hillcrest Drive and Fireweed Lane.	The project team is taking the parking reserve into consideration when addressing parking impacts in this area.
Business Impacts, New Title 21 Requirements	Consider parking requirements that would have to be met for the sale or additional development of a commercial building/lot.	Parking studies are being conducted on all affected properties.
Business, Landscaping	Commenters supported landscaping efforts to improve the aesthetics of Spenard Road.	Landscaping is planned for the corridor in coordination with property owners.

Comment Category	Comment	Response
Construction Access	Commenters raised concerns about business access, parking during construction and requested regular communication with businesses.	Construction team will provide communications during construction consistent with current MOA practice.
Construction Scheduling	Commenters suggested that construction should be done at night, in phases, and before it snows.	The team will address in specifications and guidance to the contractor.
Construction Impacts to local residents	Consider temporary or permanent speed humps on 25 th , 26 th , and 27 th Avenues to mitigate the impacts to the residents and cut-through traffic during construction.	To be considered.
Construction Access	Don't construct the same way that Arctic Boulevard was constructed because it was too hard on businesses.	The team acknowledges this concern. Traffic patterns and road network in the Spenard Road area allows for more flexibility for traffic routing during construction.
Design	Commenters supported and opposed the four-lane to three-lane conversion.	After years of discussion, the Mayor of Anchorage selected the three-lane roadway to advance the project.
Design	Commenters requested public art and consideration of way finding signs that match the spirit of Spenard and includes public process.	The project team will coordinate landscaping details with property owners and businesses. The project will be reviewed by the Urban Design Commission.
Historic Spenard	Recognize the historical nature of Spenard neighborhood.	The project team will consider the character of Spenard in design elements.
Lighting	Provide adequate lighting for the street and pedestrian facilities, without shining into residences. Bollard type lighting was suggested for high use pedestrian areas.	Lighting will be designed in accordance with Municipal design guidelines. Modern lighting design allows the designer to direct the light to the road right-of-way. Bollard lighting may be considered in select areas.

Comment Category	Comment	Response
Maintenance	Consider snow storage to reduce visibility obstructions at street corners and driveways.	Design will consider sight distance at intersections and driveways. Maintenance and Traffic Engineering will review designs.
Non-motorized user safety	Provide for pedestrian safety on the corridor and especially at Spenard Road/Hillcrest Drive near West High School.	The project enhances all non-motorized transportation facilities in the project corridor.
Non-motorized user safety	Commenters expressed concern about access for users with disabilities and for the safety of impaired pedestrians.	The project design will be compliant with the Americans with Disabilities Act.
Maintenance, Snow Removal	Limited snow removal was seen as an impediment to pedestrian and bike access and safety	Noted.
Pedestrian Safety Bike Safety	The path/trail north of Hillcrest Drive to Chester Creek needs to be a protected trail for both pedestrians and bicyclist. Also, fix the concrete sidewalk at the Chester Creek bridge.	Addressed with the Hillcrest Drive to Chester Creek design and construction completed in 2010.
Pedestrian Safety	Provide midblock pedestrian crossings along Spenard Road in the section between Northern Lights Boulevard and Fireweed Lane.	The project design includes one mid-block crossing in this area.
Pedestrian Safety	Concerns that landscape or bus stop design might encourage loitering.	The landscape/hardscape design will consider features that discourage loitering.
Process	Why has the project stopped and started multiple times?	The project schedule reflects the level of controversy and interest in the project.
Project Need	The improvements are not needed, spend the money elsewhere.	Numerous Municipal planning documents call for improving Spenard Road. The project team is tasked with complying with these documents.

Comment Category	Comment	Response
Project Need	Commenters expressed support of the project hoping to see it built as soon as possible.	Noted.
Zoning	Consider changes in zoning in accordance with the West Anchorage District Plan. The area utilities can support higher density.	The project design is in compliance with adopted Municipal guidance documents.

5.0 DESIGN CONSIDERATIONS

The following sections discuss important design considerations for this project.

5.1 SAFETY IMPROVEMENTS

The ADOT&PF initiated this project as a federally sponsored Highway Safety Improvement Project (HSIP) that focused on improving motorized and non-motorized safety concerns. To address these concerns, the previous project phase (*Traffic and Safety Analysis* and *Engineering Analysis Report*) recommended a 3-lane cross section from 36th Avenue to Hillcrest Drive. This phase of the project will move this recommendation forward.

5.2 RIGHT-OF-WAY

The intent of this project is to develop a design that meets the stated Purpose and Need while containing proposed improvements within the existing ROW to the extent possible.

5.3 PEDESTRIAN, BICYCLE AND TRANSIT FACILITIES

The public throughout the scoping and public involvement process has repeatedly voiced the need for improved and enhanced pedestrian, bicycle and transit facilities.

The *Areawide Trails Plan* identifies a multi-use paved trail along one side of Spenard Road. The standard for a multi-use paved trail recommends a width of 8- to 10-feet.

The Anchorage Bowl Comprehensive Plan, *Anchorage 2020*⁸ identifies Spenard Road as a “transit-supportive development corridor”.

⁸ Anchorage 2020 / Anchorage Bowl Comprehensive Plan, Municipality of Anchorage Department of Community Planning and Development, March 2000.

5.3.1 Pedestrian and Bicycle Facilities

Due to the limited available ROW width, both separate pedestrian and bicycle facilities cannot be accommodated throughout the corridor. Public involvement during the Engineering Analysis phase favored enhanced pedestrian facilities over bicycle facilities. This same sentiment has continued through to this phase. As such, 8-foot multi-use pathways are being proposed.

Four foot shoulders, including the gutter pan, have been provided from 27th Avenue to Hillcrest Drive which do not meet standards for a bike lane, but do provide some on street space for bicyclist.

5.3.2 Transit Facilities

The design of transit facilities have been coordinated with MOA Transit. This process will continue during the design phase. All transit stops will be improved to current standards.

5.4 ACCESS CONTROL

Access to all properties along the project will be maintained. In some cases, driveways may be eliminated, multiple driveways may be reduced in number, driveway width may be reduced, and driveway location may be moved. Driveways in some locations may become right-in/right-out-only configurations due to raised median channelization. Access control issues will be considered during the design phase.

5.5 PARKING

Adequate parking is important to businesses. Many businesses have parking deficiencies along Spenard Road. Several buildings have parking in front of the buildings that require backing over the sidewalk and into the street to exit the parking stall. Elimination of this maneuver is important to the safety of the pedestrians and drivers along the corridor. In isolated locations, decorative concrete walls will be constructed at the ROW line to prevent vehicles from backing over the sidewalk. Parking is a major concern along the corridor.

5.6 ENVIRONMENTAL CONSTRAINTS

There are not environmental constraints along the project. There are no wetlands, waterways or flood plains.

6.0 TRAFFIC ANALYSIS

A traffic analysis consisting of traffic volume projections and a level-of-service determination was performed for this project. This project, as a reconstruction project, requires a 20-year design life (2037). The existing and proposed intersection configurations were reviewed for level-of-service performance. Level-of-service

analysis was performed according to the Highway Capacity Manual⁹ (HCM2000) utilizing Trafficware's Synchro 6 computer software and signal timing plans provided by MOA.

6.1 FUTURE TRAFFIC VOLUMES

Future annual average daily traffic (AADT) volumes were determined for the year 2037 and presented under separate cover, see Appendix E.

6.2 EXISTING TURNING MOVEMENTS

Existing intersection turning movements were obtained from MOA traffic and ADOT&PF for 2014. Intersection counts were taken during the morning (7-9), noon (11:30-1:30) and afternoon (4-6) peak hours. The highest peak hour for Fireweed Lane intersections was the P.M. hour. Northern Lights and Benson Boulevards highest peak hour occurred during the noon timeframe. See Appendix F for peak hour turning movements.

6.3 FUTURE TURNING MOVEMENTS

Existing 2014 turning movements and 2037 AADT were utilized in developing 2017 and 2037 turning movements. Future turning movements were developed for 3 signalized intersections:

- Benson Boulevard and Spenard Road,
- Northern Lights Boulevard and Spenard Road, and
- Fireweed Lane and Spenard Road.

See Appendix F for future turning movements for 2017 and 2037.

6.4 2014 EXISTING LEVEL-OF-SERVICE

The Fireweed Lane and Spenard Road intersection operated at a LOS A during its highest peak hour in 2014. Spenard Road intersection at Northern Lights Boulevard intersection operated at a LOS B during its highest peak hour in 2014. Benson Boulevard and Spenard Road performed at a LOS C during their highest peak hour in 2014. Appendix M contains the LOS worksheets.

All intersections operated at an acceptable LOS in 2014

6.5 2017 AND 2037 LEVEL-OF-SERVICE

No change in the lane configuration is planned for Benson Boulevard and Spenard Road and Northern Lights Boulevard and Spenard Road. The Fireweed Lane and Spenard Road intersection was analyzed for its proposed configuration as a three lane road.

⁹ Highway Capacity Manual HCM2000, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Table 6-1, 6-2, and 6-3 summarize the forecast LOS.

Table 6-1 2017 Peak Hour LOS

Intersection	Intersection LOS	Approach LOS			
		NB	SB	EB	WB
2017 AM					
Benson/Spenard	B	C	E	A	---
Northern Lights/Spenard	B	C	C	---	A
Fireweed/Spenard	C	D	A	---	B
2017 Mid					
Benson/Spenard	C	B	D	B	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B
2017 PM					
Benson/Spenard	C	B	D	B	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B

Table 6-2 2027 Peak Hour LOS

Intersection	Intersection LOS	Approach LOS			
		NB	SB	EB	WB
2027 AM					
Benson/Spenard	B	C	E	A	---
Northern Lights/Spenard	B	C	C	---	A
Fireweed/Spenard	C	D	A	---	B
2027 Mid					
Benson/Spenard	C	B	D	B	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B
2027 PM					
Benson/Spenard	C	B	D	B	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B

Table 6-3 2037 Peak Hour LOS

Intersection	Intersection LOS	Approach LOS			
		NB	SB	EB	WB
2037 AM					
Benson/Spenard	B	C	E	A	---
Northern Lights/Spenard	B	C	C	---	A
Fireweed/Spenard	C	D	A	---	B
2037 Mid					
Benson/Spenard	C	B	E	C	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B
2037 PM					
Benson/Spenard	C	C	E	C	---
Northern Lights/Spenard	B	D	C	---	A
Fireweed/Spenard	C	D	A	---	B

The three signalized intersections within the project corridor overall intersection LOS performance levels are acceptable. However, at each intersection, specific turning movements are expected to operate poorly. At the Northern Lights Boulevard and Benson Boulevard intersections, the predominant signal green time is allocated to the major arterials, and the Spenard Road approaches tend to perform at lower levels-of-service. The Spenard Road and Benson Boulevard intersection southbound approach currently operates at a LOS E with 58.7-second delay. Queuing for this movement commonly extends to the north side of the Northern Lights Boulevard intersection. The LOS is expected to remain at LOS E for the entirety of the project design life.

Likewise, the northbound right-turn at the Spenard Road and Fireweed Lane intersection will likely operate at LOS E for the entirety of the project design life.

Detailed LOS reports are in Appendix M.

7.0 DESIGN RECOMMENDATION

The previous *Traffic and Safety Analysis* (Appendix K) and *Engineering Analysis Report* (Appendix L) recommended a 3-lane section. Refer to these two studies for discussions on design alternatives. The following sections discuss design details that incorporate the preferred 3-lane section into Spenard Road, Hillcrest Drive to Benson Boulevard. Appendix D shows the plan and profile views of the recommended alternatives.

Figure 7.1 shows proposed typical sections.

7.1 GENERAL ALIGNMENT

The general alignment will closely follow that of the existing horizontal and vertical alignments. Alignment considerations include:

- Staying within the existing right-of-way;
- Minimizing impacts to residences and businesses;
- Matching the existing vertical and horizontal alignment while meeting current standards; and
- Minimizing utility impacts and relocations.

7.2 PEDESTRIAN FACILITIES

Public involvement during the Engineering Analysis phase favored enhanced pedestrian facilities. During the Engineering Analysis phase, five 3-lane alternatives were developed that focused on sidewalk placement and width (see Figure 7.2). Based on public comment, Alternative 2 was the preferred alternative.

This same sentiment towards enhanced pedestrian facilities has continued through to this phase. A review of the previously developed alternatives revealed the public favoring Alternative 3. This alternative is essentially the same as Alternative 2. The only difference is that the space between the sidewalk and curb is utilized as sidewalk.

7.3 27TH AVENUE INTERSECTION REALIGNMENT

The existing 27th Avenue and Spenard Road intersection is off-set by 50 feet. This intersection has a high crash rate which is attributed to the high traffic volumes of the side streets and the off-set configuration.

The property at the northeast corner was purchased to allow the east leg of the intersection to be aligned into a standard four way intersection. There is a high volume of pedestrian crossings at this intersection so colored concrete will be used to highlight the intersection to drivers. The excess area of the lot will be improved for public parking.

7.4 PARKING

To address the parking concerns along the alignment on street parking and public parking lots are being included in the project.

7.4.1 On Street Parking

On street parking is included in the project at two locations. The business at the southwest corner of Spenard Road and 26th Avenue has no legal parking. Three on street parking spaces are being provided on Spenard Road and three on 26th Avenue.

Three buildings on the east side of Spenard Road between 23rd Avenue and Hillcrest Drive have head in parking in front of the buildings that require backing out over the

sidewalk and into the street. Eliminating this parking will affect 15 parking spaces. Seven on street parking spaces will be provided in this area.

7.4.2 Private Parking

In order to provide additional parking for the three buildings on the east side of Spenard Road between 23rd Avenue and Hillcrest Drive, a land swap is proposed with Franz Bakery. MOA would swap the property they own on the southwest corner of Spenard Road and 23rd Avenue for the three lots the bakery currently uses as parking on the east side of Spenard Road, between the three buildings in need of additional parking.

7.4.3 Public Parking

Two public parking lots are planned to address parking concerns along the corridor. The first is on the south side of Photo Avenue east of Spenard Road. 15 spaces will be provided. This will help offset the 11 spaces eliminated in front of the Buckaroo Club and Pizza Olympia.

The second public parking lot will be on the excess land available at the northeast corner of Spenard Road and 27th Avenue after 27th avenue is realigned. 12 spaces will be provided for use of area businesses.

7.5 LIGHTING

A new street lighting system will be constructed for the roadway. Lighting fixtures, matching those used in Phase 1 - Chester Creek to Hillside Drive, will be used. These fixtures include white light and LED energy efficient bulbs meeting current MOA lighting standards.

7.6 SIGNALIZED INTERSECTIONS

There are three signalized intersections along the project corridor. Spenard Road and Benson Boulevard, Spenard Road and Northern Lights Boulevard, and Spenard Road and Fireweed Lane. The Benson Boulevard and Northern Lights Boulevard intersection configuration will remain as they currently exist. Transition from the three lane configuration on each end will be accomplished using standard transition rates.

The Fireweed Lane intersection will be reconfigured to match the three lane roadway. A north bound right turn lane will be provided.

All intersections will function at an acceptable level of service in the design year. See Section 6 for detailed level of service information.

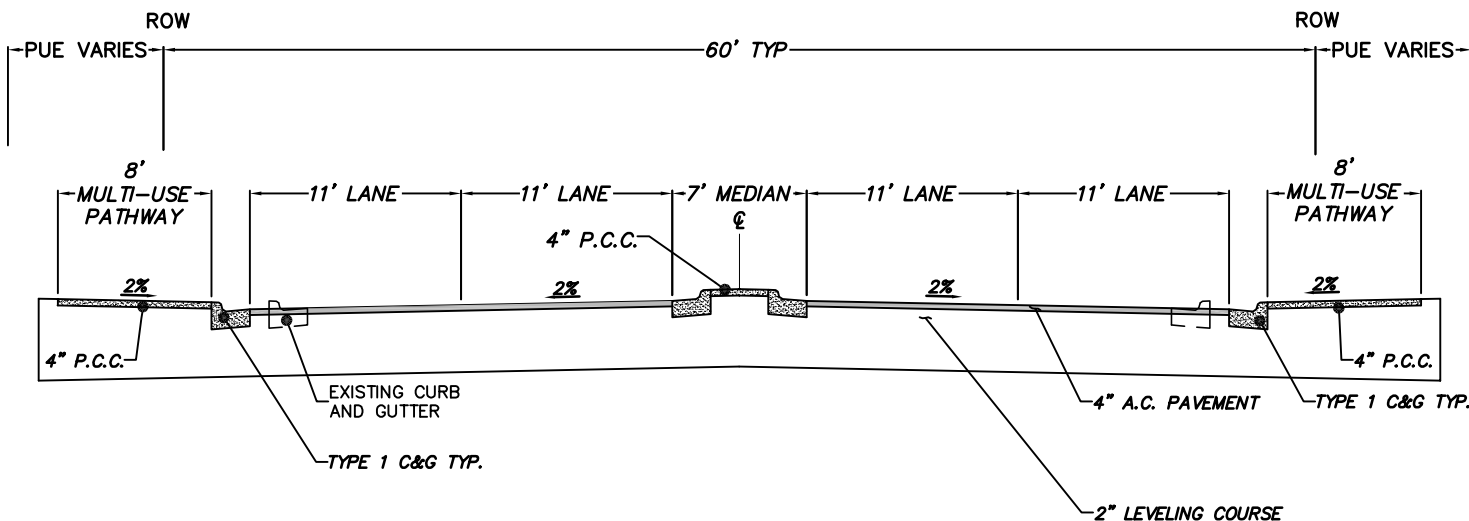
7.7 MAINTENANCE CONSIDERATIONS

Periodic maintenance will be required following construction. This project should reduce overall roadway maintenance as the number of lane miles to be maintained is being reduced from four lanes to three lanes.

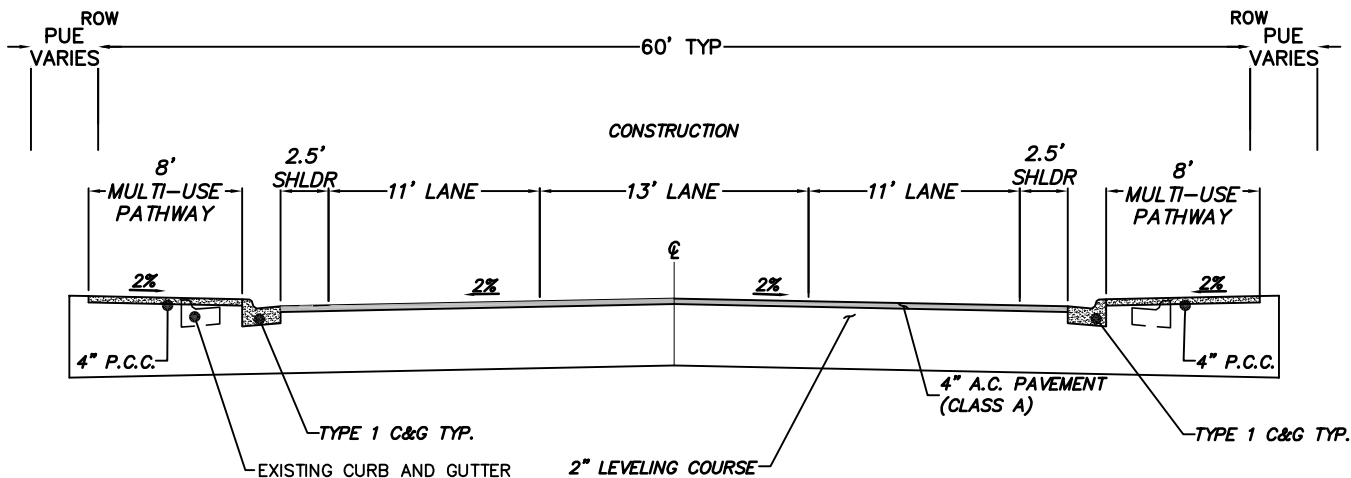
During winter months, snow removal will be required on an as-needed basis. Snow removal requires both an on-street area large enough for temporary snow storage and a clear area large enough to load snow into trucks for off-site disposal.

Winter sand must be removed in the spring and periodic sweeping may continue during the summer months. Design features will be included to trap excess sediments that are not removed by sweeping operations. Regular inspection of drainage facilities will be necessary to determine if any cleaning or repairs are required.

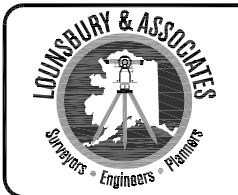
Periodic maintenance will also be required for street lighting, traffic signals, and traffic stripes and signs.



TYPICAL LANE SECTION
 BENSON BOULEVARD TO
 NORTHERN LIGHTS BOULEVARD



3-LANE ALTERNATIVE
 30TH AVE TO BENSON
 NORTHERN LIGHTS BOULEVARD
 TO HILLCREST DRIVE



5300 A Street
 Anchorage, Alaska 99518
 (907) 272-5451 Fax: 272-9065

3161 E. Palmer-Wasilla Hwy, #2
 Wasilla, Alaska 99654
 (907) 357-9129 Fax: 357-9140

SPENARD ROAD RECONSTRUCTION PHASE II
 HILLCREST DR. TO BENSON BLVD.
 MOA Project No. 03-022B

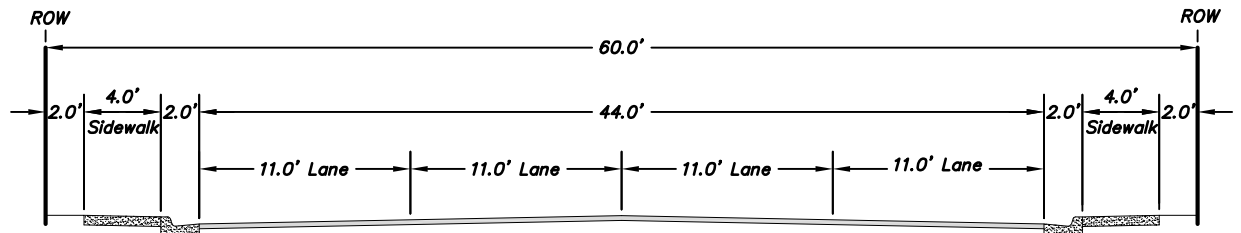
PROPOSED TYPICAL SECTIONS

DRAWN BY: DAJ
 CHECKED BY: JWS

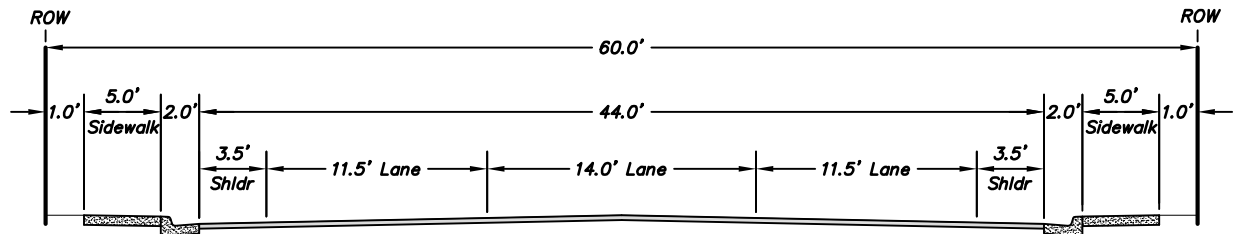
FIGURE 7.1

DATE: 1/8/2016
 SCALE: N/A

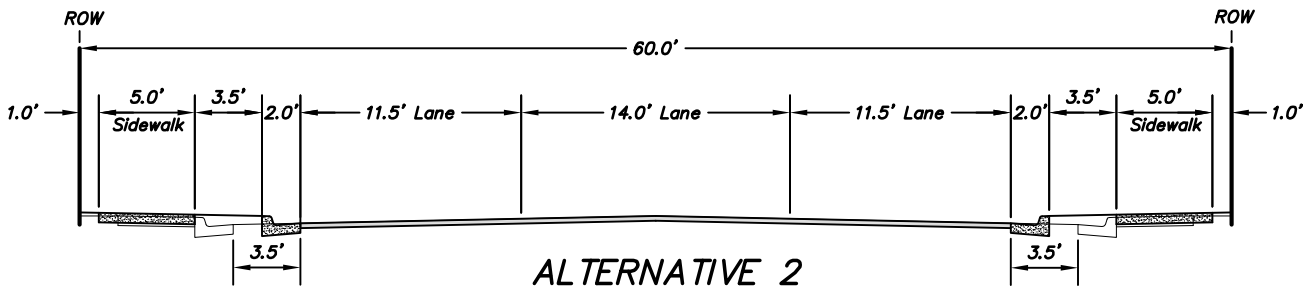
7.1



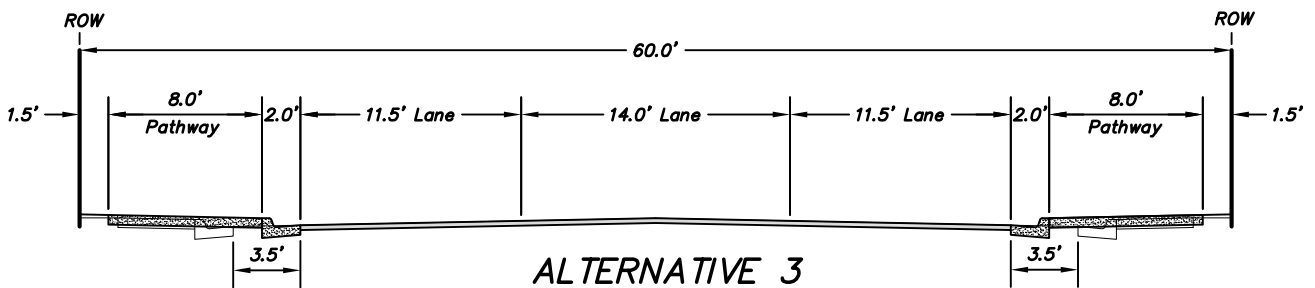
EXISTING



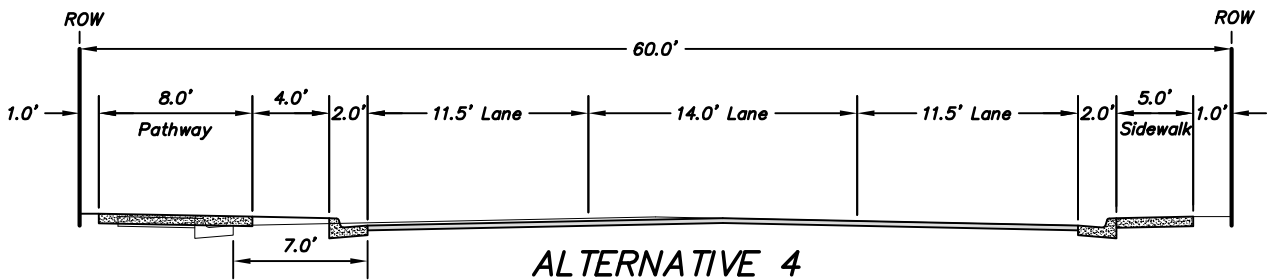
ALTERNATIVE 1



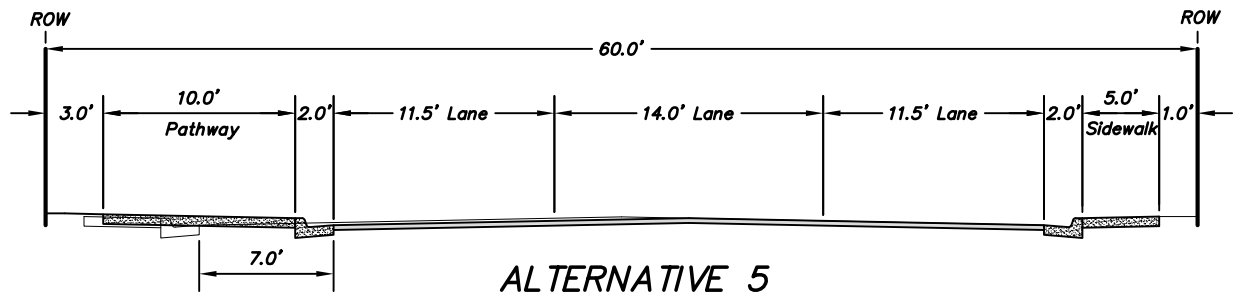
ALTERNATIVE 2



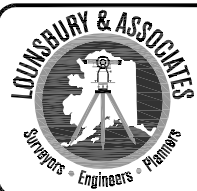
ALTERNATIVE 3



ALTERNATIVE 4



ALTERNATIVE 5

	5300 A Street Anchorage, Alaska 99518 (907) 272-5451 Fax: 272-9065	SPENARD ROAD RECONSTRUCTION PHASE II HILLCREST DR. TO BENSON BLVD. MOA Project No. 03-022B 3-LANE ALTERNATIVES		<h1>7.2</h1>
	3161 E. Palmer-Wasilla Hwy, #2 Wasilla, Alaska 99654 (907) 357-9129 Fax: 357-9140	DRAWN BY: DAJ CHECKED BY: JWS	FIGURE 7.2	

8.0 LANDSCAPING AND AMENITIES

8.1 EXISTING LANDSCAPING

When discussing Spenard Road's landscape and streetscape amenities, it is important to briefly look at its entire alignment from Chester Creek to West International Airport Road. This project, from Hillcrest Drive to Benson Boulevard, is a component of the whole. Two portions of the entire alignment have undergone improvements while others have not. The two have established a landscape and streetscape character with which this project will attempt to blend. A detailed discussion about existing landscape and streetscape amenities along Spenard Road is included in Appendix G.

The existing landscape and streetscape amenities in the project limits are meager. There are some pedestrian scale lights. There are a few planting beds along the alignment on private property.

8.2 PROPOSED AMENITIES

This segment of the Spenard Road corridor is a very vibrant area in Anchorage. It has rich history and character to build upon. The design of landscape and streetscape amenities should draw inspiration from this. This project will capitalize on and reinforce other landscape amenities along reconstructed portions of the Spenard Road Corridor. When considering the space available for landscape and streetscape it is necessary to prioritize other proposed elements necessary in the alignment such as vehicle, pedestrian, and bicycle facilities. In summary, limited space in the ROW limits the opportunity to provide amenities.

8.2.1 Landscaping

Street landscaping, where space allows, will consist of tree, shrub and perennial plantings. New plantings beds will be provided where space allows and in existing landscape beds that will be affected by construction. Existing plants will be retained to the greatest extent possible. However, where the project requires elimination of existing plant material, new will be provided that is appropriate to the space and conditions available.

Where the project is constructing parking areas, perimeter and interior parking lot landscape will be provided as required by Title 21. L1 Visual Enhancement landscaping will be used for perimeter parking lot landscape.

Planting beds will be retained by paving or curbing due to the urban environment. The beds will be dressed with rock mulch over weed barrier fabric.

8.2.2 Streetscape Amenities

Due to the limited space available for landscape plantings along the alignment, streetscape amenities proposed for the project are plentiful. It is intended that they help reinforce historic and vibrant character of the area and provide aesthetically pleasing

solutions to some of the functional needs of the roadway. Amenities are also intended to blend with existing improvements along the Spenard Corridor, increase area identification and provide wayfinding for drivers, pedestrians and cyclists. Proposed streetscape amenities include:

- Decorative Concrete Walls
- Wayfinding Columns
- Pedestrian Plaza at Photo Avenue
- Stamped and Colored Concrete Paving
- Bollards
- Decorative Fence
- Custom Colored Architectural Street Lights
- Decorative Banners
- Retail Business Monument Signs
- Transit Stops

Images of the proposed streetscape improvements are in Appendix G.

8.3 PROPOSED LANDSCAPING OUTSIDE THE RIGHT OF WAY

This project desires to extend landscape and streetscape improvements up to the fronts of businesses along the project alignment. This will be critical to the success of a complete project and streetscape. All landscape improvements on private property will be contingent on the property owner's approval and ROW negotiations. Landscape and streetscape amenity opportunities for these areas currently include:

- Pavements
- Raised planting areas
- Landscape planting beds
- Street tree plantings
- Architectural bollards

The project team will work with each individual business and property owner along the corridor to seek their input and preference on proposed landscape and streetscape design elements. The intent is to provide a functional and aesthetically pleasing solution that will integrate business frontages with the streetscape.

Plan view drawings of the proposed landscaping improvements can be found in Appendix G.

9.0 DRAINAGE

9.1 EXISTING FACILITIES

Existing drainage facilities in the project area can be found in Appendix H. Surface runoff is conveyed through a drainage system consisting of curb and gutter, catch basins, and storm drain pipes.

The Spenard Road project passes through four major drainage basins:

- Basin 1, is south of Benson Boulevard, following Spenard Road south and then west to Fish Creek,
- Basin 2 is along Benson Boulevard and drains west to Fish Creek,
- Basin 3 is along Northern Lights Boulevard and drains east and then north to Chester Creek,
- Basin 4 is along Spenard Road, north of Northern Lights Boulevard and drains north and then west to West Chester Lagoon.

Drainage basin maps and maps of the existing storm drain system can be found in Appendix N.

9.1.1 Storm Drain Inspection

A CCTV inspection was performed on the existing storm drain system. The existing system is a combination of CMP and concrete pipe. Several runs of pipe are corroded and in need of replacement or lining. Several joint repairs in the concrete pipe were also identified. All the repairs will be made during construction.

9.2 HYDROLOGY AND HYDRAULIC ANALYSIS

A drainage analysis was completed using the methodologies and format required by the Municipality of Anchorage's January 2007 Design Criteria Manual (DCM) and March 2007 Drainage Design Guidelines (DDG).

Post-development land use will not change (percent imperviousness will not change). The proposed systems will not change the drainage boundaries of the major drainage basins. Some minor revision to how the sub basins collect the runoff for Basin 4, north of Northern Light Boulevard, will be made but this will have no effect on the basin.

Some of the pipe runs in Basin 4 are undersized according to our hydraulic analysis. The storm drain system in those areas are deep and the system surcharges. No flooding has been reported in those areas by Street Maintenance so it was determined that the pipe would not be replaced.

9.2.1 Water Quality Treatment

The existing system does not include any water quality treatment. The O/G units should be designed so that they are accessible for vacuum truck access and should be cleaned out a minimum of once per year.

The complete drainage report can be found in Appendix N. The proposed storm drain improvements are shown in Appendix D, Plan and Profile – Build Alternative.

10.0 SOILS AND PAVEMENT DESIGN

A detailed geotechnical analysis is included in Appendix O.

10.1 PROJECT SETTING

The alignment between West 30th Avenue and Hillcrest Drive passes through an urban area that is largely bordered by commercial and retail properties. The road grades appear to be generally level with surface drainage generally towards the curbs and away from the intersections.

The pavement is in relatively good condition considering its age, but appears to have been overlaid one or more times. Transverse cracking was the most frequent distress feature that typically extended through curbs and sidewalks, especially between West 30th Avenue and Benson Boulevard and north of Northern Lights Boulevard. Minor rutting was also observed in these areas, especially near major intersections. Occasional longitudinal cracking was generally observed along the entire alignment and appeared to be associated with utilities. Patches and pavement distress resulting from failed overlays or potholes were observed and appeared the most frequent near 30th Avenue (both north and southbound lanes), between Northern lights Boulevard and West 25th Avenue (mainly in outside northbound lane), and in the outside southbound lane near the intersections with Fireweed Lane and West 23rd Avenue.

10.2 EXISTING STRUCTURAL SECTION

The existing structural section found in the boreholes drilled for this investigation was composed of 2.5 inch to 6 inch of asphalt concrete pavement overlying 1.5 feet to 6.7 feet of compact fill materials composed of well to poorly graded sand and gravel with silt (SP-SM, GP-GM, GW-GM, and SP) (see Table 1). The thickest asphalt concrete pavement section was between West 26th Avenue and West 23rd Avenue, which averaged 5 inches thick. All fill materials were slightly frost susceptible (NFS to F2) with moisture contents that averaged 4.2% and ranged from 2.1% to 18.5%.

The majority of the material in the structural section does not meet the MOA specifications for Type II fill primarily due to a fines content (percent passing the No. 200 sieve) that is greater than 6%. However, the grain size distribution tests results indicate that some of the structural fill near the north end of the alignment, particularly at Boreholes G08-10 and G08-12, meet the MOA specifications for Type II fill.

10.3 EXISTING SUBSURFACE CONDITIONS

It appears that the majority of near surface moderate to highly frost susceptible soils (F2 to F4) indicated in the historical boreholes have been excavated and replaced with fill materials that ranged from 1.5 feet to 3.1 feet thick. Compact to dense sandy soil was

encountered underlying the fill materials. These sandy soils had a low frost susceptibility (NFS to F2).

Groundwater was not encountered while drilling within this section of the road alignment to the depths of the exploration. However, groundwater was encountered in Borehole G08-10 at a depth of 14.2 feet below ground surface (BGS) within the standpipe piezometer about two weeks after drilling. Based on the high moisture content, about 21%, measured in the sample collected at 15 feet in Borehole G08-09, a similar piezometric surface may exist at that location as well.

10.4 PAVEMENT SECTIONS

The pavement section options considered were developed in accordance with the 2007 MOA Design Criteria Manual (DCM), which requires the structural section to be designed to provide complete frost protection or allow for limited subgrade frost penetration (maximum subgrade frost penetration up to 10% of the structural section thickness) when the subgrade soils have a frost classification of F2, F3, or F4. Insulation may also be used to limit the frost penetration and reduce the depth of fill required.

Due to the low frost susceptible fill materials and subgrade soils encountered from West 30th Avenue to Hillcrest Drive, the minimum MOA structural section of 1.75 feet may be used in this area. Some sub-excavation should be planned to remove the silt layer that is expected between West Northern Light Blvd. and West 27th Avenue.

11.0 UTILITY IMPACTS

A detailed Utility Conflict Report was prepared during this phase of the project. Underground and overhead utilities including illumination, electric, telecommunication, cable, traffic, gas, storm drain, water, and sewer are present within the Spenard Road corridor. All utilities are expected to have some degree of conflict with any proposed construction activity.

Plan views of existing utilities are found in Appendix H. Because the existing utilities were based on utility as-builts, all utility locations shown are approximate. Further coordination of utilities will occur as the design progresses.

11.1 ILLUMINATION

Street and pathway light poles are found throughout the project area. Both Chugach Electric Association (CEA), and Municipal Light & Power (ML&P) have electric facilities along the Spenard Road corridor.

11.2 ELECTRIC

Overhead and underground electric lines are found throughout the project area. Both Chugach Electric Association (CEA), and Municipal Light & Power (ML&P) have electric facilities along the Spenard Road corridor. Underground electric facilities may require safety watch and continuous support during construction in the vicinity.

CEA's service area runs from 30th Avenue to Northern Lights Boulevard. CEA's electrical system is comprised of overhead transmission and distribution lines mounted on shared-use timber poles on the south and east sides of Spenard Road. MOA requested that this section of CEA's facilities be added to their undergrounding program. CEA has indicated that they will underground these facilities in conjunction with this project's construction.

ML&P's service area runs from Northern Lights Boulevard to Hillcrest Drive. ML&P's system is primarily underground and on the east side of Spenard Road. Overhead facilities are mounted on timber poles from north of 23rd Avenue to north of Hillcrest Drive and from approximately station 80+00 to end of project. ML&P's underground electrical utilities cross Spenard Road at 27th Avenue, between 27th Avenue and 26th Avenue, at 25th Avenue, and Fireweed Lane.

11.3 TELECOMMUNICATION FACILITIES

Alaska Communications Systems (ACS) and GCI, Inc. have underground and overhead telecommunication utilities within the project area.

ACS has underground telecommunication lines crossing Spenard Road at Northern Lights Boulevard, Fireweed Lane, and between Hillcrest Drive. During construction care will be needed to avoid damaging the underground telecommunication lines where they cross Spenard Road.

GCI provides overhead telecommunication lines connected to the power poles on the south and east side of Spenard Road.

11.4 CABLE TV

GCI, Inc provides cable service in the project area. Overhead cable and fiber-optic lines are connected to the power poles on the south and east side of Spenard Road.

11.5 NATURAL GAS

Enstar Natural Gas provides service in the project area. An 8-inch steel pipe runs along the north and west sides of Spenard Road from 30th Avenue to W 25th Avenue. A 4-inch steel pipe continues north and turns west at W 25th Avenue. Gas mains and services cross Spenard Road at many locations including all the intersections between 30th Avenue and W 25th Avenue.

11.6 WATER

Anchorage Water and Wastewater Utility (AWWU) water mains run along the entire length of the project. A 10-inch asbestos concrete (AC) pipe runs north along the west side of Spenard Road from 39th Avenue to 26th Avenue. At this point, a 10-inch cast iron (CI) main extends to the east side of Spenard Road and continues north to 25th Avenue. A 6-inch AC pipe continues north to 25th Avenue and extends to the west side of the street. A 10-inch CI continues north along the west side to Fireweed Lane and reduces to an 8-inch CI pipe to the east. All of the side streets along the corridor have

various sized water pipes constructed of ductile iron (DI), AC, and CI connecting to the main line along Spenard Road.

11.7 SEWER

Anchorage Water and Wastewater Utility (AWWU) sanitary sewer is found in several locations in the project area.

An 8-inch asbestos concrete (AC) sewer line starts at a cleanout at the north side of 30th Avenue and runs along the east side of Spenard Road to Benson Boulevard. A 12-inch AC pipe continues north to a manhole at 29th Avenue and turns east and runs underneath 29th Avenue. At 29th Place, an 8-inch AC line runs east along the north side. At Benson Boulevard, A 12-inch AC main extends to the west.

An 8-inch concrete (CN) sewer main extends north along the east side of Spenard Road from a manhole at the south side of 27th Avenue to a cleanout at the north side of 25th Avenue. At 27th Avenue, an 8-inch CN main runs east along the south side of 27th Avenue. At 26th Avenue, an 8-inch CN main runs east and west along the south side of 26th Avenue. An 8-inch CN main runs east along the north side of 25th Avenue.

An 8-inch CN main extends west along 23rd Avenue and north along the west side of Spenard Road to Hillcrest Drive.

A table summarizing the utility conflicts and utility maps are in Appendix H.

12.0 RIGHT OF WAY

The project will require acquisition of a portion of 53 parcels. A parcel summary and map can be found in Appendix I.

The cost for right of way is estimated to be \$2,650,000. Right-of-way cost is based on MOA 2015 appraised value.

The required ROW acquisitions are mostly slivers of property. They will have impacts to private property. Existing landscaping, sidewalks, and parking areas will be impacted. Two signs will need relocation.

13.0 ESTIMATE OF PROBABLE COST

The Estimated costs are summarized below:

Table 13-1 Cost Estimate

Description	Estimated Cost
Construction	\$9,467,500
Utility Relocations	\$500,000
Right of Way/On Property Improvements	\$2,650,000
Sub Total =	\$12,617,500
Contingency 15%	\$1,892,625
Project Administration, Construction Management, Engineering	\$1,475,000
TOTAL	\$15,985,125

A detailed cost estimate for this alternative can be found in Appendix J, Cost Estimate. Right-of-way cost is based on MOA 2015 appraised value.

APPENDICES

APPENDIX A

DESIGN CRITERIA

APPENDIX B

COMPLIANCE MATRIX

APPENDIX C

PUBLIC INVOLVEMENT

APPENDIX D

**PLAN & PROFILE – BUILD ALTERNATIVE
Hillcrest Drive to Benson Boulevard**

APPENDIX E

TRAFFIC PROJECTIONS

APPENDIX F

LEVEL OF SERVICE ANALYSIS

APPENDIX G

LANDSCAPE AND STREETScape AMENITIES

APPENDIX H

EXISTING UTILITIES

APPENDIX I

RIGHT OF WAY

APPENDIX J

COST ESTIMATE

APPENDIX K

2002 TRAFFIC AND SAFETY ANALYSIS ADOT&PF (ON CD)

APPENDIX L

2002 ENGINEERING ANALYSIS REPORT ADOT&PF (ON CD)

APPENDIX M

LEVEL OF SERVICE WORKSHEETS (ON CD)

APPENDIX N

DRAINAGE STUDY (ON CD)

APPENDIX O

GEOTECHNICAL REPORT (ON CD)