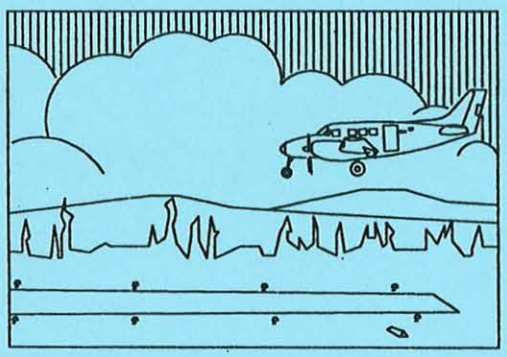
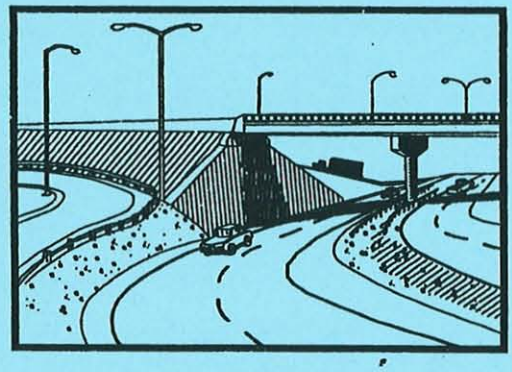
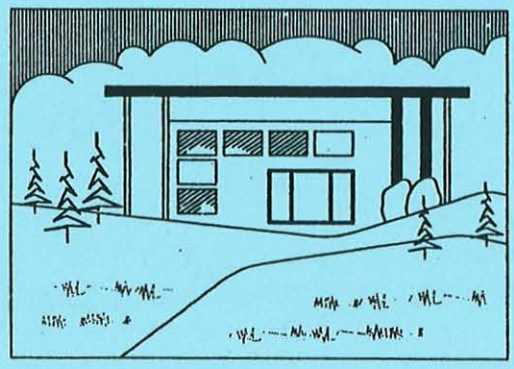
ENVIRONMENTAL ASSESSMENT

UNIVERSITY AVENUE REHABILITATION & WIDENING

PROJECT NO. STP-RS-M-0617(3)/63213



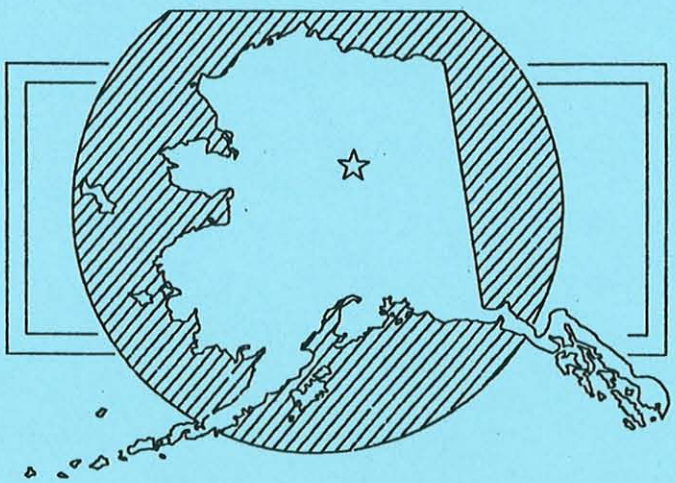




Federal Highway Administration
AUG 15 2005
Juneau, Alaska

STATE OF ALASKA

Department of Transportation and Public Facilities



NORTHERN REGION

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UNIVERSITY AVENUE REHABILITATION AND WIDENING

Fairbanks, Alaska

State Project Number: 63213
Federal Project Number: RS-M-0617(3)

Environmental Assessment

Submitted pursuant to 42 U.S.C. 4332 (2)(c)

U.S. Department of Transportation
Federal Highway Administration

and

State of Alaska Department of Transportation and Public Facilities

Recommended For Public Availability By:

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Approved For Public Availability

8/15/05 Edrie Vinson
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The proposed project involves upgrading and widening 2.12 miles of University Avenue, installation of bicycle paths and sidewalks, replacement of the University Avenue Bridge, and construction of a railroad overpass over University Avenue. Comments on this public review Environmental Assessment are due by September 16, 2005 and should be sent to Janet Brown, P.E., Engineering Manager, DOT&PF, 2301 Peger Rd, Fairbanks, AK, 99708; (907) 451-2283, or via email: janet_brown@dot.state.ak.us

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APPENDICES

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Appendix D Determinations pursuant to the National Historic Preservation Act
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LIST OF ABBREVIATIONS

ADF&G	Alaska Department of Fish and Game
ADT	Average Daily Traffic
ARR	Alaska Railroad Corporation
CAAA	Clean Air Act Amendments
CO	Carbon Monoxide
dBA	A-weighted decibels of sound
DEC	Alaska Department of Environmental Conservation
DNR	Alaska Department of Natural Resources
DOT&PF	Alaska Department of Transportation and Public Facilities
DSEIS	Draft Supplemental Environmental Impact Statement
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FSEIS	Final Supplemental Environmental Impact Statement
FHWA	Federal Highway Administration
FMATS	Fairbanks Metropolitan Area Transportation Study
FNSB	Fairbanks North Star Borough
LUST	Leaking Underground Storage Tank
LOS	Level of Service
MS4	Municipal Stormwater Permit
NAAQS	National Ambient Air Quality Standards
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
NWI	National Wetland Inventory
OHMP	DNR, Office of Habitat Management and Permitting
PPM	Parts Per Million
ROD	Record of Decision
ROW	Right-of-Way
Sec 106	National Historic Preservation Act
Sec 4(f)	U.S. Department of Transportation Act of 1966
Sec 6(f)	Land and Water Conservation Fund Act of 1965, as amended
Sec 401	Clean Water Act
Sec 404	Clean Water Act (33 U.S.C. 1344)
Sec 10	Rivers and Harbors Act of 1899 (33 U.S.C. 403)
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
STIP	State Transportation Improvement Program
SWPPP	Stormwater Pollution Prevention Plan
TSM	Transportation System Management
UAF	University of Alaska Fairbanks
USDOT	U.S. Department of Transportation
USF&WS	U.S. Fish and Wildlife Service
USACE	U.S. Army Corps of Engineers

1.0 PROPOSED ACTION

The Preferred Alternative would:

1) Construct a raised median along University Avenue from the Mitchell Expressway/Parks Highway to Thomas Street
2) Relocate the entrance for the Chena River State Recreation Site
3) Improve pedestrian facilities between the Mitchell Expressway/Parks Highway and Thomas Street.
4) Replace the University Avenue bridge over the Chena River

The project is located within Sections 5-8 and 17-18. Township 1 South, Range 1 West, Fairbanks Meridian.

A new traffic signal at the Sandvik Street and University Avenue intersection would offer safe egress for West Valley High School, Hutchison Institute of Technology, and UAF University Park Building vehicular traffic and reduce peak traffic loading at the Geist/Johansen/University Avenue Intersection.

The existing signals at the Geist Road/Johansen Expressway, Airport Way, and Rewak Drive intersections would be upgraded to reflect added turning lanes and improvements. The raised median installed between Rewak Drive and Airport would serve to restrict cross-traffic and left-turn movements to the safety of the traffic light at Rewak Drive. A new traffic signal would be installed at Davis Road.

A raised median would be installed from Airport Way to Goldizen, from Goldizen to Indiana, and from Indiana to the Geist Road intersection to reduce left-turn cross traffic and many driveway-related crashes.

Relocating Indiana Avenue to a point approximately 170 feet south of the existing Indiana Avenue location and extending Halvorson Road northward to Wolf Run would allow motorists to access University Avenue via median breaks at Goldizen Avenue and Indiana Avenue and via right-turn in and right-turn out at Widener Lane.

The raised median would reduce crashes related to left turn movements by restricting traffic to right-in/right-out access at the following:

Swenson Avenue	Widener Lane	Dead End Alley
Mitchell Avenue	Wolf Run	Thomas Street
Geraghty Avenue		

Left turn pockets in the raised median would be constructed at the following intersections:

Vian Way*	Erickson Avenue	Indiana Avenue
Davis Road	Rewak Drive	Geist Road/Johansen Expressway
Holden Road*	Airport Way	Sandvik Street/High School Access
Nineteenth Avenue*	Goldizen Avenue	Cameron Street

*southbound turn pocket only

Crashes would be further reduced by the proposed addition of a 6-foot wide shoulder for disabled vehicles to use as a refuge.

The following driveways retaining direct access to University Avenue would benefit from the proposed 6-foot wide safety shoulder:

East side of University Avenue

- 330 feet south of Nineteenth Avenue**
- 490 feet south of Rewak Drive**
- 265 feet south of Rewak Drive**
- 400 feet north of Rewak Drive (access to Safeway store)
- 200 feet south of Alaska Railroad (access to GVEA substation)

West side of University Avenue

- Opposite Widener Lane**
- Opposite relocated Indiana Avenue**
- Opposite Wolf Run**

** indicates combined driveway serving two lots

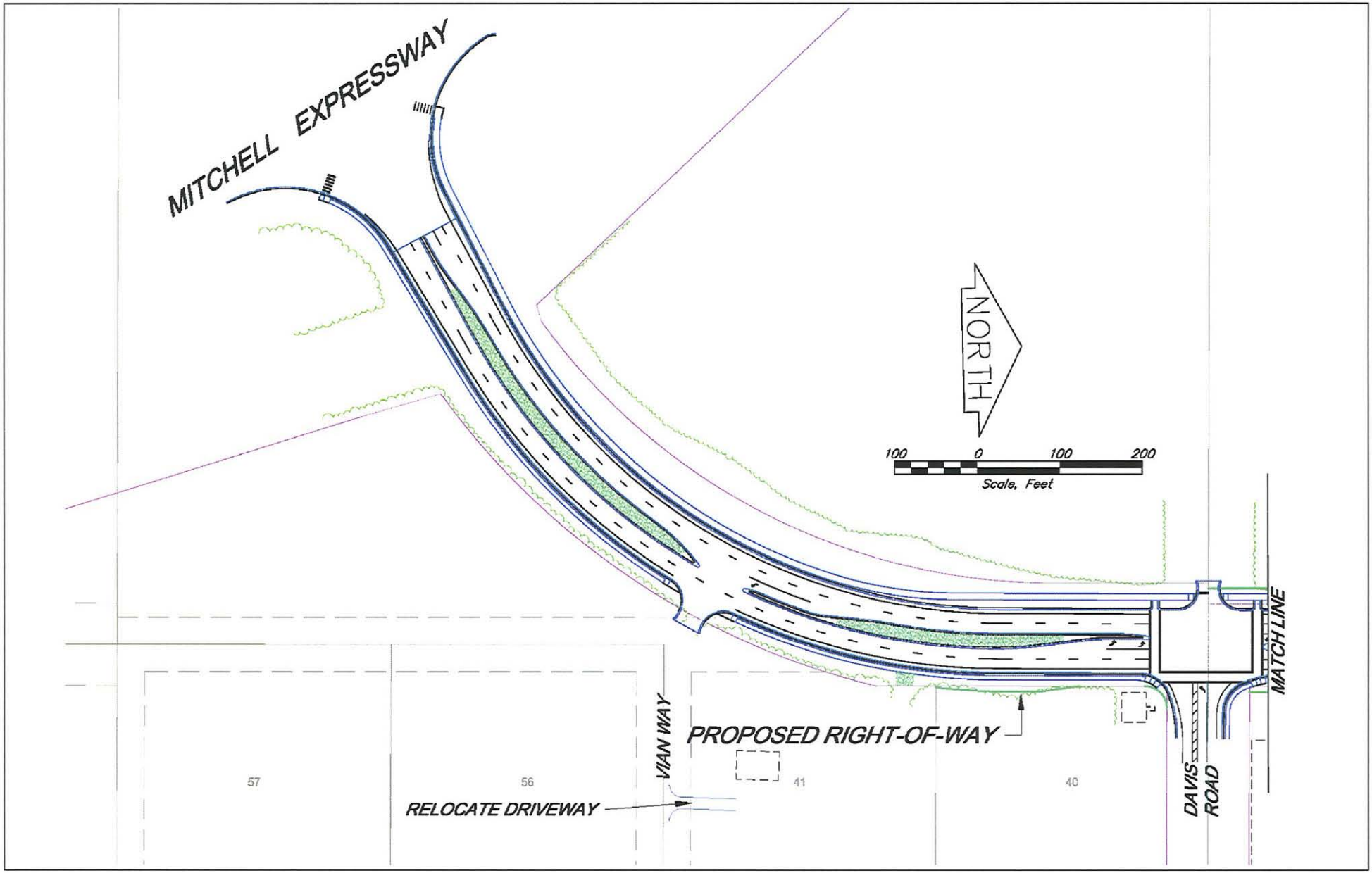
The Chena River Bridge would be replaced to accommodate the new roadway center median, shoulders, bicycle/pedestrian path and sidewalk, and meet current seismic safety standards.

A new entrance to the Chena River State Recreation Site would be constructed on Geraghty Avenue, east of Marlin Street. The existing access to the Chena River State Recreation Site would be converted to an Americans with Disabilities Act (ADA) accessible bike path entrance, with landscaping as needed, after the replacement entrance is constructed.

The existing at-grade crossing of University Avenue by the Alaska Railroad would be replaced by a grade-separated crossing. The grade separation would raise the grade of the existing railroad track by about 17 feet over University Avenue. The elevation of University Avenue would also be lowered by about four feet below the existing street elevation to provide the required minimum 16.5-foot vertical clearance between the street and the bottom of railroad crossing structure. The change in the railroad grade would begin approximately 3800 feet west of University Avenue and extend to the existing railroad bridge over Noyes Slough, located about 2000 feet east of University Avenue.

Construction of the railroad grade separation at University Avenue would conflict with the existing Fairbanks Street Bridge over the railroad, approximately 2300 feet west of University Avenue. As a consequence, the Fairbanks Street Bridge structure would be removed and a new pedestrian tunnel would be constructed under the railroad. Fairbanks Street would be obliterated north of the existing high school access road and a new pedestrian path constructed through the pedestrian tunnel to connect Fairbanks Street to the University of Alaska campus.

The proposed action would take several years and several funding cycles to complete. See Figures 1.0.1 to 1.0.12, Build Alternative.



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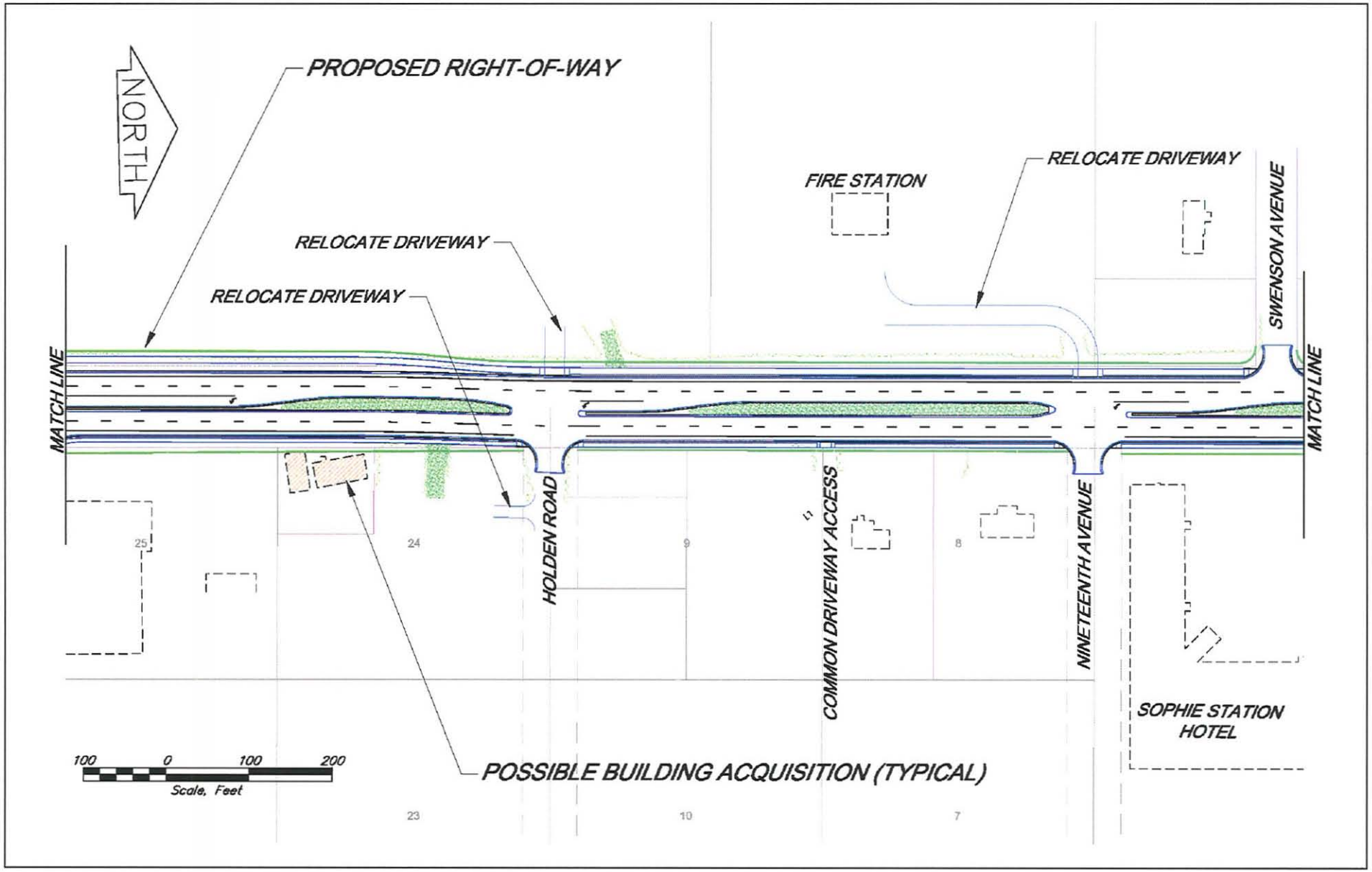

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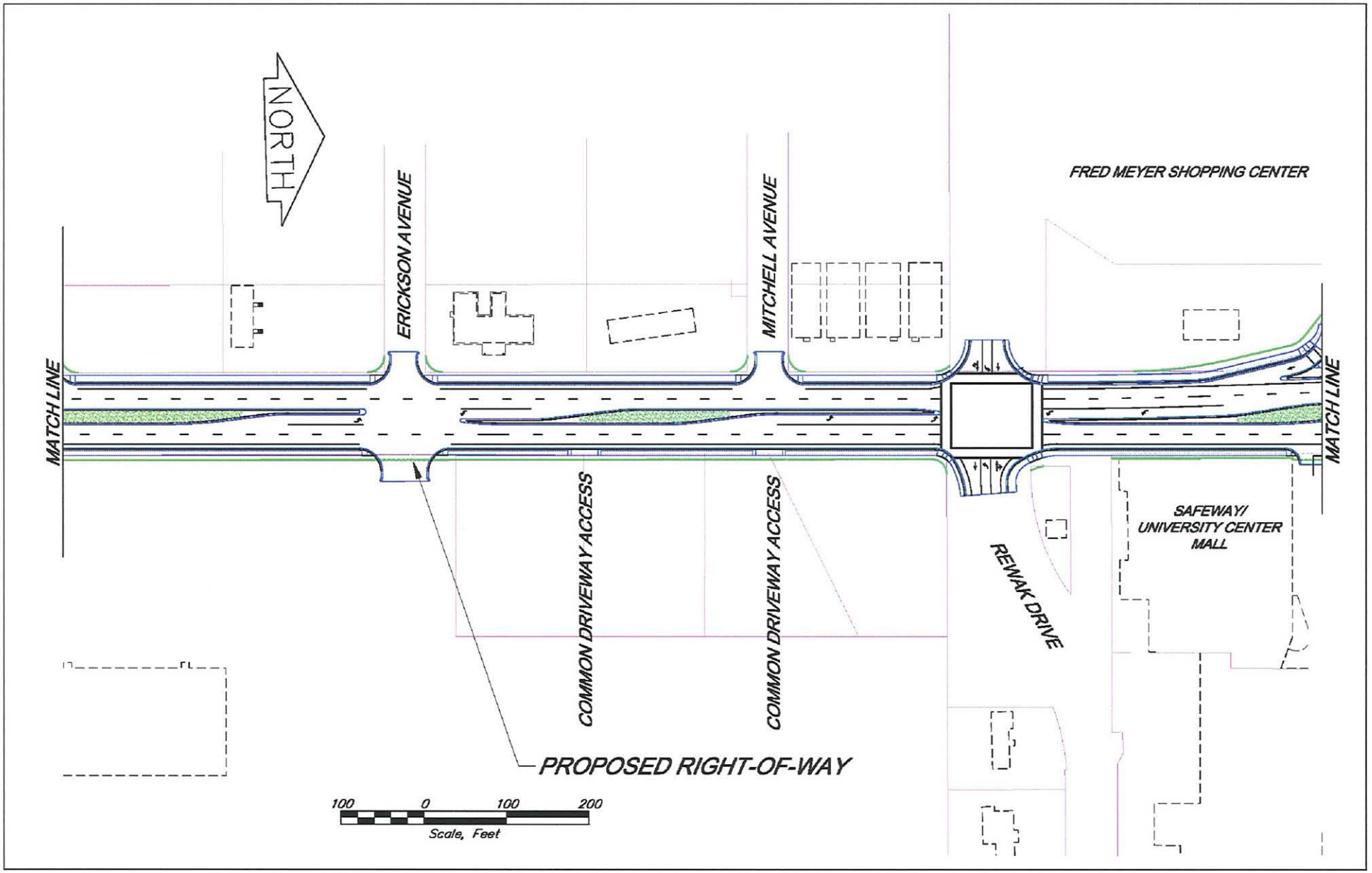

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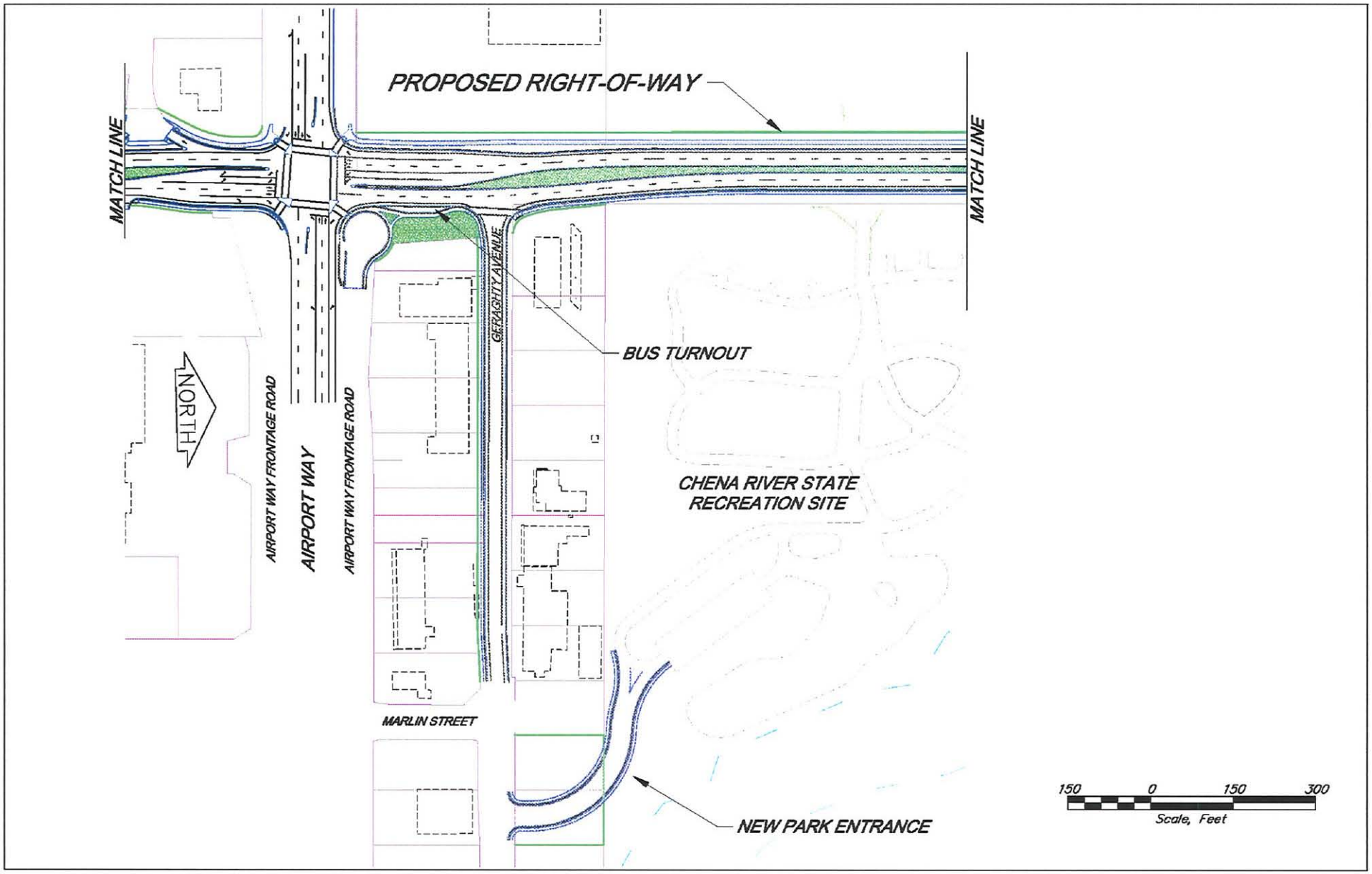

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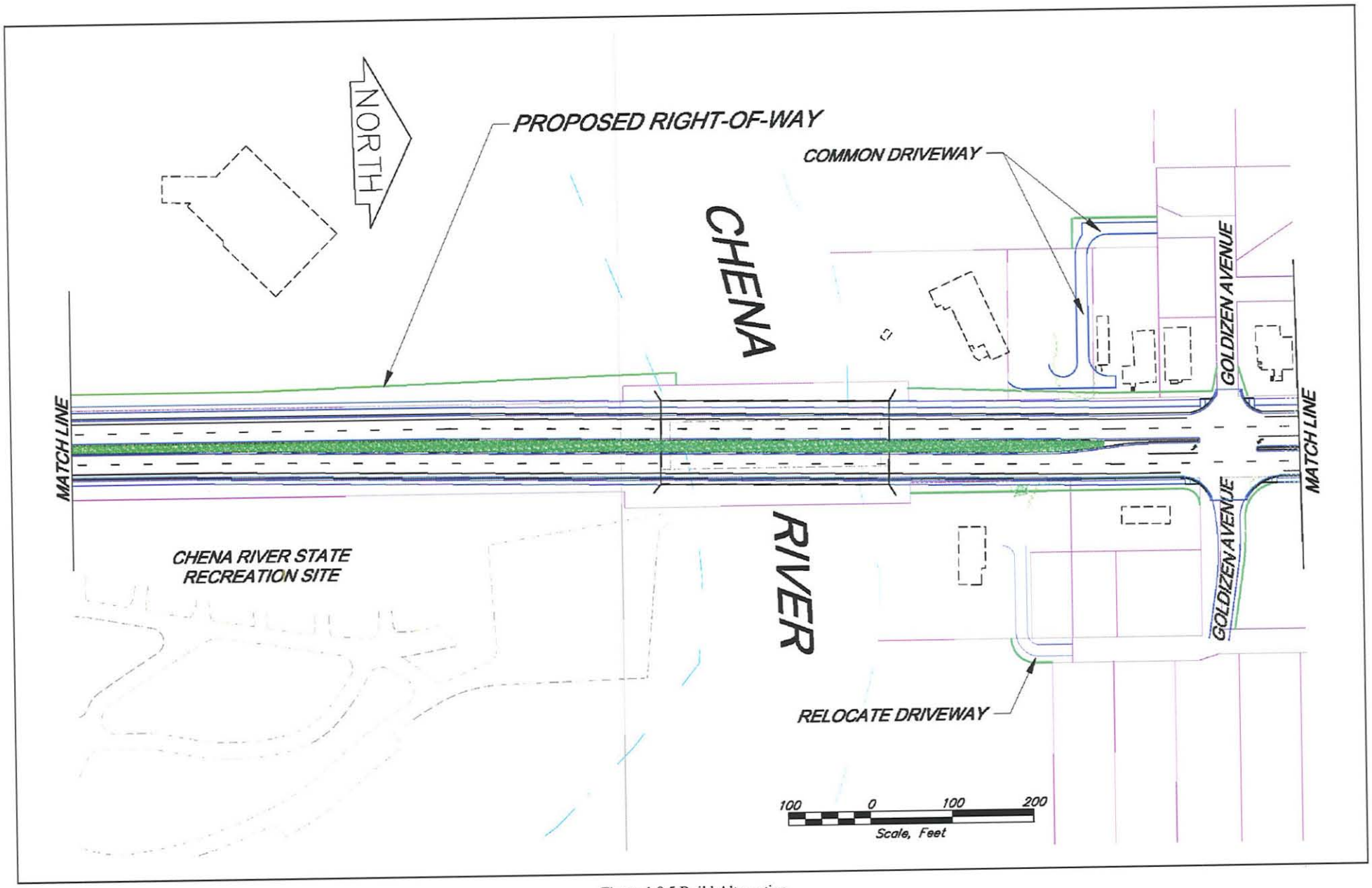

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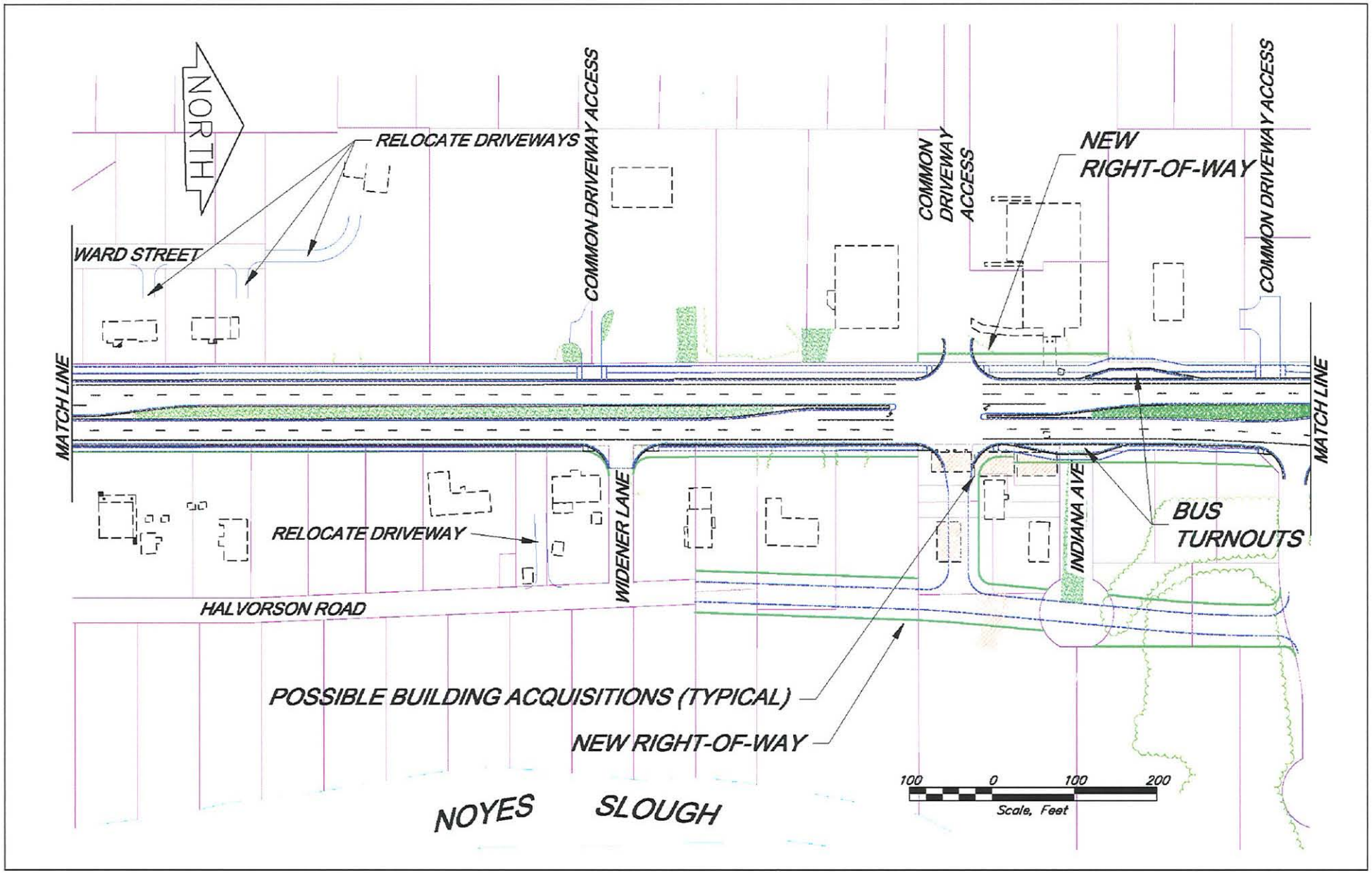

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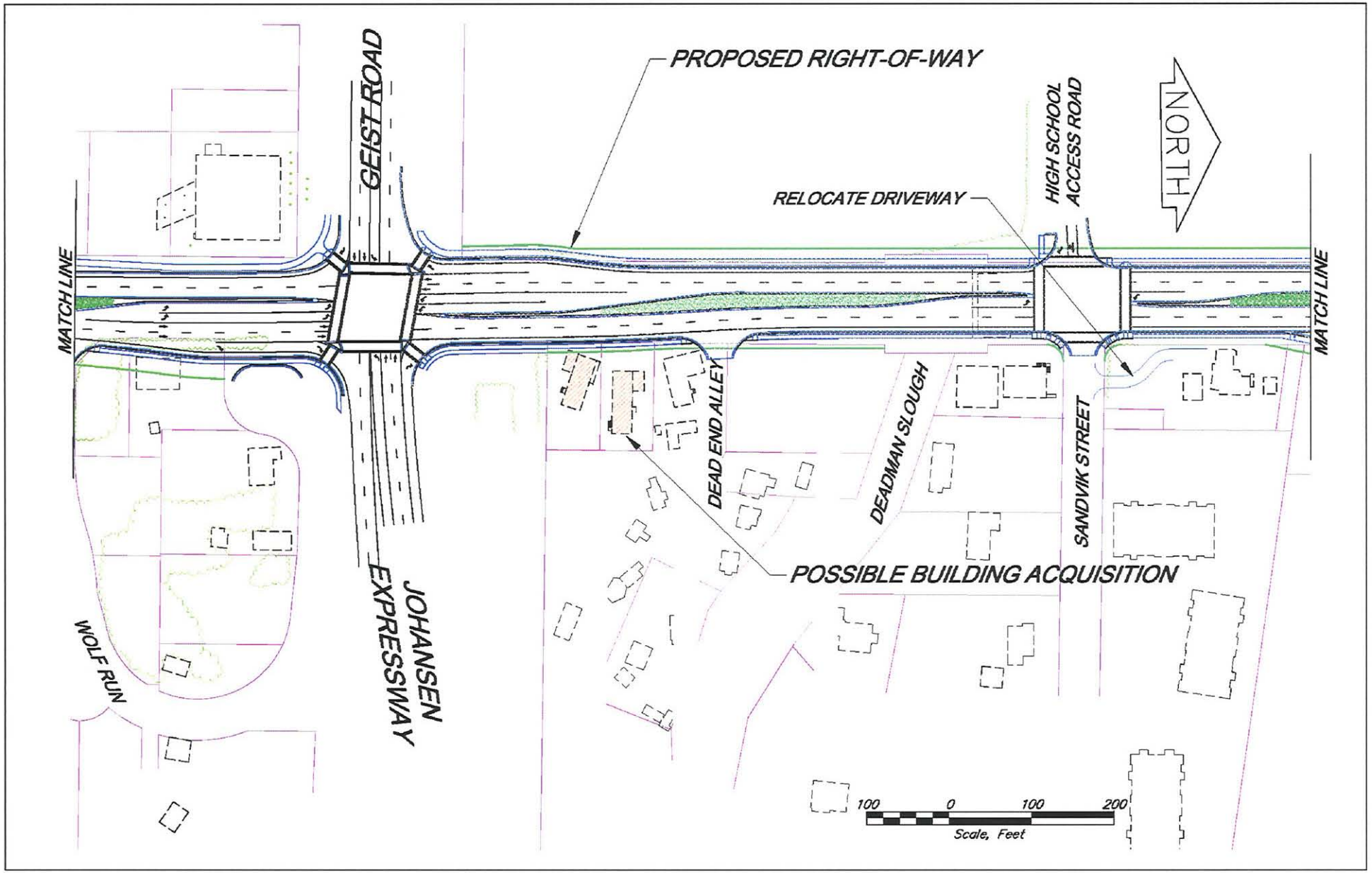

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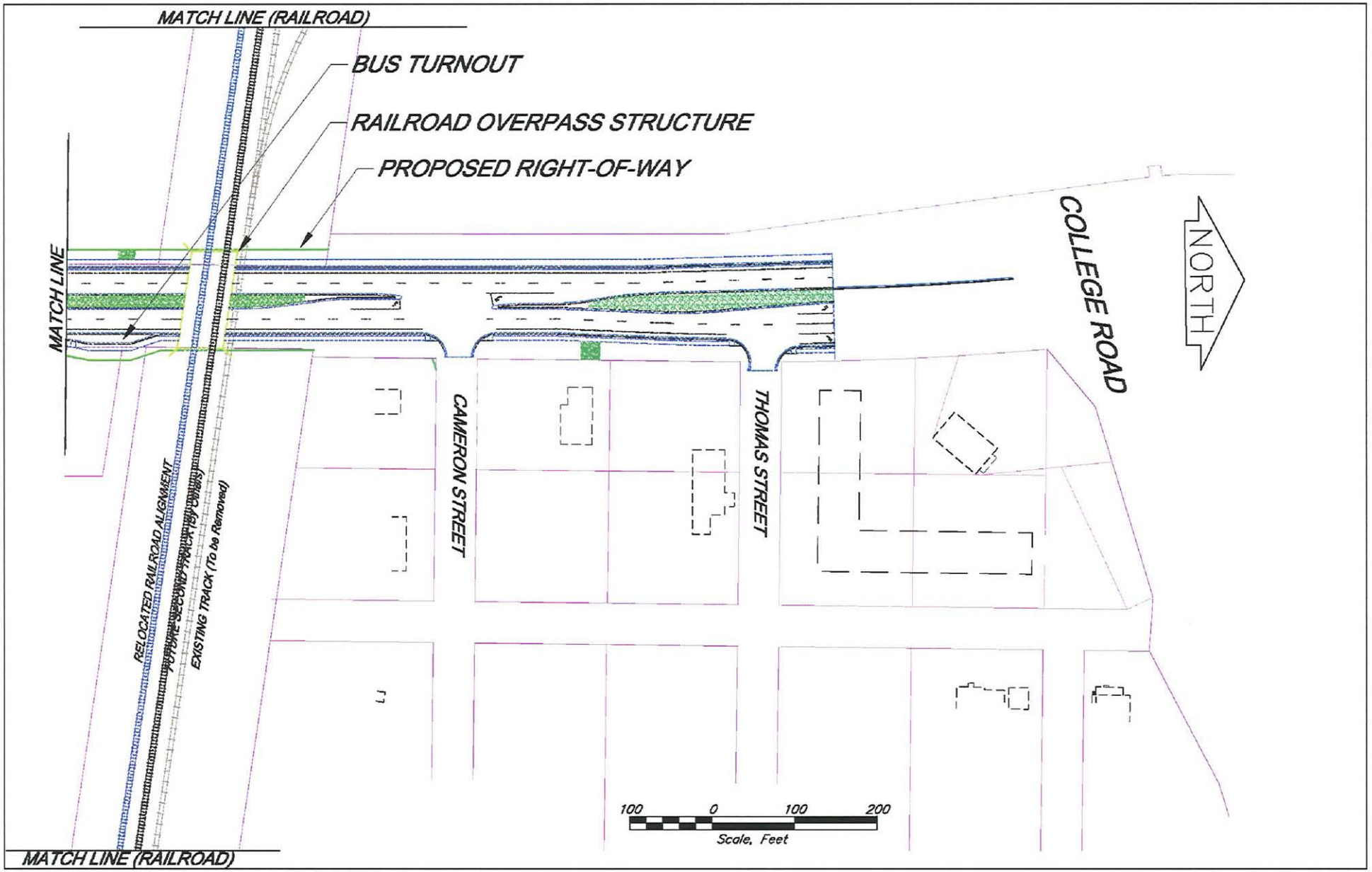

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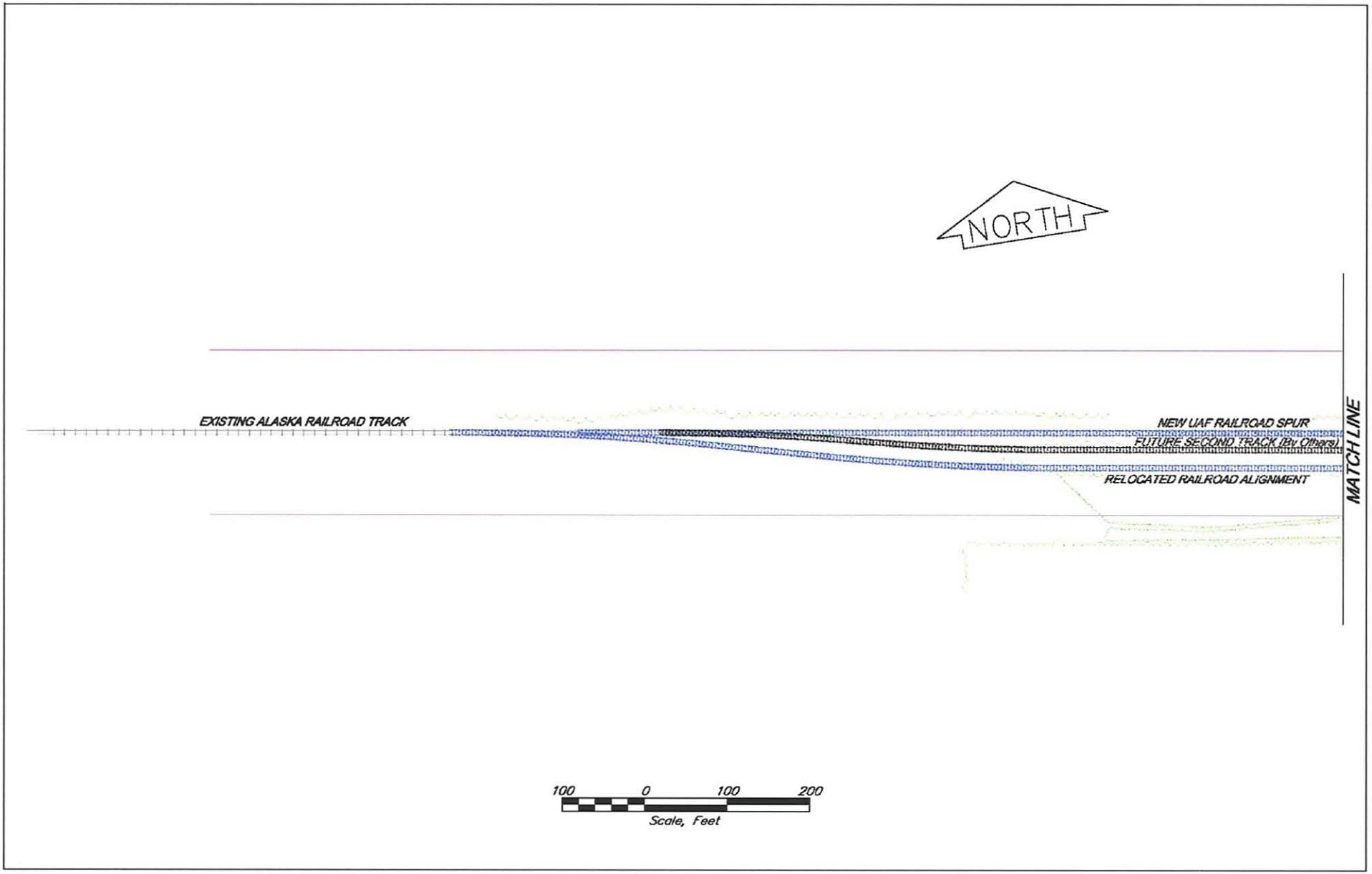

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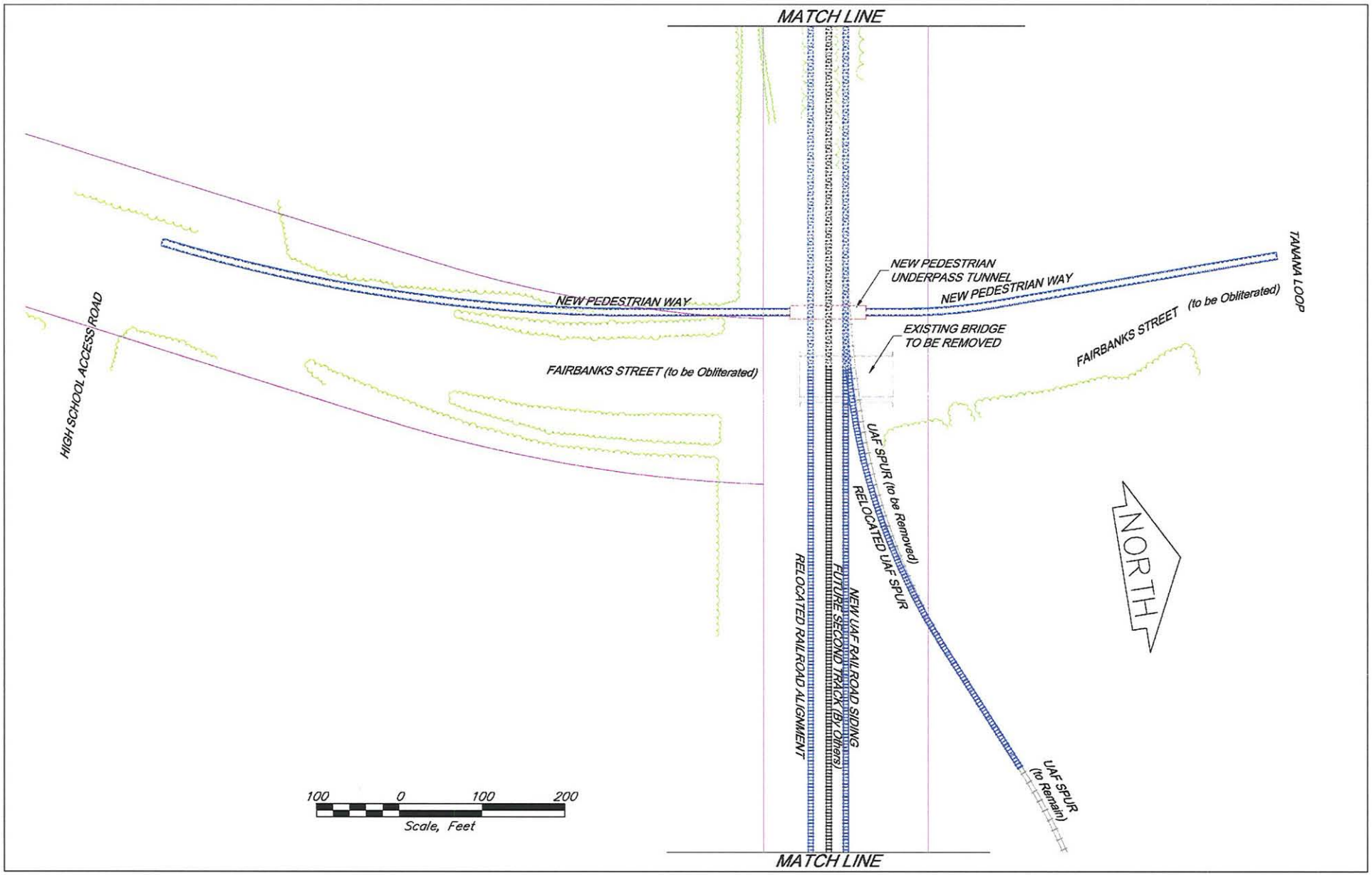

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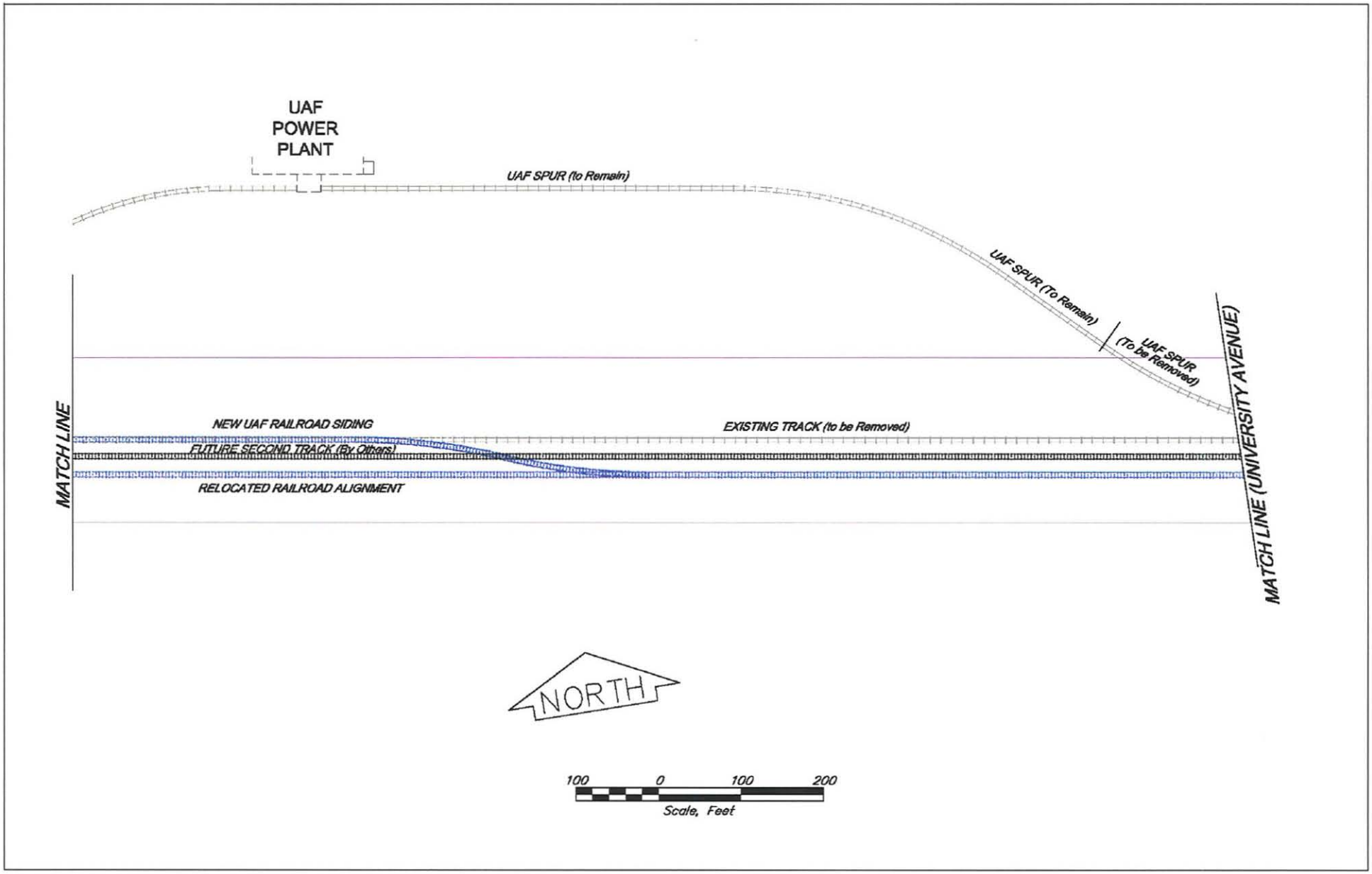

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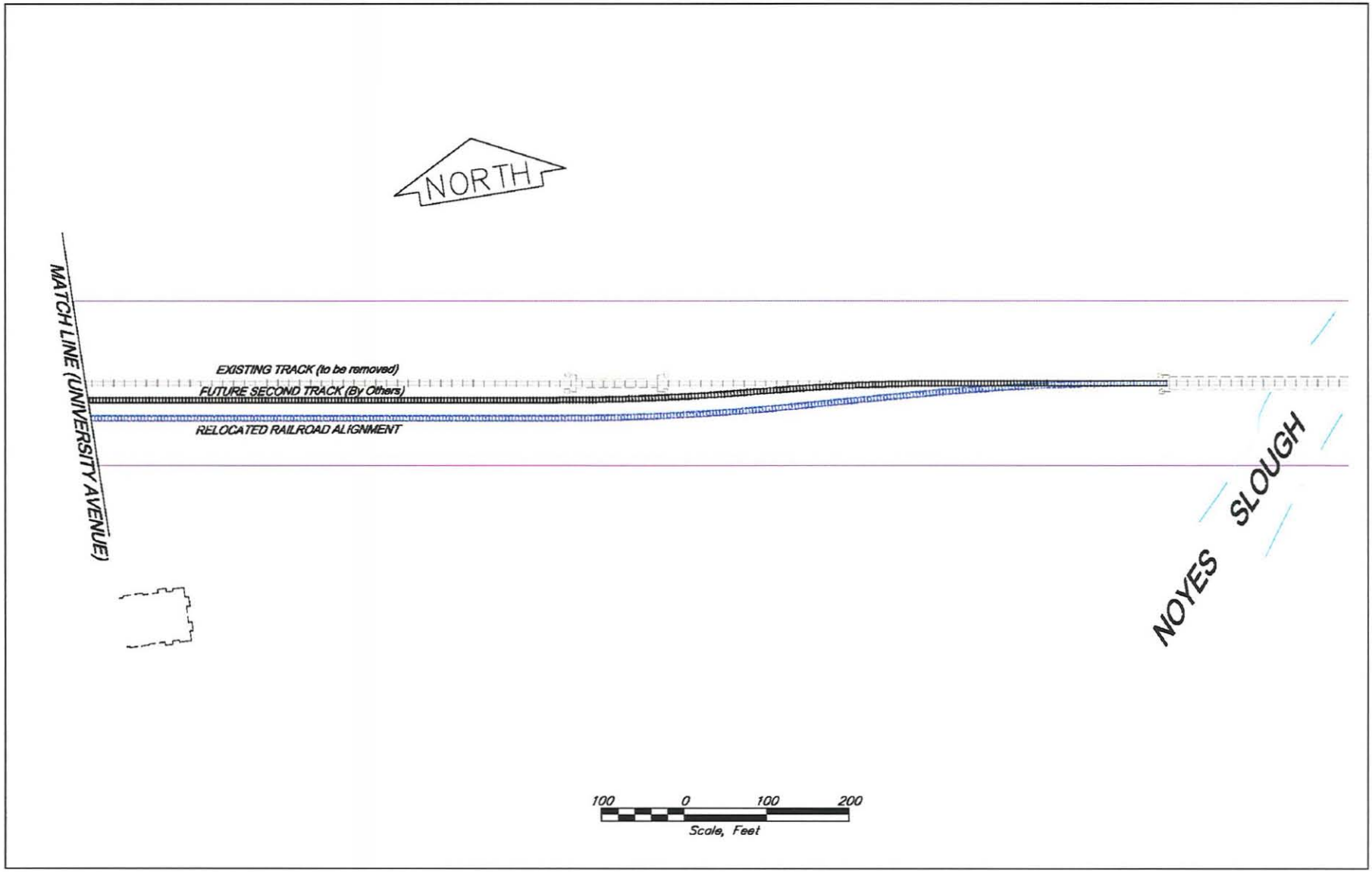


Figure 1.0.12 Build Alternative

1.1 Purpose for the Proposed Action

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Alaska Division Office of the Federal Highway Administration (FHWA), proposes to reconstruct University Avenue from just north of the Mitchell Expressway to Thomas Street, a length of 2.12 miles (Figure 2.1).

The purpose of the project is to:

- Improve safety for motorists
- Improve safety for pedestrians and bicyclists
- Provide efficient movement of traffic
- Replace deficient facilities

1.2 Need for the Proposed Action

University Avenue is the major north-south transportation corridor on the west side of Fairbanks (Figure 1.2.1). Major intersections on University Avenue include, from south to north, the Mitchell Expressway, Airport Way, Johansen Expressway/Geist Road and East Tanana Drive/College Road to the north. Land use along the corridor is changing from residential and undeveloped property to commercial. Residential property is being rezoned to commercial and professional business use.

University Avenue is predominantly through-traffic. It provides access for:

- Residential areas outside the project area from Farmer's Loop Road and College Road,
- Residential areas outside the project area from Geist Road/Johansen Expressway, Chena Pump Road, Chena Ridge Road, and Parks Highway

In addition to through-traffic, University Avenue has the following traffic generators:

- Several schools including Hutchison Institute of Technology, West Valley High School located near Geist Road and the University of Alaska Fairbanks Campus to the north
- Fairbanks International Airport to the southwest
- Several retail establishments, including two malls and a major retail store are situated on three corners of the Airport Way-University Avenue intersection.
- Government agencies such as the Alaska Department of Environmental Conservation (ADEC), the Alaska Department of Natural Resources (ADNR), and the U.S. Bureau of Land Management (BLM), all located on University Avenue, are major employers
- Professional business and restaurant establishments along the entire corridor
- Chena River State Recreation Site

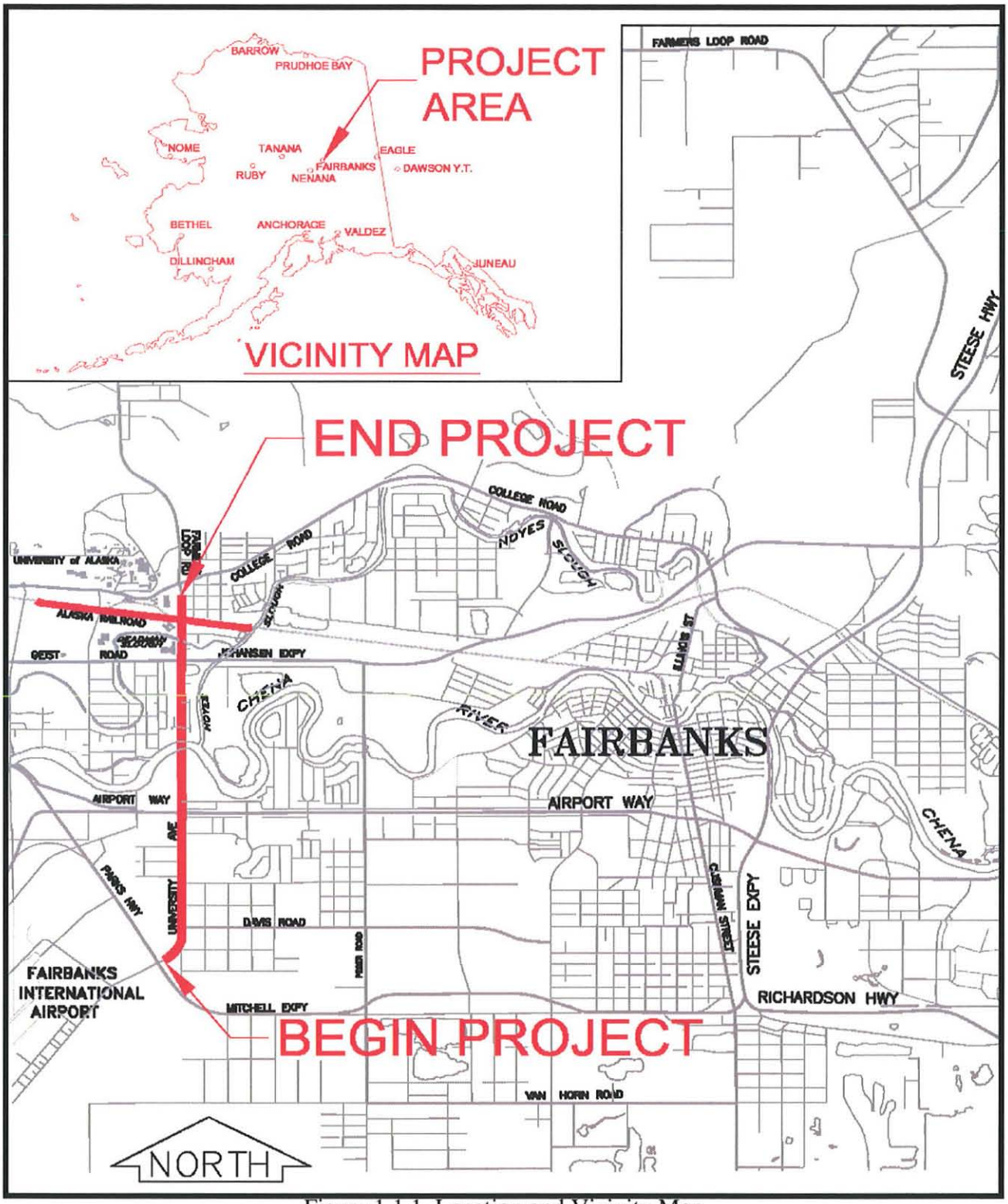


Figure 1.1.1 Location and Vicinity Map

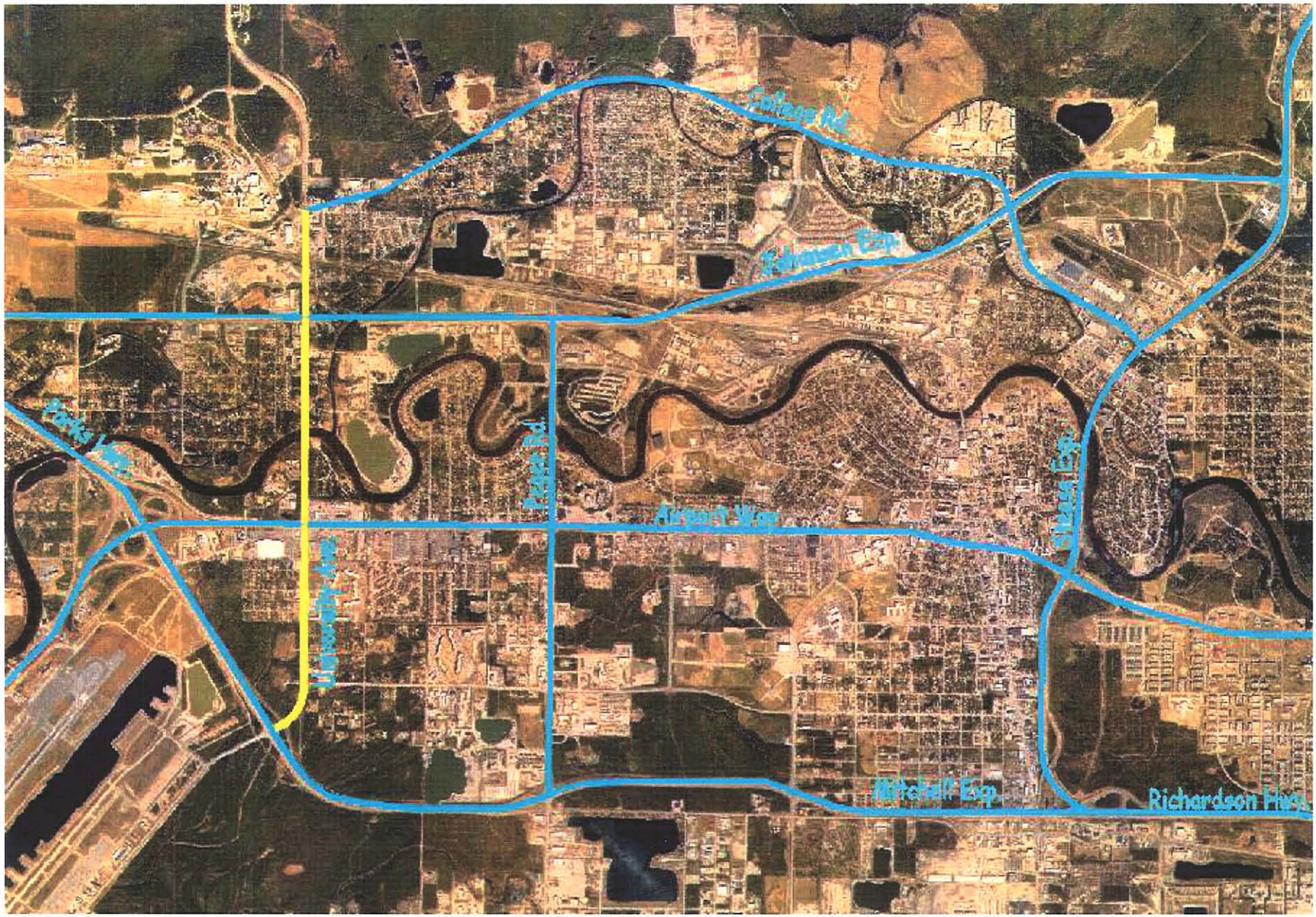


Figure 1.2.1 Major Arterials in Fairbanks

The location of major traffic generators within the University Avenue Corridor is shown on Figure 1.2.2.

Fairbanks population and traffic volumes have doubled since the early 1960's when improvements to University Avenue were first constructed. University Avenue is a four lane major arterial. Traffic volumes, crashes, and delays have steadily increased since it was constructed in 1963. In 2003, University Avenue had an average daily traffic (ADT) volume of 19,143 vehicles at the Chena River Bridge. In the design year 2035, traffic volumes are expected to approach 29,200 vehicles per day at the Chena River Bridge.

DOT&PF has identified the following problems for the University Avenue facility:

- The two highest accident rate intersections in Fairbanks are the Geist/Johansen Expressway and Rewak Drive/Airport Way/Geraghty Avenue intersections with University Avenue
- Vehicles turning left onto and off of driveways experience high incidence of rear ender and sideswipe crashes, accounting for nearly 88 percent of the crashes on University Avenue
- There are no shoulders for stalled or disabled vehicles to move from the traffic way
- There are no sidewalks south of Rewak Drive, so pedestrians are forced to cut through yards and parking lots, or walk on the shoulder or in the ditch along University Avenue
- University Avenue Bridge over the Chena River with:
    - Uncomfortably narrow four-foot wide sidewalks with little refuge for pedestrians from passing traffic. Snow and ice berms on the sidewalks narrow the usable width in winter
    - Sidewalks do not provide two way traffic for a wheelchair and oncoming pedestrians
    - The bridge does not meet current seismic code
    - Bridge rails and structure need upgrading to current crash standards
    - Untreated storm drainage flows directly into the impaired Chena River water body
    - Stream bank protection is failing, causing potholes in the road surface
- An at-grade railroad crossing delays vehicle traffic at key times each day often queuing into College Road and Geist/Johansen intersections during peak hours.
- Pavement and curb and gutter is old and cracked, needing replacement

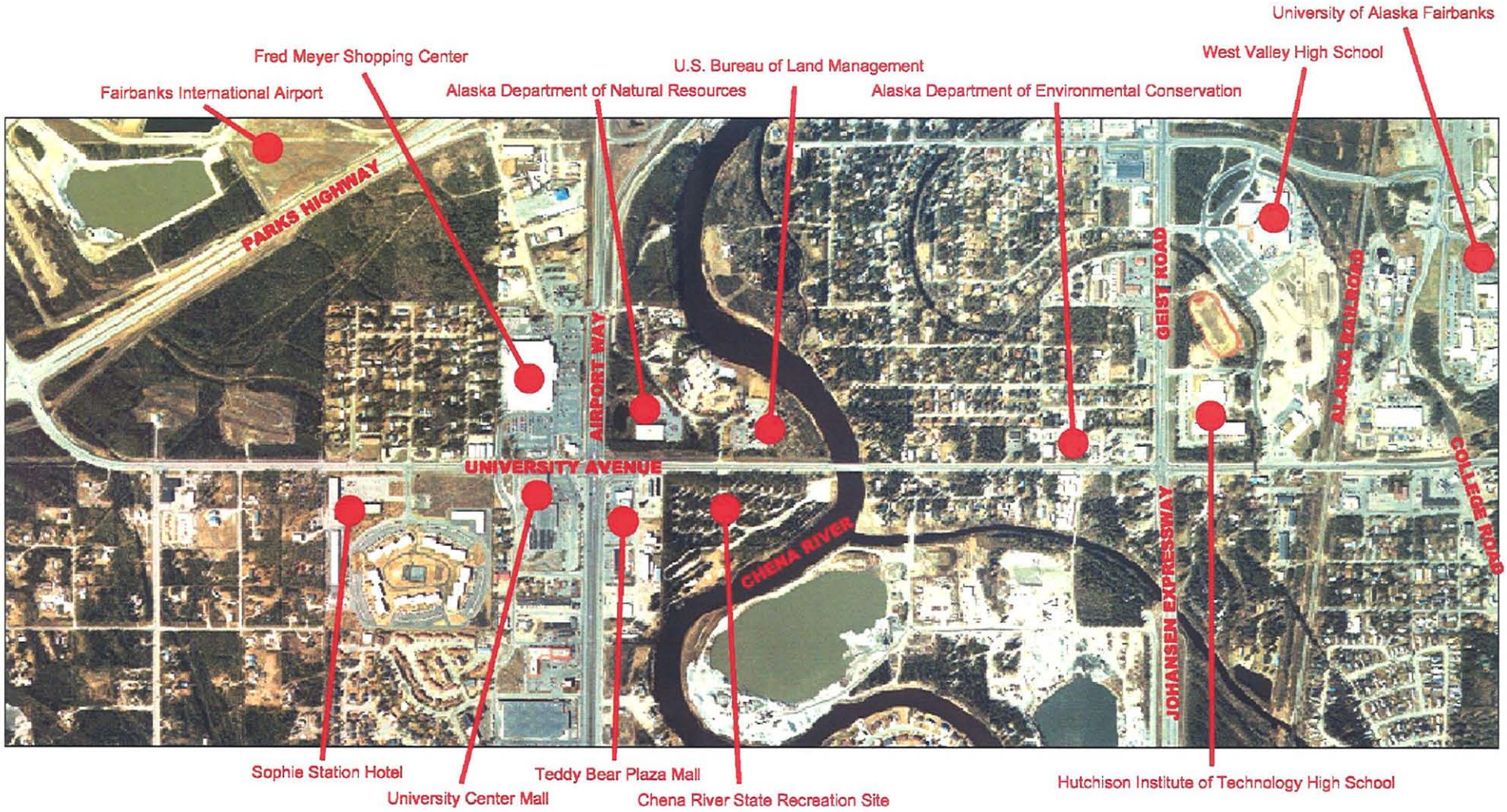


Figure 1.2.2 Major Traffic Generators near the University Avenue Corridor

1.2.1 Crashes

The number of recorded crashes from 1994 to 2003 demonstrates the need to upgrade University Avenue. Table 1.2.1.1 indicates that 1090 crashes occurred between the Mitchell Expressway and Thomas Street, with three fatalities, 28 major injuries, and 428 minor injuries.

More than seven out of eight crashes along University Avenue are related to turning movements or vehicles being rear-ended (Table 1.2.1.2). More than half of the crashes on University Avenue occurred at the Geist Road/Johansen Expressway and Airport Way intersections.

Table 1.2.1.1. University Avenue Crashes by Location
North of Mitchell Expressway to Thomas Street, 1994-2003

Crash Location	Crashes	Fatalities	Major Injuries	Minor Injuries	Percent
Davis Road	37	0	1	16	3.4%
Erickson Avenue	31	0	0	12	2.8%
Rewak Drive	91	0	2	37	8.3%
Fred Meyer/Safeway	30	0	0	2	2.8%
Airport Way	257	1	2	85	23.6%
Geraghty Avenue	77	0	4	27	7.1%
BLM/DNR-Chena Rec Site	10	1	2	5	0.9%
Chena River Bridge	18	1	1	7	1.7%
Goldizen Avenue	28	0	1	17	2.6%
Widener Lane	28	0	1	12	2.6%
Indiana Avenue	28	0	0	12	2.6%
Johansen/Geist Road	292	0	10	116	26.8%
Sandvik Street	54	0	2	46	5.0%
Cameron Street	19	0	0	5	1.7%
Thomas Street	37	0	0	8	3.4%
Other	53	0	2	21	4.9%
Totals	1090	3	28	428	100%

Details of the three traffic fatalities that occurred on University Avenue during the 1994-2003 period are as follows:

Date	Location	Description
November 30, 1998	Near driveway entrance to BLM/DNR complex	Southbound vehicle struck utility pole. Alcohol involved.
June 4, 1999	Between BLM/DNR driveway and the Chena River bridge	Bicyclist crossing the street was struck by a southbound vehicle.
October 7, 1999	Chena River bridge	Southbound vehicle crashed through the bridge railing into the river.

An additional traffic fatality on University Avenue occurred on June 19, 2004 near the exit driveway of the Fred Meyer shopping center. The incident occurred when a vehicle exiting the

driveway executed a prohibited left turn toward the northbound lanes of University Avenue and was struck by a southbound vehicle.

Table 1.2.1.2. University Avenue Crashes by Type
North of Mitchell Expressway to Thomas Street, 1994-2003

Crash Type	Crashes	Fatalities	Major Injuries	Minor Injuries	Percent
Angle	479	0	15	186	43.9%
Rear End	478	0	1	176	43.9%
Head On	35	0	2	31	3.2%
Bicyclist	17	1	6	10	1.6%
Median Barrier	12	0	0	0	1.1%
Sideswipe	10	0	1	1	0.9%
Curb/Wall	8	1	1	2	0.7%
Pedestrian	7	0	1	3	0.6%
Moose	6	0	0	0	0.6%
Sign	6	1	0	2	0.6%
Parked Vehicle	5	0	0	0	0.5%
Other	27	0	1	17	2.5%
Totals	1090	3	28	428	100.0%

1.2.2 Pedestrian Facilities

The sidewalks north of Airport Way are of a less than desireable width for a shared use facility, being too narrow for opposing bicycle and pedestrian traffic to pass comfortably. There are no sidewalks south of Rewak Drive, so pedestrians use the shoulder, through yards and parking lots, or in the ditch to reach their destination.

The University Avenue Bridge over the Chena River has four-foot wide sidewalks. Pedestrians must wait or step into the roadway in order to pass a wheelchair, baby carriage, or bicycle. In winter, snow berms narrow the usable sidewalk width.

1.2.3 Roadway Capacity & Level of Service

Average daily traffic volumes at the University Avenue Bridge were measured at 19,143 vehicles (ADT) in 2003. These are projected to increase by 52% to 29,200 vehicles by 2035. The five highest daily volumes in 2003 that were recorded by the permanent counter at the Chena River Bridge are as follows:

June 20	25,673
July 18	24,239
June 13	24,003
June 27	23,972
May 30	23,893

Traffic volumes for 2003 and projected traffic volumes for 2035 are displayed in Figure 1.2.3.2. The decreased volume of traffic north of the Johansen Expressway after 1986, as indicated in the Figure 1.2.3.2, is the result of a substantial portion of 1986 traffic on College Road moving to the Johansen Expressway after completion of construction of this facility in the early 1990s.

Traffic volumes between Davis Road and the Mitchell Expressway are projected to increase from 2003 volumes by 80 percent by 2035. Delays are expected to increase as traffic volumes increase. The Level of Service is expected to decrease due to the number of driveways intersecting the roadway, the close intersection spacing and the insufficient number of parallel routes in the Fairbanks transportation system.

A common indicator of traffic congestion at intersections is referred to as Level of Service (LOS). Levels are similar to secondary school grades where "A" is excellent and "F" is failing. LOS is further explained in Table 1.2.3.1. Currently signalized intersections on University Avenue operate at LOS 'C' or 'D', with an average intersection delay of between 20 and 55 seconds per vehicle.

Table 1.2.3.1 Level Of Service

Level of Service (LOS) is a qualitative measure of the effect of a number of factors including speed and travel time, interruptions, freedom to maneuver, safety, driving comfort, and operating costs. Six levels of service, designated excellent (LOS 'A') through unacceptable (LOS 'F'), are used to identify operating conditions that may occur on a given roadway.

LOS	INTERSECTIONS
A	Average delay per vehicle is less than ten seconds.
B	Average delay per vehicle is ten to twenty seconds.
C	Average delay per vehicle is twenty to thirty-five seconds.
D	Average delay per vehicle is thirty-five to fifty-five seconds.
E	Average delay per vehicle is fifty-five to eighty seconds.
F	Jammed conditions with delays greater than 80 seconds.

The Airport Way and Geist Road /Johansen Expressway intersections currently operate at Level of Service D during peak hours. The lack of northbound and southbound right-turn pockets on University Avenue contributes to the peak hour delay.

There are many traffic generators in the project area that contribute to high traffic volumes. These include public facilities such as UAF, West Valley High School, the Hutchison Institute of Technology (formerly Hutchison Career Center); the Chena River State Recreation Site and government agencies such as the BLM, DNR and ADEC.

During peak hours, traffic is interrupted and long delays are experienced at the Alaska Railroad Corporation (ARRC) at-grade crossing of University Avenue. Vehicles on University Avenue must wait for slow moving trains entering Fairbanks. This section of track is the mainline and all trains entering or departing Fairbanks from the west must currently cross University Avenue. Current daily trains in the summer: 7 freight, 2 coal, 4 passenger, 2 work or switch, 15 total. In the winter: 6 freight, 2 coal, 1 passenger, 1 other, 10 total. Current projections indicate train traffic going into Fairbanks would double by 2035.

ARRC traffic would increase even further if a connection were completed to Canada. More traffic would also be generated should a proposed connection to Delta Junction and Fort Greely be constructed, adding substantial military traffic from Ft. Richardson and the Port of Anchorage. At a minimum, ARRC traffic across University Avenue would double by 2030.

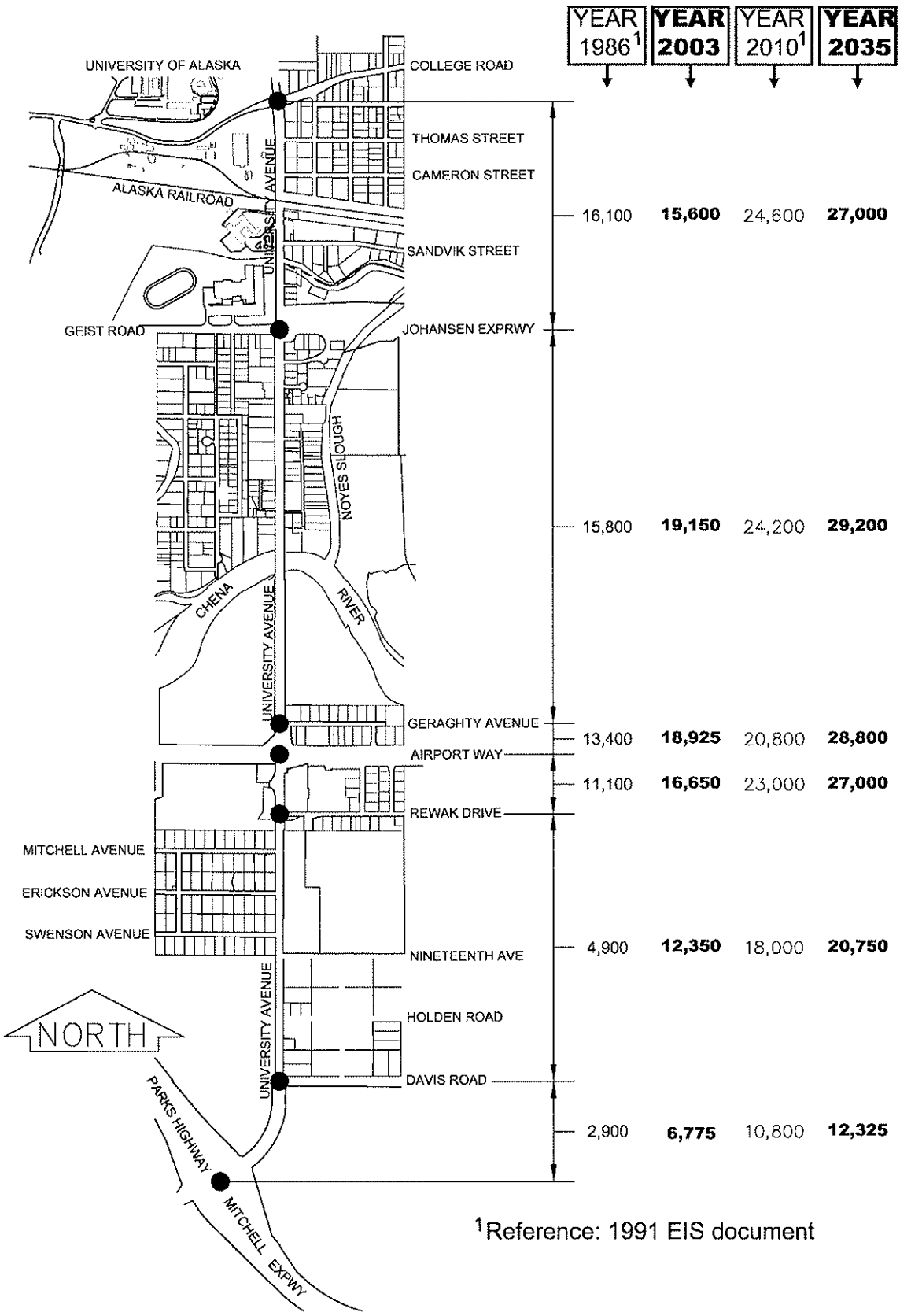


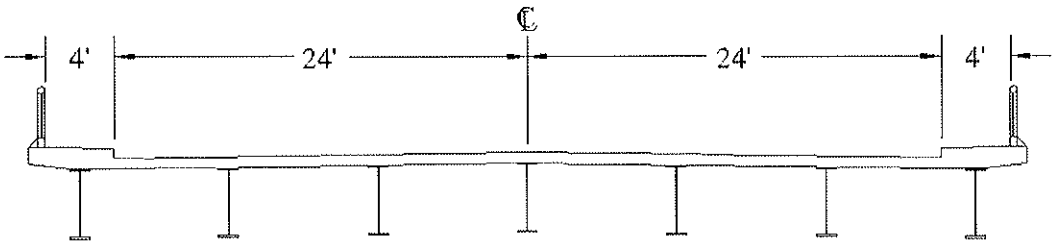
Figure 1.2.3.2 University Avenue Average Traffic Volumes

1.2.4 Roadway Deficiencies

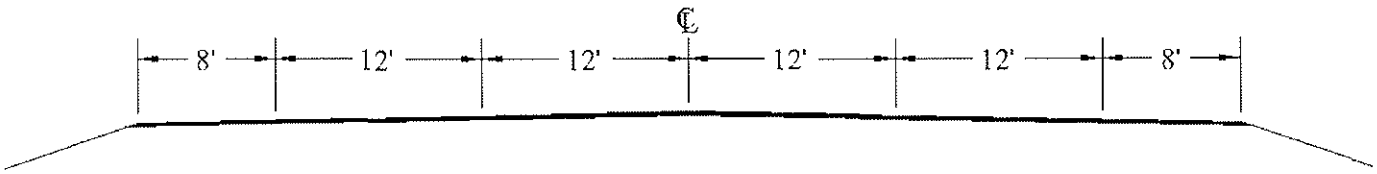
The existing facility north of Airport Way consists of an undivided 4-lane roadway with left-turn lanes at select locations. There are four 12-foot wide traffic lanes with 2-foot wide curbs, 3-foot separations between the curbs and sidewalks, and 5-foot wide sidewalks on both sides of the roadway. South of Rewak Drive the existing traveled way includes 12-foot lanes, with 8-foot shoulders on both sides (see Figure 1.2.4.1).

The University Avenue Bridge over the Chena River does not meet current seismic code and the bridge railing is not crashworthy. In 2004, riprap washed out from the south abutment of the bridge causing a pothole and erosion. Immediate maintenance was required to remedy the problem. In addition, the existing four-foot wide sidewalks on the bridge provide little refuge for pedestrians from passing traffic. Snow and ice berms on the sidewalks narrow the usable width in winter. The width of the sidewalks on the bridge is not sufficient to permit two-way traffic for a wheelchair and oncoming pedestrians

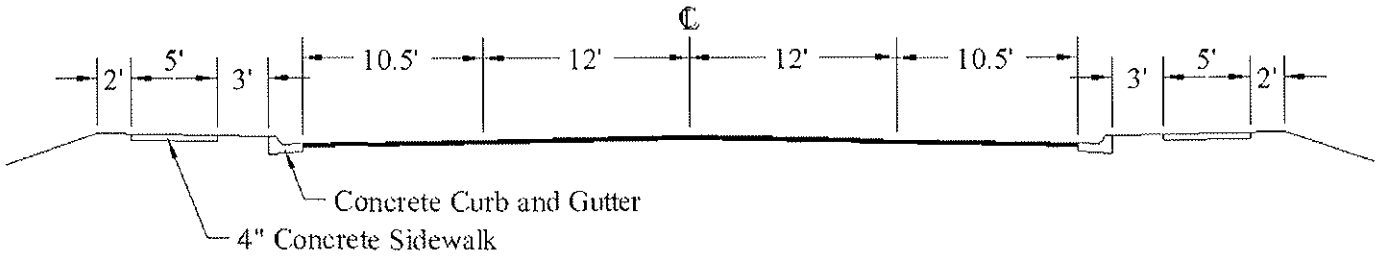
The pavement has reached the end of its useful life and is in need of rehabilitation (See Figures 1.2.4.2 and 1.2.4.3).



CHENA RIVER BRIDGE



MITCHELL EXPRESSWAY TO AIRPORT WAY



AIRPORT WAY TO THOMAS STREET

Figure 1.2.4.1 Existing Roadway Typical Sections

Figure 1.2.4.2 Patching of University Avenue Bridge - August 2004

Figure 1.2.4.3 Pavement Cracks –University Avenue

1.2.5 Transportation Planning

Upgrading University Avenue is necessary to support the projected growth in the Fairbanks North Star Borough (FNSB). Since 1960, the population of the FNSB has grown from 40,600 to 84,791 residents. The growth rate from 2001-2002 was 1.3% and economic indicators from the FNSB Community Research Quarterly (Fall 2003) show the area currently has a healthy economy and population growth is expected to continue.

The University Avenue Rehabilitation and Widening project has been a recommended project for many years. The Fairbanks Metropolitan Area Transportation Plan Update (FMATS 1985) recommended a University Avenue Widening project as a short-range priority project to be completed by 1990. The Fairbanks Metropolitan Area Transportation Plan Update (FMATS 1985) is consistent with the Alaska Statewide Transportation Improvement Program (STIP).

The July 2005 FMATS Long Range Transportation System Plan includes the upgrade of University Avenue as a committed project for 2007-2010 construction. This construction includes major reconstruction of University Avenue, Mitchell Expressway to College Road, with replacement of the Chena River bridge and the University Avenue/Alaska Railroad over-crossing.

The project is consistent with the FNSB in its Comprehensive Plan adopted 1984, amended 1990, 1997, 1999 and the new Draft Proposed Regional Comprehensive Plan (FNSB, 2005).

This plan has, as some of its transportation goals, the following:

- To have a safe, efficient multi-modal transportation system that anticipates growth.
- Encourage limiting the number of access points to high volume/speed roads.
- Improve transportation options for all segments of the community, including children, the elderly, and persons with disabilities.
- Make the Borough more pedestrian-friendly.
- Improve existing and create new walkways in urban areas that meet design standards.
- Create and implement a maintenance plan for walkways that ensures year-round use for all citizens.
- To have sufficient public utilities and infrastructure to meet existing and future demands.

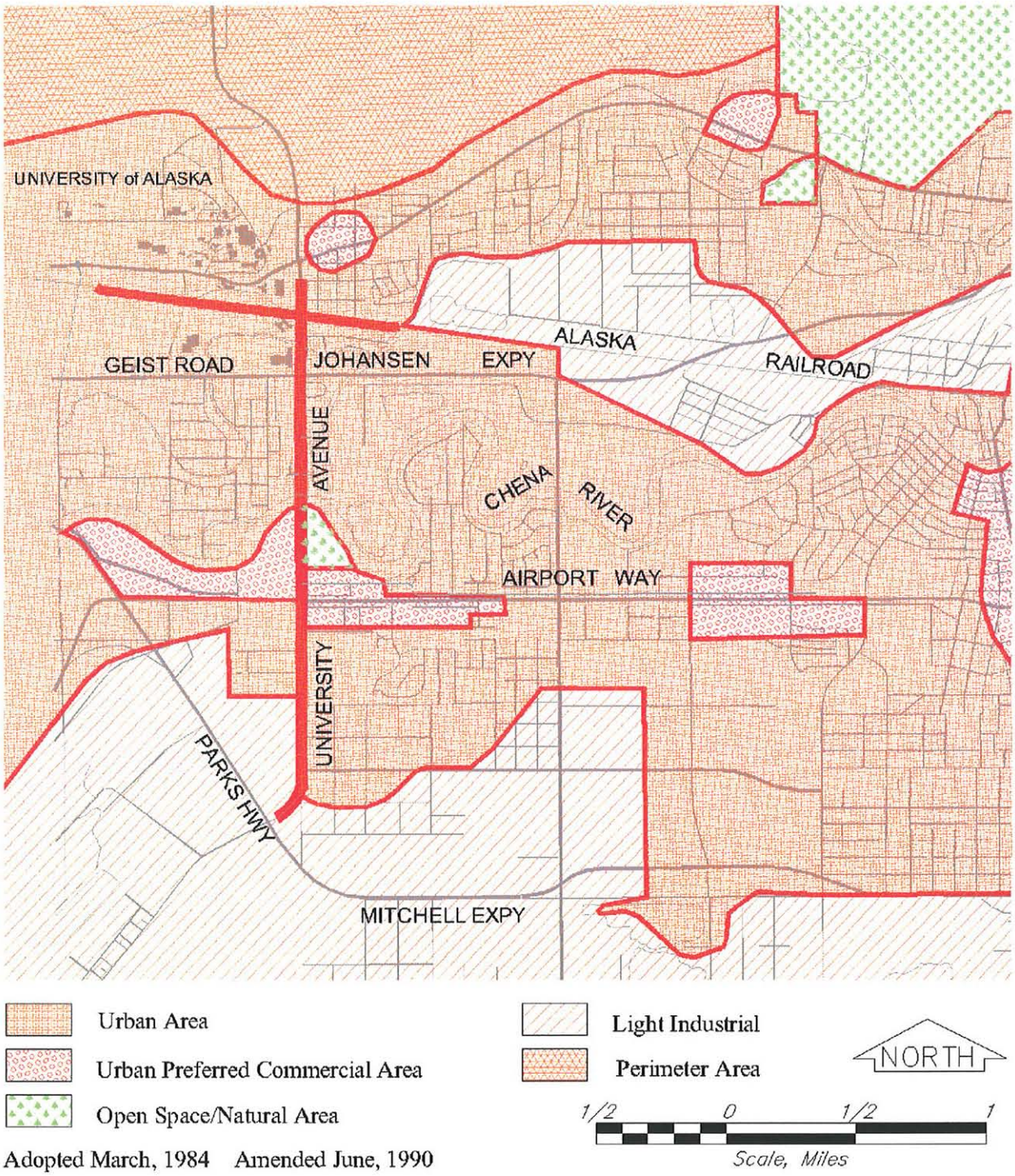


Figure 1.2.5.1 Fairbanks North Star Borough Comprehensive Land Use Plan

1.2.6 Project History

FHWA signed a Record of Decision to improve University Avenue in 1991. This decision selected the following design:

- Reconstruct University Avenue installing a two-way left-turn lane and raised center medians at major intersections, or approximately 33 percent of the roadway. The Record of Decision provided for constructing continuous raised medians the length of University Avenue, in the future.
- Widen University Avenue to include 8-foot shoulders with a combined 10-foot wide pedestrian/bike path on the west and a 5-foot wide sidewalk on the east.
- Widen the Chena River Bridge by rehabilitating the existing structure.
- Relocate the Geraghty Avenue intersection with University Avenue, 150 feet north, to provide a greater separation from the intersection of University Avenue with Airport Way.

Alternatives in the 1991 FEIS were designed to accommodate traffic projected for the year 2010 and proposed a project length of 2.2 miles between College Road and the Mitchell Expressway.

Since then, the Geist Road Extension (Johnansen Expressway) was constructed, the College Road and University Avenue intersection was rebuilt providing access to the UAF Campus via East Tanana Drive (the Old Nenana Highway). Larson Way was reconstructed into Wolf Run, Rewak Drive was upgraded and signalized, and Sandvik Street was extended westward through the West Valley High School Campus.

The Department has continued to study alternatives for the project, which has led to the development of this document. Table 1.2.6 summarizes the major changes to the proposed Build Alternative from the plan that was presented in the 1991 FEIS:

Table 1.2.6. Comparision of Proposed Build Alternative with 1991 FEIS

Proposed Build Alternative	1991 FEIS	Reason for Change
Continuous raised medians between major intersections	Two way left turn lanes except at major intersections	Improved safety with increasing traffic volumes
Minimize direct driveway access to University Avenue	Retain existing driveways	Improved safety with increasing traffic volumes
Relocate the driveway serving the Chena River State Recreation Site to Geraghty Avenue	Retain existing driveway	Improved safety with increasing traffic volumes
Retain the existing alignment of Geraghty Avenue and restrict Geraghty/University access to right-in/right-out. Provide cul-de-sac at Airport Way frontage road.	Realign Geraghty/University intersection 150 feet north of existing intersection. Retain Geraghty/Frontage Road connection.	Improve safety and reduce traffic conflicts. Alternate traffic flow on Geraghty recent extension of Geraghty to the east.
Replace Chena River Bridge with new construction	Rehabilitate existing Chena River Bridge	Lower construction costs

Proposed Build Alternative	1991 FEIS	Reason for Change
Relocate Indiana Avenue and extend Halvorson Road northward to Wolf Run	No relocation or extension	Improve safety and reduce traffic conflicts. Reduce U-turns on University Avenue
Replace railroad overcrossing at Fairbanks Street with pedestrian tunnel	Retain existing Fairbanks Street structure	Comply with railroad grade requirements for University Avenue grade separation.
Six foot shoulder width on University Avenue	Eight foot shoulder width	Reduce road footprint and right-of-way acquisitions.
Signalize Davis Road and Sandvik Street intersections	No new signals	Construction of new school access road at Sandvik. Reduce traffic delays

2.0 PROJECT ALTERNATIVES

To improve facility safety for motorists, bicyclists and pedestrians, provide efficient movement of traffic, and to replace deficient facilities, the following alternatives were evaluated:

- No build alternative
- Build alternative - raised median and driveway access
- Dismissed alternatives

In January, 2003, new legislation required that Alaska highway projects with estimated construction costs of more than $10 million be designed to adequately serve planned future traffic for at least 25 years after construction. To comply with this requirement, the design for the University Avenue project is based on traffic levels that are predicted in the year 2035, 25 years after the expected completion of construction in 2010. These predicted traffic levels are higher than the 2010 design year, in the 1991 ROD.

Continuing research finds that two-way left turn lanes are subject to more frequent crashes than facilities with continuous raised medians. New design guidelines limit the recommended use of two-way left turn lanes to roadways having low to moderate levels of traffic.

To meet the goals of the new legislation and new design guidelines, additional build alternatives besides the two-way left turn lane configuration with partial raised median of the 1991 ROD are evaluated. The new alternatives are consistent with current design guidelines for traffic safety and suitable for the higher traffic volumes that are expected in the year 2035.

Alternative traffic facilities, such as high occupancy vehicle lanes, light rail system, etc. are not considered to be reasonable alternatives for this project since such facilities do not accommodate pedestrians and the short-trip traffic that utilizes the existing facility. Accordingly, such facilities have not been included for evaluation for the project.

2.1 No Build Alternative

The no build alternative (See Figures 2.1.1 to 2.1.4) would allow traffic conditions on University Avenue to continue to deteriorate with increasing traffic volumes. This alternative would result in increased traffic delays and more crashes as traffic volume increases. There would be a long-term economic impact due to higher fuel consumption and the cost of injuries and property damage from the expected increase in crashes.

The no build alternative would also result in increased delays for police, fire, and other emergency vehicles attempting to traverse the congested roadway. The congestion that occurs while the at-grade railroad crossing is obstructed by railroad operations would increase as vehicle traffic increases and as rail traffic doubles from the present level of 10 trains per day in the winter and 15 trains per day in the summer.

Land use in this area is expected to continue to change from undeveloped land or residential use to commercial use. Direct access onto and off University Avenue would remain unrestricted. Increased congestion would pressure drivers to take greater risks and to attempt to move into inadequate gaps, leading to more crashes.

The no-build alternative is not consistent with the FNSB Comprehensive Plan, the FMATS or the STIP.

Under the no-build alternative, there would be no right of way acquisition that would lead to displacement of existing businesses or residences. The no-build alternative would not improve the access to or from property along University Avenue.

Access to the Chena River State Recreation Site would not be improved while traffic volumes past the recreation site entrance are the highest in the University Avenue corridor. With increasing volumes of traffic on University Avenue, visitors entering and leaving the recreation site, including motor homes and vehicles pulling boat trailers, would encounter shorter gaps entering or exiting the recreation site.

The No Build Alternative would leave the existing facility as is, which includes 5-foot wide shared pedestrian/bicycle paths and no roadway shoulders on either side of University Avenue, north of Airport Way. The existing situation with no sidewalk, 6-foot wide roadway shoulder on University Avenue, south of Airport Way would also remain. Existing ramps and curb cuts do not meet current ADA standards, but would remain.

Emission testing and more efficient vehicle operations and new vehicle engine designs are expected to significantly reduce CO emissions in the future. Increases in traffic volumes would partially offset this decrease. Neither the NAAQS peak-hour standard of 35-ppm CO or the 8-hour standard of 9-ppm CO are expected to be exceeded under the No Build Alternative.

Noise levels were modeled for the No Build Alternative at 52 receptor locations using TNM Traffic Noise Model Version 2.5 software for the years 2004 and 2035. No build alternative noise levels would be only nominally less than those predicted for the build alternative, and noise abatement would not be considered.

Under the No Build Alternative, highway runoff would continue to discharge via north and south outfalls into the Chena River. Some water quality improvement occurs in the existing drainage ditch located along University Avenue, between Airport Way and the Chena River, and in drainage ditches and wetlands south of Airport Way. Untreated storm water runoff would continue to discharge into the Chena River from the north.

The No Build Alternative would not impact wetlands.

The no-build alternative remains a viable alternative until a formal decision is made by the FHWA regarding this proposed project.

Figure 2.1.1 No Build Alternative

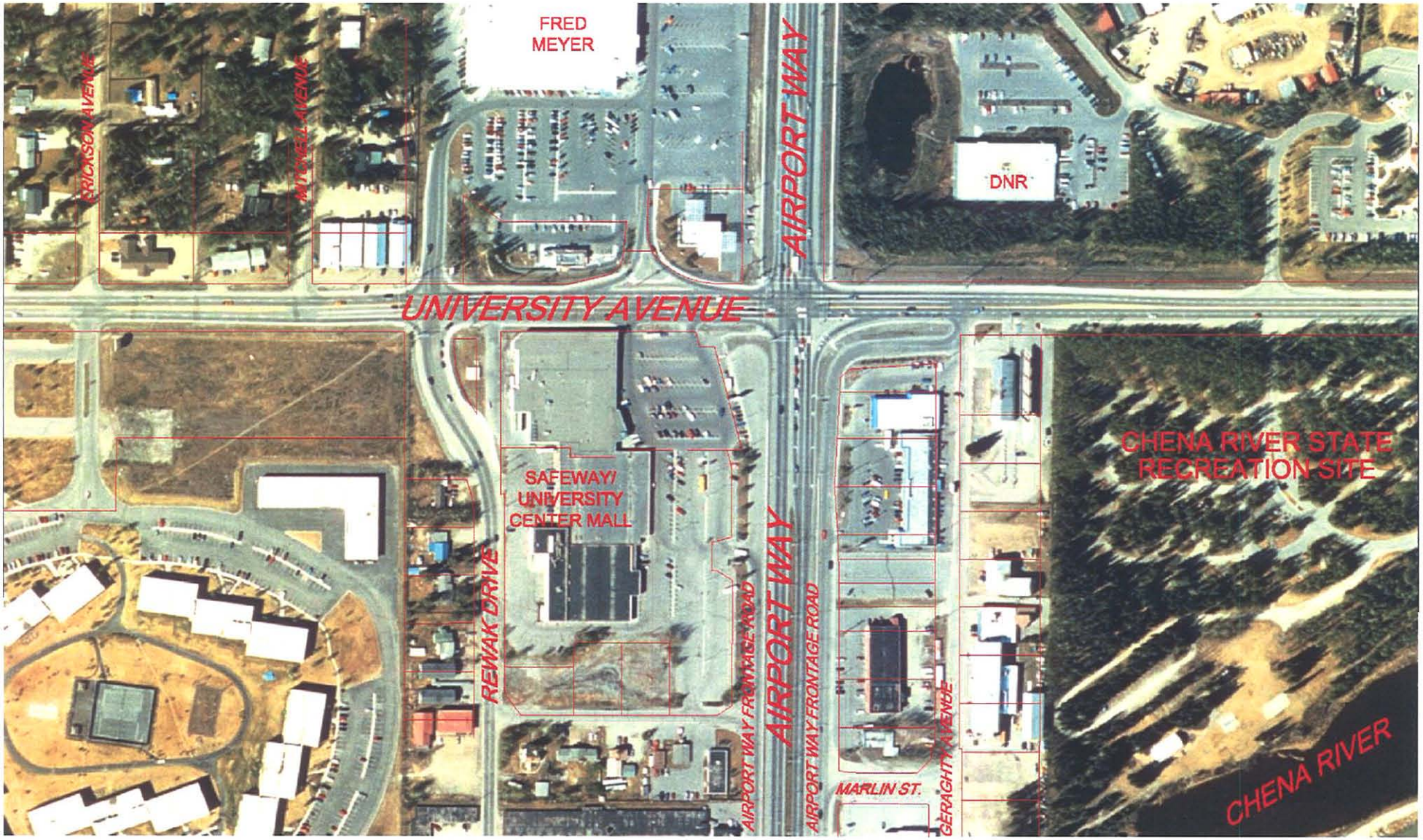


Figure 2.1.2 No Build Alternative

Figure 2.1.3 No Build Alternative

Figure 2.1.4 No Build Alternative

Figure 2.1.5 No Build Alternative

Figure 2.1.6 No Build Alternative

2.2 Build Alternative

Features of the build alternative (Figures 1.0.1 to 1.0.12) are described below with further details following:

- Median. A 19-foot wide raised median would be installed with breaks and turn pockets the entire length of the project, from Mitchell Expressway to Thomas Street.

- Traffic Lanes. Four 12-foot wide traffic lanes and 6-foot wide shoulders would be provided in each direction, bordered with curb and gutter. The typical roadway section is shown on Figure 2.2.1.

- Sidewalk. A curb and gutter with two foot wide utility strip and five-foot wide sidewalk adjoining the shoulder would be provided on the east side of the roadway.

- Bicycle Path. An eight-foot wide bicycle path would be located on the west-side of the roadway, next to the shoulder, curb, gutter, and a six foot wide utility strip.

- Improved access for persons with disabilities. ADA accessible ramps would be provided at all intersections and marked pedestrian crossings.

- Goldizen Street Intersection. The Goldizen Street intersection on the east side of University Avenue would be widened and realigned opposite the Goldizen Street intersection on the west side of University Avenue.

- Bus Turnouts. Bus turnouts would be coordinated with the FNSB Transportation Department.

- Traffic Signals. Traffic signals would be installed at Davis and Sandvik intersections. Existing existing signals at Rewak Drive, Airport Way and Geist Road/Johansen Expressway would be upgraded. The traffic lights would include ADA standard pedestrian push buttons.

- Right Turn Lanes. Right turn lanes would be added at Geist Road/Johansen Expressway and Airport Way.

- Railroad Grade Separation. The existing at-grade crossing of University Avenue by the Alaska Railroad would be replaced with a grade-separated crossing. The benefits of a grade-separated crossing include non-interrupted traffic flow, improved air quality, less noise (no horns), and improved safety for pedestrians, vehicles, and trains.

  The grade separation would be designed and constructed with provisions for the addition of a future second track. The required vertical clearance over the railroad track would require that the existing Fairbanks Street Bridge over the railroad be replaced with a

pedestrian tunnel. The portion of Fairbanks Street north of the existing West Valley High School approach would be replaced with an ADA accessible pedestrian pathway. The primary vehicular access to the University of Alaska Fairbanks campus is intended to be via Thompson Drive, now under construction. Thompson Drive is located approximately one-half mile west of Fairbanks Street.

The plan, elevation and section of the proposed railroad structure over University Avenue are shown on Figure 2.2.2.

- Chena River Bridge. The University Avenue Bridge over the Chena River would be replaced with a new widened structure built to current seismic code. Cost studies indicate that demolition of the existing bridge and construction of a new bridge is more economical than widening the existing structure and upgrading it as necessary to meet current seismic code. The proposed section of the new widened structure is shown on Figure 2.2.3. The proposed elevation and plan of the structure are shown on Figure 2.2.4.

  Construction activities for the replacement of the Chena River Bridge would affect traffic operations on University Avenue over one or more construction seasons since it would be necessary to restrict traffic to two lanes during the bridge construction period. The sequencing of construction is illustrated in Figure 2.2.5.

Traffic predictions indicate that implementation of the Build Alternative would keep the levels of service at LOS 'C' or better along the project corridor through the design year 2035. This represents a stable flow of traffic with acceptable delays along the arterial and occasional backups at intersections with a vehicle delay of 20 to 35 seconds. There would be no delays at the railroad over-crossing structure.

Widening of University Avenue to include a two-way left turn lane with raised median at major intersections, was included in the 1991 Record of Decision (ROD). The two-way left-turn lane design would provide space for a future continuous raised median. Highway design guidelines indicate that two-way left-turn lanes are not appropriate for roads with greater than 20,000 vehicles per day. Research indicates that these roads would be safer with continuous raised medians.

Plan drawings are included in Figures 1.0.1 to 1.0.8. The railroad grade separation construction would be as shown in Figures 1.0.9 to 1.0.12 following Section 1.0, Proposed Action.

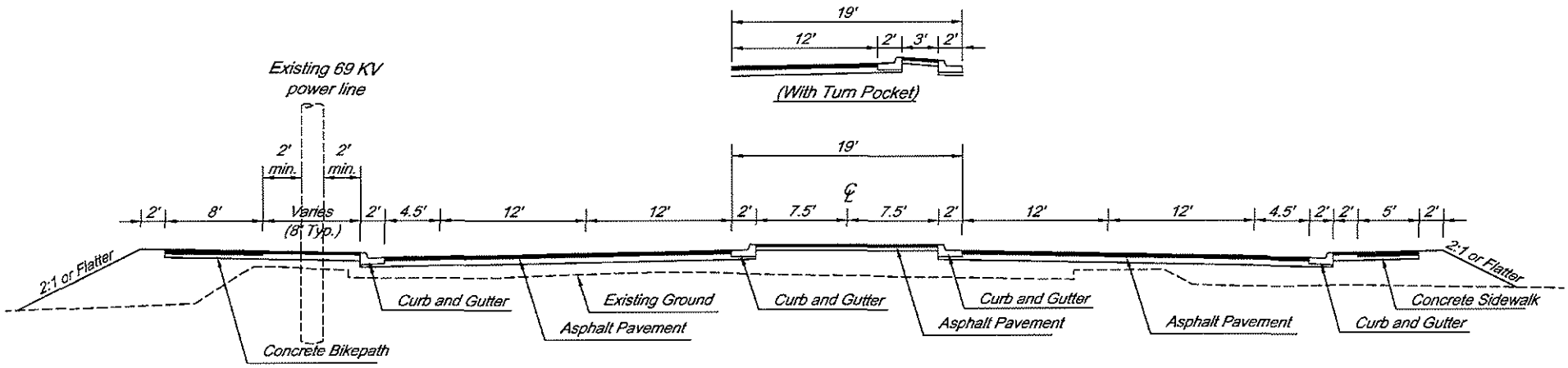


Figure 2.2.1 Typical Roadway Section (Build Alternative)

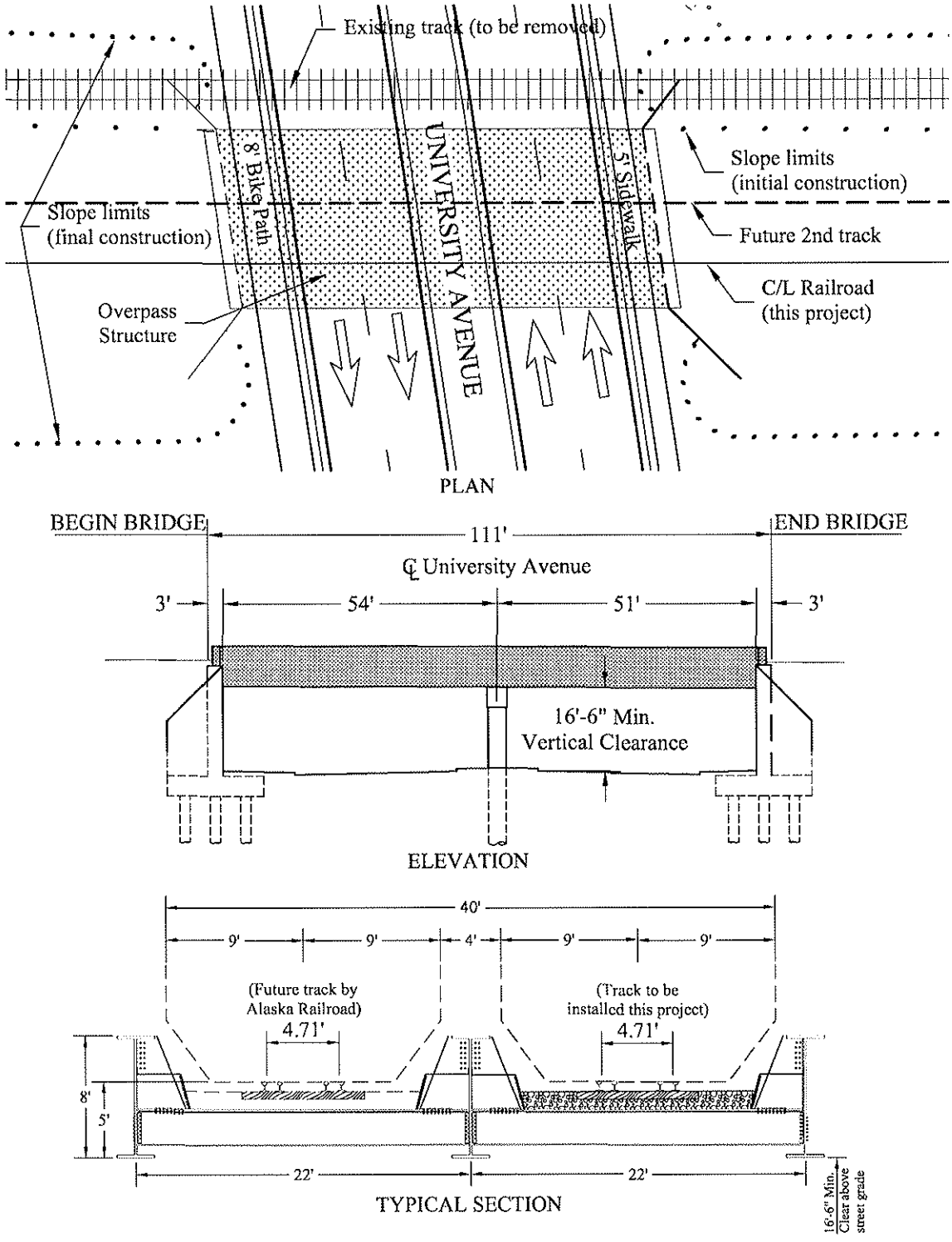


Figure 2.2.2 Railroad Overcrossing (Build Alternative)

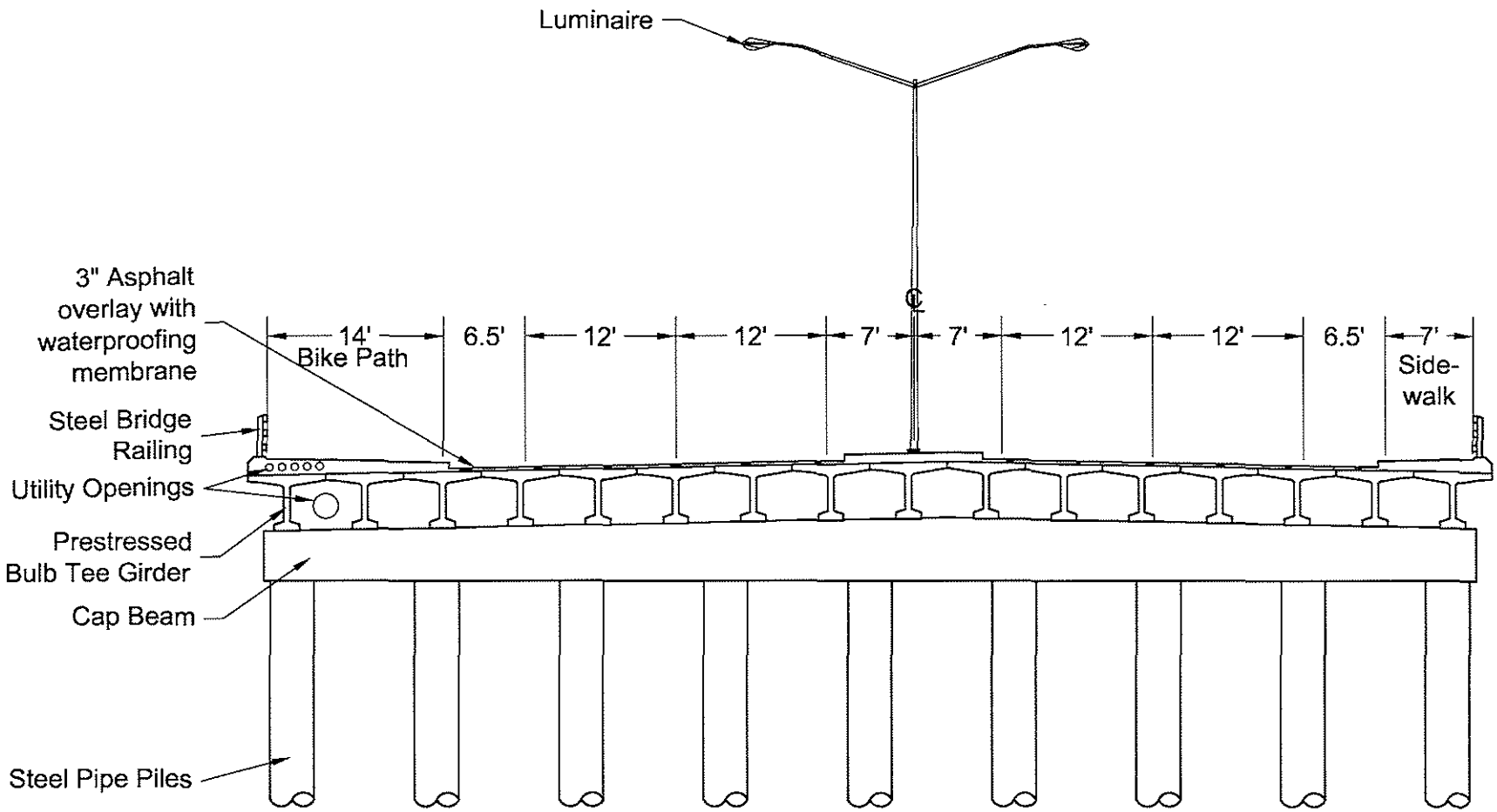


Figure 2.2.3 Typical Bridge Section - Chena River Bridge Replacement

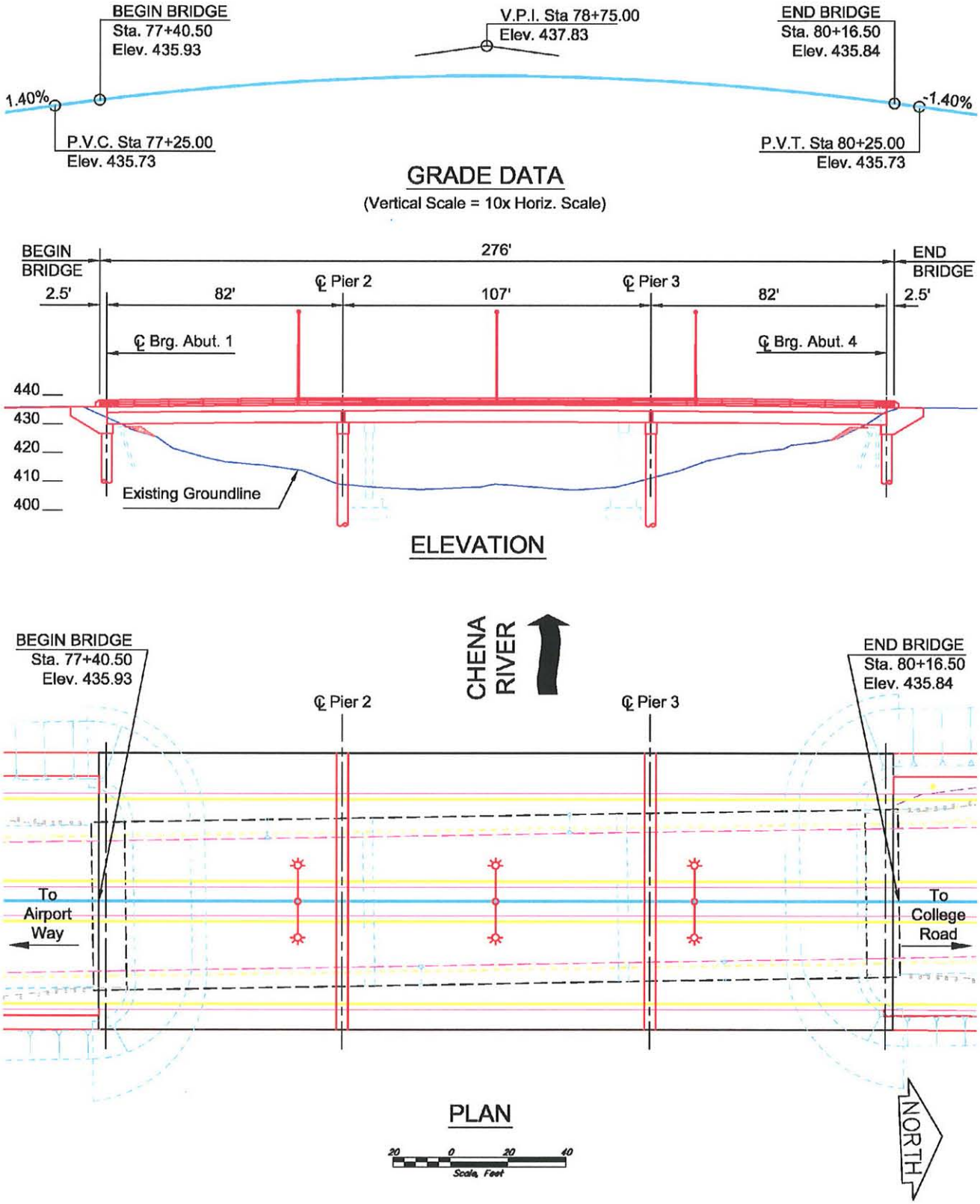
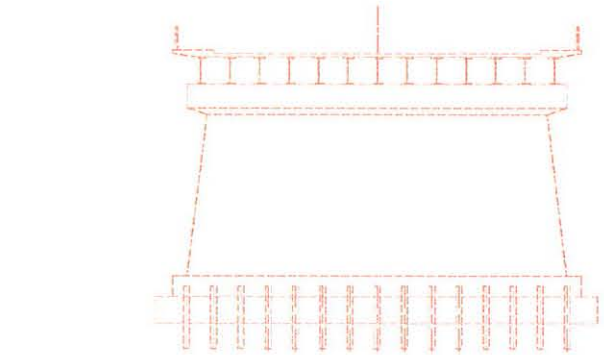
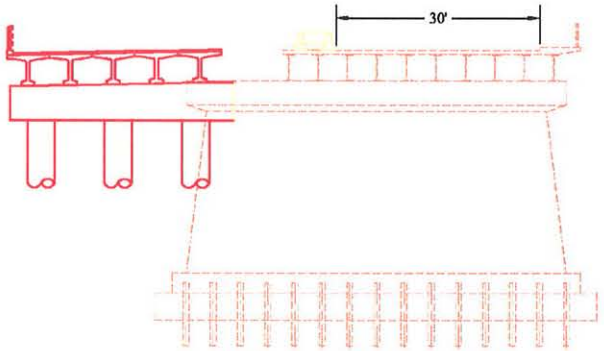


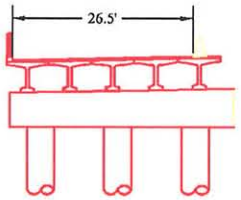
Figure 2.2.4 Bridge Plan and Elevation - Chena River Bridge Replacement



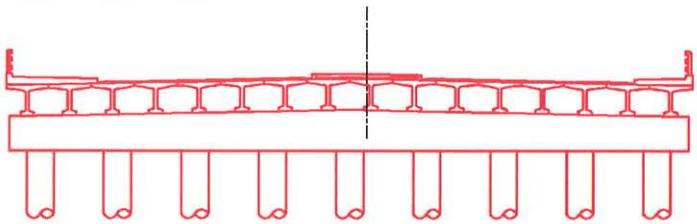
EXISTING BRIDGE
(Four traffic lanes)



CONSTRUCTION PHASE ONE
- Remove west portion of existing bridge
- Limit traffic to two lanes on existing bridge
- Construct west portion of new bridge



CONSTRUCTION PHASE TWO
- Remove remainder of existing bridge
- Route traffic to two lanes on new bridge



CONSTRUCTION PHASE THREE
- Construct east portion of new bridge
- Route traffic to two lanes on east portion
- Constuct sidewalk and guardrail on west portion
- Open new bridge to four lanes of traffic

Figure 2.2.5 Construction Phasing - Chena River Bridge Replacement

2.2.1 Raised median

Four 12-foot wide lanes would be constructed with a 19-foot wide raised-median separating the north and south bound traffic.

Turn pockets would be provided in the median at the following intersections:

Vian Way*	Airport Way
Davis Road	Goldizen Avenue
Holden Road*	Indiana Avenue
Nineteenth Avenue*	Geist Road/Johansen Expressway
Erickson Avenue	Sandvik Street/High School Access
Rewak Drive	Cameron Street

*southbound turn pocket only

The following intersections would be limited to right-in/right-out access:

Swenson Avenue	Wolf Run
Mitchell Avenue	Dead End Alley
Geraghty Avenue	Thomas Street
Widener Lane	

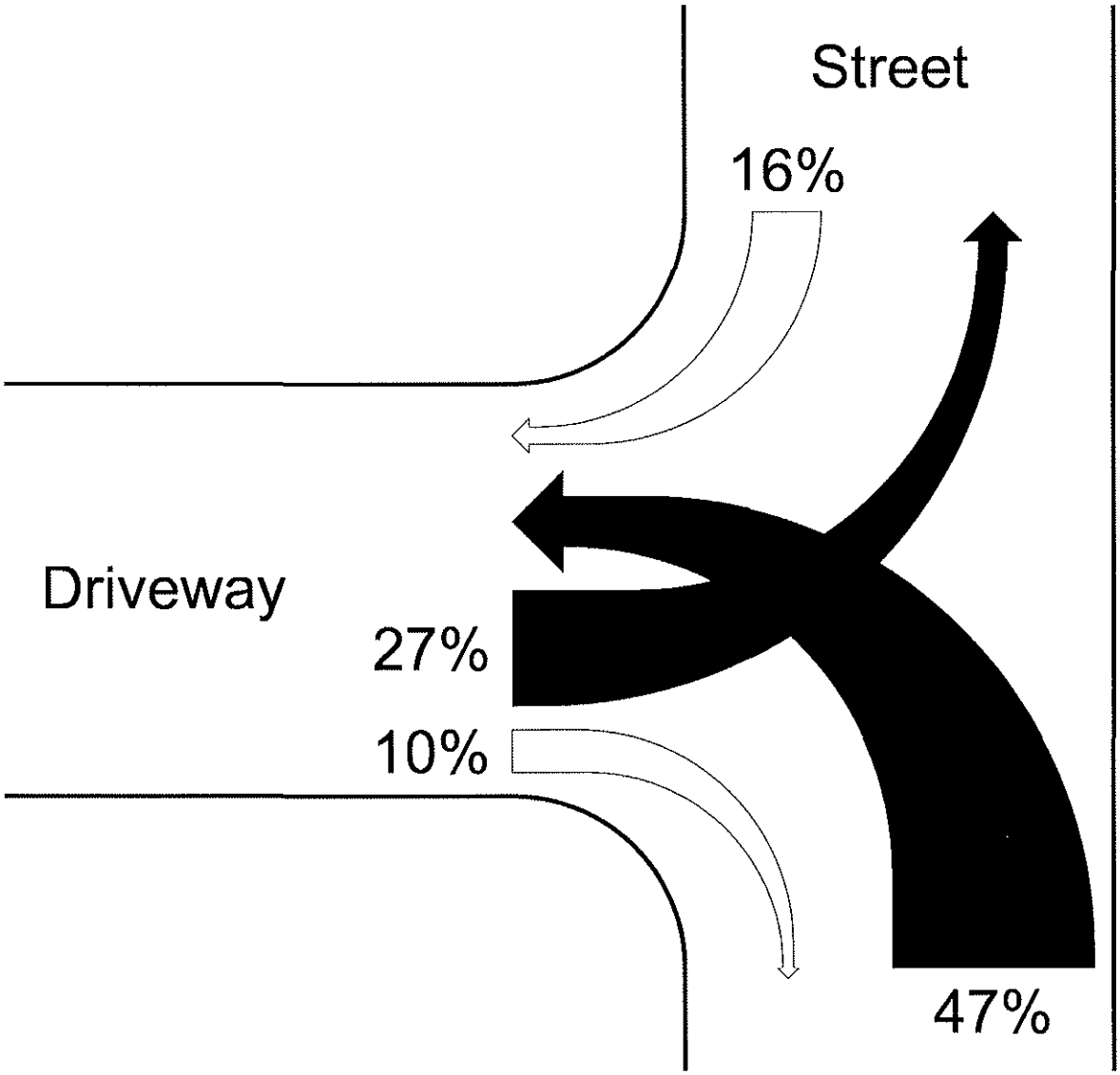
A cul-de-sac would be constructed at the west end of the Airport Way Frontage Road. The existing intersection of this frontage road at Geraghty Avenue would be eliminated. Pedestrian improvements would be made along Geraghty Avenue completing a connection to existing pedestrian facilities to the east (see Figure 1.0.4).

Comparison of Raised Medians with Two-Way Left-Turn Lanes

Accident rates are lower on roadways with raised medians than undivided roadways or roadways having two-way left turn lanes. Correspondingly, accident rates increase with increasing density of access points. At an access density of 30 access points per mile, about 45 more crashes would be expected to occur annually on University Avenue by the year 2035 with the current undivided roadway configuration than if a raised median were provided.

Raised medians with left turn pockets at cross-street intersections offer a cost-effective means of reducing crashes and improving operations at higher volume intersections because they separate slower turning vehicles from through traffic and provide a protected space to decelerate and turn.

A raised median also prevents left turns into and out of driveways, limiting access to right-in/right-out only. Studies have found that nearly three-fourths of all crashes that occur while turning into or out of driveways involve left turns (see Figure 2.2.6).



Source: Access Management Manual, Transportation Research Board, Figure 1-6

Figure 2.2.6 Driveway Turning Movement Crash Rates

DOT&PF weighed the advantages and disadvantages of raised medians and two-way left turn lanes, relative to undivided roadways.

Table 2.2.1 Two-Way Left-Turn Lane and Raised Median Comparison

Two-way left-turn lanes	Raised Medians
Advantages:	Advantages
Make use of odd lanes.	Enhance safety by reducing traffic conflict points.
Reduce left turns from through lanes.	Operate well under high volumes of through traffic.
Provide operational flexibility for emergency vehicles.	Provide pedestrian refuge at intersections.
Provide safer conditions than roads with no left-turn lanes or medians.	Restrict access to right turns only, if continuous.
Facilitate detours.	Discourage strip development.
Separate opposing traffic.	Avoid head-on crashes by separating opposing traffic.
	Reduce headlight glare distraction.
Disadvantages	Disadvantages
Encourage random access.	Reduce operational flexibility for emergency vehicles.
Illegally used as a passing or acceleration lane.	Increase crashes at median openings due to higher left-turn and U-turn volume.
Operate poorly under high volumes of through traffic.	Limit direct access to property, which may result in increased travel distance.
Allow head-on crashes.	Require increased right-of-way width
Require increased right-of-way width	

A raised median was selected because it provides greater safety and improved traffic flow. With graphic showing percent accidents with different movements. Raised median best meets the purpose and need of the project.

2.2.2 Driveway Access

To further reduce traffic conflicts and potential crashes, direct driveway access to University Avenue would be eliminated except where other means of indirect access is not practical.

The existing driveway serving the BLM/DNR complex from University Avenue would be closed. Access to these facilities would be via the existing driveway that connects to the signalized intersection at Sportsman's Way and Airport Way. The existing driveway serving the Chena River State Recreation Site would also be closed. The Recreation Site would be accessed via a new access road to be constructed to connect to Geraghty Avenue, east of Marlin Street. In addition, Indiana Avenue would be relocated to a point approximately 170 feet south of the existing Indiana Avenue location and Halvorson Road would be extended northward from its existing terminus at Widener Lane to Wolf Run.

The existing driveway to the fire station south of Nineteenth Avenue would be rerouted to connect to University at the Nineteenth Avenue intersection.

The only driveways that would retain direct access to University Avenue under the Build Alternative are at the following locations:

East side of University Avenue

- 330 feet south of Nineteenth Avenue**
- 490 feet south of Rewak Drive**
- 265 feet south of Rewak Drive**
- 400 feet north of Rewak Drive (access to Safeway store)
- 200 feet south of Alaska Railroad (access to GVEA substation)

West side of University Avenue

- Westerly extension of Nineteenth Avenue (Fire Station Access)
- Opposite Widener Lane**
- Opposite relocated Indiana Avenue**
- Opposite Wolf Run**

** indicates combined driveway serving two lots

Under the Build Alternative, 44 existing driveways that provide direct access to University Avenue would be rerouted to obtain access via other less traveled roadways or combined with other existing driveways.

Conclusion

The preferred alternative includes construction of a raised median because studies show that two-way left-turn lane operations degrade when traffic volumes exceed an ADT of 20,000 vehicles per day. Figure 1.2.3 shows that University Avenue would exceed this ADT within the design life for the project.

A model developed from a national study predicts 44 fewer crashes per mile per year with a raised median than with a two-way left-turn lane (see Table 2.2.2). Motorist safety and capacity would improve with the installation of northbound and southbound right-turn pockets on University Avenue at Geist and Johansen Expressway intersection, and southbound at the Airport Way intersection. Right turn pockets can reduce rear-end collisions and sideswipes by as much as 60 percent. (Alaska HSIP Handbook)

Installation of signals at Davis Road and Sandvik can be expected to reduce angle accidents by as much as 60 percent, however rear-enders may increase by as much as 25 percent. (Alaska HSIP Handbook)

University Avenue is an urban arterial. Its major function is to carry through traffic. Its secondary function is to provide access to adjacent properties. For this reason, the raised median is the safest and most appropriate choice for the rehabilitation of this facility.

Table 2.2.2. Predicted Accident Rate (Crashes per mile per year)

Segment	Undivided	Two-Way Left-Turn Lane	Raised Median
Mitchell Expessway to Davis Road	3	7	7
Davis Road to Rewak Drive	75	19	13
Rewak Drive to Geraghty Avenue	17	20	15
Geraghty Avenue to Chena River	26	23	12
Chena River to Johansen Expressway	114	35	17
Johansen Expressway to Thomas Street	73	19	15
Totals	308	123	79

Source: Access Management Considerations, University Avenue Rehabilitation and Widening (Appendix B).

Pedestrian safety would be improved with the addition of a path on the west side and sidewalk on the east side for the entire length of University Avenue, including the University Avenue Bridge over the Chena River.

ADA handicapped ramps and pedestrian push buttons would be installed at all appropriate locations. The raised median would be expected to reduce pedestrian accidents by as much as 25%. (Alaska HSIP Handbook, February 19, 2005.) The grade separation would expect to eliminate accidents between trains and highway vehicles.

2.3 Alternatives Considered but Dismissed

2.3.1 Two-way Left Turn Lane

The two-way left-turn lane (TWLTL) alternative was preferred in the 1991 ROD with 2010 ADT's predicted at the University Avenue Bridge expected to be 24,200 (Figure 1.2.3). Since then, design guidelines have changed and now suggest installation of a raised median for traffic levels over 20,000 ADT.

The two-way left turn lane along the centerline of University Avenue would have raised median channelization near the intersection with Geist Road/Johansen Expressway and between Geraghty Avenue and Rewak Drive. Breaks in the median with turn pockets would have been provided at the Rewak Drive and Airport Way intersections. Access to and from Geraghty Avenue would have been restricted to right-in/right-out traffic movements only.

Safety would have been improved over the no build alternative. The center lane would have provided some refuge for vehicles waiting to turn left.

The two-way-left turn lane alternative would have acquired three businesses and three private residences. Three of the Holiday House Apartment buildings would have been acquired. The two-way left-turn lane alternative would have provided a left-turn lane into and out-of the Chena River State Recreation Site.

3.0 EXISTING ENVIRONMENT AND CONSEQUENCES

The FHWA has the primary responsibility for assuring that the Nation's highway transportation system is safe, economical and efficient with respect to the movement of people and goods, while giving full consideration to the highway's impact on the human and natural environment. This chapter compares the existing environment with the No Build and Build Alternative to identify beneficial or adverse, direct or indirect social, economic or other environmental effects. Measures proposed to mitigate impacts are also identified.

Through agency coordination and field surveys, DOT&PF determined that several environmental impact categories are not affected by the proposed project actions. The table below briefly outlines these categories.

Table 3.0.1 Impact Categories Not Affected by Project

Impact Category	Description
Historic Resources	No historic properties would be affected. (Letter from the State Historic Preservation Officer dated April 22, 2005.)
Threatened or Endangered Species	No Threatened, Endangered or candidate species are listed on the United States Fish & Wildlife Service (USFWS) Alaska Region list in or near the project area. (Larry Bright, USF&WS, February 10, 2005).
Wild and Scenic Rivers	No wild and scenic rivers, as listed by the National Park Service, are impacted by the project (http://www.nps.gov/rivers/wildriverslist.html).
Coastal Barrier Resources	Fairbanks is not within a designated Alaska Coastal Zone, nor is it near a zone of influence. (Alaska Coastal Management Program, www.alaskacoast.state.ak.us/, Jan 05). This project would not affect land or water covered by the Alaska Coastal Zone Management Program (CZMP). No coastal barriers are within reach of project impacts.
Farmlands	The Farmland Protection Policy Act (FPPA) regulates Federal actions with the potential to convert farmland to non-agricultural uses, and the FHWA requires an assessment for prime or unique farmland in accordance with the US DOA Natural Resource Conservation Service (NRCS). The NRCS states that there are no prime or unique farmlands within the State of Alaska (NRCS official website Jan 05).

3.1 Land Use

3.1.1 Existing Environment

Land use along the project corridor is gradually changing from undeveloped and residential to commercial. In 1949 University Avenue was a rural dead-end road with approximately 10 homes. The construction of the Chena River Bridge in 1963 and subsequent widening of University Avenue to four lanes increased access and changed University Avenue into a through-route connecting the University Campus and population areas to shopping, work, utilities, and services.

Land use has seen an increasing mix of commercial development. Former homes have been converted to a coffeehouse, veterinary service, dental service, a utility office and other small businesses. Undeveloped land has been developed into leased office space, malls, shopping centers, restaurants and small businesses along University Avenue. Development along the southern portion of University Avenue includes a new University Fire Service Area Station.

The FNSB Comprehensive Plan, adopted 1984, amended 1990, 1997, and 1999; and the new Draft Proposed Regional Comprehensive Plan (2005), have designated land along University Avenue as "urban area." Land that is or can be served with public water and sewer and contains the most intensive use including residential, commercial and industrial development in addition to an area of open space/natural area as shown in the Fairbanks North Star Borough Comprehensive Plan (Figure 1.2.5.1).

The FNSB Title 18 Zoning Ordinance Map (Figure 3.1.1) includes several zoning classifications along University Avenue reflecting the arterial status of this roadway, its use and importance to the community. The zoning includes Rural Estates, Multiple-Family Residential/Professional Office District, Single-Family Residential, Light Industrial, General Commercial, Two-Family Residential, Outdoor Recreational, Multiple-Family/ Mobile Home Subdivision and General Use District. There is also an "Airport Noise Sensitive Area" overlay for the Light Industrial Zoning near the airport.

Utilities providing services to customers along or via the University Avenue corridor include the College Utilities Corporation water and sewer lines, Golden Valley Electric Association (GVEA) power lines, Fairbanks Natural Gas Company gas lines, GCI/Alaska Cable Network, Cablevision, Alaska Communications System (ACS), and Alascom/AT&T.

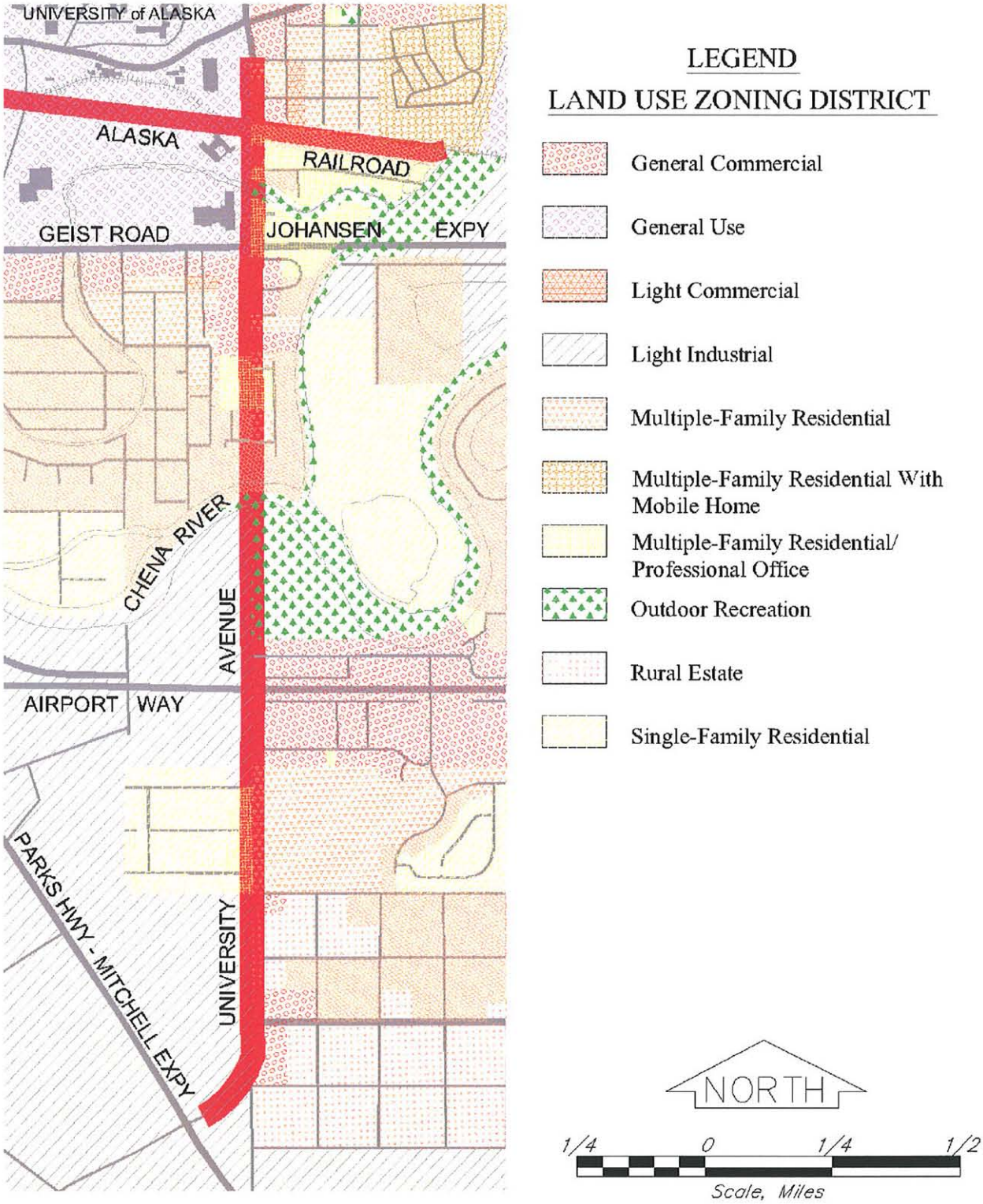


Figure 3.1.1 Fairbanks North Star Borough Zoning Ordinance Map

3.1.2 No Build

Land use in this area is expected to continue to change from undeveloped land or residential use to commercial use. Direct access onto and off of University Avenue would remain unrestricted and would become more difficult as congestion increases, pressuring drivers to take greater risks.

The no-build alternative is not consistent with the FNSB Comprehensive Plan, the FMATS or the STIP.

3.1.3 Build Alternative

Land use is expected to continue evolving with an increased emphasis on commercial and potentially larger scale development and traffic generators at intersections. The reduction in driveway access favors major commercial development over strip development. Most individual business establishments would have improved access through side roads and upgraded intersections.

The build alternative is consistent with the FNSB Comprehensive plan, FMATS and STIP. It provides a reduction in traffic delay from LOS "D" to LOS 'C.' Travel would be more circuitous for some motorists when accessing BLM/DNR, Chena River State Recreation Site, Geraghty Ave., Swenson Ave., Mitchell Ave. Dead End Alley, Thomas St. and Wolf Run. There would be a 5-foot to 50-foot wide right of way strip acquisition from various parcels.

The Build Alternative would be consistent with the following FNSB transportation plan goals:

- To have a safe, efficient multi-modal transportation system that anticipates growth.
- Encourage limiting the number of access points to high volume/speed roads.
- Improve transportation options for all segments of the community, including children, the elderly, and persons with disabilities.
- Make the Borough more pedestrian-friendly.
- Improve existing and create new walkways in urban areas that meet design standards.
- Create and implement a maintenance plan for walkways that ensures year-round use for all citizens.
- To have sufficient public utilities and infrastructure to meet existing and future demands.

3.1.4 Indirect Impacts and Cumulative Impacts

Businesses may want to establish along University Avenue because of the visibility to passing traffic and a perceived advantage in locations near to other commercial destinations. Higher density rental housing may develop. Lower density residential uses may continue to change to commercial.

3.1.5 Minimization and Mitigation

Change from residential to commercial is the continuing trend with or without the project, so no mitigation or minimization is required.

3.1.6 Permits and Special Conditions

No land use classifications or zoning permits would be required for the project.

3.2 Right of way and Relocation Impacts

3.2.1 Existing Environment

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," provides that "each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations."

A review of the Fairbanks data, the College area data and the FNSB Census 2000 demographic data indicates that the FNSB Census 2000 data best describes the demographics of the project area. Census 2000 found that the FNSB population of 82,840 had a median age of 30 years. Approximately 78% were listed under race as White, 7% American Indian or Alaska Native, 6% Black or African American, 4% Hispanic or Latino and 2% as Asian. The 2000 median household income was $49,076 per year while the per capita income was $21,553. Some 5.5 % or 1137 families were living below the poverty level in 2000, the most recent year this information is available.

Averaging the income data for the 5 Census 2000 tracts that include the project area (Tracts 2,6,7,8, and 13 shown in Figure 3.2.1.2), indicates that the project area per capita income in 1999 was $23,000 which is comparable to the entire FNSB per capita income of $21,553. Figure 3.2.1.2 maps information on the population within 1 mile, 2 miles and 3 miles of the center of University Avenue, at Indiana Avenue, as provided in the 2000 Census.

3.2.2 No Build Alternative

There would be no project, and therefore, no right of way acquisition that would lead to displacement of existing businesses and residents. Tenants, residents, business employees, customers and through-traffic would continue to experience vehicle crashes and high rates of delays.

Access to the HUD low-income housing unit on Sandvik Street would continue to deteriorate as increased congestion on University Avenue impacts residents of the 84-unit low-income HUD housing facility.

No homes, businesses or apartments would be relocated under the no build alternative.

One Mile Radius:	
Population	5,899
Household Units	2,489
White	4,249
Black	249
American Indian	711
Asian	220
Hispanic	223
Multi-race	387
Other	83

Two Mile Radius:	
Population	16,633
Household Units	6,806
White	12,238
Black	946
American Indian	1,621
Asian	570
Hispanic	655
Multi-race	998
Other	260

Three Mile Radius:	
Population	28,719
Household Units	12,577
White	20,589
Black	1,710
American Indian	3,273
Asian	850
Hispanic	1,164
Multi-race	1,819
Other	478

Source: Fairbanks North Star Borough Planning Department (All data approximate)

Figure 3.2.1.2 1990 Population Information

3.2.3 Build Alternative

Construction of this project would require strip right of way acquisition, which would cause the displacement of 3 businesses and would relocate 39 tenants, and 3 homeowners. Businesses acquired include the Trophy Cache, Holiday House Apartments, and a residential/commercial multi-family building with one tenant. Every effort would be made to assist these businesses in relocating in the same area or other areas nearby. The build alternative has been developed in accordance with the Civil Rights Act of 1964, as amended in 1968, and Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."

The Holiday House Apartments consists of several buildings, including an office and mechanical building. There are 56 apartments in the facility. Units acquired by the project would include 8-efficiencies, ten-one bedroom units, and 10-two bedroom units. There would be a total of 38 tenants displaced.

The acquisition of the Holiday House Apartment complex would result in the loss of 28 low-cost monthly rental housing units used mostly by UAF students in winter and seasonal workers in the summer. This is a small portion of the housing units used by the approximately 3500 off-campus University of Alaska Fairbanks students. University students who might be residing at the Holiday House Apartments have alternate housing in a similar price range available on Geist Rd and Fairbanks Street as well as rental housing in Shanly Homestead Subdivision.

All 3 homes are total acquisitions requiring relocation of the residents. There are approximately 38 tenants in the Holiday House Apartment Complex and 1 tenant at 875 University Avenue that would be total acquisitions, displacing a total of 39 tenants.

The FNSB Community Research Quarterly, Spring 2003 reports that rental vacancy rates fluctuate by season, with more than a 6% rental vacancy rate in the winter, which drops to 2% rental vacancy rate in the summer. An average of 200-300 apartment units and 20-30 houses are consistently available within the FNSB.

The project would not impact the HUD low-income housing unit on Sandvik Street. The 84-unit low-income HUD housing would benefit from improved access with the new traffic signal at Sandvik Street and University Avenue.

Acquisition of land for a new entrance to the Chena River State Recreation Site would include two vacant commercial parcels. The lots are zoned general commercial, but would be used for outdoor recreation.

3.2.4 Indirect Impacts and Cumulative Impacts

Indirect impacts or cumulative impacts include property acquisitions for multiple projects as traffic increases lead to increased need for safety improvements.

The building at the southeast corner of University Avenue and Johansen Expressway was acquired with the Johansen Expressway construction project. The owners chose to keep the building, but have not reoccupied it or reestablished a foundation or utility service. DOT&PF paid to move the building to its current location with the understanding that this project may acquire additional right of way from that property owner. This project would acquire additional right of way where the building now rests on its moving platform.

3.2.5 Minimization and Mitigation

The build alternative would impact a greater proportion of low-income residents if the Holiday House Apartment Complex were to be removed. Individuals would be offered relocation assistance and provided with alternate housing including, if necessary, last resort housing rent supplement for 48 months.

Relocation assistance would be available to all residential and business relocates without discrimination. Every effort would be made to assist businesses in relocating in the same area or another nearby location. The relocation of the businesses would not adversely affect the neighborhood.

The available housing market is quite active in the area and as a result, varies during the year for both homeowners and tenants. Some last resort housing is anticipated if comparable replacement housing is not available. Vacancy rates fluctuate by season, with more than 6% residential vacancy reported in the winter dropping to 2% in the summer. An average of 200-300 apartment units and 20-30 houses are consistently available within the FNSB (FNSB Community Research Quarterly, Spring 2003). The Holiday House Apartments have historically catered to students due to their low rents and location near the UAF and to seasonal summer workers. The DOT&PF would ascertain exactly how many households actually require last resort housing or rent supplements during the development of the Relocation Needs Assessment Survey, in the right of way acquisition phase of project development. Displacement would not produce long-term adverse effects.

3.2.8 Permits and Special Conditions

Relocatees would be offered decent, safe and sanitary housing within their financial means. A list of available and comparable housing would be provided to those who are potentially displaced. Within a reasonable period of time prior to displacement a comparable replacement dwelling would be available or provided for displaced individuals and families who are initial occupants, or adequate replacement dwelling would be available or be provided for subsequent occupants. The State Relocation Program is realistic and is adequate to provide orderly, timely and efficient relocation of displaced persons.

3.3 Economic Impacts

3.3.1 Existing Conditions

Fairbanks was established in 1901 and incorporated in 1903, Fairbanks began as a service and supply center for area gold mining. It is the second largest city in Alaska, with a 2003 population of 30,224 residents within the boundaries of the City of Fairbanks and a population of 82,840 in the Fairbanks North Star Borough (FNSB, established in 1964). The Borough includes the City of Fairbanks and another surrounding 7,361 square miles.

Fairbanks is the transportation, trade and service center for the interior and northern regions of Alaska. Local, State and Federal governments are major employers. Government employment includes Fort Wainwright Army Base, Eielson Air Force Base, and the University of Alaska. Construction of the Trans-Alaska Pipeline in the 1970's was a major economic boost to the area, as was construction of the Fort Knox Gold Mine in the 1990's.

According to the FNSB Community Research Quarterly, Spring 2003 economic indicators for 2002 were up in key sectors, when compared to the previous 6 years. The FNSB population grew by 2.4% over the past year. Some 693 homes sold for an average purchase price of $152,000, up 11% over the previous years purchase price. New housing units were on par with the previous 7 years, though single-family residences skyrocketed and multi-family units dropped. Local banks had $603 million on deposit (6% above the same period last year and the highest amount compared to the past 6 years). Money on loan totaled $420 million, 3.8% above the fourth quarter total in 2001 and the highest amount since 1996. Low interest rates are largely responsible for the high number of loans. The Fairbanks International Airport incoming and outgoing freight were comparable to previous years, however, there was an increase in passenger traffic. Tourism has remained stable over the past few years.

Employment in the FNSB is diverse with government, retail and military being the leading employers. Greater than 10% of the FNSB population are in the armed forces. The labor force is estimated at 74% of the population (Census 2000). FNSB unemployment was tallied at 6.2%, higher than the United States average of 4% but less than the Alaska average of 6.9%. Some 54% of all housing is owner occupied. Nearly 11% of all available housing units (3,514 dwellings) were vacant, of which 3% were seasonal, recreational, or occasional use, according to Census 2000. More than 40,000 employees commuted to work for a mean travel time of 17 minutes. Some 73% reported that they commuted to work by single occupant motor vehicle, alone, while 17% carpooled, 4% walked and 0.7% used public transportation.

3.3.2 No Build Alternative

The No Build Alternative would have an adverse long-term economic effect due to traffic congestion and consequent increased fuel consumption, increased crashes, injuries and property damage.

3.3.3 Build Alternative

The economic impacts of the use of raised medians have been studied in many recent research projects that have been conducted throughout the country. The impact of restricting left turns has

been found to be dependent not only upon the extent that access to adjacent property increases or decreases, but also on the type of activity involved and the background economic conditions.

Some activities, such as a large shopping center or office complex attract their clientele from a large area, and the overall travel time to the facility time plays a major role. Other activities, such as service stations and drive-in restaurants, rely on intercepting pass-by traffic. In such cases, left turn restrictions may adversely affect business.

Key findings of the past studies of the economic impacts of access restrictions on commercial properties, conducted throughout the country, include the following:

- Perceptions of business owners before a median was installed were more pessimistic than what usually happened.
- Business owners usually reported no change in pass-by traffic after median installations.
- Most business types (including specialty retail, fast-food restaurants and sit-down restaurants) reported increases in business activity.
- Most adverse economic impacts were realized during the construction phase of the median installations.
- Employment within the corridors of access management projects experienced upward trends overall, with some exceptions during construction phases.
- Along the corridors where property values were studied, land values stayed the same or increased, with very few exceptions.
- Corridors with completed access management projects performed better in terms of retail sales than the surrounding communities. Business failure rates along access-managed corridors were at or below statewide averages.
- Businesses surveyed along access managed corridors typically reported sales at least as high after the project was in place.

The results of these studies indicate that median projects have little overall adverse impact on business activity. Although some businesses report increase in sales and some report decreases, the majority report no change in business activity following a median project.

The build alternative would facilitate the area's on-going change to commercial use. The raised median would provide safer access to businesses and residences. Convenience, impulse shopping establishments and similar businesses may choose to locate near intersections, mindful that right-in right-out access would be the norm. Short-term impacts on businesses during construction would be outweighed by the long-term benefits.

3.3.4 Indirect Impacts and Cumulative Impacts

Direct beneficial short-term economic effects of the Build Alternatives include construction-related jobs, safer access to goods and services. Indirect long-term beneficial economic effects include improved traffic flow, less fuel consumption and fewer crashes (less property damage and fewer injuries). Improved bicycle and pedestrian facilities promote fewer motor vehicles and healthier modes of transportation.

Infrastructure improvement includes an opportunity for utility companies to upgrade and repair water, sewer, storm drainage, electricity, natural gas, telephone, and cable television during project construction that could be a substantial economic benefit to the community in the long-term.

Indirect impacts include increased travel time to access certain locations limited to right-turn-in and right-turn-out.

There would be a short-term impact to the FNSB over lost taxes on the acquired properties. The Build Alternative project cost is considered an acceptable economic impact relative to the benefits derived. Funding would be provided primarily from Federal sources, with State monies supplying the balance.

3.3.5 Minimization and Mitigation

No mitigation or minimization other than the compensation provided in the purchase of land through the right-of-way acquisition and relocation process.

3.3.6 Permits and Special Conditions

No permits are needed. Agreements would be developed with utility companies for the project corridor cover work agreed to by DOT&PF and the individual utility companies.

3.4 Social Impacts

3.4.1 Existing Conditions

The FNSB Transit System operates 3 bus routes in the University Avenue area, namely the Blue Line, the Red Line and the Yellow Line. Nine bus turnouts and passenger shelters are located along the arterial. In addition, many school buses are routed along University Avenue. West Valley High School and the Hutchison Institute of Technology are located just west of University Avenue on Geist Road. The University of Alaska Fairbanks is situated at the northwest end of the project area.

Emergency services include police protection provided by the Alaska State Troopers (outside the Fairbanks City limits), the Fairbanks City Police (inside the Fairbanks city limits) and the Campus police (UAF). The North Star Volunteer Fire Department, the Fairbanks Fire Department and the UAF Fire Department (University Fire Service Area) provide fire protection and emergency medical services.

3.4.2 No Build Alternative

Surface transportation patterns would be altered under the No Build Alternative as jammed traffic conditions, delays and crashes increase in response to projected increased traffic volumes (Figure 1.2.3.2) and continued delays due to the at-grade railroad crossing.

The No Build Alternative would result in more crashes and slower access for buses, police, fire and emergency medical services, and slow access to public facilities.

3.4.3 Build Alternative

Numerous right of way strip acquisitions from 5-50 feet in depth would be required from property owners along the project area. Some land acquisition may result in the loss of screening vegetation and privacy for the landowner. Financial compensation would be paid for the land, based on current market value and the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Community services such as the FNSB Transit System, the FNSB School District buses, the Alaska State Troopers, the Fairbanks City Police, the North Star Volunteer Fire Department, the Fairbanks Fire Department, the UAF Fire Department, and emergency medical services would be both faster and safer.

The build alternative would upgrade the pedestrian facilities to current ADA standards. Wider sidewalks along the roadway and across the bridge plus a shoulder on each side of the roadway would provide additional safety for pedestrians, bicyclists, and individuals in wheelchairs.

3.4.4 Indirect Impacts and Cumulative Impacts

Induced social impacts such as shifts in patterns of population movement and growth, public service demands and changes in business activity to the extent influenced by the No Build or Build Alternatives, do not appear to be substantial. The No Build or Build Alternatives would not divide or disrupt established community cohesion or identity, or community services; disrupt

orderly, planned development or create an appreciable change in employment. Community goals and objectives and family and individual values would not appreciably change by either the No Build or Build Alternative.

New automobile travel patterns would also be required for those who access UAF from Fairbanks Street. New access to UAF is the Loftus Road extension to Thompson Drive, located west of Fairbanks Street.

3.4.5 Minimization and Mitigation
No mitigation or minimization.

3.4.6 Permits and Special Conditions
No permits

3.5 Visual Impacts

3.5.1 Existing Conditions
University Avenue has gradually changed from a narrow gravel track to the busy four-lane avenue of today. Tall power poles line the west side of the highway and are the principle visual feature of the roadscape. One pedestrian overcrossing is located between the Alaska Railroad Crossing and Geist Road. It is not a visually distinct or sensitive locale and there is very little potential for visual impacts.

3.5.2 No Build Alternative
The No Build alternative would not specifically result in physical changes to the existing visual conditions within the University Avenue corridor. However, with growing congestion, accidents, and a failing pavement structure, the No Build alternative would lead to an image of an aging, unimproved facility that does not meet the transportation needs of the Fairbanks area.

3.5.3 Build Alternative
The Build alternative would result in some minor visual impacts. The larger power poles would remain in their current location but some of the smaller poles would be moved to accommodate a wider street and pedestrian facilities.

The University Park Elementary School pedestrian overcrossing would be removed. The overcrossing was built for the school, which is no longer in operation as an elementary school. The overcrossing would not be replaced because it is no longer used and is not ADA accessible. An ADA/pedestrian push-button walk signal would be installed at the Sandvik Street and University Avenue intersection.

The proposed Alaska Railroad (ARR) overcrossing would create a new visual feature approximately 22-feet high. No unique visual resources would be obscured by this 54-foot wide by 120-foot long structure. The finished surface of University Avenue would be lowered approximately 4 feet below the existing street grade, back to the approximate original ground level.

A fence would be constructed along the Chena River Recreation Site to serve as a physical barrier between the roadway and the campsites.

Street lighting levels along University Avenue would remain the same.

3.5.4 Indirect Impacts and Cumulative Impacts
Widening University Avenue would create broader vistas and a greater sense of openness.

3.5.5 Minimization and Mitigation
Mitigation for visual impacts could involve contractor-specified clearing of a minimal amount of vegetation as is necessary to construct the project.

3.5.6 Permits and Special Conditions
Permits for right of way landscaping would be considered on an individual basis.

3.6 Joint Development

Joint development includes new access to the Safeway shopping center at the southeast corner of University Avenue and Airport Way.

Project development has included coordination with:

- DNR Division of Parks and Recreation to develop safer access and improvements
- College Utilities waterline upgrade along University Avenue
- Fairbanks Natural Gas Corporation infrastructure
- Golden Valley Electric Association
- University of Alaska for the
  - elimination of the Fairbanks Street access to campus
  - provision for a pedestrian tunnel under the elevated railroad
  - ARR access to the UA power station
  - Access to the University Park Building (formerly University Park Elementary School) and parking lots.

3.7 Parks & Recreation

3.7.1 Existing Conditions
Chena River State Recreation Site is a 27 acre park located adjacent to University Avenue, southeast of the University Avenue Bridge. Facilities at the park include 56 overnight camping sites, a picnic area for day use, and a boat launch. Some 100,000 visits occur at the park during its season, which normally runs from mid-May through mid-September. Existing vehicle access to the park is provided by one entrance on University Avenue.

The campgrounds are located next to the busy University Avenue and receive a notable amount of noise from existing traffic, boats, gravel pit development, and aircraft.

3.7.1 No Build Alternative

The Chena River State Recreation Site would continue to use the existing entrance. As traffic increases, campers, vehicles pulling boat trailers, and individuals entering and leaving the park would wait longer periods of time and be pressured to take more risks entering or exiting the recreation site. Noise would continue to increase with increased traffic levels and congestion.

3.7.2 Build Alternative

The raised median would eliminate existing access from University Avenue. It would create a new entrance to the recreation site on Geraghty Avenue just east of Marlin Street. The information and fees kiosk would be moved to the new entrance and access roads would be reconnected to the existing roads (See Appendix A and Figure 3.7.1 for details).

The new access would be safer because it would eliminate the turning movement of large slow-moving campers and vehicles pulling trailers across higher speed through traffic. As indicated in Section 1.2.3, maximum daily traffic counts on University Avenue during the summer, while the recreation site is operating, exceeded 25,000 vehicles per day in 2003 and are expected to increase by more than fifty percent over the design life of the project. Safer recreation site access would be provided from Geraghty Avenue, which will be accessible either directly from University Avenue for northbound traffic or via Washington Drive, which is a recently upgraded (2004) low-volume, low-speed facility that crosses Airport Way at a signalized intersection.

The old entrance would be reconfigured to create a pedestrian entrance and landscaped as needed. A 6-foot high fence would be constructed between the new sidewalk and the campsites closest to University Avenue. The fence would serve as a physical barrier between the roadway and the campsites. A bike or pedestrian path allowing access from the bridge to the boat launch parking lot would be constructed.

3.7.3 Indirect Impacts and Cumulative Impacts

The new relocated entrance on Geraghty Avenue would be a long-term improvement to the park.

3.7.4 Minimization and Mitigation

Appropriate signage redirecting the public to the new entrance would be provided prior to the elimination of the existing entrance into the park. The Division of Parks and Recreation would continue to be consulted to ensure the functionality of the park is maintained and any changes are a net benefit to the public.

3.7.5 Permits and Special Conditions

A letter of agreement has been signed by DOT&PF and DNR, Division of Parks and Recreation to relocate the recreation site entrance. This letter details private property that would be acquired and entrance modifications that would be completed prior to the construction of the University Avenue Rehabilitation and Widening Project.

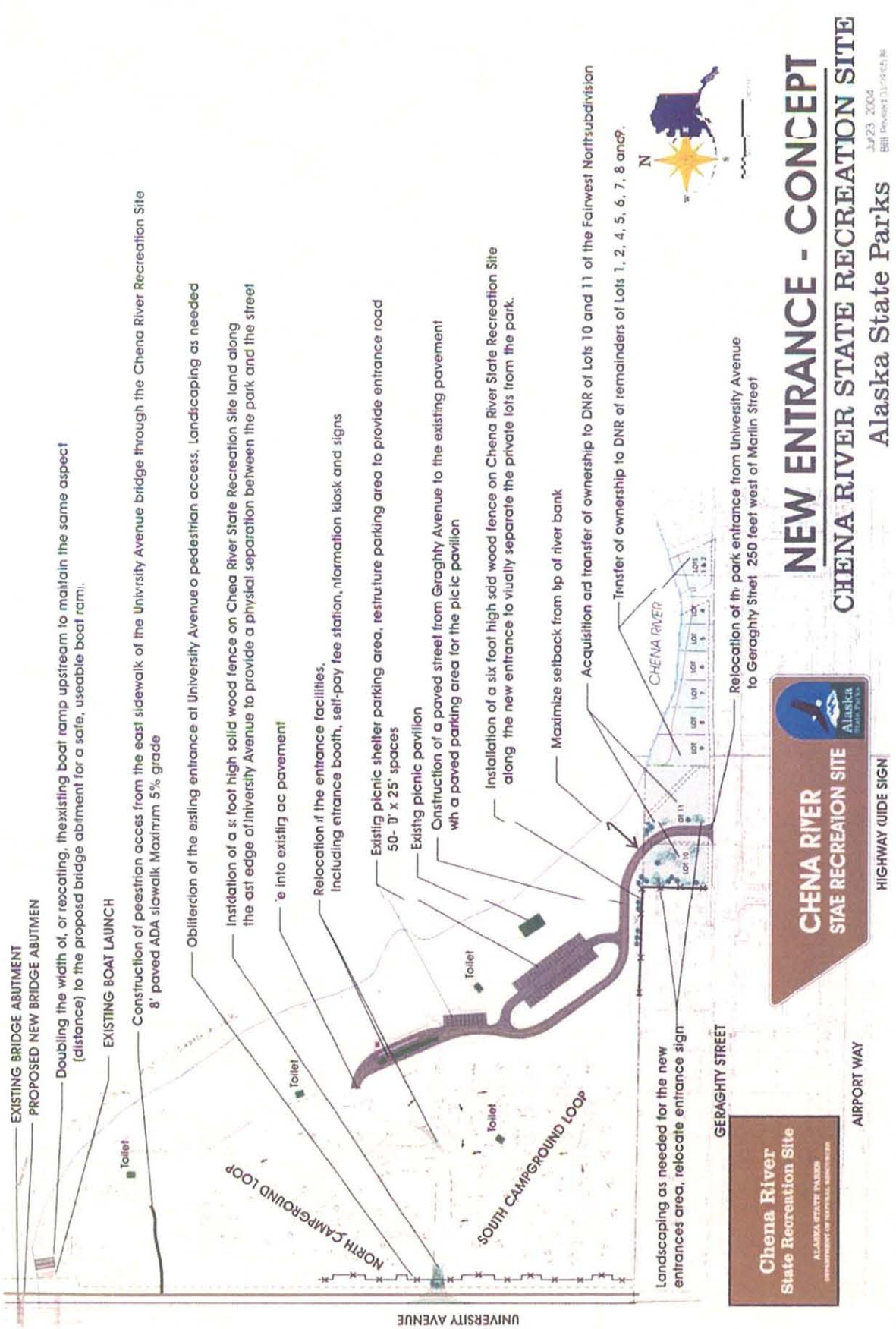


Figure 3.7.1 Chena State Recreation Site Entrance Relocation

3.8 Considerations Relating to Pedestrians and Bicycles

3.8.1 Existing Conditions

There is a shared five-foot wide sidewalk north of Rewak Drive and a six-foot wide roadway shoulder and no sidewalk south of Rewak Drive. The sidewalk narrows to a width of four-feet on the Chena River Bridge. Pedestrian and bicyclists share a sidewalk on the bridge that is narrow and is not separated from University Avenue by shoulders.

3.8.2 No Build Alternative

The No Build Alternative will not improve the existing facility. Pedestrian facilities within the project limits would remain inadequate and in deteriorating condition. Further, the absence of sidewalks would remain on University Avenue, south of Rewak Drive. The No Build Alternative is not consistent with the Purpose and Need of this project, which includes improving and extending facilities for pedestrians and bicycles. The No Build Alternative is also not consistent with the FNSB Comprehensive Plan to have a linked multi-modal transportation system, to make the FNSB more pedestrian friendly and to integrate safe bicycle circulation into road networks and maintain bikeways for commuter and recreational purposes.

3.8.3 Build Alternative

The Build Alternative is consistent with the Purpose and Need of the project, with the FNSB Comprehensive Plan and with the FNSB 1989 Bike Plan. In compliance with Section 109(n) of 23 USC, the proposed project would provide bicyclists an improved and extended alternative to the existing facility. The Build Alternative features construction of 6-foot wide shoulders on both sides of the roadway with an 8-foot wide bike path on the west and a 5-foot wide sidewalk on the east, running the entire 2.12 mile length of University Avenue. New sidewalk would be extended along the south side of Geraghty Avenue to Marlin Street. A new pedestrian/bike path and tunnel under the railroad would be constructed west of the north Fairbanks Street roadbed (to be removed), between West Valley High School and the UAF.

Curb cuts and ramps would be provided at all intersections and ADA/pedestrian push-buttons at all traffic lights. These would comply with current ADA accessibility standards.

3.8.4 Indirect Impacts and Cumulative Impacts

Providing pedestrian and bicycle improvements adds to the widening of the required right-of-way acquisition in some places. The project would make travel much safer for pedestrians and bicyclists. A major electrical transmission line is located on the west side of University Avenue. The line would not be moved, so the bike path must be located west of the transmission line, slightly increasing the overall width of the project.

3.8.5 Minimization and Mitigation

The project mitigates existing conditions for pedestrians and bicyclists.

3.8.6 Permits and Special Conditions

No permits

3.9 Air Quality Impacts

3.9.1 Existing Environment

On September 27, 2004, the U.S. Environmental Protection Agency (EPA) designated Fairbanks as an air quality Carbon Monoxide (CO) Maintenance Area. The project area is within the CO maintenance area. EPA has not designated Fairbanks as a non-attainment area for PM10, nor does the current State Implementation Plan / State Air Quality Control Plan (SIP) include PM10 control measures for Fairbanks.

The FNSB prepared a Draft Carbon Monoxide Maintenance Plan (FNSB, 2003), which detailed how predicted CO emissions between 2000 and 2015 would not cause an exceedance of the National Ambient Air Quality Standards (NAAQS) ambient CO standard. Efforts to improve the likelihood of continued attainment, in addition to benefits of fleet turnover (expected replacement of older more-polluting vehicles), were described in the Plan and include:

An episodic wood burning ban,
A vehicle oxygen sensor replacement program,
Additional downtown parking space electrical plug-ins,
Continued public awareness programs,
Continued free-ride winter bus service, and
Continued operation and improvement of the I/M program.

Federal regulations require transportation projects to conform with State Implementation Plans (SIP), both on a regional and local level. Conformity is defined as complying with the SIP's goal of reducing violations of ambient air quality standards.

3.9.2 No Build Alternative

Emission testing and more efficient vehicle operations and new vehicle engine designs would greatly improve CO emissions in the future. Increases in traffic volumes would partially offset this decrease. Neither the NAAQS peak-hour standard of 35-ppm CO nor the 8-hour standard of 9-ppm CO are expected to be exceeded under the No Build Alternative.

3.9.3 Build Alternative

The University Avenue Rehabilitation and Widening Project has been determined to conform to the state and federal implementation plans as required under Section 176(c)(4) of the Clean Air Act as amended. DOT&PF completed quantitative CO microscale or hot-spot dispersion modeling. Future CO concentrations near University Avenue were predicted using EPA's MOBILE 6 and CAL3QHC computer models and the State of California CALINE4 model for the Build and No Build Alternatives (Reference C).

DOT&PF's analysis indicates that future CO emissions per vehicle mile would continue to decrease as a result of vehicle emission controls for both the No Build and the Build Alternative and thus meet the NAAQS. Increases in traffic volumes would partially offset this decrease. However, Neither the NAAQS peak-hour standard of 35-ppm CO nor the 8-hour standard of 9-ppm CO are expected to be exceeded under the No Build or Build Alternative. The project

would not cause or contribute to any new localized violation or increase the frequency or severity of any existing CO violations in the CO non-attainment area.

The 2004-2006 State Implementation Plan (SIP) includes the University Avenue Rehabilitation and Widening project. FHWA approved the air quality conformity analysis for non-attainment area projects on December 19, 2003 (USDOT, 2003). The emission calculation of the Build Alternative is consistent with the motor vehicle emissions budget of the SIP. This project conforms to the requirements and objectives of the most recent SIP for air quality.

The Air Quality analysis was reviewed in a formal Air Quality Conformity Review. The review included local, state and federal agencies and was completed in 2004.

3.9.4 Indirect Impacts and Cumulative Impacts

Improved vehicle movement and reduced idling and transit times resulting from this and other highway projects in the Fairbanks Maintenance Area would lessen the overall production of CO and reduce the likelihood that air-quality standards would be exceeded.

3.9.5 Minimization and Mitigation

The air quality criteria in the Federal Conformity Rule and in State regulations have been met. No further mitigation or minimization is required.

3.9.6 Permits and Special Conditions

No permits.

3.10 Noise Impacts

3.10.1 Existing Environment

The existing land use along the University Avenue project area is a mix of residential (Land Use Category B) and commercial (Category C) with some undeveloped land (Category D) near the south end of the roadway. Future development is likely headed towards commercial land use along much of the project corridor.

Noise impacts from a roadway occur when an actual or predicted noise level (after construction) approaches or exceeds the Federal Highway Administration (FHWA) noise abatement criteria or substantially exceeds existing noise levels. A ten-decibel increase in noise is considered substantial. The DOT&PF's noise policy defines approaches as within 2 dBA of the FHWA Noise Abatement Criteria (NAC). The NAC for Land Use Category B (residences, parks, churches) is 67 dBA for an exterior hourly equivalent traffic noise level and 72 dBA for Land Use Category C (businesses, public offices etc.).

Other noise generators in the project area include the Fairbanks International Airport, boat traffic on the Chena River, and a gravel pit just upstream of the University Avenue Bridge.

The Chena River Recreation Site, 1155 University Avenue, is utilized for overnight camping from mid-May through mid-September. The nearest campsites are located about 125-feet from the roadway centerline or 72-feet from the closest edge of the traveled way.

3.10.2 No Build Alternative

Noise levels were modeled for the No Build Alternative at 53 locations using Traffic Noise Model Version 2.5 software (See Appendix E). The results of modeling indicate that traffic noise levels in the year 2004 at these locations would typically increase by 2 dBA by the year 2035 with the no build alternative. Traffic noise levels resulting from year 2004 traffic volumes approach or exceed the traffic noise impact criteria at 11 of the 53 locations that were evaluated in the modeling. By the year 2035 19 of these 53 locations would experience traffic noise levels that approach or exceed the traffic noise impact criteria.

Table 3.10.2.1 PREDICTED TRAFFIC NOISE IMPACTS (NO-BUILD ALTERNATIVE)

ID No.	Receiver Description	Address	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	Offset to Center of Nearest Existing Lane, ft.	2004 Noise Level $L_{eq}(h)$, dBA	2035 Noise Level $L_{eq}(h)$, dBA	Noise Increase dBA from 2004	Noise Impact Type
1	West Side Business Park	2175 University Avenue	C (72)	97/53	65	67	2	None
2	West Side Business Park Annex	2173 University Avenue	C (72)	185	57	59	2	None
3	Residence	2151 University Avenue	B (67)	40	67	69	2	E
4	University Fire Station	1950 University Avenue	C (72)	-190	58	60	2	None
5	Residence	1875 University Avenue	B (67)	120	61	64	3	None
6	Snow Goose Fibers & Quilting Co.	1875 University Avenue	C (72)	110	62	64	2	None
7	Sophie Station Hotel	1717 University Avenue	B (67)	77	64	66	2	A
8	Apartment Building	3712 Swenson Avenue	B (67)	-189	58	60	2	None
9	The Drilling Company and Apartments	1818 University Avenue	B (67)	-63	65	67	2	E
10	Fairbanks Funeral Home	3704 Erickson Avenue	B (67)	-67	65	67	2	A
11	Residence	1716 University Avenue	B (67)	-66	65	67	2	A
12	The Front End Shop	1432 University Avenue	C (72)	-72	66	68	2	None
13	Taco Bell	1450 University Avenue	C (72)	-93	65	67	2	None
14	Quisno's Subs	3588 Airport Way	C (72)	182/122	64	67	3	None
15	Alaska Department of Natural Resources	3700 Airport Way	C (72)	-216	60	62	2	None
16	Chena River State Recreation Site	1155 University Avenue	B (67)	160	64	65	1	A
17	Chena River State Recreation Site	1155 University Avenue	B (67)	120	66	68	2	E
18	Chena River State Recreation Site	1155 University Avenue	B (67)	79	66	68	2	E
19	Chena River State Recreation Site	1155 University Avenue	B (67)	126	63	65	2	A
20	Chena River State Recreation Site	1155 University Avenue	B (67)	103	64	66	2	E
21	Chena River State Recreation Site	1155 University Avenue	B (67)	81	66	67	1	E
22	Chena River State Recreation Site	1155 University Avenue	B (67)	116	63	65	2	A
23	Bureau of Land Management	1150 University Avenue	C (72)	-173	61	63	2	None
24	Chena River State Recreation Site	1150 University Avenue	B (67)	143	62	63	1	None
25	Chena River State Recreation Site	1155 University Avenue	B (67)	160	61	63	2	None
26	Residence	475 University Avenue	B (67)	86	65	66	1	A
27	Residence	480 University Avenue	B (67)	-89	65	66	1	A
28	Residence	490 University Avenue	B (67)	-49	68	70	2	E
29	Residence	3625 Goldizen Avenue	B (67)	-53	68	69	1	E
30	Residence	500 University Avenue	B (67)	-63	67	68	1	E
31	Assemblies of God Central Mission Church	3548 Goldizen Avenue	B (67)	102	64	66	2	A
32	Residence	510 University Avenue	B (67)	-60	67	69	2	E
33	Residence	518 Halvorson Road	B (67)	122	63	65	2	[1]None
34	Residence	520 University Avenue	B (67)	-62	67	68	1	E
35	Residence	540 University Avenue	B (67)	-238	58	60	2	None
36	Web Weavers	565 University Avenue	C (72)	63	67	68	1	None
37	Residence (Deck at rear of house))	581 University Avenue	B (67)	220	60	61	1	None
38	Residence (front of house)	581 University Avenue	B (67)	144	66	68	2	E
39	University Dental Clinic	570 University Avenue	C (72)	68	59	60	1	None
40	Residence	3690 Widener Lane	B (67)	111	63	65	2	A
41	Golden Heart Veterinary Services	615 University Avenue	C (72)	123	63	65	2	None
42	Attorney's Plaza	590 University Avenue	C (72)	-72	66	68	2	None
43	Holiday House Apartments	655 Indiana Avenue	B (67)	262	57	58	1	None
44	Holiday House Apartments	655 Indiana Avenue	B (67)	42	69	71	2	E
45	Holiday House Apartments	655 Indiana Avenue	B (67)	75	55	57	2	None
46	University Plaza	610 University Avenue	C (72)	-73	66	68	2	None
47	Holiday House Apartments	655 Indiana Avenue	B (67)	125	60	62	2	None
48	Oasis Restaurant & Lounge	734 University Avenue	C (72)	-82	65	67	2	None
49	Todd Wentz, DDS MS	701 University Avenue	C (72)	55	67	69	2	None
50	Wells Fargo Bank Alaska	794 University Avenue	C (72)	-53	69	70	1	A
51	Wolf Run Restaurant	3350 Wolf Run	C (72)	155	64	66	2	None
52	Residence	895 University Avenue	B (67)	37	69	72	3	E
53	University Park Bible Church	3681 Sandvik Street	B (67)	234	57	59	2	None
54	Parkwest Apartments	2006 Sandvik Street	B (67)	224	57	59	2	None
55	University Park Building	1000 University Avenue	C (72)	-141	61	63	2	None
56	Residence	1045 University Avenue	B (67)	61	64	66	2	A
57	University Avenue Truck & Car Wash	3701 Cameron Street	C (72)	78	63	66	3	None
58	Utility Services of Alaska, Inc.	3691 Cameron Street	C (72)	233	55	58	3	None
59	Sam's Sourdough Café	3702 Cameron Street	C (72)	59	65	67	2	None
60	University Baptist Church	1197 University Avenue	B (67)	105	61	63	2	None

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria
[1]No noise impact (2035 noise levels shown are rounded upwards from a lower number)

3.10.3 Build Alternative

With Build Alternative, 24 of the 53 noise receptor locations would experience traffic noise levels that approach or exceed the traffic noise impact criteria by 2035, including one location (Holiday House Apartments) that would experience a substantial increase of 14 dBA in traffic noise. The increase at Holiday House Apartments would result from the removal of a building that is currently between University Avenue and the modeled location.

Of the receptors that approach or exceed the noise abatement criteria, the Build Alternative would increase noise over the No Build at 15 out of 28 receptor locations. Four receptor locations would experience a decrease in noise.

Twelve noise walls were evaluated for the 24-receptor locations that approach or exceed the noise abatement criteria in 2035, as shown in Appendix E. Noise barriers were found to be not reasonable at eleven of the twelve potential noise wall locations that were evaluated where future Build noise levels were less than five dBA greater than existing noise levels and less than three dBA greater than future No Build noise levels. At six of these twelve locations, the estimated construction cost of the noise walls exceeds $25,000 per impacted and benefitted residence. A noise barrier would be reasonable at the Holiday House Apartments and would be constructed if the property owner requests a wall.

The Build Alternative would construct a 6-foot high wooden fence along the Chena River State Recreation Site. The fence would achieve a 4 dBA noise reduction, even though it would be constructed for its visual enhancement of the site. As indicated in Table 3.10.2.1 and Table 3.10.3.1, noise impact criteria are approached at the recreation site with both the No-Build and Build Alternatives in the year 2035, although the traffic noise levels with the Build Alternative were marginally lower than with the No-Build Alternative. The traffic noise levels are marginally lower because the Build alternative moves the southbound traffic lanes farther from the campsites.

Table 3.10.3.1 PREDICTED TRAFFIC NOISE IMPACTS (BUILD ALTERNATIVE)

ID No.	Receiver Description	Address	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	Offset to Center of Nearest Existing Lane, ft.	Offset to Center of Nearest Build Lane, ft.	2035 Noise Level $L_{eq}(h)$, dBA	Noise Increase dBA From 2004	Noise Impact Type
1	West Side Business Park	2175 University Avenue	C (72)	97/53	91/49	68	3	None
2	West Side Business Park Annex	2173 University Avenue	C (72)	185	179	60	3	None
3	Residence	2151 University Avenue	B (67)	40	34	70	3	E
4	University Fire Station	1950 University Avenue	C (72)	-190	-183	61	3	None
5	Residence	1875 University Avenue	B (67)	120	108	65	4	[1]None
6	Snow Goose Fibers & Quilting Co.	1875 University Avenue	C (72)	110	98	65	3	None
7	Sophie Station Hotel	1717 University Avenue	B (67)	77	64	67	3	E
8	Apartment Building	3712 Swenson Avenue	B (67)	-189	-183	62	4	None
9	The Drilling Company and Apartments	1818 University Avenue	B (67)	-63	-56	68	3	E
10	Fairbanks Funeral Home	3704 Erickson Avenue	B (67)	-67	-62	68	3	E
11	Residence	1716 University Avenue	B (67)	-66	-61	68	3	E
12	The Front End Shop	1432 University Avenue	C (72)	-72	-67	68	2	None
13	Taco Bell	1450 University Avenue	C (72)	-93	-82	67	2	None
14	Quisno's Subs	3588 Airport Way	C (72)	182/122	153/122	67	3	None
15	Alaska Department of Natural Resources	3700 Airport Way	C (72)	-216	-204	62	2	None
16	Chena River State Recreation Site	1155 University Avenue	B (67)	160	149	64	0	None
17	Chena River State Recreation Site	1155 University Avenue	B (67)	120	111	65	-1	A
18	Chena River State Recreation Site	1155 University Avenue	B (67)	79	74	67	1	E
19	Chena River State Recreation Site	1155 University Avenue	B (67)	126	126	65	2	[1]None
20	Chena River State Recreation Site	1155 University Avenue	B (67)	103	103	66	2	A
21	Chena River State Recreation Site	1155 University Avenue	B (67)	81	81	67	1	E
22	Chena River State Recreation Site	1155 University Avenue	B (67)	116	116	65	2	A
23	Bureau of Land Management	1150 University Avenue	C (72)	-173	-159	63	2	None
24	Chena River State Recreation Site	1155 University Avenue	B (67)	143	143	64	2	None
25	Chena River State Recreation Site	1155 University Avenue	B (67)	160	160	63	2	None
26	Residence	475 University Avenue	B (67)	86	73	68	3	E
27	Residence	480 University Avenue	B (67)	-89	-87	65	0	[1]None
28	Residence	490 University Avenue	B (67)	-49	-50	69	1	E
29	Residence	3625 Goldizen Avenue	B (67)	-53	-53	69	1	E
30	Residence	500 University Avenue	B (67)	-63	-63	68	1	E
31	Assemblies of God Central Mission Church	3548 Goldizen Avenue	B (67)	102	82	67	3	A
32	Residence	510 University Avenue	B (67)	-60	-60	68	1	E
33	Residence	518 Halvorson Road	B (67)	122	103	66	3	A
34	Residence	520 University Avenue	B (67)	-62	-62	68	1	E
35	Residence	540 University Avenue	B (67)	-238	-238	61	3	None
36	Web Weavers	565 University Avenue	B (72)	63	44	70	3	[1]None
37	Residence (Deck at rear of house))	581 University Avenue	B (67)	220	220	62	2	None
38	Residence (front of house)	581 University Avenue	B (67)	144	125	69	3	E
39	University Dental Clinic	570 University Avenue	C (72)	68	49	61	2	None
40	Residence	3690 Widener Lane	B (67)	111	91	66	3	A
41	Golden Heart Veterinary Services	615 University Avenue	C (72)	123	103	66	3	None
42	Attorney's Plaza	590 University Avenue	C (72)	-72	-73	68	2	None
43	Holiday House Apartments	655 Indiana Avenue	B (67)	262	242	60	3	None
44	Holiday House Apartments	655 Indiana Avenue	B (67)	42	22	72	3	E
45	Holiday House Apartments	655 Indiana Avenue	B (67)	75	56	69	14	S
46	University Plaza	610 University Avenue	C (72)	-73	-73	68	2	None
47	Holiday House Apartments	655 Indiana Avenue	B (67)	125	108	66	6	A
48	Oasis Restaurant & Lounge	734 University Avenue	C (72)	-82	-82	68	3	None
49	Todd Wentz, DDS MS	701 University Avenue	C (72)	55	43	70	3	A
50	Wells Fargo Bank Alaska	794 University Avenue	C (72)	-53	-53	70	1	A
51	Wolf Run Restaurant	3350 Wolf Run	C (72)	155	135	67	3	None
52	Residence	895 University Avenue	B (67)	37	34	72	3	E
53	University Park Bible Church	3681 Sandvik Street	B (67)	234	230	61	4	None
54	Parkwest Apartments	2006 Sandvik Street	B (67)	224	220	62	5	None
55	University Park Building	1000 University Avenue	C (72)	-141	-127	66	5	None
56	Residence	1045 University Avenue	B (67)	61	57	67	3	E
57	University Avenue Truck & Car Wash	3701 Cameron Street	C (72)	78	79	68	5	None
58	Utility Services of Alaska, Inc.	3691 Cameron Street	C (72)	233	234	60	5	None
59	Sam's Sourdough Cafe	3702 Cameron Street	C (72)	59	63	68	3	None
60	University Baptist Church	1197 University Avenue	B (67)	105	108	65	4	[1]None

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria

[1]No noise impact (2035 noise levels shown are rounded upwards from a lower number)

Table 3.10.3.2 2035 NOISE LEVEL CHANGES WITH THE BUILD ALTERNATIVE

ID No.	Receiver Description	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	2004 Noise Level $L_{eq}(h)$, dBA	2035 No-Build Noise Level $L_{eq}(h)$, dBA	2035 Build Noise Level $L_{eq}(h)$, dBA	Build Noise Increase from Existing, dBA	Build Noise Increase from 2035 NoBuild, dBA	Noise Impact Type
3	Residence	B (67)	67	69	70	3	1	E
7	Sophie Station Hotel	B (67)	64	66	67	3	1	E
9	The Drilling Company and Apartments	B (67)	65	67	68	3	1	E
10	Fairbanks Funeral Home	B (67)	65	67	68	3	1	E
11	Residence	B (67)	65	67	68	3	1	E
17	Chena River State Recreation Site	B (67)	63	65	65	2	0	A
18	Chena River State Recreation Site	B (67)	66	68	67	1	-1	E
20	Chena River State Recreation Site	B (67)	64	66	66	2	0	A
21	Chena River State Recreation Site	B (67)	66	67	67	1	0	E
22	Chena River State Recreation Site	B (67)	63	65	65	2	0	A
26	Residence	B (67)	65	66	68	3	2	E
27	Residence	B (67)	65	66	65	0	-1	A
28	Residence	B (67)	68	70	69	1	-1	E
29	Residence	B (67)	68	69	69	1	0	E
30	Residence	B (67)	67	68	68	1	0	E
31	Assemblies of God Central Mission Church	B (67)	64	66	67	3	1	A
32	Residence	B (67)	67	69	68	1	-1	E
33	Residence	B (67)	63	65	66	3	1	A
34	Residence	B (67)	67	68	68	1	0	E
38	Residence (front of house)	B (67)	66	68	69	3	1	E
40	Residence	B (67)	63	65	66	3	1	A
44	Holiday House Apartments	B (67)	69	71	72	3	1	E
45	Holiday House Apartments	B (67)	55	57	69	14	12	S
47	Holiday House Apartments	B (67)	60	62	66	6	4	A
49	Todd Wentz, DDS MS	C (72)	67	69	70	3	1	A
50	Wells Fargo Bank Alaska	C (72)	69	70	70	1	0	A
52	Residence	B (67)	69	72	72	3	0	E
56	Residence	B (67)	64	66	67	3	1	E

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria

3.10.4 Railroad Noise Analysis

West Valley High School is located adjacent to Fairbanks Street and the Alaska Railroad. Closure of Fairbanks Street north of West Valley High School would reduce traffic and decrease noise. The railroad embankment north of West Valley High School would be relocated some 40 feet closer to the school and would rise up more than 10 feet above its existing elevation to allow an over-crossing of University Avenue to the east. The Alaska Railroad Corporation reports that six to twelve trains utilize this track daily. Noise levels at West Valley High School should be lower under the Build Alternative, because the railroad embankment construction would shield the school from noise generated by the University of Alaska power plant that is located to the north of the railroad right-of-way in this area.

The Alaska Railroad train sounds a warning horn when approaching the University Avenue grade crossing. The Build Alternatives would eliminate the railroad crossing and the noise from the signal horn. This would reduce the noise levels at receptors along the railroad alignment by

five to twelve dBA as defined by the Ldn and Leq(h) noise metrics for non-residential and residential land use categories, respectively.

3.10.5 Minimization and Mitigation

The FHWA is committed to ensure that all feasible and reasonable mitigation measures are incorporated into projects to minimize noise and enhance the surrounding noise environment to the extent practicable.

DOT&PF would provide a noise barrier at Holiday House apartments providing the property owner wants a barrier.

A solid wood fence, 6-foot high, would be constructed parallel to the Chena State Recreation Site, as identified in the agreement in Appendix A. The fence would serve as a pleasing delineation between the urban traffic and the overnight campground. It would also reduce noise levels from 67 to 63 dBA, a perceptible noise reduction of 4 dBA.

3.10.6 Permits and Special Conditions

No permits

3.11 Hazardous Materials

3.11.1 Existing Environment

A Phase 1 Environmental Assessment was undertaken on 19 properties along or adjacent to the University Avenue Rehabilitation and Widening Project corridor. Hazardous materials suspected to be located in the project area are petroleum products and asbestos used in building construction. The ADEC files were searched after initial review of the Leaking Underground Storage Tank (LUST) computer database and the Contaminated Sites Database and Spill Files. A listing of hazardous waste sites (CERCLIS) by the EPA Office of Remedial Response was reviewed. Candidate properties were researched at the FNSB as to property size, building age, historic land use and zoning. Site reconnaissance was undertaken, interviews with regulatory personnel were conducted, and a report prepared (Reference F).

No known contamination potential exists at the 6 properties under consideration for relocation/acquisition. Six other sites were identified as having been contaminated, and they are being or have been remediated. These include Sophies Apartments, Tesoro Northstore #110, the Kayak Building, Hutchison Institute of Technology, UAF Physical Plant and Tesoro Northstore #111. There are no known significantly contaminated sites in the project area.

3.11.2 No Build Alternative

The No Build Alternative would have no impact on hazardous waste sites.

3.11.3 Build Alternative

The probability of the build alternative encountering hazardous materials during construction is low.

3.11.4 Indirect Impacts and Cumulative Impacts

If hazardous materials are encountered the material would require treatment and handling to a clean-up standard higher than the conditions encountered as per ADEC or EPA requirements.

3.11.5 Minimization and Mitigation

No mitigation or minimization is required unless contamination is uncovered during project construction.

3.11.6 Permits and Special Conditions

No permits are required unless contamination is encountered. Standard Specification for highway construction 641-2.02 require that the contractor prepare a Hazardous Material Control Plan (HCMP) for the handing, storage, cleanup, and disposal of petroleum products and other hazardous substances, including those listed in 40 CFR 117 and 302.

3.12 Water Body and Water Quality Impacts

3.12.1 Existing Environment

Water bodies in the project area include the Chena River, Noyes Slough, and an intermittent side-channel named Deadman Slough.

Both Noyes Slough and the Chena River are listed Category 5 waters by the Alaska Department of Environmental Conservation (ADEC). Waters on this list are impaired by pollutant(s) for one or more designated uses and are not attaining Alaska's Water Quality Standards (18 AAC 70). U.S. Environmental Protection Agency approved Alaska's Category 5 list of impaired waters in 2003.

The impaired water body list contained the following information about the Chena River:

- The Chena River has been on the Section 303(d) list since 1990 for turbidity and sediment. A State Division of Mining memorandum dated March 5, 1996 provided information indicating that turbidity and sedimentation was the result of a one-time placer mining settling pond failure that was repaired and therefore recommended dropping turbidity and sediment parameters from placer mining sources.
- Best professional judgment from ADEC staff in Fairbanks was to list the water body for petroleum products as well.
- The river flows directly through the City of Fairbanks and past several known areas of groundwater contamination.
- The area has permeable soils and shallow groundwater that readily interacts with surface water.
- The following water quality standards are listed--petroleum hydrocarbons, oil and grease, sediment.
- The report lists the pollutant source as urban runoff.

Noyes Slough has been on the Section 303(d) list for non-attainment of the Sediment, Petroleum Hydrocarbons, Oil & Grease and Residues standards for sediment, petroleum product and debris since 1994. Numerous water quality violations have been reported. These violations are a result of debris dumped into the slough. Urban run-off is also a problem. Snow dumps from the removal of snow from city streets and parking lots located adjacent to the slough contain oil, grease, anti-freeze, and salts. Melting snow carries these pollutants into the water body. The report lists urban runoff as the pollutant source.

DOT&PF maintains a storm drainage system of open ditches, culverts and underground piping. There are 2 storm drain outfalls, one on the north and one on the south bank of the Chena River. Stormwater that travels through existing drainage facilities in the project corridor eventually enters the Chena River and Noyes Slough untreated. Curb and gutter drainage is only present from Rewak to College Road and most of the stormwater in this area percolates into the ground.

The Chena River is navigable for recreational boating, while the Noyes Slough is canoeable only when the water level in the Chena River is high and the beaver dams and logjams have been

removed. The Noyes Slough Trail is recognized in the FNSB Comprehensive Trail Plan for its year round multiple-use recreational value (canoeing, skiing, snowmachining and dog mushing).

3.12.2 No Build Alternative

Under the No Build Alternative, highway runoff would continue to discharge via north and south outfalls into the Chena and Tanana Rivers. Some water quality improvement is occurring in the existing drainage ditch located along University Avenue, between Airport Way and the Chena River, and in drainage ditches and wetlands south of Airport Way.

3.12.3 Build Alternative

The Build Alternative would disturb some 42 acres of land during construction of this project, not including material extracted from commercial borrow sources. The project would not change any existing stream drainage patterns.

Upgraded storm drainage facilities would be built along the entire 2.12-mile roadway corridor. A 1500-foot long trapezoidal bioswale would be constructed in the drainage ditch along west University Avenue, between Airport Way and the Chena River for storm water treatment. Another trapezoidal bioswale would be built along the reconstructed Goldizen Avenue, running east 500 feet to a new Noyes Slough outfall. Vegetated bioswales are low flow trapezoidal channels, which promote the settlement of suspended solids and treatment of the associated contaminants including organics, nutrients and metals through filtration, adsorption, and absorption processes.

Approximately 12 additional acres of impervious area would result from the roadway widening and 7 additional acres of impervious/low pervious area would result from the new railroad embankment, Geraghty Avenue improvements and Halvorson Road extension. This new impervious/low pervious surface area (19 acres) would result in an increase in the amount and speed of storm water runoff. Fairbanks is located in a semi-arid climatic zone, which is characterized by low annual precipitation of 10.37-inches, therefore the increase in impervious area should not impact the local water quality. The Build Alternative is expected to result in reduced sediment and pollutant loading to the Chena River.

3.12.4 Indirect Impacts and Cumulative Impacts

Historical records of groundwater wells within the project area show some 20 wells along the University Avenue corridor (ADNR, 2004). The ADNR reports that most of these wells are likely no longer utilized. The ADEC concurs that private wells are not regulated and are largely unknown and that most properties in the area are provided water service by the College Utilities Corporation (ADEC, 2004). This utility closed its wells in 2002 and now purchases water from the Golden Heart Utility in downtown Fairbanks. It is, therefore unlikely that the Build Alternative would have any impact on drinking water wells or groundwater water quality.

3.12.5 Minimization and Mitigation

Surface and groundwater quality during construction would be maintained through compliance with EPA's National Pollutant Discharge Elimination System, General Permit for Construction Activities in Alaska. The Contractor would be required to prepare a site-specific Storm Water Pollution Prevention Plan (SWPPP) and a Hazardous Material Control Plan (HMCP) for review

and acceptance by the DOT&PF before construction begins. The Best Management Practices for Construction, Erosion and Sediment Control and Maintenance and Operations Activities Guide ("Best Management Practices") would be used to prevent sediment, fuel and other hazardous materials from entering the Chena River during construction of the bridge and roadway. The construction of a storm water collection system would provide long-term treatment of storm water prior to its run off into the Chena River or Noyes Slough.

3.12.6 Permits and special conditions

This project would require a ADEC Section 401 Certificate of Reasonable Assurance (Water Quality) in addition to the wetlands permit issued by the U.S. Army Corps of Engineers (USACE) and an EPA Storm Water Pollution Prevention Plan and a Hazardous Material Control Plan approved by DOT&PF.

EPA Region 10 has prepared a Draft Municipal Separate Storm Sewer System (MS4) for the City of Fairbanks, City of North Pole, University of Alaska-Fairbanks, and DOT&PF-Northern Region Office. Permit requirements are based on Section 402(p) of the Clean Water Act and EPA's "Phase II" regulations for municipal storm water discharges. This permit would impose operator regulations relevant to this project in conjunction with the existing Construction General Permit. The draft MS4 permit may not be in effect until April 2006.

The storm water treatment system would comply with the City of Fairbanks MS-4 Municipal Stormwater permit from the EPA. It would be a net benefit to the Chena River and Noyes Slough, both of which are impaired water bodies.

Section 10 of the Rivers and Harbors Act of 1899 requires that an U.S. Army Corps of Engineers permit be obtained for certain structures or work in or affecting navigable waters of the United States such as the Chena River.

A U.S. Coast Guard Section 9 Bridge Permit would be required because the Chena River is navigable.

3.13 Wetland Impacts

3.13.1 Existing Environment

Wetlands are significant environmental resources that provide a wide range of important functions and values. Wetlands, as defined by the USACE, include "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." A 2003 field reconnaissance identified five areas that support wetlands along the project alignment.

A wetlands finding is included pursuant to Executive Order 11990, "Protection of Wetlands" and DOT Order 5660.1A, "Preservation of the Nation's Wetlands." These Orders state that new construction in wetlands is to be avoided unless: (a) "there is no practical alternative to such construction, and (b) the proposed action includes all practicable measures to minimize harm to wetlands, which may result from such use."

3.13.2 No Build Alternative

The No Build Alternative would completely avoid wetland impacts.

3.13.3 Build Alternative

The Build Alternative would involve some impacts to wetland areas. A November 21, 2003 Department of Army Corps of Engineers jurisdictional determination for proposed improvements to University Avenue determined that permits would be required.

There are 5 areas of wetlands, totaling approximately 0.17 acre. These areas include:

- A drainage channel crossing University Avenue, immediately south of Davis Road. The build alternative would require the replacement of 2 culverts and the filling of approximately 0.02 acres of wetlands to accommodate the roadway widening. The wetlands are part of an abandoned drainage channel containing Bradway soils (USDA, 1963) seasonally frozen and hydric in nature. The 1992 National Wetland Inventory Map (NWI) designates the area as Palustrine Scrub Shrub Saturated wetland. This wetland serves as flood control/ drainage channel, groundwater recharge, water pollution abatement and habitat for small animals and birds.
- An area just north of Holden Road would require culvert replacement and the loss of 0.01 acres of wetland. This area is described in the NWI as Palustrine Forested Needle-leafed Evergreen Saturated wetland. This wetland serves as flood control/drainage channel, groundwater recharge, water pollution abatement and habitat for small animals and birds.
- Approximately 0.03 acres of Chena River bank would be impacted by the widened roadway and bridge. These riparian wetlands are described in the NWI as Rocky Shore Unconsolidated Bottom Permanently Flooded wetland. A new storm water outfall would discharge runoff from a water quality improvement bioswale onto riprap at the southwest side of the bridge. The existing storm water outfall on the north side of the Chena River Bridge would be relocated to the Noyes Slough via a new bioswale running along Goldizen Avenue. The riparian wetlands by the bridge provide limited habitat for fish and

birds because of their modified condition and the surrounding residences and urban activity.

- Deadman Slough passes under University Avenue to the north of the Johansen Expressway. The existing 8-foot diameter culvert would be replaced when the roadway is widened by 42-feet at this location. Approximately 0.02 acres of Palustrine Emergent/Riverine wetlands would be impacted. Deadman Slough is a distributor channel and branch of Noyes Slough. The flow regime in these sloughs is dependent upon the water level of the Chena River and may be isolated pools or there may not be any surface water at drier times of the year. Extensive development in the area and channelization of natural drainageways have altered the condition of Deadman Slough. Construction of the Chena River Flood Control Project by the USACE following the 1968 Fairbanks area flood has also impacted the flow regime and lessened the importance of the Deadman Slough wetlands for flood control. The function of these wetlands is drainageway, groundwater recharge, water pollution abatement, and limited habitat for small animals, birds and fish.
- A short railroad trestle bridge, located approximately 800 feet east of University Avenue and 600 feet west of the Noyes Slough is the location of a Palustrine Emergent wetland area, which would be impacted by the project. An estimated 0.09 acres of wetlands would be filled to accommodate the new railroad embankment, which would extend some 40 feet to the south. The wetland is part of an abandoned drainage way, which meanders toward Deadman Slough. Wetland function is groundwater recharge, drainage way and habitat for birds and small animals.

3.13.4 Indirect Impacts and Cumulative Impacts

Increased commercial development along University Avenue has led to the placement of fill in small isolated areas of wetlands.

3.13.5 Minimization and Mitigation

The Build Alternative would incorporate mitigation measures, which include timing construction activities to maintain flow regimes and avoid fisheries impacts, limiting wetlands involvement by maintaining the planned construction footprint and adhering to "Best Management Practices for erosion, sediment and pollution control.

The Build Alternative would result in impacts to some 0.17 acres of wetland, which is unavoidable as no practical alternative to the wetland taking exists.

3.13.6 Permits and Special Conditions

A permit would be required from the USACE.

3.14 Fish and Wildlife Impacts

3.14.1 Existing Environment

There are four categories of concern under this section namely, Anadromous Fish, Essential Fish Habitat, Wildlife Resources and Bald Eagles.

The ADNR, OHMP report anadromous fish including Chinook (King) Salmon, and Chum (Dog) Salmon, which migrate through the project area in the Chena River, on their way upstream to spawn and on their way downstream as smolts headed for the ocean (ADNR, 2002).

The Chena River also supports resident fish such as Arctic Grayling, Whitefish, Burbot, Northern Pike, Sculpin and Long-nose Sucker. Fish species indigenous to the Chena River have been found in Deadman Slough during certain times of the year (DOT&PF, 1991).

The Chena River is designated as Essential Fish Habitat (EFH) for fish managed by the Magnuson-Stevens Fishery Conservation and Management Act. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Consultation is required with the National Marine Fisheries Service (NMFS) to assess any activities proposed which may adversely affect EFH.

Kings are usually done (or numbers are very low) migrating upstream by early August -- Chums are usually done migrating upstream by late August-early September -- salmon fry tend to move downstream late April-early May -- Arctic grayling begin moving upstream in mid April-early May, depending on water temperatures during breakup.

Wildlife resources known to utilize the project area, in addition to fish, include transient moose, beaver, fox, rabbit, red squirrels, raven, migratory birds and small voles and shrews. Executive Order 13186, the Migratory Bird Treaty Act, protects birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle. The USFWS has not identified any eagle nests within the project area. Bald eagles are protected under the Bald Eagle Protection Act.

3.14.2 No Build Alternative

Under the No Build Alternative, there would be no improvement in the existing impacts to fish or wildlife.

3.14.3 Build Alternative

The National Marine Fisheries Service (NMFS or NOAA Fisheries), the agency responsible for EFH, has revealed through early project coordination, that the only potential impact to EFH is the bridge construction over the Chena River. Short-term adverse effects to listed species could occur during construction due to sedimentation caused when the new bridge piers are installed or during construction-related storm water or pollution runoff into the Chena River.

The Build Alternative should not adversely effect Anadromous Fish, Essential Fish Habitat, Wildlife Resources and Bald Eagles in this urban environment.

The new bridge (Chena River Bridge #263 replacement) would be approximately 30 feet wider than the existing structure to accommodate the center median, lights, shoulders, sidewalks and bike path. The extra width creates extra cover for fish in 0.16 acre of river. The new piers would displace some 0.02 acres or less of river-bottom, depending upon whether the piers are encased in concrete as the present piers are or the piers are left with spaces between. The existing piers would be cut off near river-bottom. Bridge construction would occur in 3 phases.

3.14.4 Indirect Impacts and Cumulative Impacts

There are several other proposed bridge projects along the Chena River in Fairbanks. Proposals include a new bridge at Barnette Street, replacing the Cushman Street Bridge, and a new bridge extending Dennis Road over the Chena River. All of these would be constructed using Best Management Practices. The cumulative impact is minimal.

3.14.5 Minimization and Mitigation

Project mitigation measures include utilization of "no-restriction" construction windows (mid-September through early April) established by the NMFS and ADNR/OHMP to minimize pile driving sedimentation impacts and would ensure that there would be no adverse effect on EFH during construction of the bridge piers in the Chena River.

DOT&PF would also monitor vibration/sound pressure levels during pile driving. OHMP notes that recent studies are suggesting limiting in-water sound pressure levels to 220dB or less during non-spawning/migration times and 180dB or less during juvenile salmon out-migration and adult spawning migration times. While remaining within the sound pressure levels stated above, it might be possible to schedule the pile driving activities with long breaks in the work to give migrating fish the opportunity to move through the work site. For example, the work might be scheduled to drive piles for 10-12 hours a day (any time of the year) and then to cease pile driving work for 12-14 hours to allow fish passage.

3.14.6 Permits and Special Conditions

Alaska Department of Natural Resources Office of Habitat Management and Permitting Title 41 Fish Habitat Permit would be required for any work in a fish-bearing water body.

DOT&PF on behalf of the FHWA, has determined that the project could affect salmonid smolt or spawning habitat. However, the proposed mitigation measures ensure there are no substantial adverse individual or cumulative effects on EFH in the project area.

3.15 Floodplain Impacts

3.15.1 Existing Environment

In passing the National Flood Insurance Act of 1968, Congress established the National Flood Insurance Program and delegated administration of this program to the Federal Emergency Management Agency (FEMA). The desire was to reduce annual flood losses, by making affordable flood insurance available to property owners, who comply with local regulations designed to minimize flood damage.

The project area includes the Chena and Tanana rivers floodplain. After the 1967 Fairbanks Flood the U.S. Army Corps of Engineers protected the area from flooding by constructing the Chena Lakes Flood Control Project. The 1992 Federal Emergency Management Agency (FEMA) Rate Map for the project area shows most of the project in Zone X, the area of the 500-year flood.

In the project corridor, special flood hazard areas likely inundated by the 100-year flood labeled Zone A and AE include:

- Chena River corridor
- Noyes Slough
- Deadman Slough
- Drainage ditch east of the DNR/BLM Complex at the northwest corner of University Avenue and Airport Way
- Drainage channel near the southern end of University Avenue).

The City of Fairbanks is located on the floodplain of the Tanana and Chena Rivers, where the alluvial deposits consist of sand, silts and gravel. The physical nature of this alluvium makes it an excellent water-bearing aquifer, due to its high porosity. Groundwater fluctuates seasonally and is generally between 10 and 20 feet below the road surface in the project area. Groundwater flow direction generally follows the direction of the surface water, however the hydraulic gradient is normally from the southeast to the northwest.

The University Avenue Rehabilitation and Widening project lies mostly within Zone X, an area of the 500-year flood, on the FEMA flood maps. Special flood hazard areas likely inundated by the 100-year flood, include Zone A and AE (Chena River corridor, Noyes Slough and Deadman Slough; the drainage ditch east of the DNR/BLM complex and the drainage channel near the southern end of University Avenue).

3.15.2 No Build Alternative

The No Build Alternative would not alter the impacts of the existing facility.

3.15.3 Build Alternative

Pursuant to EO 11988, "Floodplain Management," it has been determined that the proposed action involves encroachments into the 100-year base floodplain. The new bridge piers would perform hydraulically in a manner equal to or greater than the existing bridge piers and backwater surface elevations would not increase. There should be no impacts on natural or

beneficial floodplain values. There would be no change in flood risk and there would not be a significant change in the potential for interruption or termination of emergency services or emergency evacuation routes.

3.15.4 Indirect Impacts and Cumulative Impacts

The U.S. Army Corps of Engineers built the Chena Flood Control Project to reduce the flooding potential in the Fairbanks Area. The flood control project diverts water from the Chena into the Tanana River when flows reach a certain level.

3.15.5 Minimization and Mitigation

No mitigation or minimization.

3.15.6 Permits and Special Conditions

A FNSB Floodplain Permit would be required to demonstrate project consistency with the regulatory floodplain.

3.16 Construction Impacts

3.16.1 Existing Conditions

Construction along University Avenue includes maintenance and intersection improvements, added turn lanes, timing of traffic signals, bus turnouts and related Highway Safety and Improvement Program fixes to immediate traffic problems. The University Avenue/College Road and the Geist Road/Johansen intersections were improved in 1990's.

3.16.2 No Build Alternative

The No Build Alternative would see "patchwork" construction activities as the road surface and the existing underground utility systems that are located within the right-of-way deteriorate.

3.16.3 Build Alternative

The Build Alternative could result in short-term impacts to air quality, noise, water quality, transportation, access and economics. No permanent adverse effects to the natural environment are anticipated. Project start-up could begin no earlier than 2007. The proposed widening of University Avenue may be constructed in as many as 3 separate phases.

Impacts to businesses impacts likely would be minimized by maintaining access with DOT&PF approved traffic control plans.

Utility upgrades undertaken during roadway reconstruction would also require some intermittent disruption.

Heavy equipment is the major source of noise in construction. High noise levels may occur on an intermittent basis, such as during pile driving operations required for the Chena River Bridge. Construction noise at other locations would be mostly generated by moving equipment, and as such, would limit the duration of high noise levels that are experienced at a fixed location.

Erosion and pollution control is required standard practices in construction. The Contractor would be required to obtain and comply with an approved EPA NPDES General Permit for Construction Activities in Alaska, and its associated Storm Water Pollution Prevention Plan and a Hazardous Materials Control Plan. Best Management Practices would be implemented during construction to minimize erosion and sedimentation in wetlands and water bodies along the project corridor.

Project mitigation measures include utilization of "no-restriction" construction windows (mid-September through early April) established by the NMFS and ADNR/OHMP to minimize pile driving sedimentation impacts and would ensure that there would be no adverse effect on EFH during construction of the bridge piers in the Chena River.

DOT&PF would also monitor vibration/sound pressure levels during pile driving. OHMP notes that recent studies are suggesting limiting in-water sound pressure levels to 220dB or less during non-spawning/migration times and 180dB or less during juvenile salmon out-migration and adult spawning migration times. While staying within the sound pressure levels stated above, it might

be possible to cease pile driving for sufficient time intervals each day to give migrating fish the opportunity to move through the work site.

3.16.4 Indirect and Cumulative Impacts

Additional bridge construction may take place upstream at or near Dennis Road, Cushman Street, and Barnette Street.

3.16.5 Minimization and Mitigation

Public involvement and community interaction to ease disruptive effects would be undertaken through the use of the media and signage.

Construction would be phased to limit impacts to one segment of University Avenue at a time. Construction traffic for hauling of fill and asphalt would take place during the summer season and would not impact air quality during the winter, when air quality conditions have been problematic in the Fairbanks area.

Local and emergency access would be maintained and controlled with traffic movement by flagging and signage, under a DOT&PF approved Traffic Control Plan.

Provisions would be included in the project specifications requiring the Contractor to make reasonable efforts to minimize construction noise through abatement measures such as work-hour controls, maintenance of mufflers, and compliance with the City of Fairbanks noise ordinance.

3.16.6 Permits

This project would require several permits from local and state agencies including:

1). Fairbanks North Star Borough (FNSB) Floodplain Permit and platting authority approval of proposed ROW acquisitions,
2). ADNR/OHMP Title 41 Permit (ADF&G Title 16 Fish Habitat Permit),
3). An Alaska Department of Environmental Conservation (ADEC) Certificate of Reasonable Assurance (Section 401 of the Clean Water Act) and ADEC Storm Water Plan,

4.0 LIST OF PREPARERS

Preparer	Education	Experience
	FHWA	
Edrie Vinson Environmental Project Mgr	MA History & Archeology BA History & English	29 years in historic preservation and NEPA project development
Ed DeCleva Northern Region Liaison	BA Anthropology	10 years archaeology 6 years FHWA environmental protection specialist
	DOT&PF	
Janet Brown Engineering Manager	B.S. General Engineering	24 years in transportation engineering
Bruce Campbell Environmental Analyst	B.S. Geology	8 years in environmental project review and analysis
Melinda Brunner Environmental Assistant	B.S. Chemistry	1 year environmental project review and analysis
John F. Bennett, PLS, SR/WA Right of Way Chief	AA Applied Science	32 years transportation/ surveying/right-of-way
Patricia F. Thayer, SR/WA		20 years right-of-way/relocation
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	Consultants	
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Suzan A. Amundsen Environmental Engineer	B.S. Biochemistry M.S. Civil Engineering	31 years preparing environmental documents
Janet Matheson, AIA. Historic Preservation Evaluation	Master of Architecture	26 years of historical architecture surveys

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Cooperating Agency Reviewers
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Nancy Ihlenfeldt-McNay, Biologist, DNR, Office of Habitat Management and Permitting
Larry Peltz, Biologist, National Marine Fisheries Service, NOAA-Fisheries
Anna Plager, Regional Manager, DNR, Division of Parks and Outdoor Recreation

5.0 LIST OF AGENCIES, ORGANIZATIONS AND PERSONS TO WHOM COPIES OF THE EA WERE SENT

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6.0 COMMENTS and COORDINATION

A summary of all the public and interagency coordination involved in developing this project and Supplemental Environmental Impact Statement (SEIS), is contained in Chapter VIII. This includes documenting, for the administrative record, the scoping process, the meetings with government agencies, community groups and individual citizens, and identifying the key issues and pertinent information received through these project coordination efforts.

6.1 Scoping

Project scoping involved:

- Public "Open House" meeting at the University Center Mall on November 17, 2004
- Update for the College Road Service area meeting November 16, 2004
- Direct mailing to property owners throughout the project corridor on November 2, 2004
- FMATS power-point presentation in August of 2004
- Power-point presentation to the Greater Fairbanks Chamber of Commerce Transportation Committee in October, 2003
- Agency Scoping Letter to regulatory agencies on June 6, 2003, with follow-up communication through July, 2005.
- Public "Open House" meeting at the Noel Wien Library Auditorium on October 1, 2002
- Public "Open House" meeting at the Noel Wien Library Auditorium on March 8, 2001

6.1.1 Open House Public Scoping Meeting, November 17, 2004.

A notice of availability for the Air Quality Conformity Document and notice of the public meeting was published in the Fairbanks Daily News-Miner on November 7, 10, 14, and 17, 2004. Invitations were also mailed to the property owners and agencies on November 2, 2004. News media coverage included interviews with Television Channel 13 and Channel 11, radio interview on KUAC FM, and an article about the project in the Fairbanks Daily News Miner.

Approximately 126 individuals attended the Open House. Comments were received verbally, in writing, through phone calls, and via email.

Name	Comments
Lynne Franklin, Owner, Oasis Restaurant and Lounge	Prefers no build or Two-Way Left-Turn lane (TWLTL), other alternatives would create a hardship for her business. Also wants Geraghty open for left turn lanes.
Tim Cerney, Owner, Fountainhead Development	Prefers no build south of Rewak to the Mitchell Expressway. Alternatives 3 & 4 would negatively impact business on University Ave. by making it difficult for customers to access. Inadequate notices and too short a public comment period.
Pat Holloway	Prefers TWLTL, because raised median would ruin the area. Also need to landscape with trees.
Marcella Hill	Prefers Alternative 3, Raised Median. Also lower speed limit to 35 mph.

Barry Donnellan	Road cannot both serve local businesses and provide for through traffic. Provide a new western "leg" to the "ring road" around Fbks.
Larry Morris, FNSB School District, Facilities Manager	Supports traffic lights at the high school access next to the old University Park (Sandvik Rd). School district is concerned about the proposed pedestrian tunnel on Fairbanks Street because, if not well lit and maintained, it could be a severe safety and vandalism problem.
Jim Allan	Problem is speed, slow traffic down.
John Brown	Opposes raised medians because not safe when obscured by snow and darkness. Also opposed to traffic light at Sandvik. Opposed to the changed access for the Fire Station on south University Ave. Include access for the large parcel of Airport property just north of the Mitchell Expressway.
Catherine Schultz, General Manager, Sophie Station Hotel	The majority of crashes are north of Rewak, median and widening not needed south of Rewak. TWLTL south of Rewak is proper balance.
Howard Van Ness, Proprietor, Alaska Fly Shop	Little, if any, safety gains for Alternatives 3 or 4 south of Rewak. In favor of Alternatives 1 or 2 south of Rewak.
Julie Sowards, owner, Snow Goose Fibers	Supports turn lane like the one on Peger next to the DMV.
Linda Stephenson	Supports TWLTL
L Fenton	Supports TWLTL
David Sowards	Supports TWLTL
Katie Nash	Supports TWLTL
Ruth B Bohms, owner of land fronting on University	Land should be taken equally from both east and west sides of University Ave. Wants to know how much land would be taken again from her lots # 6, 7, and 8 Halvorson Estates Subdivision.
Jon Underwood.	No build is best, Option 2 (TWLTL) would be difficult but manageable.
Tima Priess	Vehicles going too fast slide into intersections, add flashing "prepare to stop ahead" warning lights.
Celeste Goering	Now difficult to turn right from Geist Rd onto University Ave. Add green arrow to the right turn lane.
Jenny Campbell	TWLTL is best alternative. Median would cause major traffic problems on the side streets and drives search for openings that allow them to get to their destination.
Jo Kuykendall	Provide a turn lane (TWLTL), and side rails on the Chena Bridge
Rachel Conn	Pedestrian feels unsafe, add area between sidewalk and road.
Brett Nelson	New bridge essential. Railroad overcrossing is needed. Prefers Alternative 4. Limited access points best for traffic. Cautions against adding stoplights. Consider closing the northeast entrance to Fred Meyer West.

Caprice Toporowski, Owner Quiznos	Concerned about access onto Geraghty. Right-turn in and out at a minimum. Keep two lanes of traffic open at all times during construction.
Fred Dean	Concerned about the "hump" in the road at the Airport Intersection.
Ann Roberts	Favors 2, 3, 4 in that order.
Cameron Wohlford	Access into Wells Fargo. Changes to old U Park right of way. Fire department access to businesses through a left turn.
Michael Dome(?)	Cross-country skiing winter and summer.
Katherine Knorr, PDC	Raised medians are needed. Alt 3 as minimum.
Rob Nethkin	Supports Alt 2 (TWLTL). Alts 3 and 4 less safe.
David Nethkin	No Fence. Supports TWLTL with medians from Rewak to Sandvik.
Carolyn Nethkin	Supports Alt 2, TWLTL.
Shaun Patterson	Prefers Alts 2 or 3, option 4 impacts too many residential properties. Would like to see access via Goldizen to Birch Lane. Please research noise coming from Chena Bridge. Would a solid concrete rail reduce noise from the bridge deck?
Chris Guinn, Business owner in 600 Court.	Prefers Alt 2 & 4 that allow south or north on University from his office building.
Loran Benham	Supports Alt #4.
Debra Long	Opposed to dead end of frontage road. Wants to at least be able to turn right on or off University Avenue.
Mark Nielsen, owns lot 24 at University & Holden Rd.	Needs right-in and right-out access. Supports center TWLTL. Median near Safeway & Fred Meyers. No chain link fence.
Ben Shilling	Shorten divided median in front of Wolff Run to allow Left and right turns into Wolff Run and into the bank (Wells Fargo) from both directions. No to fencing. Supports Alt 4 w/o fence.

6.1.2 Open House Meeting, March 8, 2001

Notification of the meeting was published in the Fairbanks Daily News-Miner and 183 detailed notification letters were mailed to regulatory agencies and to property owners along the project alignment, in advance of the meeting. The agenda for the meeting was to undertake the following:

1. Review the 1991 Final EIS and the Preferred Alternative for the project.
2. Review proposed project information such as a relocated access to UAF from Fairbanks Street to Loftus Road and a railroad overpass at University Avenue.
3. Review environmental reevaluation procedures.

The project, as envisioned in 2001, had evolved since 1991 to include some changes:

1. Construction of a center median from a point north of the Chena River to Airport Way and from Airport Way to Rewak Drive.

2. Closure of the existing railroad overcrossing structure at the Fairbanks Street entrance to the UAF campus and construction of a new pedestrian underpass.
3. Closure of the Airport Way frontage road near University Avenue, eliminating the existing intersection of the frontage road at Geraghty Street.
4. No relocation of people, property or businesses were anticipated for the proposed project at that time.

The Open House meeting was held from 3:30-7:30 PM and was attended by more than 40 people. Written comments, letters, emails and verbal discussions with DOT&PF staff regarding the meeting, are summarized below.

Name	Address	Comments
James Long	3360 Wolf Run	Need a better map of the Wolf Run intersection.
Mary Ann Nickles	215 Dunbar Ave.	Concern over DNR/BLM access, Chena River State Recreation Site and short left turn lanes.
unsigned		Lengthen left turn lanes westbound onto Geist from University Avenue. Supports left turn from DNR/BLM onto University Avenue. Cul-de-sacs are a waste of land for the Airport Way Frontage Roads. The University Avenue underpass would be a swimming pool during rainstorms and a snow storage area in winter.
Landowner on Erickson Avenue		Wants a traffic signal at Erickson or Swenson. Questions the new Fire Station access onto University Avenue.
Jerry Bowers		Wants a bus stop and left turn access onto University Avenue from Bowers Bldg. New signal at Davis St. would cause traffic backup and short cuts through his parking lot.
Wolf Run Coffee House owner		Wants left turn access onto Wolf Run for southbound University Ave. traffic, an extended left turn lane for northbound traffic headed westward onto Geist Rd., no median between BLM and the Chena River State Rec. Site and wants a right turn lane for large, slow vehicles to safely access the Chena River State Rec. Site. Concerned over impacts to his business during construction.
Landowner on Holden Road		Would like the median shortened on Univ. Ave. opposite Holden Rd. to make left turn access safer. Supports acquisition of the Baker property at 2151 University Avenue.
Davis Road resident		Concerned over potential flooding on Davis Rd. due to constricted slough at University Ave. crossing. Supports access for new University Fire Station.

Curtis Fortenberry	North Pole	Dislikes removal of Fairbanks St. entrance to UAF. Wants left turn access into BLM and out of the Chena River State Recreation Site.
Thomas Classen	University Ave.	Does not want to lose part of his front yard, vegetation and privacy.
Jim Kowalsky	fnjek@aurora.uaf.edu	Snow removal concerns. Past maintenance put snow on sidewalks. Need room for snow storage. Support a bike lane
John/Deborah Bennett	1479 Farmers Loop	Snow removal on sidewalks would be a nightmare around power poles. Suggests a bicycle lane on road shoulder with a through lane left of the right turn pockets. Need pedestrian-friendly innovations. Fred Meyer entrance should be redesigned as it is dangerous for bicycles and pedestrians.
Comments to DOT&PF from various unidentified citizens at the public open house meeting		Support raised medians to eliminate the cross-over crashes and "plugging up" near intersections. Supports extra travel distance to make left turns at traffic lights. Likes proposed traffic light at Davis Street. Commented that crossing the University Ave. and Airport Way and Geist Road intersections is a daunting task for a pedestrian due to the distance. The Counseling Center on SW corner of University Avenue and Mitchell Avenue has access issues. Questioned the purpose of the cul-de-sac. Thinks drivers would cut through the Teddy Bear Plaza parking lot to access Geraghty Avenue with use of the cul-de-sac.

6.1.3 Open House Meeting, October 1, 2002.

A second public meeting was held at the FNSB Noel Wien Library Auditorium from 3-7 PM. Prior notification of this meeting was published in the Fairbanks Daily News-Miner. The purpose of the Open House meeting was the following:

1. Update the public on preliminary plans for the project and access management plans.
2. Inform the public about the process that the State uses to develop this kind of project.
3. Gather comments and suggestions from the public.
4. Inform the public that the "No-Build" option is one of the alternatives for the project.

The project, as envisioned in 2001, had evolved to include the following changes:

1. Construction of a continuous raised median, dividing opposing traffic lanes, with left turn lanes and breaks at major street intersections.

2. New design life requirements of traffic levels projected to 2035 not 2020 (traffic projection levels in 2001) or 2010 (projection levels in 1991).
3. Environmental document would be prepared as a Supplemental EIS rather than a Reevaluation EIS. The Preferred Build Alternative has been modified from the Original EIS Preferred Build Option, for which the FHWA issued a Record of Decision in 1991, concurring with the DOT&PF on a need for the project.

The Open House meeting was attended by more than 65 people. Letters, comment sheets and emails received after the meeting are summarized below.

Name	Address	Comments
Willie Bliss	4376 Dartmouth	The plan looks good. The right-lane turn lanes are a problem, especially going right onto Geist Road when southbound on University Avenue.
Jon Underwood	Pets Stuff owner	Does not like access limitations caused by the proposed median. Favors No-Build Option oroiginally proposed two-way center turn lane.
George Gordon	P.O. Box 80370	Build it.
Timothy Biggane	FNSB Emergency Operations	Wants a median break for northbound access by the new University Fire Service Area station located on south University Avenue.
Sherry Abrahams	875 Univ. Ave.	Does not want her house to be acquired by State.
Mark May	615 Univ. Ave.	Favors No-Build Option. Wants more traffic lights and speed limit reduced to 30mph.
Ken/Pat Weaver	520 Univ. Ave.	Want more gaps in traffic to improve access from their driveway. Prefer two-way center turn lane.
cmccaa@mosquitonet.com		Wants left turn lane at DNR/BLM driveway.
Firmin Murakami	Univ. Ave.	Has concerns about drainage between University Avenue and his house.
Jim Deininger	P.O. Box 84606	Doesn't want a signal at Sandvik Street or a continuous median across from the DNR/BLM driveway. Wants two-way center turn lane all along University Avenue.
Ruth Gronquist	P.O. Box 81543	Wants left turn lanes along University Ave.
Ann Roberts	2821 Totem Dr.	Likes two-way center turn lane. Doesn't like proposed access to Teddy Bear Plaza or the continuous median at Thomas Street.
Jim Herriges	1094 Breckinridge	Wants left turn lane access to Chena River State Rec. Site and DNR/BLM complex. Wants bike lane on each side of the road, or at least a road shoulder adequate for biking on.
Shawn Servoss	4082 Birch Lane	Wants crosswalks between Geist Road and Airport Way and improved bicycle and pedestrian ways along University Avenue in the vicinity of the BLM. Cars and tour buses use the DNR/BLM road as a shortcut to Boat Street

6.1.4 Agency Scoping Letter, June 6, 2003.
A letter was mailed to involved regulatory agencies. The comments received are summarized below.

Agency	Date	Comments
NOAA	6/13/03	Identified possible impacts to Salmon Essential Fish Habitat during Chena River Bridge Reconstruction.
ADNR, Parks & Outdoor Rec.	1/28/02 1/07/03	Agency concerns over access alternatives to the Chena River State Recreation Site include: 1. Right in, right out access restriction to Univ. Ave. is due to the proposed continuous raised median. 2. New bridge design could impact boat launch safety at the existing ramp. Boat ramp may require relocation within 100 feet and boat ramp parking area would require reconstruction and paving. They would like to see a stairway from the sidewalk to the parking area for pedestrian access. 3. Having traffic lanes and sidewalks closer would impact campsites adjacent to University Ave.. Decreased vegetation screening. Suggested mitigation is to install aesthetically pleasing wall for a visual and sound barrier.
ADNR, Parks & Outdoor Rec.	6/23/03	Request consideration of a median break between ADNR and Chena River State Rec. Site. No break may create a larger negative impact on safety and congestion elsewhere.
ADNR, Office of Habitat Management and Permitting	6/20/03	A Fish Habitat Permit would be needed for construction of the Chena River Bridge. Some timing restrictions may apply when work is conducted instream.
ADEC, Spill Prevention and Response	6/09/03	Dewatering issues near known contaminated sites such as at the End of Project, near College Road, should be considered.
US Dept. of Interior, BLM	3/20/01	The access for visitors and employees to BLM from Airport Way via Sportsman Way is circuitous.
US Dept. of Interior, BLM	6/23/03	Object to the continuous raised median proposed between Airport Way and the Chena River Bridge. Support left-turn lanes onto University Avenue from DNR/BLM and onto DNR/BLM northbound from University Ave. BLM has a University Avenue address, which would make it difficult for northbound customers to find and access them if there is no left turn on Univ. Ave. into the BLM.

APPENDICES

APPENDIX A

Letter of Agreement
Regarding the Chena River State Recreation Site

between

The Alaska Department of Transportation and Public Facilities

and

The Alaska Department of Natural Resources

STATE OF ALASKA

ARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

NORTHERN REGION, PRECONSTRUCTION

FRANK MURKOWSKI, GOVERNOR

2301 PEGER ROAD
FAIRBANKS, ALASKA 99709-5399
TELEPHONE: (907) 451-2274
TDD: (907) 451-2363
FAX: (907) 451-5126

March 10, 2005

Re: University Avenue Widening
Project No. STP-RS-M-0617(3)/63213
Chena River Recreation Site
Concurrence Letter

Ms. Anna Plager
Parks Superintendent
State of Alaska
Department of Natural Resources
Division of Parks and Outdoor Recreation (DNR DPOR)
3700 Airport Way
Fairbanks, AK 99709

Dear Ms. Plager:

As you know, the State of Alaska Department of Transportation and Public Facilities, in cooperation with the Federal Highway Administration, is preparing an environmental document for this project. During the last few months we have discussed ideas with you and agree it will be in the public's best interest to move the entrance to the Chena River State Recreation Site from University Avenue to Geraghty Street.

DOT&PF through the University Avenue Project will fund the following changes to the Chena River State Recreation Site:

1. Relocation of the park entrance from University Avenue to Geraghty Street, 250 feet west of Marlin Street, as shown on the attached conceptual plan. Tasks include:

    a) Construction of a paved street from Geraghty Avenue to the existing paved road with a paved parking area for the picnic pavilion.

    b) Relocation of the entrance booth, existing fee station, information kiosk and signs from their present location to the new entrance.

    c) Obliteration of the existing entrance at University Avenue.

    d) Landscaping as needed for the existing and new entrances.

e) Acquisition and transfer of ownership to DNR of Lots 10 and 11 of the Fairwest North subdivision.

f) Transfer of ownership to DNR of remainders of Lots 1, 2, 4, 5, 6, 7, 8 and 9.

2. Installation of a six foot high solid wood fence on Chena River State Recreation Site land along the east edge of University Avenue to provide a physical separation between the park and the street.

3. Construction of pedestrian access from the east sidewalk of the University Avenue bridge through the Chena River Recreation Site.

4. Doubling the width of, or relocating, the existing boat ramp upstream to maintain the same aspect (distance) to the proposed bridge abutment for a safe, useable boat ramp.

No land within the Chena River State Recreation Site will be acquired for the University Avenue Project and constitutes no 4(f) use of the Chena River State Recreation Site. DOT&PF and DNR DPOR agree that the Chena River State Recreation Site benefits from the improvements of, and will not be impacted by, the University Avenue Widening Project. These improvements constitute a betterment of the park and do not substantially impair or diminish the activities, features, attributes, utility, use or enjoyment of this 6(f) property.

DOT&PF agrees to initiate a Reimbursable Services Agreement with DNR to design and monitor construction of the proposed improvements within the Chena River State Recreation Site.

Work performed for the roadway improvements will occur exclusively within the DOTPF right-of-way and not impact the 6(f)(3) boundary of Chena River State Recreation Site. Development performed by DOT within the 6(f)(3) boundary will be accomplished by the request of and in coordination with the LWCF grantee – Alaska State Parks – and will enhance the recreational usefulness of the park.

Based on the information provided to the State Liaison Officer, this proposal will not convert property currently under 6(f)(3) protection to other than outdoor recreation use, and will not have a negative impact on the current or future recreational usefulness of the area under 6(f)(3). Therefore, this proposal will not constitute a conversion of use for purposes of Section 6(f)(3) of the Land and Water Conservation Fund Act of 1964.

No additional improvements will be requested by DNR to satisfy this concurrence.

If you agree, please concur on the following page.

Sincerely,

David T. Bloom, P.E.
Preconstruction Engineer

Concurrence indicates agreement with the terms described in the letter dated March 10, 2005 to Anna Plager, DNR DPOR Park Superintendent from David T. Bloom, DOT&PF Preconstruction Engineer.

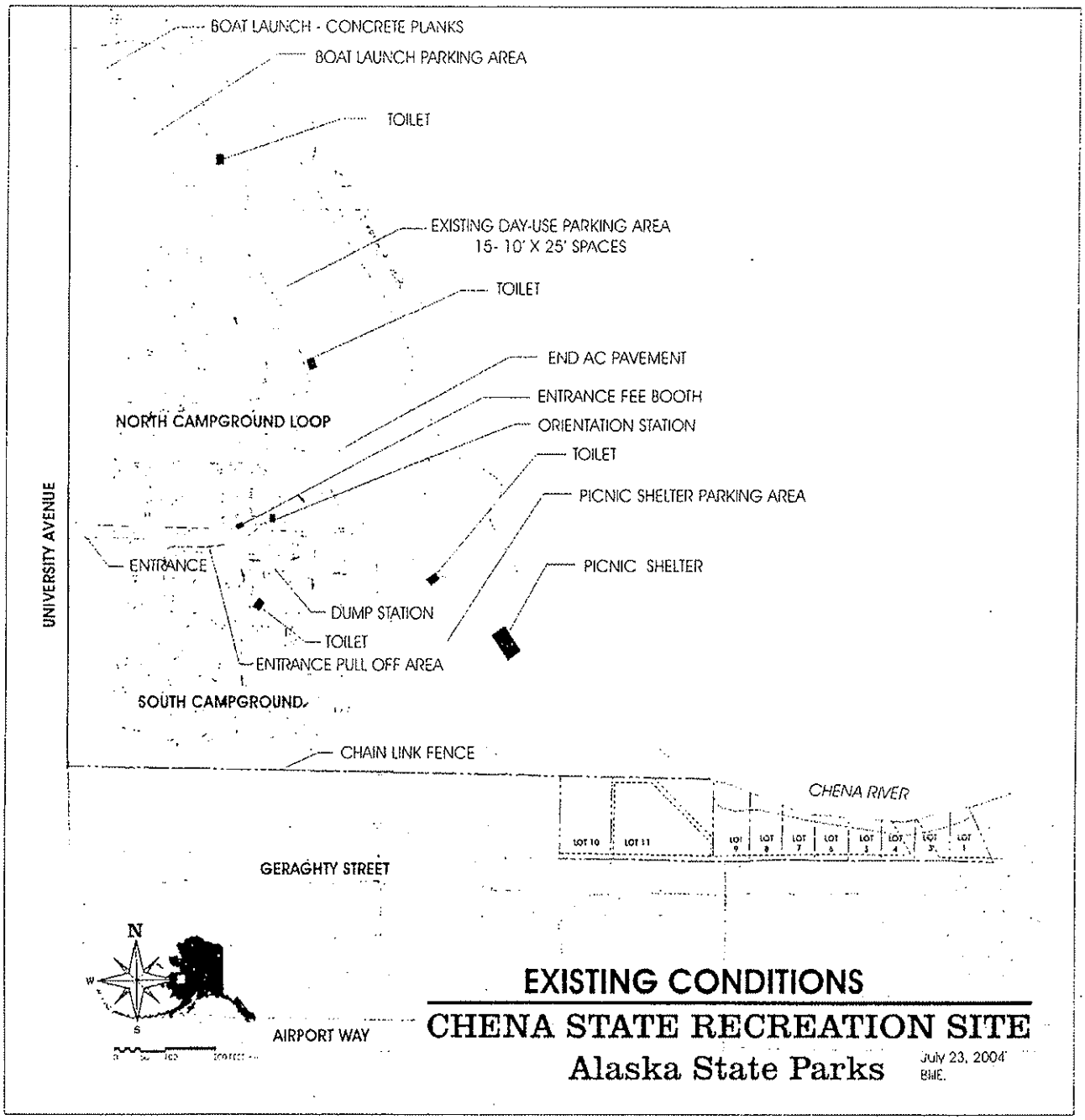
Concur:

Lisa Bland-Dalsbo ASLO 3-29-05

DNR DPOR – Alternate State Liaison Officer Date

JLB/myj

Attachments: Existing Conditions (CSRS)
New Entrance – Concept (CSRS)

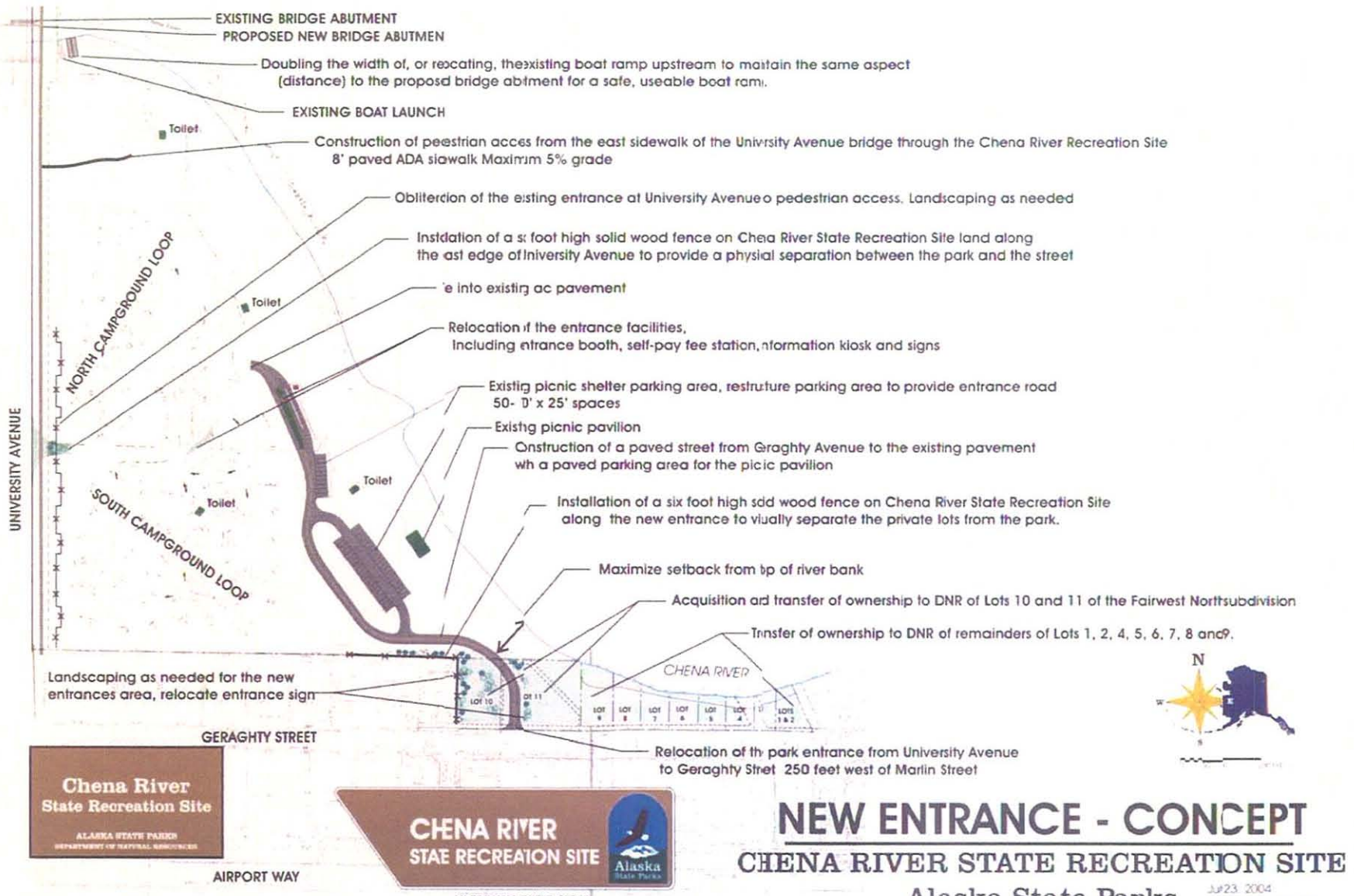


EXISTING CONDITIONS

CHENA STATE RECREATION SITE

Alaska State Parks

July 23, 2004
BME



NEW ENTRANCE - CONCEPT

CHENA RIVER STATE RECREATION SITE

Alaska State Parks

Jul 23, 2004
Bill Revised 03/09/05 JV

APPENDIX B

ACCESS MANAGEMENT CONSIDERATIONS

UNIVERSITY AVENUE REHAB AND WIDENING

prepared by

R&M Engineering Consultants

for

The Alaska Department of Transportation and Public Facilities

May, 2002

ACCESS MANAGEMENT CONSIDERATIONS
UNIVERSITY AVENUE REHAB AND WIDENING

The Alaska Department of Transportation and Public Facilities proposes to upgrade University Avenue in Fairbanks from its existing undivided four lane configuration to a four lane section having six foot wide shoulders and a raised non-traversable center median with left turn lanes at intersections.

The proposed plan differs from the plan that was evaluated in an Environmental Impact Study that was prepared for the project in 1991. The 1991 plan included a continuous 16-foot wide center turn lane for left turning vehicles. The 16-foot width of this lane, together with eight-foot wide shoulders was intended to provide sufficient width for the construction of a future raised median.

The present proposal is based on the results of numerous studies, conducted throughout the country over the past thirty years, which have documented the safety and operational benefits of roadway medians and other access management techniques.

It is recognized that all roadways must be designed to achieve a balance between serving the access needs of adjacent property owners and meeting the safety requirements of the motoring public. However, in achieving this balance, the safety of the public must be the paramount consideration.

The following portions of this document present the underlying research results and related considerations that have formed the basis for the present proposal for the University Avenue improvements, together with a discussion of the specific effects of the project on access to adjacent properties.

What is access management?

The Federal Highway Administration defines access management as "the process that provides access to land development while simultaneously preserving the flow of traffic on the surrounding system in terms of safety, capacity, and speed." In practical terms, access management involves managing the number of access points along the roadway while maintaining reasonable access to the adjacent property and removing slower, turning vehicles from the stream of through traffic as efficiently possible.

The overall goal of local access management is to reduce traffic conflicts by

- limiting the number of conflict points that a vehicle may experience in its travel;
- separating conflict points as much as possible (if they cannot be completely eliminated); and
- removing slower turning vehicles that require access to adjacent sites from the through traffic lanes.

What are the access management alternatives to an undivided roadway?

- Continuous raised medians
- Raised medians at intersections
- Two way left turn lanes

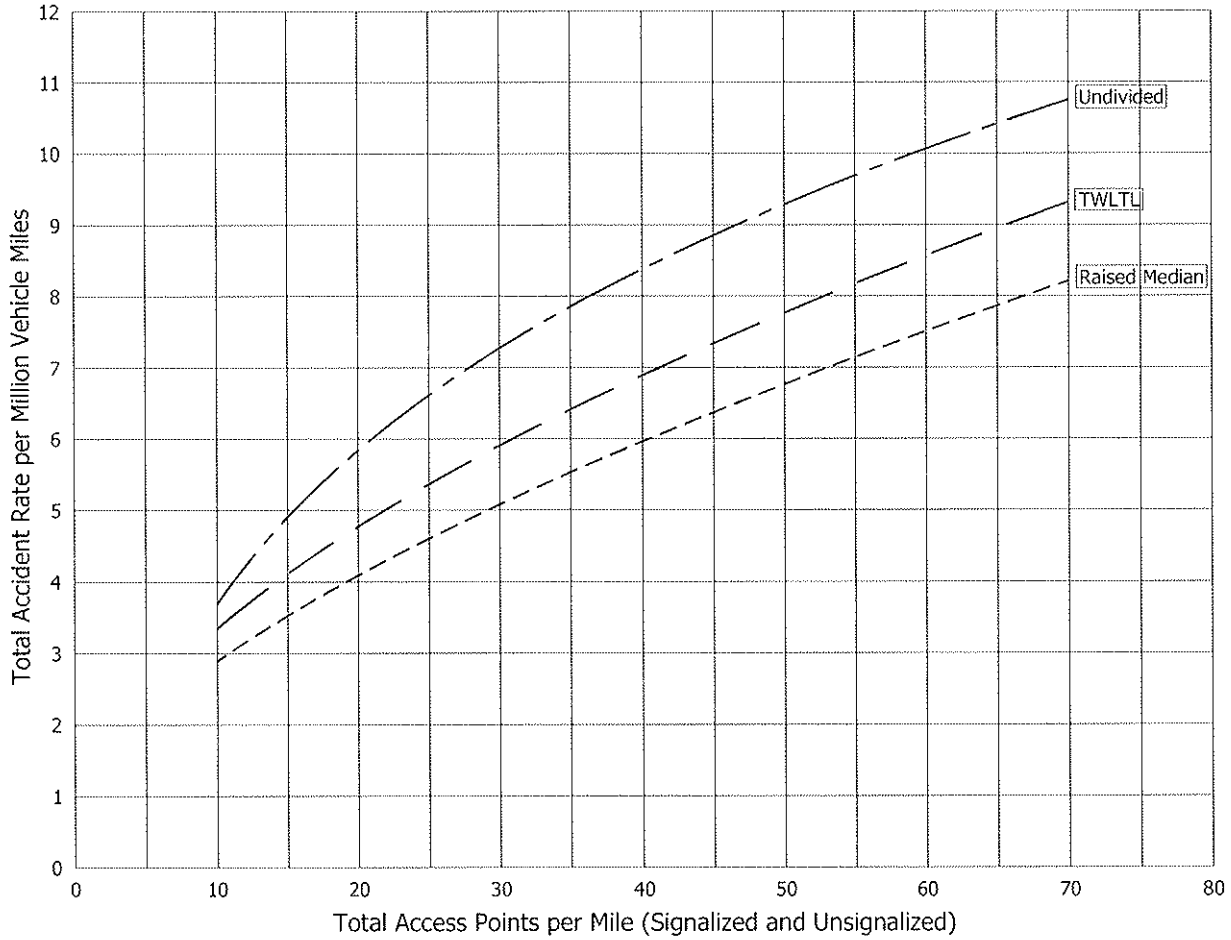
Research from many states shows that roadways having raised medians separating opposing lanes of traffic are safer than undivided roadways or roadways having two-way left turn lanes as shown below:

URBAN/SUBURBAN ACCIDENT RATES PER 100 MILLION MILES TRAVELED

Access Density (Accident Points per mile)	Undivided Roadway	Two-way Left Turn Lane	Raised Median	Accident Rate Reduction for Raised Median vs. TWLTL
Less than 20	3.8	-	2.9	-
20-40	8.3	5.9	5.1	-0.8
40-60	9.4	7.4	6.5	-0.9
Over 60	9.6	9.2	5.4	-3.8

Source: Table 28, NCHRP Report 420

The following chart presents accident rates by median type and total access density (both directions) for urban-suburban roadways with adjustments to eliminate apparent inconsistencies in the reported data. This chart indicates that, in urban and suburban areas, each access point (or driveway) added would increase the annual accident rate by 0.11 to 0.18 on undivided highways and by 0.09 to 0.13 on highways with two-way left turn lanes or non traversable medians.



Source: NCHRP Report 420, Figure 24

A study of hundreds of crashes at more than 1,300 driveways in three different communities in Illinois found the following range of crash involvement at commercial driveways:

Turning Movement	Percent of Total Crashes at Commercial Driveways	
	Left- turning Vehicles	Right-turning Vehicles
Entering business driveways	43% to 78%	6% to 15%
Exiting business driveways	14% to 31%	2% to 15%

Source: Paul Box and Associates, 1998

A principal conclusion that can be drawn from the results of this study is that left-turning vehicles (entering and existing) are involved in a majority of driveway related crashes. The safety benefits of raised medians are the result, in part, that they prevent left turns into and out of driveways and limit such turns to intersection locations where turning movements can be more safely negotiated—particularly at signalized intersections having dedicated left turn lanes.

Many regression models have been developed from accident data for calculating the expected number of crashes per mile per year for different median treatments. Of these prediction models, the Bowman-Vecellio model is believed to have been based on the largest and most geographically diverse database, having been developed from three to five years of crash data from 178 roadway sections covering over 55 miles to urban and suburban streets. The equation utilized in this model and the coefficients to be applied for the operational and median treatment variables are presented in Table 1.

The forecast average daily traffic volumes for University Avenue, as utilized in the prediction of potential accidents, is as follows:

UNIVERSITY AVENUE AVERAGE DAILY TRAFFIC (2 WAY)

Location	ADT (2 Way)		
	1997	2010	2020
Geist Road/Johansen Expressway	17,125	20,250	24,000
Airport Way	17,875	20,800	24,500
Rewak Avenue	12,225	15,825	18,500
Davis Road	8,525	12,750	15,500
Mitchell Expressway	6,400	8,550	10,500

The accident rate for the year 2020 that is predicted by the Bowman-Vecellio model for different access management configurations is as follows for the University Avenue project:

PREDICTED ACCIDENT RATE (CRASHES PER MILE PER YEAR)[1]

Segment	Undivided	Two Way Left Turn Lane	Raised Median
Mitchell Expressway to Davis Road	3	7	7
Davis Road to Rewak Drive	75	19	13
Rewak Drive to Geraghty Avenue	17	20	15
Geraghty Avenue to Chena River	26	23	12
Chena River to Johansen Expressway	114	35	17
Johansen Expressway to Thomas Street	73	19	15

[1]Based on forecast 2020 traffic volumes

To test the validity of the Bowman-Vecellio model with regard to the traffic conditions of University Avenue, actual 1997 traffic volumes for University Avenue were input into the model, together with the appropriate variables associated with the operating conditions for that period. The accident rate predicted by the model from these input values was then compared to the accident rate as compiled from actual accident statistics for the 1994-2000 period. The results are as follows:

COMPARISON OF PREDICTED AND ACTUAL ACCIDENT RATES, 1994-2000

Segment	Predicted Accident Rate[1] (crashes per mile per year)	Actual Accident Rate[2] (crashes per mile per year)
Mitchell Expressway to Davis Road	2	10
Davis Road to Rewak Drive	45	7
Rewak Drive to Geraghty Avenue	14	58
Geraghty Avenue to Chena River	19	6
Chena River to Johansen Expressway	94	19
Johansen Expressway to Thomas Street	49	59
Overall – Mitchell Expy to Thomas Street	32.2	25.9

[1]Predicted accident rate is based on 1997 traffic volumes
[2]Actual accident rate is for the 1994-2000 time period

The results of the Bowman-Vecellio model do not specifically reflect the volume of crossing traffic at intersections. Therefore, the accident rate predicted by the model tends to underestimate the number of accidents within street segments that include major intersections and overestimate the accident count elsewhere. In the above tabulation, the accident rate that is predicted by the model is substantially lower than the actual accident rate for the segments that include the Davis Road, Airport Way and Johansen Expressway intersections. About two-thirds of the accidents on University Avenue occur at these intersections. However, the overall accident rate that is predicted by the model for the entire length of University Avenue agrees closely with the actual rate of accidents over the 1994 to 2000 time period.

Raised medians with left turn lanes at intersections offer a cost-effective means for reducing accidents and improving operations at higher volume intersections where access requirements or other considerations are prohibitive to the installation of continuous raised medians. The left-turn lanes separate slower turning vehicles from through traffic and provide a protected space for these vehicles to decelerate and turn. The raised median prohibits left turns into and out of driveways that may be located too close to the functional area of the intersection.

Raised medians at intersections may be most effective in retrofit situations where high volumes of turning vehicles have degraded operations and safety and where more extensive solutions would be too expensive because of limited right-of-way and the constraints of the adjacent environment.

Because raised medians are the most restrictive access management treatment, building a raised median along a major roadway may be very controversial among business and property owners who may feel that a raised median could negatively affect sales and property values. Two-way left turn lanes are commonly suggested as a compromise solution. However two-way left turn lanes are a safety compromise when compared with raised medians.

Two-way left turn lanes typically function adequately on roadways having a low to moderate commercial driveway density or where the land use does not produce many turning movements

per hour, such as through a predominantly residential area. The effectiveness of two-way left turn lanes is significantly reduced in situations where commercial driveway densities are high and these driveways are closely spaced. In addition, studies indicate that operating degradation occurs between an ADT of 24,000 and 28,000 vehicles per day.

TABLE 1

BOWMAN-VECELLIO ACCIDENT PREDICTION MODEL

	Variables		Coefficients Median Type Undivided	TWLTL	Raised Median
Exposure	intercept	B0	0.000365	0.000365	0.000365
	Average Daily Traffic	B1	1	1	1
	Segment Length	B2	1	1	1
Explanatory	intercept	C0	1.88	3.71	7.21
	Accident Reporting Threshold, dollars	C1	-0.00303	-0.00278	-0.00788
	Office Land Use, Off	C2	1.06	-0.0723	-0.448
	Business Land Use, Bus	C3	0.657	0	0
	Area Type, Area	C4	0.457	0	0
	Median Width, Med	C5	0	0.0354	-0.0276
	Unsignalized Approach Density, Unsig	C6	0	-0.0606	0
	Driveway Density, Cross	C7	0.0132	0.0129	0
	Crossover Density, Cross	C8	0	0	0.0962
	Speed Limit, Spd	C9	0	-0.0339	-0.070

Average daily traffic	ADT
Segment length, miles	Len
Accident reporting threshold	Thr
Office land use (1 if office, 0 otherwise)	Off
Business land use (1 if business, 0 otherwise)	Bus
Area type (1 if CBD, 0 otherwise)	Area
Median width, feet	Med
Unsignalized approach density, approaches/mile	Unsig
Driveway density, driveways/mile	Drv
Crossover density, crossovers/mile	Cross
Speed limit, mph	Spd

Prediction Model:

Number of crashes per mile per year $= B_0 ADT^{B1} LEN^{B2} e^{(explanatory\ terms)}$

explanatory terms $= C_0 + C_1 Thr + C_2 Off + C_3 Bus + C_4 Area + C_5 Med + C_6 Unsig + C_7 Drv + C_8 Cross + C_9 Spd$

What are the advantages and disadvantages of access management alternatives compared to an undivided roadway?

RAISED MEDIANS	
Advantages	*Disadvantages*
• Discourages strip development • Reduces number of conflicting maneuvers at driveways • Provides pedestrian refuge at intersections • If continuous, restricts access to right turns only • Reduces crashes in mid-block area • Separates opposing traffic • Reduced headlight glare distraction	• Reduces operational flexibility for emergency vehicles • Increases left turn and U-turn volumes at median openings • May increase crashes at openings • Limits direct access to property • Requires increased right-of-way width
TWO WAY LEFT TURN LANES	
Advantages	*Disadvantages*
• Makes use of odd lanes • Reduces left turns from through lanes • Provides operational flexibility for emergency vehicles • Safer than roads with no left turn lanes or medians • Facilitates detours • Separates opposing traffic	• Encourages random access • Can illegally be used as a passing or acceleration lane • Operates poorly under high volumes of through traffic • Allows head-on crashes • Required increased right-of-way width

What are the effects of the access restrictions of raised medians on businesses?

Raised medians are increasingly being incorporated into roadway projects in urban areas. The purpose of these actions is to reduce traffic conflicts, protect driver safety, and improve traffic flow on major roadways. The impact of restricting left turns not only is dependent upon the extent that access to adjacent property increases or decreases, but also on the type of activity involved and the background economic conditions. Some activities, such as a large shopping center or office complex attract their clientele from a large area, and the overall travel time to the facility time plays a major role. Other activities, such as service stations and drive –in restaurants, rely on intercepting pass-by traffic. In such cases, left turn restrictions could adversely affect business. The following table shows PM peak hour pass-by percentages for a range of retail activities:

PASS-BY TRIPS AS PERCENT OF TOTAL

Convenience store	71
Gasoline service station	52
Sit-down restaurant	40
Fast food restaurant	47
with drive-through window	43
Discount store	22
Shopping center - 50,000 sq. ft.	60
100,000 sq. ft.	45
200,000 sq. ft.	36

Source: Table 61, NCHRP Report 420

Owners of abutting businesses often feel that their business will be adversely affected by the introduction of a raised median. To test the validity of these concerns, the economic impacts of access management has been studied in many recent research projects that have been conducted throughout the country. An overview of the findings of these studies is presented below.

Kansas Study

In 1999, the Kansas Department of Transportation studied fifteen businesses that had filed inverse condemnation lawsuits against the Department in the past on access related issues. In nearly every case, the landowner had claimed that the applicable access restrictions would have devastating effects on their business and the highest and best use of their property. Each property was studied to determine if the economic impacts had in fact been realized.

In all but one of the cases, either the claimant was still in possession of the property and operating the business, the property was being used for the same use by a different operator, or the use of the property had been upgraded. The only exception was where a mainline was relocated with two gas stations remaining on the old mainline, which was converted to a frontage road. In this case, drivers had to go about two miles out of their way to reach the frontage road and the gas stations went out of business.

Conclusion: The changes in access or traffic patterns that were included in this study did not cause a change in the highest and best use of abutting properties, except in a single extreme situation.

Texas Study

The Texas Department of Transportation conducted a study of the economic impacts of left turn restrictions in the mid-1990s, utilizing on-site interviews with business owners. Key findings included the following:

- Perceptions of business owners before a median was installed were more pessimistic than what usually happened.
- Business owners reported no change in pass-by traffic after median installations.
- Most business types (including specialty retail, fast-food restaurants and sit-down restaurants) reported increases in business activity except for gasoline stations and automotive repair shops, which reported decreased business.
- Most adverse economic impacts were realized during the construction phase of the median installations.
- Employment within the corridors experienced upward trends overall, with some exceptions during construction phases.
- When asked what factors were important to attracting customers, business owners generally ranked "accessibility to store" lower than customer service, product quality and product price, and ahead of store hours and distance to travel.
- Most business owners reported that their regular customers were at least as likely or more likely to continue patronizing their business after the median installation.
- Along the corridors where property values were studied, land values stayed the same or increased, with very few exceptions.

Iowa Study

A statewide study of the effects of access management on business vitality was conducted in Iowa in 1996. Results indicated that:

- Corridors with completed access management projects performed better in terms of retail sales than the surrounding communities. Business failure rates along access-managed corridors were at or below the statewide average for Iowa.
- Eighty percent of the businesses surveyed along access managed corridors reported sales at least as high after the project was in place. The firms perceiving negative impacts were a mixture of business types.
- Similarly, about 80 percent of businesses reported no customer complaints about access to their businesses after project completion. Those businesses that tended to report most complaints were highly oriented toward automobile traffic.
- The vast majority of motorists thought that the improved roadways were safer and that traffic flow had improved.

Florida Studies

Two studies have been conducted by the Florida Department of Transportation to identify the economic effects of median reconstruction projects. The results were as follows:

- A survey was conducted of Ft. Lauderdale businesses abutting a project involving closure of several median openings and reconstruction of the raised median. Seventy percent of the businesses indicated that the median changes had no adverse effect on truck deliveries and over sixty percent reported no change in business activity following the project. More than half of the businesses (57%) reported that they favored the median changes and eighty percent of those traveling on the corridor favored the project.
- A study was conducted of drivers and business owners affected by median changes in five corridors in the Orlando area. A majority of business owners (57%) indicated that the value of their business was unaffected or increased and that the changes were not inconvenient to delivery trucks.

The results of the above studies provide evidence that median projects have little overall adverse impact on business activity. Although some businesses report increase in sales and some report decreases, the majority report no change in business activity following a median project.

What are the comparative costs and benefits of access management alternatives for the University Avenue project?

The cost per linear foot of roadway for right-of-way acquisition and construction to convert the existing undivided roadway on University Avenue to include a two way left turn lane or a raised non-traversable median is estimated as follows:

ESTIMATED CONVERSION COST FROM UNDIVIDED ROADWAY

	Quantity	Units	Unit Cost	Total Cost
Two-way Left Turn Lane				
Right-of-way	14	SF	$ 4.00	$56.00
Asphalt pavement and base course	14	SF	1.50	21.00
Embankment	1.5	CY	12.00	18.00
Curb and gutter	-	LF	18.00	0.00
Topsoil	-	CY	20.00	0.00
Total estimated reconstruction and right-of-way cost per foot				$95.00
Raised Median				
Right-of-way	19	SF	$ 4.00	$76.00
Asphalt pavement and base course	-	SF	1.50	0.00
Embankment	2	CY	12.00	24.00
Curb and gutter	2	LF	18.00	36.00
Topsoil	0.25	CY	20.00	5.00
Total estimated reconstruction and right-of-way cost per foot				$141.00

The above costs can be expressed as an annual cost per mile as follows:

ANNUALIZED CONVERSION COST FOR UNDIVIDED ROADWAY

Conversion	Cost per foot	[1]Annualized cost per mile
Undivided to Raised Median	$141.00	$55,000
Undivided to Two Way Left Turn Lane	95.00	$37,000

[1]Debt Service Factor – (20 years @ 4%) = 0.073582

A generalized estimate of the annual number of accidents per mile that will occur with the different access management alternatives can be calculated from the forecast average daily traffic volumes and the relationship between accident rates and access density that are presented above.

The annual per mile accident numbers as presented in the following table are based on an ADT of 22,500 vehicles per day. The $5,000 average amount of damage per accident as used in this analysis is the approximate average reported damage of over 500 accidents occurring on University Avenue between 1994 and 2000.

The annual per mile delay time as presented in the following table was computed from Tables E-13, E-14, and E-15 of NCHRP Report 395 for an average daily traffic of 22,500 vehicles per day, with a five percent left turn percentage per 1,320-foot segment length.

ANNUALIZED COMPARISON OF BENEFITS AND COSTS

	Undivided street	Two way left turn lane	Raised median
Approaches per mile	40	40	30
Annual accidents per mile	70	58	41
Annual per mile accident cost savings at $5,000 per accident	$350,000	$290,000	$205,000
Annual delays per mile	4,800 hrs	3,200 hrs	3,200 hrs
Annual delay savings at $20.00/hour	$96,000	$64,000	$64,000
Annualized cost of conversion		$37,000	$55,000
Total annualized cost per mile	$446,000	$391,000	$324,000
Annual benefit of conversion per mile	-	$55,000	$124,000

What are the proposed provisions for access management for the University Avenue project?

The proposed access management provisions for University Avenue are illustrated on the accompanying Drawings One through Four and are summarized as follows:

Mitchell Expressway to Davis Road

The segment of University Avenue between the Mitchell Expressway and Davis Road currently includes one driveway and unsignalized intersections at Davis Road and at Vian Way. A traffic signal is planned at Davis Road, based on projected traffic volumes at this location. Because of the land ownership in this segment, it is not expected that future development will result in additional driveway approaches.

The segment was planned to remain with an undivided four-lane roadway section as defined in the 1991 environmental study for the project except for raised median channelization within the functional intersection areas of the Mitchell Expressway and Davis Road. Current plans are to construct a continuous raised median over the entire length of the segment because of the expected safety and operational benefits that would be expected result from this construction, with little or no adverse effects resulting from the access restrictions that would be imposed by the median.

Davis Road to Rewak Drive

The roadway segment between Davis Road and Rewak Drive currently includes unsignalized intersections at Davis Road, Holden Road, Nineteenth Avenue, Swenson Avenue, Erickson Avenue, and Mitchell Avenue, with a signalized intersection at Rewak Drive. Eleven commercial driveways and three residential driveways currently access University Avenue within this segment. All of the existing residential driveways could potentially be utilized as commercial driveways as development of the area progresses. Construction of a new fire station is planned to begin in July 2002 on the west side of University Avenue, south of Nineteenth Avenue.

A raised median is proposed to be constructed within this segment of University Avenue as part of the proposed project. As previously discussed, the planned raised median would be expected to result in greater operating safety in comparison other access management alternatives. Median breaks and left turn lanes are proposed to be provided at Holden Road, Nineteenth Avenue, Erickson Avenue, and Rewak Drive. The 1991 Environmental Impact Statement for the University Avenue project included provisions for a continuous two-way left turn lane for the entire length of this segment, without raised median channelization.

The raised median channelization between Davis Road and Holden Road would limit the University Avenue access of the Bowers Building property, located at the corner of Davis Road and University Avenue, to right in-right out access only. Left and right turn access to this property would continue to be available from Davis Road. The adjoining property to the north has insufficient area available to permit vehicles to maneuver as necessary to safely exit the property onto University Avenue. It is proposed that the business and residence on this parcel be acquired as part of the right-of-way acquisition process for the project and the driveways serving the property eliminated. An existing driveway on University Avenue serving vacant land at the corner of Holden Road and University Avenue would have to be relocated to obtain access from Holden Road rather than University Avenue. Access to a residential lot located on the east side of University Avenue between Holden Road and Nineteenth Avenue would also be limited to right in-right out only.

The proposed raised median channelization at Swenson and Mitchell Avenues would limit direct access to and from these two streets and University Avenue to right in-right out only. Access restrictions imposed by the raised median in this area would also affect four businesses located between Mitchell Avenue and Rewak Drive, on the west side of University Avenue. The buildings serving these businesses are located close to University Avenue with little space between the front of the buildings and the right-of-way line for parking and maneuvering vehicles. It may be necessary to modify the operation of these businesses to provide parking and access at the rear of the buildings.

Rewak Drive to Geraghty Avenue

The entire length of the segment of University Avenue between Rewak Drive and Geraghty Avenue is within the functional intersection area of the intersections of Airport Way and Rewak Drive with University Avenue. Left turn lanes with raised median channelization are proposed for construction for the length of this segment. Because of the close proximity of Geraghty Avenue to the Airport Way intersection, it is planned that the raised median continue across the Geraghty Avenue intersection, prohibiting left turns between University Avenue and Geraghty Avenue. It is expected that this restriction would significantly enhance both the safety and operational efficiency of the Geraghty Avenue intersection. If a median opening were to be provided at Geraghty Avenue with left turns to and from Geraghty Avenue permitted, significant delays would be experienced by the left turning traffic. At 2020 traffic levels, left turning traffic would operate at Level of Service "F".

The raised median channelization between Airport Way and Rewak Drive would eliminate direct left turn access to the Safeway store and University Center mall, located immediately south of Airport Way. Access to these businesses by southbound University Avenue traffic would be

obtained either by executing a U-turn at the signalized Rewak Drive intersection or by turning left at Rewak Drive and proceeding east to Kalakaket Street.

The 1991 Environmental Impact Statement for the University Avenue project included provisions for left turn lanes with raised median channelization for the entire length of this segment, with a median break and left turn lane at the Geraghty Avenue intersection. The plan that was presented in the 1991 study included relocating the Geraghty Avenue intersection about 200 feet north of its present location in order to provide a greater separation distance from the Airport Way intersection.

Geraghty Avenue to Chena River

A continuous raised median is proposed for the entire length of the University Avenue between Geraghty Avenue and the Chena River. This will result in right in–right out access to and from Geraghty Avenue as well as to and from the existing approach serving the Chena River State Recreation Site, a 27 acre park located east of University Avenue about 900 feet south of the Chena River. An existing approach serving the Alaska Department of Natural Resources and Bureau of Land Management complex, on the west side of University Avenue, would also be limited to right in–right out access.

Construction of a continuous raised median at these existing approaches is intended to reduce the number of accidents that are statistically associated with turning movements at intersections. The intersection at the park entrance is expected to have an increased potential for accidents due to the long length of vehicles (i.e., RVs and vehicles towing trailers) making left turns through gaps in conflicting traffic. The raised median will also serve to eliminate the long delays that will be experienced in making left turns to and from University Avenue at these approaches. Elimination of these delays would also be expected to enhance safety, since drivers that experience long delays may attempt to enter the intersection when the size of gaps between approaching traffic is insufficient to safely execute the turning maneuver.

Access restrictions resulting from the construction of a raised median on University Avenue would not be expected to significantly affect access to and from the DNR/BLM complex since alternate access to this facility is provided at the signalized Airport Way/Sportsman Way intersection. Further, left turns from University Avenue to the DNR/BLM complex are currently prohibited.

Since no alternate access to the Chena River State Recreation Site is currently available, the construction of a continuous raised median on University Avenue will require that vehicles that are leaving the park and desiring to head in a southerly direction turn north on University Avenue in exiting the park. Similarly, southbound vehicles on University Avenue that desire to enter the park would have to execute a series of turns in order to be heading north on University Avenue at the park entrance. There is not a grid of existing side streets in the area north of Geraghty Avenue that could be utilized to make the reversals in the direction of travel that would be necessary if the park entrance were limited to only right in-right out access. To permit U-turns by northbound vehicles, a widened area of University Avenue is proposed to be constructed at the Indiana Avenue intersection, approximately one-half mile north of the park. A southbound vehicle destined for the park would be required to travel an additional distance of about than one

mile to reach the park via the new Washington Drive/Airport Way intersection and Geraghty Avenue if left turns from University Avenue into the park were prohibited.
The park experiences about 40,000 visits per year, with a substantial portion of the traffic consisting of RVs and vehicles towing trailers. A capacity analysis indicates that, if left turns to and from the park are allowed, vehicles making left turns to enter or leave the park will experience very long traffic delays in the 2020 design year whereas vehicles making right turns into or out of the park would experience little or no delay.

The 1991 Environmental Impact Statement for the University Avenue project included provisions for a raised median for the portion of University Avenue between Geraghty Avenue and the Chena River, with a median break and auxiliary left turn lanes at the entrance to the Chena River State Recreation Site and the approach to the DNR/BLM complex.

Chena River to Johansen Expressway

The existing 0.45-mile length of University Avenue between the Chena River and the Johansen Expressway includes 23 driveways, 13 of which serve commercial facilities, and four intersections with minor streets. The Bowman-Vecellio accident prediction model estimates that about twice as many crashes will occur if this segment is constructed with a two way left turn lane rather than with a continuous raised median. A continuous raised median therefore proposed to be constructed within this segment with median breaks and left turn lanes provided at Goldizen Avenue, Widener Lane, and Indiana Avenue.

One existing driveway would be eliminated at each of three businesses having multiple driveways. Existing driveways serving nine parcels would either be limited to right in-right out access or alternated access could be obtained from adjoining rights-of-way other than University Avenue.

The raised median will limit access to three residences and three businesses to right in-right out only. It is proposed that a new street be constructed to connect Wolf Run, a local road that intersects with University Avenue within the functional area of the University Avenue/Johansen Expressway intersection limits, to Indiana Avenue. The new connection would provide an additional route for northbound vehicles in reversing their direction of travel without executing a U-turn at a University Avenue intersection.

The 1991 Environmental Impact Statement for the University Avenue project did not include provisions to connect Wolf Run with Indiana Avenue. This resulted in insufficient turn lane storage at the University Avenue/Johansen Expressway intersection as well as conflicts with Wolf Run traffic within the functional area of the University Avenue/Johansen Expressway intersection. The 1991 EIS included a two way left turn lane for the entire segment length between Wolf Run and the Chena River.

Johansen Expressway to College Road

A raised median is planned to be provided on University Avenue between the Johansen Expressway and College Road. Traffic counts performed in 2001 indicated that a traffic signal is warranted at the Sandvik Street intersection under current traffic volumes. Accordingly, a signalized intersection with left turn lanes is planned to be constructed at Sandvik Street, with

unsignalized intersections at Cameron. Dead End Alley, an existing private street located about 350 feet north of the Johansen Expressway, and Thomas Street, located between Cameron Street and College Road, would be limited to right in-right out access only.

The existing 0.5-mile length of University Avenue between the Johansen Expressway and College Road includes 10 driveways, 7 of which serve commercial facilities. Three of these driveways would be relocated to adjacent side streets. One driveway, providing access to the University of Alaska maintenance yard, would be relocated to the Cameron Street intersection. A driveway providing access to the old University Park School and a driveway serving the Sam's Sourdough Café would be eliminated. Two residences, located within the functional intersection area of University Avenue/Johansen Expressway, have insufficient area available to permit vehicles to safely exit the property onto University Avenue. It is proposed that these residences be acquired as part of the right-of-way acquisition process for the project and the driveways serving these parcels eliminated. A driveway serving an adjacent parcel would be relocated to Dead End Alley. A crossing point would be provided in the raised median near the GVEA substation to permit access to the substation across the median by emergency vehicles.

The 1991 Environmental Impact Statement for the University Avenue project included provisions for a left turn lane with raised median channelization within about 250 feet of the Johansen Expressway intersection. A two way left turn lane was provided for the entire portion of University Avenue north of this channelization.

APPENDIX C

HIGH CRASH RATE INTERSECTIONS (1999-2001)

High Crash Rate Intersections (1999-2001)

We have several projects pending that effect many of the intersections listed below.

The "University Avenue Rehabilitation and Widening" project will upgrade the length of University Avenue. It will add a railroad overcrossing, raised medians, and intersection upgrades. The project is in the environmental phase and is proposed to be constructed in three phases; the earliest possible start would be 2006. Five intersections on University Avenue have an accident rate exceeding the critical rate.

The "Airport Way Corridor Study" is to examine Airport Way starting at Sportsman's Way and extending through the Airport Way/Richardson Hwy/Gaffney/Steese intersection down the Steese Expressway to the Steese Expwy/College Road intersection. It will examine everything from signal progression to frontage road access issues. As a result of this study we hope to program future improvements to some of the persistent safety issues evident at most Airport Way and Steese Expressway intersections. The corridor will be considered as a whole instead of piecemeal. Thirteen intersections on this corridor study have a crash rate exceeding the critical rate.

The "Johansen Expressway/Danby Overpass" project is programmed to construct a grade separated intersection serving both Danby St. and the new Alaska Railroad Passenger Terminal Facility. The project will begin the environmental phase this month.

#1 University Ave & Geist Road (Johansen Expressway)

The upcoming "University Ave Rehabilitation and Widening" project will make minor revisions to this intersection. It will add raised medians and right tun pockets for north-south traffic. No improvements are planned for east-west traffic. Additional intersection safety improvements will be addressed in the upcoming "Geist Road, Parks – University" project.

There is currently protected/permitted phasing for left turns in the east-west direction only. In order to convert to protected-only the westbound left turn pocket would have to be extended or changed to a dual left (southbound is already dual-left) which will require extensive changes to the intersection approaches. It would also require changing the phasing of the signal. No HSIP project proposed at this time.

#2 University Ave & Airport Way

The upcoming "University Ave Rehabilitation and Widening" project will install raised medians and add a southbound right turn lane. Like much of Airport Way, the elimination of the permitted left turns east-west would decrease left turn crashes. Airport Way is currently the subject of a corridor study. The corridor study will include consideration of the problems of protected/permitted left turns and access between Airport Way and the adjacent frontage roads. No HSIP project proposed at this time.

#3 Cushman St & 1st Ave.

Last years HSIP proposed using durable markings (M&O) to reduce lane confusion and sideswipe crashes. Same recommendation for this year. No HSIP project proposed at this time.

#4 Johansen Expressway & Danby St.

Proposed location for an overpass (PH4 2006) would eliminate this at grade intersection. No HSIP project proposed at this time.

#5 Airport Way & Peger Road

The Market St intersection to the west contributes to WB rear end crashes at this intersection. See # 8. No HSIP project proposed at this time.

#6 Airport Way & Cushman St.

The proposed "Cushman St Widening" project will add raised medians and consider dual left turning movements. No HSIP project proposed at this time.

#7 Steese Expressway & 3rd St

Proposed "3rd Street Widening" (PH4 2006) project will address safety issues at intersection. No HSIP project proposed at this time.

#8 Airport Way & Market St.

This years construction project "Airport Way Frontage Roads – University Ave to Market St" is making major changes to this intersection. Another intersection will be constructed on Airport Way west of this location that will reduce the left turning movements at this intersection. It should reduce both WB-EB angle and WB rear-end crashes at Market St and reduce WB rear-end crashes at Peger Road as well. This project is removing the acceleration lane on Airport Way and the coordinated signal at Market Street/Frontage road, returning this intersection to its original configuration (and consistent with other intersections on Airport Way). No HSIP project proposed at this time.

#9 Lacey St & 10th Ave.

Lacey St. was converted from a one-way street (SB) to a two way street October 1, 2002. The conversion to a two-way street will not fix the red-light-running pattern. Lacey is a signalized intersection just 158 feet west of the signalized Noble St./10th Ave. intersection (See #18). The pattern of red-light-running indicates drivers on 10th Ave. may be confusing the signals at these closely spaced intersections. Coordination of the signals on 10th or installation of programmed visibility signal heads is expected to be

done by M&O. No HSIP project proposed at this time.

#10 Airport Way & Cowles

This intersection has one of the highest number of pedestrian and bike crashes in Fairbanks. The four quadrants of this intersection are occupied by a junior high/high school complex, shopping center, large apartment complex and the borough public library producing high pedestrian/bike volumes. It was improved by an HSIP project in 1998 that added a lane and introduced raised medians to the north side of the intersection. An evaluation of the intersection shows a need to increase pedestrian crossing time and to relocate the pedestrian signals on the NW quadrant to a separate pedestrian pole. This work will be included in the Northern Region ADA – Airport Way project scheduled for construction in 2004. In the interim, pedestrian signal timing will be re-evaluated and adjusted if necessary. No HSIP project proposed at this time.

#11 Steese Expressway & College Road

The crash pattern at this intersection is the NB left turns from the Steese Expwy to College Road WB. The solution is eliminating the permitted left turns, but that would require additional left turn storage capacity. It is not possible to extend the existing left turn pocket due to its proximity to the left turn pocket of the adjacent intersection; to build a dual left would require ROW acquisition and re-alignment of the Steese Expwy to accommodate it. No HSIP project proposed at this time.

#12 Badger Loop Rd/Overpass & Santa Claus Lane

Proposed project, currently at the end of the environmental phase will address crash patterns. No HSIP project proposed at this time.

#13 Geist Road & Fairbanks St

Modified under 2001 HSIP project. Construction completed in 2002. "UAF/Geist Access" project will close the north leg of the intersection for University traffic (it will become a driveway to West Valley High School only and exit only access for emergency vehicles from the University Fire Department). No HSIP project proposed at this time.

#14 Old Steese Highway & Minnie St

Reconstructed in 2001 under the Old Steese Highway project. No HSIP project proposed at this time.

#15 Airport Way & Barnette St/Gillam Way

No discernable pattern to crashes. It is currently phased protected/permitted left turns east-west-north-south. Like much of Airport Way, the elimination of the permitted left turns east-west would decrease left turn crashes. No HSIP project proposed at this time.

#16 Peger Road & Phillips Field Road Extension

Predominately rear-end crashes. No HSIP project proposed at this time.

#17 Steese Highway & Farmers Loop Rd/Fairhill Rd

As a partial interim solution M&O has modified the signal to convert the SB left from a permitted to a protected/permitted. 2002 HSIP project under construction spring of 2004.

#18 Noble St & 10th Ave

Noble St. was converted from a one-way street (NB) to a two way street October 1, 2002. The conversion to a two-way street will not fix the red-light-running pattern. Noble St. is a signalized intersection 158 feet east of the signalized Lacey St./10th Ave. intersection (See #9) The pattern of red-light-running indicates drivers on 10th Ave. may be confusing the signals at these closely spaced intersections. Coordination of the signals on 10th or installation of programmed visibility signal heads is expected to be done by M&O. No HSIP project proposed at this time.

#19 University Ave. & Parks Highway (Mitchell Expressway)

This intersection has an unusual number of Fixed Object (ditch) crashes. Due in part to the high speed, divided four-lane (by ditches) highway character and its location as the first signalized intersection as you approach Fairbanks from the south. An AAWF was installed for the northbound Parks traffic in 1994. An upcoming "University Ave Widening" project will add sidewalks to the east side of this intersection. No HSIP project proposed at this time.

#20 Airport Way & Noble St

Like much of Airport Way, the elimination of the EB permitted left turns would decrease left turn crashes. No HSIP project proposed at this time.

#21 Parks Highway (Mitchell Expressway) & Lathrop St

This intersection has an unusual number of Fixed Object (signs, guardrail, signal poles) crashes. Due in part to the high speed, divided four-lane (by ditches) highway character and its location as the first signalized intersection as you approach Fairbanks from the east. An AAWF was installed for the westbound traffic in 2002. No HSIP project proposed at this time.

#22 Airport Way & Lathrop St

No discernable pattern to crashes. It is currently phased protected/permitted left turns east-west and permitted north-south. Like much of Airport Way, the elimination of the permitted left turns would decrease left turn crashes. No HSIP project proposed at this time.

#23 Cushman St & 30th Ave

No discernable pattern to crashes. This intersection is currently phased protected/permitted left turns east-west and permitted only north-south. No HSIP project proposed at this time.

#24 College Road & Old Steese Highway

This intersection was completely reconstructed in 2001 as part of the "Old Steese

Widening" project. No HSIP project proposed at this time.

#25 Cowles St & 3rd Ave

This unsignalized intersection is stop controlled on the east-west legs. It has a pattern of "Failure to Yield" crashes on the EB leg. Will coordinate with the City of Fairbanks to investigate sight distance, traffic markings and visibility of STOP sign. No HSIP project proposed at this time.

#26 Steese Expressway & 10th Ave

No discernable pattern to crashes. This is a signalized "T" intersection. It is currently phased protected/permitted left turns NB and permitted only EB. No HSIP project proposed at this time.

#27 Geist Road & Loftus Rd

Completely reconstructed as a signalized intersection this summer as part of the "UAF/Geist Road Access" project. No HSIP project proposed at this time.

#28 Lathrop St & 19th Ave

This unsignalized intersection is stop controlled on the east-west legs. The accident pattern is WB "Failure to Yield" crashes. The Fairbanks Memorial Hospital recently had the ROW for 19th Ave vacated from this intersection east to the East Cowles intersection. This will reduce traffic on this leg to hospital traffic only. No HSIP project proposed at this time.

 # 29 Parks Highway & Sheep Creek Road

This intersection will be included in the upcoming "Parks Highway MP 351-356 Rehabilitation" project. No HSIP project proposed at this time.

#30 University Ave & Sandvik St

The upcoming "University Ave Widening" project will signalize this intersection. No HSIP project proposed at this time.

#31 Danby St & Wembley Ave

This unsignalized intersection is in close proximity to the Johansen/Danby signalized intersection. It is stop controlled east-west. Northbound traffic coming off the Johansen has the choice of left only or thru-right at this intersection with left being the dominant movement. A high percentage of the crashes at this intersection are "Failure to Yield" associated with that movement. The road curves east through this intersection and sight distance is excellent in both directions. Drivers sitting waiting to turn left are faced with an opposing left turn lane and two through lanes. Shadowing of through vehicles is common. M&O will make additional signing and striping changes. No HSIP project proposed at this time.

#32 Airport Way & Wilbur St

This intersection is phased lead-lag in the east-west direction and permitted in the north-south direction. Protected/permitted phasing could reduce the pattern of N-S left turn

crashes. An additional problem at this intersection is the close proximity of the adjacent frontage roads. Many of the crashes attributed to this intersection are actually related to the frontage roads. One solution would be to construct raised medians on Wilbur St. similar to the Airport Way/Cowles intersection. However, at this location it is expected that adding medians would cause greater problems at adjacent intersections (Airport Way/Lathrop St. #22) than it solves at this location. No HSIP project proposed at this time.

#33 Badger Loop Road & Plack Road
No discernable pattern to crashes. No HSIP project proposed at this time.

#34 University Ave & Davis Road
The upcoming "University Ave Widening" project will signalize this intersection. No HSIP project proposed at this time.

#35 Airport Way & Old Airport/Sportsman's Way
This intersection was signalized by an HSIP project in 1999. No discernable pattern to crashes. No HSIP project proposed at this time.

#36 Farmers Loop Road & Old Steese Highway
This unsignalized intersection is 300 feet from the Farmers Loop Rd/Fairhill & Steese Hwy intersection (see #17) and only 185 feet from the Steese Hwy exit ramp onto farmer Loop Rd. The Old Steese leg (east side) functions as a parallel frontage road to the Steese Hwy. The west leg is a convenience store/gas station driveway. This is a busy area that has large volumes of traffic moving in multiple directions. The "Failure to Yield" crashes have no discernable pattern. Sight distance is excellent in all directions. The current HSIP project (#17) will likely have some positive effect on this intersection, since converting the protected/permitted left turn to protected only left turns will increase the gaps for traffic at the Old Steese. And converting the exit ramp to yield control will slow down traffic exiting the Steese Hwy. The root of the problem is the proximity of the Old Steese and the driveway to a high volume intersection. The gas station has no alternate access and it would require extensive ROW acquisition to relocate the Old Steese Hwy leg. No HSIP project proposed at this time.

#37 Cowles St & 2nd Ave
This unsignalized intersection is stop controlled on the east-west legs. It has a pattern of "Failure to Yield" crashes on the EB leg. Will coordinate with the City of Fairbanks to investigate sight distance, traffic markings and visibility of STOP sign. No HSIP project proposed at this time.

#38 Richardson Highway & Mission Road/5th Avenue
The Richardson Highway is a divided four-lane at this location. This is an illuminated at-grade intersection with left and right turn lanes and acceleration lanes on the Richardson Hwy. The pattern of crashes is "failure to yield" and angle accidents. The proposed North Pole Overpass will eliminate this at-grade intersection. No HSIP project proposed at this

time.

#39 Richardson Highway & Laurance Road

The Richardson Highway is a divided four-lane at this location. This is an illuminated at-grade intersection with left and right turn lanes and acceleration lanes on the Richardson Hwy. The pattern of crashes is "failure to yield" and left turn accidents from the Richardson onto Laurance Road. The presence of these auxiliary lanes in addition to the four through lanes increases the difficulty of crossing the Richardson. We will install oversize STOP signs on Laurance Road. No HSIP project proposed at this time.

#40 College Road & Aurora Dr

College Road in an east-west urban arterial, undivided 4-lane at this location. The lack of dedicated left turn pockets (east-west) has produced a pattern of WB left turn crashes. The north side of this intersection is the State Fairgrounds, which has high traffic volumes for approximately 10 days of the year. The southeast quadrant of the intersection is a convenience store/gas station; the southwest quadrant is a motorcycle/snowmachine dealership. The "College Road Rehabilitation" project will add left and auxiliary lanes to this intersection. No HSIP project proposed at this time.

#41 Cushman St & 23rd Ave

No discernable pattern to crashes. No HSIP project proposed at this time.

#42 Cushman St & 3rd Ave

This signalized intersection is one way north and one way west. It has a pattern of "Failure to Yield" crashes between NB and WB traffic. Will coordinate with the City of Fairbanks to investigate traffic markings and signing. No HSIP project proposed at this time.

APPENDIX D

DETERMINATIONS PURSUANT TO THE

NATIONAL HISTORIC PRESERVATION ACT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
ALASKA DIVISION
709 West Ninth Street, Room 851
P.O. Box 21648
Juneau, Alaska 99802
907-586-7418 | 907-586-7420 FAX

November 22, 2004

REFER TO
HDA-AK
File #: RS-M-0617(3)/63213

Ms. Carol D. Shull
Keeper of the National Register of Historic Places
National Park Service
1849 C Street, N.W.
Washington, DC 20240

SUBJECT: University Avenue Widening Determination of Eligibility pursuant to 36CFR63.3

Dear Ms. Shull:

The Federal Highway Administration (FHWA) and the Department of Transportation and Public Facilities (AKDOT&PF) are developing an Environmental Impact Statement (EIS) on proposed improvements to University Avenue in Fairbanks, Alaska. During the consultation required under Section 106 of the National Historic Preservation Act (NHPA), the State Historic Preservation Officer (SHPO) did not concur with FHWA's National Register of Historic Places (Register) determination of eligibility. All of these properties are buildings. Since the SHPO does not have an architectural historian (the office has only an archaeologist and a historian), and you have a well-trained and experienced staff, we believe it appropriate to refer this matter for your official decision.

The proposed project is to widen University Avenue from College Avenue to the Mitchell Expressway, in Fairbanks, Alaska (USGS Map Fairbanks D-2, Fairbanks, Meridian, T1S, R1W, Sections 5, 6, 7, & 8). University Avenue is the principal north-south roadway on the west side of Fairbanks and as such is an important arterial roadway, providing access to residences, commercial businesses and the University of Alaska Fairbanks. Construction would not remove or alter the buildings under consideration, but could alter access and driveways.

As a part of this proposal AKDOT&PF contracted Janet Matheson, Architect, to produce the attached survey titled Historical Evaluation, University Avenue Rehabilitation & Widening, August 17, 2004, a copy of which is attached. The FHWA determination of eligibility (August 11, 2004) and the SHPO response (September 20, 2004) are also attached. For your convenience in reviewing, we have prepared responses to the SHPO, and duplicated relevant information from the attachments, plus our own photographic collection for each property.

All recommendations of the above report have been resolved and agreed to by the

BUCKLE UP
AMERICA

FHWA and SHPO excepting the following:

1. Ernest & Joanne Wolff Cabin (FAI-1622) built 1952
2. May House (FAI-1633) Built circa 1959
3. Boyd Cabin (FAI-1643) built in 1939
4. Jim Binkley House ((FAI-1644) built 1952
5. University Avenue Historic District (FAI-1657), consisting of:
   - May House (FAI-1633)
   - Boyd Cabin (FAI-1643)
   - Jim Binkley House ((FAI-1644)
6. Riverboat Discovery Historic District (FAI-1658), consisting of
   - Jim Binkley House ((FAI-1644)
   - Riverboat Discovery Shop (FAI-1645) built 1961
   - Riverboat Discovery Warehouse (FAI-1646) built 1964
   - Riverboat Discovery Garage (FAI-1647) built 1960's

1. Ernest & Joanne Wolff Cabin (FAI-1622).

This property was found eligible under criterion (b) because a university professor supposedly lived there. Following this logic, would all homes of university professors in the United States be eligible? We found no evidence that Ernest Wolff, the professor whom was found significant under criterion (b), had any interest in the property until 1973, well after the historic period. The "cabin" itself has been so altered and added on to, and its setting has changed beyond recognition, so we do not believe it has integrity. (For a complete discussion on this cabin, please see the attached packet #1).

2. May House (FAI-1633)

The May House, probably built in 1959, was found eligible under criterion (c) as a bungalow. It fails it meet our expectations of a bungalow. It has no distinctive characteristics, or high artistic value, and is not the work of a master.

3. Robert Boyd Cabin (FAI-1643)

The Boyd Cabin was also found significant under criterion (c). We believe that criterion is not met. Its construction date of 1939 is unsupported, and the additions and modifications to the cabin are a major loss of integrity.

4. Jim Binkley House (FAI-1644)

This property was found eligible under criterion (b) because it was constructed by the Binkleys, a family who owns a riverboat tour company in Fairbanks. They lived here when they built their second tour boat, *Discovery I.* The tour business has changed locations since the slough behind the house no longer supports navigation, and the house itself has been altered to serve a veterinarian. These changes compromise the setting and integrity of construction of this

property. If indeed Jim Binkley is found significant under criterion (b), then the riverboat *Discovery I,* which has been moved to a new location, would better represent that significance. It is not located near this project.

5. University Avenue Historic District (FAI-1657).

This "district" found eligible under criterion (a) would be composed of the May House (#2 above), the Boyd Cabin (#3), and the Jim Binkley House (#4) comprising a residential historic district. Since the houses were built in different periods, circa 1937, 1952, and 1959, we do not believe they share a historic context or theme of "the post WWII period, a time of growth for the community." That growth actually occurred in the college area. As a result of modifications and additions, it is our opinion that these properties do not pass the integrity test.

6. Riverboat Discovery Historic District (FAI-1658)

This historic district would be composed of the Jim Binkley House described under #4 above, and three additional outbuildings built after the historic period which are described in packet #6. Only the Brinkley House meets the age criterion for consideration. The 1960s outbuildings fail the meet the exceptional significance for early consideration. Even if the Binkley House were eligible, which we do not believe it is, the 50% contributing rule for historic districts would not be met.

In conclusion, FHWA requests that the Keeper make a formal eligibility decision on these four properties and 2 historic districts. Thank you for your attention to this matter. If you have any additional questions, please contact me at (907) 586-7464 or by email at edrie.vinson@fhwa.dot.gov.

Sincerely,

Edrie Vinson

Edrie Vinson
Environmental Project Manager

Enclosures:
Six packets of detailed information for each property.
SHPO letter of September 20, 2004
FHWA letter of August 11, 2004
Matheson Report, 2004

cc: Janet Brown, Engineering Manager, AKDOT&PF, Northern Region
Judith Bittner, State Historic Preservation Officer w/enclosures
MaryAnn Naber, FHWA, w/enclosures

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

2280

IN REPLY REFER TO:

To: Edrie Vinson
Environmental Project Manager
FHwA, Alaska Division
709 W. Ninth St., Rm 851
P.O. Box 21648
Juneau, AK 99802

The Director of the National Park Service wishes to inform you of our determination pursuant to the National Historic Preservation Act, as amended, and Executive Order 11593 in response to your request for a determination of eligibility for inclusion in the National Register of Historic Places. Our determination appears on the enclosed material.

As you know, your request for our professional judgment constitutes a part of the Federal planning process. We urge that this information be integrated into the National Environmental Policy Act analysis and the analysis required under section 4(f) of the Department of Transportation Act, if this is a transportation project, to bring about the best possible program decisions.

This determination does not serve in any manner as a veto to uses of property, with or without Federal participation or assistance. The responsibility for program planning concerning properties eligible for the National Register lies with the agency or block grant recipient after the Advisory Council on Historic Preservation has had an opportunity to comment.

Attachment

United States Department of the Interior

NATIONAL PARK SERVICE
1849 C Street, N.W.
Washington, D.C. 20240

IN REPLY REFER TO:

DETERMINATION OF ELIGIBILITY NOTIFICATION

National Register of Historic Places
National Park Service

Project Name: University Avenue Widening

Location: Fairbanks **State:** AK

Request submitted by: Edrie Vinson, Environmental Project Manager, FHwA, Alaska Div.

Date received: 11/26/04 **Additional information received:**

Name of property	SHPO opinion	Eligibility: Secretary of the Interior's opinion	Criteria
Ernest & Joanne Wolff Cabin (FAI-1622)	Eligible	Not Eligible	
May House (FAI-1633)	Eligible	Not Eligible	
Boyd Cabin (FAI-1643)	Eligible	Not Eligible	
Jim Binkley House (FAI-1644)	Eligible	Not Eligible	
University Avenue Historic District(FAI-1657)	Eligible	Not Eligible	
Riverboat Discovery Historic District (FAI-1658) Riverboat Discovery Shot (FAI-1645) Riverboat Discovery Warehouse (FAI-1646) Riverboat Discovery Garage (FAI-1647)	Eligible	Not Eligible	

(See attached comments)

Keeper of the National Register

Date: 1/6/05

WASO-27

DETERMINATION OF ELIGIBILITY NOTIFICATION

National Register of Historic Places
National Park Service

Project Name: University Avenue Widening (continued)

General Comments:
The current documentation generally fails to establish sufficient context for justifying the particular significance of the identified resources. Other than the buildings being extant versions of common building types built during the broad periods associated with local development (log, bungalow, ranch, etc.), the documentation provides little local comparative context to other areas of Fairbanks, and no justification for the particular importance of the identified types, or the specific examples. Under Criterion B, the majority of the resources fail to adequately justify the unique contributions of the individuals, or provide a comparative analysis of the identified resources with other possible locations offering similar associations. Mere association with an individual involved in a particular profession is not sufficient grounds for eligibility.

Ernest & Joanne Wolff Cabin
The Wolff Cabin appears significantly altered. Under Criterion B, the association between Prof. Wolff and the property dates from far outside the historic period (1973). The associations are not shown by the current documentation to be exceptional in nature or even beyond the norm for persons in his profession. In addition, the documentation provides no discussion of other possible properties associated with Prof. Wolff, such as offices or school facilities, that may better convey his potential contributions. Not Eligible.

May House
The May House was built outside the historic period (circa 1959). Under Criterion C, the current documentation fails to justify the architectural significance of the resource beyond its existence as a modest example of a common property type. The documentation provides no suggestion as to why the property type is significant or why this particular example is especially noteworthy or significant within the local/regional context. Not Eligible.

Boyd Cabin
The Boyd Cabin appears altered from its historic appearance. Outside of its potential (undocumented) status as one of the earliest cabin properties constructed in the immediate area, the current documentation fails to establish or justify the significance of the building's property type within the local/regional context, or why this particular example is especially noteworthy. Under Criterion B, the documentation fails to justify the significance of the property owner(s). Not Eligible.

Jim Binkley House
The Binkley House appears significantly altered. Under Criterion B, the current documentation fails to justify the significant nature of Binkley's association with the local tourism industry. While early river transportation was recognized as an important aspect of the industrial development and growth of Fairbanks during the early twentieth century (mining, exploration, trade, etc), the historic

(Continued)

DETERMINATION OF ELIGIBILITY NOTIFICATION

National Register of Historic Places
National Park Service

Project Name: University Avenue Widening (continued)

(Continued)

context for recreational riverboat development and tourism remains largely undeveloped. In addition, a considerable amount of the activity associated with the Binkley's enterprise was conducted in the recent past outside the historic period of significance. The current documentation fails to provide any discussion of other possible properties associated with the Binkleys, such as the riverboats themselves, that may better convey their potential contributions; nor does it justify the altered resource under Criteria Consideration G. Not Eligible.

University Avenue Historic District
The current documentation fails to identify any cohesive theme for the proposed district outside of the existence of the three different resources within the same broad time frame associated with the development of the local University Avenue area. Individually, the buildings appear to retain modest physical integrity at best and fail to convey any particular architectural or historical significance. In addition, the proximity of the individual resources is compromised by numerous non-historic intrusions. The mere fact that the buildings represent common examples of the local pattern of residential development is insufficient without a broader understanding of the architectural context for greater Fairbanks. Not Eligible.

Riverboat Discovery Historic District
The district resources associated with the identified theme of riverboat tourism are either less than 50 years old, or are considerably altered. Similar to the Binkley House property, the documentation for the Riverboat Discovery district fails to provide adequate justification for the relative significance of this operation within the local/regional context, particularly as it relates to the exceptional significance necessary under Criteria Consideration G. Not Eligible.

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
ALASKA DIVISION
709 West Ninth Street, Room 851
P.O. Box 21648
Juneau, Alaska 99802
907-586-7418 | 907-586-7420 FAX

March 10, 2005

REFER TO
HDA-AK
File #: RS-M-0617(3)/63213

Ms. Judith Bittner
State Historic Preservation Officer
Alaska Office of History and Archaeology
550 W. 7th Ave., Suite 1310
Anchorage, Alaska 99501-3565

SUBJECT: University Avenue Rehabilitation and Widening, Finding of No Historic Properties Affected pursuant to 36 CFR 800.4(d)(1)

Dear Ms. Bittner:

The Alaska Division Office of the Federal Highway Administration (FHWA), in cooperation with the Alaska Department of Transportation and Public Facilities (AKDOT&PF), is proposing to widen University Avenue from Mitchell Expressway to just south of College Avenue in Fairbanks, Alaska, sections 5, 6, 7, 8, 17, and 18, T1S, R1W, Fairbanks Meridian, Fairbanks D-2 Quadrangle. Pursuant to 36 CFR 800.4(d)(1), implementing regulations of Section 106 of the National Historic Preservation Act, the FHWA finds that no historic properties would be affected by the proposed project.

The AKDOT&PF has conducted a historic inventory of the area, presented the results to your office, and all recommendations were resolved and agreed to excepting the following:

1. Ernest & Joanne Wolff Cabin (FAI-1622)
2. May House (FAI-1633)
3. Boyd Cabin (FAI-1643)
4. Jim Binkley House ((FAI-1644)
5. University Avenue Historic District (FAI-1657),
6. Riverboat Discovery Historic District (FAI-1658)
7.

Since neither of our offices were staffed with an historic architect, we submitted a request for determination of eligibility to the Keeper of the National Register. The Keeper has determined that the above properties are not eligible for listing on the Register. We are requesting your concurrence on our finding of no historic properties affected.

BUCKLE UP AMERICA

Please direct your concurrence or comments to me at the address above, by telephone at 907-586-7464, or by e-mail at Edrie.Vinson@fhwa.dot.gov.

Sincerely,

Edrie Vinson

Edrie Vinson,
Environmental Program Manager

Enclosure:
National Park Service Letter signed by the Keeper on 1/6/05

cc w/o enclosures:
Janet Brown, P.E., AKDOT&PF Northern Region, Engineering Manager
Laurie Mulcahy, AKDOT&PF HQ, Environmental Program Manager

FRANK H. MURKOWSKI, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF PARKS AND OUTDOOR RECREATION
OFFICE OF HISTORY AND ARCHAEOLOGY

550 W. 7TH AVENUE, SUITE 1310
ANCHORAGE, ALASKA 99501-3565
PHONE: (907) 269-8721
FAX: (907) 269-8908

April 22, 2005

File No.: 3130-1R FHWA
3330-6N FAI-1622, FAI-1633, FAI-1643, FAI-1644, FAI-1657, FAI-1658

SUBJECT: University Avenue Rehabilitation & Widening, Fairbanks, Alaska
Project No. 63213

Edrie Vinson
Environmental Project Manager
Federal Highway Administration
Alaska Division
P. O. Box 21648
Juneau, AK 99802

Dear Ms. Vinson,

The Alaska State Historic Preservation Office received your latest correspondence regarding the referenced project on March 14, 2005. We acknowledge the authority of the Keeper of the National Register to find the following properties not eligible for inclusion to the National Register of Historic Places:

- Ernest & Joanne Wolff Cabin (FAI-1622)
- May House (FAI-1633)
- Boyd Cabin (FAI-1643)
- Jim Binkley House (FAI-1644)
- University Avenue Historic District (FAI-1657)
- Riverboat Discovery Historic District (FAI-1658)

Since none of the properties within the project area have been found to be eligible, we concur with your finding of no historic properties affected for this project.

Please contact Stefanie Ludwig at 269-8720 if you have any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner
State Historic Preservation Officer

JEB:sll

Federal Highway Administration
APR 27 2005
Juneau, Alaska

Cc: Janet Brown, P. E., AKDOT & PF, Northern Region, Engineering Manager

APPENDIX E

ANALYSIS OF TRAFFIC NOISE IMPACTS

ANALYSIS OF TRAFFIC NOISE IMPACTS

UNIVERSITY AVENUE REHABILITATION AND WIDENING

PROJECT NO. RS-M-0617(3)/63213

Prepared for:

State of Alaska
Department of Transportation and Public Facilities
2301 Peger Road
Fairbanks, Alaska 99709

July 2005

Prepared by:

R&M Engineering Consultants
510 Fourth Street
Fairbanks, Alaska 99701

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ANALYSIS OF TRAFFIC NOISE IMPACTS
UNIVERSITY AVENUE REHABILITATION AND WIDENING
PROJECT NO. RS-M-0617(3)/63213

INTRODUCTION

The Alaska Department of Transportation and Public Facilities is proposing to upgrade and widen University Avenue in Fairbanks, Alaska between the Mitchell Expressway and Thomas Street, a distance of approximately 2.1 miles. This document presents the results of an analysis of the noise impacts of the project on land adjacent to University Avenue.

University Avenue is a principal north-south arterial in Fairbanks (see Figure 1). As such, University Avenue serves through traffic, access to neighborhood collector streets, and direct access to adjacent residential and commercial property. Land use in the area of the project, as defined by current land use zoning regulations, is identified in Figure 2.

Alternatives that have been evaluated for the project include retention of the existing facility without new construction (the "No-Build" altermative) and widening the existing four-lane facility to include four 12-foot travel lanes, a 19-foot raised center median, 6-foot shoulders and a grade separation to replace the existing at-grade crossing of University Avenue by the Alaska Railroad (the "Build") altermative.

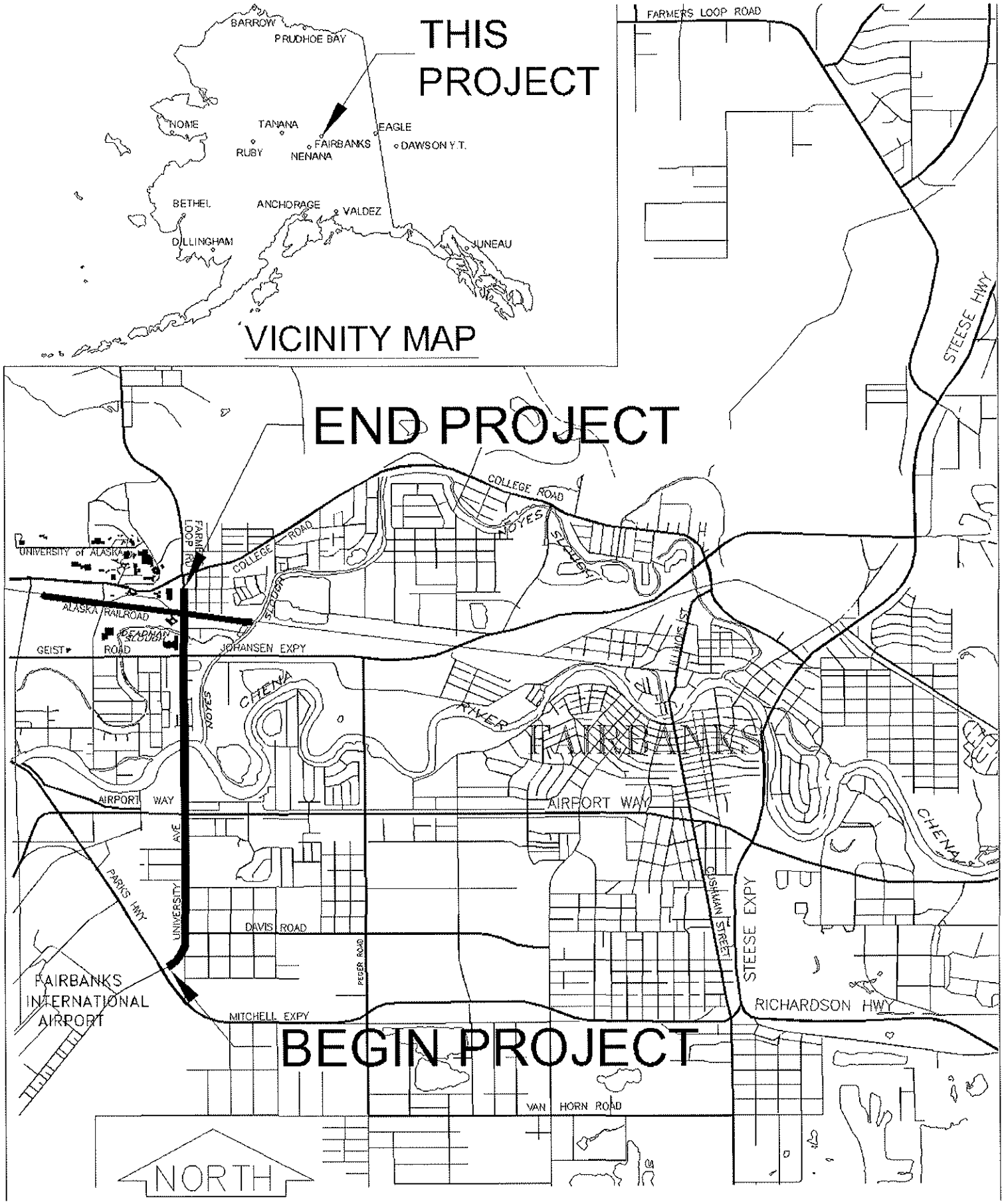

Figure 1. LOCATION AND VICINITY MAP

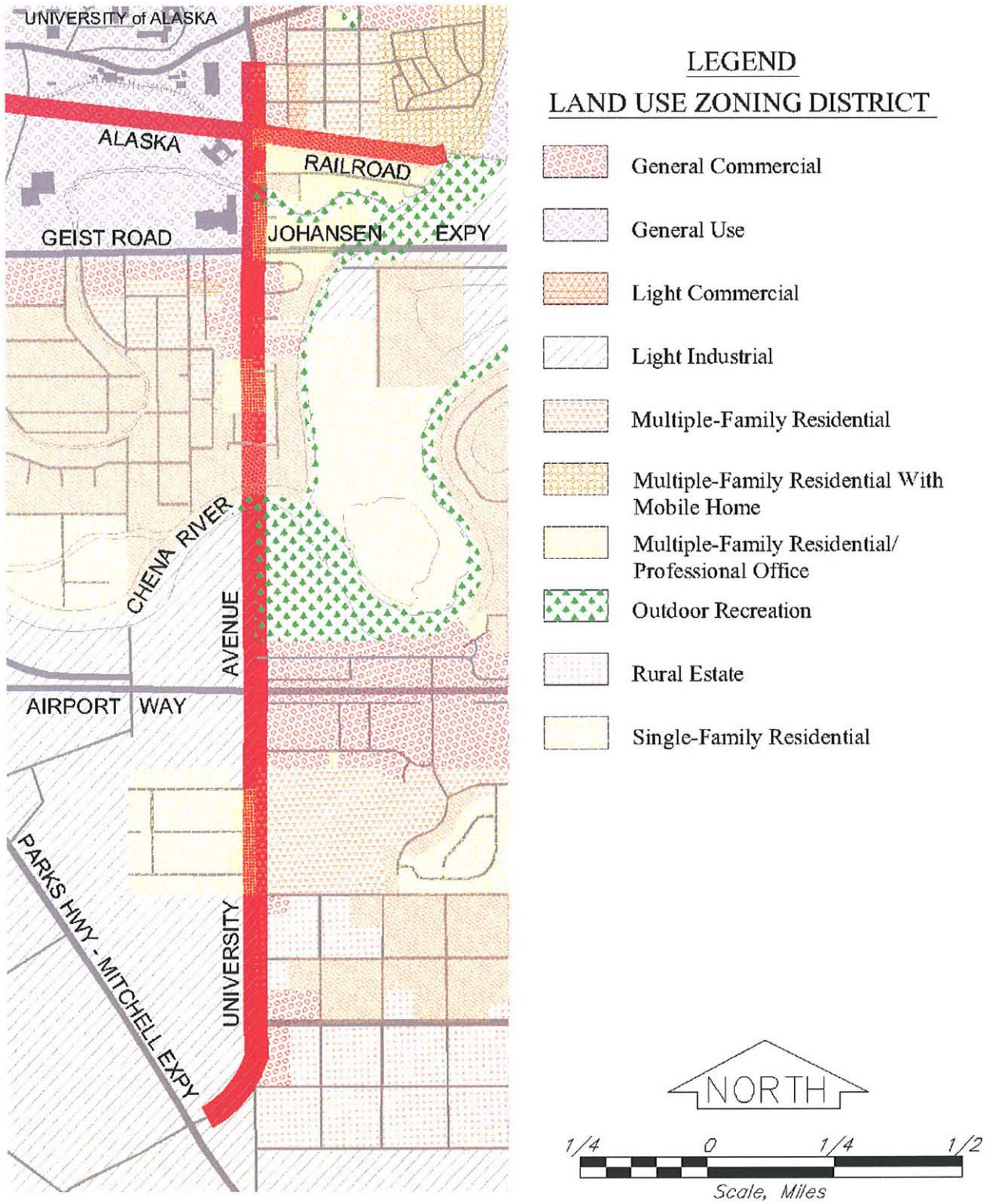

Figure 2. FAIRBANKS NORTH STAR BOROUGH LAND USE ZONING

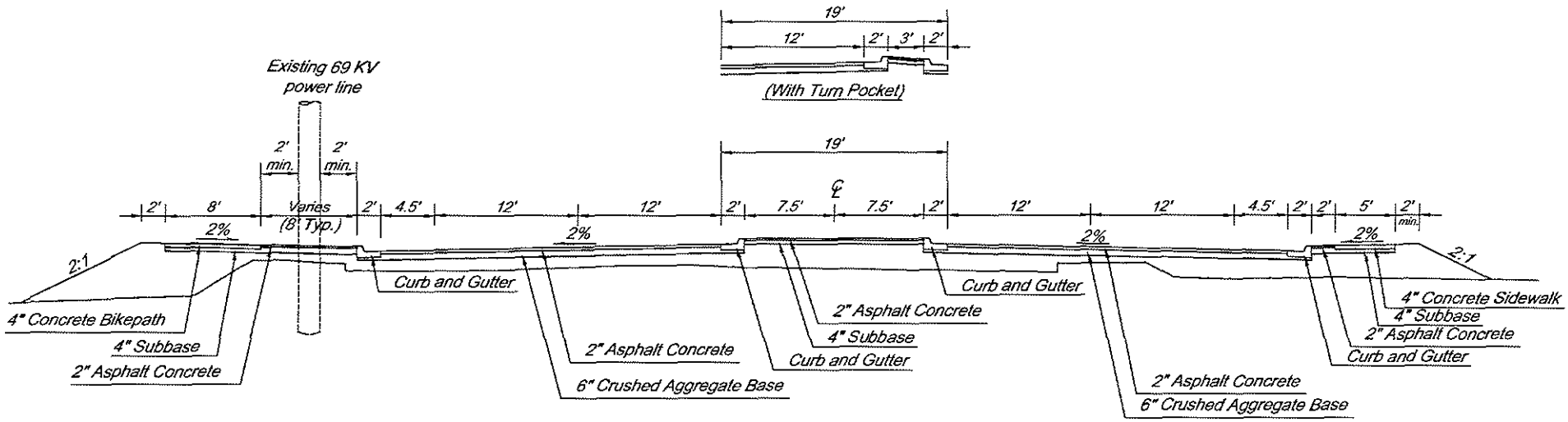

Figure 3. TYPICAL ROADWAY SECTION

The typical roadway section of the improvement included in the Build Alternative is shown in Figure 3.

FUNDAMENTALS OF TRAFFIC NOISE

Sound is created when an object vibrates, creating pressure waves in the air, like ripples on water. The detection of these pressure waves by the human ear is called sound. Noise is defined as unwanted sound. The range of sound intensities, from the faintest to the loudest sound that humans can hear, is so large that sound pressure is expressed on a logarithmic scale in units called decibels (dB). However, although sound is composed of various frequencies, the human ear does not respond to all frequencies. Therefore, when measuring highway noise, it is normal to filter out frequencies to which the human ear does not respond. Sound level meters are usually equipped with weighting circuits to filter out selected frequencies. The frequency weighting that best approximates how an average person hears sounds is the A-scale on a sound level meter. Sound pressure levels measured on the A-scale of an electronic sound level meter are abbreviated dBA.

Noise intensity varies with time in addition to frequency variations. Consequently, a noise level is commonly described as the steady-state A-weighted sound level that is equivalent to (i.e. contains same amount of acoustic energy) the actual time-varying, A-weighted sound level over a specified time period. For example, two sounds, one of which contains twice as much energy but lasts only half as long, have the same equivalent noise levels. For a one hour time period, traffic noise is commonly described as the hourly equivalent sound level, $L_{eq}(h)$. Another

common noise level descriptor is the L_{10}, which simply is the A-weighted sound level that is exceeded 10 percent of the time.

Typical sound levels of familiar noise sources are presented in Table 1.

Table 1. TYPICAL SOUND LEVELS

Noise Source	Decibels
Modified motorcycle (50 feet at 50 mph)	90
Medium truck (50 feet at 50 mph)	80
Pickup truck (50 feet at 50 mph)	70
Air-conditioning unit	60
Clothes dryer	50
Refrigerator	40
Library	30
Broadcast studio	20
Normal breathing	10
Hearing threshold	0

Source: "Highway Traffic Noise", FHWA, 1992

Because of the logarithmic decibel scale, a doubling of the number of noise sources, such as the volume of automobile traffic, will increase noise levels by 3 dBA. Thus, a noise source emitting a level of 60 dBA combined with another noise source of 60 dBA will result in a combined noise level of 63 dBA, not 120 dBA. Further, an increase or decrease of 10 dB in the sound level will be perceived by an observer to be a doubling or halving of the sound. For example, a sound at 70 dB will sound twice as loud as a sound at 60 dB.

Sound intensity decreases in proportion with the square of the distance from the source. For a roadway, noise levels will decrease 3 dB over pavement or other hard ground or 4.5 dB over soft ground for every doubled distance between the source and the receptor. For a point source, such

as stationary equipment, noise levels will decrease between 6 and 7.5 dB for every doubled distance from the source.

NOISE STANDARDS AND POLICIES

Federal standards for mitigating highway traffic noise are established within Code of Federal Regulations, Part 772 (23 CFR 772), "Procedures for Abatement of Highway Traffic Noise and Construction Noise". These procedures specify the requirements that must be met when using Federal-aid funds for highway projects

The guiding document of the Federal Highway Administration ("FHWA") for the analysis and abatement of highway traffic noise is the *Highway Traffic Analysis and Abatement – Policy and Guidance* (FHWA 1993). In this document, the FHWA defines a traffic noise impact to have occurred when the predicted hourly equivalent traffic noise levels approach or exceed the following values depending upon land use:

Land Use Category	Hourly Equivalent Traffic Noise
A	57dBA (Exterior)
B	67 dBA (Exterior)
C	72 dBA (Exterior)
D	-
E	52 dBA (Interior)

where land use categories are defined as follows:

Category A - Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.

Category B - Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.

Category C - Developed lands, properties, or activities not included in the above categories.

Category D - Undeveloped lands.

Category E - Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

A second criterion in the FHWA definition of a traffic noise impact is the occurrence of a substantial increase in existing noise levels.

The Alaska Department of Transportation and Public Facilities ("DOT&PF") policy and criteria for providing noise abatement measures on federal highway projects is presented in *Noise Abatement Policy*, dated March 1996. A copy of this document is included as Appendix I of this evaluation.

STUDY METHODS AND PROCEDURES

The potential noise impacts of the Build alternative have been evaluated in this noise study. The noise analysis was based on noise level calculations that were made utilizing FHWA Traffic Noise Model (TNM) Version 2.5 computer software. With this software, the geometry of the traffic lanes and the traffic volume, type, and speed are defined as input to the model, together with the location of traffic signals, topographic information, and the noise characteristics of the ground surface. The computer model were used to calculate the existing noise conditions and to predict the noise levels for the 2035 design year with both the Build and No Build alternatives.

TRAFFIC NOISE IMPACTS

Traffic noise impacts were evaluated using the Traffic Noise Model at 60 locations as shown in Figure 4. The results of the modeling indicate that traffic noise levels in the year 2004 at these locations will typically increase by 2 dBA by the year 2035 with the No-Build Alternative. Traffic noise levels resulting from year 2004 traffic volumes approach or exceed the traffic noise impact criteria at 17 of the 60 locations that were evaluated in the modeling. By the year 2035 with the No-Build Alternative, 26 of these 60 locations would experience traffic noise levels that approach or exceed the traffic noise impact criteria.

By the year 2035 with the Build Alternative, 27 of the 60 locations would experience traffic noise levels that approach or exceed the traffic noise impact criteria, including one location (Holiday House Apartments) that will experience a substantial increase in traffic noise. This increase will result from the removal of a building that is currently between University Avenue and the modeled location due to the construction of the project (See Tables 2 through 4).

Figure 4. RECEIVER LOCATIONS

Table 2. PREDICTED TRAFFIC NOISE IMPACTS (NO-BUILD ALTERNATIVE)

ID No.	Receiver Description	Address	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	Offset to Center of Nearest Existing Lane, ft.	2004 Noise Level $L_{eq}(h)$, dBA	2035 Noise Level $L_{eq}(h)$, dBA	Noise Increase dBA from 2004	Noise Impact Type
1	West Side Business Park	2175 University Avenue	C (72)	97/53	65	67	2	None
2	West Side Business Park Annex	2173 University Avenue	C (72)	185	57	59	2	None
3	Residence	2151 University Avenue	B (67)	40	67	69	2	E
4	University Fire Station	1950 University Avenue	C (72)	-190	58	60	2	None
5	Residence	1875 University Avenue	B (67)	120	61	64	3	None
6	Snow Goose Fibers & Quilting Co.	1875 University Avenue	C (72)	110	62	64	2	None
7	Sophie Station Hotel	1717 University Avenue	B (67)	77	64	66	2	A
8	Apartment Building	3712 Swenson Avenue	B (67)	-189	58	60	2	None
9	The Drilling Company and Apartments	1818 University Avenue	B (67)	-63	65	67	2	E
10	Fairbanks Funeral Home	3704 Erickson Avenue	B (67)	-67	65	67	2	A
11	Residence	1716 University Avenue	B (67)	-66	65	67	2	A
12	The Front End Shop	1432 University Avenue	C (72)	-72	66	68	2	None
13	Taco Bell	1450 University Avenue	C (72)	-93	65	67	2	None
14	Quisno's Subs	3588 Airport Way	C (72)	182/122	64	67	3	None
15	Alaska Department of Natural Resources	3700 Airport Way	C (72)	-216	60	62	2	None
16	Chena River State Recreation Site	1155 University Avenue	B (67)	160	64	65	1	A
17	Chena River State Recreation Site	1155 University Avenue	B (67)	120	66	68	2	E
18	Chena River State Recreation Site	1155 University Avenue	B (67)	79	66	68	2	E
19	Chena River State Recreation Site	1155 University Avenue	B (67)	126	63	65	2	A
20	Chena River State Recreation Site	1155 University Avenue	B (67)	103	64	66	2	E
21	Chena River State Recreation Site	1155 University Avenue	B (67)	81	66	67	1	E
22	Chena River State Recreation Site	1155 University Avenue	B (67)	116	63	65	2	A
23	Bureau of Land Management	1150 University Avenue	C (72)	-173	61	63	2	None
24	Chena River State Recreation Site	1150 University Avenue	B (67)	143	62	63	1	None
25	Chena River State Recreation Site	1155 University Avenue	B (67)	160	61	63	2	None
26	Residence	475 University Avenue	B (67)	86	65	66	1	A
27	Residence	480 University Avenue	B (67)	-89	65	66	1	A
28	Residence	490 University Avenue	B (67)	-49	68	70	2	E
29	Residence	3625 Goldizen Avenue	B (67)	-53	68	69	1	E
30	Residence	500 University Avenue	B (67)	-63	67	68	1	E
31	Assemblies of God Central Mission Church	3548 Goldizen Avenue	B (67)	102	64	66	2	A
32	Residence	510 University Avenue	B (67)	-60	67	69	2	E
33	Residence	518 Halvorson Road	B (67)	122	63	65	2	[1]None
34	Residence	520 University Avenue	B (67)	-62	67	68	1	E
35	Residence	540 University Avenue	B (67)	-238	58	60	2	None
36	Web Weavers	565 University Avenue	C (72)	63	67	68	1	None
37	Residence (Deck at rear of house))	581 University Avenue	B (67)	220	60	61	1	None
38	Residence (front of house)	581 University Avenue	B (67)	144	66	68	2	E
39	University Dental Clinic	570 University Avenue	C (72)	68	59	60	1	None
40	Residence	3690 Widener Lane	B (67)	111	63	65	2	A
41	Golden Heart Veterinary Services	615 University Avenue	C (72)	123	63	65	2	None
42	Attorney's Plaza	590 University Avenue	C (72)	-72	66	68	2	None
43	Holiday House Apartments	655 Indiana Avenue	B (67)	262	57	58	1	None
44	Holiday House Apartments	655 Indiana Avenue	B (67)	42	69	71	2	E
45	Holiday House Apartments	655 Indiana Avenue	B (67)	75	55	57	2	None
46	University Plaza	610 University Avenue	C (72)	-73	66	68	2	None
47	Holiday House Apartments	655 Indiana Avenue	B (67)	125	60	62	2	None
48	Oasis Restaurant & Lounge	734 University Avenue	C (72)	-82	65	67	2	None
49	Todd Wentz, DDS MS	701 University Avenue	C (72)	55	67	69	2	None
50	Wells Fargo Bank Alaska	794 University Avenue	C (72)	-53	69	70	1	A
51	Wolf Run Restaurant	3350 Wolf Run	C (72)	155	64	66	2	None
52	Residence	895 University Avenue	B (67)	37	69	72	3	E
53	University Park Bible Church	3681 Sandvik Street	B (67)	234	57	59	2	None
54	Parkwest Apartments	2006 Sandvik Street	B (67)	224	57	59	2	None
55	University Park Building	1000 University Avenue	C (72)	-141	61	63	2	None
56	Residence	1045 University Avenue	B (67)	61	64	66	2	A
57	University Avenue Truck & Car Wash	3701 Cameron Street	C (72)	78	63	66	3	None
58	Utility Services of Alaska, Inc.	3691 Cameron Street	C (72)	233	55	58	3	None
59	Sam's Sourdough Cafe	3702 Cameron Street	C (72)	59	65	67	2	None
60	University Baptist Church	1197 University Avenue	B (67)	105	61	63	2	None

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria

[1]No noise impact (2035 noise levels shown are rounded upwards from a lower number)

Table 3. PREDICTED TRAFFIC NOISE IMPACTS (BUILD ALTERNATIVE)

ID No.	Receiver Description	Address	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	Offset to Center of Nearest Existing Lane, ft.	Offset to Center of Nearest Build Lane, ft.	2035 Noise Level $L_{eq}(h)$, dBA	Noise Increase dBA From 2004	Noise Impact Type
1	West Side Business Park	2175 University Avenue	C (72)	97/53	91/49	68	3	None
2	West Side Business Park Annex	2173 University Avenue	C (72)	185	179	60	3	None
3	Residence	2151 University Avenue	B (67)	40	34	70	3	E
4	University Fire Station	1950 University Avenue	C (72)	-190	-183	61	3	None
5	Residence	1875 University Avenue	B (67)	120	108	65	4	[1]None
6	Snow Goose Fibers & Quilting Co.	1875 University Avenue	C (72)	110	98	65	3	None
7	Sophie Station Hotel	1717 University Avenue	B (67)	77	64	67	3	E
8	Apartment Building	3712 Swenson Avenue	B (67)	-189	-183	62	4	None
9	The Drilling Company and Apartments	1818 University Avenue	B (67)	-63	-56	68	3	E
10	Fairbanks Funeral Home	3704 Erickson Avenue	B (67)	-67	-62	68	3	E
11	Residence	1716 University Avenue	B (67)	-66	-61	68	3	E
12	The Front End Shop	1432 University Avenue	C (72)	-72	-67	68	2	None
13	Taco Bell	1450 University Avenue	C (72)	-93	-82	67	2	None
14	Quisno's Subs	3588 Airport Way	C (72)	182/122	153/122	67	3	None
15	Alaska Department of Natural Resources	3700 Airport Way	C (72)	-216	-204	62	2	None
16	Chena River State Recreation Site	1155 University Avenue	B (67)	160	149	64	0	None
17	Chena River State Recreation Site	1155 University Avenue	B (67)	120	111	65	-1	A
18	Chena River State Recreation Site	1155 University Avenue	B (67)	79	74	67	1	E
19	Chena River State Recreation Site	1155 University Avenue	B (67)	126	126	65	2	[1]None
20	Chena River State Recreation Site	1155 University Avenue	B (67)	103	103	66	2	A
21	Chena River State Recreation Site	1155 University Avenue	B (67)	81	81	67	1	E
22	Chena River State Recreation Site	1155 University Avenue	B (67)	116	116	65	2	A
23	Bureau of Land Management	1150 University Avenue	C (72)	-173	-159	63	2	None
24	Chena River State Recreation Site	1155 University Avenue	B (67)	143	143	64	2	None
25	Chena River State Recreation Site	1155 University Avenue	B (67)	160	160	63	2	None
26	Residence	475 University Avenue	B (67)	86	73	68	3	E
27	Residence	480 University Avenue	B (67)	-89	-87	65	0	[1]None
28	Residence	490 University Avenue	B (67)	-49	-50	69	1	E
29	Residence	3625 Goldizen Avenue	B (67)	-53	-53	69	1	E
30	Residence	500 University Avenue	B (67)	-63	-63	68	1	E
31	Assemblies of God Central Mission Church	3548 Goldizen Avenue	B (67)	102	82	67	3	A
32	Residence	510 University Avenue	B (67)	-60	-60	68	1	E
33	Residence	518 Halvorson Road	B (67)	122	103	66	3	A
34	Residence	520 University Avenue	B (67)	-62	-62	68	1	E
35	Residence	540 University Avenue	B (67)	-238	-238	61	3	None
36	Web Weavers	565 University Avenue	B (72)	63	44	70	3	[1]None
37	Residence (Deck at rear of house))	581 University Avenue	B (67)	220	220	62	2	None
38	Residence (front of house)	581 University Avenue	B (67)	144	125	69	3	E
39	University Dental Clinic	570 University Avenue	C (72)	68	49	61	2	None
40	Residence	3690 Widener Lane	B (67)	111	91	66	3	A
41	Golden Heart Veterinary Services	615 University Avenue	C (72)	123	103	66	3	None
42	Attorney's Plaza	590 University Avenue	C (72)	-72	-73	68	2	None
43	Holiday House Apartments	655 Indiana Avenue	B (67)	262	242	60	3	None
44	Holiday House Apartments	655 Indiana Avenue	B (67)	42	22	72	3	E
45	Holiday House Apartments	655 Indiana Avenue	B (67)	75	56	69	14	S
46	University Plaza	610 University Avenue	C (72)	-73	-73	68	2	None
47	Holiday House Apartments	655 Indiana Avenue	B (67)	125	108	66	6	A
48	Oasis Restaurant & Lounge	734 University Avenue	C (72)	-82	-82	68	3	None
49	Todd Wentz, DDS MS	701 University Avenue	C (72)	55	43	70	3	A
50	Wells Fargo Bank Alaska	794 University Avenue	C (72)	-53	-53	70	1	A
51	Wolf Run Restaurant	3350 Wolf Run	C (72)	155	135	67	3	None
52	Residence	895 University Avenue	B (67)	37	34	72	3	E
53	University Park Bible Church	3681 Sandvik Street	B (67)	234	230	61	4	None
54	Parkwest Apartments	2006 Sandvik Street	B (67)	224	220	62	5	None
55	University Park Building	1000 University Avenue	C (72)	-141	-127	66	5	None
56	Residence	1045 University Avenue	B (67)	61	57	67	3	E
57	University Avenue Truck & Car Wash	3701 Cameron Street	C (72)	78	79	68	5	None
58	Utility Services of Alaska, Inc.	3691 Cameron Street	C (72)	233	234	60	5	None
59	Sam's Sourdough Cafe	3702 Cameron Street	C (72)	59	63	68	3	None
60	University Baptist Church	1197 University Avenue	B (67)	105	108	65	4	[1]None

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria

[1]No noise impact (2035 noise levels shown are rounded upwards from a lower number)

Table 4. 2035 NOISE LEVEL CHANGES WITH THE BUILD ALTERNATIVE

ID No.	Receiver Description	Activity Category (Abatement Criterion) $L_{eq}(h)$, dBA	2004 Noise Level $L_{eq}(h)$, dBA	2035 No-Build Noise Level $L_{eq}(h)$, dBA	2035 Build Noise Level $L_{eq}(h)$, dBA	Build Noise Increase from Existing, dBA	Build Noise Increase from 2035 NoBuild, dBA	Noise Impact Type
3	Residence	B (67)	67	69	70	3	1	E
7	Sophie Station Hotel	B (67)	64	66	67	3	1	E
9	The Drilling Company and Apartments	B (67)	65	67	68	3	1	E
10	Fairbanks Funeral Home	B (67)	65	67	68	3	1	E
11	Residence	B (67)	65	67	68	3	1	E
17	Chena River State Recreation Site	B (67)	63	65	65	2	0	A
18	Chena River State Recreation Site	B (67)	66	68	67	1	-1	E
20	Chena River State Recreation Site	B (67)	64	66	66	2	0	A
21	Chena River State Recreation Site	B (67)	66	67	67	1	0	E
22	Chena River State Recreation Site	B (67)	63	65	65	2	0	A
26	Residence	B (67)	65	66	68	3	2	E
27	Residence	B (67)	65	66	65	0	-1	A
28	Residence	B (67)	68	70	69	1	-1	E
29	Residence	B (67)	68	69	69	1	0	E
30	Residence	B (67)	67	68	68	1	0	E
31	Assemblies of God Central Mission Church	B (67)	64	66	67	3	1	A
32	Residence	B (67)	67	69	68	1	-1	E
33	Residence	B (67)	63	65	66	3	1	A
34	Residence	B (67)	67	68	68	1	0	E
38	Residence (front of house)	B (67)	66	68	69	3	1	E
40	Residence	B (67)	63	65	66	3	1	A
44	Holiday House Apartments	B (67)	69	71	72	3	1	E
45	Holiday House Apartments	B (67)	55	57	69	14	12	S
47	Holiday House Apartments	B (67)	60	62	66	6	4	A
49	Todd Wentz, DDS MS	C (72)	67	69	70	3	1	A
50	Wells Fargo Bank Alaska	C (72)	69	70	70	1	0	A
52	Residence	B (67)	69	72	72	3	0	E
56	Residence	B (67)	64	66	67	3	1	E

Impact Types: S = Substantial Increase (10 dBA or more) A = Approach Noise Abatement Criteria E = Exceed Noise Abatement Criteria

RAILROAD NOISE IMPACTS

The Build alternative for the project includes the construction of a grade separation for the railroad over University Avenue. To enable the railroad to continue to operate during construction, the grade separation will be built on a new alignment that is approximately 42 feet south of and parallel to the existing track. About 5,800 feet of new mainline track will be required. The new track will be about seventeen feet higher than the existing track at University Avenue.

The railroad construction included in the Build alternative will affect the noise levels in adjoining area as a result of the following:

- With the elimination of the existing at-grade crossing of University Avenue, it will not be necessary to sound the signal horn when trains are approaching the University Avenue crossing. The U.S. Department of Transportation regulations require that the train's warning signal produce a minimum level of 98 dBA when measured from a distance of 100 feet.

- Most of the new track is to be substantially higher than the existing track. As a result, the effect of the ground in absorbing sound energy is lessened, effectively reducing the attenuation of train noise with distance (see Figure 5).

- Since the new track is be located south of the existing track, existing noise receptors that are south of the railroad right-of-way will closer to the new track than to the

existing track, increasing the level of train noise that would otherwise be experienced. Conversely, existing noise receptors that are north of the railroad right-of-way will be farther from the new track than from the existing track, decreasing the level of train noise that would otherwise be experienced.

- The new railroad track is to be approximately fifteen feet higher than the existing track in the vicinity of the athletic fields and related facilities that are south of the railroad right-of-way near the West Valley High School and the Hutchison Institute of Technology. The embankment for the new railroad track will provide shielding of some of the noise from the University of Alaska power plant complex that is located on the north side of the railroad right-of-way in this area.

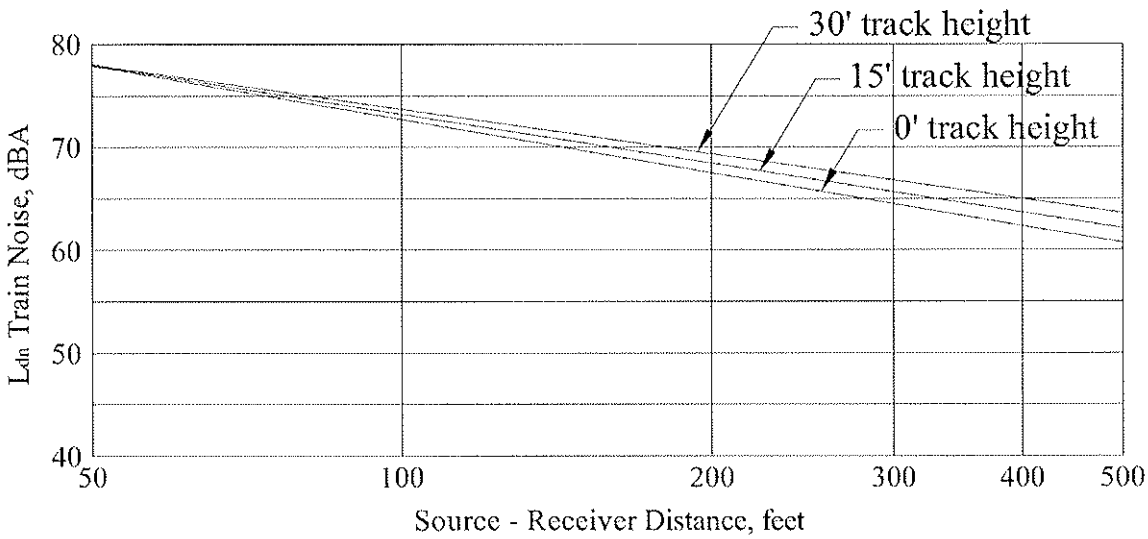

Figure 5. TYPICAL TRAIN NOISE ATTENUATION WITH DISTANCE

Applicable railroad noise impact criteria depend on land use, designated as either Category 1, Category 2 or Category 3. Category includes tracts of land where quiet is an essential element in their intended purpose, such as outdoor concert pavilions or National Historic Landmarks where outdoor interpretation routinely takes place. Category 2 includes residences and buildings where people sleep, while Category includes institutional land uses with primarily daytime and evening use, such as schools, places of worship and libraries.

The railroad noise impact criteria do not apply to most commercial or industrial uses because activities within these buildings are usually compatible with higher noise levels.

For land use Categories 1 and 3, exposure to railroad noise is measured in terms of the hourly equivalent sound level (L_{eq}) for the noisiest hour of railroad-related activity during hours of noise sensitivity. For Category 2 land uses, exposure to railroad noise is defined by the day-night sound level (L_{dn}), which describes a receiver's cumulative noise exposure over a full 24-hour

period, with events between 10 pm and 7 am being increased by ten decibels to account for greater nighttime sensitivity to noise.

The railroad noise impact criteria shown on Figure 6 are based on comparison of the existing outdoor noise levels and the future outdoor noise levels with the proposed project. Below the lower curve in Figure 6, a proposed project is considered to have no noise impact since the project will not result in a significant number of people that are highly annoyed by the new noise. Project noise above the upper curve is considered to cause severe impact since a significant percentage of people would be highly annoyed by the new noise. Between the two curves, the proposed project is judged to have an impact, though not severe. The change in the noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community.

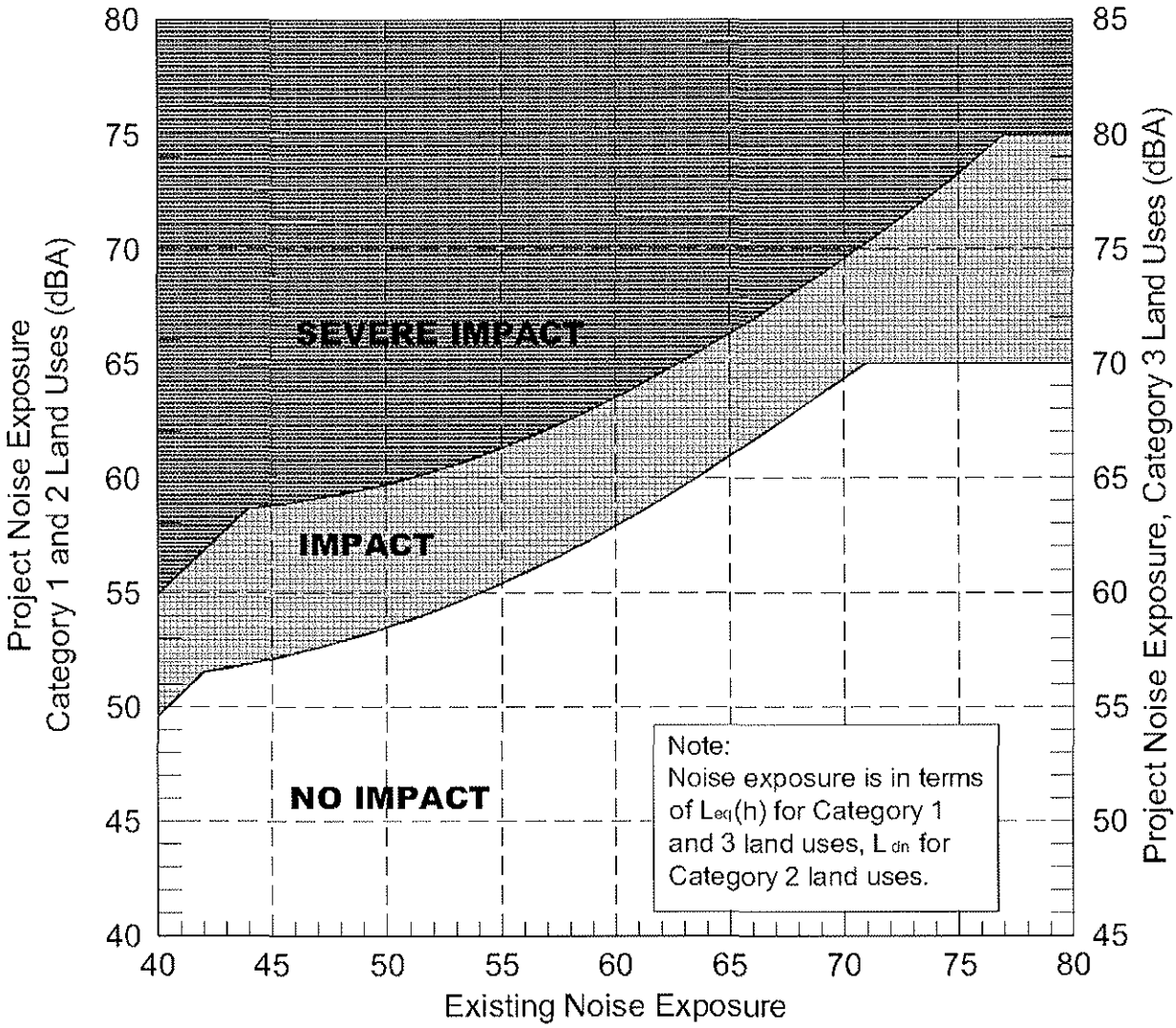

Figure 6. RAILROAD NOISE IMPACT CRITERIA

Railroad noise levels in the vicinity of the project were calculated utilizing the relationships presented in "Transit Noise and Vibration Impact Assessment" published by the Federal Transit Administration. Railroad operational characteristics used in the calculations included the following:

Train operating speed		20 mph
Number of trains per day	7am to 10pm	5
	10pm to 7am	3
Average number of locomotives per train		3
Average number of rail cars per train		60
Sound exposure level (SEL) of locomotives at 50 feet from the track		92 dBA
Sound exposure level (SEL) of rail cars at 50 feet from the track		82 dBA
Sound exposure level (SEL) of signal horn at 50 feet from the track (No-Build Alternative only)		108 dBA

The level of ambient noise that was used in the noise modeling was 55 dBA. This was determined by applying a relationship between population density and ambient noise that was developed by the U.S. Environmental Protection Agency. exclusive of railroad and highway noise. By this relationship, ambient noise (dBA), exclusive of railroad, highway, and airport noise, is equal to the expression

$$L_{dn}=22+10\log(p)$$

where p is the population density in persons per square mile. The population density of the area is 2147 persons per square mile, per the 2000 U.S. census data for the College census tract.

The levels of railroad noise for the No-Build and Build Alternatives were modeled at the ten typical receiver locations shown in Figure 7. The noise levels determined from this modeling are presented in Table 5.

As shown in Table 5, noise levels within the vicinity of the railroad after construction of the project are projected to be 8 to 12 dBA lower than existing noise levels using the L_{dn} noise metric for Category 2 land uses, and 5 dBA lower than existing noise levels with the $L_{eq}(h)$ noise metric for Category 1 and 3 land uses. The lower sound levels principally result from the absence of signal horn noise with the Build alternative due to the elimination of the at-grade crossing of University Avenue.

With Category 2 land uses, railroad noise impacts will be "Severe" at distances that are less than about 700 feet with the No-Build alternative and at distances of less than about 170 feet with the Build alternative. No railroad noise impact will be experienced at distances of more than about 2.5 miles from the track with the No-Build alternative and at distances of more than about ¾ mile from the track with the Build alternative.

It should be noted that, at an existing noise exposure of 55 dBA exclusive of any railroad noise, the addition of virtually any level of railroad noise will result in a noise impact, even though the railroad noise levels resulting from construction of the project are substantially lower than existing railroad noise levels (See Figure 6).

With Category 1 and 3 land uses, railroad noise impacts will be "Severe" at distances that are less than about 120 feet from the track with the No-Build alternative. No railroad noise impact will be experienced at distances of more than about 325 feet from the track with the No-Build alternative and at distances of more than about 75 feet from the track with the Build alternative.

Construction of noise barriers to mitigate railroad noise impacts is not considered to be reasonable, based on DOT&PF noise abatment criteria, since the railroad noise levels after construction of the project are predicted to be less than existing noise levels and expected future noise if the project is not constructed. Further, the future levels of railroad noise are expected to be less than the threshold of 65 dBA that is required for reasonable construction of noise barriers under the DOT&PF noise abatement criteria.

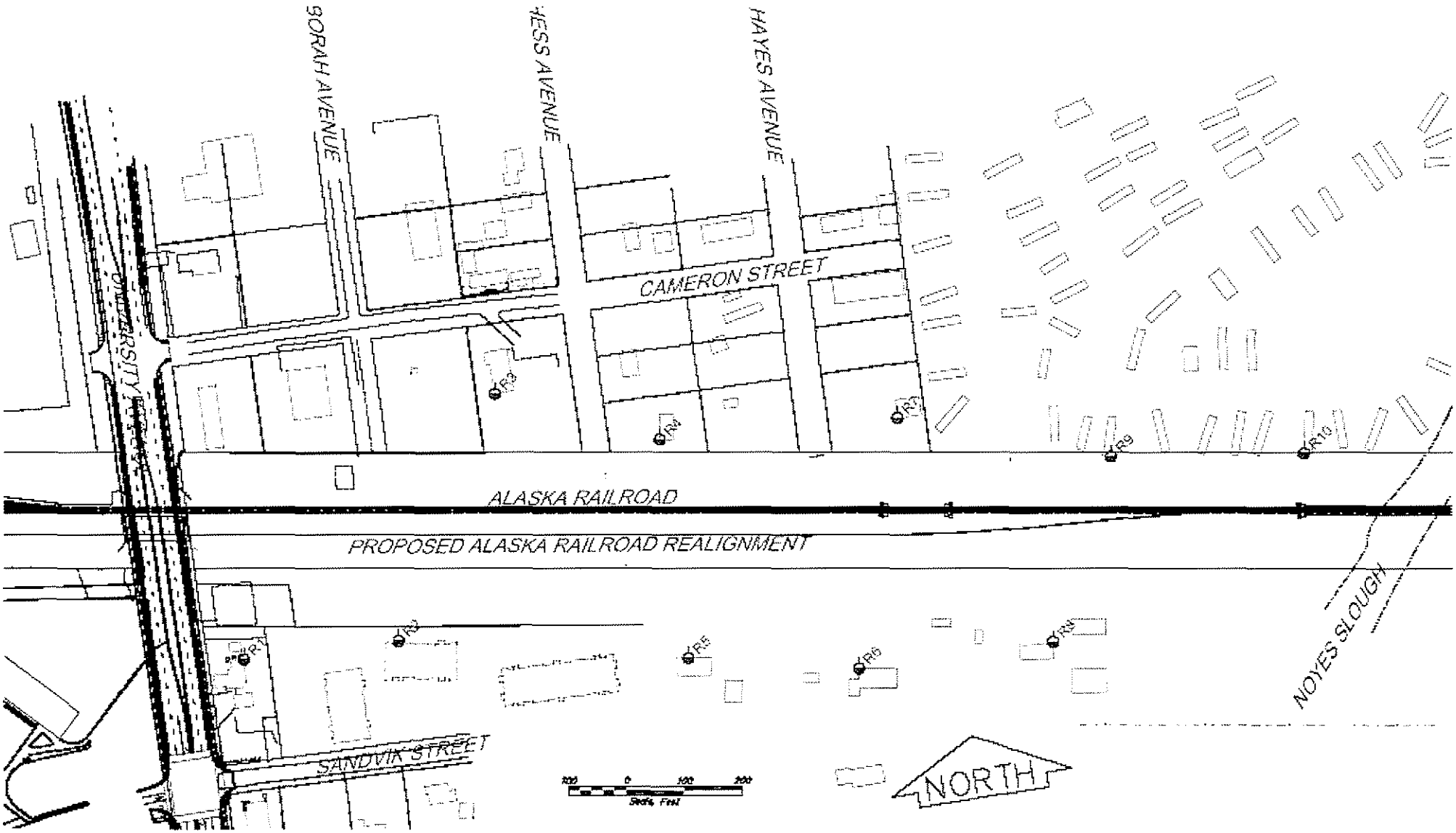

Figure 7. RAILROAD NOISE RECEIVER LOCATIONS

Table 5. RAILROAD NOISE - COMPARISON OF NO-BUILD AND BUILD ALTERNATIVES

No.	Receiver Description	Land Use Cat-egory	No-Build Alternative			Build Alternative				
			Receiver offset (feet)	Train Noise (dBA)*	Combined Train/Ambient Noise Exposure (dBA)*	Receiver offset (feet)	Train Noise (dBA)*	Combined Train/Ambient Noise Exposure (dBA)*	Noise level reduction (dBA)*	Project Noise Impact
R1	Single Family Residence	2	258	67	67	216	73	59	8	Impact
R2	Apartment Building	2	227	68	68	184	73	60	8	Impact
R3	Child Care Facility	3	201	62	63	244	55	58	5	None
R4	Single Family Residence	2	122	72	72	165	74	60	12	Impact
R5	Single Family Residence	2	255	67	67	212	73	58	9	Impact
R6	Single Family Residence	2	273	66	67	231	72	58	9	Impact
R7	Single Family Residence	2	160	70	70	202	73	59	12	Impact
R8	Bed and Breakfast	2	233	68	68	205	73	59	9	Impact
R9	Mobile Home	2	93	74	74	109	75	63	11	Severe
R10	Mobile Home	2	99	73	73	99	76	63	10	Severe

*Notes:

Train noise metric is Outdoor L_{dn} in Land Use Category 2 and Outdoor $L_{eq}(h)$ in Land Use Category 3

The ambient noise level L_{dn}, excluding train, highway, and aircraft noise (dBA) is 55.

CONSTRUCTION NOISE

It is difficult to predict reliable levels of construction noise at a particular location. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. The most prevalent noise sources during construction would be the engines that power equipment. Typical ranges of noise levels from construction equipment are presented on Table 6.

Table 6. NOISE RANGES OF CONSTRUCTION EQUIPMENT

Equipment	Examples	Noise Level (dBA) at 50 feet
Earth Moving	Compactors, loaders, backhoes, pavers	73-96
Materials Handling	Concrete mixers, pumps, cranes, derricks	74-88
Stationary	Pumps, compressors, generators	69-87
Hauling	Trucks, scrapers	83-94
Impact Equipment	Pile drivers	95-106
Impact Tools	Jackhammers, rock drills, pneumatic wrenches	81-98

It should be noted that, since many types of construction equipment are normally moving, the average equivalent noise levels would typically be less than the noise levels shown on Table 6.

Daily construction normally occurs during daytime hours when occasional loud noises are more tolerable. Although high noise levels may occur on an intermittent basis, such as during pile driving operations for the Chena River bridge crossing, no single location is expected to be exposed to construction noise of long duration. Therefore, extensive disruption of normal activities is not anticipated.

POTENTIAL MITIGATION MEASURES

Policies and guidelines of the FHWA and DOT&PF require an analysis of roadway projects to "identify noise abatement measures which are reasonable and feasible and which are likely to be incorporated in the project." The evaluation of feasibility involves a determination as to whether a noise abatement measure will achieve the desired level of noise reduction at a particular location. The DOT&PF policy also includes the evaluation of safety and maintenance requirements as part of the feasibility assessment. Reasonableness is based on the practicality of an abatement measure, considering such factors as cost, amount of noise reduction, and aesthetics.

Measures to provide noise abatement on highway projects can include construction of noise barriers, traffic management, horizontal or vertical alignment shifts, elevation or depression of the roadway, and insulation of public buildings. Of these mitigation measures, the noise barrier option is normally the most practical, reasonable and effective choice.

An analysis of design requirements and costs for the construction of noise barriers to reduce year 2035 traffic noise levels by 5 dBA has been performed. The results of the analysis are presented in Table 7.

Construction of noise barriers may be feasible for reduction of future noise levels where the noise criteria are exceeded. Table 8 presents a comparision of conditions at possible noise

barrier locations with criteria for reasonableness as identified in the DOT&PF Noise Abatement Policy.

As indicated on Table 8, two noise barrier configurations were evaluated at the Chena River State Recreation Site, a continuous noise wall and a noise wall with an intermediate gap for permitting driveway access between University Avenue and the Recreation Site. A noise barrier at this location is not considered to be warranted, however, since a six-foot high solid wood fence is planned along the west boundary of the Recreation Site as part of the changes in access and related improvements to the Recreation Site in connection with the University Avenue project. The planned fence will reduce noise levels at receptors on this site from a maximum of 67 dBA to less than 63 dBA, below the threshold of the noise impact criteria. Consequently, construction of a noise barrier at this location is not necessary for mitigation of noise impacts.

The following conclusions are made, based on the results of the noise barrier analysis:

1. With the exception on one receiver location at the Holiday House Apartments, the future noise levels with the Build Alternative do not exceed the existing noise level by at least 5 dBA as required by the DOT&PF policy for noise barrier reasonableness (See Table 3). The predicted year 2035 noise levels with the Build Alternative represent an increase of 3 dBA or less over the existing noise levels. Such an increase in the noise level would be barely perceptible. A noise barrier to reduce future noise levels at the Holiday House Apartments is warranted under the DOT&PF criteria if desired by most impacted and benefitting residents.

2. The future noise levels with the Build Alternative do not exceed the future noise level of the No Build Alternative by at least 3 dBA as required by the DOT&PF policy for noise barrier reasonableness. As indicated in Table 4, with the exception of receivers at the Holiday House Apartments, the predicted noise levels with the Build Alternative represent an increase 2 dBA or less over the No Build Alternative in the Year 2035. At the Holiday House Apartments, an existing apartment building would be removed under the Build Alternative, resulting in an increase in the level of traffic noise in the area that is behind the building.

Table 7. NOISE BARRIER ANALYSIS

Barrier Number and Description	Receiver Number	2035 Peak-Hr Noise Levels			Noise Barrier Design			Noise Barrier Costs						Cost per Benefited Residence
		Without Barrier (dBA)	With Barrier (dBA)	Noise Reduction (dBA)	Wall Length (Ft.)	Wall Height (Ft.)	Wall Area (Sq. Ft.)	Wall Cost ($25/Sq.Ft)	R.O W. to be Acquired (Sq. Ft.)	Estimated R.O.W. Cost per Sq.Ft	R.O.W. Cost	Total Barrier Cost	Number of Benefited Residences	
1. Sophie Station Hotel	7	68	63	5	170	18-22	3540	$ 88,500	80	$ 2.40	$ 192	$88,692	6[1]	$ 14,782
2. 1818 University Avenue	9	68	62	6	280	4-7	1780	44,500	985	1.80	1,773	46,273	1	46,273
3. Erickson to Mitchell Avenue	10	68	62	6										
	11	67	61	6	420	4-10	3321	83,025	842	1.80	1,516	84,541	6	14,090
4a. Chena River State Recreation Area (continuous wall)	17	65	60	5	1180	4-10	8440	211,000	0			211,000	8[2]	26,375
	18	67	60	7										
	20	66	60	6										
	21	67	61	6										
	22	65	60	5										
4b. Chena River State Recreation Area (wall with gap at driveway)	17	65	60	5	1106	6-10	8495	212,376	0			212,376	8[2]	26,547
	18	67	61	6										
	20	66	61	5										
	21	67	60	7										
	22	65	60	5										
5. 475 University Avenue	26	67	62	5	318	4-6	1829	45,725	45	3.45	155	45,880	1	45,880
6. Chena River to Goldizen	28	69	64	5										
	29	69	63	6	210	0-4	760	19,000	74	3.45	255	19,255	2	9,628
7. Goldizen Avenue North	30	68	63	5										
	32	68	63	5										
	34	68	63	5	360	4-6	2100	52,500	1427	2.25	3,211	55,711	3	18,570
8. Goldizen to Widner	31	67	62	5										
	33	66	60	6										
	38	69	64	5	720	6	4320	108,000	1460	3.38	4,928	112,928	2	56,464
9. 3690 Widner Lane	40	66	61	5	300	4-8	2127	53,175	220	2.55	561	53,736	1	53,736
10. Holiday House Apartments	45	69	64	5										
	47	66	60	6	230	3-6	1310	32,750	0			32,750	6	5,458
11. 895 University Avenue	52	72	67	5	130	6	780	19,500	440	8.40	3,696	23,196	1	23,196
12. 1045 University Avenue	56	67	62	5	260	4-7	1576	39,400	463	3.90	1,806	41,206	1	41,206

[1]6 hotel rooms are benefited
[2]8 campsites are benefited

Table 8. CONFORMITY TO NOISE BARRIER REASONABLENESS CRITERIA

Criterion	Possible Noise Barrier Location											
	Sophie Station Hotel	1818 University Avenue	Erickson to Mitchell Avenue	Chena River State Rec. Site	475 University Avenue	Chena River to Goldizen	Goldizen Avenue North	Goldizen to Widner Lane	3690 Widner Lane	Holiday House Apts	895 University Avenue	1045 University Avenue
Less than $25,000 cost per impacted and benefited residence	Yes	No	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No
Most impacted and benefittng residents want a noise barrier	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Receivers predate initial highway construction	No	No	No	No	No	No	No	No	No	No	No	No
Most receivers have existed for at least 10 years	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Future build noise levels are at least 65 dBA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Future build noise levels are at least 5 dBA greater than the existing noise levels	No	No	No	No	No	No	No	No	No	Yes	No	No
Future build noise levels are at least 3 dBA greater than future no-build noise levels	No	No	No	No	No	No	No	No	No	Yes	No	No

Construction Noise Mitigation

Provisions will be included in the plans and specifications requiring the contractor to make reasonable efforts to minimize construction noise through abatement measures such as work-hour controls and maintenance of muffler systems.

Additional measures to mitigate construction noise may be taken during construction if noise complaints are received in the course of construction activities. Such measures could include notifying nearby residents whenever extremely noisy operations will be occurring, rescheduling construction operations to avoid periods of noise annoyance, or relocating stationary construction equipment as far from noise sensitive locations as possible.