Circulation and Parking Plan for the University of Alaska Fairbanks

Fairbanks, Alaska
March 2004

Section 5

Non-Motorized Circulation Plan

Non-Motorized Circulation Plan

Pedestrian and bicycle accessibility is the most important element of transportation within the university environment once students are on campus. Good pedestrian and bicycle accessibility is critical since it is not realistic to design a parking and vehicular circulation system that provides every student, visitor and employee with the ability to drive to their destinations. In addition, many students do not own automobiles. Pedestrian accessibility can be broken into the following categories:

- Accessibility between residential buildings and parking areas to educational and support facilities on the campus.
- Accessibility between classroom, administration, and research buildings.
- Accessibility to food service and recreational facilities from residential buildings.
- Accessibility to off-campus activities and destinations.

It is important to provide good accessibility for all of these categories in order for the campus to function efficiently. The analysis of existing conditions revealed that accessibility within defined activity centers is good, while there are significant gaps in the pedestrian system between the major activity centers and parking areas. In addition to the numerous gaps in the system, the topography of the campus can make north/south pedestrian connections difficult. For these reasons, many of the most direct pedestrian routes require that pedestrians share the roadway with motor vehicles, or traverse the steep terrain in undeveloped areas.

Key Plan Components

The recommended strategies to improve the non-motorized transportation system are depicted graphically in Figure 7. Each of the strategies is described below.

1. Yukon Drive Pedestrian Improvements

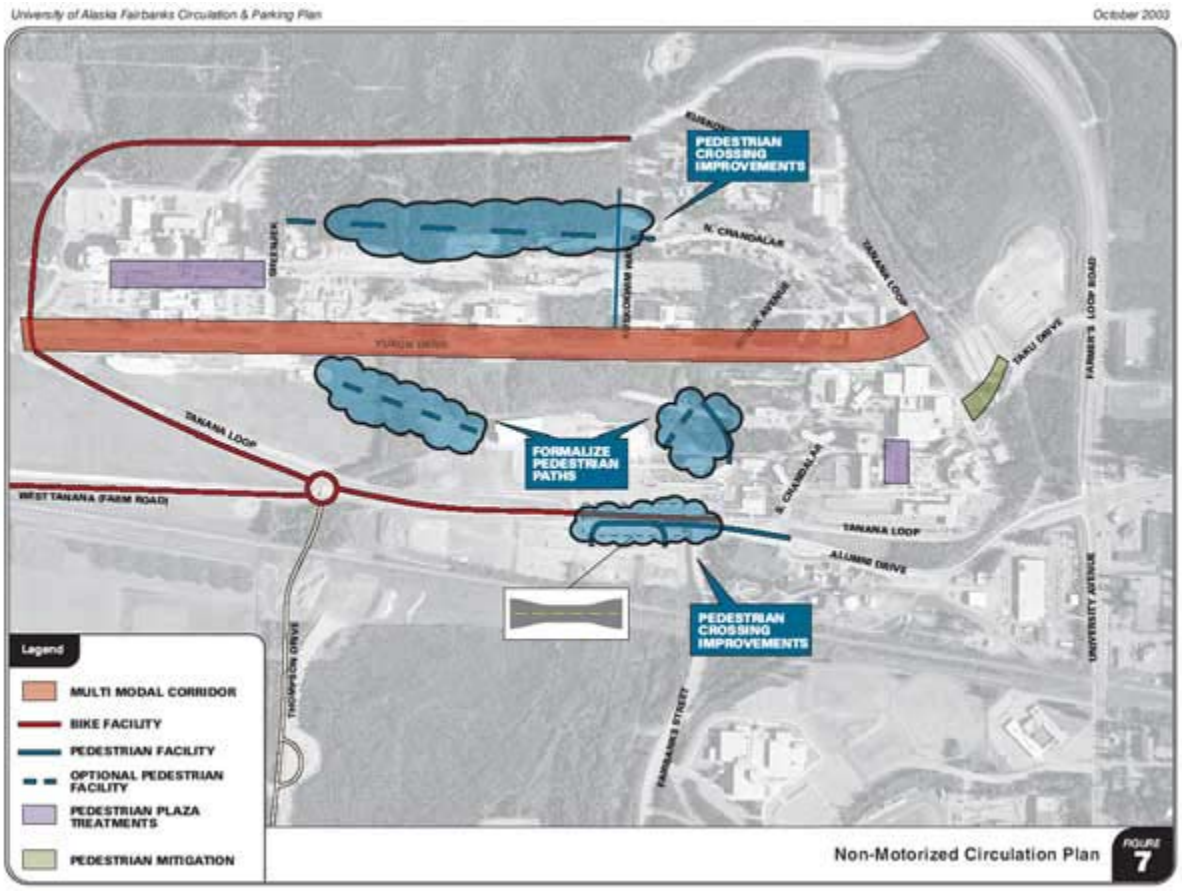
Yukon Drive is well-situated to serve as the backbone of the UAF non-motorized circulation system. Bisecting the campus from east to west, Yukon Drive connects West

Ridge with Lower Campus and the Residential Area. The planned completion of Tanana Loop on the north side of the campus provides an opportunity to divert automobile traffic away from Yukon Drive. Several design improvements are suggested to occur in conjunction with the Tanana Loop completion. The roadway has been divided into three sections according to the current design characteristics:

Yukon Drive Section 1, the western most section between Tanana Loop and Sheenjek Way, serves moderate pedestrian volumes and should have continuous sidewalks.

Yukon Drive Section 2 is the central portion of Yukon Drive between Sheenjek Way and Kuskokwim Way. This portion is in need of the greatest roadway multi-modal improvements, as it carries a high volume of pedestrians. The sidewalk on the north side of the street is relatively new, but is narrow and does not create a good walking environment for the high levels of pedestrian activity. The south side of the street has no sidewalks and a paved shoulder, resulting in a large pavement width of around 30 feet (including two 12-foot travel lanes). Cross sections including narrower pavement width and wider sidewalks for this portion of Yukon Drive should be provided.

Figure 7: Non-Motorized Circulation Plan (larger map)



Yukon Drive Section 3 is the eastern-most portion between Kuskokwim Way and Tanana Loop, and currently has the most multi-modal friendly roadway characteristics. It has a narrower pavement width of around 23 feet and a landscape barrier between the roadway and sidewalk. The parking lot in the NE corner of Yukon/Kuskokwim is planned to be removed.

Figures 8, 9, and 10 show design concepts for multi-modal enhancements on each section of Yukon Drive. For each section of the roadway, sketches have been developed showing the plan view and pedestrian view of the improvements. The figures illustrate the following design features:

- Narrow motor vehicle travelways: Drivers tend to drive more slowly on narrow travel lanes. Pavement width should be 20 to 24 feet, which is adequate to provide two-way motor vehicle travel.
- Limited motor vehicle access points: When Tanana Loop is completed, motor vehicle access should be redirected away from Yukon Drive. Wherever possible, motor vehicle access should occur on Tanana Loop, except for shuttle vehicles and emergency/official vehicles.
- Wider sidewalks: The current five-foot sidewalks are narrow for the large volume of pedestrians between the Residential Area and West Ridge. Sidewalk widths of 10 feet would more safely and comfortably accommodate pedestrian demand. Narrow sidewalks may be acceptable on the south side of Yukon Drive where pedestrian demand tends to be lower.
- Bicycle considerations: A parallel path should be constructed alongside sidewalks on Yukon Drive for bicycles. A minimum width of ten feet is recommended. Different pavement surfaces (i.e. asphalt for bicycles and concrete for pedestrians) or striping and signing should be provided to direct bicycles to one side of the path in order to minimize pedestrian and bicycle conflicts. If the majority of traffic can be diverted from Yukon Drive, and remaining traffic is effectively slowed, shared use of the travel lane by bicycles would be appropriate.
- Landscape buffer: A landscape buffer is recommended between sidewalks (or multi-use paths) and motor vehicle travel ways, especially in high pedestrian areas, and according to where land is available. This is shown on the north side of the road.
- Major and minor pedestrian nodes that can be anchored with benches, informational kiosks, or directional signage. The locations shown in Figures 8, 9, and 10 give some indication of approximate locations that may be suitable for UAF.

In addition to these roadway design features, other improvements such as lighting enhancements, street furniture, and warm-up shelters for pedestrians and shuttle bus riders should be installed to enhance comfort, security, and safety.

Figure 8: Yukon Drive Western Area Concept Drawings (larger map)

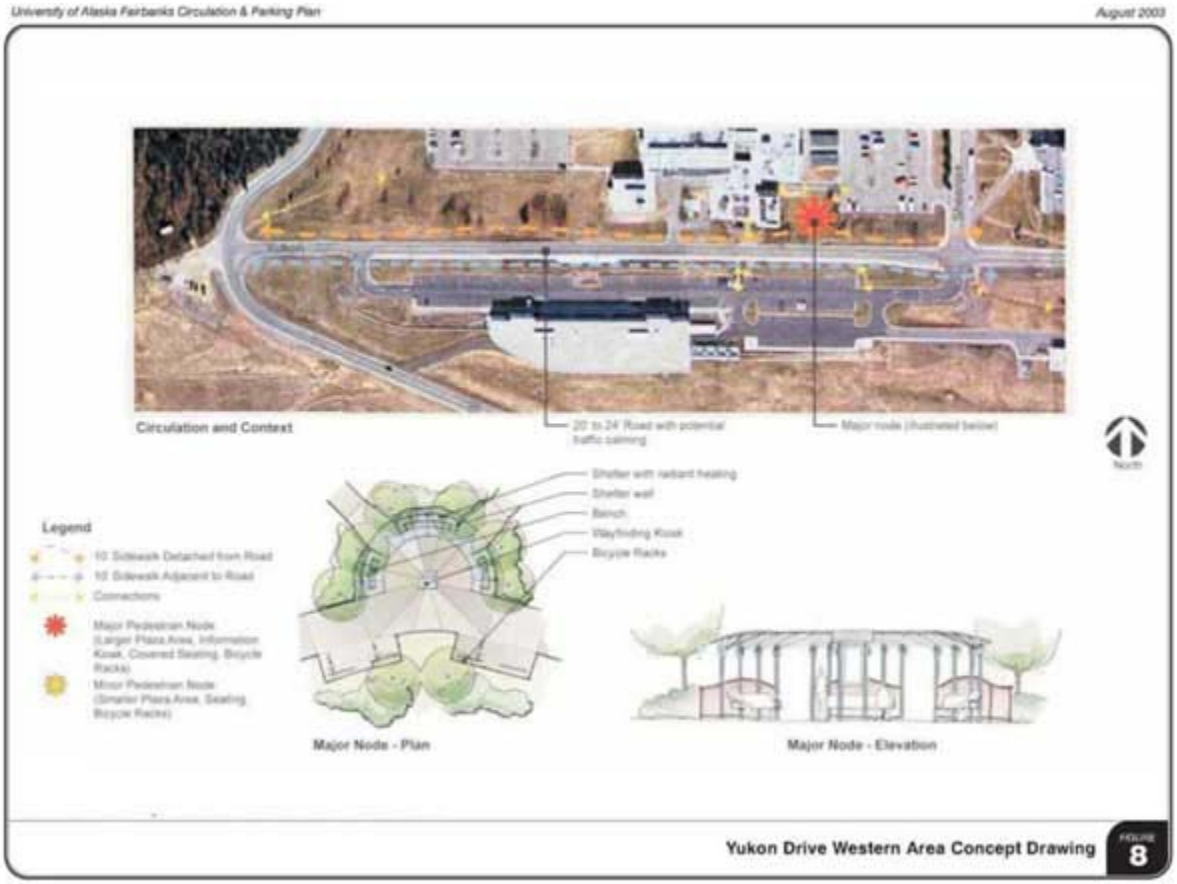


Figure 9: Yukon Drive Central Area Concept Drawings (larger map)

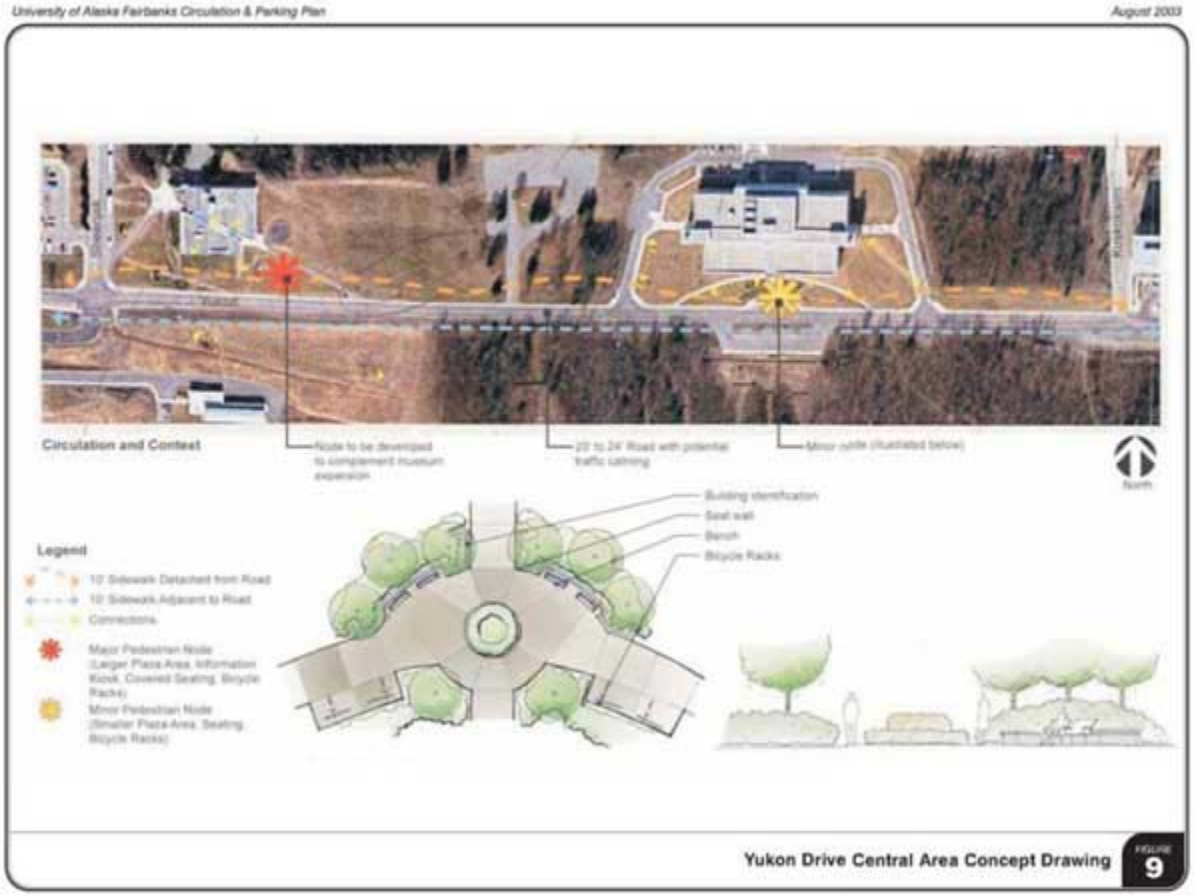
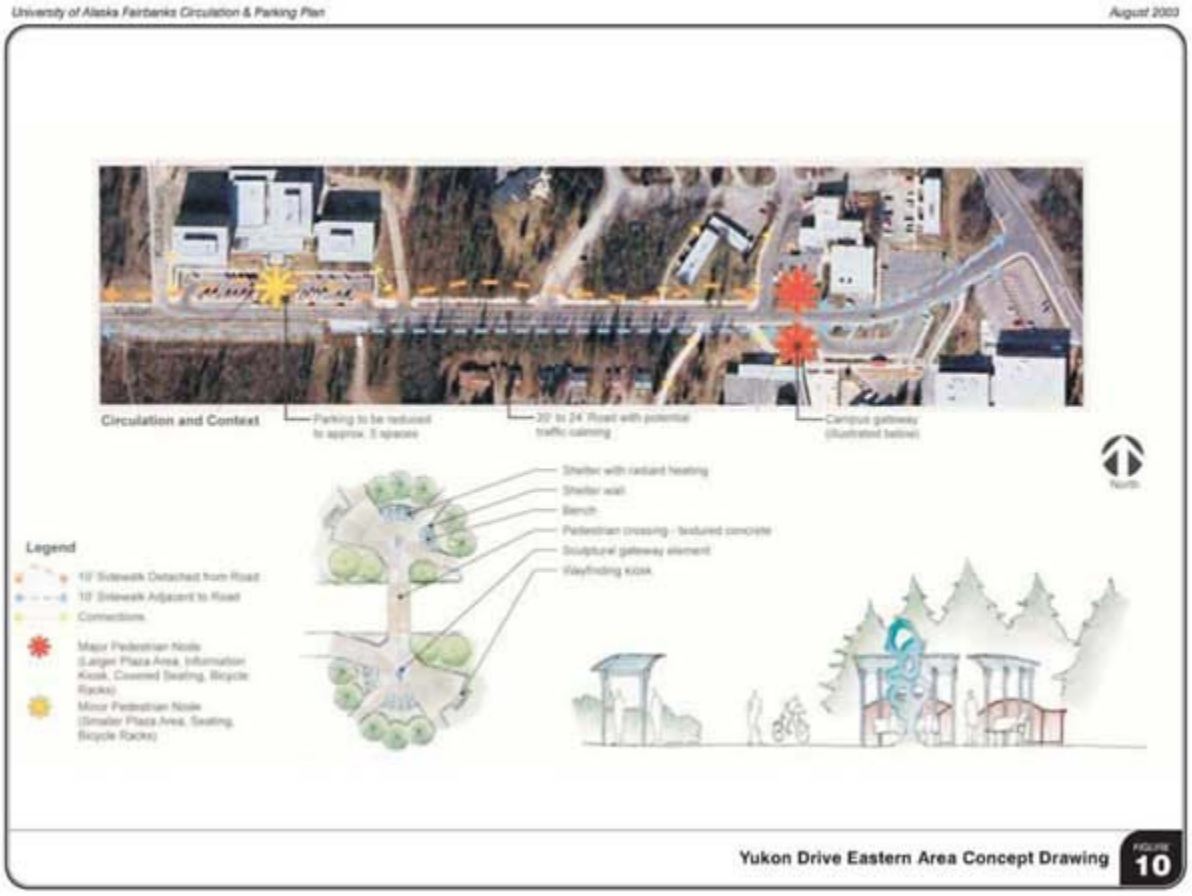


Figure 10: Yukon Drive Eastern Area Concept Drawings (larger map)



2. Tanana Loop Completion

The construction of the north section of the Tanana Loop will provide a good opportunity to connect West Ridge, the residential areas and the trail system. Campus Master Plan Action A18 indicates that future roadways should include nearby multi-use lanes to accommodate non-motorized travel. The Tanana Loop completion is one of three roadways specifically identified for multi-use lanes. The cross section shown in preliminary alignment options developed in a separate engineering study indicates 10-foot paved shoulders, which are adequate for bicycle travel. No sidewalk is shown in the figure. The importance and necessity of sidewalk connections will increase as residential development occurs in the area south of Tanana Loop and west of Kuskokwim, as identified in the Campus Master Plan. Depending on the exact locations and orientations of future developments, a separate dedicated pedestrian path south of Tanana Loop may be preferred to sidewalks adjacent to the road. If sidewalks are provided adjacent to Tanana Loop Road, UAF should provide a landscape buffer separating pedestrians from traffic.

The proximity of the North Campus Area to Tanana Loop requires that access to the North Campus by non-motorized means be addressed. Planning for the loop alignment must establish pedestrian (including walkers, skiers, runners, etc.) routes into the North Campus that may include, but are not limited to, under/overpasses and signaled crosswalks.

3. West Ridge Pedestrian Priority Area

The Campus Master Plan identifies the West Ridge-Koyukuk Drive as a future open space. It is recommended the pedestrian plaza be developed as planned. Limited on-street parking could be considered along Koyukuk Drive for short-term visitors to allow easy accessibility. If allowed, these parking spaces should be restricted to short-term visitors and/or vendors and could be controlled with parking meters. Specific design considerations, including parking, are being addressed separately from this Circulation and Parking Plan process.

4. Pedestrian/Bicycle Connection Between Student Recreation Center/Nenana Lots and West Ridge

The lack of a formal pedestrian path between West Ridge and SRC/Nenana Lots was one of the most frequently-mentioned pedestrian system deficiencies indicated in the UAF web survey. Aerial photography reveals numerous informal trails between the two locations. These informal trails are slippery and difficult or even dangerous due to the steep slope. While the steep terrain makes construction of the trail problematic, a formalized trail will provide a safer connection then the worn trail students have already created. Recommended mitigations to this gap in bicycle and pedestrian facilities are identified below.

Construct a Dedicated Trail for Pedestrians

Aerial photography reveals an informal pedestrian path through the field between SRC and West Ridge. A dedicated trail should be provided generally along this path for pedestrians. The alignment should be as direct as possible. The trail should be paved and well lit to provide safe access during the winter. The steep grade may make construction costs high, particularly as needed to meet ADA requirements. However, because demand for this connection is well established, it should be considered a priority among pedestrian improvements.

Provide Bicycle Lanes along Tanana Loop and West Tanana

Currently, bicycles share the travel lanes with motor vehicles on Tanana Loop between the Nenana Lots and West Ridge. Observed peak hour traffic volumes on this section of the Tanana Loop are 380 (335) during the a.m. (p.m.) peak hour, which is higher than normally considered comfortable for shared bicycle/motor vehicle travel. Since the proposed pathway recommended above is not intended to be used by bicycles, on-street bicycle lanes are recommended on Tanana Loop. Dedicated bicycle lanes at least six feet wide should be provided adjacent to Tanana Loop to provide this connection.

Provide Alternative Connectivity Improvements via Shuttle Service

In addition to improving bicycle and pedestrian access between SRC/Nenana Lots and West Ridge, alternative access should be provided, in particular to meet ADA requirements. Provide shuttle service connecting SRC/Nenana Lots to West Ridge to supplement the dedicated pedestrian path and Tanana Loop bicycle lanes.

5. Pedestrian Connection from Lower Tanana Loop to Yukon Drive and the Residential Area

Currently a covered pedestrian stairway is provided across from the MBS Complex. The covered stairway quickly becomes uncovered stairs down to Ambler Lane, at which point students either follow the roadway east toward Lower Campus or take an informal route down the hillside toward the Patty Center. The route down the hillside is signed as dangerous, but a well-worn path demonstrates the high demand for a safe and formal pathway in this area between two priority locations. In addition, the steep terrain poses safety liability issues for UAF.

Given the high amount of use, the existing pedestrian walkway down to Ambler Lane should be covered. In addition, provide a formal pedestrian facility extending the stairway from the MBS Complex to the Patty Center, as the pedestrian trails reveal this is the path that students will take. Earlier cost estimates developed for UAF indicate that constructing such a stairway would cost on the order of $750,000 to $800,000 in order to meet ADA requirements. While this cost is considerable, it would provide an essential link in the pedestrian system with significant connectivity, convenience, and safety benefits.

6. Sidewalk Connection on Kuskokwim Way Between Yukon Drive and Hess Village

Field observations verified by survey comments identified a deficiency in the pedestrian system on Kuskokwim Way. Currently, pedestrians utilize the roadway to access the residential areas and parking lot, as sidewalks are not provided on either side of the road. Kuskokwim Way is unpaved in this section and pedestrians have expressed concerns with the dust churned up by the vehicles in the summer. In addition, the access to the parking lot is poor and the western half of the Moore Upper parking lot was approximately 20% occupied during the peak hour, while the eastern half, which has a protected pedestrian connection to the residence halls, was nearly 100% full. This illustrates the interrelationship between the pedestrian system and efficient use of parking facilities.

Based on the concerns expressed in the survey, it is recommended that a formal dedicated walkway be provided on Kuskokwim Way between North Chandalar and Yukon Drive. It could be constructed separately or in conjunction with paving Kuskokwim Way. The walkway should also connect to the MBS parking area to provide a continuous pedestrian connection from the parking lot to Yukon Drive. The walkway would provide a safe and convenient path for pedestrians accessing the parking lot and residential areas. With the addition of a formal walkway for pedestrians, it is likely that parking lot use could be increased.

7. North Chandalar Extension

The Campus Master Plan identifies the potential extension of North Chandalar to connect to Kuskokwim Way. This is included in the motor vehicle portion of this plan. However, the extension of this roadway is solely dependent upon the type of future development that occurs in the North Chandalar area. The Campus Master Plan calls for the creation of higher density housing in this area and the elimination of individual houses. Both

faculty and student housing will, in all likelihood, be located in this area. Depending upon the types of housing and numbers of residents, increased traffic counts may require a direct connection to Kuskokwim Way.

At this point in time, there is an informal pedestrian route connecting North Chandalar to Kuskokwim Way. This route should be formalized to meet design standards for pedestrian and bicycle traffic.

8. Pedestrian Crossing at Nenana Lots

Pedestrian crossing conflicts were identified on Tanana Loop north of the Nenana Lots. Tanana Loop carries high traffic volumes at this location, and pedestrians are unprotected when crossing from the parking lot to the campus. The problem is exacerbated by the fact that peak arrivals at the parking lot coincide with the peak traffic volume on Tanana Loop.

With the closure of Fairbanks Street, the major left-turning movement from this intersection will be shifted from using Tanana Loop along Nenana Lots to using Thompson Drive and bypassing the Nenana Lots, which will reduce the potential for pedestrian/vehicle conflicts to some degree. The following measures are recommended for implementation to improve conditions further.

Use the Nenana Parking Lots for Long-Term Economy and Residential Parking

By using parking management strategies, more long-term parking could be located in the Nenana Lots, which will reduce the pedestrian crossings during the mid-day. This option is discussed in conjunction with parking system recommendations outlined further in this Plan.

Reduce Roadway Width at Pedestrian Crossing

Reducing the roadway width through the used of curb extensions would have a traffic calming effect by “necking” down the roadway to reduce travel speeds and highlight the presence of pedestrians to drivers. In addition, it would shorten the crossing distance for pedestrians. The specific design would have to take into consideration snow removal issues.

Pedestrian Diversion

After Fairbanks Street is closed, improved sidewalks from the Nenana Lots to the east on the south side of the street could provide the opportunity for some pedestrians to walk eastward and cross at the all-way stop intersection at South Chandalar. This intersection is characterized by unconventional alignment and confusing channelization, as will be discussed in the motor vehicle section of this Plan. Nevertheless, motor vehicle traffic is stopped at all approaches, providing protected crossing for pedestrians.

9. Pedestrian Conflicts with Vehicles in Front of Signers’ Hall

There is currently parking in front of Signers' Hall. During the data collection for this study, the parking was only allowed on the west side due to construction activities. Members of the Circulation and Parking Subcommittee, and the Campus Master Plan committee expressed concerns about pedestrian/vehicle conflicts in the parking lot in front of Signers' Hall. High pedestrian volumes were noted during field observations, particularly pedestrians crossing from Bunnell toward the Rasmuson Library and Wood Center. When construction is finished and the construction fences are removed to allow pedestrian passage through the Campus Quad area, these pedestrians will be better accommodated.

Given this is one of the highest volume pedestrian areas on campus and volumes are expected to increase in the future, the majority of this parking lot should be removed. Limited visitor parking could be provided directly adjacent to Signers' Hall. Additional replacement visitor parking can be provided in Eielson South, which is discussed in the parking section of this Plan.

10. Pedestrian Crossing and Pedestrian Path on Taku Drive at Tanana Loop

The existing Tanana Loop/Taku Drive intersection is characterized by a steep grade on the east leg of Taku Drive, a skewed intersection, and poor sight distance due to curvature of Taku Drive. Vehicles on Taku Drive do not have to stop before going through the intersection. This is appropriate due to the steep grade and frequent icy condition of the roadway. However, there is limited visibility of pedestrians at the Tanana Loop intersection. A number of options were considered which are described below:

Option 1: Close Taku Drive to Through Traffic – Recommended Option

Closing Taku Drive to through traffic would sharply reduce the traffic using this intersection, thus reducing the number of possible pedestrian conflicts. Access could still be made available to shuttles and emergency vehicles, but would eliminate all traffic not related to the parking lot on Taku Drive. This option is discussed in the motor vehicle section of this Plan. A signed crossing at Tanana Loop is also recommended to better alert traffic on Tanana Loop of the pedestrian crossing.

Option 2: Construct Parking Structure With Pedestrian Bridge

Constructing a parking structure on the existing Ballaine Lot was identified in the 2002 Campus Master Plan. The Campus Master Plan shows a parking structure with an elevator connecting to a pedestrian bridge between the structure and Great Hall or Fine Arts Building. The pedestrian bridge would eliminate pedestrian vehicle conflicts, and the elevator would resolve steep pedestrian grade issues. Further, the parking structure may be a desired component of the longrange parking plan. This is a long-term solution that may be implemented in the future. However, a nearer term solution is required in the interim.

This option is likely not feasible in the near term but may be appropriate in conjunction

with long-term campus development plans.

Option 3: Construct a Pedestrian Diversion Guardrail

A pedestrian guardrail could be constructed in the northeast corner of the intersection to divert pedestrians away from Taku Drive before crossing Tanana Loop. This would improve the conflicts at the intersection, but would result in a mid-block pedestrian crossing of Tanana Loop. Care should be taken to ensure that vehicle sight distance is not hindered by the guardrail. This would be a relatively low-cost, low-impact measure that could improve conditions by moving pedestrians away from the critical intersection. This measure should be considered as a temporary, partial mitigation, only if closure of Taku Drive is not implemented, or does not fully mitigate the deficiency.

This option is recommended only if other options are not possible and conflicts worsen.

11. Pedestrian Grade on Taku Drive from Parking Lots

In addition to pedestrian crossing issues, the “serpentine” pedestrian path provided along Taku Drive is steep and slippery during the winter months. Students and faculty have expressed concern over the safety of this path, which connects the parking lot to Tanana Loop and the campus. The following measures are recommended to improve the safety of this connection:

Provide a Covered Path

Covering the pedestrian path would reduce snow and ice accumulation on the path. Even with a covered path, water will drain toward the path and freeze, causing slippery conditions. Consequently, there will be a need for drainage improvements, and regular maintenance will be required even with the cover in place.

Replace the Walkway with Steps

This option is not preferred until covered walkway options have been explored. This option requires the removal of the path, and replacing it with stairs. This measure would reduce the tendency for the path to become slippery. However, snow removal would be more difficult.

12. Pedestrian Crossing at Salcha Drive and South Chandalar

The pedestrian crossing at the intersection of Salcha Drive and South Chandalar is confusing at best and dangerous at worst. Traffic converges on this point from three separate directions. Although the majority of traffic is turning left onto Salcha from South Chandalar, many drivers neglect to use the left turn signal. There is a significant amount of pedestrian traffic in this area, especially since it is a direct route from the core campus to Lola Tilly Commons as well as the Nenana parking lot. Pedestrians at this crossroads often assume that the oncoming vehicle is turning left onto Salcha when,

in fact, they are continuing straight either to the turn-around/drop-off area by Gruening or to Chapman and the nearby parking lot.

The Wickersham Hall/Gruening Passenger Drop-off recommendation under the Motor Vehicle section may help to alleviate some of this situation. However, a clearly marked pedestrian crossing, possibly signalized, should be put in place at the Salcha/S. Chandalar crossing.

13. Other Pedestrian Facility Improvements to Consider

Because of the cold-weather environment and steep terrain, pedestrian accessibility is complicated. UAF should consider special design features for future projects. Each of these treatments can be very expensive. As the campus population increases in the long-term future, the value of these improvements may increase, particularly if the campus is to increase emphasis on non-motorized circulation modes and peripheral parking locations. Development activity may present opportunities to install more extensive pedestrian systems.

Some high demand pedestrian areas that would be well served by improved connections include:

- Taku Lot to Lower Campus
- The Bunnell-Duckering-Library “triangle”
- MBS Complex to SRC

Protected pedestrian connections should also be considered for integration with all new buildings in the campus core.

Underground Tunnels

The most prevalent alternative to sidewalks is underground tunnels, which are used to varying degrees at universities in North Dakota, Indiana, Calgary, and Minnesota. Carleton University in Ottawa has all of its approximately 30 buildings attached by underground tunnels. Student parking lots all are located in the campus perimeter, and have easy access to tunnels as well. At Carleton University there is a wall in the tunnels separating underground utilities (including central heating and cables) from the pedestrians. One benefit of the tunnel system is the elimination of standard maintenance vehicles. Maintenance personnel drive golf carts in the tunnels to get to building locations. The tunnel system has also been a considerable access benefit for persons with disabilities.

Tunnels can present safety and security concerns, but are very well received when designed appropriately. In order to minimize safety concerns, sharp corners should be avoided to ensure good visibility; adequate lighting should be installed; and telephones can be provided at regular intervals. The most successful tunnels should be active corridors, which is the best security.

Heated Sidewalks

The University of Idaho in Northern Idaho provides heated sidewalks throughout the

central campus. Steam tunnels below ground heat the sidewalks. The heated sidewalks eliminate ice and snow accumulation, improving both comfort and safety for pedestrians. As new buildings are constructed at UAF, the potential for channeling steam or other heating methods for this purpose could be considered.

Covered/Enclosed Walkways

UAF currently has a covered stairwell connecting MBS Complex to Lower Campus, and also to the parking area behind MBS Complex. In addition to providing shelter, the use of covered walkways reduces snow accumulation. An extension of the existing covered walkway to Lower Campus was recommended. Additional use of covered walkways may be appropriate in other dense pedestrian corridors. While covering walkways is expensive, it is generally lower cost and less maintenance than many other alternatives.

Enclosed walkways at ground level are another option to provide shelter for pedestrians and keeps walkways free of ice. Examples of enclosed walkways can be seen at University of Alaska in Anchorage.

Pedestrian Bridge

Covered pedestrian bridges can help overcome steep grade and cold climate pedestrian barriers such as snow, ice, and wind. The Campus Master Plan identifies a potential parking garage at the existing Ballaine Lot, to be connected to the Library Terrace.

Escalators for Steep Terrain

In addition to cold and icy conditions, pedestrians at UAF face steep terrain. Escalators have been proven in many cold weather environments to be a feasible option. The idea of an escalator on especially steep locations has been identified in previous planning activities on campus. The cost of such a system would be very high, as would maintenance issues regarding moisture and snow/ice accumulation.

13. Other Bicycle Facility Improvements for Consideration

Despite the cold weather, UAF has considerable bicycle use, as evidenced by the number of bicycles observed in the field, comments to the web survey, and census data indicating a nearly 2% mode share for bicycles among commuters in the UAF areas.

Bicycle Parking

Field observations indicate that existing bicycle parking tends to be well utilized, particularly near residential buildings. General estimates of installation costs for several bicycle parking options are summarized below.

- Bike racks: $150 each (parks two bikes)
- Bike lockers: $1,000 each (parks two bikes)
- Bike sheds: $4,500 (fits 10 to 15 bicycles)

Bike Racks on Shuttle

Bike racks on transit vehicles allow bicyclists to utilize the public transportation system to and from campus. While shuttle buses could be equipped with bike racks, it likely that given the size of the campus most bicyclists would choose to ride their bikes on campus. In addition, loading and unloading bikes on the racks increases the shuttle dwell time at stops. However, as parking locations shift toward the perimeter of campus, some drivers choose to ride bicycles rather than use the shuttle for internal campus access.

Many U.S. transit agencies, including FNSB, offer this service to customers. Bicycles are secured on racks mounted to the front of the bus; racks can generally hold two bicycles. The actual type and design of bike rack would vary depending on the size and model of the shuttle.