

## Concept Evaluation

This section describes and summarizes the result of evaluation process for each of the system concepts. The evaluation consists of a brief description of the concept and the key findings under each of the broad categories of evaluation criteria.

For each evaluation criterion, Table 5-4 summarizes the good, fair or poor rating for each concept east of Mendenhall River. The brief evaluation notes explaining the reason for the scoring of each concept for each evaluation criteria are provided in Appendix D. Appendix E provides order-of-magnitude construction costs for each concept alternative.

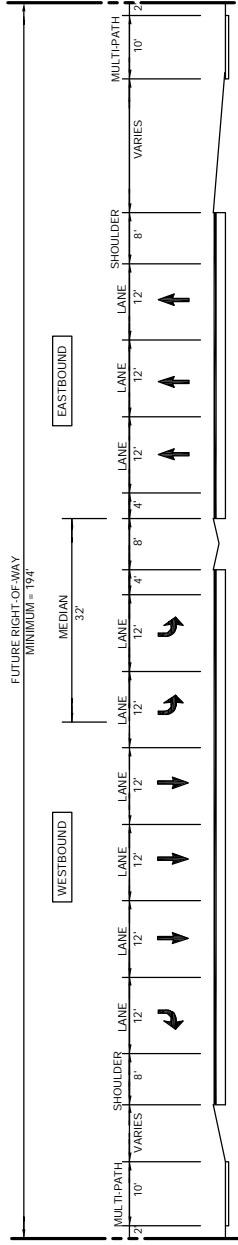
### AREA #1 – EAST OF MENDENHALL RIVER

#### System #1: At-Grade Intersections Concepts

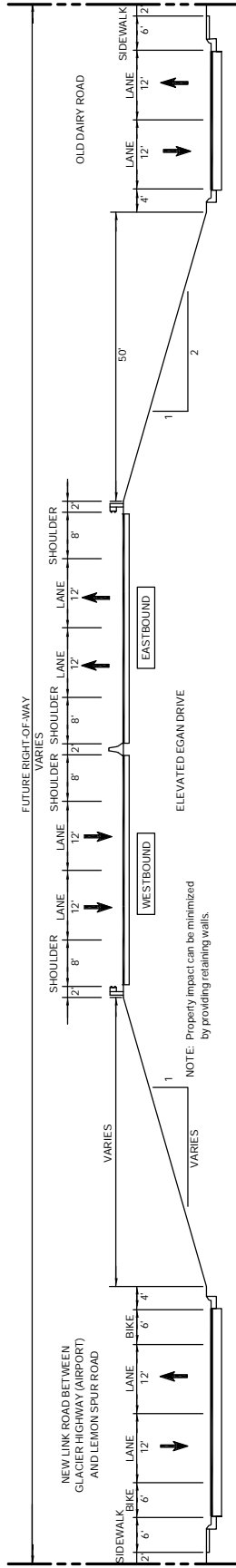
These concepts retain the current use of signalized, at-grade intersections along Egan Drive to provide maximum access to all intersecting cross streets. Figure 5-3 shows a typical cross section of Egan Drive just east of Mendenhall Loop Road for the at-grade intersection concepts.

#### *Concept 1A*

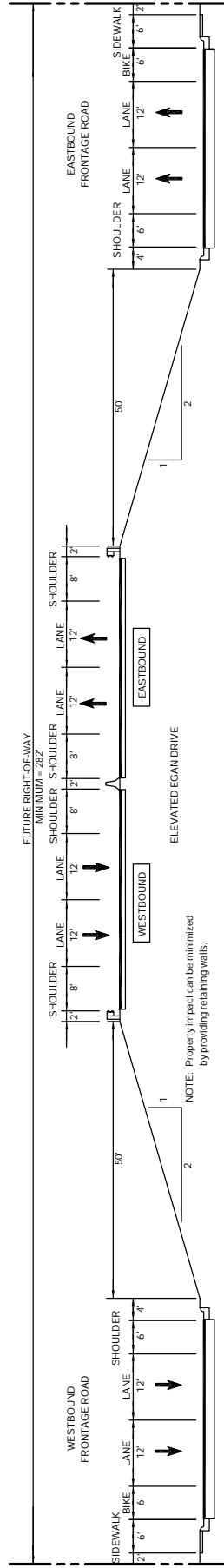
The unique feature of this concept is the realignment of Yandukin Drive to align with Lemon Spur Road north of Egan Drive. This new connection intersects Egan Drive to the west of Fred Meyer and permits all movements except the north- and southbound left turns from Yandukin Drive to Egan Drive. The existing access just east of Fred Meyer will remain, allowing only right-in/right-out/left-out access, and will be signalized. Access at the rest of the intersections along this section of the corridor remains the same and all intersections need to be signalized. Egan Drive will require three through lanes in each direction from Mendenhall Loop Road to just east of the Fred Meyer access. Concept 1A is shown in Figure 5-4 and indicates the recommended lane configuration for each intersection.



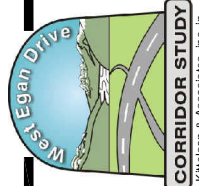
**SYSTEM #1: AT-GRADE INTERSECTIONS - TYPICAL CROSS SECTION**  
JUST EAST OF MENDEHALL LOOP ROAD



**SYSTEM #2: GRADE SEPARATION (NO TRAFFIC EXCHANGE)/INTERCHANGES**  
TYPICAL CROSS SECTION IN THE VICINITY OF OLD DAIRY ROAD



**SYSTEM #3: INTERCHANGES AND FRONTAGE ROADS**  
TYPICAL CROSS SECTION



## TYPICAL CROSS SECTIONS

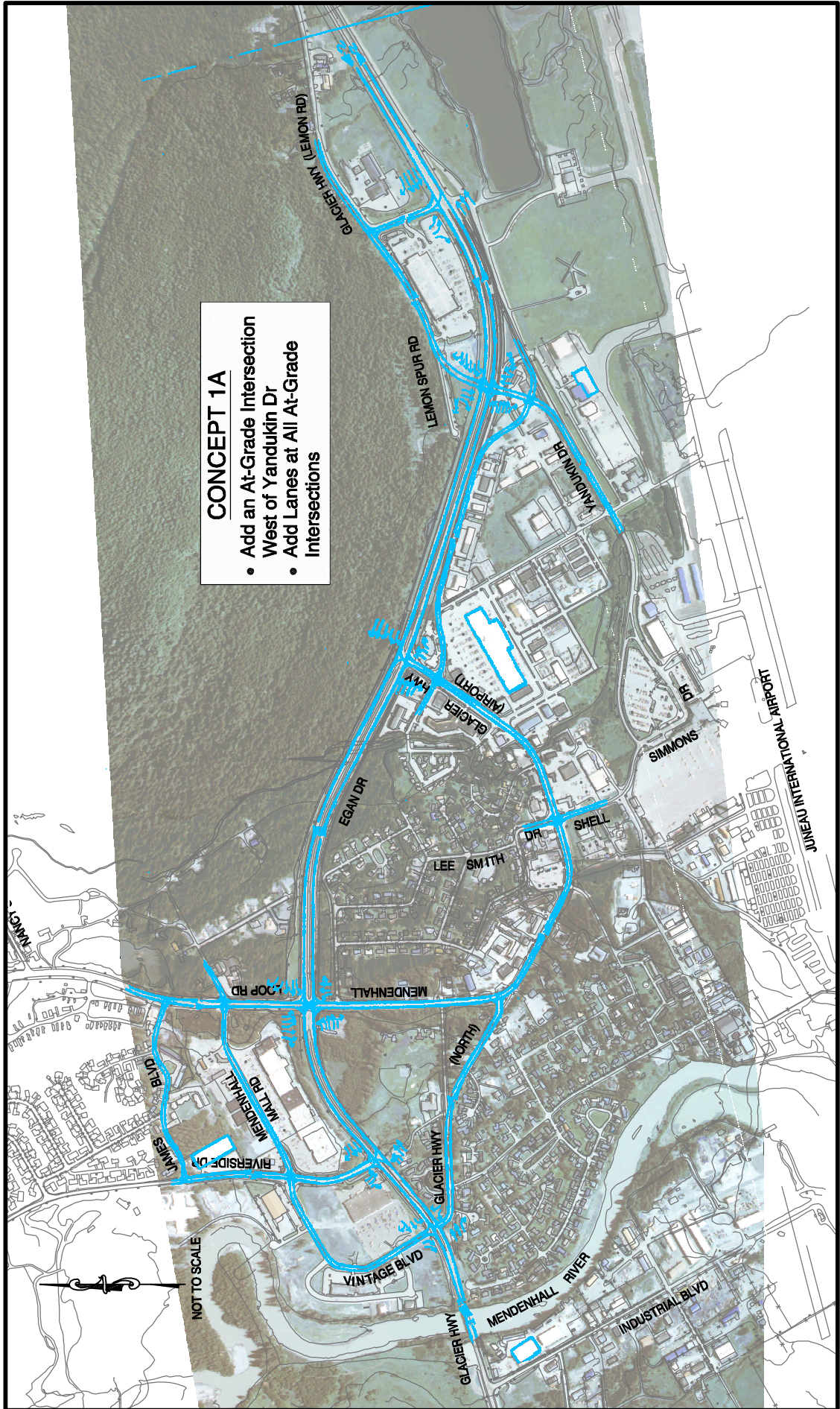
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FIGURE  
5-3

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**CONCEPT 1A**

- Add an At-Grade Intersection West of Yandukin Dr
- Add Lanes at All At-Grade Intersections

**AREA #1: CONCEPTS FOR EAST OF MENDENHALL RIVER  
CONCEPT 1A**

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FIGURE  
5-4

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Table 5-4 Qualitative Evaluation of Alternatives (Concepts East of Mendenhall River)

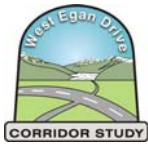
Evaluation Criterion	Proposed Road System – East of Mendenhall River											
	1A	1B	1C	2A	2B	2C	2D	2E	2F	3A	3B	3C
<b>Traffic Considerations</b>												
1. Safety	Poor	Poor	Poor	Good	Fair	Good	Good	Fair	Good	Fair	Fair	Fair
2. Emergency Vehicle Access and Circulation	Poor	Fair	Fair	Good	Fair	Good	Fair	Good	Fair	Poor	Fair	Fair
3. Traffic Operations	Poor	Fair	Poor	Poor	Fair	Good	Good	Good	Fair	Fair	Fair	Fair
4. Airport Access	Poor	Fair	Fair	Fair	Poor	Good	Fair	Good	Fair	Fair	Fair	Fair
5. Local Circulation	Fair	Good	Good	Poor	Poor	Good	Fair	Good	Fair	Poor	Fair	Fair
<b>Non-Motorized Users and Public Transit</b>												
6. Compatibility with Public Transportation	Fair	Fair	Fair	Fair	Poor	Good	Good	Good	Good	Poor	Fair	Fair
7. Compatibility with Pedestrians	Poor	Poor	Poor	Fair	Good	Good	Fair	Good	Fair	Good	Fair	Good
8. Compatibility with Bicyclists	Poor	Poor	Poor	Fair	Fair	Good	Fair	Good	Fair	Fair	Good	Good
Satisfies Purpose and Need?	YES*	YES*	YES*	YES	YES	YES	YES	YES	YES	YES	YES	YES
<b>Environmental and Planning</b>												
9. Environmental Impacts	Good	Good	Good	Fair	Good	Poor	Poor	Poor	Fair	Fair	Poor	Fair
10. Consistency with Other Planning Efforts	Good	Good	Good	Fair	Fair	Poor	Poor	Fair	Poor	Good	Good	Good
11. Compatibility with Built Environment	Fair	Fair	Fair	Fair	Poor	Good	Fair	Good	Good	Poor	Poor	Fair
<b>Practical Considerations</b>												
12. Constructability	Good	Good	Fair	Poor	Fair	Fair	Poor	Poor	Fair	Fair	Fair	Fair
13. Funding Feasibility	Good	Good	Good	Poor	Fair	Fair	Fair	Poor	Poor	Fair	Poor	Poor
14. Phased Implementation & Expandability	Good	Good	Good	Fair	Fair	Fair	Poor	Fair	Poor	Fair	Fair	Fair
15. Construction Costs	Good	Good	Good	Poor	Fair	Fair	Fair	Poor	Poor	Fair	Poor	Poor
16. Maintenance Requirements	Good	Good	Good	Fair	Fair	Poor	Fair	Fair	Fair	Fair	Fair	Poor
17. Satisfies Design Requirements	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Good	Fair	Good
18. Right-of-Way Requirements	Good	Good	Good	Fair	Fair	Fair	Fair	Poor	Fair	Poor	Fair	Poor

\* Alternative may not satisfy safety needs without further investigation of treatments.



*Concept 1A (continued)*

- Traffic Considerations
  - Mendenhall Loop Road at Egan Drive will be the largest intersection in this concept. To achieve acceptable operating conditions, additional approach lanes would be required on all four approaches. In the southbound direction an additional through lane is required. In the northbound direction, a separate right turn lane would be required. Because the p.m. peak hour traffic demand requires a westbound free right-turn lane for acceptable traffic performance, the weaving section between Mendenhall Loop Road/Egan Drive and Mendenhall Loop Road/Mendenhall Mall Road still exists. Furthermore, an additional southbound through lane should be developed in advance of the Mendenhall Loop Road/Mendenhall Mall Road intersection to provide adequate lane usage approaching Egan Drive.
  - No substantial changes to the road network are proposed in this concept, except for the realigned Yandukin Drive/Lemon Spur Road connection. This connection provides an indirect link between Old Glacier Highway and the commercial areas along Glacier Highway (Airport).
  - This concept adds more signals to Egan Drive, which will increase delay and potentially increases rear-end accidents. However, angle accidents at the existing unsignalized of Egan Drive/Vintage Boulevard/Glacier Highway (North) should decrease.
  - Under this concept, the existing signalized intersections of Egan Drive/Mendenhall Loop Road and Egan Drive/Glacier Highway (McNugget) may decrease in safety due to an increase in traffic volumes without a corresponding reduction in potential conflicts. This would directly and adversely affect the ability of these concepts to meet the Purpose and Need elements of the project. It is therefore recommended that, if this concept is carried forward for further evaluation, additional investigation should be conducted to identify opportunities to address the existing safety concerns.
- Non-Motorized Users and Public Transit
  - Large high-volume, at-grade intersections can be unfriendly to pedestrians and bicycles, especially if they have to cross up to nine traffic lanes (through lanes plus turn lanes).
- Environmental and Planning
  - This concept does not present any substantial environmental impact, although any widening of the Egan Drive/Mendenhall Loop Road intersection will negatively impact Duck Creek. The concept is consistent with the Area-Wide Transportation Plan (AWTP), Riverside Drive Corridor, and Second Channel Crossing planning efforts.
  - Several businesses would be affected by the realigned Yandukin Drive/Egan Drive intersection.
- Practical Considerations



- The construction cost of Concept 1A ranks in the lower third of all the concepts and has limited impact on affected properties. Construction would cause minimal impact to traffic.
- Maintenance would increase slightly due to additional lanes at intersections and additional roads at Yandukin Drive.
- Roadway widening along Egan Drive will be to the outside to preserve the median for future transportation needs.
- Conclusion
  - In summary, Concept 1A marginally meets the Purpose and Need Statement but requires special attention to address the safety issues if carried forward for further evaluation.

### *Concept 1B*

The notable feature of this concept is that it adds a new link by extending Riverside Drive south of Egan Drive along Sunset Drive to Glacier Highway (North) and restricts the Vintage Boulevard/Glacier Highway (North)/Egan Drive intersection to right-in/right-out only. Yandukin Drive is realigned to the east of the Juneau Christian Center, which should have less impact on developed properties compared with Concept 1A because it minimizes impact in the vicinity of Old Dairy Road. The remaining intersections will be signalized and retain the same access as today. Egan Drive will require three through lanes in each direction from Mendenhall Loop Road to just east of the realigned Yandukin connection. Figure 5-5 shows the preliminary lane configurations under this concept.

- Traffic Considerations
  - The Riverside connection between Egan Drive and Glacier Highway (North) will reduce traffic volumes at the intersection of Mendenhall Loop Road/Egan Drive. However, because the a.m. peak hour southbound left-turning traffic from Mendenhall Loop Road to Egan Drive has the largest influence on the intersection traffic operations and therefore lane configurations, this intersection would most likely still require an additional southbound through lane and the westbound to northbound free right-turn lane. The latter continues to create the critical weaving section between Mendenhall Loop Road/Egan Drive and Mendenhall Loop Road/Mall Road.
  - The additional leg at the Riverside Drive/Egan Drive intersection will require an additional phase at this signal, resulting in longer delays.
  - Realigning Yandukin Drive and providing full access with Egan Drive provides an indirect link between Old Glacier Highway and the commercial areas along Glacier Highway (Airport).
  - This concept adds more signals to Egan Drive, which will increase delay and potentially increases rear-end accidents. However, angle accidents at the existing unsignalized of Egan Drive/Vintage Boulevard/Glacier Highway (North) should decrease with the restriction to right-in/right-out.



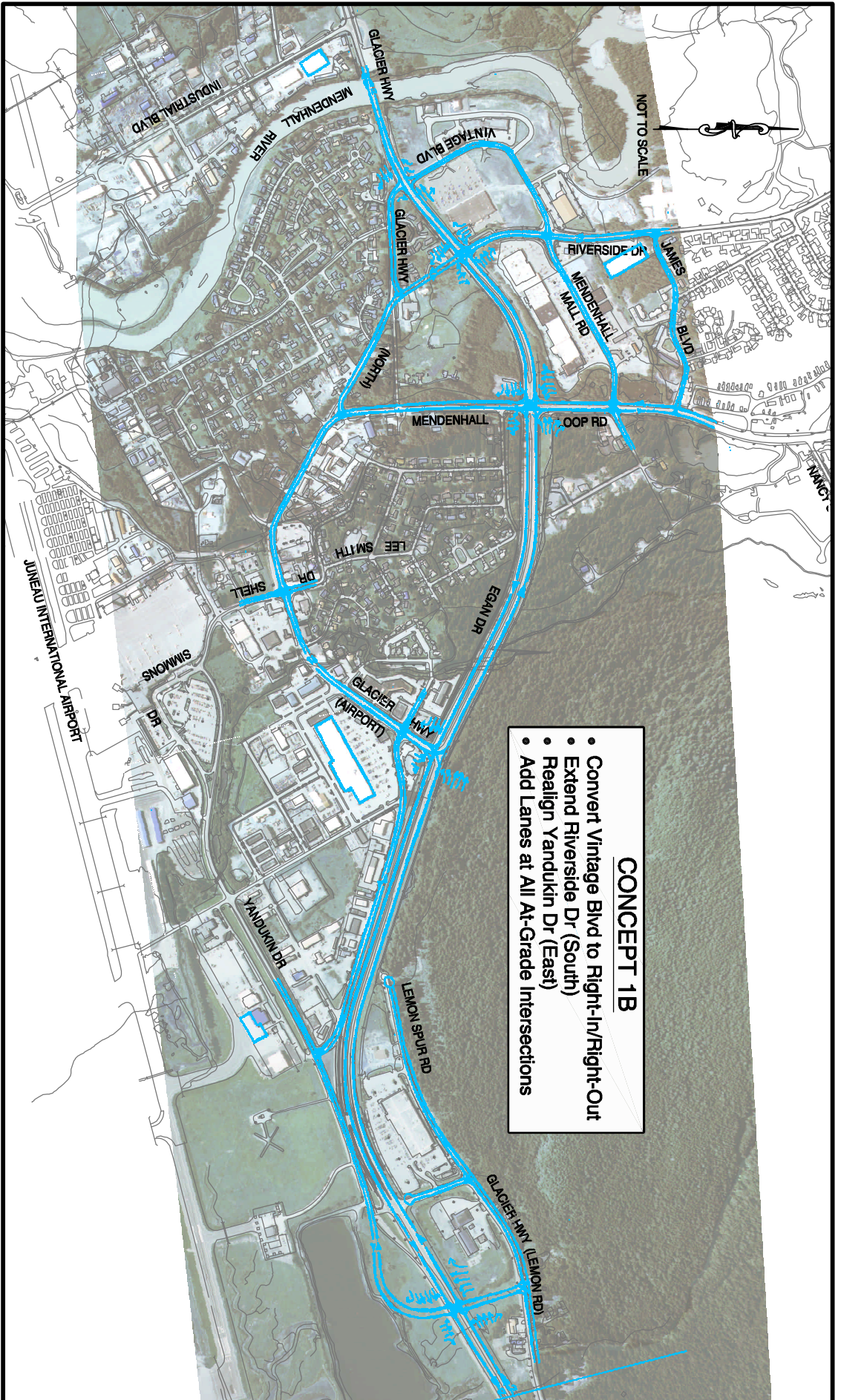


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# AREA #1: CONCEPTS FOR EAST OF MENDENHALL RIVER CONCEPT 1B

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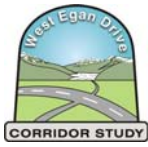


- CONCEPT 1B**
- Convert Vintage Blvd to Right-In/Right-Out
  - Extend Riverside Dr (South)
  - Realign Yandukin Dr (East)
  - Add Lanes at All At-Grade Intersections

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FIGURE  
 5-5

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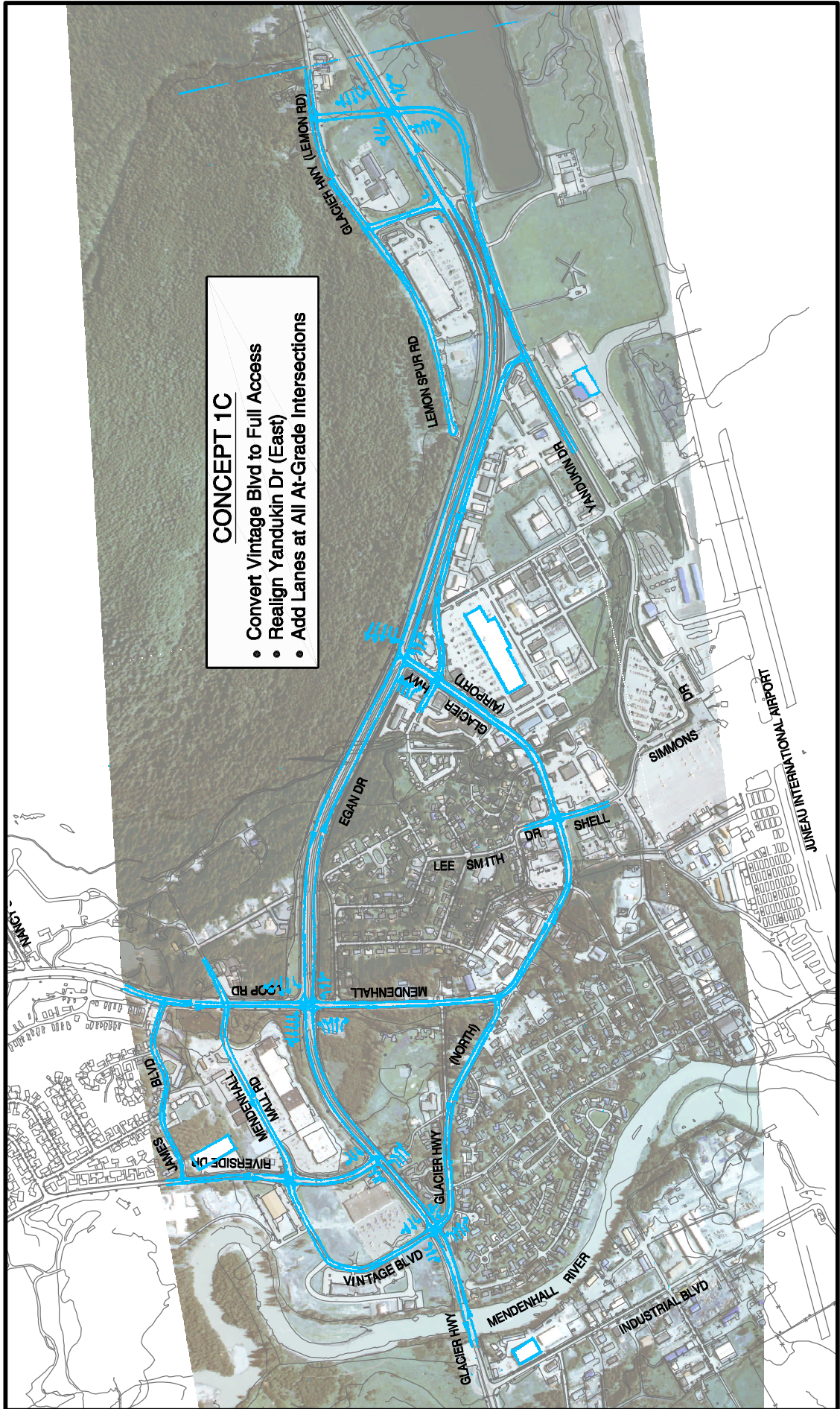
- Under this concept, the existing signalized intersections of Egan Drive/Mendenhall Loop Road and Egan Drive/Glacier Highway (McNugget) may decrease in safety due to an increase in traffic volumes without a corresponding reduction in potential conflicts. This would directly and adversely affect the ability of these concepts to meet the Purpose and Need elements of the project. It is therefore recommended that, if this concept is carried forward for further evaluation, additional investigation should be conducted to identify opportunities to address the existing safety concerns.
- Non-Motorized Users and Public Transit
  - Large high-volume, at-grade intersections can be unfriendly to pedestrians and bicycles.
- Environmental and Planning
  - The realignment at Yandukin Drive impacts wetlands, both low value and high value, and wildlife habitat. The Riverside Drive extension is not part of the AWTP or the Riverside Drive corridor plan and may change long-term planning assumptions. This concept is compatible with the Second Channel Crossing planning efforts.
- Practical Considerations
  - Concept 1B is similar to Concept 1A in construction costs (\$7 million versus \$6 million) and impacts (slightly more right of way required), along with only a slight increase in maintenance due to more new road. Construction would pose only limited impacts to traffic.
  - Roadway widening along Egan Drive will be to the outside to preserve the median for future transportation needs.
- Conclusion
  - In summary, Concept 1B marginally meets the Purpose and Need Statement but requires special attention to address the safety issues if carried forward for further evaluation.

### *Concept 1C*

Concept 1C proposes full access at Vintage Boulevard/Egan Drive intersection (new signal) and realigns Yandukin Drive to the east (new signal) as discussed in Concept 1B. The other intersections will remain signalized and will retain the same access as today. Egan Drive will require three through lanes in each direction from Mendenhall Loop Road to just east of the realigned Yandukin connection. The recommended lane configurations for Concept 1C is shown in Figure 5-6.

- Traffic Considerations
  - Traffic operations in this scenario will be very comparable to the operations in Concepts 1A and 1B. Adding the fourth leg and allowing full access at the intersection of Vintage Boulevard/Egan Drive can reduce total traffic volumes





- CONCEPT 1C**
- Convert Vintage Blvd to Full Access
  - Realign Yandukin Dr (East)
  - Add Lanes at All At-Grade Intersections

**AREA #1: CONCEPTS FOR EAST OF MENDENHALL RIVER  
CONCEPT 1C**

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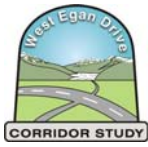
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FIGURE  
5-6

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through the intersection of Mendenhall Loop Road/Egan Drive, although not substantially. From a traffic operations perspective, there are no other substantial differences between Concepts 1A, 1B and 1C.

- The Vintage Boulevard/Glacier Highway (north) link provides an additional north-south connection and should remove some traffic from the Egan Drive/Mendenhall Loop Road intersection.
- As discussed for Concept 1B, the realigned Yandukin Drive provides an indirect link between Old Glacier Highway and the commercial areas along Glacier Highway (Airport).
- This concept adds more signals to Egan Drive, which will increase delay and potentially increases rear-end accidents. However, angle accidents at the existing unsignalized of Egan Drive/Vintage Boulevard/Glacier Highway (North) should decrease.
- Under this concept, the existing signalized intersections of Egan Drive/Mendenhall Loop Road and Egan Drive/Glacier Highway (McNugget) may decrease in safety due to an increase in traffic volumes without a corresponding reduction in potential conflicts. This would directly and adversely affect the ability of these concepts to meet the Purpose and Need elements of the project. It is therefore recommended that, if this concept is carried forward for further evaluation, additional investigation should be conducted to identify opportunities to address the existing safety concerns.
- Non-Motorized Users and Public Transit
  - Large high-volume, at-grade intersections can be unfriendly to pedestrians and bicycles.
- Environmental and Planning
  - The concept is compatible with the AWTP, Riverside Drive Corridor and Second Channel Crossing planning efforts.
- Practical Considerations
  - The construction cost of Concept 1C is similar to Concepts 1A and 1B. Conversion of the Vintage Boulevard intersection with Egan Drive to full access increases maintenance slightly, and has little or no other impacts. Construction would pose only limited impacts to traffic.
  - Roadway widening along Egan Drive will be to the outside to preserve the median for future transportation needs.
- Conclusion
  - In summary, Concept 1C marginally meets the Purpose and Need Statement but requires special attention to address the safety issues if carried forward for further evaluation.





## **System #2: Grade Separation (No Traffic Exchange)/Interchange Concepts**

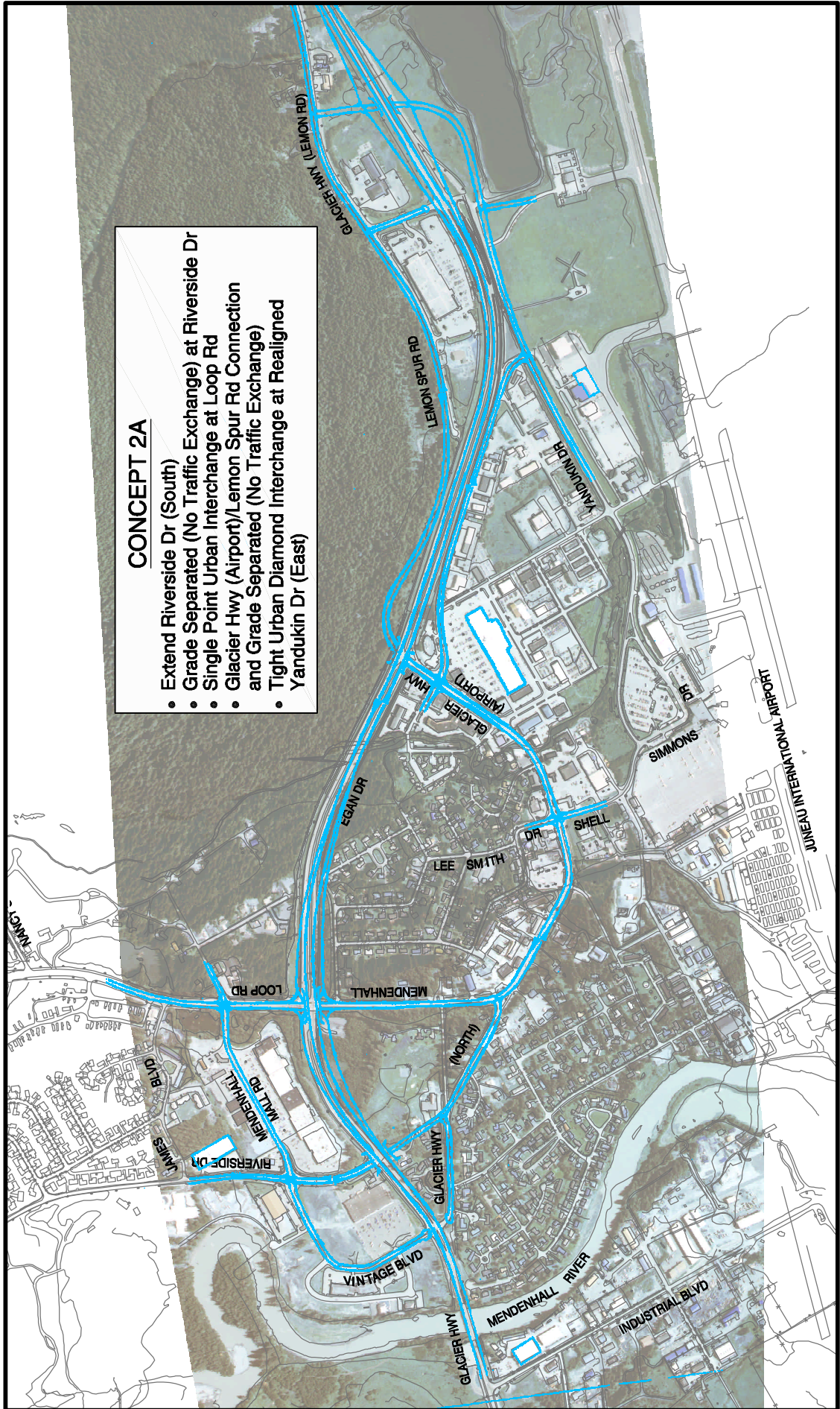
These concepts improve mobility along Egan Drive but limit access to the study area. Traffic conflicts with cross streets are eliminated through over-crossings. Various combinations of interchanges and new connections provide for traffic exchange and circulation. Figure 5-3 also shows a typical cross section of Egan Drive in the vicinity of Old Dairy Road just east of Glacier Highway (Airport).

### *Concept 2A*

This concept, shown in Figure 5-7, provides full access along Egan Drive at only two locations: a single-point urban interchange at Mendenhall Loop Road, and a tight urban diamond interchange at realigned Yandukin Drive to the east. The realignment of Yandukin Drive to the east of the Juneau Christian Center minimizes the impact on airport property. Two important local connections are proposed in Concept 2A: extending Riverside Drive south of Egan Drive to Glacier Highway (North), and connecting Glacier Highway (Airport) to Lemon Spur Road. These connections will provide better local access and separate local traffic within the study area from those traveling along Egan Drive to other locations. As shown in Figure 5-7, new structures will carry the elevated Egan Drive over the Riverside Drive and Glacier Highway (Airport). Access will be prohibited at the Vintage Boulevard/Glacier Highway (North) and Glacier Highway (Fred Meyer) intersections and these side streets will be turned into cul-de-sacs.

- Traffic Considerations
  - As a result of the grade-separation (no traffic exchange) at Riverside Drive, and the access closure at Vintage Boulevard/Glacier Highway (North), many of the turning movement volumes will be redirected from these access points (Vintage Boulevard and Riverside Drive) to the intersection of Mendenhall Loop Road/Egan Drive. A single-point urban interchange will be quite large in this scenario.
  - In a worst-case redistribution of traffic (all of the traffic diverts to Mendenhall Loop Road), the single-point urban interchange would include southbound triple left-turn lanes, double northbound left-turn lanes at all other approaches to the intersection, and two northbound and southbound through lanes. To operate below capacity, the westbound right-turn would still have to be a free-right turn, thereby maintaining the weaving section between the intersection of Mendenhall Loop Road/Egan Drive and Mendenhall Loop Road/Mall Road. In addition to this intersection being very large at the ground level, the length traveled along Egan Drive crossing Mendenhall Loop Road would be extensive.
  - The Riverside Drive south extension and the Glacier Highway (Airport)/Lemon Spur Road link completes local connections.
  - The Glacier Highway (Airport) area loses its direct connection with Egan Drive.
  - Grade separations and interchanges will reduce conflicts and improve safety along the corridor.
- Non-Motorized Users and Public Transit





- CONCEPT 2A**
- Extend Riverside Dr (South)
  - Grade Separated (No Traffic Exchange) at Riverside Dr
  - Single Point Urban Interchange at Loop Rd
  - Glacier Hwy (Airport)/Lemon Spur Rd Connection and Grade Separated (No Traffic Exchange)
  - Tight Urban Diamond Interchange at Realigned Yandukin Dr (East)

**AREA #1: CONCEPTS FOR EAST OF MENDENHALL RIVER  
CONCEPT 2A**

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FIGURE  
5-7

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