North Douglas Crossing- Comparison of Alternative Crossings

Updated February 23, 2007
(Changes in cost estimates fill footprints)

EVALUATION CRITERIA (Not Ranked)	Vanderbilt Hill Road Corridor	Sunny Point Corridor	Yandukin Corridor A	Yandukin Corridor B	Yandukin Corridor C
Transportation	Results of Traffic Modeling (2004) -- Looking at relative traffic in 2035: crossing. · Reduces projected traffic on existing bridge by approx. 40%. · Reduces projected traffic between crossings on North Douglas Highway by approx. 40%. · Provides shortest travel times between Bayview and Bonnie Brae subdivisions and Lemon Creek; and between Bayview and downtown.		Results of Traffic Modeling (2004) -- Looking at relative traffic in 2035: · Effectively provides access to north and west Douglas. Attracts high volume of traffic to crossing. · Reduces projected traffic on existing bridge by approx. 30%. · Reduces projected traffic between crossings on North Douglas Highway by approx. 40%. · Provides shortest travel times between Bayview and Bonnie Brae subdivisions and Airport, Valley and out the road.		
	Attractive to pedestrian and bicycle use.	Attractive to pedestrian and bicycle use.	Attractive to pedestrian and bicycle use.	Tunnel least attractive to pedestrians, bicyclists.	Attractive to pedestrian and bicycle use.
	On Egan Drive, crossing would likely require construction of a grade-separated interection at Vanderbilt Hill Road. See Note (2).	On Egan Drive, crossing would connect to grade-separated intersection at Sunny Point (already funded for construction), with some upgrades for capacity and turning movements. See Note (2).	On Egan Drive, crossing would likely require construction of a grade-separated interection at Yandukin. See Note (2).	On Egan Drive, crossing would likely require construction of a grade-separated interection at Yandukin. See Note (2).	On Egan Drive, crossing would likely require construction of a grade-separated interection at Yandukin. See Note (2).
	All alignments can feasibly connect to intersection locations on North Douglas Highway that comply with Alaska Department of Transportation & Public Facilities (DOT&PF) sight distance requirements.				
Neighborhoods	Third ranked route in North Douglas resident survey (Vanderbilt to ~5 Mile Creek).	Second ranked route in North Douglas resident survey (Sunny Pt. to Hendrickson Creek area).	This route not tested in North Douglas resident survey.	Highest-ranked route in North Douglas resident survey (Yandukin to Fish Creek Rd.).	Highest-ranked route in North Douglas resident survey (Yandukin to Fish Creek Rd.).
	Concern re: fragmentation of North Douglas neighborhood corridor.	Concern re: fragmentation of North Douglas neighborhood corridor.	Concern re: fragmentation of North Douglas neighborhood corridor.	Least fragmentation of North Douglas neighborhood corridor.	Least fragmentation of North Douglas neighborhood corridor.
	Less flexibility on intersection location (if maintaining shortest route across Refuge).	Alignment of Sunny Point or Yandukin A corridor to CBJ property on Hendrickson Point would give more flexibility on exact location of intersection between Hendrickson and Johnson Creeks.		Yandukin B or C corridors intersect North Douglas Highway at existing intersection at Fish Creek Road (Eaglecrest), through a State-owned right of way.	
	Minimal neighborhood effects on Juneau mainland.	Closest alignment to Sunny Point neighborhood on Juneau mainland.	Minimal neighborhood effects on Juneau mainland.	Minimal neighborhood effects on Juneau mainland.	Minimal neighborhood effects on Juneau mainland.
	All alignments provide opportunities to consider and address North Douglas neighborhood conditions with regard to safety, travel management, and off-highway recreation opportunities.				
Emergency Response	All crossing alignments significantly improve emergency response times and access to Bartlett Hospital and other emergency response locations.				
	Mainland intersection not as close to Glacier (Airport) Fire Station.	Mainland intersection not as close to Glacier (Airport) Fire Station.	Yandukin Drive intersection close to Glacier (Airport) Fire Station.	Yandukin Drive intersection close to Glacier (Airport) Fire Station. Yandukin B or C intersects North Douglas Highway "furthest west," provides shortest response time to West Douglas, and maximizes area in which fire service insurance rate reduction would apply.	
Airport operations & future use	Least impact to Airport.	Low impact to Airport.	Raises issues of impacts to Airport operations and future needs.	Disruption of Airport operations during tunnel construction. Could complicate Airport management. Post-construction, impacts to Airport development & operations minimized.	Raises issues of impacts to Airport operations and future needs.
Environment / Wetlands / Refuge	Shortest crossing of Refuge and wetlands. Least *non-tunnel* fill footprint in wetlands.	Wetlands fill footprint for embankment approx. 1.8 times that of Vanderbilt Hill Road alignment.	Wetlands fill footprint for embankment approx. 2 times that of Vanderbilt Hill Road alignment.	Least fill footprint in wetlands (very comparable to Vanderbilt Hill Road alignment).	Longest crossing of Refuge & wetlands. Largest fill footprint in wetlands (for embankment, approx. 2.4 times that of Vanderbilt Hill Road alignment.)
	Crosses primarily unvegetated sea floor and open water in Refuge; no wetland at Douglas Island terminus.	Crosses primarily low estuarine marsh in Refuge and wetland (bog & fen) habitat (Category B) on Douglas Island.	Crosses primarily high estuarine marsh in Refuge and wetland (bog & fen) habitat (Category B) on Douglas Island.	Crosses primarily high estuarine marsh in Refuge and forested wetland habitat (Category B) on Douglas Island.	Crosses primarily high estuarine marsh in Refuge and forested wetland habitat (Category B) on Douglas Island.
	All alternative corridors are within the Mendenhall Wetlands State Game Refuge. However, none of the corridors are in the vicinity of a documented "hotspot" for bird use in the Refuge.				
Visual impacts	Impact to channel/wetlands vista.	Impact to channel/wetlands vista.	Impact to channel/wetlands vista.	Least visual impact, due to partial tunnel.	Impact to channel/wetlands vista.
Crossing Length	4,200 ft.	7,200 ft.	7,650 ft.	7,000 ft. (Tunnel = 1,000 ft.)	9,750 ft.
Footprint of fill in wetlands	Embankment w/ fixed bridge: 8.3 ac.	Embankment w/ fixed bridge: 14.9 ac.	Embankment w/ fixed bridge: 15.8 ac.	Embankment w/ fixed bridge: 8.1 ac.	Embankment w/ fixed bridge: 20.1 ac.
	Embankment w/ movable bridge: 11.0 ac.	Embankment w/ movable bridge: 18.5 ac.	Embankment w/ movable bridge: 18.4 ac.	Embankment w/ movable bridge: 13.7 ac.	Embankment w/ movable bridge: 23.5 ac.
	Structure road w/ fixed bridge: 0.5 ac.	Structure road w/ fixed bridge: 3.9 ac.	Structure road w/ fixed bridge: 1.8 ac.	Structure road w/ fixed bridge: 1.0 ac.	Structure road w/ fixed bridge: 1.0 ac.
	Structure road w/ movable bridge: 0.5 ac.	Structure road w/ movable bridge: 4.4 ac.	Structure road w/ movable bridge: 1.8 ac.	Structure road w/ movable bridge: 1.0 ac.	Structure road w/ movable bridge: 1.0 ac.
Estimated Project cost (2007) See Notes (2)&(3)	Embankment w/ fixed bridge: $53 - $65 M	Embankment w/ fixed bridge: $62 - 77 M	Embankment w/ fixed bridge: $69 - 87 M	Embankment w/ fixed bridge: $178-204 M	Embankment w/ fixed bridge: $91 - 115 M
	Embankment w/ movable bridge: $65 - 81 M	Embankment w/ movable bridge: $75 - 94 M	Embankment w/ movable bridge: $76 - 97 M	Embankment w/ movable bridge: $173-204 M	Embankment w/ movable bridge: $101 - 126 M
	Structure road w/ fixed bridge: $105 - 119 M	Structure road w/ fixed bridge: $137 - 155 M	Structure road w/ fixed bridge: $171 - 194 M	Structure road w/ fixed bridge: $205-233 M	Structure road w/ fixed bridge: $221 - 251 M
	Structure road w/ movable bridge: $131 - 148 M	Structure road w/ movable bridge:$164-185 M	Structure road w/ movable bridge: $198-225 M	Structure road w/ movable bridge: $227 - 258 M	Structure road w/ movable bridge: $256-290 M
Estimated Egan Intersection Cost	$40 M for construction of grade-separated intersection.	$5 M for upgrade to grade-separated intersection (construction 2007-08).	$47 M for construction of grade-separated intersection.	$47 M for construction of grade-separated intersection.	$47 M for construction of grade-separated intersection.

Notes: (1) All corridors must provide for a navigable channel.

(2) Estimated project costs do not include costs for intersection upgrades at Egan Drive. Those estimated costs are provided in separate matrix entry.

(3) Low end of cost ranges represent using borrow/embankment material provided by DOT&PF Gastineau Channel Dredging project, and reduced contingencies for construction.

(4) Movable bridges incur higher operations & maintenance costs. Tunnel also raises operation & maintenance costs.