

# Remote Bridges in Alaska

Travis Arndt, PE, SE

Leslie Daugherty, PE, SE

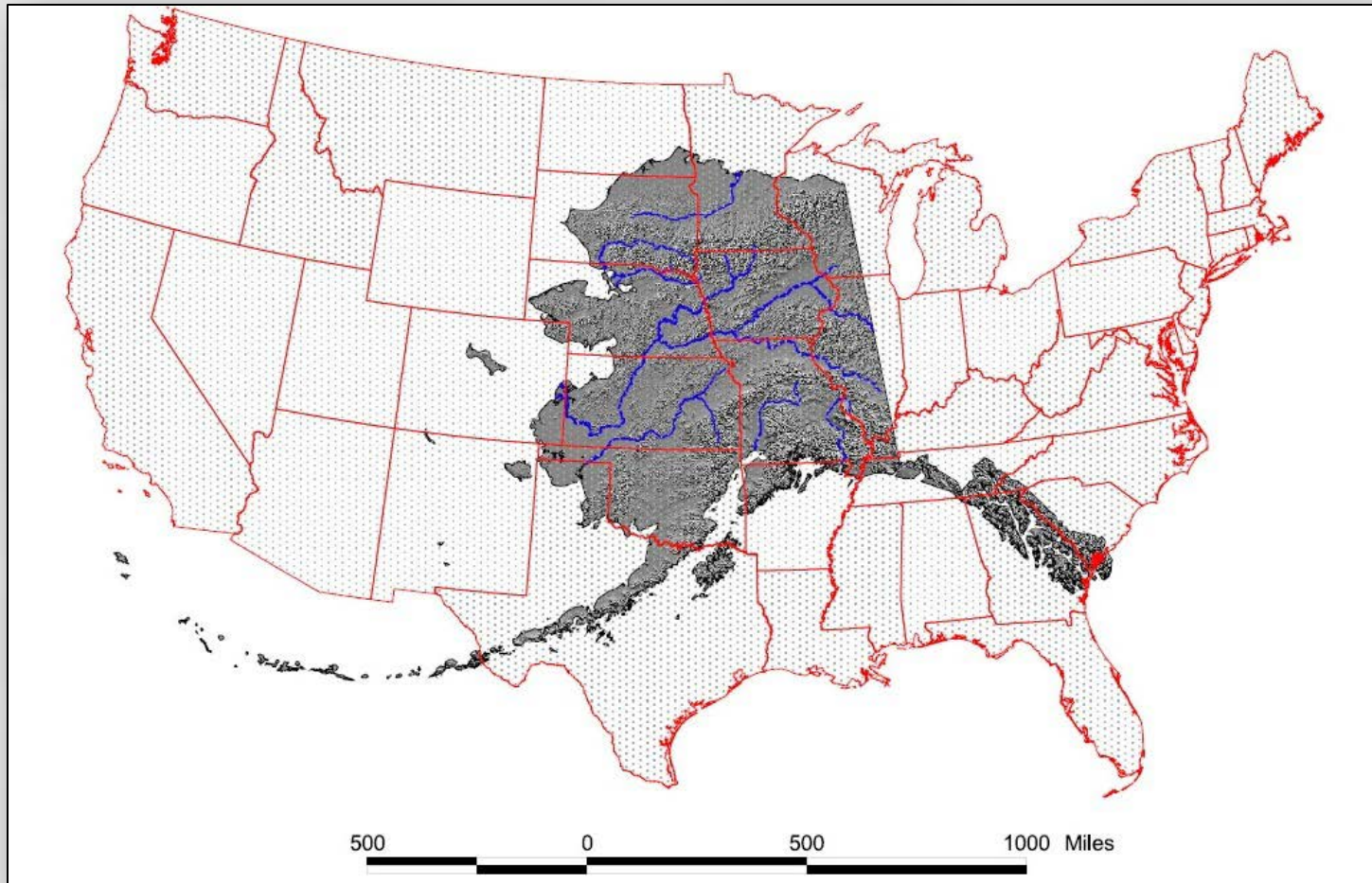
Western Bridge Engineers Seminar  
September 4, 2013



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# Geography



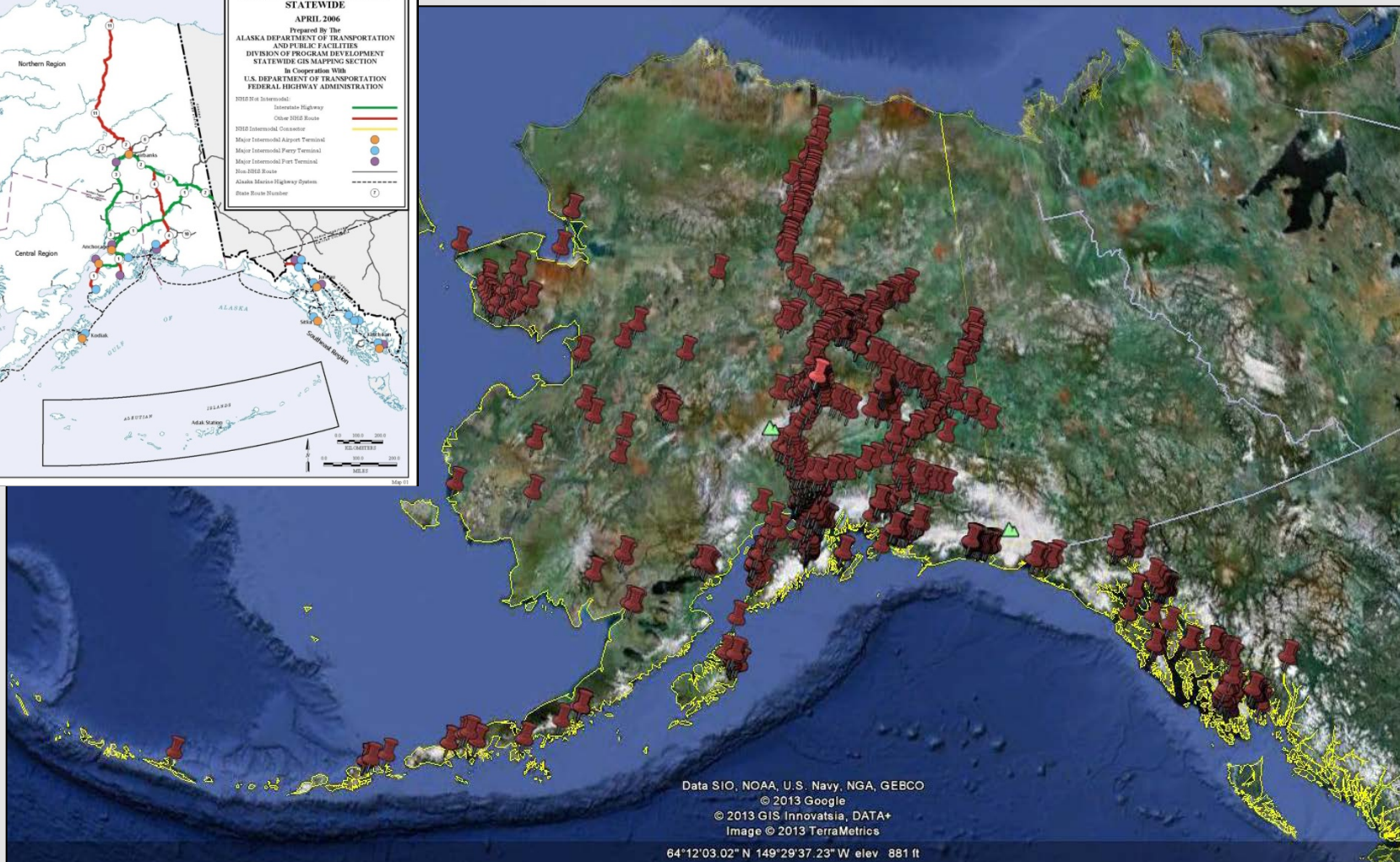
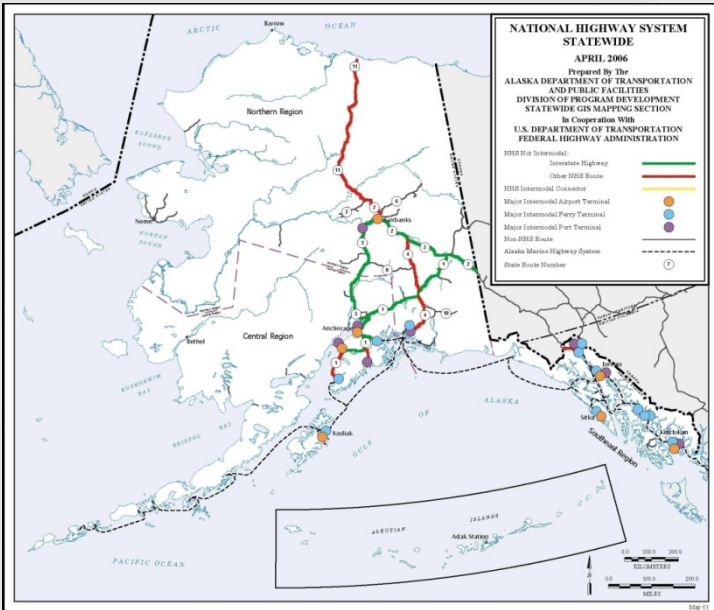
(USDA - <http://www.ak.nrcs.usda.gov/technical/AKlower48.html>)



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# Bridge Locations



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# What is a "Remote Location"?

- Off the road system
- Maybe 1 barge per year or air cargo only
- No maintenance
- No detours





# Design Considerations

- Bridge is usually lifeline
- Multiple users (ATV, peds, snow machine)
- No overweight vehicle enforcement
- Economy vs. durability



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# Design Definition of Remote Bridge

- No mining or heavy industry
- $ADT \leq 50$ ,  $ADTT \leq 10$
- No change in loads expected



# Increased Construction Costs

- No concrete plants
- Shipping costs
- Fuel costs
- Lack of labor,  
maybe lack of  
worker housing



# Design of Remote Bridges

- Cannot sacrifice safety!
- 1-lane vs. 2-lane
- Can modify load modifiers, live load factors, and limit states according to Dept. Policy



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# Detailing for Remote Bridges

- Shipping length determines splice location
- Rolled shapes may be preferable
- Rebar length (splices) @ 40' instead of 60'



# Plan Ahead!

- Precast/prefab as much as possible
- Concrete: Pre-batch, ship in sacks & truck mix





# Village of Grayling

- Bridge is critical link to airport



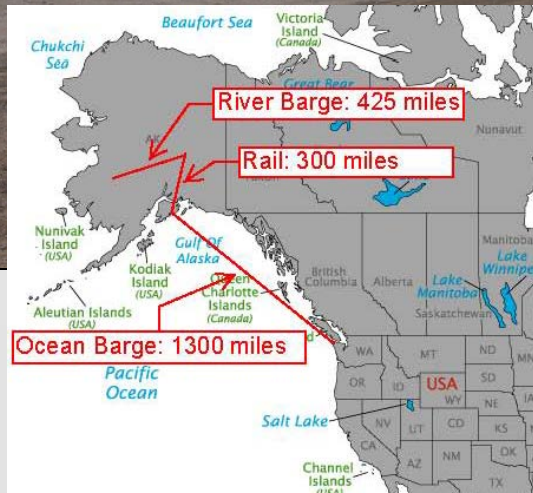


# Grayling Creek Bridge

- Old Bridge: 92' long x 13' wide
- New Bridge 149' long x 28' wide



# Transport to Grayling



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# Abutment



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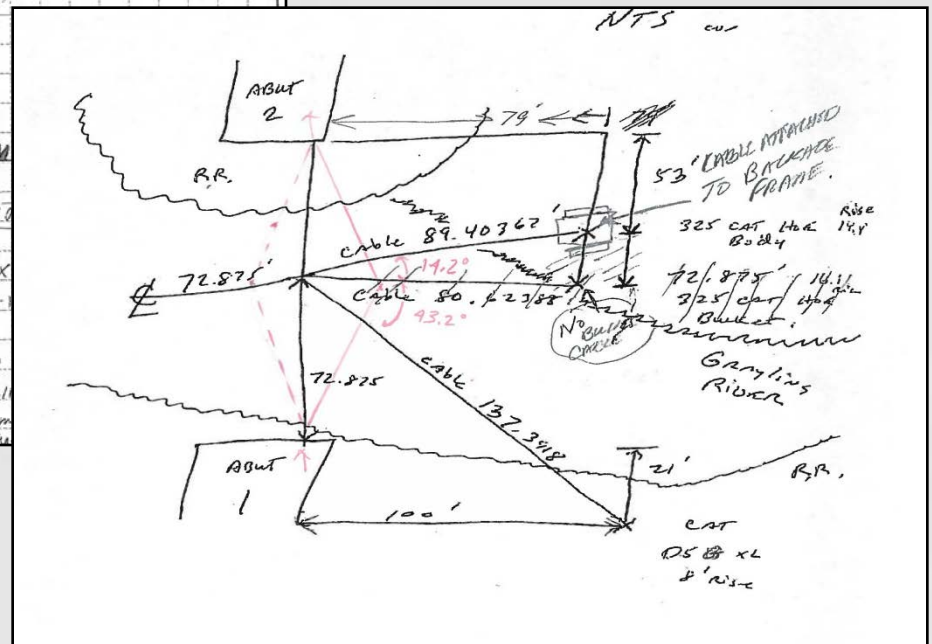
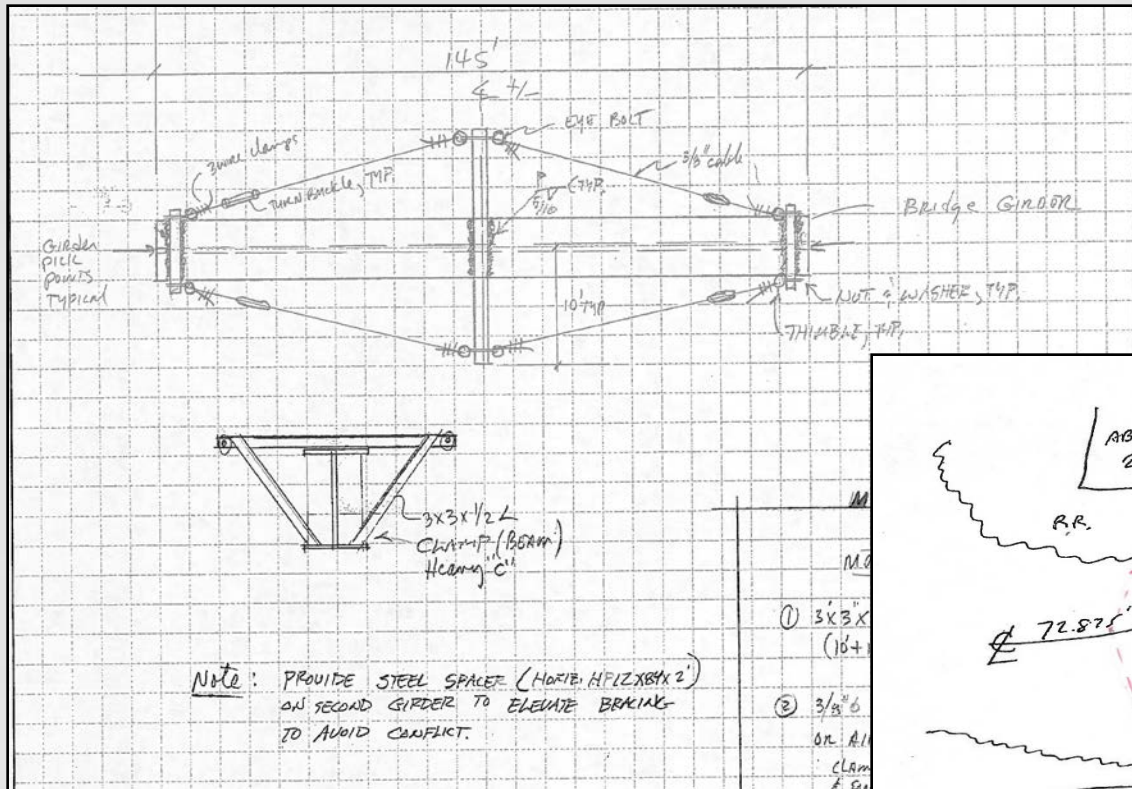


# Steel Superstructure



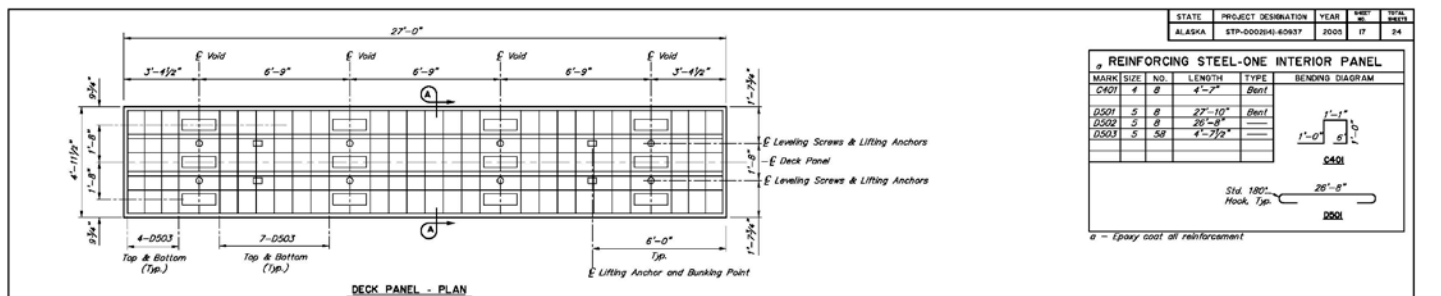
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# Erection Challenges





# Deck Panel Placement



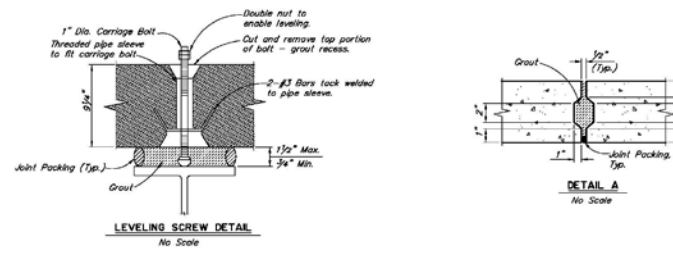
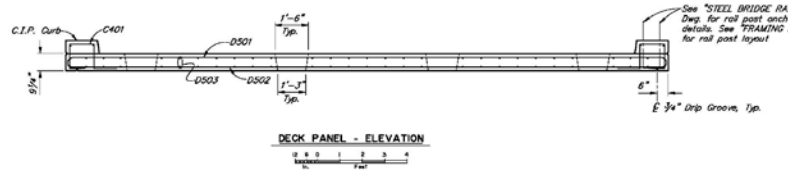
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	STP-000204-40937	2005	17	24

REINFORCING STEEL-ONE INTERIOR PANEL				
MARKER SIZE	NO.	LENGTH	TYPE	REINFORCING DIAGRAM
C401	4	4'-7"	ReinT	
D501	5	27'-10"	ReinT	
D502	5	26'-8"	---	
D503	5	4'-7 1/2"	---	

Std. 180° Hook Typ. 26'-8"

D501

a - Epoxy coat all reinforcement



DESIGNED BY: Frank Arndt	CHECKED: Todd Bark	STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES BRIDGE SECTION	
DRAWN BY: Sam Juhn	CHECKED: Frank Arndt		
QUANTITIES BY: Frank Arndt	CHECKED: Todd Bark		





# Grout Placement



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# Grout Problems



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# Old and New Grayling Cr Bridges



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# Questions?

[travis.arndt@alaska.gov](mailto:travis.arndt@alaska.gov)

907-465-8892



[leslie.daugherty@alaska.gov](mailto:leslie.daugherty@alaska.gov)

907-465-8891



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