

TECHNOLOGY FOR  
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**Transportation**  
DOT Statewide Research, Development,  
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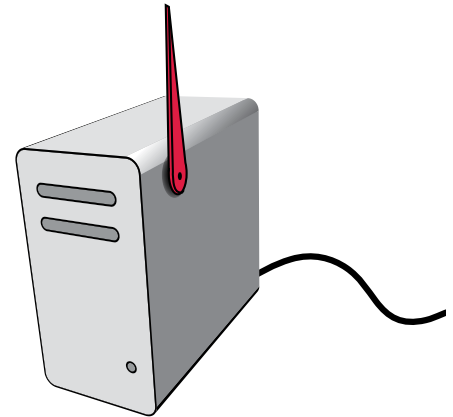
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## Top Tips for Effective Email

By Thomas Murawski and Perry Lockett

The biggest complaint we hear about email is that we have too much of it. Some executives receive more than 500 messages a day. As a result, people are lashed to their computers and can’t do other things. We also hear horror stories. A reader doesn’t see the deadline lurking below the first screen and misses a major opportunity. A writer asks a vague question and starts an email storm that lasts a week. For all its speed and convenience, email hasn’t canceled the need for sound judgment.



If we could give you just one piece of advice, we’d say use this marvelous tool wisely. Don’t write unless you must, and when you do,

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## Finding a Sustainable Wearing Surface for the Yukon River Bridge

Technical translation by Bryr Ludington

The E. L. Patton Yukon River Bridge is located about 140 road miles north of Fairbanks on the Dalton Highway, and is the only span across the Yukon River in Alaska. It was opened to traffic in 1976 after two years of construction and has carried the pipeline and the heavy traffic of the Haul Road ever since.

### The Problem

The trouble AKDOT&PF has faced since the construction of the bridge over 35 years ago is finding a surface material for the bridge

deck that can withstand the damage inflicted by hundreds of heavy trucks loads a year, snow removal equipment, and the chains used on truck tires in the winter, as well as interior Alaska temperature extremes from  $-60^{\circ}\text{F}$  to  $100^{\circ}\text{F}$ .

In July of this year, the Alaska University Transportation Center at the University of Alaska Fairbanks released a report, “Evaluation of Wearing Surfaces for the Yukon River Bridge,” in which authors Dr. J. Leroy Hulsey, Zachary Jerla, and Wilhelm Muench tested several material types in an attempt to find

a lightweight, durable, and traction-resistant material that could withstand not only the existing traffic load, but also the increase in volume projected to accompany the future gas pipeline.

The bridge is 2,295 feet long with a deck width of 30 feet. The two traffic lanes are on a 6% downgrade from south to north over an orthotropic closed-cell steel deck. The deck is supported by two steel box girders that are 61 in. wide by 163 in. deep. In 1976, a 5 in. thick

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Timber on timber composite (rough sawn, two layers of 2½ in. by 12 in.).



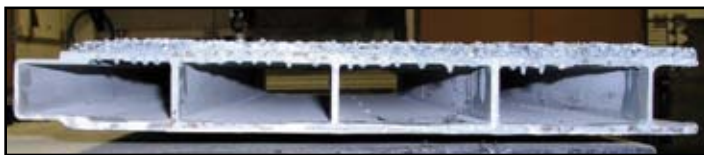
Timber driving surface lagged to UHMW solid.



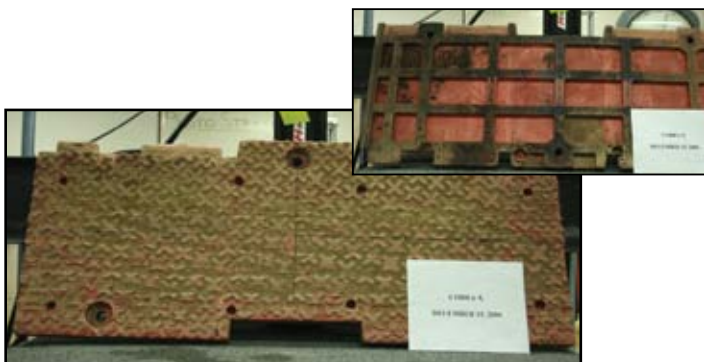
Transonite by Martin Marietta (side view).



Timber driving surface lagged to UHMW M-shape.



Super Panel (side view).



Cobra X, typical bridge-deck panel (inset; bottom side).

two-layer timber wearing surface was installed on the bridge deck. This timber system has been replaced four times: in 1981, 1992, 1999, and 2007. Each replacement has been more expensive, while the quality of the material declines. The central objective of this study is to determine if the timber system should again be reinstalled or if a better, more cost-effective material exists that will outperform and outlast it.

### The Candidates

There were a number of materials evaluated, some in combination:

1. Timber: Douglas Fir #2 boards (2½ in. x 12 in. x 12 ft).
2. Transonite: a light weight, high strength, extremely durable composite panel made of fiber-reinforced polymer laminates and a foam core (4 ft. x 4 ft. panels and 5 in. x 18 in. x 24 in. samples).
3. Uncoated UHMW: ultra high molecular weight polyethylene (5 in. x 4 ft. x 4 ft. panels, one solid and one M-shaped).
4. Coated UHMW: (18 in. x 24 in. panels)
5. Super Panel: manufactured with cement, light-weight aggregate and reinforced with embedded fiberglass mesh (with local aggregate wear surface applied)
6. Cobra X: lightweight high-density polyethylene (HDPE) (a 14-year-old sample of existing bridge deck surface, installed as an experiment in 1992, was used. A new sample was unobtainable because Cobra X is no longer manufactured).
7. Asphalt concrete (a nine-year-old section previously removed from an intersection, tested to provide a baseline for comparison between products).

A suitable wearing surface must meet the following criteria:

- A maximum thickness of 6 in.
- Surface must clear splice plates and bolts that were used for the steel deck.
- Surface must be fastened to the orthotropic steel deck.
- Weight should be less than 30 pounds per square foot.
- Traction should be superior to that of wood and preferably equal or better than pavement.
- Surface must resist wear and damage from tire chains.
- Thermal strains should be accounted for.
- Flexibility should be compatible with the steel deck.

The three main issues addressed for each of the test materials were:

- structural durability,
- traction, and resistance to wear and damage caused by truck tire chains, and
- field performance.

## The Tests

### Structural Durability

Factors considered when ranking the materials for structural durability were stiffness, cold-temperature response, behavior during testing, and material properties. Six experimental bridge decks were tested for durability through testing and analytical modeling.

See the table below for material performance, ranked in order of durability.

### Traction and Chain Damage

Six wearing surfaces and a sample of asphalt pavement were tested in the laboratory. Multiple tests were conducted at temperatures of 70°F, 20°F, and -20°F. Wearing surfaces were ranked for traction under dry and icy conditions for a moving vehicle (dynamic friction coefficient) and under icy conditions with a stalled vehicle (static friction coefficient).

Traction tests yielded the following results:

**Cobra X** ranked in the top three products for all tests in icy conditions.



*Typical traction test*

**UHMW**, uncoated and coated, ranked near the bottom of the products for 20°F and -20°F.

**Timber** under icy conditions ranked near zero at 20°F for both dynamic and static friction coefficients. For a stalled vehicle on a 6% grade, this lack of traction is problematic. At -20°F and icy, however, timber is one of the best traction surfaces.

Tire chain damage occurs as three types: rolling, lashing, and dragging damage. Rolling damage is the measure of the damage caused by a truck tire moving across the bridge deck. The tests for rolling damage involved moving a normally loaded (4,500 lb) test panel while the chained tire rotated at about 40 mph. The damage caused by the high pressure of chain links against the bridge deck surface is cumulative with

Material	Rank	Advantages	Disadvantages
Cobra X	1	Lightweight and flexible	Needs a connection to deck
Transonite	2	Lightweight and flexible; little change in stiffness with temperature; stronger than others	Instability at low compressive stresses may cause surface to delaminate
Timber / Timber	3	Lightweight and flexible; stiffness similar to Transonite	Difference in stiffness in lower layer caused it to carry more load, which caused premature cracking
Timber on Solid UHMW	4	Top timber layer was jointed and fastened to the UHMW; the plastic is ideal for fastening to the deck	The material property mismatch caused timber planks to crack. Thermal strains are a problem.
Timber on M-shaped UHMW	5	Same as timber on solid UHMW and its weight is reduced	M-shape was significantly more flexible than the solid; this caused timber planks to crack at lower loads. Other disadvantages are the same as the solid except it stiffened more in cold temperatures.
Super Panel	6	By comparison, stiffer and stronger than the other systems. Material properties were somewhat insensitive to cold temperatures.	Too stiff and too brittle for use on the Yukon River Bridge.

*(continued)*

time; therefore, the test was designed to represent a year of rolling damage.

Lashing damage is caused by loose links of chain striking the wearing surface. Lashing damage was measured by spinning a tire with chains at approximately 40 mph. The chained tire was rotated at 1 in. above the surface for a period of 2 seconds (representing nearly a year of use on the bridge).

Dragging damage was measured by cyclically moving the test panel eleven cycles under the chained tire. The tire was subjected to a normal force of 4,500 lb while locked and prevented from rolling (a drag condition). The normal force of 4,500 lb approximated the force on a single tire in an 18,000 lb equivalent single axle load. Two seconds of lashing time and 11 cycles of dragging were used to approximate one year of damage on the Yukon River Bridge.



Applying rolling, lashing, and drag forces.

Wearing surfaces can be damaged by a combination of rolling, lashing, and dragging. The weighted contribution of each is dependent on traffic and weather, and on what percentage of the surface is damaged by each. Weighted values for each type of damage were not determined for this study. Performance of materials was based on accumulated damage, assuming each type of damage is weighted equally.

Accumulated Damage for -20°F (0.001 in.)					
Rank	Sample	Rolling	Lashing	Dragging	Totals
1	Cobra X	13	14	-5	22
2	UHMW	12	13	13	38
3	Transonite	14	31	26	71
4	Super Panel	19	50	28	97
5	Timber	95	27	13	135



Cobra X crossing module, summer of 2007.



Decay in the top of the wearing surface.



Timber deck repair; a maintenance activity.



Field traction measurements using Grip Tester Type 292/16.

## Field Performance

Existing Yukon River Bridge wearing surfaces were inspected in 2006 and again in 2007. Based on these inspections, wearing surfaces were ranked for performance.

Rank	Future Use	Surface	Age	Condition	Performance
1	Yes	Cobra X on timber	15	Fastened to timber under-layer	This experimental feature was installed in 1992. Observed: It has performed well.
2	Yes	Two-layer timber system	8	Timber layers are lagged together	Installed in 1999. Observed: It is slick when wet or icy. Life is reduced by decay, chains, and equipment damage. Predicted: Likely will prematurely crack because one layer carries more load.
3	No	Concrete-filled grid	8	Metal grid with concrete between	This is an experimental feature. Observed: Condition was better than expected; however, concrete was below the metal grid, which will cause a traction problem.
4	No	Transonite	2	Composite is fastened to the steel deck	This experimental feature was installed in 2005. Observed: Wearing surface was damaged the first year. It also appears that the panel was not sealed at the fastener penetrations and was unable to drain.
5	No	Prodeck 4	2	FRP supported by a rail	This experimental feature was installed in 2005. Observed: Wearing surface was delaminating and there were stress cracks at the web flange interface. It appears that the system was too stiff and too brittle for this application. There also appeared to be water damage.

## Conclusions

Except for Cobra X, none of the wearing surfaces tested in this study will provide a satisfactory long-term solution for use on the Yukon River Bridge. Each material had problems, as shown below.

Wearing Surface	Where (Field or Lab)	Laboratory Studies Rank			Field Evaluation	Acceptability
		Durability	Traction	Chain Damage		
Cobra X	F, L	1	3	1	Good	Recommended
Timber/timber	F, L	3	4	5	Poor	Not recommended
Transonite	F, L	2	2	3	Failed	Rejected
Timber on solid UHMW	L	4	4	5	NA	Rejected
Timber on M-shaped UHMW	L	5	4	5	NA	Rejected
Super Panel	L	6	1	4	NA	Rejected
UHMW	L	NA	5	NA	NA	Rejected
Uncoated UHMW	L	NA	6	2	NA	Rejected
Prodeck 4	F	NA	NA	NA	Failed	Rejected
Concrete-filled metal grid	F	NA	NA	NA	Failed	Weight is a problem, and traction will be an issue as the concrete abrades below the metal grid

(continued)

## Recommendations

Cobra X was clearly the best alternative to timber. Unfortunately, the company that produced Cobra X is no longer in business. The authors of this study recommend that a wearing surface similar to Cobra X be developed for the Yukon River Bridge. The patent for Cobra X ran out in November 2007, so other manufacturers should be able to provide this or similar products. Instead of a timber underlayer, however, the wearing surface should be fastened directly to the deck, after that fastening system undergoes laboratory testing.

This study shows that any wearing surface proposed for the Yukon River Bridge should meet the following criteria:

- It should weigh less than 30 psf.
- If any two-layer system is proposed, the top layer should be more flexible than the bottom layer.
- Surface traction coatings should be more flexible than the support system and should be resistant to gouges and abrasions.
- The system should be thermally compatible with the orthotropic steel deck, or if not, connections

to the steel deck should allow it to breathe.

- If possible, the wearing surface should be modular so it is easy to remove and replace.

The authors of this study recommend that AKDOT&PF prepare a competitive proposal, requesting design and manufacture of alternate wearing surfaces that may be installed on a section of road with a grade of 6% or greater, where trucks typically use tire chains. Test panels should first be tested in the laboratory for traction and resistance to tire damage before undergoing field tests. Test sections need not be installed on the Yukon River Bridge, as this study provides adequate structural durability information for the bridge. Any traction coating must be able to hold up to traffic and weather.

Cobra X has already been in service on the Yukon River Bridge for twelve years and has continued to prove promising in both laboratory and field tests. Once a similarly cost-effective material is developed, tested, and installed, the bridge will be prepared to meet the ever-increasing demands of the Dalton Highway.



## Are You Prepared for Winter Weather Driving?

Winter weather too often catches people unprepared. Researchers say that 70 percent of the fatalities related to ice and snow occur in automobiles, and about 25 percent of all winter-related fatalities are people caught off guard, out in the storm. What winter weather preparations are being made in your area and what are the appropriate steps to take that will ensure your winter weather safety? Preparing your vehicle for winter and knowing how to react if stranded or lost on the road are the keys to safe winter driving.

Before the winter season begins, have a mechanic check the following items on your car:

- Battery
- Antifreeze
- Wipers and windshield washer fluid
- Ignition system
- Thermostat
- Lights
- Flashing hazard lights
- Exhaust system
- Heater
- Brakes
- Defroster

- Oil level (if necessary, replace existing oil with a winter grade oil)
- Install good winter tires. Make sure the tires have adequate tread. All-weather radials are usually adequate for most winter conditions.
- Keep a windshield scraper and small broom for ice and snow removal.
- Maintain at least a half tank of gas during the winter season.

### Plan long trips carefully

Before departing, review weather forecasts and know the current road conditions. Call 511, Travel in the Know, or log onto <http://511.Alaska.gov>. Always travel during daylight and, if possible, take at least one other adult.

If you must go out during a winter storm, use public transportation. Dress warmly. Wear layers of loose-fitting, layered, light-weight clothing.

### Carry food and water

Store a supply of high energy munchies and several bottles of water.

## Winter Car Kit

Keep these items in your car:

- Flashlights with extra batteries
- First aid kit with pocket knife
- Necessary medications
- Several blankets
- Sleeping bags
- Plastic bags (for sanitation)
- Matches and firestarter
- Extra set of mittens, socks, and a wool cap
- Rain gear and extra clothes
- Small sack of sand for traction under wheels
- Small shovel
- Small tools (pliers, wrench, screwdriver)
- Booster cables
- Set of tire chains or traction mats
- Cards, games, and puzzles
- Brightly colored cloth to use as a flag
- Canned fruit and nuts
- Nonelectric can opener
- Bottled water

## If trapped in your car during a snow storm

Stay in the car. Do not leave the car to look for help unless help is visible within 100 yards. You may become disoriented and lost in blowing and drifting snow.

- Display a trouble sign.
- Hang a brightly colored cloth on the radio antenna and raise the hood.
- Occasionally run engine to keep warm for about 10 minutes each hour.
- Run the heater when the car is running. Also, turn on the car's dome light when the car is running.
- Beware of carbon monoxide poisoning. Keep the exhaust pipe clear of snow, and open a downwind window slightly for ventilation.
- Watch for signs of frostbite and hypothermia.
- Do minor exercises to keep up circulation. Clap hands and move arms and legs occasionally. Try not to stay in one position for too long. If more than one person is in the car, take turns sleeping.
- For warmth, huddle together.
- Use newspapers, maps, and even the removable car mats for added insulation.
- Avoid overexertion. Cold weather puts an added strain on the heart.
- Unaccustomed exercise such as shoveling snow or pushing a car can bring on a heart attack or make other medical conditions worse. Be aware of symptoms of dehydration.

## Safe winter driving tips

- Clear snow and ice from all windows and lights—even the hood and roof—before driving.
- Pay attention. Don't try to out-drive the conditions. Remember the posted speed limits are for dry pavement.
- Leave plenty of room for stopping.
- Leave room for maintenance vehicles and plows—stay back at least 200 feet and don't pass on the right.
- Know the current road conditions. Call 511, Travel in the Know, or log onto the road conditions reports web page.
- Use brakes carefully. Brake early. Brake correctly. It takes more time to stop in adverse conditions.
- Watch for slippery bridge decks, even when the rest of the pavement is in good condition. Bridge decks will ice up sooner than the adjacent pavement.
- Don't use your cruise control in wintry conditions. Even roads that appear clear can have sudden slippery spots, and the short touch of your brakes to deactivate the cruise control feature can cause you to lose control of your vehicle.
- Don't get overconfident in your 4x4 vehicle. Remember that your four-wheel drive vehicle may help you get going quicker than other vehicles but it won't help you stop any faster. Many 4x4 vehicles are heavier than passenger vehicles and actually may take longer to stop. Your 4x4 can lose traction as quickly as a two-wheel drive vehicle.
- If your car is equipped with anti-lock brakes, do not pump brakes in attempting to stop. The right way is to stomp and steer!
- Look farther ahead in traffic than you normally do. Actions by other cars will alert you quicker to problems and give you a split second extra time to react safely.
- Remember that trucks are heavier than cars. Trucks take longer to safely respond and come to a complete stop, so avoid cutting quickly in front of them. Go slow!



**Note:** This safety reminder is for informational purposes only. We recognize it doesn't cover everything. Contact your local emergency management office or American Red Cross chapter for more information on winter driving.

have mercy on your readers. Slow down for important messages and apply what you learned in school about writing that’s clear, complete, concise, and convincing. Come across as courteously efficient.

Here are five tips to make your email experience less painful and more productive:

**1. Start fast and focus readers by improving your subject line**

Pack the subject line with meaning and front-load it for smart phones and other data devices with small screens. Start with the “do” and a date if you’re requesting or answering. Here’s an example: “Need refund-feature factor by Jan 16 for exclusion ratio.” If your deadline is tight, start with the date: “By Jan 16, need ...” Meaty subject lines make acting, filing, and finding easier for everyone.

**2. Accelerate by avoiding “uphill” writing (slow buildup)**

Ask yourself what you want the reader to think, feel, or do. If your subject contains an action, use the first two lines of your message to say how to complete it, why you need something, or why you’re doing something. If your subject line doesn’t contain an action, use your opening lines for key concepts, examples, benefits, or other support.

You can explain more afterward, but remember a bit of street poetry a CEO shared with us about limiting lines in email: “If you can’t do it in three, you won’t do it to me.” People are busy, so they don’t read well on screen and don’t like to scroll.

**3. Think twice about saying anything sensitive**

Anyone may read an email you send to your boss or to a colleague. Email is only as private as a postcard and so easy to forward. Take care when using the Cc line, the Bcc line, and Reply to All. Did you hear about the fellow who sent a steamy message to his

secret love—through the company’s group list for the North America staff? It made the papers.

**4. Pick up the phone or meet when your purpose calls for give and take**

Email isn’t good for debating, negotiating, or brainstorming. Delivering bad news by email doesn’t work well either because it’s so hard to get the tone right. For sensitive issues, nothing beats hearing a person’s voice or seeing facial expressions. Want your team’s thoughts on a certain subject? Sitting down with them for an hour can get faster and better results than endless email chatter. If you’ve started writing and haven’t closed the matter after several emails, it’s time to phone or meet.

**5. To tame the email avalanche, manage your inbox and encourage effectiveness**

Manage your inbox by deleting junk. Use color highlighting for messages from important people. Create a rule that sends certain messages to clearly named folders. Flag messages so reminders pop up near due dates. Above all, try to handle any message just once.

If you’re a senior or mid-level supervisor, encourage effective use of email. Tell your staff how you’d complete these beginnings: “I like email that . . .” “I dislike email that . . .” Once every quarter, discuss managing email at your staff meeting. Put out the word. We’re pulling for you—after all, we are in this together.

*Thomas Murawski (president) and Perry Luckett (senior consultant) are with the Murawski Group. They’ve offered premier training to hundreds of Alaska DOT’s writers over the last ten years and to thousands across the nation since 1988. You can learn more about them at [www.writingandspeaking.com](http://www.writingandspeaking.com).*



## Transportation-Related Training Available Free On-Line to the Public From NHI

Course Number	Course Title
FHWA-NHI-131110	Pavement Preservation Treatment Construction—web based
FHWA-NHI-131110A	Pavement Preservation Treatment Construction Guide: Introduction to Pavement Preservation—web based
FHWA-NHI-131110B	Pavement Preservation Treatment Construction Guide: Materials—web based
FHWA-NHI-131110C	Pavement Preservation Treatment Construction Guide: Crack and Joint Sealing and Filling—web based
FHWA-NHI-131110D	Pavement Preservation Treatment Construction Guide: Localized Pavement Repair—web based
FHWA-NHI-131110E	Pavement Preservation Treatment Construction Guide: Chip Seals—web based

Course Number	Course Title
FHWA-NHI-131110G	Pavement Preservation Treatment Construction Guide: Slurry Seals—web based
FHWA-NHI-131110H	Pavement Preservation Treatment Construction Guide: Micro-Surfacing—web based
FHWA-NHI-131110I	Pavement Preservation Treatment Construction Guide: Thin Functional HMA Overlay—web based
FHWA-NHI-131110J	Pavement Preservation Treatment Construction Guide: Ultra Thin Bonded Wearing Courses—web based
FHWA-NHI-131110K	Pavement Preservation Treatment Construction Guide: Selecting the Right Treatment—web based
FHWA-NHI-131117	TCCC Basic Materials for Highway and Structure Construction and Maintenance—web based
FHWA-NHI-131121	TCCC Construction of Portland Cement Concrete Pavements—web based
FHWA-NHI-131122	TCCC Portland Cement Concrete Paving Inspection—web based
FHWA-NHI-131126	TCCC Concrete Pavement Preservation Series—web based
FHWA-NHI-131126A	TCCC Preventative Maintenance and Pavement Preservation Concepts—web based
FHWA-NHI-131126B	TCCC Concrete Pavement Evaluation—web based
FHWA-NHI-131126C	TCCC Slab Stabilization and Slab Jacking—web based
FHWA-NHI-131126D	TCCC Partial-Depth Repairs—web based
FHWA-NHI-131126E	TCCC Full-Depth Repairs—web based
FHWA-NHI-131126F	TCCC Retrofitted Edge Drains—web based
FHWA-NHI-131126G	TCCC Load Transfer Restoration—web based
FHWA-NHI-131126H	TCCC Diamond Grinding and Grooving—web based
FHWA-NHI-131126I	TCCC Joint Sealing and Crack Resealing—web based
FHWA-NHI-131126J	TCCC Strategy Selection—web based
FHWA-NHI-131127	TCCC Concrete Series—web based
FHWA-NHI-134063A	Maintenance Leadership Academy - WCT/WBT Sessions
FHWA-NHI-134069	TCCC Ethics Awareness for the Transportation Industry—web based
FHWA-NHI-134070	Spec Risk Quality Assurance Specification Development and Validation Course—web based
FHWA-NHI-134071	TCCC Basic Construction and Maintenance Documentation—Improving the Daily Diary—web based
FHWA-NHI-134072	TCCC Math Module—web based
FHWA-NHI-134074	TCCC Bolted Connections—web based
FHWA-NHI-134075	TCCC Hardened Concrete Properties—Durability—web based
FHWA-NHI-134078	TCCC GPS Technology—web based
FHWA-NHI-134081	TCCC Plan Reading—web based
FHWA-NHI-134084	TCCC Fundamentals of Materials Used for Concrete Pavements—web based
FHWA-NHI-134085	TCCC Incompatibility in Concrete Pavement Systems—web based
FHWA-NHI-134087	TCCC Mix Design Principles—web based
FHWA-NHI-134095	TCCC Early Age Cracking—web based
FHWA-NHI-134096	TCCC Basics of Cement Hydration—web based
FHWA-NHI-134097	TCCC Fresh Properties—web based
FHWA-NHI-134098	TCCC Construction of Concrete Pavements—web based
FHWA-NHI-134100	TCCC QCQA for Concrete Pavements—web based
FHWA-NHI-134101	TCCC Design of Pavement—web based
FHWA-NHI-134102	TCCC Troubleshooting for Concrete Pavements—web based
FHWA-NHI-134106	TCCC Basic Construction Surveying—web based
FHWA-NHI-135085	Plan of Action (POA) for Scour Critical Bridges—web based
FHWA-NHI-135086	Stream Stability Factors and Concepts (Prerequisite)—web based
FHWA-NHI-135087	Scour at Highway Bridges: Concepts and Definitions (Prerequisite)—web based
FHWA-NHI-137046	ITS Deployment Analysis System (IDAS)—web based
FHWA-NHI-139006	Integrating Freight in the Transportation Planning Process—web based Standard Version
FHWA-NHI-139006W	Integrating Freight in the Transportation Planning Process—web based Accessible 508 Version
FHWA-NHI-141045	Real Estate Acquisition Under the Uniform Act: An Overview—web based
FHWA-NHI-141047	Local Public Agency Real Estate Acquisition—web based
FHWA-NHI-141048	Outdoor Advertising Control: Bonus States—web based
FHWA-NHI-141049	Outdoor Advertising Control: Non-Bonus States—web based
FHWA-NHI-142052	Introduction to NEPA and Transportation Decision making—web based
FHWA-NHI-151044	Traffic Monitoring and Pavement Design Programs—web based
FHWA-NHI-151045	Highway Performance Monitoring System: An Introduction—web based
FHWA-NHI-231027	Funds Management for FHWA Employees—web based
FHWA-NHI-310115	Introducing Highway Federal Aid—web based Standard Version
FHWA-NHI-310115W	Introducing Highway Federal Aid—web based Accessible 508 Version
FHWA-NHI-380079	AASHTO Roadside Design Guide—web based
FHWA-NHI-380098	TCCC Maintenance of Traffic for Technicians—web based
FHWA-NHI-380099	TCCC Maintenance of Traffic for Supervisors—web based



# The Valdez Trail Becomes the Richardson Highway

by Shannon McCarthy

In the late 1890's it was a disparate trail system, leading from Alaska's Interior to the deep waters of Prince William Sound. A few gold rushes and 60 years later it became Alaska's first highway: the 368-mile Richardson highway. The road has mirrored Alaska's history—from serving as footpath for Alaska's first civilizations to move goods to and from the coast to a modern scenic byway supporting the highly engineered oil pipeline.

It was 1896 when a small prospecting party led by Keish, an Athabaskan prospector commonly known as Skookum Jim Mason, made a significant gold discovery near Dawson City in the Canadian Yukon. By 1897, word of the Yukon River Valley discovery hit the United States and set off a frenzy of activity as hopeful prospectors made their way north.

Spurred on by poor economic conditions in the U.S., the population in the Yukon swelled from 10,000 to an estimated 40,000 in two short years, causing concerns with the British authorities about the lawlessness and a potential famine in the region. Canadian Northwest Mounted Police began imposing taxes on stampeders and required they have enough food, clothing, and equipment to last one year. As a result, the gold seekers became more concerned about having American-controlled routes into Alaska's Interior and the Canadian Yukon. In addition, the existing trails were treacherous, losing men and equipment at an alarming rate. Prospective miners wanted to find easier routes into the Interior.

At the height of the frenzy, unscrupulous promoters advertised the "Valdez Glacier Trail" as the "All American Route" from the Valdez area to several promising locations, including the Copper River Basin, Eagle, and the Yukon. The route was advertised as something it was not: a short glacier crossing. The promotion was believable. It was based on information from the U.S. Army's 1884 Abercrombie expedition. Eager gold seekers arrived by the thousands. The only problem was, there was no town and no established pack trail.

A tent city sprang up at the Valdez tidewaters in 1897 when the newcomers realized they had been duped. In total, four thousand people arrived in Valdez that year. Some decided to stay and set up businesses, others attempted the glacier crossing with mixed success, some losing their lives in the process.



*Adams grader and Caterpillar tractor working outside Fairbanks, 1928.*

By the following year, Abercrombie's U.S. Army crew cut a pack trail through Keystone Canyon and over Thompson Pass based on Alaska Native paths in the area. This time the reality matched the hype and the pack trail became the "All American Route" to the gold fields. The original trail, 409 miles long, could only be traversed in winter, and conditions were still for only the most hardy travelers, because they had to carry all the supplies they needed for the year.

The exploding population increased the need for law and order on the American side of the border and prompted the U.S. Army to establish camps throughout the region.

By 1900, Captain Ambercrombie had selected Valdez as the site of Fort Liscum and the trail took on additional importance as a military link between Valdez and Fort Egbert in Eagle, Alaska. Two events in the years following solidified the route as the dominant route into Alaska's Interior. From 1900 to 1903, work proceeded on the Washington-Alaska Military Cable and Telegraph System (WAMCATS) to connect the two forts. And in 1902, the Fairbanks gold rush urged a whole new round of gold seekers up the Valdez pack trail, establishing the Valdez-to-Fairbanks route.

In 1910, the Alaska Road Commission, led by U.S. Army Wilds P. Richardson, upgraded the route to a wagon trail, hiring struggling gold miners along the way. The upgrade also meant increased economic activity, and many of the now-historic roadhouses were built around this time.

While the first automobile trip on the Valdez to Fairbanks trail was made in 1913, it wasn't until the early 1920s that the automobile became the

*(continued on back page)*

## Meetings Around Alaska

Society	Chapter	Meeting Days	Location	Contact
ASCE	Anchorage	Monthly, 3rd Tues., noon	Moose Lodge	
	Fairbanks	Monthly, 3rd Wed., noon except Sept. and Feb.	Westmark Hotel	
	Juneau	Monthly, 2nd Wed., noon except June–Aug	2nd Fl. Conf. Rm at AEL&P	
ASPE	Anchorage	Monthly, 2nd Thurs., noon except summer	Coast International Inn	
	Fairbanks	Monthly, 1st Mon., noon	Regency Hotel	Jennifer Gibson, 343-8130
	Juneau	Monthly, 2nd Wed., noon except June–Aug.	2nd Fl. Conf. Rm at AEL&P	
ASPLS	Anchorage	Monthly, 3rd Tues., noon	Sourdough Mining Co.	
	Fairbanks	Monthly, 4th Tues., noon	Westmark Hotel	George Strother, 745-9810
	Mat-Su Valley	Monthly, last Wed., noon	Windbreak Cafe	
AWRA	Northern Region	Monthly, 3rd Wed., noon	Rm 531 Duckering Bldg., UAF	Larry Hinzman, 474-7331
ICBO	Northern Chapter	Monthly, 1st Wed., noon except July and Aug.	Zach's Sophie Station	Tom Marsh, 451-9353
ITE	Anchorage	Monthly, 1st Tues., noon except July and Aug.	Ak. Aviation Heritage Museum	Karthik Murugesan, 272-1877
	Sourdough Ch. 49	Monthly, 3rd Thurs., noon except July & Dec.	West Coast International Inn	
IRWA	Arctic Trails Ch. 71	Monthly, 2nd Thurs., noon except July & Dec.	Zach's Sophie Station	
	Asphalt Pavement Alliance	Alaska	3rd Wednesday of every other month	varies
PE in Government	Anchorage	Monthly, last Fri., 7 a.m.	Elmer's Restaurant	
Soc. of Women Eng.	Anchorage	Monthly, 1st Wed. 5:30 p.m. except July and Aug.	DOWL Engineers	Julie Gaken, 269-0634

## Training in February

### Alaska Forum on the Environment, 2010

Feb. 8 to Feb. 12 in Anchorage

### Construction Management Series: Managing Change Productively

Feb. 16 to Mar. 4 in Fairbanks

### Construction Management Series: Managing Change Productively (video)

Feb. 16 to Mar. 4 in Anchorage

### Construction Management Series: Project Management Boot Camp

Feb. 3 to Feb. 24 in Fairbanks

### Construction Management Series: Project Management Boot Camp (video)

Feb. 3 to Feb. 24 in Ketchikan, Feb. 3 to Feb. 24 in Sitka

### Law Enforcement Train-the-Trainer Course

Feb. 12 in Juneau

### NHI 142005: NEPA & Transportation Decision Making

Feb. 17 to Feb. 19 in Fairbanks

### Nighttime Traffic Control for Work Zones

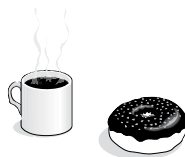
Feb. 10 in Juneau

### Traffic Control Design Specialist

Feb. 8–9 in Juneau

### Utility Training

Feb. 11 in Juneau



## Training in March

### Construction Management Series: Cross-Functional Project Team Building

Mar. 9–25 in Fairbanks

### Construction Management Series: Cross-Functional Project Team Building (video)

Mar. 9–25 in Anchorage

### Construction Management Series: Project Management Boot Camp

Mar. 1–17 in Anchorage

### Construction Management Series: Project Management Boot Camp (video)

Mar. 1–17 in Juneau

### Construction Management Series: Working With Dirt—Quantity Estimating for Heavy Construction

Mar. 22 to Apr. 12 in Fairbanks

### Construction Management Series: Working With Dirt—Quantity Estimating for Heavy Construction (video)

Mar. 22 to Apr. 12 in Anchorage

### Flagger Instructor Training

Mar. 4–5 in Fairbanks

### Law Enforcement Train-the-Trainer Course

Mar. 26 in Ketchikan

## March (continued)

### Maintenance and Short Duration Activities

Mar. 15 in Fairbanks

### NHI 132081: Highway Slope Maintenance and Slide Restoration

Mar. 31 to Apr. 2 in Anchorage

### NHI 135041: HEC-RAS, River Analysis System

Mar. 9–12 in Fairbanks

### NHI 139004: Principles of Effective Commercial Motor Vehicle (CMV) Size and Weight Enforcement

Mar. 8–9 in Anchorage

### NHI 142049: Beyond Compliance: Historic Preservation in Transportation Project Development

Mar. 9–11 in Anchorage

### Nighttime Traffic Control for Work Zones

Mar. 8 in Sitka, Mar. 24 in Ketchikan

### Storm Water Pollution Prevention Plan

Mar. 2–3 in Fairbanks

### Traffic Control Design Specialist

Mar. 22–23 in Ketchikan

### Traffic Control Supervisor

Mar. 2–3 in Fairbanks

### Traffic Control Technician

Mar. 1 in Fairbanks

### Urban Work Zone Design

Mar. 10–11 in Fairbanks

### Utility Training

Mar. 9 in Sitka, Mar. 16 in Fairbanks, Mar. 25 in Ketchikan

### Work Zone Strategies

Mar. 8–9 in Fairbanks

## For information about T2-sponsored training, contact:

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or go to: [www.dot.state.ak.us](http://www.dot.state.ak.us)

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**The Valdez Trail (continued from page 10)**

predominant form of travel across the United States. The strategic and economic importance of the Richardson Highway made it ideal to become Alaska’s first highway.

Thompson Pass, which has the most snow accumulation ever recorded in Alaska, prevented the Richardson from being open year round for decades after it was upgraded to a highway. It wasn’t until 1950 that John Clarke, a foreman of a freight company, proved that it could be cleared, when he plowed the pass continuously that winter. Government forces took over the winter maintenance in 1951.

The Richardson Highway achieved the final indicator of modern automobile routes when it was paved in 1957. In the 1970s it once again became a critical piece of infrastructure when Valdez was selected as the terminus to the Trans-Alaska Oil Pipeline. Today, the historic relics rest roadside with the modern oil facilities.



*Alaska Road Commission teams passing Camp Comfort en route to Valdez after their season’s work.*

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