NEWSLETTER

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President's Message

Paul Cho
ITE-WA President

Almost a decade ago, I purchased my first LED light. It was a critical purchase as I was venturing into the world of night-time mountain biking. If you've lived in the Pacific Northwest for at least a year, you know that it gets dark about 4:30pm during the winter. So any mid-week rides after work equates to riding in the dark. But hey, we do night skiing just fine around here, right?

Still, I had my trusty halogen lamp I used for commuting to run in tandem and it was an interesting comparison of the two. The halogen lamp required a battery pack about the size of laptop batteries. It was good for 1.5hrs of use and provided an adequate beam of light to see directly in front of wheel and faded gradually away to the sides. The LED light came with a battery pack the size of a roll of quarters and put out a spotlight of light with a dramatic cut-off on the edges.

The amount of light put out by the LED light was impressive. I could see farther and even wider. I was good to go for up to 2.5 hours of run time. What was not to like? I found my answer when we hit some dense fog. Yes, apparently cold winter evenings and cloud cover dropping into the woods happens. All of sudden my LED light that was providing me great visibility on the trail was being sprayed back into my eyes. All I could see was a wall of water droplets. Using high-beams driving through a snow storm on the freeway comes to mind. But still, the benefits of the LED outweighed those few instances where it was not so favorable. Also, I found that mounting the light lower (handlebar vs helmet) negated a lot of the blinding affects by moving the intense light away from the same plane as my eye to allow for shadows and reflection. With recent technology of bicycle lights, I've found the brightest lights are almost unusable. They provide so much light output that everything gets flattened out. I have little depth perception and the increased information I pick up with peripheral vision has actually slowed my riding so my brain could process all the added information I was receiving.

In 2010, Redmond installed several

~ See President's Message Next Page

ITE November Meeting

Topic: Street Lighting Controls: A Case Study from Bellingham

When: Tuesday, November 15
12:30pm – 2:30pm

Where: Snohomish Library
311 Maple Avenue
Snohomish, WA 98290

See Events Page for registration information

SAVE THE DATE!

ITE/IMSA Joint Conference

Your Partner in PUBLIC SAFETY

Monday, February 12

In this Issue

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President's Message – continued

manufacturers of LED streetlights to begin testing this new technology for roadway use. There were high claims of energy savings up to 50% with maintenance intervals stretching from 4 years to virtually forever. The draw back was the initial cost of the fixture and its limited light output for arterial applications. So the goal was to evaluate the fixture for performance, ease of maintenance and actual cost savings. The evaluation proved to be positive and Redmond moved towards installing LED streetlights in 2013.

Since then we've learned more on what constitutes good visibility. We used to have 5 basic flavors of light output; 100w, 150w, 200w, 250w and 400w from HPS fixtures. These corresponded to a constant lumen output over the last few decades. The distribution pattern was typically limited to oval or wide oval shape. Currently, the lighting fixture's output varies greatly by how many LEDs are in use and what power input the fixture is being operated at. LED chip technology has been improving with brighter and more efficient chips every other year so the same model fixture may not be available five years from now. This has created the need to catalogue and label the fixtures differently than ANSI's standard fixture type and wattage. Now we must document the actual lumen output if we are to replace the fixture in kind after a knock-down. And all this great light output and energy savings is rather meaningless if the fixture is blocked by a tree. Again, for all that have lived here less than a year, Washington is referred to as the "Evergreen State."

But like my experience with bicycle lighting, there are different manufacturer's that put together differently performing fixtures. Also, we focus so much on lumen output, but there is so much more to visibility than that. Now, we are having to deal with the social variable to the equation. How are these new lights perceived by the public? What are ways that we can balance visual acuity while limiting damaging glare. Have you seen a level LED streetlights on a sloped roadway? Then there is the behind the scenes components such as power supply and wiring that may not last as long as the LED chips themselves.

With all these added variables, it's important that we explore each facet of roadway lighting beyond just average foot-candles and uniformity ratios. How should we treat relative light levels as urban areas are developing buildings that come right up to the right-of-way line? How do we strike a balance of providing lighting on sidewalks while limiting glare to homes? If LEDs are supposed to last 12+ years, then how should we put together a replacement program? Are LED lights too bright?

Now that it is post daylight savings time, I'm sure many agencies are getting comments regarding streetlights. As you are responding to the comments and pondering previously mentioned questions, please join me at our November luncheon meeting where we will learn about another facet of LED technology to manage our lighting system. Lighting controls can provide some solutions to corridors that may be over lit due to design mathematics or during odd hours of the day. It can also alert when a light is out signaling at least a malfunction and at worst a knock-down.

McKinstry will present on Street Lighting Controls: A Case Study from Bellingham to find out what a local agency has been working through as they convert older technology street lighting to LED.

Paul Cho, President

Traffic Operations Engineer

City of Redmond

Sign of the Times

Traffic signal poles in Kiev, Ukraine are illuminated and synced with the signal controller.

Submit by Kevin Johnson, Blueridge Lighting & Controls in Portland, Oregon

2016 ITE Washington

Dates are subject to change. Watch future newsletters for details and events.

NOV 15 [Tuesday] ITE Business Meeting :

Street Lighting Controls: A Case Study from Bellingham

Andrew Williamson, McKinstry Energy Services - Municipal Business Manager, will present how Bellingham wanted to create a modern, illuminated, energy-efficient city. Bellingham retrofitted its 3,600 city-owned streetlights and lighting infrastructure with new light emitting diode (LED) lights integrated with wired (power line) and wireless (radio frequency) controls based on an intelligent networking solution. Bellingham anticipates its new lighting system will reduce its energy consumption by 70 percent or 1.8 million kWh by the year 2020.

Andrew Williamson
Municipal Business Manager
McKinstry Energy Services

Event Information:
When: Tuesday, November 15
12:30pm – 2:30pm

Where: Snohomish Library
311 Maple Avenue
Snohomish, WA 98290

Lunch: Bring your own lunch, no charge, OR boxed lunches from Ingallina's at $20, please make a selection from the following:

1. Turkey & Havarti: Smoked turkey on ciabatta with Havarti cheese, pesto balsamic-aioli, mixed greens, and tomato.
2. Fully Loaded Sub: Italian salami, pepperoni, ham, pepper jack, Cheddar, olives, tomato and pepperoncini on a baguette with Italian Vinaigrette on the side.
3. Roasted Portobello Sandwich: On ciabatta with spinach, mozzarella, roasted peppers and pesto mayo.
4. Pear & Blue Cheese Salad: Ripe pears on a bed of gourmet greens, bleu cheese, dried cranberries, walnuts and fresh strawberry. Served with walnut vinaigrette.
5. Roast Beef with Cheddar: Served on sourdough with leaf lettuce and tomato.
6. Albacore & Dill Pickle Fancy white albacore tossed with dill pickle, celery and mayonnaise on whole wheat with cheddar cheese, and leaf lettuce.
7. Classic Cobb Salad: Lemon & herb chicken breast, avocado, bleu cheese, bacon, tomato, scallions and hard-boiled egg on mixed greens with vinaigrette dressing.

Parking: Free. Please reply to Carla Nasr at itewaregister@gmail.com by Friday November, 11th 2016.

DEC 06 [TUE].....Joint Meeting with ITS-Washington, Puget Sound Regional Council, 5th Floor Conference Rooms
JAN 10.....ITE Business Meeting (Topic and Location TBD)
Feb 13..... ITE/IMSA Conference and Exhibit Show, DoubleTree Inn at SeaTac, WA
MAR 14.....ITE Business Meeting (Topic and Location TBD)
APR 11 .....ITE Business Meeting (Topic and Location TBD)
MAY 16.....ITE Business Meeting (Topic and Location TBD)
JUN 15 (THUR) ...Annual Meeting (Location TBD)
JUN 16 (FRI) .....Annual Golf Tournament/Scholarship Foundation - (Location TBD)

2017 ITE WA Partner Events

APR 10-13.....APWA-Oregon Chapter, Seaside, OR
APR 25-27.....APWA Washington Chapter, Tacoma WA
JUN 18-21 .....WesternITE Annual Meeting, San Diego, CA
JUL 30-AUG 02 ...ITE International Annual Meeting, Toronto, Ontario Canada

Training

Washington Transportation Professionals Forum (WTPF) – Live Webinar Available

www.wsdot.wa.gov/LocalPrograms/Traffic/WTPF.htm

Winter Meeting: December 2016 – Federal Way

WSDOT provides and supports safe, reliable, and cost-effective transportation options to improve livable communities and economic vitality for people and businesses. Local Programs succeeds through the success of our partners.

Washington State Dept. of Transportation's Local Technical Assistance Program (LTAP)

LTAP Training Program provides local agencies access to relevant training opportunities. LTAP sponsors its own courses, directly targeting the training needs of local agencies receiving Federal funding, as well as gathering information about other valuable training.

Courses that are conducted by LTAP are specifically designed to help educate Washington State local agencies working with the Local Programs office and who are receiving Federal funds.

http://www.wsdot.wa.gov/LocalPrograms/Training

Career Opportunities

Network within our ITE Professional Membership any career opportunities for your firm.

Send information to the ITE Newsletter Editor, Ed Aristo, earisto@seataclighting.com

Traffic Engineer (Civil Engineer II) Mountlake Terrace, WA

City of Mountlake Terrace

This position researches and applies engineering principles for planning and designing traffic and transportation improvement projects. Performs duties related to review of project proposals for land use approval, review of construction plans for site and right of way improvements. Provides plans and specification, construction engineering, inspections and contract administration. Advises and assists in the operation and maintenance of traffic control systems within the City.

http://wa-mountlaketerrace.civicplus.com/Jobs

Office Assistant Beaverton, OR

Blueridge Lighting & Controls, LLC (Sister company to Sea-Tac Lighting & Controls) is accepting qualified applications for the position of Office Assistant. This is a support role for project management and quotation teams.

This allows the eligible person an opportunity to grow with our company's successes. We provide our employees with a first class office environment, full medical benefits, 401K and other positive attributes. We will train the qualified applicant with the goal of progressing to a Project Manager position. Our office is located in Beaverton, Oregon adjacent to the MAX Central Plaza Station.

Contact Jennifer Corona jcorona@seataclighting.com for a full details and qualifications.

Highway Existence: - 100 Years and Beyond

A peaceful campaign of progress and reform:

The Federal Highway Administration at 100

by Richard F. Weingroff

On October 3, 1993, the Federal Highway Administration (FHWA) celebrated 100 years of service to the country. General Roy Stone, the agency's first head, called the movement to improve the Nation's roads a "peaceful campaign of progress and reform." Today, the 68,800-kilometer (42,800-mile) Dwight D. Eisenhower System of Interstate and Defense Highways is the most visible result, but the peaceful campaign continues as the FHWA adapts to the intermodal demands of the 1990s.

Origins

In the second half of the 19th century, the railroads dominated interstate travel, and the limited pre-railroad network of roads fell into neglect. In the 1880s, however, the growing popularity of a new mode of transportation, the "ordinary" bicycle -- the type with the large front wheel -- was the first sign of change. The speed and individual mobility afforded by the bicycle created a nationwide craze -- complete with bicycle clubs, clothes, races, and touring guides -- for what appeared to be the next important mode of transportation. With the introduction of the "safety" bicycle with two wheels of the same size and the pneumatic tire in the late 1880s, the craze became an economic, political, and social force in the United States. By 1890, over one million bicycles were being manufactured in the country each year.

In the late 1880s, the safety bicycle with two wheels the same size and pneumatic tires replaced the ordinary bicycle.

The biggest problem was that, outside the cities, the nation's bad roads made bicycling a laborious, dangerous process. As one contemporary slogan put it, the roads were, "Wholly unclassable, almost impassable, scarcely jackassable!" The Good Roads Movement was a response to this problem. Bicycle groups, led by the League of American Wheelmen (L.A.W.), and manufacturers, led by Col. Albert Pope, worked at the federal, state, and local level to secure road improvement legislation.

To build support for the movement, the bicycle groups tried to interest the farmers and their state and national organizations. The message was that bad roads, by increasing transportation expenditures, cost more than good roads. But the farmers weren't interested; they didn't want to be taxed to benefit, as they saw it, the city "peacocks" who wanted to get their

relaxation riding bicycles at the farmers' expense. As a result, the Good Roads Movement was dominated by bicycle interests until the late 1890s.

General Stone, a Civil War hero and civil engineer, was one of the leaders of the movement, which rallied around a bill he had drafted in 1892 for consideration in the Congress. The bill called for creation of a two-year National Highway Commission to formulate plans for a national school of roads and bridges, to collect and disseminate information, and to prepare a comprehensive road exhibit for the Chicago World's Columbian Exposition, which was to open in April 1893. The measure passed the Senate, but despite intense lobbying by Stone, the L.A.W., and other groups, failed in the House of Representatives.

In January 1893, Representatives Allan Durburow of Illinois and Clarke Lewis of Mississippi succeeded in adding a provision to the Agriculture Appropriation Act of 1894 to provide $10,000 "to make inquiry regarding public roads" and to disseminate the information. The Congress approved the act on March 3, and it was signed by President Benjamin Harrison that same day, his last in office.

Incoming President Grover Cleveland, beginning his second nonconsecutive term on March 4, chose J. Sterling Morton to be Secretary of Agriculture. Morton, a former secretary and acting governor of the Nebraska Territory and the founder of Arbor Day, adhered to principles of rigid economy and strict conservatism. His initiation of the road inquiry reflected these principles.

On October 3, 1893, he signed a letter to General Stone, who had been chosen special agent and engineer for road inquiry. This letter is the charter for the new Office of Road Inquiry (ORI), the FHWA's first predecessor. After enunciating the statutory goals of the Appropriations Act, Morton reminded Stone that the work "will need to be of gradual growth, conducted at all times economically . . . [with] no considerable expenditure for the present." Morton added that, "It must be borne in mind that the actual expense in the construction of these highways is to be borne by the localities and states in which they lie." The ORI began life in two small attic rooms of the main Agriculture Building, with General Stone and a stenographer, Robert Grubbs, being its first two employees.

Stone began by writing letters to the governors, their secretaries of state, the members of Congress, railroad presidents, and state geologists, with a general circular to the public, asking for information on highway laws, the location of materials suitable for roadbuilding, and rail rates for hauling roadbuilding material. Responses in hand, Stone completed the ORI's first bulletin by December 4, 1893: *State Laws Relating to the Management of Roads. Enacted from 1888-93*. Eight more bulletins, most based on the new information, were released by the start of the next fiscal year (FY) in July 1894.

The ORI's annual budget was small ($10,000 for its first three years, $8,000 for the next four years, then $10,000 again), but Stone and his small staff of full- and part-time employees made the most of it. In addition to publishing technical and promotional literature, Stone was a popular speaker at good roads conventions, helped states draft road legislation, and initiated tests of road materials. He also cooperated with the Post Office Department in its experiments with Rural Free Delivery (RFD), begun in 1896, a program that finally convinced the nation's farmers of the value of good roads and brought them into the Good Roads Movement.

One of Stone's most enduring successes was the object lesson road program, begun in 1897. The idea, borrowed from Massachusetts, was to build short stretches of road to educate local engineers and, on the theory that "seeing is believing," create support for increasing funding for road improvements. Federal engineers or part-time special agents directed the work, but equipment was donated and most of the remaining cost was paid by the sponsors. The program was one of the ORI's most popular, with demand far exceeding the agency's resources.

On October 13, 1899, General Stone resigned. By then, largely through his efforts, the ORI had become the recognized national leader of the Good Roads Movement. Historian Bruce Seely summarized Stone's accomplishments, as well as the

stamp he left on the agency he founded:

In the end, he pioneered three enduring patterns of activity for the ORI: build a reputation for technical knowledge, promote the gospel of good roads, and utilize cooperation to reach those goals. The first fulfilled the office's mandate from Congress, and the second grew from the promotional goals of the Wheelmen, but the third was Stone's hallmark, even if it was necessitated by a small budget.

General Stone died on August 5, 1905, and was buried with full military honors at Arlington National Cemetery.

Turning Point: Birth of the Federal-aid Highway Program

Martin Dodge was appointed intertim director of the Office of Road Inquiry in August 1898 when his predecessor, General Roy Stone, vacated the office to serve in the Spanish-American War. Stone returned to the post for nine months in 1899 and then resigned. Dodge became director until 1905.

In 1899, Martin Dodge, a former president of the Ohio State Highway Commission, was appointed director of the ORI, which was renamed the Office of Public Road Inquiries (OPRI). He expanded the promotional and technical activities of the agency, including cooperating with railroad companies and good roads promotional groups as a sponsor of Good Roads Trains. The trains toured the country from 1901 to 1903, demonstrating road building techniques with equipment borrowed from the manufacturers.

In an economy move, Dodge established the agency's first field structure to continue the popular object lesson road program and keep in touch with local developments. He divided the country into four divisions, with a full-time special agent in charge of the Eastern Division and part-time special agents for the Southern, Middle, and Western Divisions. To head the Eastern Division, Dodge chose Logan W. Page, a geologist who in 1900 had established the OPRI's laboratory for testing road materials in the Department of Agriculture's Bureau of Chemistry.

In addition, Dodge launched the first inventory of all rural roads in the United States. Begun in 1904, the survey required over 60,000 communications -- printed and typewritten -- and several years to compile. Of 3,462,522 km (2,151,570 mi) of rural public roads, only 247,288 km (153,662 mi) had any kind of surfacing.

Dodge also pushed the OPRI into its next incarnation by helping to persuade Congress to increase the budget to $30,000 in 1903 and to elevate the agency to permanent status within the Department of Agriculture. The Agriculture Appropriation Act of 1906, signed by President Theodore Roosevelt on March 3, 1905, merged the OPRI with Page's Division of Tests to form the Office of Public Roads (OPR). The annual budget was $50,000 and the OPR was authorized to include 10 full-time

positions. The act also provided that the director of the OPR "shall be a scientist and have charge of all scientific and technical work." Dodge, a lawyer, was not eligible.

Logan Waller Page in 1905 became the first director of the newly created Office of Public Roads, and he served until 1919. As director, he began a series of investigations that won international acclaim for the laboratories he directed.

Logan Page was appointed director of the OPR. As Seely has shown, Page moved the OPR into the forefront of the Progressive movement, which put its faith in an "ideology of reform through apolitical expertise." He expanded the object lesson road program and the testing laboratory, revived good roads trains (1911-1916), built experimental roads to test building methods and materials, and increased the agency's lecture schedule -- from 150 in 1905 to 1,135 in 1912. He also entered into a formal agreement with the Post Office Department to make OPR engineers available to inspect proposed RFD routes.

As with Page's predecessors, he believed in cooperation, that working with, rather than dictating to, the highway community would get the best results. When the state highway agencies decided to form their own organization, Page was present at the creation of the American Association of State Highway Officials (AASHO) in December 1914. Although the OPR had provided advice on forest trails since 1905, Page worked out a formal agreement with the Forest Service, also part of the Department of Agriculture, in 1913 and began an expanded program for roads in national parks. To handle this work, Page established a Division of National Park and Forest Roads in 1914.

By this time, the growth in automobile travel had increased pressure on the federal government to provide funds for road building outside federal reserves. The issue wasn't whether the federal role would expand -- the issue was how. The key issues were whether the federal government would build the roads or provide aid to states or counties; whether the emphasis would be on getting the farmer out of the mud or building long-distance roads; and how much aid would be provided.

To help find answers, the Post Office Appropriation Bill for FY 1913 appropriated $500,000 for an experimental post road program, which the OPR administered in cooperation with states and counties. From the standpoint of road improvement, the experimental program had limited success, but it provided valuable experience that helped shape the OPR's mission. The most important lesson was that cooperating with the nation's 3,000 diverse counties would be a lot more difficult than working with the 48 states.

In December 1915, AASHO ratified a federal-aid bill that largely reflected Page's Progressive views, including his preference for a federal program of aid to technically proficient state highway agencies. The bill was introduced by Senator J. H. Bankhead

of Alabama, and Page and the OPR and Rural
engineering (OPRRE), as the OPR had been renamed in 1915, provided extensive technical assistance during the debates on Capitol Hill in 1916. The final version of the Bankhead Bill, modified but still reflecting Page's views, was signed into law by President Woodrow Wilson on July 11, 1916, launching the federal-state partnership known as the Federal-aid Highway Program.

The Federal Aid Road Act of 1916 authorized $75 million over five years -- but only $5 million for the first year -- to be apportioned by formula -- based on land area, population, and post road mileage -- to state highway agencies. Funding was restricted to rural post roads and the federal share of project costs was 50 percent, with a limit of $10,000 per mile. The states would prepare the plans and control construction and maintenance, subject to federal approval and inspection. The act also authorized $10 million for roads on federal lands.

Regulations implementing the new law were drafted, and Page invited the states to Washington for an August 16 meeting to comment on them. The day before, AASHO members met at the Raleigh Hotel to prepare their suggestions. On Wednesday, August 16, the formal meeting took place in the auditorium of the National Museum -- today's Smithsonian Museum of Natural History -- with 35 states represented. Virtually all of the states' suggestions were adopted. The regulations were issued September 1, 1916, less than two months after enactment of the law.

Turning Point: Clarification of the Federal-aid Highway Program

To accommodate the new program, Page established the agency's first formal field organization of 10 district offices with delegated operating responsibility and authority. He also reorganized the Washington headquarters, grouping all existing divisions into the Engineering Branch and the Management and Economics Branch, and providing for two general inspectors who reported directly to him.

At the start of the program, 11 states did not have a state highway agency and many others required legislative changes to comply with the 1916 law. By June 1917, all the states except one were in compliance, with technical experts in charge of agencies that had the authority to administer the federal-aid program. The exception was Indiana, which was delayed by a state constitutional challenge.

In April 1917, the initial federal-aid highway program was severely hindered by United States entry into World War I. The war reduced the supply of men and materials for roadwork. Meanwhile, the nation's road network was under severe stress. The railroads were unable to handle all war shipments, giving the fledgling trucking industry the opportunity to fill the void -- with even the best roads suffering the consequences. By war's end, only five federal-aid projects, totaling 28.3 km (17.6 mi), had been completed.

An improved post road in 1903.

On December 9, 1918, Page died of a heart attack while attending a meeting of AASHO's Executive Committee in Chicago. Page's successor almost didn't take the job. Thomas H. MacDonald, chief engineer of the Iowa State Highway Commission, was asked to take over the Bureau of Public Roads (BPR), as the OPRRE had been renamed in 1918, but he hesitated because the $4,500 salary was too low. He took the job on April 1, 1919, pending review of compensation. On July 1, 1919, he was appointed chief of the bureau with a salary of $6,000 and retained the position, through various title changes, until March 1953.

As with Page, MacDonald's tenure was marked by the spirit of cooperation and consensus. He never lost sight of the view expressed in his first communication, dated May 25, to BPR field staff: "Our success will depend largely upon the attitude of mind and confidence we establish on the part of the state officials."

Legislation in 1919 increased federal-aid highway funding, but the states, hampered by inflation, postwar strikes, shipping problems, and shortages, were slow to respond. This limited progress, three years into the program, gave competing forces within the highway community the opportunity to revive the arguments that the Federal Aid Road Act of 1916 had been intended to settle -- notably the debate over federal versus federal-aid construction and over long-distance versus farm-to-market roads.

The turning point that made the Federal-aid Highway Program a success came in 1921. MacDonald worked with AASHO to draft legislation that addressed the major concerns about the program. The proposal retained the federal-aid principle, but satisfied supporters of long-distance roads by restricting funds to a federal-aid system, to be linked at state lines, comprising 7 percent of total public road distance -- 322,134 km (200,170 mi) out of 4,601,914 km (2,859,575 mi) -- and requiring that paved surfaces should be at least 5.5 meters (18 feet) wide.

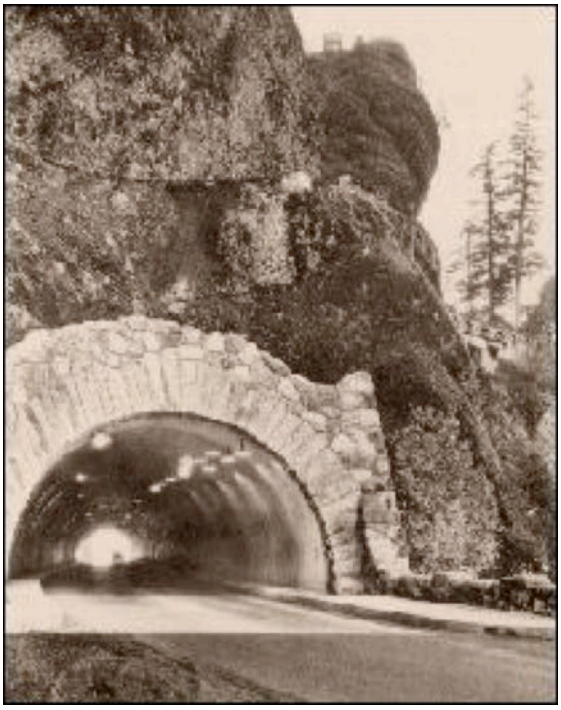
In these and other ways, the Federal Highway Act of 1921, signed by President Warren G. Harding on November 9, resolved the decade-long debates over highway policy and unified the highway community behind MacDonald, who emerged from the debates as its technical and political leader. With the program solidified and post-war problems resolved, a highway improvement boom began in the 1920s that coincided, but did not keep pace with, the continuing growth in auto travel -- vehicle registrations totalled 10.4 million in 1921 and 26 million in 1931.

MacDonald and the BPR were involved in wide-ranging activities during the 1920s, aside from administering the Federal-aid Highway Program. Research aimed at finding the best road building techniques, particularly in light of the increasing volume of heavy trucks, continued throughout the decade. In November 1920, MacDonald helped found the National Advisory Board on Highway Research -- renamed the Highway Research Board in 1925, and the Transportation Research Board in 1974 -- to address fundamental questions in highway transport. The BPR launched transportation surveys in cooperation with the states to examine every aspect of highway transportation, from ownership of motor vehicles to driver behavior.

In other areas, the BPR worked with AASHO to create the U.S. numbered highway system (1925-1926) to replace the names -- the Lincoln Highway, the National Old Trails Road, and over 250 others -- that had been given to the country's main highways by private booster groups. In October 1925, MacDonald was appointed a delegate to the Pan-American Road Congress in Argentina, leading to United States support for the Pan American Highway (Alaska to Argentina) and a direct role in construction of the Inter-American Highway. Work on federal lands also continued, with new agreements covering forest and park road construction. In 1921, MacDonald established the Western Regional Office in San Francisco, under Dr. L. I. Hewes, to administer this work and the Federal-aid Highway Program in 11 western states and Alaska and Hawaii.

During the Depression, economic pump priming legislation under Presidents Herbert Hoover and Franklin Roosevelt continued federal funding for road building. The funding was aimed at creating jobs quickly, rather than achieving the

connected system of good roads that was the primary goal of the Federal-aid Highway Program. Because of state financial difficulties, the legislation temporarily abandoned the matching share concept that was fundamental to the program.



BPR constructed the Tooth Rock Tunnel on the Columbia River Highway in Oregon, 1936-37. The old highway can be seen above the tunnel portal.

On July 1, 1939, the BPR was renamed the Public Roads Administration (PRA) and shifted to the new Federal Works Agency. By then, the distance of paved roads had increased from 622,800 km (387,000 mi) in 1921 to 2,199,900 km (1,367,000 mi). But increasing numbers of vehicles had created congestion in urban areas while the higher speeds possible in the more powerful cars of the time combined with out-of-date highway designs to create safety problems nationwide--and a call for better highways.

Tooth Rock Tunnel- Google Maps 2016

CHIEF ADMINISTRATIVE OFFICERS OFFICE OF ROAD INQUIRY TO FEDERAL HIGHWAY ADMINISTRATION 1893-1993

General Roy Stone (1893-1899)

Martin Dodge (1899-1905)

Logan Waller Page (1905-1918)

Thomas H. MacDonald (1919-1953)

Francis V. du Pont (1953-1955)

Charles D. (Cap) Curtiss (1956)

John A. Volpe (1956-1957)

Bertram D. Tallamy (1957-1961)

Rex Whitton (1961-1966)

Lowell K. Bridwell (1967-1969)

Frank C. Turner (1969-1972)

Norbert Tiemann (1973-1977)

William M. Cox (1977-1978)

Karl S. Bowers (1978-1980)

John S. Hassell, Jr. (1980-1981)

Ray A. Barnhart (1981-1987)

Robert E. Farris (1988-1989)

Thomas D. Larson (1989-1993)

Rodney E. Slater (1993-)

OFFICE OF ROAD INQUIRY TO FEDERAL HIGHWAY ADMINISTRATION

Office of Road Inquiry (1893-1898)

Office of Public Road Inquiries (1899-1905)

Office of Public Roads (1905-1915)

Office of Public Roads and Rural Engineering (1915-1918)

Bureau of Public Roads (1918-1939)

Public Roads Administration (1939-1949)

Bureau of Public Roads (1949-1967)

Federal Highway Administration (April 1, 1967 --)

Turning Point: Launching the Interstate Highway Program

By the early 1930s, proposals to build a network of superhighways for the United States were common, a vision waiting for the right moment. In part because of the job-creating potential of such a network, President Franklin Roosevelt was enthusiastic. He favored a self-supporting network of toll superhighways on "excess right-of-way" that could be rented and eventually sold to help pay for the network. Given the continuing interest, the Congress, in Section 13 of the Federal-Aid Highway Act of 1938, called for a study of a toll network consisting of no more than three east-west and three north-south routes.

The study was assigned to the BPR, which reported its findings in a 1939 report entitled *Toll Roads and Free Roads*. The report demonstrated that a network of six toll superhighways would not be financially feasible. Instead, the report endorsed "A Master Plan for Free Highway Development," the first formal description of the future interstate system. The plan called for a 42,970-km (26,700-mi) non-toll network, with possible routes identified on the basis of statewide surveys conducted during the 1930s that showed where traffic volumes were highest.

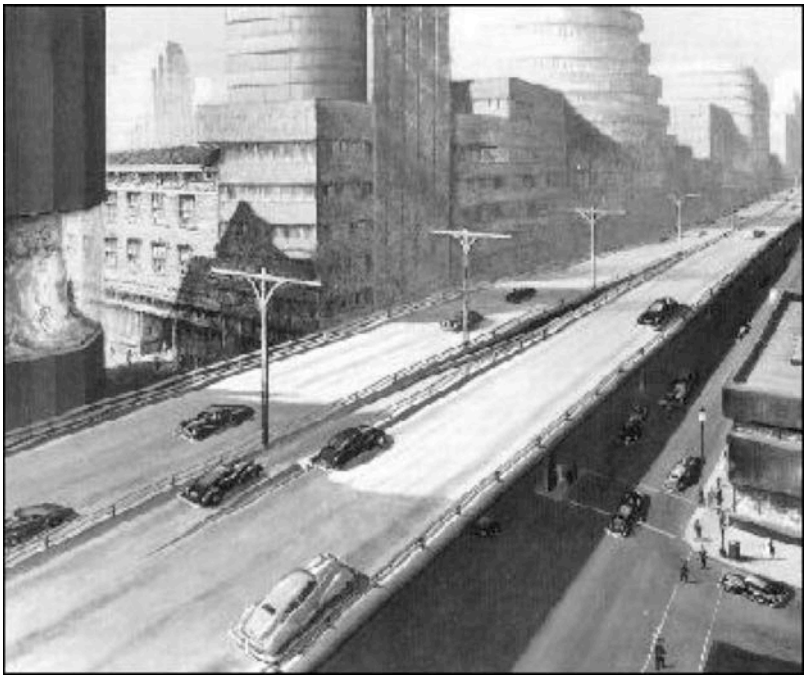
In 1941, the President appointed the National Interregional Highway Committee, headed by MacDonald, to study the need for a nationwide expressway system.

The committee had essentially completed its work by year's end, but America's entry into World War II following the attack on Pearl Harbor in December delayed completion.

During the war, civilian road building was, as in World War I, put on hold for the most part. The PRA focused on war-related activities, such as enhancing road access to defense plants, but its most remarkable achievement was the Alaska Highway. In February 1942, President Roosevelt approved construction of a road across Canada from Dawson Creek, British Columbia, to Big Delta, Alaska, as a way of ensuring land access in the event of a Japanese invasion of Alaska. From March to October 1942, the U.S. Army along with civilian contractors under direction of the PRA constructed a pioneer trail to open the route to essential traffic. In 1943, contractors working for the PRA rebuilt the 2,250-km (1,400-mi) road, in some cases on new location. At war's end, the Alaska Highway was turned over to Canada for maintenance and has since become the main land link to the state.

In 1943, the Congress added a provision to the Federal-Aid Highway Amendment Act calling for a national expressway study. In response, President Roosevelt transmitted *Interregional Highways*, the study prepared by MacDonald's committee, to Congress in January 1944. This report refined the concept presented in the 1939 master plan and recommended a rural network of 54,550 km (33,900 mi), plus 8,050 km (5,000 mi) of urban routes.

With the report in hand, Congress acted. The Federal-Aid Highway Act of 1944, signed on December 20, called for designation of a 64,375-km (40,000-mi) network, to be called the National System of Interstate Highways. Routes were to be selected by the state highway agencies, with PRA concurrence, but no funds were authorized for the new network. Following coordination with the states and the Department of Defense, the PRA announced selection of the general location of 60,670 km (37,700 mi) on August 2, 1947.



Sketch from *Interregional Highways* (1944) shows elevated section of urban expressway (from original caption: "Show window at the elevated level dressed appropriately with the kind of large display that would be needed for comprehension by express traffic").

The 1944 act did not provide funds specifically for construction of the interstate system. The importance of the National System of Interstate Highways was such that the states were expected to give priority in the use of regular federal-aid funds for its construction. For the most part, though, that did not happen and only a small amount of mileage was constructed. The first funding for the interstate system, approved in 1952, amounted to $25 million annually in FYs 1954 and 1955, followed by 1954 legislation authorizing $175 million a year for FYs 1956 and 1957. During this early period, therefore, little work on the toll-free network was accomplished, although the success of the Pennsylvania Turnpike, the first 260-km (160-mi) segment of which opened in 1940, prompted several states, particularly in the densely populated Northeast, to construct toll superhighways in interstate system corridors.

The PRA was transferred to the Department of Commerce in 1949 and renamed the BPR. MacDonald retired in July 1951, but stayed on -- in a job that now paid $16,000 a year -- at President Harry Truman's request. Shortly after President Dwight D. Eisenhower's first term began on January 20, 1953, MacDonald left office, after 34 years, on March 31, 1953, replaced by Francis V. duPont.

Development of the interstate system had a strong new advocate in the White House. As a young officer in 1919, the President had participated in the first transcontinental army convoy, which took nearly two months to go from Washington, D.C., to San Francisco, and thereby learned the value of good two-lane roads. During World War II, he had seen the efficient German autobahn network first hand and recognized its value. Given these experiences, the new president was committed to providing such highways for the United States.

He appointed a committee, under General Lucius Clay, to devise a plan for financing the network. The committee's report, transmitted to Congress in February 1955, proposed to complete the interstate system at a cost of $27 billion in 10 years. Bonds would be issued to finance construction, to be repaid over 32 years from the existing two-cent federal motor-fuel tax. Clay's plan failed in 1955, largely because conservative members of Congress objected to the $12 billion in interest payments that would go along with the proposed $20 billion bond sale.

Despite extensive debate in and out of Congress in 1955, no alternative plan emerged that was acceptable to the many competing forces contending for a share of the vast program. The interstate system had considerable support, but even its supporters disagreed on the details.

In 1956, Congress approved a plan for an expanded 66,000-km (41,000-mi) National System of Interstate and Defense Highways, as it was now called, that gave each of the competing forces something with which to be satisfied. The new Highway Trust Fund, an accounting mechanism for restricting highway user tax revenue to highway purposes, met the president's goal of avoiding deficit spending by including a an anti-deficit provision. Taxes on truckers went up, but not too much to lose their support. Urban areas did not get the control they wanted, but the bulk of funding would be spent in the cities. Rural officials, who did not believe the interstate system would benefit them, received continued funding for federal-aid secondary roads.

President Eisenhower signed the Federal-Aid Highway Act and the Highway Revenue Act of 1956 on June 29, ushering in the interstate era. His role had been to push for its construction, without insisting on financing details that would have jeopardized

the primary goal. In October 1990, the name
of the system was changed by federal law to honor his role: The Dwight D. Eisenhower System of Interstate and Defense Highways.

The Interstate Era Gets Underway

Bertram D. Tallamy, chairman of the New York State Thruway Authority, was Eisenhower's choice to get the program underway. Tallamy was the second federal highway administrator and the first to be confirmed by the Senate. The first administrator, John Volpe, held the office on an interim basis, from October 1956 to February 1957, until Tallamy was confirmed and took office in 1957.

At first, the interstate highway program ran into serious problems that prompted speculation on whether the program should be scrapped: allegations of corruption, financial problems, and protests against construction of the Interstate routes.

An article in the July 1960 issue of *Reader's Digest*, entitled "Our Great Big Highway Bungle," was typical of the many articles and television reports of corruption. According to the subhead, "Haste, waste, mismanagement and outright graft are making a multibillion-dollar rathole out of the Federal Highway Program." The BPR responded to the allegations in several ways, including detailed rebuttals and speeches pointing out that the abuses were minor within the context of the much larger, efficiently run program.

When Rex Whitton became federal highway administrator in 1961, he confronted the problem by strengthening procedures -- for example, instituting unannounced sampling of materials nearly every month -- and establishing an office of audits and investigations, headed by a former agent of the Federal Bureau of Investigation. Meanwhile, a special investigative committee of the House Committee on Public Works, established in 1959 under Representative John A. Blatnik, found that some allegations were valid, but confirmed the BPR's, the states', and industry's view that, overall, the program was well run.

The first sign of financial trouble was the release, in January 1958, of the 1958 Interstate Cost Estimate, the first to be based on detailed information from the States. During the debates in 1955 and 1956, the BPR had estimated the cost of the 64,375-km (40,000-mi) proposed network to be $27 billion--federal share: $25 billion. The 1958 estimate, which by law covered only 62,035 km (38,548 mi) of the authorized distance -- 66,000 km (41,000 mi), later expanded to 68,880 km (42,800 mi) -- indicated the cost would be $37.6 billion. A few months later, in August, legislation increased annual authorizations for the interstate program, in part because of the higher cost, to accelerate completion, and to pump public works funding into a recessionary economy. The legislation also temporarily set aside the pay-as-you-go feature of the Highway Trust Fund, with the resultant shortfall in revenue made up by borrowing from the general treasury and imposing quarterly limitations on spending. The result of these financial difficulties was concern that the program was too costly.

The Federal-Aid Highway Act of 1959 temporarily increased the federal gas tax by a penny, to four cents, and lowered interstate authorizations to address immediate fiscal problems. For the longer range, Congress approved legislation in 1961 restoring the pay-as-you-go provision, making the four-cent gas tax permanent, and adjusting other highway user taxes, thus restoring the fiscal solvency that has characterized operation of the Highway Trust Fund ever since.

The third problem facing the interstate program was more difficult. Protests against urban freeway construction began soon after the program was authorized. The first formal recognition of the problem occurred in September 1957. During a conference in Hartford on "The New Highways: Challenge to the Metropolitan Region," city planners, led by critic and author Lewis Mumford, urged suspension of all urban interstate construction until comprehensive land use plans could be developed. During the early 1960's, the problem was compounded by increasing criticism of the adverse environmental impacts of interstate construction in rural as well as urban areas.

The problems confronting the interstate highway program, particularly the urban and environmental controversies, were a

shock to the highway community, which had expected to apply technical expertise to the new program for the benefit of a grateful nation. Instead, the highway community was on the defensive.

The BPR's response to the new challenge was diverse. The agency, for example, joined with AASHO in national conferences on urban planning and in working with urban groups to find better ways to fit the new freeways into an urban setting. The Federal-Aid Highway Act of 1962 included an early legislative attempt to address the problem, requiring the planning process to be "continuing, cooperative, and comprehensive."

Similarly, to address environmental concerns, the BPR modified its policies, for example by issuing instructions in 1963 regarding assessment of impacts on fish and wildlife areas. But as with urban problems, legislative solutions were required, notably the National Environmental Policy Act of 1969, which resulted in formal environmental assessment of all federal-aid highway projects, and the Department of Transportation Act of 1966, which applied Section 4(f) restrictions on construction of roads on publicly owned land in a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance unless there is no feasible and prudent alternative and the program includes all possible mitigation to minimize harm.

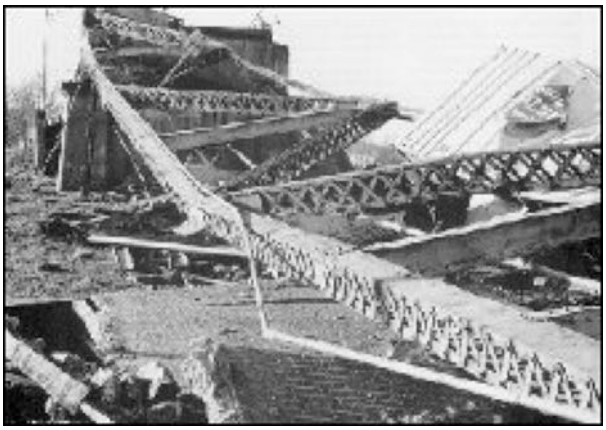
These steps helped, but could not resolve all controversies. Accordingly, the Federal-Aid Highway Act of 1973 authorized withdrawal of controversial interstate segments and substitution of urban mass transportation projects (expanded to allow substitute highway projects by the Federal-Aid Highway Act of 1976). Although controversies continued, the withdrawal option provided a safety valve that brought many interstate battles to an end, beginning with the 1974 withdrawal of portions of I-95 and I-695 in Boston and ending with withdrawal of I-205 bus lanes in Portland, Oregon in 1989.

The Department of Transportation Act also changed the name of the BPR. On

April 1, 1967, the agency became the Federal Highway Administration, part of the new U.S. Department of Transportation. The Bureau of Public Roads became one of three bureaus of FHWA, the others being the Bureau of Motor Carrier Safety -- now the Associate Administrator for Motor Carriers -- and the National Highway Safety Bureau -- which became the National Highway Traffic Safety Administration (NHTSA) in March 1970. On August 10, 1970, the agency was again reorganized, and the BPR was abolished, bringing to an end a name that dated to July 1, 1918, when Logan Page was director.

Although the FHWA's primary goal has been completion of the interstate system, the years since the start of the interstate highway program have included many other activities:

- FHWA has continued its extensive program of cooperation with other federal agencies in the construction of roads on federal lands. Facilities such as the Blue Ridge Parkway, including the award winning Linn Cove Viaduct, are nationally recognized scenic highways.
- Safety has been a continuing focus. Hazard elimination and rail-highway crossing safety programs, design changes such as the concept of a forgiving roadside, and the shift of traffic from conventional roads to the interstate system have combined with NHTSA vehicle safety initiatives and the efforts of private groups to lower the fatality rate to under two per 100 million vehicle miles (compared with, for example, 3.3 in 1980).
- Motor carrier safety programs have played an important part in this reduction. These programs were strengthened by passage of the Commercial Motor Vehicle Safety Act of 1986, which required bus and truck drivers have a single commercial driver's license based on uniform standards for testing drivers; creation of a central clearinghouse for complete driving records; and mandatory penalties for serious traffic violations and felony convictions.
- After the loss of 46 lives in the collapse of the Silver Bridge between Point Pleasant, W.Va., and Gallipolis, Ohio, on December 15, 1967, national concern about bridge safety led to the establishment of the National Bridge Inspection Standards under the Federal-aid Highway Act of 1968 and the Special Bridge Replacement Program (SBRP) in the Federal-aid Highway Act of 1970. The Highway Bridge Replacement and Rehabilitation Program replaced the SBRP under the Surface Transportation Assistance Act of 1978 and is funded today at over $2.76 billion a year.



Collapse of the Silver Bridge in 1967 with the loss of 46 lives sparkled national concern about bridge safety. This photograph shows the damage on the Ohio end of the bridge.

- Beginning with MacDonald's participation in the 1925 Pan-American Road Congress in Argentina, the BPR/FHWA has played a growing role internationally. Construction activity has included the Inter-American Highway and additional projects in Central America, reconstruction of war-damaged roads in the Philippine Islands beginning in 1946, and construction and training programs in Asia and the Middle East. In recent years, emphasis has also been placed on development of cooperative agreements for technology sharing with countries, such as Japan and the nations of Europe, that have common problems.

- The original mission "to collect and disseminate information" has remained an important part of the program. FHWA has continued an aggressive research and implementation program on such topics as congestion, the environment, safety, and pavements and bridges. The Demonstration Projects Program, initiated in 1969, borrowed the "seeing is believing" idea of the object lesson road program, and continues today under Technology Applications.

- Attempts to control outdoor advertising along the interstate system began with the Federal-Aid Highway Act of 1958, which authorized the "Bonus Program" of payments to states that agreed to control signs located within 660 feet of the interstate system in accordance with national standards (23 states participated). With support from President Lyndon Johnson's wife Ladybird, the Highway Beautification Act of 1965 launched a new phase in the effort to control outdoor advertising, but one that has been complicated by subsequent amendments.

I-70 along Vail Pass, Colorado (1980), fits into extremely sensitive terrain to prevent erosion, pollution of local streams, disruption of plant life, and isolation of wild game.

- The Surface Transportation Assistance Act of 1982 increased the gas tax by five cents -- one cent for mass transit -- and adjusted other highway user taxes to fund restoration of highway and bridge conditions. The act also established a 10-percent goal for participation of disadvantaged business enterprises (DBE), exclusive of women business enterprises (WBE), in federal-aid highway projects. The definition of "DBE" was expanded to include WBE's in 1987. In 1992, participation by DBE's, including WBE's, exceeded 14 percent.

Turning Point: The Post-Interstate Era

Today, the interstate system is essentially complete -- 99.7 percent open to traffic at the end of 1992. With the end of the interstate highway program in sight, FHWA began working with the American Association of State Highway and Transportation Officials and other groups within the highway community in the late 1980s to explore options for the future.

When, shortly after taking office in 1989, Secretary of Transportation Samuel Skinner called for development of a National Transportation Policy (NTP), FHWA's earlier work helped establish the highway goals identified in the NTP, which was released in March 1990. Most notably, the NTP called for designation of a National Highway System (NHS) to consist of the interstate system and other principal arterials of national significance, improved to appropriate standards.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), embodying many of the NTP's concepts plus others initiated by Congress, is a major restructuring of the federal-aid highway program, retaining some traditional types of program while putting them in a new context. On the traditional side, ISTEA funded interstate completion and maintenance, bridge replacement and rehabilitation, and a Surface Transportation Program for all roads except those classified as rural minor collectors or local roads. It also directs the FHWA to develop a proposal for designation of the NHS, subject to congressional approval.

At the same time, ISTEA stressed increased flexibility of choice among modal options, including bicycling and walking, in making transportation choices. In other areas, ISTEA emphasized environmental enhancement, preservation rather than expansion of the highway network, strengthened statewide and metropolitan planning, greater authority for states to establish their own standards off the NHS, increased reliance on public/private partnerships to finance needed projects, revitalized research and technology transfer, particularly in the areas of intelligent vehicle-highway systems and high-speed rail, and scenic byways and recreational trails.

More broadly, ISTEA declared that the policy of the United States is to develop a National Intermodal Transportation System:

The National Intermodal Transportation System shall consist of all forms of transportation in a unified, interconnected manner, including the transportation systems of the future, to reduce energy consumption and air pollution while promoting economic development and supporting the nation's preeminent position in international commerce.

Just as the agency has adapted to each previous turning point, FHWA has been adjusting to the shape of its intermodal future. Headquarters and field offices have been restructured and such activities as the FHWA 2000 initiative, the followup business planning initiatives, and diversity sensitivity training have helped prepare the agency for the future.

From the day General Stone moved into his attic office at the Department of Agriculture, the agency has been evolving. So change is nothing new for FHWA. At 100, it continues to evolve to meet the transportation needs of the nation.

1893 In Perspective

- The stock market crashed, plunging the United States into a depression.
- Massachusetts becomes the first state to establish a highway department.
- The Dalton Gang was captured
- The former Cherokee territories of Oklahoma were opened to settlement.

- Sir Arthur Conan Doyle, tired of his most famous creation, allowed Sherlock Holmes to plunge to his "death" at Reichenbach Falls in "The Final Problem."
- Katherine Lee Bates wrote the words to "America the Beautiful."
- The Chicago World's Columbian Exposition honoring the 400th anniversary of the discovery of the new world opened. Nicknamed "The White City," the exposition introduced the Ferris Wheel, the zipper, and long-distance telephone service and inspired the City Beautiful movement and the Emerald City of L. Frank Baum's *The Wizard of Oz*.
- In a lecture during the Exposition, Professor Frederick Jackson Turner declared that the frontier, which had helped shape the U.S. character, was closed.
- Bicycle makers Charles E. and J. Frank Duryea inspired by reports of European automotive successes, built the first American gasoline-powered automobile to operate in the United States, on September 21 in Springfield, Massachusetts, with Frank in the driver's seat.
- Congress defeated attempts to switch the country to the metric system.
- Colorado adopted women's suffrage.
- Stephen Crane wrote *Maggie: A Girl of the Streets*.
- Hurricane devastated Charleston, South Carolina, and Savannah, Georgia, killing about 1,000 people.
- Edison Laboratories built film studio in West Orange, New Jersey.
- Antonin Dvorak composed his "Symphony No. 9 (From the New World)."
- Sigmund Freud and Josef Breuer published *The Psychic Mechanism of Hysterical Phenomena.*
- Ice hockey was introduced from Canada at Yale and Johns Hopkins Universities

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October 2016

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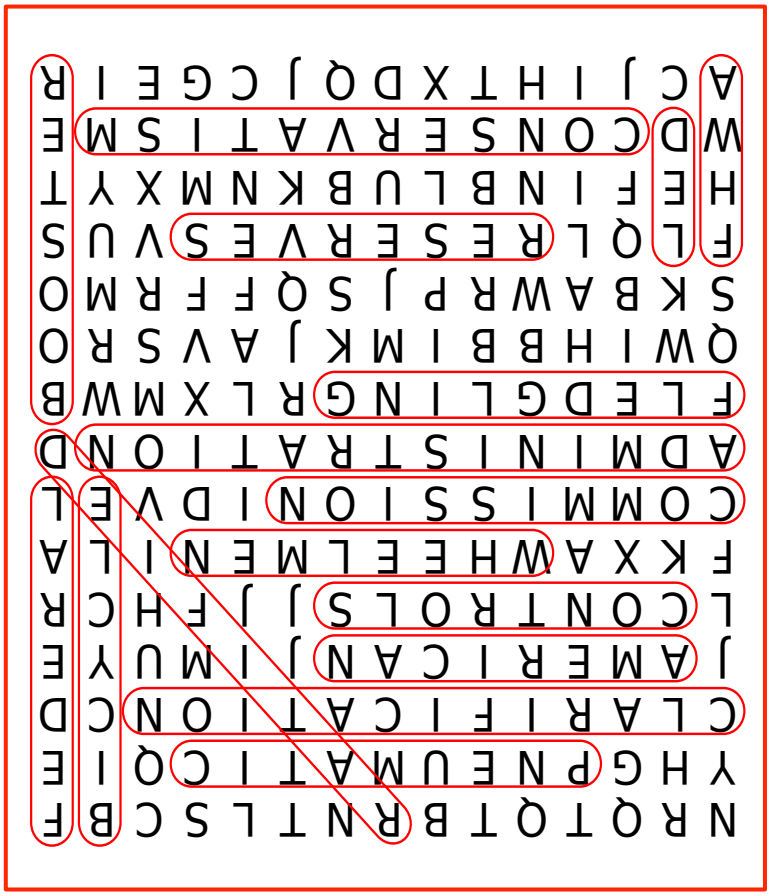

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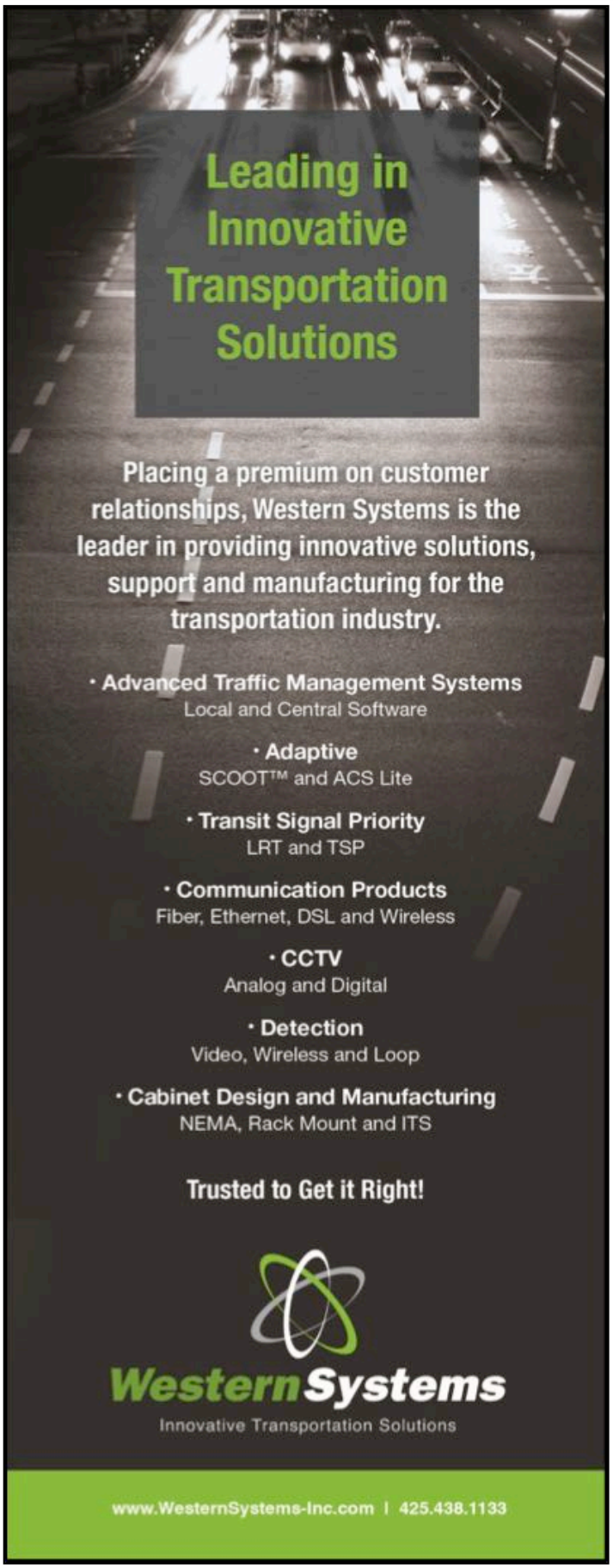

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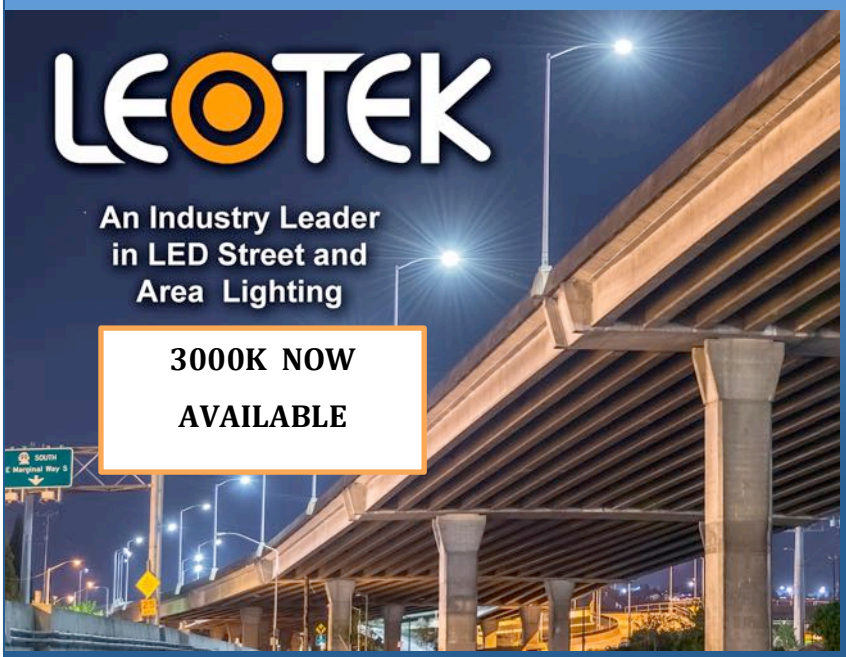

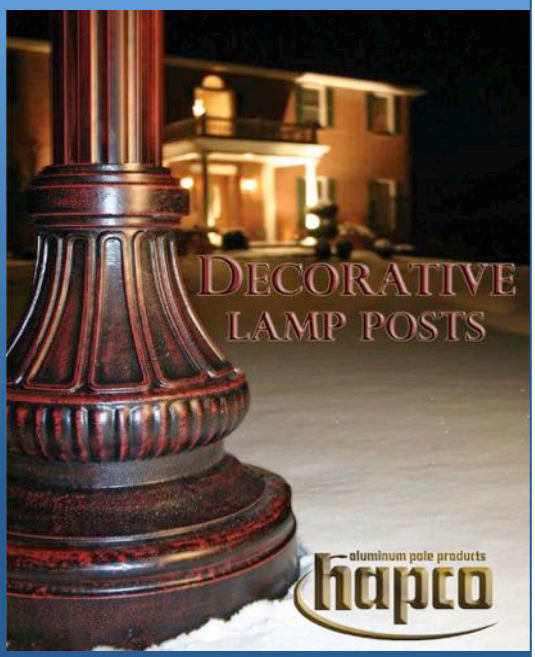

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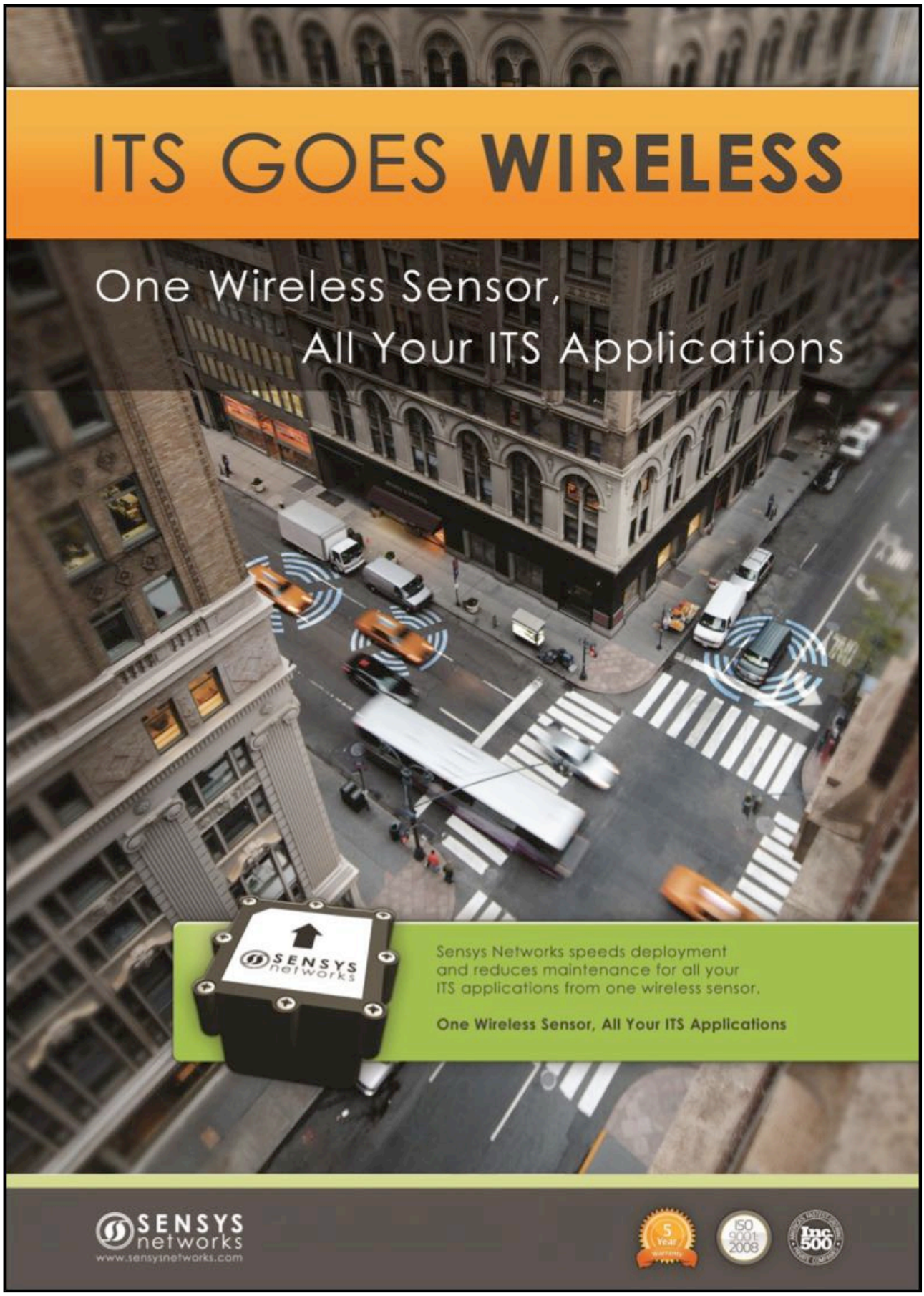
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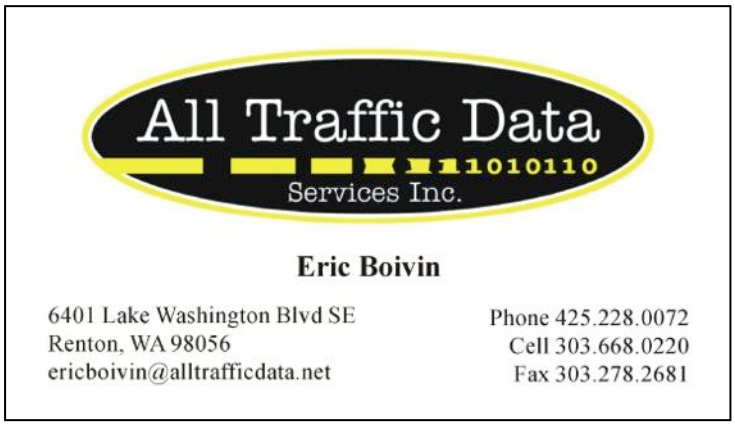
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Quarter Page Ad $250
Half Page Ad $500
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Please let us know if your contact information changes so that you continue to receive monthly ITE WA announcements and newsletters by email. To update your information, click on the Membership tab on the ITE WA website: http://www.westernite.org/Sections/washington/index.htm.

Newsletter Comments and Article Submissions

If you have comments about this newsletter or have an interesting announcement, topic, or project to share, please contact Ed Aristo, Newsletter Editor itewaeditor@gmail.com. **Articles must be received by the third Thursday of the month to be considered for publishing in the next issue.**

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