IDEA

Innovations Deserving
Exploratory Analysis Programs

Products from the NCHRP IDEA Program

Table 1: IDEA Products Currently in the Marketplace

Table 2: IDEA Products with a High Potential for Near-Term Implementation/ Commercialization

The color coded products in the tables are described in more detail in the accompanying document, **Products with an Impact or Potential Impact on Current Highway Practice – Notable Examples**

Green:	Mature Products with wide implementation
Yellow:	Products further supported by FHWA's Highways for Life Program
Blue:	Products further supported by State DOTs with pooled funds
Purple:	New Products with a high near-term implementation potential

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Table 1

IDEA Products Currently in the Marketplace

	Product	Benefits	Implementation/Application
1	A sacrificial sprayed zinc anode system (Project #3) Funding: $65,000 Completion: 1995	Prevents steel corrosion in marine substructures Far less expensive than impressed current ($15-30/ sq.ft. vs. $400-500/sq.ft.) Lasts 8-12 years. Respraying is neither expensive nor labor-intensive	Many states have standardized the use of metalized zinc technology for bridge rehabilitation work. Florida and Oregon lead in implementing the technology with installations on a number of coastal bridges. Other notable user states include Virginia, Missouri, and Alaska. Also being used in non-transportation structures, such as high-rise buildings, parking garages, concrete cooling towers, concrete intake and outfall structures in power plants, and dock facilities, among others.
2	An interlayer stress absorbing composite (ISAC) (Project #6) Funding: $60,000 Completion: 1995	Minimizes reflection cracking Extends pavement service life, reduces maintenance costs	Approved and used by Illinois DOT on several state roads and airports. Wisconsin, Minnesota, and Nebraska also evaluated ISAC. Used on Houston's Hobby airport. Cost needs to be competitive for its widespread use. Distributed by Crafco, Inc. (Chandler, Arizona).
3	Concrete admixture based on alkenyl dicarboxylic acid diammonium salts (Hycrete) (Project #13) Funding: $60,000 Completion: 1995	Inhibits steel corrosion, protects concrete from frost and moisture damage Extends service life of concrete pavements and structures, reduces maintenance costs	Evaluated by a number of states (New Jersey, New York, Ohio, Virginia, Kansas, and the six New England states) and the U.S. Army Corps of Engineers. Approved by Ohio and Virginia. Being used increasingly in the private sector for commercial and residential real estate, parking garages and other structures. Sold by Hycrete Technologies, Inc. (Carlstadt, New Jersey).
4	A bridge-mounted automated anti-icing spray system (Project #27) Funding: $70,000 Completion: 1998	Prevents ice formation on bridge decks Saves lives, reduces snow-related accidents Reduced exposure of highway workers to winter operations hazards	Technology was first demonstrated in the U.S. by this IDEA-funded project in Utah. Minnesota and Ontario (Canada) currently lead in implementing the technology, with installations on a number of bridges in their jurisdictions. Technology also evaluated or implemented by Utah, Colorado, Kansas, Kentucky, New York, North Carolina, Virginia, Pennsylvania, Wisconsin, and Washington State. Most recent installations include Minnesota's I-35 W Saint Anthony Falls Bridge in Minneapolis and Highway 61 Bridge near Hastings and Nevada's Galena Creek Bridge near Reno.

5	A dual phase ferritic martensitic steel (MMFX steel) (Project #28) Funding: $70,000 Completion: 1997 *2002 Winner of the American Society of Civil Engineers' 'Charles Pankow Award' for innovation* *2004 Winner of the Construction Innovation Forum's 'NOVA Award' for innovation*	About five times as corrosion resistant and twice as strong as conventional steel Structures using MMFX steel require 20-40% less steel and incur 20-50% less labor costs	A number of states have evaluated or implemented MMFX steel in their bridge projects (Iowa, Florida, West Virginia, Virginia, Delaware, New Jersey, Louisiana, South Dakota, Michigan, Connecticut, Vermont, Texas, Kentucky, Pennsylvania, New Mexico, and Manitoba, Canada). The U.S. Navy and the U.S. Army Corps of Engineers also used MMFX steel on pier and bridge projects in California and Oklahoma respectively. In use by the private sector across North America in residential and commercial buildings and parking and other structures. Sold by MMFX Steel Corporation (San Diego, California).
6	Lightweight fiber-reinforced polymer composite bridge deck (Projects #30, 46) Funding: $144,000 Completion: 2000 *Winner of 1997 'Best of Market' and 'Counterpoise Grand Design Award' at the International Composite Expo* *Winner of 1997 'R&D 100 Award' of the Research & Development Magazine for innovation* *Bridge in Fairfield, Ohio featured on the National Public Radio*	Rapid installation saves construction time and labor, reduces traffic delays Reduced dead weight allows more live load Corrosion-free, longer service life	The IDEA-funded No-Name Creek Bridge in Russell, Kansas was the first composite bridge in the U.S. Since then, the technology has been implemented by the IDEA contractor in Kansas, Missouri, Nebraska, Colorado, West Virginia, Ohio, Pennsylvania, and New York. Other composite manufacturers have also followed suit and installed composite decks in a number of states (Idaho, California, Ohio, New York, Oregon, Maryland, Iowa, Pennsylvania, Illinois, Delaware, North and South Carolina, Virginia, West Virginia, Washington, and Wisconsin).
7	Pavement quality indicator (PQI) (Projects #32, 47) Funding: $158,000 Completion: 1998 *2003 Winner of the Construction Innovation Forum's 'NOVA Award' for innovation*	Non-nuclear device eliminates the hassle and hazards associated with owning and operating a nuclear gauge Costs much less than the nuclear gauge to maintain (about $200 vs. about $3,000) Rapid, takes only a few seconds to measure density during paving operation	Technology has been extensively evaluated by a number of states (Maryland, Virginia, New York, Connecticut, North Carolina, Pennsylvania, Delaware, Florida, Kentucky, Ohio, Nebraska, Texas, Iowa, Arkansas, and Oregon). Sensitive to moisture and mix type and less accurate than the nuclear gauge. Recommended as a quality control tool but not for quality assurance. Some states (such as Maryland and Pennsylvania) now allow its use for quality control purpose. Many paving contractors now use PQI for quality control in accordance with AASHTO's specifications for non-nuclear gauges. Sold by Trans Tech, Inc. (Schenectady, New York).

8	A hybrid composite beam (HCB) (Project #60) Funding: $150,000 Completion: 2007 *One of 'Top 25 Inventions' of the 2006-2007' Modern Marvels Invent Now Challenge' Contest* *American Council of Engineering Companies' 2009 'Grand Award' for Lockport High Road Bridge, IL* *Engineering News Record's 2010 'Award of Excellence'*	High performance, corrosion-resistant, lightweight beam (only about one-seventh the weight of precast concrete and one-third the weight of steel for the same size bridge) Easier and less costly to ship and erect a bridge with HCB than with traditional materials, saving time and money Estimated service life of more than 100 years	HCB was successfully tested on a railroad test track in Pueblo, Colorado. Since then, the beams have been installed on highway bridges in Illinois and New Jersey. Maine is currently installing HCB in a major bridge project (Knickerbocker Bridge in Boothbay). Missouri and Utah plan to install HCB in bridge projects with grants from FHWA's Highways for Life Program. Also under consideration for bridge projects in Canada. Licensing agreements signed with companies in the European Union, Russia, Kuwait, and Brazil. AASHTO's Technology Implementation Group has selected HCB for implementation for 2011 and is looking for a lead state.
9	Horizontal wick drains (Projects #57, 76) Funding: $124,000 Completion: 2003	Prevents highway landslides (by facilitating drainage to lower the water table) Inexpensive, can be installed rapidly by crew with minimal training and equipment Resistant to rupturing and clogging better than PVC or steel pipe drains	Technique successfully demonstrated in Missouri, Colorado, and Indiana. Being used by private manufactures, geotechnical firms, and local agencies (American Wick Drain Corporation, Nilex Corporation, Gillen Company, Tetratech, Inc., Kleinfelder, Inc., and Blackhawk Geologic Hazards Abatement District in California).
10	A computer-controlled image analysis system for aggregate characterization (AIMS) (Projects #77, 114) Funding: $110,000 Completion: 2007 *FHWA's Highways for Life Program funded further development*	Automated, rapid, and accurate aggregate characterization without operator's influence and bias, saving time and money Versatile – able to characterize aggregates for Superpave sieve sizes from 0.075 mm to 25 mm retained	FHWA is currently using AIMS for demonstration and training in its mobile testing laboratory. AASHTO is reviewing test methods based on AIMS for adoption. Sold by Pine Instruments Company (Grove City, Pennsylvania). Units have been sold both in the U.S. and overseas.
11	Adaptation of self-compacting concrete (SCC) technology for the U.S. market using domestic materials (Project #89) Funding: $78,000 Completion: 2005	Better consolidation for enhanced durability, no vibration-induced segregation Reduces construction time Uses less material	This project was among the earlier studies to adapt SCC technology for domestic use. A number of state DOTs, including Florida, Illinois, New Jersey, Nevada, Ohio, and Virginia, now have SCC construction specifications. Maine showcased its use on Ogunquit Beach Bridge. Nebraska used it on a bridge near Crofton (Knox County). More recently, Mississippi used SCC on its Biloxi Bay Bridge project.

12	A vertical composite drain system to mitigate soil liquefaction hazard through drainage (Earthquake Drains) (Projects #94, 103) Funding: $148,000 Completion: 2007	Prevents liquefaction and structure collapse due to earthquake by providing a conduit for rapid pore pressure dissipation Drains installed at a fraction of time and cost of alternative methods and do not require any post-treatment testing to confirm their effectiveness Can be used in new construction or to upgrade existing foundations	Earthquake Drains have been used so far by California and South Carolina DOTs, the Port of Seattle, the City of Seattle, the Federal Bureau of Prisons, Wal-Mart, and other commercial interests. Utah DOT and the British Columbia Ministry of Transportation assisted in the initial evaluation of the drain system. Sold by HB Wickdrain, a division of Hayward Baker, Inc. (Centennial, Colorado)
13	A simple test for determining thermal cracking temperature of asphalt binders (ABCD) (Project #99) Funding: $76,000 Completion: 2007 *FHWA's Highways for Life Program funded further development*	Simple field-like test accurately predicts cracking temperature Helps avoid using binders susceptible to cracking at low temperatures Saves time and money by allowing simultaneous testing of multiple samples	Device is currently being tested by more than 30 laboratories from state DOTs, universities, and industry across the U.S. and Canada. The test was also used in Minnesota's MnRoad Project. AASHTO is reviewing the test procedure for adoption. Sold by EZ Asphalt, Inc. (Athens, Ohio).
14	A hand-held impact echo scanner for NDE of grout/void in post-tensioned bridge ducts for tendon corrosion mitigation and to image void, honeycomb, thickness, and cracking damage (Project #102) Funding: $85,000 Completion: 2006	Rapid (about 14 feet per minute) and reliable scanning locates areas of void in need of grouting repairs for both new and old bridge structures Applicable to both steel and plastic post-tensioning ducts	At least eight state DOTs have used or evaluated the scanner technology in their bridge projects. Agencies and institutions that own the system include Virginia DOT and the Metropolitan Water District of Southern California. Over 20 units have been sold in China to various agencies and institutions. Sold by Olson Instruments, Inc. (Wheat Ridge, Colorado).
15	A mobile geophysical survey method based on electromagnetic induction technology to detect and identify subsurface objects and features for highway projects (Project #107) Funding: $90,000 Completion: 2006	Rapid survey and mapping (up to 140 lane- miles per day) Reduces delays in highway construction projects by detecting in advance unexpected subsurface conditions and objects Helps reduce change orders, construction claims, schedule slippage, and cost overruns	Caltrans evaluated the method on two highway projects with good results. Reclamation Districts in the Sacramento-San Joaquin Delta have also used the technology in their projects. Technology has been fully utilized for levees work by several California Water Resources Divisions. Also was used for detecting buried archeological artifacts in Egypt and Mexico. Available from Argus Technologies, Inc. (Western Sacramento, California).

16	A real-time, hand-held microwave imaging device for the nondestructive evaluation of fiber-reinforced plastic (FRP) composite-wrapped concrete bridge members (Project #109) Funding: $79,000 Completion: 2007	The only available nondestructive method to detect debonding of FRP composite wraps in concrete bridge components Rapid, real-time damage detection allows timely repair to extend bridge's service life	Caltrans and New York State DOT evaluated the device on their bridge projects. Conclinic (a subsidiary of Fyfe Company, a leading manufacturer of FRP products for structural repairs) used it on a bridge in Seoul, South Korea. Device available from Newport Sensors, Inc. (Irvine, California).
17	A portable equipment using a bending plate for rapid measurement of soil modulus both in the laboratory and the field (Project #118) Funding: $95,000 Completion: 2009	The only portable device for measuring soil modulus both in the laboratory and the field Helps ensure proper soil compaction in highway projects Rapid test, takes only a few seconds	Florida DOT is currently evaluating the device in the field. A New Mexico DOT project will also use the device. FHWA plans to acquire several units for evaluation. Device commercially available from Roctest, Inc. (Montreal, Canada) with sales offices in Charleston, South Carolina and Seaside, California.
18	A fiber optic accelerometer system to assess structural integrity of bridges under traffic, earthquakes, and other dynamic loads (Project #124) Funding: $130,000 Completion: 2009	Cost effective real-time bridge inspection and early warning for structural damage during seismic events and under other dynamic loads Easy to install, needs no cables or electricity Immune to electromagnetic interference and lightening strikes	Caltrans evaluated the device on several bridge sites in California. Tokyo Sokushin, Ltd., a Japanese manufacturer of vibration sensors, is using it for deep ground motion monitoring in Japan. Also being used to monitor a 500-meter commercial/retail building in Nanjing, China. Available from Newport Sensors, Inc., (Irvine, California).
19	DriveCam, a video event data recorder to monitor driving activity (Project #ITS 84) Funding: $95,000 Completion: 2001 *Received wide media coverage (ABC's World News Tonight and Good Morning America, CBS's Early Show, NBC's Dateline, CNN, and Wall Street Journal, among others)* *Featured on Discovery Channel's show, 'The Truth about Traffic,' focusing on improving traffic flow and driving habits*	Reduces accidents, improves driving behavior Recorder, triggered by crash or erratic driving, can also be activated manually to capture road rage, hit-and-run, or other road events Saves time and money by helping determine accident liability	Use of DriveCam by transit agencies and industry continues to increase. The user transit agencies include San Francisco, Austin, New Jersey, and Washington, DC. Many major private companies (such as Sysco Corporation) are using the device on their fleet of trucks, buses, and other vehicles. Maryland DOT used DriveCam for a teen drivers' safety program. Iowa DOT also used it for a similar study on teen drivers' behavior. DriveCam has now evolved into a major business claiming a spot on the Inc. magazine's list of 500 fastest growing companies for three consecutive years and was ranked 67th in 2005. Sold by DriveCam, Inc., (San Diego, California).

Table 2

IDEA Products with a High Potential for Near-Term 1mplementation/Commercialization

	Product	Benefits	Implementation/Application
1	Basalt fibers and basalt fiber composite rebars for use in concrete (Projects #25, 45, 86) Funding: $137,000 Completion: 2003	Corrosion-free material with superior mechanical performance (Basalt rebar exhibited tensile strength three times that of steel rebar) Much less expensive than steel fibers and rebars	Feasibility of using local basalt mineral (from northern Wisconsin and Minnesota) for making basalt fiber products was demonstrated. Mechanical performance as concrete reinforcement (using surface modified or twisted rebars) was also established as comparable to steel reinforcement. Efforts are underway to set up a basalt fiber plant in South Dakota using domestic basalt mineral to facilitate implementation of the basalt fiber technology in the U.S.
2	A geocomposite layer system for pavement subsurface drainage (Projects #68, 113) Funding: $150,000 Completion: 2009	Prevents pavement damage due to base/subbase moisture, extends pavement's service life	Project received substantial support from several states (New Hampshire, Vermont, Maine, and New York) and the U.S. Army Corps of Engineers. The geocomposite layer system was successfully tested in a full-scale test section in MnRoad Project. The test section with the geocomposite layer system had considerably drier base and subbase as compared to the control section. Product is now available for licensing. Availability of a better and less expensive geotextile for the transport layer will help facilitate implementation of the technology.
3	A fiber-reinforced composite sidewalk (Project #67) Funding: $75,000 Completion: 2001 *The I-beam developed in the IDEA project was exhibited as one of the 'Highly Engineered Materials Designed for Ultimate Performance in Extreme Conditions' at the Smithsonian Cooper-Hewitt National Design Museum in New York City in 2005*	Lightweight, high-strength, can be easily installed where concrete or steel would be too heavy for the existing bridge Allows widening of the road within an existing bridge envelope by moving sidewalk outboard	Demonstration of the sidewalk on a bridge in Vermont was postponed at the final stage due to budgetary problems. Plans to install the sidewalks in New York, New Hampshire, and Massachusetts also did not materialize. However, the I-beam developed in the IDEA project with carbon fabric and epoxy resin has found use in the construction industry.

4	A mechanical system based on anvil and hammer concept for crushing and recycling concrete pavement (Road Recycler) (Projects #79, 95) Funding: $120,000 Completion: 2003 *USDOT/SBIR Program funded further development*	Saves labor and time for removing, fragmenting, and recycling concrete pavement (can lift a 12ft. wide, foot deep section of concrete pavement, pulverize it into reusable aggregate, and separate and cut steel rebar, leaving behind a roadway ready for paving)	Kansas and Iowa DOTs assisted in testing the prototype. A stationary version of the machine was fabricated and sold to a private highway contractor. The machine is now in Minnesota for continued testing and demonstration. Needs substantial additional resources to bring a mobile unit to the market.
5	Test methods, based on fracture mechanics, for predicting asphalt binder performance at low temperatures (Projects #84, 104) Funding: $161,000 Completion: 2006	Test specifications help eliminate thermal stresses in asphalt pavements to avoid premature failure Help purchase better quality asphalt cement resistant to cracking at low temperatures	The test methods now form part of the Ontario Ministry of Transportation's Laboratory Testing Manual and are in use by a majority of asphalt cement suppliers and quality assurance laboratories in Ontario. The Quebec Province and a number of Canadian cities (Ottawa, Edmonton, Muskoka, North Bay, Kingston, and Timmins) are also using the methods to help purchase better quality asphalt cement.
6	A robotic safety marker system for use in highway work zone (Project #90) Funding: $87,000 Completion: 2005 *Reported on the CNN and the BBC. The Discovery Channel featured the markers in its movie, 'Future Cars'*	Helps eliminate tasks that expose highway workers to high risk Robotic barrels could self-deploy and self-retrieve and be located accurately up to 80 meters away Rapid deployment (The barrels took less than two minutes to deploy)	Tests showed good agreement between the desired and actual path for each robot in a realistic environment. A field implementable safety marker system should be feasible in near future by taking advantage of recent advances in electronics and computer technology.
7	An improved detection control system (D-CS) for high speed signalized intersections (Project #115) Funding: $75,000 Completion: 2007	Drivers approaching a traffic signal with yellow indication at high speed must decide whether or not to stop. The D-SC helps reduce the likelihood of vehicles being in the dilemma zone	The IDEA work is being continued in association with a private company (Intelligent Automation, Inc., Columbia, Maryland) in a USDOT/SBIR project that also incorporates driver warning in addition to signal control into the system.
8	A mini-power generator utilizing bridge vibration energy to operate wireless sensors and actuators (Project #117) Funding: $76,000 Completion: 2007	Requires no electricity from external sources. Uses bridge vibrations to produce electricity to operate sensors Wireless sensors eliminate cables and minimize installation costs	Improvements to the self-powered sensor platform continue. Prototype needs to be packaged into a compact field implementable system. The wireless sensor platform is currently being sold as an energy harvesting development kit by Ambio Systems, LLC (Heuvelton, New York).

9	A software system for the identification, evaluation and management of unstable highway slopes (Split-FX) (Project #119) Funding: $99,500 Completion: 2008 *The NSF/SBIR Program and a number of states are funding further development and evaluation through a pooled-fund study*	Eliminates safety hazards associated with traditional geotechnical surveying Allows rapid and accurate analysis of highway slopes using ground-based LIDAR scanning from distances as far as 2 kilometers	A pooled fund study involving eight states (Arizona, California, Colorado, New York, New Hampshire, Pennsylvania, Texas, and Tennessee) is evaluating the product. Alaska is also doing its own evaluation. An NSF/SBIR project is further exploring it for monitoring changes in infrastructure sites (highways, bridges, dams, foundations, and tunnels). Software is commercially available from Split Engineering, Inc. (Tuscon, Arizona). Purchased by the U.S. Bureau of Reclamation and British Geological Survey, in addition to pooled fund participant states.
10	A software system for automatic processing and extraction of information on roadway signs from video log images (Project #121) Funding: $100,000 Completion: 2009	Replaces current manual practice that is time consuming, costly, and exposes workers to safety hazards	Several state DOTs (Connecticut, Georgia, Florida, and Louisiana) and the City of Nashville tested the method. The FHWA has selected the technology for a nationwide demonstration project. The US Coast Guard is also evaluating the technology for marine applications.
11	A laser-based bridge measurement system and a virtual assembly software to facilitate complex bridge fabrication (Project #127) Funding: $140,000 Completion: 2009 *Several states are funding further evaluation through pooled-funds*	Measures accurately all aspects of bridge components in an automated manner Helps avoid costly errors before it is too late. Identifies mismatch at the shop, allowing corrective actions prior to painting and shipment to a job site Minimizes or eliminates the need for shop fit-up and assembly Allows use of complex steel bridge designs in situations previously considered impractical	The IDEA product was evaluated with assistance from FHWA and two private steel bridge fabricators from Pennsylvania and South Dakota. A pooled-fund project is further evaluating the system involving several states (Virginia, New York, Iowa, and Texas) and FHWA. A bridge fabricator, Hirschfeld Industries (San Angelo, Texas) is also involved and will help commercialize the product.
12	A field instrument for automated rapid measurement of air permeability of pavement base or subbase (Project #130) Funding: $100,000 Completion: 2009	In-situ permeability measurement will allow greater precision in the design, construction, and QC/QA of pavement base/subbase Rapid test (takes less than 30 seconds)	The prototype instrument was tested in several new road construction projects in Iowa, Pennsylvania, and Michigan, and the results were verified with laboratory measurements.

13	A low-cost wireless sensor system for autonomous monitoring and reporting of highway traffic noise data (Project #131) Funding: $125,000 Completion: 2009	Automated traffic noise monitoring Eliminates expensive hardware and the need for an on-site worker Inexpensive wireless sensors can be mounted inconspicuously and left alone while data is transmitted and accessed over the internet	System was evaluated by Ohio and California DOTs for noise barrier testing and community and wayside highway noise measurements. The US National Park Service used it for monitoring noise in remote national park locations. Efforts to commercialize the sensor system are underway through sublicensing to a manufacturer of sound level meters.
14	A vehicle-mounted scanner system for the nondestructive evaluation of concrete bridge decks (Project #132) Funding: $100,000 Completion: 2009	Rapid monitoring of bridge deck for delamination, saving time and money Reduces exposure of highway workers to roadway traffic hazards	Prototype was successfully tested on two bridges in Wyoming. The technique is ready for implementation. Iowa DOT plans to evaluate the scanner system on one of its bridge projects. Olson Engineering, Inc. (Wheat Bridge, Colorado) will use scanner as a consulting service but may consider commercialization, based on market demand.
15	A new bending beam test applied on thin specimens for low-temperature compliance of asphalt mixtures (Projects #133, 151) Funding: $210,000 Completion: Active	Helps select asphalt mixtures with superior performance at low temperatures Requires no additional equipment – uses existing bending beam rheometer Provides a critical parameter in the current AASHTO's MEPDG specifications	Utah DOT assisted in the initial evaluation of the test method and is currently considering it as a possible QC test for asphalt pavement-related activities. FHWA and a number of private contractors and laboratories have also used the test for low-temperature performance prediction of asphalt binders. The test will be submitted to AASHTO for review and implementation.
16	A software system for a baseline-free methodology for real-time structural health monitoring and post-event damage assessment of highway bridges (Bridge Doctor) (Project #137) Funding: $129,000 Completion: 2010	Timely detection and location of structural damage in real time, as opposed to current periodic visual inspection Allows remote assessment of post-event bridge damage for timely response/repair	Caltrans evaluated the system on Jamboree Overcrossing in Irvine, California. Further evaluation continues. Newport Sensors, Inc. (Irvine, California) plans to bring the product to market in 2011.
17	A traffic sensor based on computer vision technology for use on fixed and pan-tilt-zoom cameras for collecting traffic parameters (Project #140) Funding: $135,000 Completion: 2010	Cost effective, real- time traffic data collection and incidents detection without having to install additional hardware Data collection in all types of conditions (day, night, rain, snow, congestion, and other scenarios)	The sensor was tested successfully in the states of South Carolina, Maryland, and New York. Partnership with a software company has been established to help commercialize the IDEA product. The sensor system is expected to be on the market in 2011.

18	A vibration damping system based on magnets to reduce fatigue in traffic signal support structures exposed to excessive wind-induced vibrations (Project #141) Funding: $135,000 Completion: Active	Inexpensive system produces significant vibration damping Can be used in new signals or retrofitted to existing problem poles	System was successfully demonstrated in full-scale laboratory tests. Field tests are planned. The work has been supported by Connecticut DOT which intends to pursue field deployment and evaluation of the system through a pooled-fund study.
19	A device using pneumatic power and rotary wire brushes to remove debris and chemicals from cracks and joints prior to sealing treatment (Project #148) Funding: $57,000 Completion: Active	Allows thorough cleaning to ensure proper, durable sealing of pavement cracks and joints Reduces crew's workload for crack routing process	Nebraska DOR is assisting in evaluating the device. Two pavement equipment companies, Crafco, Inc. (Chandler, Arizona) and Pavement Coatings, Inc. (Evansville, Indiana) have expressed commercial interest.
20	A guardrail post for installation in mow strips and frozen soils without adversely affecting the safety performance of the guardrail systems (Project #149) Funding: $100,000 Completion: Active	Helps save lives by successfully redirecting errant vehicle independent of the foundation conditions Helps reduce the cost of installing mow strips around guardrail systems and improve guardrail safety performance under frozen soil conditions	The states of Michigan, Minnesota, Iowa, Nebraska, and Wisconsin will help evaluate the guardrail posts in the field. Road Systems, Inc. (Big Spring, Texas), a manufacturer of highway safety products is interested in commercializing the product.