

Leica Geosystems

The New Infrastructure Boom Market

Under the American Recovery
And Reinvestment Act of 2009

- when it has to be **right**

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1. Executive Summary

Even though the U.S. is in a recession, the American Recovery and Reinvestment Act of 2009 (ARRA) is stimulating a mini-boom for contractors and subcontractors who can build and manage large infrastructure projects.

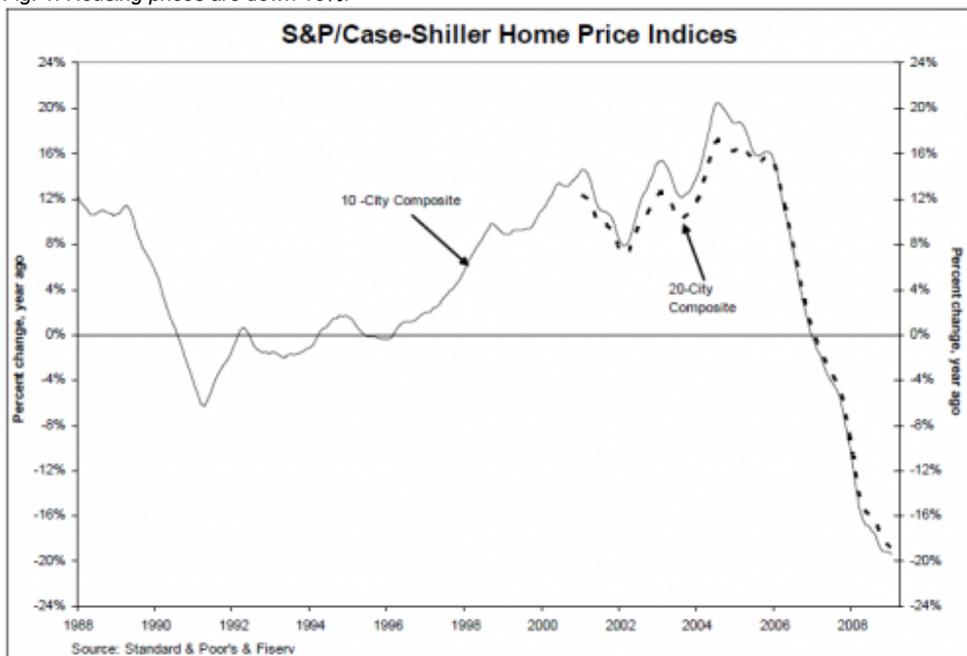
The goal of this special report is to help you understand the opportunities available under the ARRA, and highlight technology that can help you compete more effectively for federally funded infrastructure contracts.

2. State of the Construction Industry in 2009

The construction industry has been hit hard by the recession. From December 2007 (the start of the recession) through December 2008, the price of the average home in the U.S. dropped from \$207,000 to \$175,400, a decline of 16% in one year (Fig. 1).¹

With housing prices plummeting, home construction has dropped off precipitously, resulting in hard times for contractors specializing in residential construction. New construction starts for 2009 are estimated at \$463.1 billion, a 15% drop from 2008.²

Fig. 1. Housing prices are down 15%.



Banks and other lenders have tightened their purse strings, making it more difficult for contractors to borrow money or buy on credit. High unemployment has weakened consumer confidence, causing a slowdown in spending. Businesses, in turn, are tightening belts and holding off on new projects.

The good news is that there's a bright silver lining under this otherwise gloomy cloud: the coming boom in construction of large infrastructure projects being funded by the federal government under the American Recovery and Reinvestment Act of 2009, signed by President Obama on February 17, 2009.³

"Stimulus spending is set to accelerate," reports an article in Time magazine (7/13/09). "Over the next two years, more federal dollars will flow to hard-hat construction projects."⁴

Why focus on infrastructure? Most Americans take the infrastructure for granted. We expect the lights to come on when we flip the switch, the water to flow when we turn the faucet, the furnace to keep us warm all winter, and the trains to run on time. But the American Society for Civil Engineers gives the U.S. infrastructure a grade of "D" – and estimates \$1.6 trillion will be needed over the next 5 years to keep it from crumbling.⁵

The ARRA initiatives are already creating a flood of new infrastructure projects – dams, bridges, roads, towers, tunnels, airports, telecommunications networks, power plants, ports, and more. Federal and state governments need contractors – like you – to build them all!

3. A Once-in-a-Decade Profit Opportunity from Infrastructure Construction

Under the American Recovery and Reinvestment Act of 2009 (ARRA), the federal government will spend \$787 billion to spur economic growth in the U.S. – making the ARRA the largest federal spending bill implemented since Roosevelt's New Deal.⁶ Of this total, approximately \$140 billion is earmarked for construction projects – specifically **infrastructure** rebuilding and expansion.³

With the ARRA, the Obama administration has twin objectives: (1) rebuild America's aging infrastructure and (2) stimulate the U.S. economy.

"To build an economy that can lead this future, we will begin to rebuild America," President Obama has stated. "Yes, we'll put people to work repairing crumbling roads, bridges, and schools by eliminating the backlog of well-planned, worthy and needed infrastructure projects."⁷

The economic stimulus comes, in large part, from the millions of new jobs that rebuilding the U.S. infrastructure will create (see Fig. 2). For instance, the Mass Transit Tunnel being drilled under the Hudson River between New York and New Jersey is expected to create 5,600 new construction jobs.⁸

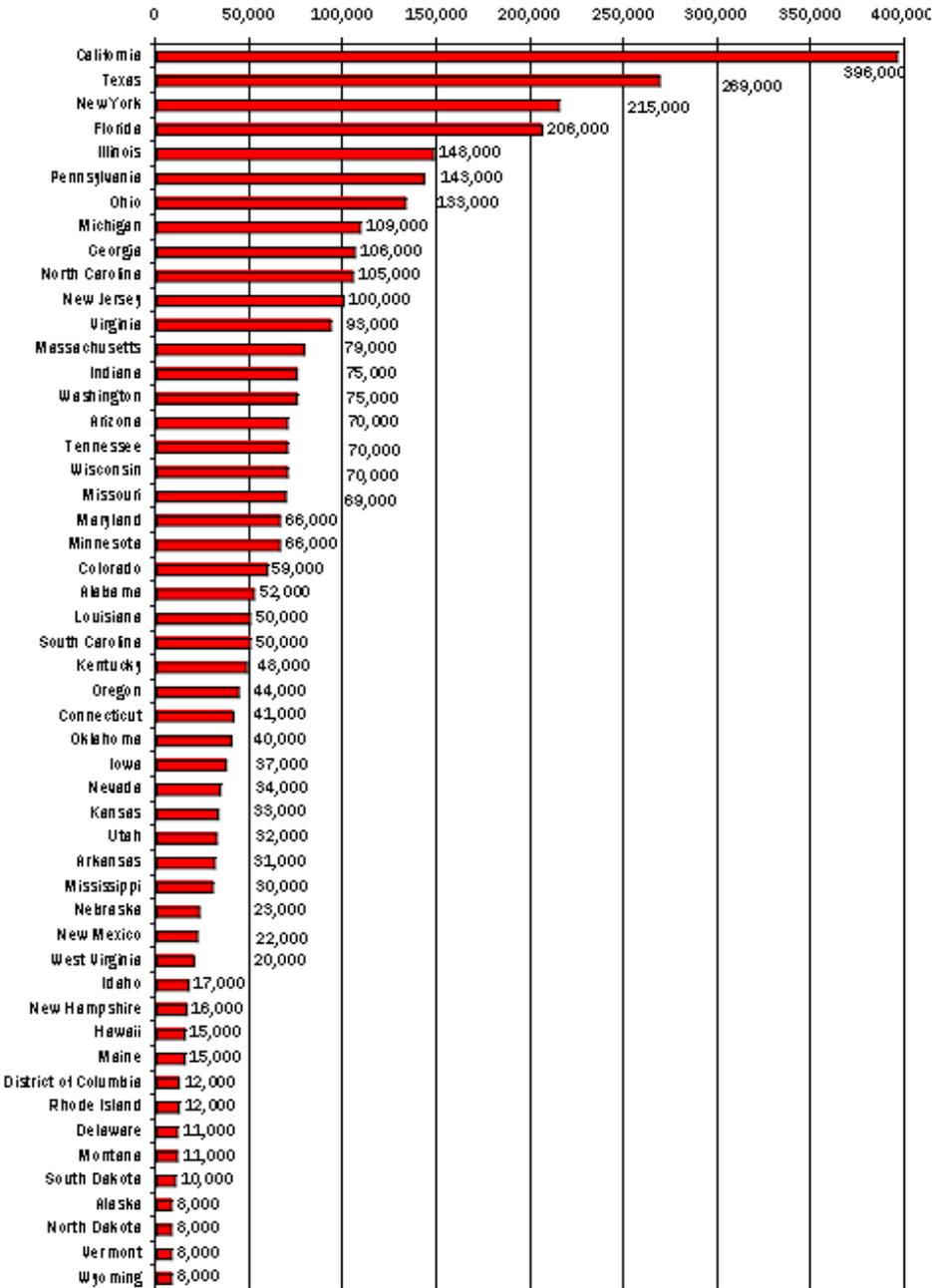


Fig. 2. Jobs created or retained as a result of the ARRA by state.

The dozens of new infrastructure projects initiated under ARRA also represent a profit opportunity for design and construction firms, surveyors, and engineers who build such projects.⁹

However, the President has no particular interest in helping contractors maximize profits. On the contrary, he says:

“We can’t just fall into the old Washington habit of throwing money at a problem.”¹⁰

The federal government has always been a price-sensitive customer, ultimately choosing the lowest bid from the many qualified vendors who want the job.

And that tight-fisted fiscal policy will continue under ARRA. As a result, the lower your bid, the greater your chances of securing these federally funded contracts.

That means you need to submit a bid low enough to win the contract. Yet high enough to permit you to complete it at a profit instead of a loss.

When building the structure, you need to control costs and eliminate waste – so your firm makes a nice profit on the job whatever the project price tag.

The competition for government contracts is always stiff. But under the ARRA, with the Obama administration's emphasis on cost cutting, bidding for these projects may be even more competitive. In some instances, you may find yourself up against 30 to 40 contractors for each ARRA project.³

A survey by the American Association of State Highway and Transportation Officials (AASHTO) found construction firms are competing fiercely for ARRA infrastructure projects. According to AASHTO, some states are reporting project bids coming in between 5% and 27% below estimates.¹¹

“Across America, competition for these projects is so fierce and contractors are doing such a good job cutting costs that projects are consistently coming in under budget,” says President Obama. “That means we can fund more projects, revitalize more of our infrastructure, put more people back to work, and ensure that taxpayers get more value for their dollar.”¹²

4. How Contractors are Hired and Paid Under ARRA

According to Peter Orszag, director of the Office of Management and Budget (OMB): “The chief of human Capital Officers Act of 2002 provided new hiring authorities which, coupled with those that already existed, have the potential for dramatically improving agencies' ability to get the right people in the right jobs at the right time.”⁶

The ARRA includes a provision for the creation of a special Recovery Accountability and Transparency Board (RATB) to oversee the disbursement of all funds. Contractors and their subcontractors are required to submit reports to web sites and oversight committees or the Office of the Inspector General.

These reporting requirements apply only to non-federal recipients, which include contractors and subcontractors, who receive funding provided through discretionary appropriations. Contractors and subs are required to report:¹³

- The name of the project.
- A description of the work they are to perform.
- An evaluation of the completion status of the project or activity.

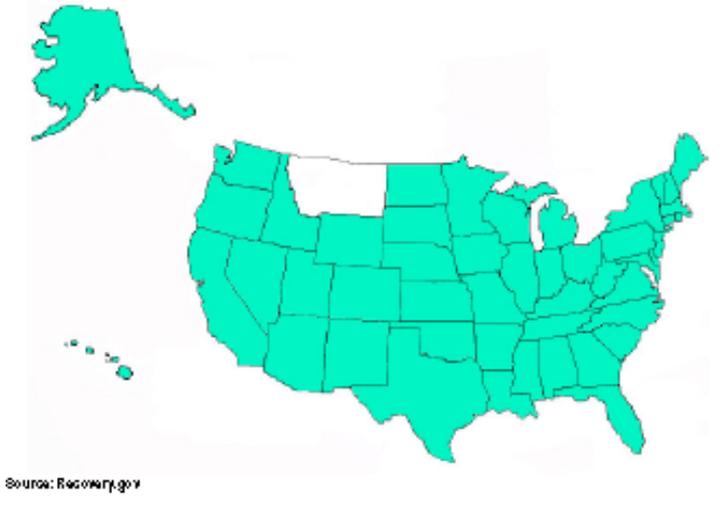
- An estimate of the number of jobs created and retained by the project or activity.
- The names of the subcontractors and what each was hired to do.

While the ARRA is federal legislation, the states are responsible for administering payments and hiring under the bill's provisions. For some projects, federal agencies will award the contracts directly. But in many cases, the federal government will give the states a block of grants and loans to distribute within the ARRA guidelines.

The ARRA awards federal funding to agencies and states to use as they see fit. The bill lists dollar amounts that can be awarded to projects under certain program administration areas. But it does not dictate how much money will be spent on each specific project. As of 4/21/09, 49 states (see Fig. 3) have certified that they want to receive funding.¹³

Fig.3. States (shown in green) requesting ARRA funding.

States in green have accepted stimulus funding. States in white have not done so yet.



5. Tips for Winning ARRA-Funded Projects

Here are some strategies that can help you win lucrative infrastructure projects funded by federal or state agencies under ARRA.⁶

1. Regularly check www.recovery.gov and other web sites for news of ARRA infrastructure projects accepting bids (see Section 7). If you don't submit your proposal by the bid deadline, you can't win the project.
2. In your proposal, stress your experience in the successful completion of government funded projects. Firms with a track record of working for federal and state agencies have an edge in ARRA contract reviews.

3. Bid on local projects close to home. Showing that you have projects already approved in the state or town demonstrates your ability to get approvals with local agencies and inspectors.
4. Increase your visibility. Step up your public relations efforts. Highlight each successful project completion and each new contract win. The more visible you are with state agencies, the better your chances of getting their ARRA work.
5. Be aware of reporting requirements you have to comply with as well as any unusual aspects of these awards to keep compliant with the stimulus plan's stipulations.
6. State and municipal clients are in a hurry to complete preliminary phases and design work on infrastructure projects so they can submit them for funding considerations; ARRA only funds projects that are ready to build. Make it clear to the department or agency that you are willing and able to get their project "shovel-ready" and move with speed and urgency to do so.
7. Contact the state and municipal agencies you have worked with in the past. If they have ARRA funds to award, you will likely have an edge over bidders the agency has not worked with before.
8. Differentiate your firm's skill and experience. For instance, if you have worked on bridges, that experience will give you a leg up over other bidders in winning a contract for a new bridge funded under ARRA.
9. Get on the agency's short list even before the project announcement is made. Make contacts through networking to improve your visibility to state and municipal hiring authorities.
10. Visit www.fedbizopps.com regularly and read the pre-solicitation notices posted on the site. Doing so can help you keep abreast of what projects are coming up for selection so you can have your materials ready for submission as soon as the project opens up for bidding.
11. Demonstrate a clear understanding of the project scope in your proposal. Include examples of how your firm solved similar problems on previous projects, showing how you saved the client money or helped them get the job done faster.
12. Highlight your firm's specialized equipment, unique skill sets of key team members, and any advanced technology you use that can help accelerate progress or reduce costs (see next section).

6. How Technology Can Give Your Firm an Edge in Winning ARRA Projects

To win ARRA infrastructure projects by submitting the low bid, construction firms need to cut costs to the bone. And one often-neglected cost-cutting measure is improving the accuracy, speed, and efficiency of geospatial measurements.

Increasing the efficiency and accuracy of your mapping and measurement can help you control costs, prevent waste, and eliminate costly errors that result in delays -- and add expense that erodes your margin.

So it makes sense to use modern, high-speed, ultra-precision data capture systems to ensure rapid and correct results.

Greater precision, enabled by state-of-the-art machine controls automation, can also save time and money during the initial construction phase.

When you acquire or upgrade to new positioning technology, your bid for an ARRA project (or any other) can reflect the time and cost savings the technology provides in these tasks:

- Surveying, mapping and data collection for initial site assessment.
- Precision control of machines during construction using predetermined data sets.
- Automated structural monitoring of the finished structure such as dams, tunnels, bridges.

Result: your price is more competitive, increasing your chances of winning big ARRA infrastructure projects more often.

OK. Let's look at specifics – 7 ways digital positioning technology and expertise can help you win more ARRA infrastructure projects and complete them more profitably:

1. **Use less material during construction.**

Using excess materials to build an infrastructure wastes both time and money, and can significantly add to your construction costs.

For example, tunnels must be surrounded by a layer of shotcrete of uniform thickness. If you make it thicker than needed, you are wasting material and labor. If the layer is not thick enough, you will have to go back in and rework it to pass final inspection.

To ensure uniform thickness, you scan the tunnel with a high-definition scanner before shotcrete is applied and again after shotcrete. The difference between the two readings is the thickness. You apply the thickness the specification calls for – no more, no less.

Or let's say you are grading a large parking area. Without electronic guidance, the operator eyeballs a string to keep his grader level. But human operators are prone to error, and often more earth is moved than needed.

A digital machine controller can help the operator maintain a level grade with increased accuracy, keeping the grader almost perfectly level. Level grading ensures that you remove no more soil than required, saving time and money.

2. *Improve monitoring efficiency and results.*

Many infrastructure projects initiated under the American Recovery and Reinvestment Act of 2009 require the contractor to provide monitoring both during construction and after completion.

You can improve the quality of the monitoring you provide and reduce its costs by including automated monitoring stations in your bids.

With manual structural monitoring, surveyors may come to the job site monthly and spend an entire day taking measurements. An automated monitoring system can provide continuous monitoring of the structure's movements -- without sending a surveying crew each month.

For instance, the monitoring network installed in the half-mile-high Burj Dubai (the tallest man-made structure ever built) determines and analyzes displacement of the tower alignment from the vertical axis in real time with millimeter accuracy.

3. *Stop geological flaws at the site from interfering with the build.*

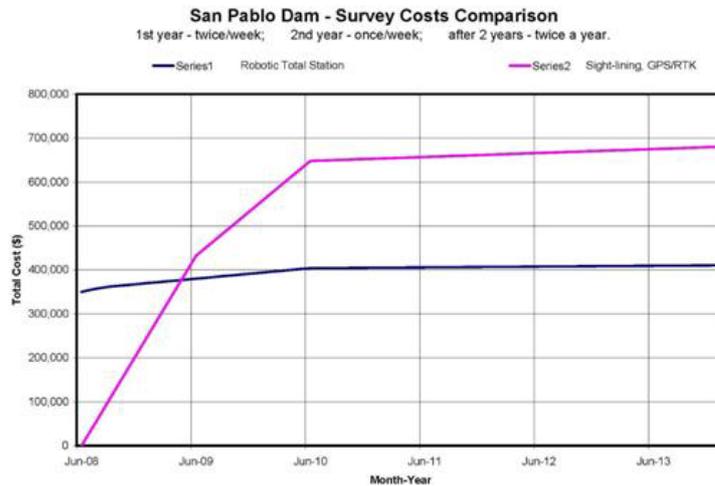
With today's advanced measuring, monitoring, and surveying data capture systems, you can build dams, tunnels, and other projects faster, more efficiently, and more accurately than your competitors bidding against you. High-speed, ultra-precise positioning technology can help you lower your project costs by defining, monitoring, and allocating risks correctly the first time.

Precision systems for mapping and surveying of the job site can enable early detection of geotechnical issues – so design plans can be modified early on, before construction begins. This can help prevent cost overruns, reduce insurance costs, and avoid potential litigation while addressing regulators and maintaining safety.

4. *Save time and money when surveying.*

Improvements in positioning technology have resulted in major savings of time and money in surveying for large construction projects. Therefore, acquiring the right measurement equipment can enable you to complete surveys faster, more accurately, and at lower cost.

A case in point: a \$55 million seismic upgrade to California's San Pablo Dam, where using robotic total stations cut survey and monitoring costs approximately 40% (see graph) vs. sight-lining GPS/RTK.



5. Reduce manual labor.

Government contracts are most often fixed-price, not time and materials. That means the more hours your crews spend in the field, the lower your profit margin on the job.

After Hurricane Katrina, Martin & Whiteacre Surveyors & Engineers was hired to map a six-mile stretch of Lake Pontchartrain along the southern shore. A Leica Geosystems ScanStation was used to produce 3D laser scan surveys for the flood gates, seawalls, and site structures.

“The HDS3000 proved to be a real workhorse on this complex and difficult job,” says Gary Whiteacre, president of Martin & White. “When it comes to capturing detailed information on a complex structure, there is no comparison in terms of speed and accuracy. Without this technology, we would have had to take a large number of single measurements and connect the dots – and probably do a lot of hand sketches on a clipboard.”

6. Build the structure faster and more accurately.

After the surveying is done, the project has to be built. Use of levels, lasers, and automated machine control solutions can help you build the structure more accurately, in less time, and with minimal wasted material.

For instance, automated optical levels are quick to set up and deliver precise measurement, and our construction lasers are built to handle any environment. Machine controls minimize operator error. Bulldozers and other heavy equipment can be operated with greater precision, resulting in jobs that are built to tighter tolerances.

7. Pave the way for your project success.

Concrete paving is an integral part of many large infrastructure projects. Setting stringline for paving is labor-intensive and extremely prone to error ... and the greater the accuracy of your paving, the lower your material and labor costs.

Head Inc. specializes in airfield concrete slipform paving. They were hired to remove and replace an old 3,760-foot concrete runway with a new cement-treated base 6 inches thick.

The company used a concrete paver and trimmer/placer equipped with an automated machine control system. The system enabled a tolerance on a 16-foot straight edge of plus or minus one-eighth of an inch. It also eliminated the time and effort of setting stringline.

7. Keep Up to Date on New ARRA Projects You Can Bid On

You can find infrastructure projects funded by the ARRA online at these sites:

Official ARRA web site
www.recovery.gov

General information on ARRA
www.propublica.org

State-specific stimulus information
www.agc.org/stimulus

Federal Business Opportunities
www.fbo.gov

8. Conclusions and Recommendations

Contractors with experience and a track record of success completing large infrastructure projects have an edge in winning contracts for projects initiated under the ARRA.

Monitoring, mapping, and surveying can account for up to 5% - 10% or more of the contract value, which on a \$10 million project is approximately at least half a million dollars.

By using the most efficient and accurate positioning technology, you can:

- Reduce job costs.
- Bid more competitively.
- Win more contract awards.
- Measure correctly the first time.
- Work better and faster.
- Increase profit margins.

9. The next step

State-of-the-art surveying, mapping, monitoring, and machine control systems can give you a competitive advantage on bidding for, winning, and building ARRA-funded infrastructure projects. Which is why you should sit down with a Leica Geosystems Engineered Solutions Specialist for a free evaluation and analysis of your positioning equipment needs.

For nearly 200 years, thousands of contractors, surveyors, and engineers worldwide have put their trust in Leica Geosystems products and services to help them capture, analyze, model, visualize, and present spatial information. We provide reliable local support on a global scale through our more than 2,600 employees and hundreds of partners in over 120 countries.

For a free consultation with a Leica Geosystems Engineered Solutions Specialist on choosing and using the right surveying, mapping, and machine control systems for the project you are bidding on or building, call **1-877-390-2437**. Or to attend our FREE webcast, "Winning and Profiting from American Recovery and Reinvestment Act of 2009 Construction Projects" visit: **www.leica-geosystems.us/HowtoWin**

References

1. <http://pennysleuth.com/existing-home-sales-show-glimmer-of-hope>
2. Morrison, Mary, "Build Message for Tough Time," BtoB's Vertical Insight Guide, 2009, p. 7.
3. "Understanding the American Recovery and Reinvestment Act: Technology Best Practices for Public Sector Contractors," Sage Construction and Real Estate Solutions, p.2.
4. Scherer, Michael, "What Happened to the Stimulus," Time, 7/13/09, pp. 38-41.
5. "Long Neglected Infrastructure Setting Up Major Spending Boom," Independent Living, 3/08, pp. 1-3.
6. Howley, Elaine, "Guide to the American Recovery and Reinvestment Act of 2009," Zweig Market Intelligence Reports, pp. 65-68.
7. http://vision4freedom.net/obama_speech_010809.html.
8. McGeehan, Patrick, "Train Tunnel is Becoming a Reality," NY Times, 6/8/09, p. A14.
9. Howley, Elaine, "Guide to the American Recovery and Reinvestment Act of 2009," Zweig Market Intelligence Reports, p. 11
10. = <http://change.gov/newsroom>, Newsroom Blog, "American Recovery and Reinvestment," 1/3/09.
11. AASHTO press release, "States Deliver Economic Recovery Projects Nationwide."
12. AASHTO, "Economic Recovery: Delivering on the Promise."
13. Howley, Elaine, "Guide to the American Recovery and Reinvestment Act of 2009," Zweig Market Intelligence Reports, pp. 32-33.

Leica Geosystems – when it has to be right

With close to 200 years of pioneering solutions to measure the world, Leica Geosystems products and services are trusted by professionals worldwide to help them capture, analyze, and present spatial information. Leica Geosystems is best known for its broad array of products that capture accurately, model quickly, analyze easily, and visualize and present spatial information.

Those who use Leica Geosystems products every day trust them for their dependability, the value they deliver, and the superior customer support. Based in Heerbrugg, Switzerland, Leica Geosystems is a global company with tens of thousands of customers supported by more than 3,500 employees in 28 countries and hundreds of partners located in more than 120 countries around the world. Leica Geosystems is part of the Hexagon Group, Sweden.

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