

RETURN ON INVESTMENT

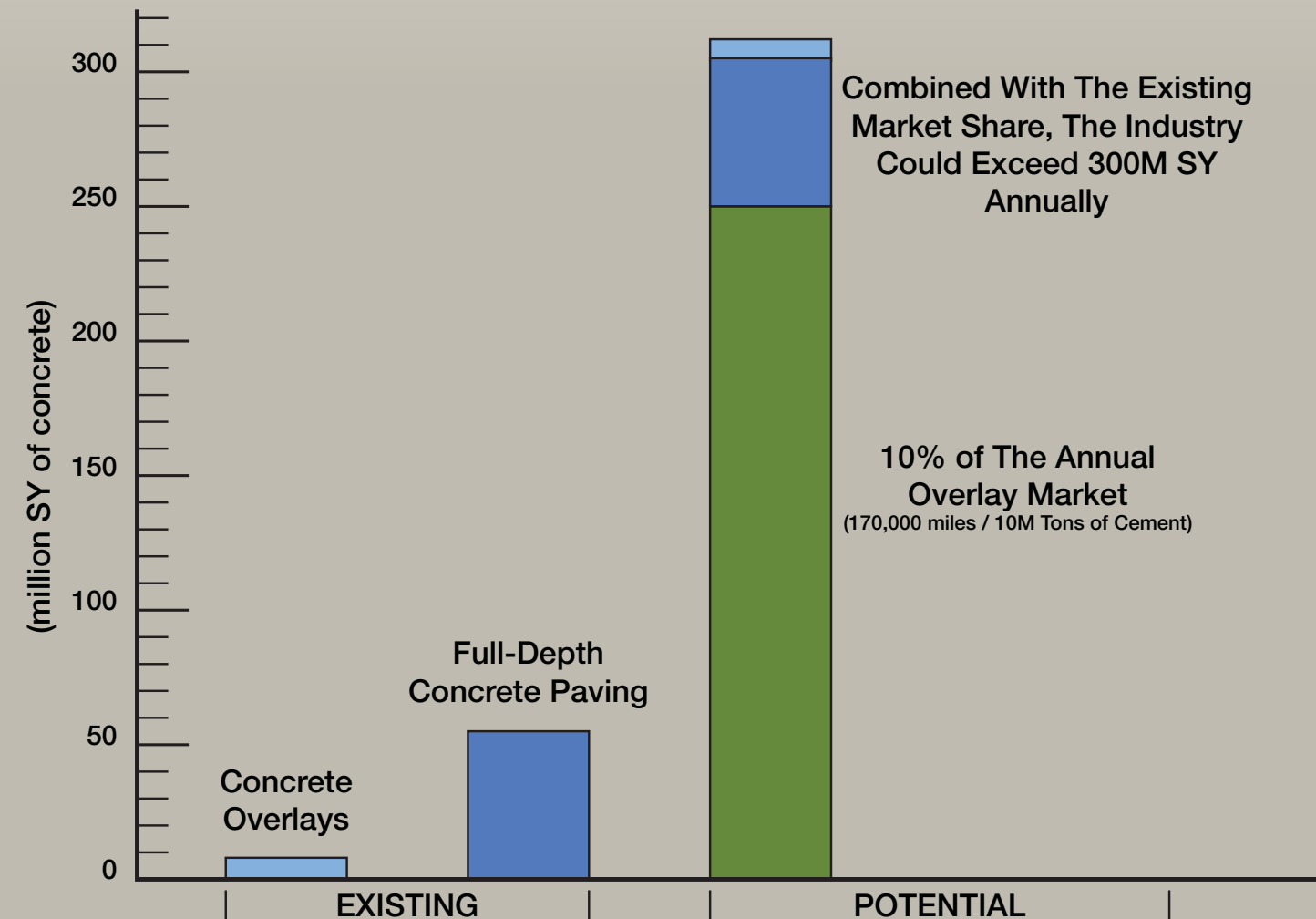
The benefits resulting from continued training and technical support efforts are substantial and straight forward. Simply put, through concrete overlay training and demonstration, the expanded use of concrete overlays on a national basis is a strong possibility. This can lead to an increase in billions of dollars of work for the concrete industry. This **mandate for change** provides the industry with an unprecedented opportunity in the rehabilitation of pavements in states, cities, and counties throughout the US.

A simple example of the benefits:

Of the 2.7 million miles of paved roadways in the US, 94% or 2.5 million miles have an asphalt surface. On the average, asphalt pavements' surface life without a surface overlay is typically limited to less than 15 years.

On an annual basis this equates to a need to address 170,000 miles of existing asphalt pavements per year. Conservatively, if just 10% of these miles were physically eligible for a concrete overlay, this equates to a new market of 17,000 miles per year over the next 15 years. Assuming an average thickness of 5 inches at an average cost of \$245,000 per mile, this equates to an annual \$4 billion per year in potential new markets.

Factoring the investment cost of \$2 million into the \$4 billion in return as an industry, the annual return on the investment would be \$2000 returned for every \$1 invested. In some areas of the country, additional investment may also be required by ACPA, PCA, and local promotion efforts to sufficiently support agencies with new projects. It is also likely that this evolution will take several years to realize but this is an opportunity that cannot be ignored.



CONCRETE OVERLAYS

A Mandate For Change

There are two major truths in the world of concrete.

1. Concrete is the most widely used construction product in the world.
2. Only six percent of US highways have a concrete surface.

Fifty years ago concrete was the most widely used pavement. Since that time, asphalt pavement began to dominate the market due to the perception that asphalt pavements were easier to construct and the fact that it had a lower initial cost to construct. This occurred even though the average life of asphalt pavement is less than 15 years and the average life of concrete pavement is 30 to 40 years.

Today, in addition to exceptional longevity, concrete pavements also have a lower initial construction cost. There has never been a greater opportunity to provide a cost effective concrete pavement option to public transportation agencies.

The fastest growing concrete pavement market for the last four years has been in concrete overlays largely due to the emphasis placed by public agencies on pavement rehabilitation. Through the combined effort of the ACPA, FHWA, PCA, local state promotional groups, and the National Concrete Pavement Technology Center, the consideration and use of concrete as an alternative for overlays is slowly increasing. Through a program funded primarily by the FHWA, the Center has provided training and technical support on design and construction of concrete overlays for 26 states around the country. However, the ability to maintain, let alone increase this momentum is slowing because of insufficient funding for concrete overlay technology deployment activities.

In order for the concrete pavement industry to introduce a concrete overlay alternative to public agencies on a national basis, increased investment in technical support is required. Once new agencies experience firsthand the increased pavement performance and reduced ownership costs, the expanded use of concrete overlays will be sustainable on a national basis.

ALIGNMENT WITH FEDERAL PRIORITIES

MAP-21 repeatedly refers to the need for improvement in “sustainable infrastructure”, “accountability in results and reporting”, and “infrastructure benefit-cost”. The intent behind much of MAP-21 is quite simple; we must be good stewards with the money allocated for transportation infrastructure and be strategic in how we accomplish the goals in a tight economy. The concrete overlay market has the potential to grow significantly because the MAP-21 requirements are in direct alignment with the benefits of using concrete overlays. However, without widespread understanding of the application of concrete overlays and the benefits received in their use, this promising alternative may not be adopted. This would be a loss for both the public agency and industry.

HOW DO WE GET THERE

How do we increase the performance life of the nation's highways at a lower life-cycle cost? The answer is simple; develop a comprehensive concrete overlay program that provides the following to states, cities and counties:

- On-call technical expertise
- Technology updates and implementation
- Problem solving resources
- Coordinated research on durability and overlays
- Uniform specifications

Most of the essential elements for a program to provide technical support are already in place:

- Technical documents including:
 - o *Guide for Concrete Overlays, Second Edition* (Note, 3rd edition is in process)
 - o *Guide for Concrete Overlays of Asphalt Parking Lots*
 - o *Guide for the Design of Concrete Overlay using Existing Methodologies*
 - o *Concrete Overlay Field Application Program Lessons Learned*
- National expertise has been organized and is readily available.
- The CP Tech Center has a successful track record of working effectively with public agencies and advancing innovative technologies; the concrete overlay training program has been involved in 26 state DOTs and developed the Guide for Concrete Overlays. Most importantly the Center is looked upon by highway agencies and the engineering community as an education and research institution bringing a proven unbiased approach to educating and training in the use of concrete overlays.

What is needed:

- A comprehensive approach that provides the technical support to public agencies
- Alignment of the industry
- All parties in the industry including ACPA, PCA, NRMCA, local state promotional groups and the CP Tech Center partnering to address the common challenge. It will take this unified approach to effectively solve issues for the benefit of owners of transportation infrastructure.
- Funding to advance the technology
- Focusing the resources and leadership of the CP Tech Center to support the opportunity



REQUIRED FUNDING TO MEET THE OPPORTUNITY

It is proposed that the Center will staff regional expert teams to travel with representatives of industry along with local and federal agencies to discuss the suitability of using concrete overlays at specific sites. Updated technical documents and training will be provided as needed. They will provide guidance for local engineers to design, specify and build durable and cost effective overlays. This service will be primarily targeted for states, counties and cities that have not worked with concrete in the recent past.

Technical support will also be available to assist with addressing unusual design or construction problems whenever and wherever they occur.

The recommended budget to meet these needs is estimated at \$2M per year

- 1. Concrete Overlay Technology Deployment: \$1.5M/year**
 - \$250,000/year: technical guides and manual development
 - \$1M/year: direct technology support to 25 states with four expert regional teams
 - \$250,000/year to conduct state-based training workshops
- 2. Concrete Overlay Research: \$500,000/year** (needs include the following)
 - Benefits, limitations and effective use of textile interlayers
 - Prediction and control of curling and warping
 - Improved bonding where required
 - Design methodologies
 - Thin overlays technologies
 - Use of fibers
 - Optimal panel size and jointing
 - Opening strength requirements

