Industry-Leading Electric Power Company

Multiple Sites

General Description:

- **Locations:** Indiana, Ohio and Kentucky
- **Profile:** Multiple Sites
- **Project:** Pavement Management Program

Services Provided:

- Pavement inspections/evaluations
- Construction Management/Field Quality Assurance
- Long Range Asset Management Program

Challenges:

- Evaluating many different pavement locations in multiple states
- Interfacing with multiple stake holders
- Prioritizing based on site specific traffic needs
- Managing construction at different locations simultaneously

Solutions:

- Evaluated all paving assets and developed a prioritized, long-term budget plan based on condition ratings
- Achieved economies of scale by packaging into one project
- Designed site specific pavement cross-section based on traffic and load requirements

Paver used to place base-course

One of the most overlooked facility assets of a corporation is its parking lots. Although these assets do not generate income, the lack of proper planning and maintenance can have a significant impact on the financial "bottom line" of the organization. In addition to the aesthetics of a poorly maintained parking lot, the performance of operational vehicles can also be affected. These are just two reasons paving must be addressed and maintained to ensure the operation's integrity.

As part of a comprehensive weatherproofing program, StructureTec was contracted to develop a pavement program for 116 sites across several states for a major utility company. The objectives for the program were to prioritize funding allocations for each site, aid in implementing cost reduction processes and procedures, and assist the corporation in achieving a level of sustainability moving forward Also, safety is of paramount importance to the infrastructure of the organization and its employees.

Prioritization began by performing an evaluation of each site in conjunction with the company's corporate national weatherproofing program team, and included other building envelope systems such as façades, roofs and fall protection systems, along with paving.

The process began with a two-stage approach. First, a visual inspection was performed. Next, selected sites were given a more in-depth evaluation, which included

Pavement failure due to age and neglect

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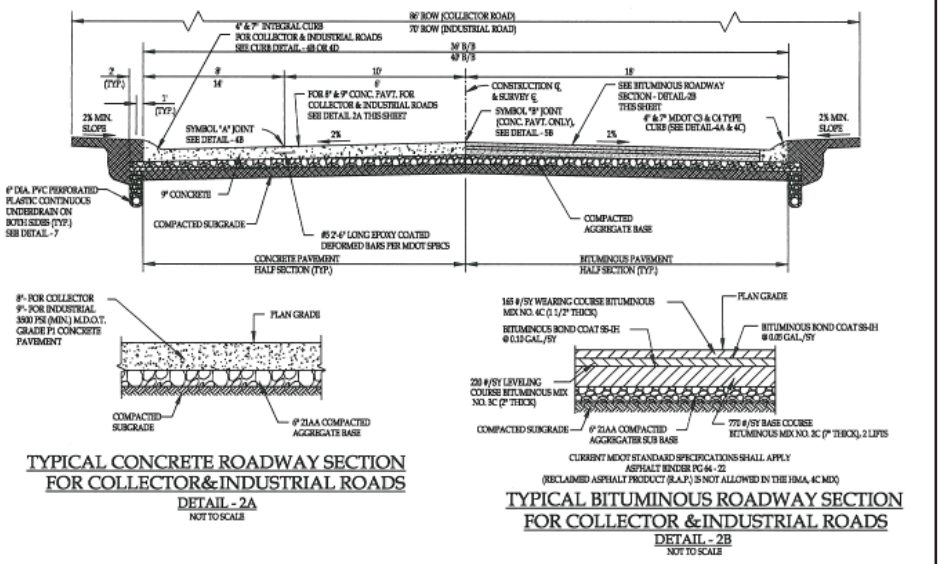


Light Duty Cross Section

geotechnical surveys. The process was performed under the governance of the StructureTec Pavement Group, which consists of a civil engineering team with extensive experience in pavement condition assessments and design. Each site was evaluated as follows:

Review Preliminary Information

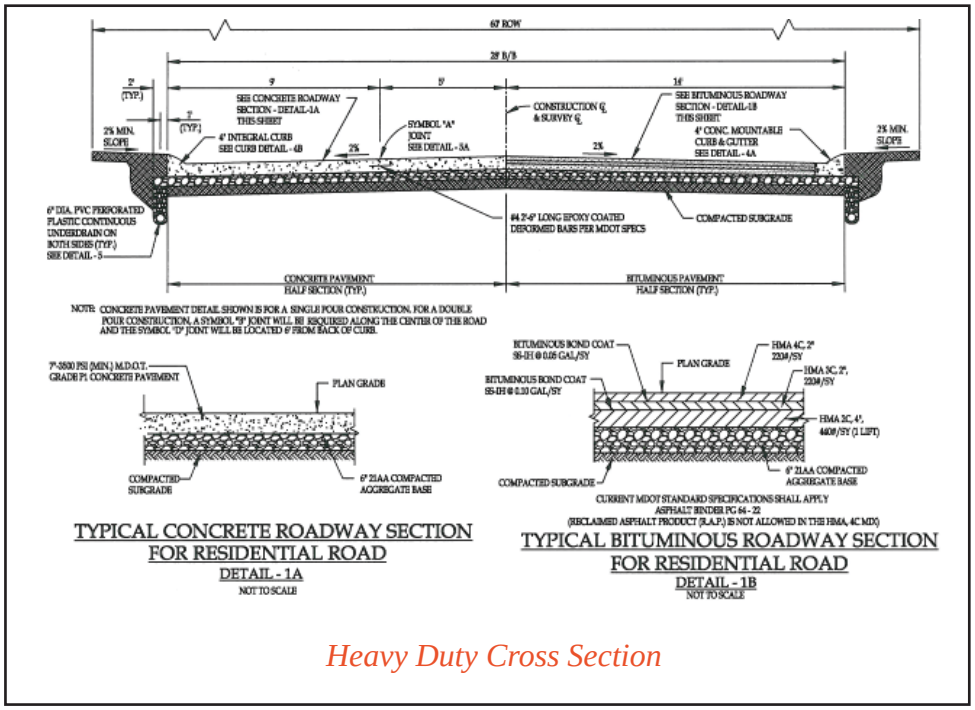
- Review as-built drawings, including existing cross-sections, in order to determine the site's original design criteria in comparison with its current and future need requirements.
- Review of existing traffic volume requirements, including load analysis based on axle weights.
- Review and confirm sight line distances to ensure safety access and egress.
- Review and confirm compliance with local regulations and construction codes.

Survey the Site

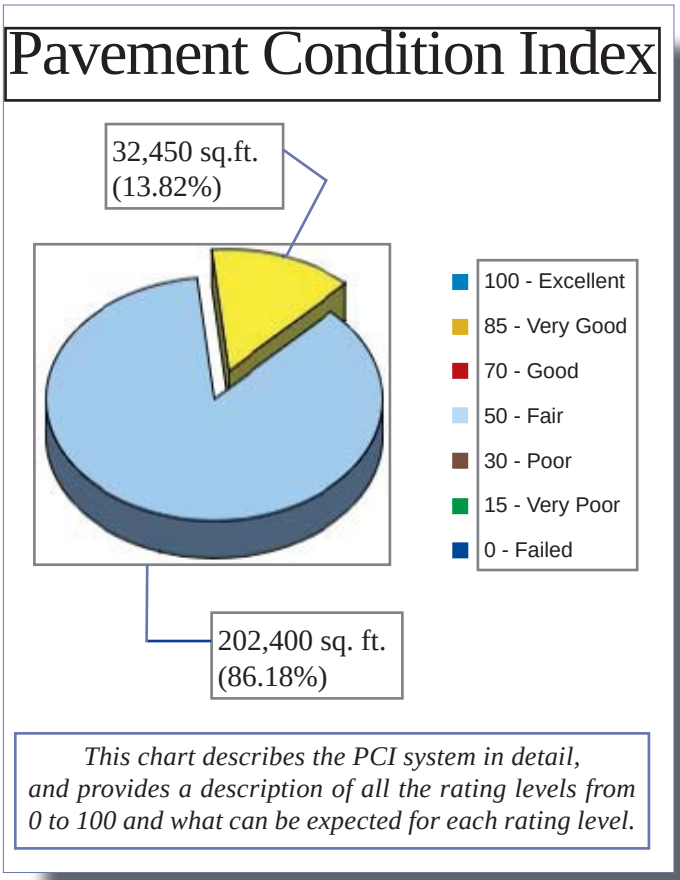
- Develop site plans in CAD delineating "areas" or "sections" based on perimeter definitions and pavement construction types (gravel, concrete, asphalt).
- Survey and document pavement deficiencies, load and volume failures, storm and drainage failures and trench failures.
- Geotechnical services are performed at strategic locations in order to determine existing soil composition.

After collecting the survey information for each site, the information was reviewed and analyzed with the objective of developing a prioritization program for capital and operating and maintenance funding requests.

The analysis for each site was performed using industry standard methods for reviewing existing pavement cross sections in order to determine proposed current and future needs based on axle weight loads and traffic volumes. The objective of the analysis process was to minimize the long-term cost of ownership for each site. Upon completion of the analysis, a pavement condition index (PCI) rating scale was used to rate each site based



Heavy Duty Cross Section



on the remaining service life of each pavement section. The PCI rating scale uses a scale range from 0 to 100, where zero represents a complete failure and 100 represents the best of conditions. This rating system is instrumental for the development of a long-range pavement asset management program. It allowed upper management to easily review the recommended sites to be addressed for each year's funding requirements.

Estimates for capital improvements (pavement replacement) and for strategic repairs or deferred maintenance (pavement repairs) were developed based on regional pricing in order to ensure that budgets were realistic and achievable based on local markets.

Annual Project Funding

On an annual basis, based on the project schedule provided by the long-range asset management program, upper management selects a list of projects based on capital and/or operating and maintenance (O&M) budgets to be released.

Design & Bidding Process

Utilizing the data collected through the evaluation/survey phase of the program, StructureTec proceeded to the design development phase by reviewing alternative pavement procedures with each site team, which consisted of stakeholders ranging from regional facility managers to site personnel and the environmental health and safety team (EHS). The pros and cons of the various procedures were evaluated and reviewed from different perspectives according to each stakeholder's objectives. This helped reduce the possibility of expensive unforeseen conditions during actual construction while ensuring the highest level of safety standards.

Asphalt milling and grinding recycling procedures were also considered when the base course of a parking lot remained in good condition but the asphalt layer has failed to a large extent. By applying these recycling processes to asphalt pavement, organizations can save money as well as energy when recycling is done on site, conserving diminishing resources of aggregates and petroleum products, which helps organizations meet their sustainable initiatives.

Preparation of site plans, details, and the specifications necessary to complete each project was completed based on the agreed upon objectives of the design development phase. In order to ensure regional compliance, all specifications were based on each state's Department of Transportation (DOT) guidelines. Each project specification also included the front end corporate guidelines; i.e., bid form, general conditions, etc., so that the construction documents could be submitted for the bid process. This enabled us to acquire the most concise and competitive quotations for the

Finishing work on new concrete pavement

designated scope of work.

In the bidding phase, qualified contractors were contacted and invited to attend a pre-bid conference for each site. After contractor bids had been submitted and tabulated, a select group of contractors was assigned sites based on each region.

Construction Management

A unique aspect of the program is that StructureTec provided its **Platinum Program**SM for all projects. The **Platinum Program**SM provides a construction manager as the prime contractor for each site, providing complete administration and supervision, including interface with all contractors and testing companies involved.

Each project included site visits for construction review while the project was in progress, issuing field review reports for each site visit. The project closeout of this phase included a final walkthrough, the preparation of project punch list, review of the contractor warranty submittals and closeout administration.

FEATURES	BENEFITS
Long-range asset management program	Created prioritization for capital and operating projects
Aggressive bidding through economies of scale	Provided savings by bidding multiple projects across regions
Included paving milling options	Allowed for recycling of existing materials
Delineated which paving components require full replacement and which require maintenance or strategic repairs	Conserved diminishing resources of aggregates and petroleum products, meeting the corporation's sustainable initiatives
Enhanced pavement cross-section details	Ability to allocate their resources properly, maximizing the return on investment
	Longer pavement service life based on current and future traffic volumes

Warranty Audit

StructureTec has been implementing a ***Warranty Audit Program***SM for capital projects. This program consists of two annual inspections of the completed project, twelve months and twenty-four months after completion. However, applying this program to a pavement capital project was a challenge due to the fact that most pavement contractors and product manufacturers have not offered more than a one- year warranty. By leveraging the volume of work and asking through the bid documents for a two-year warranty on all projects, we were able to overcome this challenge.

The program allowed us to help our client protect their parking lot investments by ensuring that all aspects of their warranties are sufficiently covered by the contractor or manufacturer.

Long-Range Asset Management Program Update

Utilizing the completed project data from each capital and operating management annual program, StructureTec re-surveys all sites every year in order to readjust the long-range plan for the corporation.

Conclusion

Using a three-pronged approach–prioritization, cost reduction and sustainability–to maximize the service life of these important assets helped the company in developing a sustainable long-range asset management program. ■

StructureTec® Program Profile