Tech Brief

NJDOT Companion Manual to the 1993 AASHTO Guide for the Design of Pavement Structures

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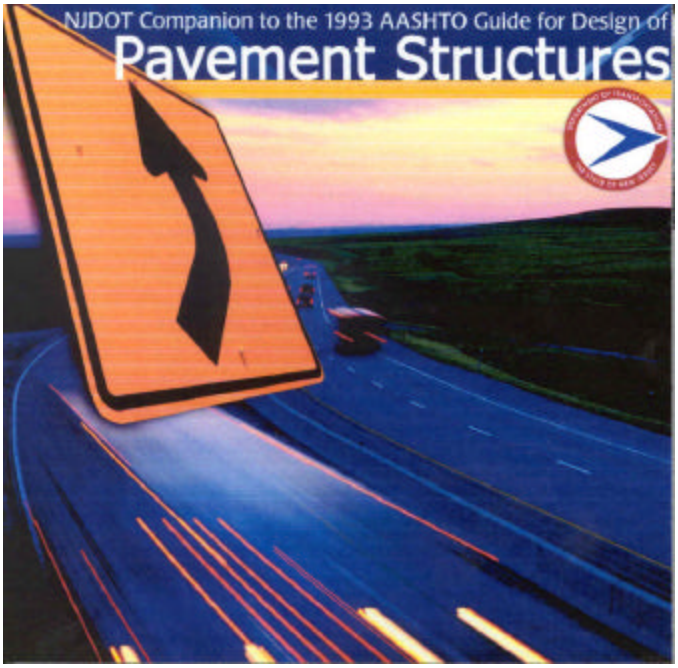
HERE IS THE PROBLEM…



The New Jersey Department of Transportation (NJDOT) Bureau of Research wanted to develop and implement an interactive CD-ROM as a New Jersey specific companion manual to the 1993 American Association of State Highway Transportation Officials Guide for Design of Pavement Structures. The research team developed a framework for the companion manual that would meet the New Jersey Department of Transportation's requirements. The manual chapters, sections, and procedures were designed similarly to those in the 1993 AASHTO publication, to allow for easy referencing. New Jersey specific values for the parameters required in the structural analysis and design of pavements were identified and added.

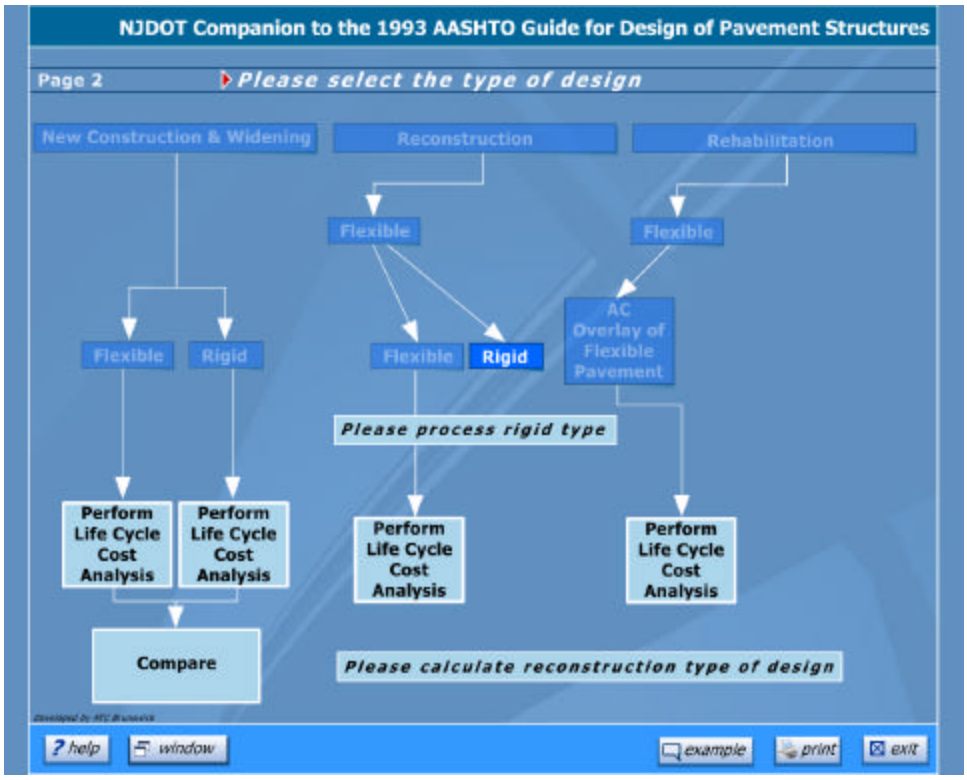
THESE ARE OBJECTIVES OF THE PROJECT…

- To develop a companion to the 1993 American Association of State Highway Transportation Officials Guide for Design of Pavement Structures that would be New Jersey specific.
- To produce this companion guide in the format of an interactive CD ROM that reflects the New Jersey Department of Transportation requirements.

AND, THE SCOPE OF THE PROJECT …

The project required identification of the New Jersey specific values for parameters needed in the structural analysis and design of pavements. The primary parameters of interest were those related to traffic, material characterization, subgrade characteristics, seasonal variation of material properties, and rehabilitation considerations. Specific design parameters were established to be:

- Initial serviceability for different pavement types and classes
- Terminal serviceability for different pavement types and classes
- Reliability level for different pavement types and classes
- Overall standard deviation for different pavement types and classes
- Seasonal adjustment factors
- Layer coefficients for different material types
- Back calculation subgrade correction factors
- PCC effective thickness parameters



The CD content includes:

- Flexible Pavement Design
- Rigid Pavement Design
- Flexible Overlay Design
- Rigid Overlay Design
- Composite Overlay Design
- Asphalt Pavement Repair
- Planned Rehabilitation

- Rigid Pavement Dimensioning
- Traffic Design Requirements
- Existing Structural Number
- Flexible Overlay Dimensioning
- Flexible Pavement Dimensioning
- Layers and Layer Coefficients
- Subgrade Modulus of Reaction
- ESAL
- Directional Distribution
- Lane Distribution
- Effective Roadbed Resilient Modulus
- Existing Layers and Layer Coefficients
- Performance and Analysis Period
- Serviceability Loss
- Standard Deviation
- Superpave Layer Information
- Laboratory Mr Data
- New Jersey Seasonal Length
- Reliability
- Laboratory Resilient Modulus and Elastic K-Value

An objective oriented approach was utilized in developing the CD companion guide. This meant that the CD-ROM would guide the designer based on their objective and the available data, without exposing the user to irrelevant design procedures and processes.

The application was developed as an e-learning tool that would be interactive while providing pavement designers with step-by-step instructions for a New Jersey specific application of the 1993 AASHTO guidelines.

The CD ROM was formatted so that it would operate in a manner tailored toward individual designers, providing them with the ability to work at their own pace, utilizing their expertise, experience, and knowledge.

CONCLUSION:

The resulting product was a deliverable in the form of a multi-purpose, multi-media based CD ROM Companion to the 1993 American Association of State Highway Traffic Officials (AASHTO) Guide for Design of Pavement Structures. Customizing and standardizing the AASHTO design procedure for New Jersey was a priority task for the NJDOT. The manual may be used by Pavement Design Engineers and will work in a personal computer based environment, on a local CD-ROM, local hard drive, or network file server.

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A final report is available online at http://www.state.nj.us/transportation/research/research.html

If you would like a copy of the full report, please FAX the NJDOT, Bureau of Research, Technology Transfer Group at (609) 530-3722 or send an e-mail to Research.Bureau@dot.state.nj.us and ask for:

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