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All software is programmed in XML, maintained on a NT server located at CTR Red River, and accessed via a redirect through the University Unix URL above.

Rigid Pavement Design and Analysis
Web-Based Training Site
http://www.utexas.edu/research/ctr/training

Texas Department of Transportation, 2004

Product 5-1869-03-P8
produced under Project 5-1869-03

Performed in cooperation with the
Texas Department of Transportation and
the Federal Highway Administration

Overview

This website offers training for six computer programs pertaining mainly to the design and analysis of rigid pavements. The programs are: CRCP9, CRCP10, JRCP6, PavePro, RPLCCA, and TxPTS (includes ACP as an option). Each program will be discussed in the sections that follow.

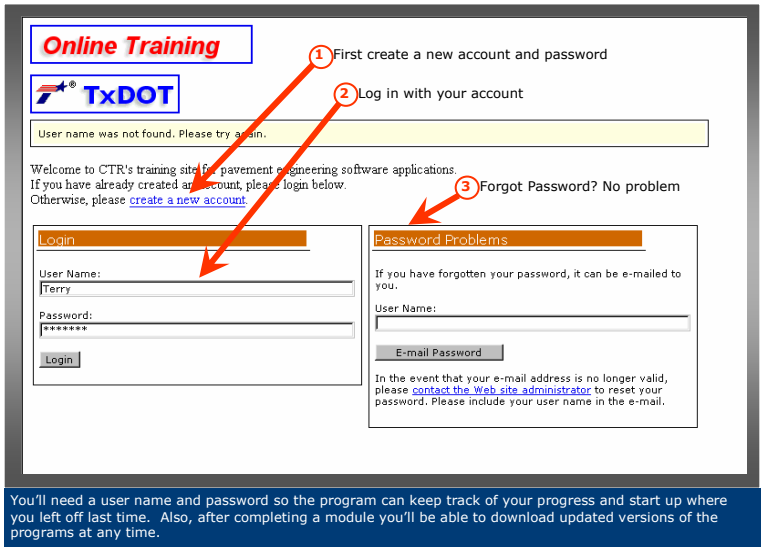
For each program, you may:

- Take a series of training modules, ranging from how to input data into the program to how to interpret the output,
- Download the actual program to your PC after successfully completing the training, and
- Keep a record of where you were in the training so that you may return at a later time and resume where you left off.

System Requirements

To run the training programs, you'll need only:

- A recent version of either the MS Internet Explorer or Netscape web browser,
- An open internet connection

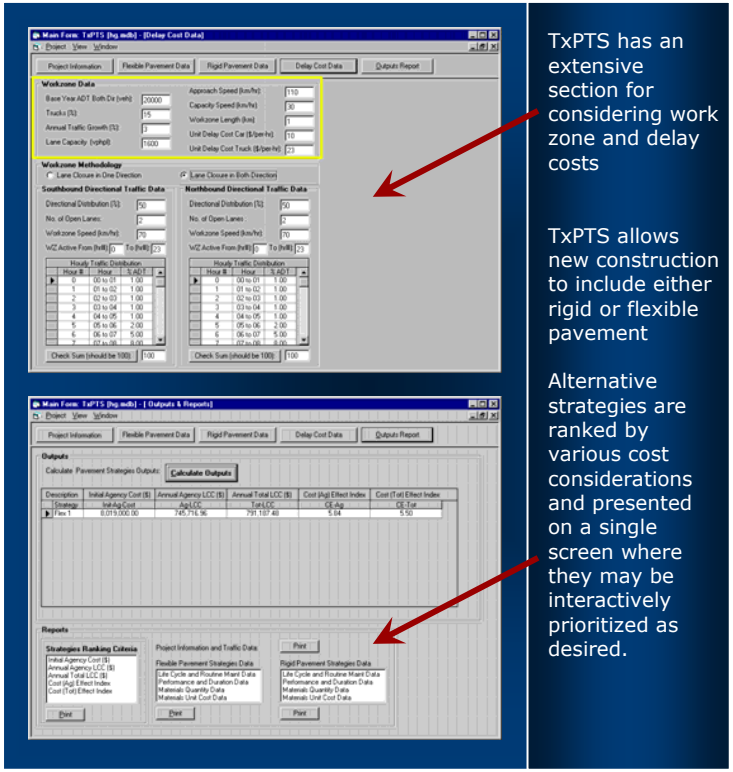


You'll need a user name and password so the program can keep track of your progress and start up where you left off last time. Also, after completing a module you'll be able to download updated versions of the programs at any time.

TxPTS

The Texas Pavement Type Selection program allows a user to compare several paving strategies and ranks them according to their cost effectiveness. It is a similar program to the RPLCCA program discussed above, but takes fewer costs into account and thus requires fewer user inputs. The performance models used are less complicated than those included in RPLCCA, and do not address specific distresses. However, TxPTS includes flexible pavements for new construction whereas RPLCCA only allows flexible overlays over rigid pavements. Like RPLCCA, TxPTS primarily uses life cycle cost analysis to rank the various strategies under consideration.

It is recommended that the interested user take the training modules on both programs to determine which one is more appropriate for their design situation.



TxPTS has an extensive section for considering work zone and delay costs

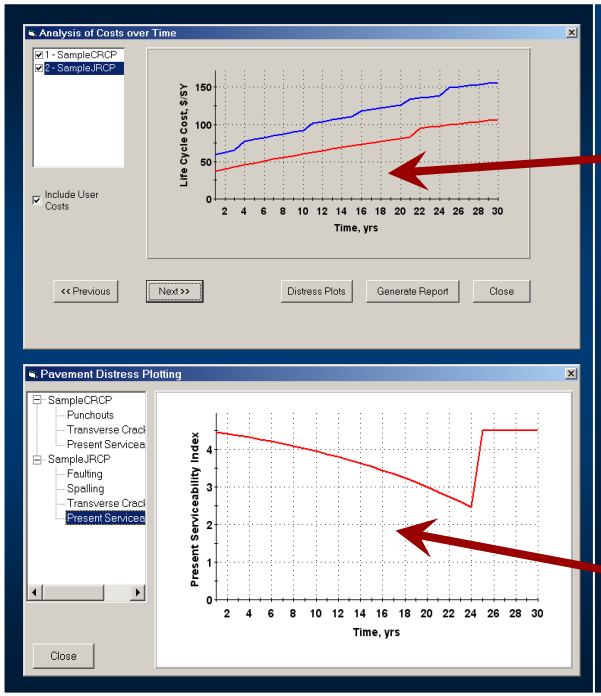
TxPTS allows new construction to include either rigid or flexible pavement

Alternative strategies are ranked by various cost considerations and presented on a single screen where they may be interactively prioritized as desired.

RPLCCA

This program is a MS Windows-based software program to perform Rigid Pavement Life Cycle Cost Analysis. The purpose of the program is to allow direct comparisons of all costs associated with several design and rehabilitation strategies over the life of the pavement, so that the most cost-effective option can be selected. The program includes performance prediction models so that the rate of distress development characteristic to each type of pavement can be factored into the analysis.

Because the program attempts to include all costs associated with a strategy, a large number of inputs are required not only pertaining to material properties but including such difficult to determine factors as traffic growth, vehicle operating costs, emissions, accidents, etc. In every case the program will attempt to provide reasonable default values that can be overridden by the user when better data is available.



RPLCCA compares the total costs associated with each alternative design over the lifetime of the pavement to find the true cost of a strategy

RPLCCA includes various rehabilitation options as well as distress models

For each pavement type considered, the user may view a predicted history of distress

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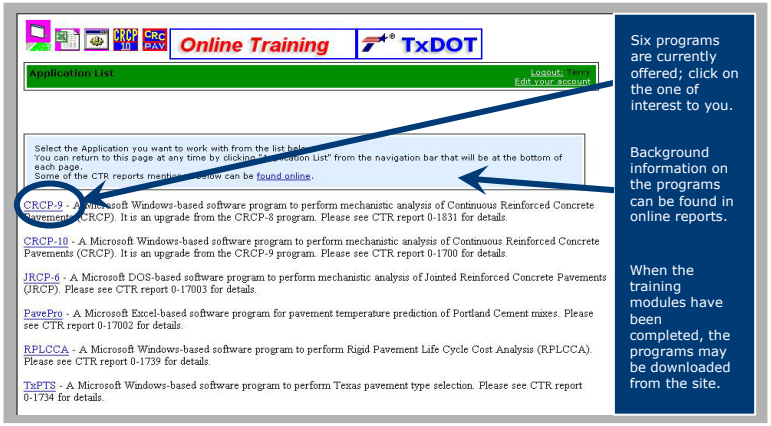
Once you've logged in, you can choose from a list of programs to train on. You can also access extensive online literature about the programs from this screen.



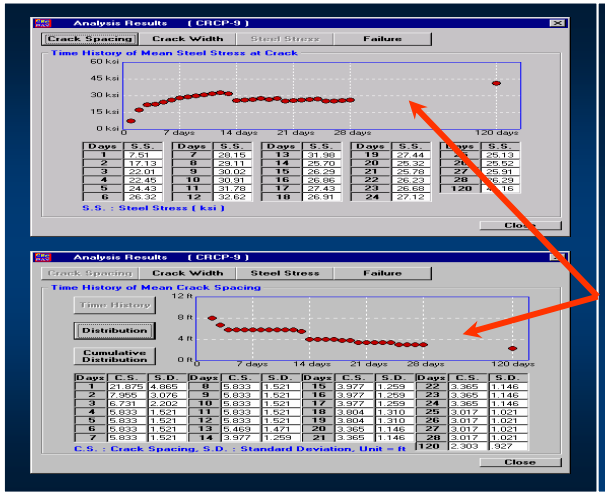
Six programs are currently offered; click on the one of interest to you.

Background information on the programs can be found in online reports.

When the training modules have been completed, the programs may be downloaded from the site.

CRCP-9 & CRCP-10

The CRCP programs assist the user in evaluating a proposed design for continuously reinforced concrete pavement. Inputs include design parameters, environmental and traffic loading stresses, and material properties. The program predicts crack spacing, crack width, steel stress, and rate of punchout development.



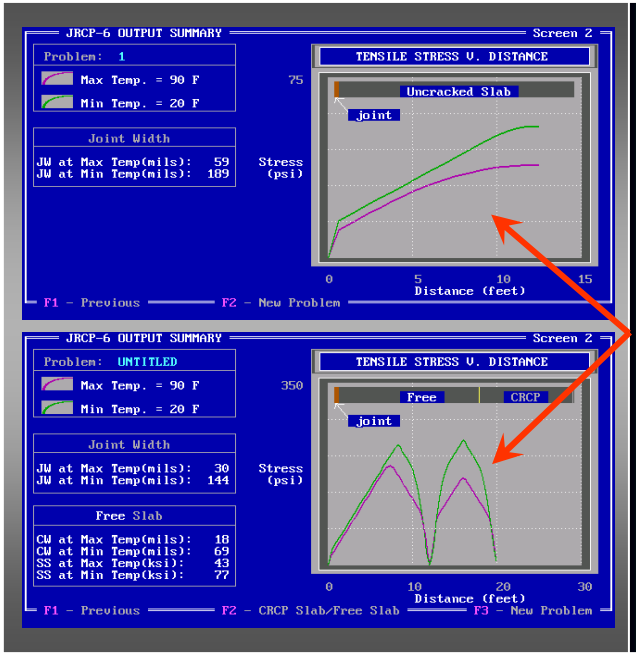
The training modules show how to input a design into the CRCP programs, how to run the programs, and how to interpret the output

The sample graphs on the left show predicted crack spacing and steel stress with time for a proposed CRC pavement design

CRCP9 and CRCP10 differ only in that CRCP10 takes into account dynamic wheel loading. If dynamic loading is not a factor, CRCP9 is recommended since it is slightly less complicated to use and gives the same results.

JRCP-6

The ***JRCP Version 6.0*** software is an analysis program for jointed reinforced pavement. JRCP predicts the stresses on a user-defined pavement. The user enters data such as reinforcement type, amount of reinforcement, environmental conditions, and concrete properties. ***JRCP-6*** may also be used to predict the stresses on jointed pavement that has no reinforcement. To do this, simply enter a small number (0.01, for example) for the **Percent Reinforcement** option on Screen 3 of the JRCP inputs.



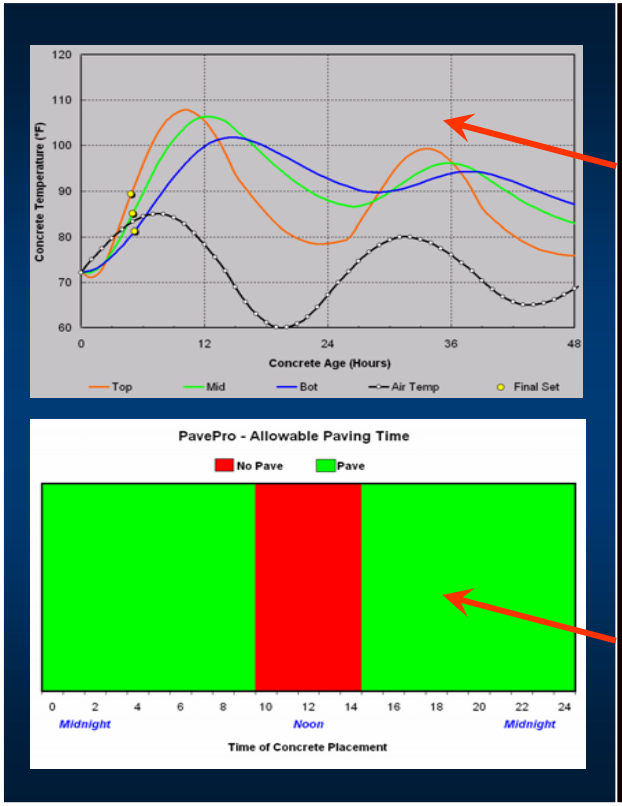
JRCP-6 can be used to simulate plain jointed or jointed reinforced concrete pavement, or even CRCP pavements in the transverse direction

No crack, one crack, and two crack modes are handled

Outputs include joint and crack opening at min and max temperature, and steel stress if reinforced

Pave Pro

The **PavePro** system was developed to assist in the management of temperature in newly-placed Portland cement concrete pavements. Given general, mix design, materials, environmental, and construction inputs, the system can predict the temperature within and below a concrete pavement slab. The system calculates and plots the average concrete temperature over the first 48 hours, and the temperature profile through the concrete slab and into the subbase during the first 36 hours after placement.



PavePro closely predicts top, middle and bottom concrete temperatures over time from cement chemistry, concrete mix proportions, and environmental factors

Determining the zero stress temperature is a good predictor for crack development

Based on these predictions, the contractor can predetermine time periods during hot weather paving that are unsafe to place concrete