

**Development of the Connecticut Product Evaluation
Database Application - Phase 1B**

Final Report

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16. Abstract The Federal Highway Administration (FHWA), the American Association of State Highway Transportation Officials (AASHTO) and the Transportation Research Board (TRB), a division of the National Research Council (NRC), maintain databases to store national transportation data that cover many aspects of the transportation system and its operation. Much of these data are collected by the state transportation agencies. In many instances, the state-level database management systems and/or information tracking systems do not automatically generate output appropriate for direct submission to FHWA, AASHTO or TRB. Therefore, there was a need to develop a digital protocol and database management system to streamline tracking and reporting of transportation proprietary product evaluation information for internal use and submittal to the national databases. Increasing the efficiency of this reporting process will allow ConnDOT, and potentially other DOTs, to more efficiently conduct this business function and with greater detail and accuracy. The first phase of this research developed the application. The second phase of this research developed the protocol and local-area-network connectivity necessary to provide wider access to the database.					
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Disclaimer

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
AREA				
in ²	square inches	645.2	square millimeters	mm ²
ft ²	square feet	0.093	square meters	m ²
yd ²	square yard	0.836	square meters	m ²
ac	acres	0.405	hectares	ha
mi ²	square miles	2.59	square kilometers	km ²
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft ³	cubic feet	0.028	cubic meters	m ³
yd ³	cubic yards	0.765	cubic meters	m ³
NOTE: volumes greater than 1000 L shall be shown in m ³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C
ILLUMINATION				
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m ²	cd/m ²
FORCE and PRESSURE or STRESS				
lbf	poundforce	4.45	newtons	N
lbf/in ²	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
LENGTH				
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
AREA				
mm ²	square millimeters	0.0016	square inches	in ²
m ²	square meters	10.764	square feet	ft ²
m ²	square meters	1.195	square yards	yd ²
ha	hectares	2.47	acres	ac
km ²	square kilometers	0.386	square miles	mi ²
VOLUME				
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m ³	cubic meters	35.314	cubic feet	ft ³
m ³	cubic meters	1.307	cubic yards	yd ³
MASS				
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
TEMPERATURE (exact degrees)				
°C	Celsius	1.8C+32	Fahrenheit	°F
ILLUMINATION				
lx	lux	0.0929	foot-candles	fc
cd/m ²	candela/m ²	0.2919	foot-Lamberts	fl
FORCE and PRESSURE or STRESS				
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in ²

*SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380.
(Revised March 2003)

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Development of the Connecticut Product Evaluation Database Application - Phase 1B

Background:

The Federal Highway Administration (FHWA), the American Association of State Highway Transportation Officials (AASHTO) and the Transportation Research Board (TRB), a division of the National Research Council (NRC), maintain databases to store national transportation data that cover many aspects of the transportation system and its operation. These data are used to determine federal transportation policy development.

Much of these data are collected by the state transportation agencies. In recent years, the mandates for data submission to the authorities maintaining these databases have become more comprehensive and extensive. The state transportation agencies have tried to provide this information from databases, computerized systems and/or paper-based systems that may have existed before the new data submission requirements were put in place. In many instances, the state-level database management systems and/or information tracking systems do not automatically generate output appropriate for direct submission to FHWA, AASHTO or TRB. Therefore, there was a need to develop a digital protocol and database management system to streamline reporting of transportation proprietary product evaluation data and information. Increasing the efficiency of this reporting process will allow ConnDOT, and potentially other DOTs, to more efficiently conduct the business function and with greater detail and accuracy. The first phase of this research developed the application. The second phase of this research developed the protocol and network connectivity necessary to view and submit information to the database.

The Division of Research of the Connecticut Department of Transportation (ConnDOT) currently provides product evaluation data and data regarding current research projects to federal clearinghouses/databases. Considerable manual effort is generally required to gather and manipulate the data and information required for input to the national information databases for product evaluation and transportation research.

ConnDOT provides product evaluation data to the AASHTO National Transportation Product Evaluation Program (NTPEP) and the AASHTO Approved Product Evaluation Listing (APEL). Although there is no federal statutory requirement to participate in these programs, ConnDOT has always supported the concept of sharing resources with other governmental agencies to reduce duplication and improve its decision-making capability, and therefore, has supported both NTPEP and APEL since the inception of both programs.

NTPEP was created in the early 1990's to "quality and provide engineering for the testing and evaluation of products, materials and devices that are commonly used by the AASHTO Member Departments of Transportation."/2/ NTPEP operates through cooperative partnerships with industry to develop and conduct laboratory and field evaluations of proprietary engineered products of interest to a national audience, and to disseminate the results of the test/evaluation to concerned parties. Each product is tested at four regional test sites (southwest, southeast, northwest and northeast), thereby accounting for different climates, geographies and other geophysical/environmental factors that occur in the United States. The test results and other information are published by

NTPEP on paper reports, compact disks (CDs) and online through a data mining application.

AASHTO's NTPEP is a voluntary national program for AASHTO Member Departments of Transportation.

NTPEP's data are used by the Research Liaison Committee in its initial review and evaluation of product submissions. For some products, NTPEP is the sole source of laboratory and field performance data for the committee's analysis and decision-making action on a product.

Current NTPEP product categories are:

Concrete Admixtures - CADD

Concrete Curing Compounds - CCC

Erosion Control Products - ECP

Geotextiles and Geosynthetics - GTX

Geosynthetic Soil Reinforcement - REGEO

HDPE Plastic Pipe for Highway Applications - PIPE

HMA Crack Sealers - CS

PCC Joint Sealants - JS

Pavement Marking Materials - PMM

Polymer Concrete Bridge Deck Overlays - PCBDO

Portable Changeable Message Signs and Flashing Panels - PCMS/FAP

Rapid Set Concrete Patch Materials - RSCP

Raised Pavement Markers & Adhesives - RPM

Reinforcing Steel Bar - REBAR

Sign Sheeting Materials - SSM

Structural Steel Coating Systems - SSC

Temporary Traffic Control Devices - TTCD

As required by the State DOTs, additional product categories are added. At this time, the following new NTPEP categories are under development:

Asphalt Release Agents

Detectable Warning Devices

Concrete Anchor Systems

Bridge Deck Overlays (BDO)

PVC Pipe (PVC)

One deficiency of the current (old) ConnPED is that it cannot record which of the NTPEP categories a product falls under.

APEL is an information clearinghouse that provides information about products that are usable in a particular area or that have unique specifications/characteristics. APEL was first deployed in the late 1990's to help facilitate the sharing of information and resources between the participating state transportation agencies, thereby reducing duplicate testing and allowing faster implementation of innovative products. The evaluation and testing are conducted by the individual state agencies and the information is provided to APEL via the Internet. APEL evolved from the Special Products Evaluation Listing (SPEL), an information clearinghouse that had been in use for many years.

Literature Review:

Other researchers have sited the importance of providing up-to-date data on new emerging materials and methodologies. (1) Morgan, Peterson, Durham and Surdahl summarized that one of the key products developed from their study is a database where current product information can be retrieved from one central resource.

Objectives:

The objective of this research was to generate a digital protocol that would reduce the manual effort required for ConnDOT to report and maintain information for product evaluations. The development of this system was achieved in two parts:

- Phase 1A: Development of the Connecticut Product Evaluation Database (ConnPED) Application. The results of that phase are reported in ConnDOT research report No. CT-2239-01-06-3./3/
- Phase 1B: Development of an Internet protocol to allow vendors to submit product information on-line; and to allow ConnDOT personnel and vendors to view product information on-line.

This research report will document the results of Phase 1B of the project. The original objectives of Phase 1B of this project were to: 1) develop an Internet/Intranet database application to allow dissemination of pertinent data related to the product evaluation process in Connecticut; 2) develop an Internet/Intranet database application to allow on-line submittal of the Preliminary Product Evaluation Information Forms along with pertinent, supplementary/background information on the product under consideration; and, 3) provide support for legacy computer systems.

Benefits:

The primary benefit of developing ConnPED Internet/Intranet-based application(s) to submit and disseminate product evaluation information is to use available technology to transmit information in a more

efficient manner to better serve customer needs and expectations. The system developed will allow multiple uses to add and maintain data in a central database with easy user access. The secondary benefit of a searchable, electronic database is that it allows for easy access to product evaluation information by non-Product Evaluation Section ConnDOT personnel.

After initial review and evaluation, the Research Liaison Committee recommends one of the following actions to the Department.

1. Approval for immediate adoption. (A)
2. Trial Installation for further evaluation. (T.I.)
3. Further Study and evaluation, to avoid duplication. (F.S.)
4. Refer back to initiator for Additional Information. (A.I.)
5. Rejection. (R.)

One of these five R.L.C. recommendations is assigned to each product.

Additional product status categories may be considered, such as: New Submission, No-Action Required and Governed By Standard Specification.

There may be a need to add sub-categories, such as Approved for use by Special Provision, Approved for Use by Municipalities, and reasons for rejection action, such as due to failure in trial installation.

Analysis:

Phase 1B Results

This section will outline the updating, implementation and testing of the ConnPED application developed in Phase 1A.

Revisions from Phase 1A

Phase 1B of this research was responsible for the implementation and networking necessary to make the ConnPED application (developed under Phase 1A) accessible to potential users. Investigations into installing and operating the ConnPED application required the application be converted from Visual Basic Version 6 language into a Connecticut Department of Information and Technology (DOIT) approved language. DOIT has classified Visual Basic 6.0 as a "Transitional" language and should not be used to create new applications. Therefore, the application was converted over to Visual Basic .NET (VB.NET) for implementation and testing on ConnDOT's Intranet. While converting the original application, an additional form was included in the new version. This new form allows the user the setup the connection with the established database.

Furthermore, the application developed in Phase 1A used Access to store the data. In Phase 1B, the Access software was replaced with Oracle to store data obtained through the ConnPED application. The conversion to Oracle resulted in updating the database scheme (Figure 1). The application was first converted to the newer version of Visual Basic. The database schema used by the VB version of the software was judged to be adequately designed. In 2006, work began on the Product Evaluation database schema to port it to Oracle and ODBC connections to the Oracle database were created to support this application. Finally, the software was both debugged and error checked.

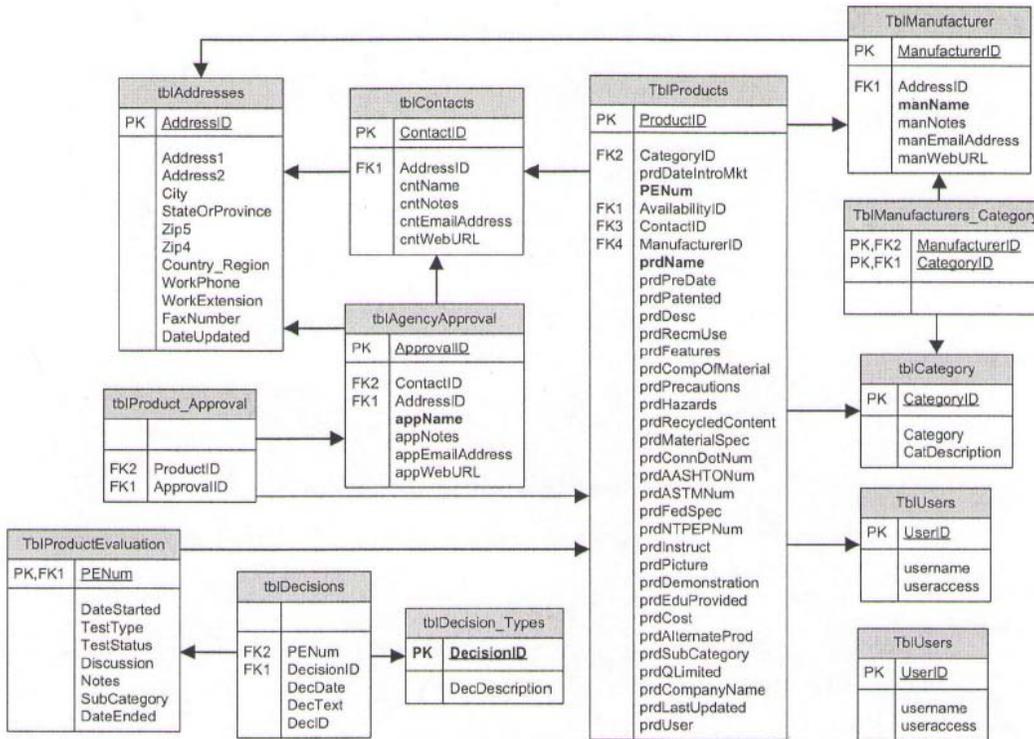


Figure 1 - New Database Scheme

A second significant revision to the original program was the creation of an installation program to allow the user to install the application with minimal effort. It is important to understand that the ConnPED application is not a standalone program. The ConnPED application must be connected to the database server to work properly using the additional form mentioned above.

Software Installation

Successful installation of the ConnPED Software has been completed. The software was installed on a server at ConnDOT's main headquarters in Newington, CT.

Steps involved in deployment of ConnPED:

- Determine the correct settings for the program.

- Specify the database server to use, with user name and password.
- Save the settings to the configuration file.
- Install the program to the client PC.
- Install Oracle XE Client on the client PC.
- Copy the configuration file to the client PC.

Remote access to the software was also achieved and a computer at the Research Division of ConnDOT located in Rocky Hill, CT was able to create, access, and save records to the ConnPED database. The software is fully functional and ready for use by ConnDOT. A user guide for the Software can be found in Appendix A.

Implementation:

Issues:

The final version of the ConnPED has had only minor issues on certain screens during data entry.

- On the *Contact Information* data entry screen the *Add New Contact* button does not work. The only way to save the *Contact Information* data is to hit the *Close* button and the program automatically prompts "Do you want to save the changed data before closing this form?" and you confirm by clicking the *Yes* button.
- On the *Product Information* data entry screen the *product Category* feature is not functional. The only way to categorize a product is by selecting its appropriate category when entering data on the *Add a New Manufacturer* data entry screen.

Conclusions:

- The database is stable and functioning; data can be queried and retrieved.
- There is a need to develop a new set of querying functions based on the review status of the product. This would aid in retrieving data for various types of reports, lists and tables.
- Operational efficiency would be improved if ConnPED had the option to receive a product submission application in PDF format via e-mail, with the capability to upload it into the database.
- Record keeping could be improved if ConnPED was able to attach and store supporting documentation that is either scanned or uploaded.
- References in ConnPED records would be more useful if able to add internet links to ConnDOT and manufacturers' websites.
- The primary benefit was partially realized, to submit, track and disseminate product evaluation information in a more efficient manner to better serve customer needs and expectations. The new ConnPED allows multiple users to add and maintain data in a central database with easier user access. However, part of the secondary benefit has not been realized. Although the new ConnPED is a searchable electronic database, it is behind the network firewall and so is not directly available to the public. We did realize the benefit of installing ConnPED on computers of Department personnel outside the Department's Product Evaluation Section.

Recommendations:

Future Database Record Query Development Needs

ConnDOT personnel have identified the need to expand querying and report generation capabilities of the ConnPED database. A recurring need is to generate reports for ConnDOT Annual/Quarterly Reports, and for Research Liaison Committee (RLC) Meetings. For RLC meetings, product data needs to be sorted by its status to facilitate oversight by RLC Committee members.

Additional product status categories may be considered, such as: New Submission, No-Action Required and Governed By Standard Specification.

There may be a need to add sub-categories, such as Approved for use by Special Provision, Approved for Use by Municipalities, and reasons for rejection action, such as due to failure in trial installation.

ConnPED needs to be modified 1) to record the Department decisions by the RLC, and 2) to record which NTPEP product category a product falls under, and to indicate 'none' if not covered by NTPEP.

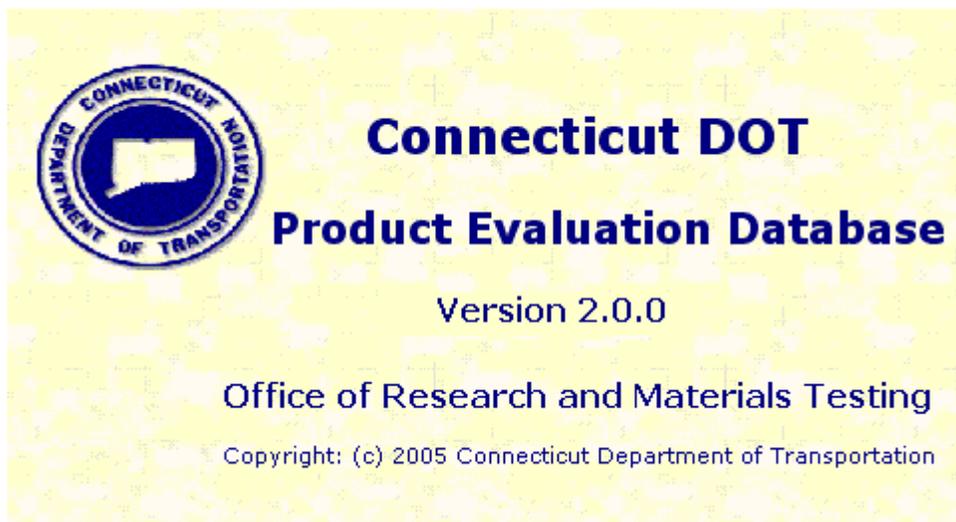
References:

- (1) Matt T. Morgan, Bradley A. Petersen, Stephan A. Durham and Rodger Surdahl, Advancing Innovative Materials Practice in Highway Construction. Annual Meeting of Transportation Research Board, Washington D.C., 2009.
- (2) AASHTO National Transportation Product Evaluation Program website, <http://www.ntpep.org>.
- (3) Development of the Connecticut Product Evaluation Database Application - Phase 1A, Report 1, Darrell E. Smith, Project SPR-2239 Phase 1A, ConnDOT Report No. CT-2239-01-06-3, March 2006. <http://www.ct.gov/dot/LIB/dot/documents/dresearch/CT-2239-01-06-3.pdf>

Appendix A: ConnPED User Guide

Product Evaluation Database 2.0 Users Manual

Report Date
July 22, 2009



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Introduction

Introduction to Product Evaluation Database

The Product Evaluation Database provides a software interface for collecting the data associated with product evaluation for Connecticut Department of Transportation personnel. This program facilitates the sharing of notes, ideas, and decisions involved in the evaluation of a product and stores the information in fully searchable database. Data collection also includes the fields on the Preliminary Product Evaluation Form and digital data (word documents, PDF files, image files, etc).

Using Product Evaluation Database

Program Forms and Options

Main Form (Switchboard)

The first screen the user will see when the program is activated is the Main Form or Switchboard. The Switchboard form displays the name of the program, the version number, and the program options. From the Switchboard form, the user can add, edit, search, and print product, manufacturer, contact, agency, and evaluation information.



Approved Product List

The Approved Product List (also known as the Qualified Product List) option on the Switchboard form is a link to a PDF document of products, suppliers, manufactures, equipment and methodologies evaluated and approved by ConnDOT personnel. This report has been developed as a means for determining what products, suppliers, manufacturers, equipment and methodologies may be used on ConnDOT construction projects. The items referenced have met the approval of ConnDOT personnel in one of the following ways:

1. They have been approved by the Research Liaison Committee.
2. They have been used successfully since before the establishment of a formal approval process.
3. They currently satisfy Department of Transportation specifications.

AASHTO Product Evaluation (Internet)

The AASHTO (American Association of State Highway and Transportation Officials) Product Evaluation links to the APEL (AASHTO's Product Evaluation Listing) and is the repository for findings from the evaluation and testing of new and/or proprietary, engineered transportation products. On this site you will be able to find information relating to new product evaluations being conducted or completed by the various state Departments of Transportation (DOT's). Besides new product information, other information that may be helpful to you is also available, including: manufacturer addresses and contacts; state DOT and other agency contacts; various AASHTO meetings and conferences; product related links; and news concerning the APEL Program, NTPEP (National Transportation Product Evaluation Program) and other pertinent AASHTO efforts.

Email and Website Hyperlink

Several forms have an Email and Website Hyperlink available to the user. Clicking on the Email Address hyperlink will start Microsoft Outlook and open a new mail message addressed to the name associated with the hyperlink. Clicking on the Web Site hyperlink will open the URL in the default browser.

Approval Agency Forms

Add/Edit Approving Agency Form

Search

* Agency Name

Phone Number Fax Number

Email

Web Site

Contact Person

Address 1

Address 2

City

State Zip Code

Country

Notes

Options

Add New Agency

Save

Clear Form

Delete

Close

* Indicates Required Field

Click on the **Search** drop down list to view any of the approving agencies currently in the Product Evaluation Database.

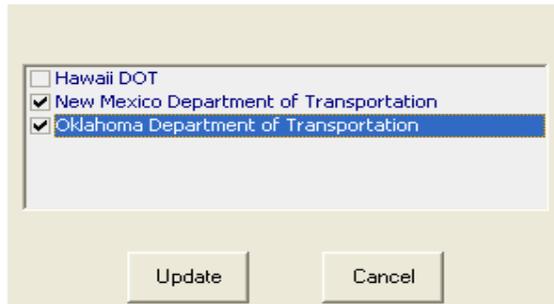
Add New Agency Button: Click this button to save a new approving agency to the Product Evaluation Database. Duplicate agency names are not allowed.

Save Button: Click this button to save the information on the Approving Agency Form.

Clear Form Button: Click this button to clear all the current information on the form.

Delete Button: Clicking on this button will delete the current Approving Agency information displayed on the form.

Agency Approval Listing Form

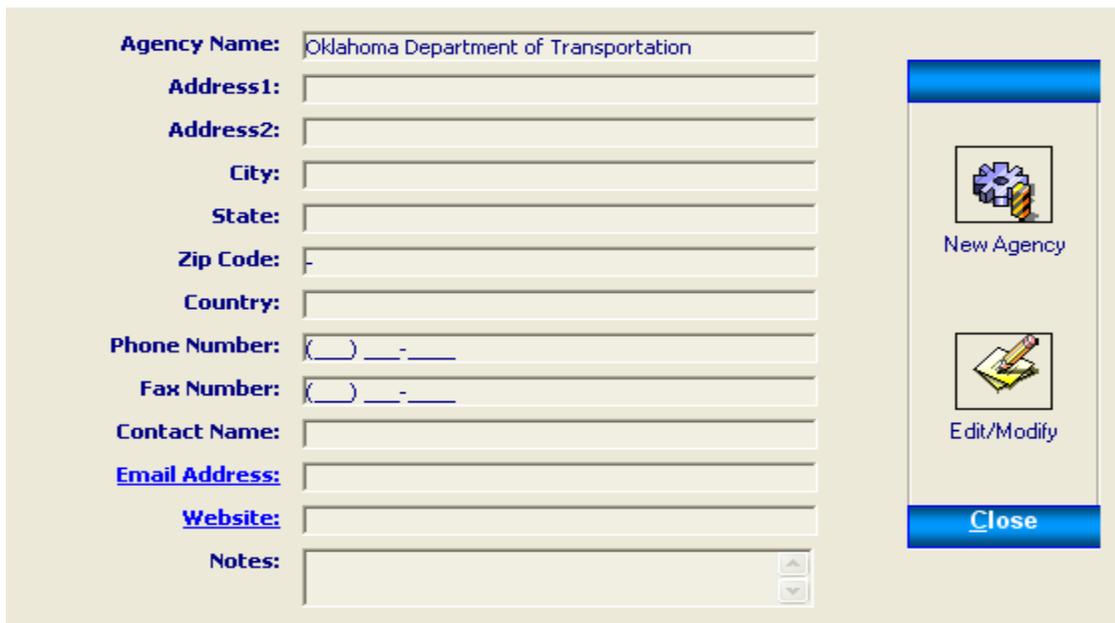


Hawaii DOT
 New Mexico Department of Transportation
 Oklahoma Department of Transportation

Update Cancel

Select the approving agency and click the Update button to save the changes to the current product. Click the Cancel button to close the form and ignore any changes.

Approving Agency Information Form



Agency Name: Oklahoma Department of Transportation

Address1: _____

Address2: _____

City: _____

State: _____

Zip Code: _____

Country: _____

Phone Number: () - -

Fax Number: () - -

Contact Name: _____

Email Address: _____

Website: _____

Notes: _____

New Agency

Edit/Modify

Close

New Agency Button: Clicking this option will activate the Add/Edit Approving Agency Form.

Edit/Modify Button: Clicking this option will activate the Add/Edit Approving Agency form and fill the text boxes with the current agency information.

Category Form

Edit Category Form



Add Category Button: This button will add a new category to the Product Evaluation Database.

Clear Button: This button will clear the category letter and the category description text boxes.

Remove Button: This button will delete the highlighted category if it is not associated with any products.

Save Button: This button will save any changes made to the selected category.

Contact Forms

Add/Edit Contacts Information Form

* Contact Name

Address1

Options

Add New Contact

Save

Clear Form

Delete

Close

Phone

Fax Number

Email

Website

Address2

City

State

Zip Code

Country

* Indicates Required Field

Add New Contact Button: This button will save new contact information to the Product Evaluation Database.

Save Button: Clicking on this button will save the information on the Add/Edit Contact form to the Product Evaluation Database.

Clear Form Button: Use this button to clear the form and enter new contact information. Click the [Add New Contact](#) button to save the new contact information.

Delete Button: This button will delete the current contact information from the Product Evaluation Database. An error message is displayed if a user tries to delete a contact associated with a product.

Contact Info Form



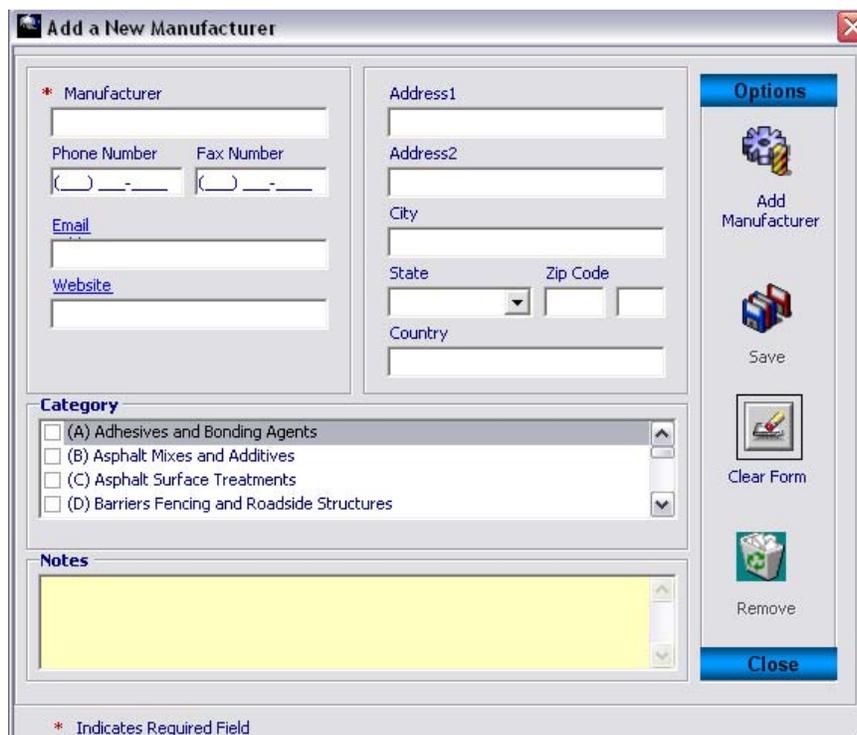
The screenshot shows a window titled "View Contact" with a close button in the top right. Below the title bar are two links: "New Contact" and "Edit". To the right of these links is a legend: "* Indicates Required Field". The form contains the following fields:

- Contact Name: * David Amara
- Address1: 5400 S. 122 Avenue
- Address2: (empty)
- City: Tulsa
- State: Oklahoma
- Zip Code: 74146-
- Country: USA
- Phone Number: (860) 205-6385
- Fax Number: () - -
- Email Address: (empty)
- Website: (empty)

Clicking on the New Contact or Edit link opens the Add/Edit Contacts form.

Manufacturer Forms

Add/Edit Manufacturer Form



The screenshot shows a window titled "Add a New Manufacturer" with a close button in the top right. The form is divided into several sections:

- Manufacturer:** * Manufacturer (required), Phone Number, Fax Number, Email, Website.
- Address:** Address1, Address2, City, State, Zip Code, Country.
- Category:** A list of categories with checkboxes: (A) Adhesives and Bonding Agents, (B) Asphalt Mixes and Additives, (C) Asphalt Surface Treatments, (D) Barriers Fencing and Roadside Structures.
- Notes:** A large text area for notes.
- Options:** A vertical sidebar on the right containing buttons: Add Manufacturer, Save, Clear Form, Remove, and Close.

* Indicates Required Field

Add Manufacturer Button: This button will save new manufacturer information to the Product Evaluation Database. Duplicate manufacturer names are not allowed.

Save Manufacturer Button: Save the information on the manufacturer form to the Product Evaluation Database.

Clear Form Button: Use this button to clear the form and enter new manufacturer information. Click the Add Manufacturer button to save the new information.

Remove Button: This button will delete the current manufacturer information from the Product Evaluation Database. An error message will be displayed if the user tries to delete a manufacturer associated with a product.

Manufacturer Information Form

View Manufacturer Info.

Manufacturer * 3M

Address1: 3M Center, Building 235-3B-55

Address2:

City: St. Paul

State: MN

Zip Code: 55144-55144

Country: USA

Phone Number: (800) 553-1380

Fax Number: () -

Email:

Website:

Categories: (A) Adhesives and Bonding Agents
(B) Asphalt Mixes and Additives

Notes:

Options

 New Manufacturer

 Edit/Modify

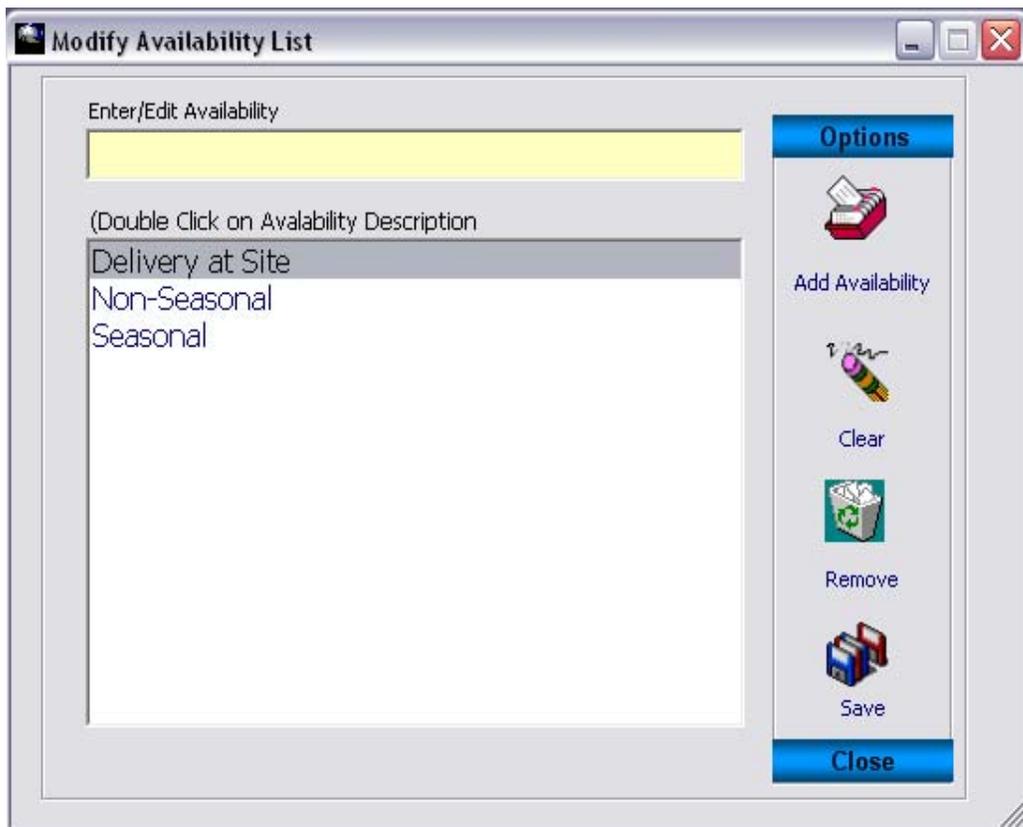
Close

* Indicates Required

Click on the New Manufacturer button to add a new manufacturer. To modify the current manufacturer information click on the Edit/Modify button.

Product Availability

Product Availability Form



Double click on availability descriptions to edit. Save any modification by clicking on the **Save** button.

Add Availability Button: Input the availability description into the *Enter/Edit Availability* textbox and click this button to save it to the Product Evaluation Database.

Clear Button: This button will clear the availability description in the *Enter/Edit Availability* text box.

Remove Button: This button will delete the highlighted availability if it is not associated with any products in the database.

Save Button: This button will save any changes made to the selected availability description.

Product by Category

Product by Category Form



Click on the category in the “Category List” to view all associated products from the Product Evaluation Database. Click on the product in the “Results List” to view the product in the Add/Edit Product Form.

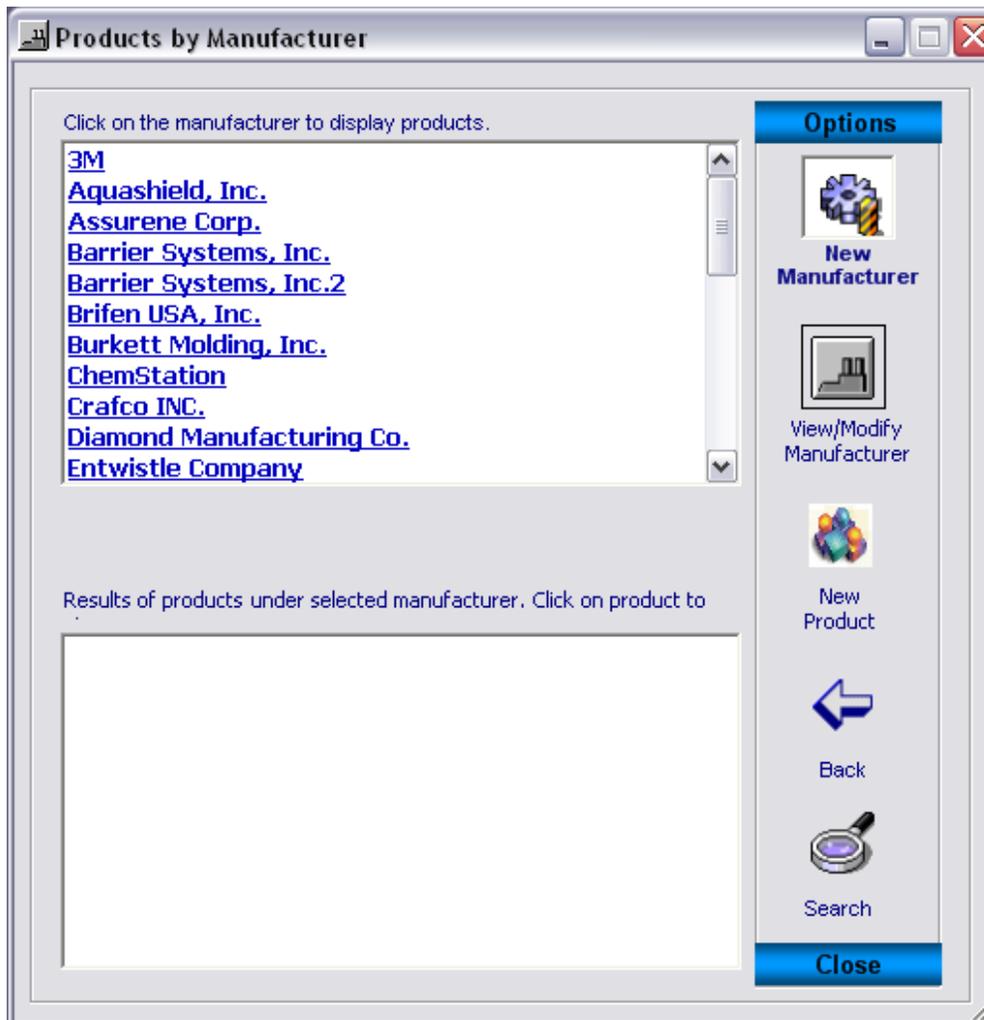
New Product Button: Clicking this button will activate the Add/Edit Product Form.

Edit Categories Button: Clicking this button will activate the Modify Categories Form.

Search Button: Clicking on this button will display the Search Form (See page 21).

Product by Manufacturer

Product by Manufacturer Form



Click on a manufacturer to view all associated products from the Product Evaluation Database. Click on the product in the "Results list" to view the product in the Add/Edit Product Form.

New Manufacturer Button: Clicking this option will display the Add/Edit Manufacturer Form (See page 10).

View/Modify Manufacturer Button: Clicking on this button will activate the View Manufacturer Information form and display the selected manufacturer information (See Page 11).

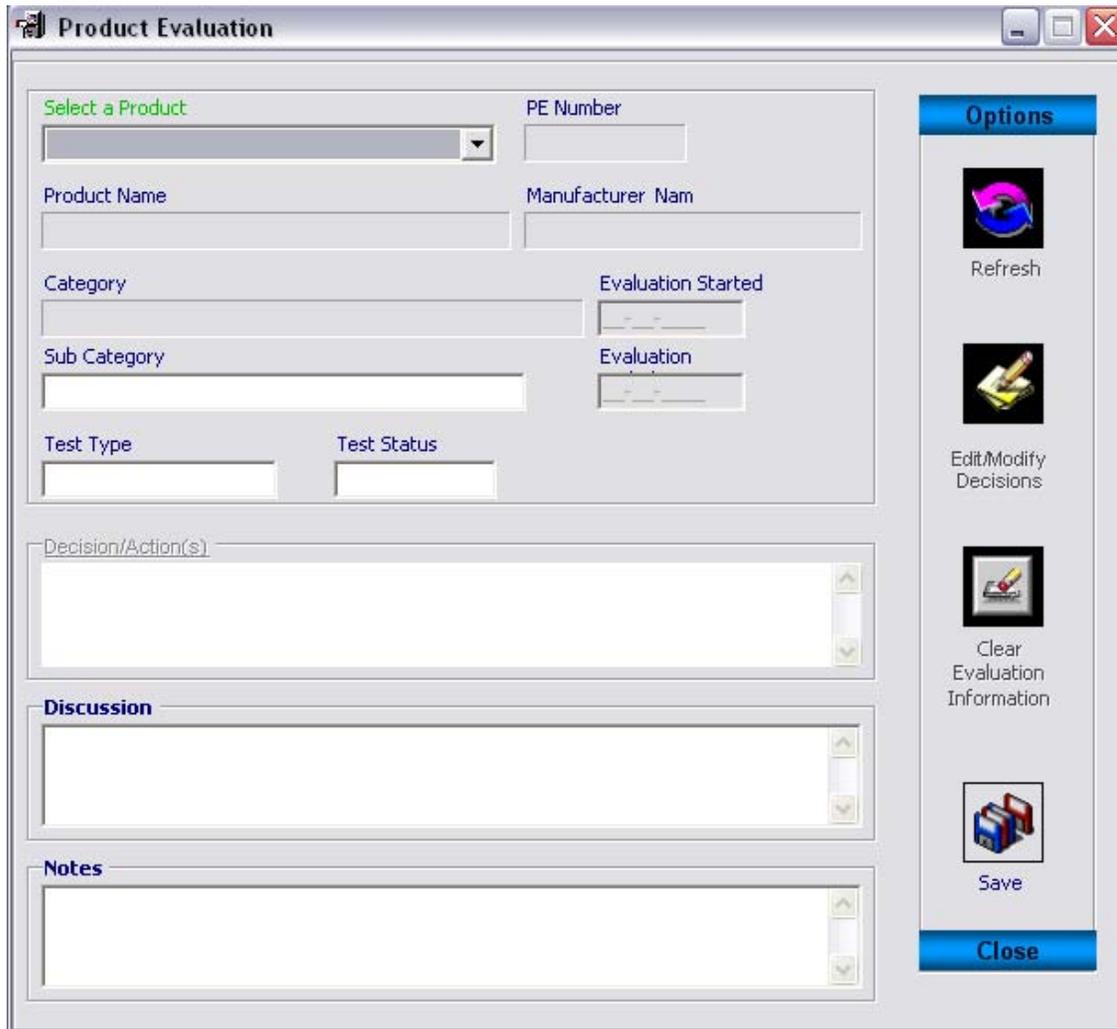
New Product Button: Clicking this option will open an empty Product Information Form (See Page 18).

Back Button: Clicking on this option will close the form and activate the Switchboard form.

Search Button: Clicking on this button will display the Search Form (See page 21).

Product Evaluation Forms

Edit Evaluation Form



The screenshot shows a software window titled "Product Evaluation". The main area contains several input fields: "Select a Product" (a dropdown menu), "PE Number", "Product Name", "Manufacturer Nam", "Category", "Evaluation Started", "Sub Category", "Evaluation", "Test Type", and "Test Status". Below these fields are three text areas labeled "Decision/Action(s)", "Discussion", and "Notes", each with a vertical scrollbar. On the right side, there is a vertical "Options" panel with four icons and labels: "Refresh" (a circular arrow), "Edit/Modify Decisions" (a pencil and paper), "Clear Evaluation Information" (a trash can), and "Save" (a floppy disk). At the bottom of the Options panel is a blue "Close" button.

Select a product from the "Select a Product" list box to view evaluation information. Clicking on the Decision/Action(s) link or text box will open the Decisions Form.

Menu Options:

1. From the **File** menu option, the user can change the *Printer Setup*.
2. The **Product Evaluation Report** menu has two options: *Detail Report* and *Decision Report*. The user has the option to print a report for all records or the current record for either report option.

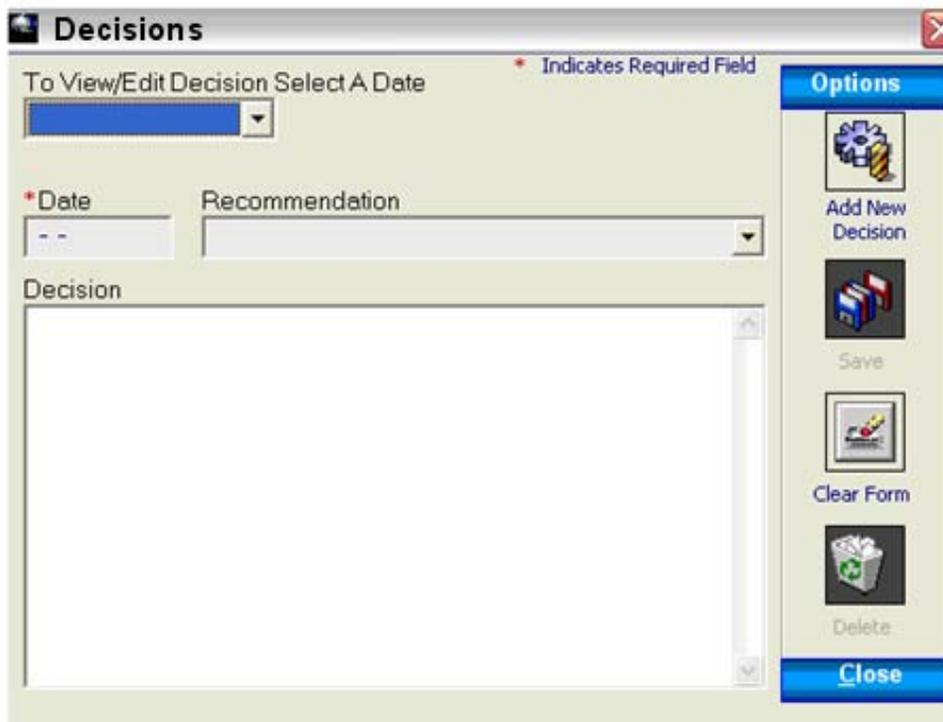
Refresh Button: Clicking on this button will re-query the Product Evaluation Database and display any updated information on the selected evaluation.

Edit/Modify Decisions Button: Clicking this option will display the Add/Edit Evaluation Decisions Form.

Clear Evaluation Information Button: Clicking on this option will clear the Product Evaluation Information in the text boxes on the form. The user will also be asked if the decisions associated with the current evaluation should be deleted. Clicking “Yes” will delete the decisions from the Product Evaluation Database.

Save Button: Click this button to save any modifications made to the current evaluation information.

Add/Edit Evaluation Decisions Form



To add new decisions use the **Clear Form** button to clear any information in the text boxes and input the information. Press the **Add New Decision** button to save the information to the database.

To edit an existing decision:

1. Select the date of the decision from the **To View/Edit Decision Select a Date** List box.
2. Modify the information and click the **Save** option.
3. If you do not want to save changes; close the form.

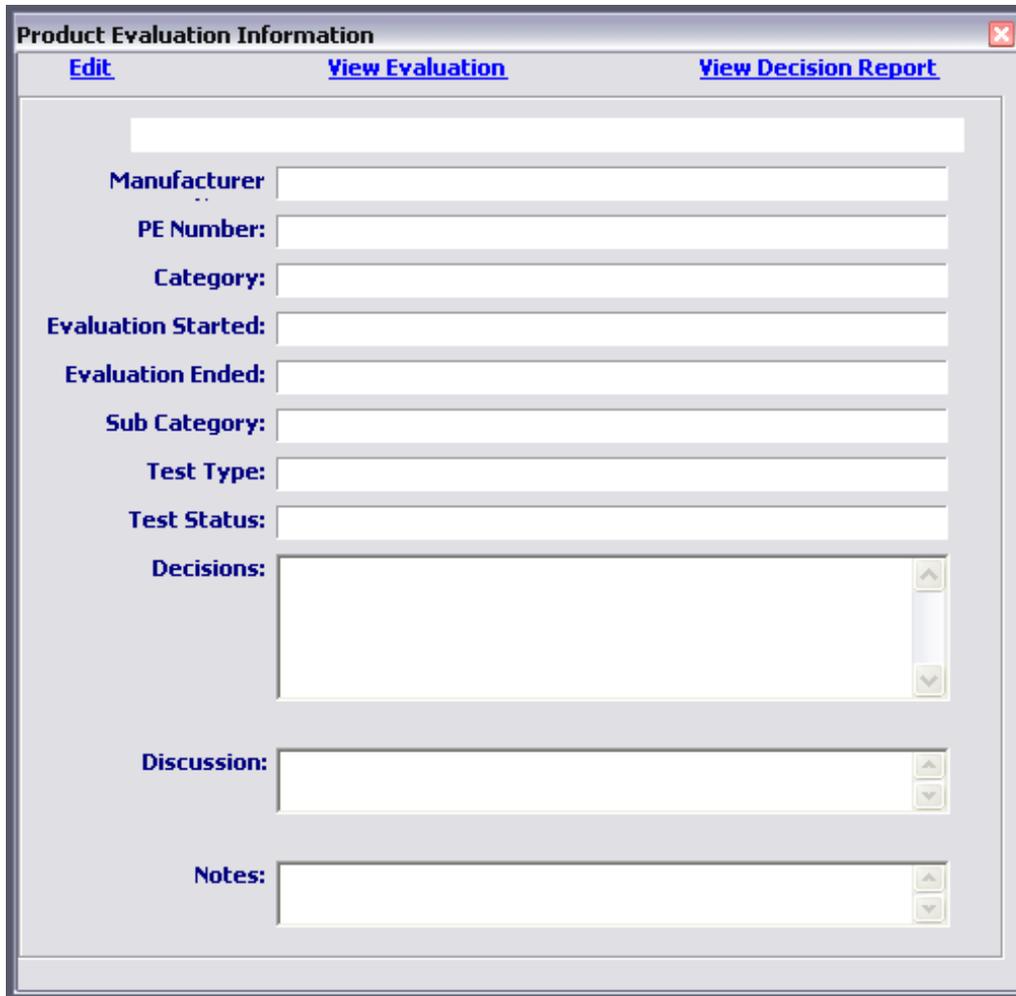
Add New Decision Button: Click on this button to add a new evaluation decision to the Product Evaluation Database for the current product.

Save Button: Click this option to save any modifications to the current decision.

Clear Form Button: Clicking on this button will clear the Decision form. (The decision is not deleted from the database.)

Delete Button: Clicking on this option will delete the current decision.

Evaluation Information Form



The screenshot shows a web application window titled "Product Evaluation Information". At the top of the window, there are three blue hyperlinks: "Edit", "View Evaluation", and "View Decision Report". Below the hyperlinks, there is a large white text input field. Underneath this field, there are several labeled input fields: "Manufacturer", "PE Number:", "Category:", "Evaluation Started:", "Evaluation Ended:", "Sub Category:", "Test Type:", and "Test Status:". Below these fields is a "Decisions:" label followed by a large, empty list box with up and down arrow buttons on the right side. At the bottom of the form, there are two more labeled input fields: "Discussion:" and "Notes:", each with up and down arrow buttons on the right side.

Clicking the [Edit](#) hyperlink will display the Edit Evaluation Form. The [View Evaluation Report](#) hyperlink will open a preview of the Evaluation Report for the current product. The [View Decision Report](#) hyperlink will open a preview of the Decision report.

Product Information Forms

Add/Edit Product Information Form

The screenshot shows a web-based form titled "Product Information". The form is divided into several sections. On the left, there are fields for "P.E. #", "* Product Name" (with a "View Evaluation" link), "* Category" (with a "Modify Category Button" icon), and several text areas for "Product Description", "Recommended Use", "Outstanding Features or Advantages", "Composition of Material", "Precaution in", "Known Health Hazards", and "Recycled Content". Below these are "Product Availability", "Patented" (Yes/No), "Typical Cost", "Date Introduced", and "Quantities" (Yes/No). On the right, there are fields for "* Manufacturer Name" (with an "Indicates Required Field" note and a "View Manufacturer Button" icon), "Contact for Evaluation" (with a "View Contacts Button" icon), "Company (Contact Represents)", "Learning Guides" (Material Specs, Instructions, Demonstration, Picture, Education - each with Yes/No checkboxes), "Approved for use by other Agencies" (with a "Select Agency Button" icon), "Specification Conformance (Give Spec No.)" (ConnDOT, ASTM, Fed. Spec., AASHTO, NTPEP, http://www.ntpep.org), and "Alternate Product Info". On the far right, an "Options" panel contains buttons for "Add Product", "Clear", "Delete", "Save", "View Product Report", and "Close".

Input the information and click the **Add Product** or **Save** buttons to store the information in the Product Evaluation Database. Required Fields are marked with a red star (*).

Clicking on the **Modify Category Button**  will open the Edit Category form (See page 8).

Clicking on the **View Manufacturer Button**  will open the Manufacturer Information Form (See page 10 or 11).

Clicking on the **View Contacts Button**  will open the Contact Information Form (See page 9 or 10).

Clicking on the **Select Agency Button**  will open the Agency Approval Listing Form (See page 7).

Clicking on the **Agency Information Button**  will open the Agency Information Form (See page 6).

Add Product Button: The Add Product button will add the product to the Product Evaluation Database. The required fields (Product Name, Manufacturer, and Category) are prerequisites for saving product information. Duplicate product names are allowed and a warning is displayed.

Clear Button: Use this button to clear the text boxes on the form and enter new product information. The information is not deleted from the database. Click the Add Product button to save the new product information.

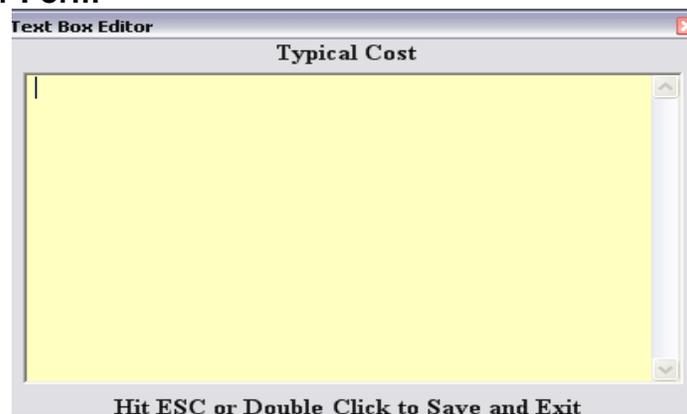
Delete Button: This button will delete the product and evaluation information associated with the current or displayed product. Manufacturer, contact, category, and agency information are not deleted.

Save Button: Save the information on the Product Information form to the Product Evaluation Database.

Product Report Button: Click this option to view the Product Preliminary Evaluation Information Report.

Clicking on the [Product Description](#), [Recommended use](#), [Outstanding Features or Advantages](#), [Composition of Material](#), [Precaution in Handling](#), [Known Health Hazards](#), [Recycled Content](#), [AASHTO](#), [NTPEP](#), or [Alternate Product Info](#) links activates the Text Box Editor Form.

Text Box Editor Form



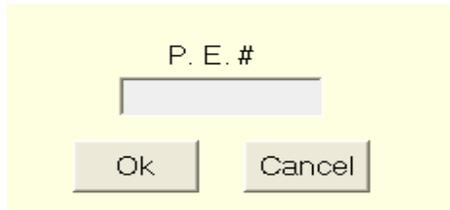
View, edit, and save the text associated with the selected link.

Clicking on the [Product Availability](#) link will open the Product Availability Form (See page 12).

Clicking on the [View Evaluation](#) link will open the Product Evaluation Information form (See page 17).

Clicking on the [PE# Form](#) link will open the Modify P. E. # form.

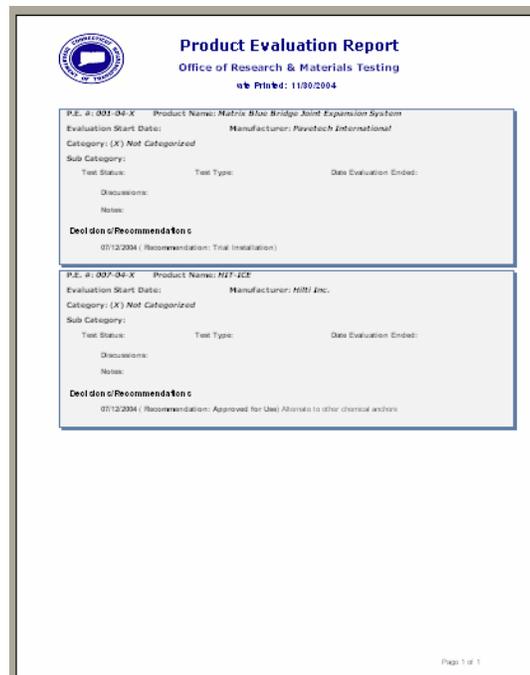
Modify P. E. # Form



Modify the P. E. # and click ok to save.

Report Viewer

Report Viewer Form



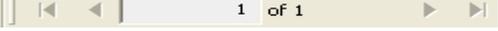
Click the **Print Button**  to send the report to the printer.

Click the **Export Button**  to export the report to another file format. The available formats are:

1. PDF
2. Crystal Reports
3. HTML 3.2
4. HTML 4.0
5. Excel 97-2000
6. Excel 97-2000 Data only
7. Word
8. ODBC
9. Record Style (Comma no space)
10. Record Style (Comma with spaces)
11. Report Definition
12. Separated Values (CSV)
13. Tab Separated Text
14. Text
15. XML

Clicking the **Refresh Button**  will update the report data.

Clicking on the **Toggle Group Tree Button**  displays or hides the group tree window.

Use the **Report Navigation Buttons**  to navigate through the pages of the report.

The **Stop Report Load Button**  will stop the report generation process.

Click the **Search Button**  to search the report for occurrences of text input by the user.

Search Forms

Search Form



Select a search option (Product name, Manufacturer, Contacts, Product Description), enter a keyword, and click the Search button  to view the results of your search. Double click on any of the green search options to view all data for the selected option.

A product list area is displayed below the search results for contact and manufacturer searches. Click on the contact or manufacturer in the search results area and any products associated with that item is displayed in the product list. (See picture below.) View the manufacturer or contact in the Search Result list by clicking on the View Manufacturer or View Contact buttons. Click on any product in the products list to view it in the Add/Edit Product Information Form.

Search Form (Results)

The screenshot displays a search interface with the following components:

- Search Information:** A header section containing the instruction "Double Click on Green Search Options to View All".
- Search Options:** A group of radio buttons for filtering results: "Product Name", "Manufacturer" (selected), "Contacts", and "Product Description".
- Search Input:** A text box labeled "Type Keyword:" with a "Search" button featuring a magnifying glass icon.
- Search Results:** A list of results under the heading "Search Result:". The first two items are "Hilti Inc." and "Pavetech International", both underlined and highlighted in blue. A "View Manufacturer" button is positioned to the right of this list.
- Products:** A list of results under the heading "Products:". The first item is "Matrix Blue Bridge Joint Expansion System", underlined and highlighted in blue.
- Options Panel:** A vertical sidebar on the right with a blue header "Options" and a "Close" button at the bottom. It contains four icons with corresponding labels: "Clear Search" (magnifying glass), "New Product" (gears), "New Contact" (phone), and "New Manufacturer" (gears and a person icon).

Clear Search: Clicking this button will clear the information on the search form.

New Product Button: Clicking this button displays an empty Product Information form.

New Contact Button: Clicking this option displays the Add/Edit Contact Form.

New Manufacturer Button: Clicking this option will display the Add/Edit Manufacturer Form.

Setup Forms

Setup Form

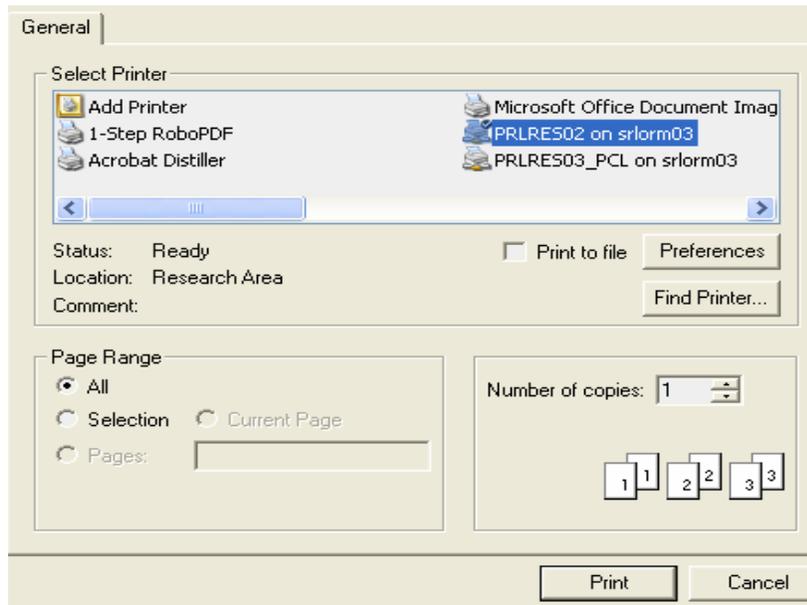
The screenshot shows a web-based configuration interface. At the top, there are two navigation icons: a printer icon labeled 'Printer Setup' and a group of people icon labeled 'Administration'. Below these is a title bar 'Database ODBC, File Directories, and Links'. The main area contains several text input fields with labels on the left: 'DatabaseODBC:' (value: pedb), 'Database Directory:', 'Instruction Directory:' (value: \\SRLORM03\GROUPS\PRODEVAL\INSTRUCTIONS\), 'Picture Directory:' (value: \\SRLORM03\GROUPS\PRODEVAL\PICTURES\), 'Report Directory:' (value: \\SRLORM03\GROUPS\PRODEVAL\REPORTS\), 'Material Specs. Directory:' (value: \\SRLORM03\GROUPS\PRODEVAL\MATERIALSPECS\), 'Help Files Directory:' (value: C:\PE\helpfiles\PEHelp\ISSLI\WebHelp\PEHelp.htm), 'Approved Product List Link:' (value: http://www.ct.gov/dot/LIB/dot/documents/dresearch/conndot_psl.pdf), and 'AASHTO APEL Link:' (value: http://apel.transportation.org). At the bottom, there are three buttons: 'Edit', 'Refresh', and 'Close'.

Clicking on the **Edit** button will cause the form to go into *Edit Mode*. Edit mode hides the **Edit**, **Refresh**, and **Close** button and displays the **Update** and **Cancel** buttons (See form below for Edit Mode View). The user can make changes to the directory paths, links and ODBC settings. Click the **Update** button to save the changes. Clicking on the **Cancel** button will discard any changes and exit *Edit Mode*.

Edit Mode

This screenshot shows the same configuration interface as above, but in 'Edit Mode'. The 'Edit', 'Refresh', and 'Close' buttons are no longer visible. Instead, 'Update' and 'Cancel' buttons are present at the bottom of the form. All the text input fields and their values remain the same as in the previous screenshot.

Printer Dialog



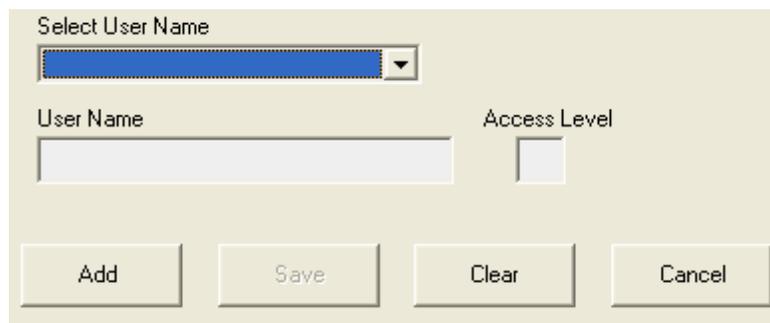
Use this form to select the default printer destination for reports generated by the Product Evaluation Database program.

To select a printer for Product Evaluation reports:

1. Select the desired printer from the "Select Printer" listing
2. Click the **Print** button.

Clicking on the Print button will not generate printed documents.

User Form



Access levels are currently "**M**" for *Managers* and "**U**" for *Users*. The default setting is "U" for everyone on the CONNDOT_01 domain and does not need to be added to the Product Evaluation database. If a user needs management access then they must be added to the database using this form.

To add a user:

1. Enter their windows logon user name (ex:SmithDE) into the User Name text box.
2. Enter the access level into the text box: **(M)**anager or **(U)**ser.
3. Click the **Add** button.

To modify a user name or access level:

1. Select the user name from the drop down list.
2. Modify the information in the **User name** and/or **Access Level** text boxes.
3. Click the **Save** button to store the changes in the Product Evaluation Database.

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