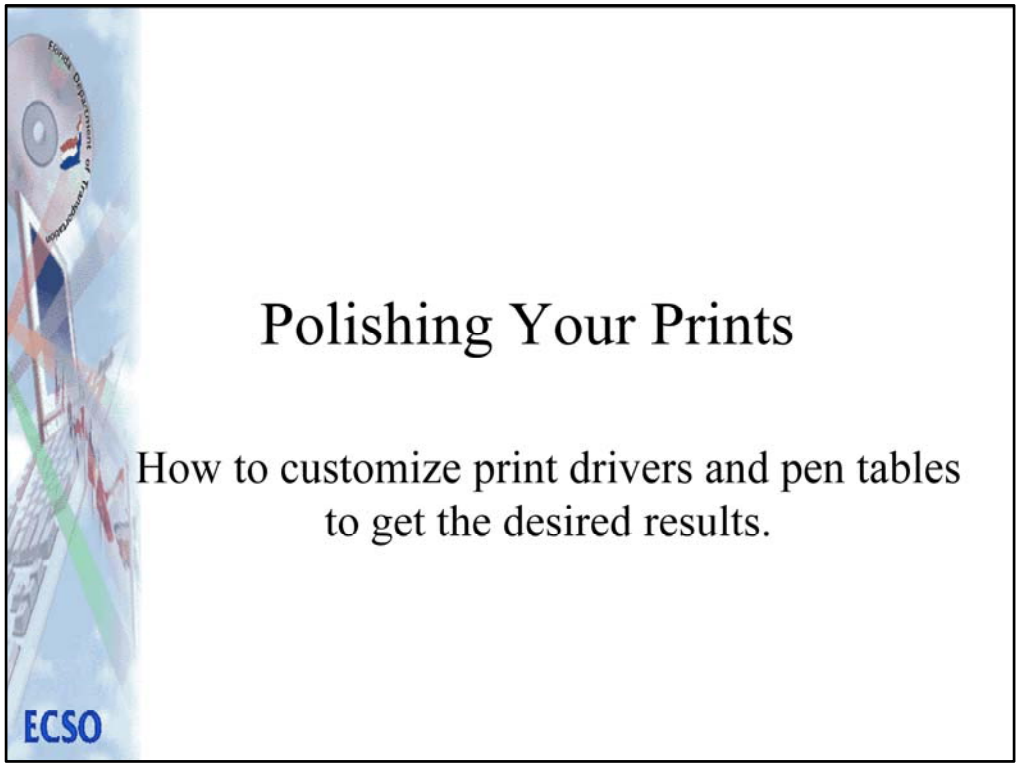
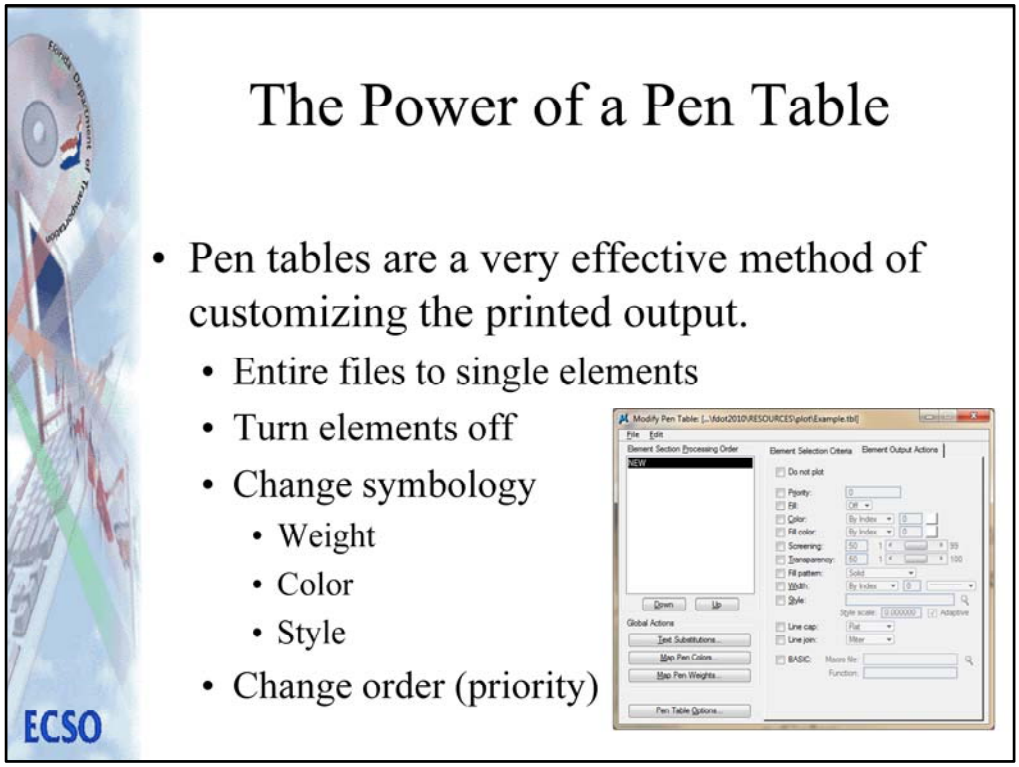


Polishing Your Prints

How to customize print drivers and pen tables to get the desired results.

Topics Covered

- The Power of a Pen Table
- Grayscale References
- Multiple Shades of Gray
- Transparencies without Rasterized.



Introduction to Pen Tables

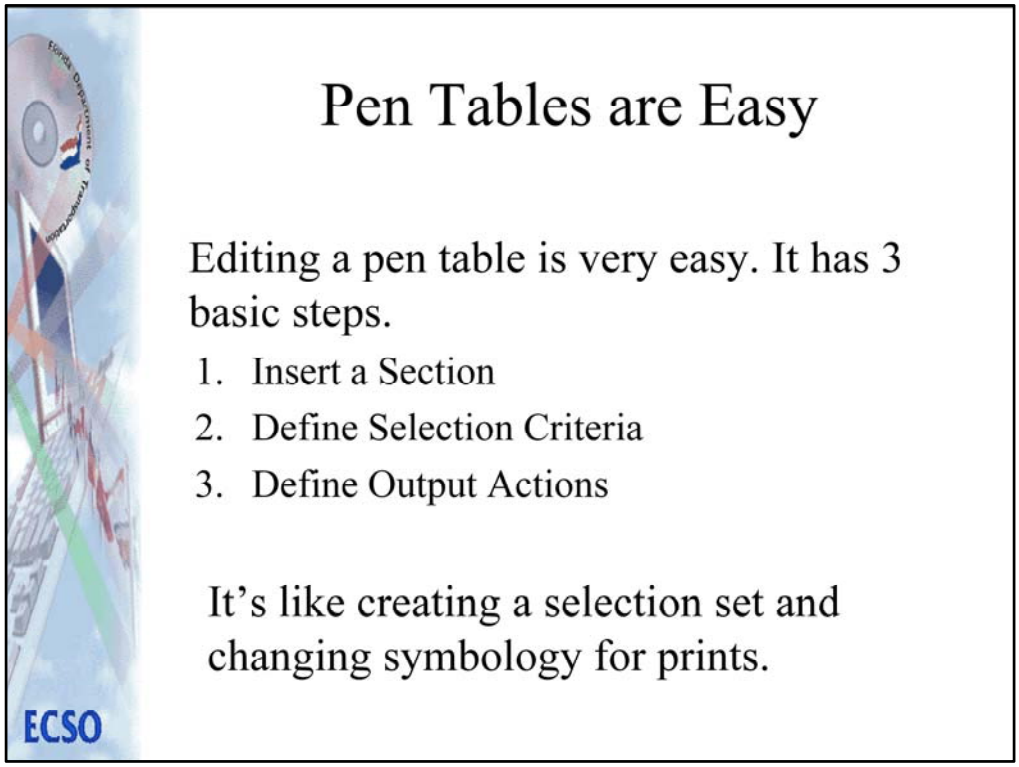
Resymbolization is the process of changing characteristics of elements within a design file. When these changes are applied to printed output, the process is referred to as print resymbolization. Pen tables control print resymbolization. Pen tables let you remap any of the characteristics associated with design file elements for the printed output. Once specified, you can save them for future use. You can store multiple pen tables that can be applied to one or more design files. Using a pen table, you can specify many complex print resymbolization steps. Similarly, you can specify a single simple resymbolization step. In addition, the text string substitution feature lets you substitute specific strings of text with one of several tokens provided by the pen table.

In summary, a pen table lets you:

•Selectively alter the printed appearance of elements

•Determine the printing order of elements

•Specify text string substitutions



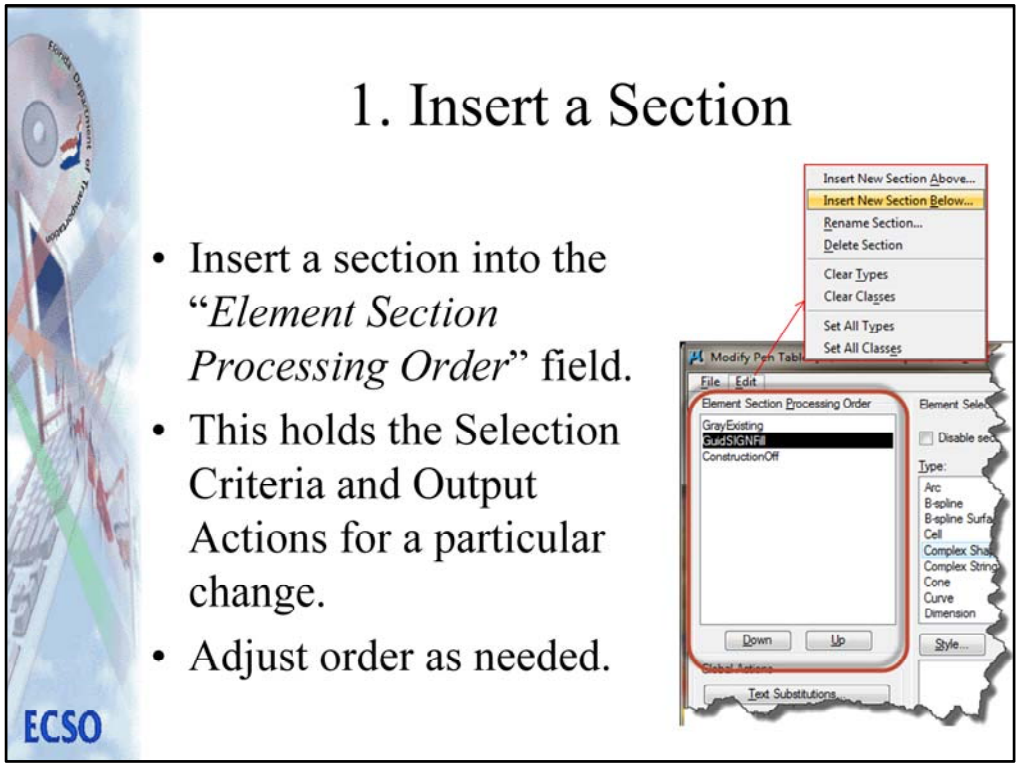
Modifying Pen Tables
All operations concerning pen tables can be carried out from the Modify Pen Table dialog. Sections present in the currently loaded pen table are listed in the Element Section Processing Order list box. Its File and Edit menus let you create and edit both new and existing pen tables.

Using settings in the Element Selection Criteria tab of the Modify Pen Table dialog, you can define the parameters for selecting elements in the design file. Having set the selection criteria, you can use the settings in the Element Output Actions tab to define the changes required for the printed output.

You can define an individual parameter for element selection and based on that evaluation, specify modification of the identified element in the output file. Similarly, you can evaluate multiple parameters. However, when you specify more than one parameter, they are considered as a boolean AND operation. That is, elements for which you specify multiple parameter values must meet *all* specified criteria before they will be identified.

For example, if you specify Ellipse as the element type, you can specify one or more types of modifications to be applied to all ellipses in the design file. However, if you specify Ellipse, Level 40, Line Weight 2, then only ellipses on level 40 with a line weight of 2 will be affected by the output action. All other ellipses in the design will be ignored by this section. Subsequently, you can define changes that you want to apply to other types of ellipses on other levels of the design file. Those changes will be applied without affecting the first section of changes.

By default, only one section can be applied to an element. This means that elements modified by the present or previous sections cannot be changed in future sections. You can change this in the Pen Table Options dialog, however, to allow more than one section to apply to an element. If you do so, the sections are selected and applied in descending order, starting at the top of the list and working downward.



Element Section Processing Order

Contains a list of section names, defining the order in which sections are processed. When you edit a new pen table, a single section called NEW is inserted automatically. You can rename this section, or delete and insert one or more sections using the Edit menu.

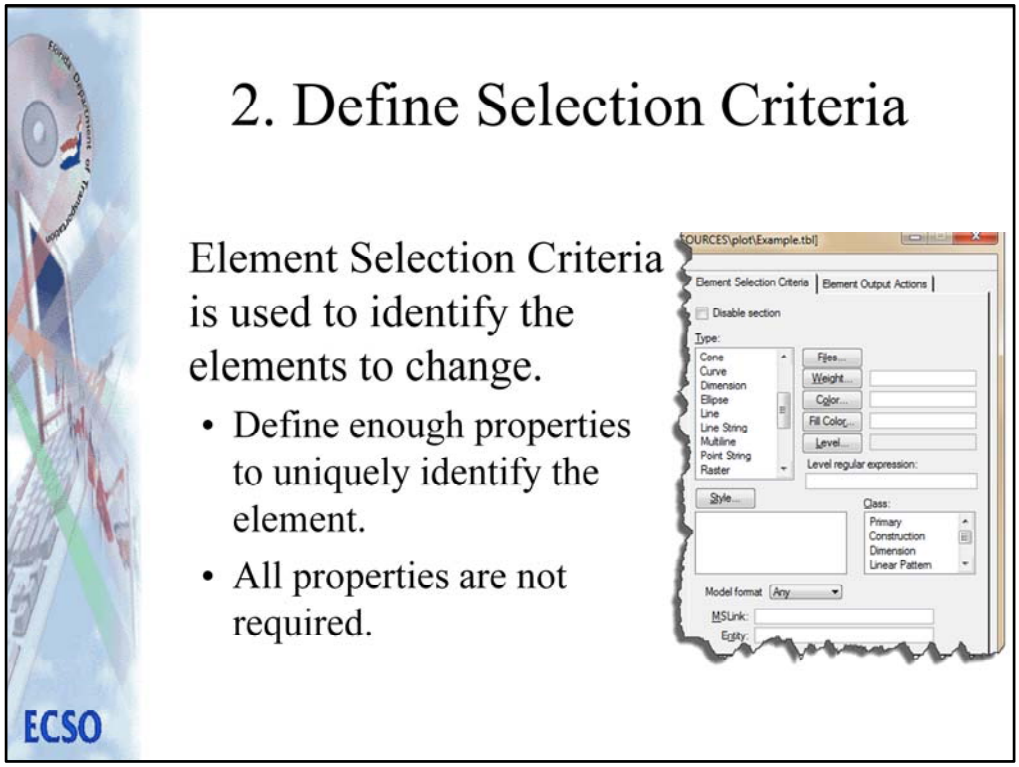
Element sections

Each element section contains the definition for an individual resymbolization task or a group of related resymbolization tasks. These tasks can be applied to either a single element or a group of elements.

Element sections let you define resymbolization tasks separately from each other. You can specify virtually an unlimited number of resymbolization tasks of varying degrees of complexity. These resymbolization tasks can apply to any element that, while being similar to others, has at least one characteristic differentiating it from the others.

In the Modify Pen Table dialog, the Element Section Processing Order list box displays the processing order of the element sections that you have defined for the pen table. As you create element sections, they are added to the Element Section Processing Order list box. During processing, each element is checked against the first section, then the second section and so on, through to the last section or until a match occurs. Regardless of whether elements are affected by only one section or by all sections in the pen table, the order of processing is important. When necessary, you can rearrange the order of sections in the Element Section Processing Order list.

When creating sections, Element Selection Criteria parameters define the elements to be processed and the Element Output Actions parameters define how the selected elements are treated when printed.



Element Selection Criteria tab
Contains controls used to specify criteria, unique to each section, against which elements are evaluated. If a match occurs, then the section's set of Element Output Actions is performed, and all subsequent sections are bypassed. If no match occurs, the element is passed to the next section for evaluation.

Criteria are typically selected from choices in a list box. Multiple values of a criterion may be selected from a list box. Multiple contiguous values are selected using the mouse with the <Shift> button depressed; multiple non-contiguous values are selected using the mouse with the <Ctrl> key depressed.

Disable Section
If on, the section is disabled, and will not be considered during processing.

Use Section Name as Criteria
(Visible only when the active file is a DWG file and a STB file has been imported.) When you turn on this check box, if the pen table section name matches the plot style name on the element, then that criteria is used for the pen table section to match. That is, the pen table section match would be on plot style, rather than element color or type.

Type
This list box contains a list of element types. A type, against which an element is evaluated, is selected by clicking it. The Edit menu has the following relevant menu items: Clear Types and Set All Types.

Files...
Opens the Identify Files dialog, which is used to identify references for a pen table section based on their slot numbers or logical names.

Weight...
Opens the Select Weights dialog, which is used to enter line weight criteria in the Weight text field.

Color...
Opens the Select Colors dialog, which is used to insert color values in the Color text field.

Fill Color...
Opens the Select Colors dialog, which is used to insert color values in the Fill Color text field.

Level...
Opens the Select Levels dialog, which is used to insert level values in the Level text field.

Level regular expression
Allows you to use regular expressions to select levels. For example, if you type a.*, the pen table section will match every level beginning with a. The comparisons are not case sensitive.
If a pen table contains a list of levels and a regular expression, all must match the element level name for the pen table section's output actions to be applied.

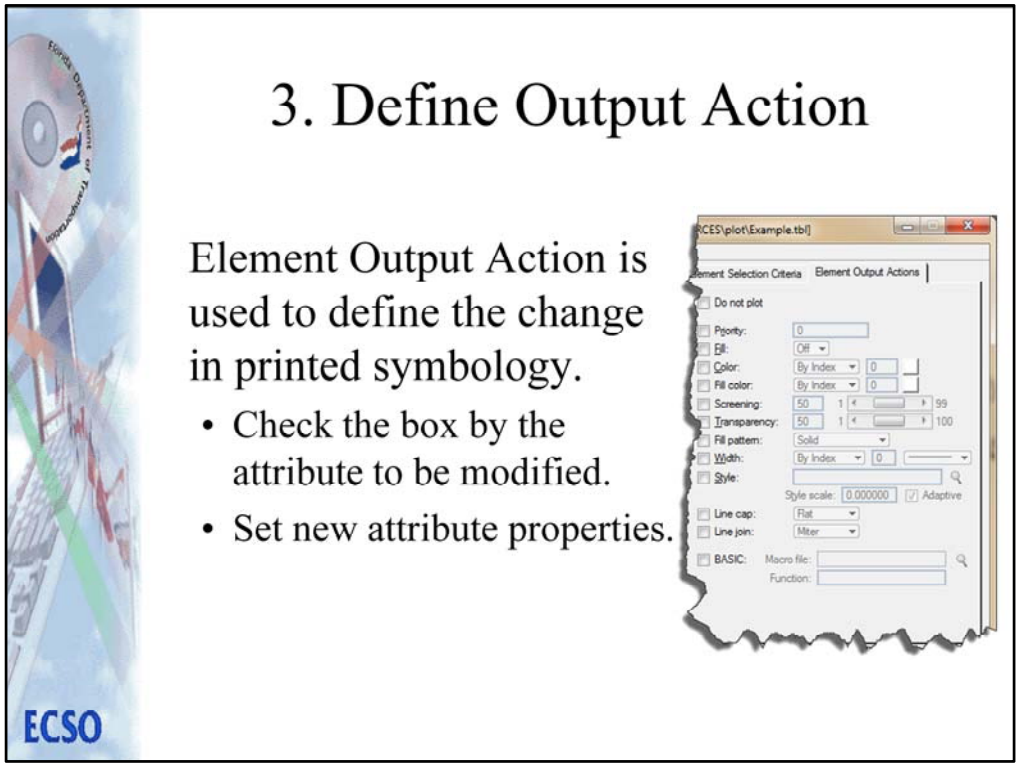
Style...
Opens the Select Line Style dialog, which is used to select line style criteria, against which an element will be evaluated.

Class
This list box contains a list of classes. A class, against which an element is evaluated, is selected by clicking it. The Edit menu has the following relevant items: Clear Classes and Set All Classes.

Model Format
Lets you select one of the following model formats: Any, DGN, or DWG/DXF. Lets you define pen table sections that operate only on elements inside DGN and/or DWG/DXF models. The default value is "Any," meaning that the model format is not used when filtering the element.

MSLink
Used to key in the value of the database mslink criterion in the text field.

Entity
Used to key in the value of the database entity number criterion in the text field.



Modify Pen Table dialog Element Output Actions tab
If an element under evaluation matches a section's Element Selection Criteria, then the actions specified using the controls on the Element Output Actions tab (as well as the actions specified in the Text Substitutions dialog) are executed.

Do not plot
When this check box is selected, all elements matching the current section will not be printed. When selected, this option causes all other items on the Output Actions tab to be disabled.

Priority
Turns on the check box to enable the text field to accept your key-in.
An element's priority determines the order in which it is printed in relation to other elements. The valid range of element priorities are (negative) -16777216 to (positive) 16777215. The rules of prioritization are as follows:

•Elements with a lower priority are printed before elements with a higher priority.
•Elements with no priority are always drawn before all prioritized elements.

To make an element meeting certain criteria print before any other elements, you must prioritize *all* other elements (those that you do not want printed first) in the entire design. To make elements meeting certain criteria print after other elements, you need only prioritize the elements you wish to be printed last.

Do not prioritize elements unless it is significant to the printed output, because prioritized elements require additional processing time and memory.

Pen table priority is supported only for 2D designs.

Fill
Used to control whether or not filled areas are printed for the selected filled elements, such as ellipses, shapes, and complex shapes. If on, all elements matching the current pen table section will have their fill states changed to reflect the enabled option button.

•On — If on, the Fill Color and Fill Pattern fields are enabled. All selected elements are printed as filled.
•Off — If off, the Fill Color and Fill Pattern fields are disabled. All selected elements are printed without fill.

When the Fill setting is turned off, the selected filled elements are printed as they appear in the design file.

Color
If on, lets you control the color of the printed output for the selected elements. You can select the output color as follows:
•By Index — lets you define the color manually by keying in its value, or graphically by clicking the adjacent color tile to open a color palette in which you click the required color.
•By RGB — lets you define the color by clicking the adjacent color tile, which opens the Color Picker dialog. This lets you select the color by True Color (by color model or color components) or by Color Book.
•Grayscale — specifies that the printed output is in grayscale.

Fill Color
If on, lets you control the color of the printed output of filled areas for the selected elements. You can select the output fill color as follows:
•By Index — lets you define the color manually by keying in its value, or graphically by clicking the adjacent color tile to open a color palette in which you click the required color.
•By RGB — lets you define the color by clicking the adjacent color tile, which opens the Color Picker dialog. This lets you select the color by True Color (by color model or color components) or by Color Book.
•Grayscale — lets you specify that output is in grayscale.

Assigning a fill color does not cause an element that is not already filled to be filled with the specified color. Only elements that are already filled are affected.

Screening
If on, lets you specify that a color is "washed out" towards white in the printed output. A 50% screen, for example, moves a color halfway to white. Can be used to save ink, or to de-emphasize elements plotted in that color. You can choose a value from 1 to 99.

Transparency
If on, you can set a value from 1 to 100 to make the selected elements transparent in the printed output. Pen table transparency is supported for any printer driver capable of printing in rasterized mode. If pen table transparency is used when printing in non-rasterized mode, the transparency values do not have any effect.

Fill Pattern
If on, lets you choose a fill pattern from an option menu: Solid, Checker Board, Cross Hatch, Diamonds, Horizontal Bars, Slant Left, Slant Right, Square Dots, or Vertical Bars. The fill pattern output action is intended to support only AutoCAD plot style tables and therefore the pattern size is fixed. For better control over patterning, use MicroStation's design element hatching and patterning tools.

Width
If on, lets you define the line weight of the selected elements in the printed output. Definitions can be either:
•By Index — lets you key in a value (0–15) or select the line weight graphically, from the option menu.
•By MM — lets you key in a dimension in millimeters (from 0mm to 51mm) for the line weight. If the current setting is inches, selecting By MM will convert it to millimeters.
•By Inches — lets you key in a dimension in inches. If the current setting is By MM, selecting By Inches will convert it to inches.

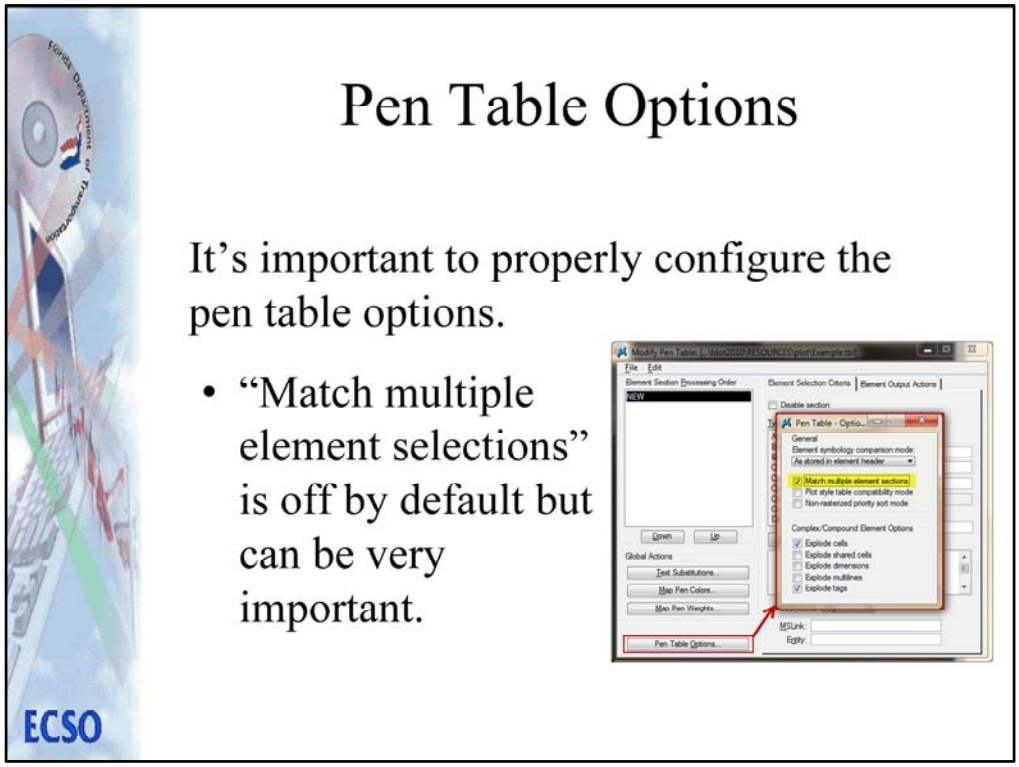
Style
If on, lets you control the line style and the scale of the selected elements. When this setting is enabled, you can key in the required line style or click the Line Style icon to select one from the Select Line Style dialog. When you choose a custom line style, you can use the Style Scale field to key in a scale value.

Adaptive
If on, ensures that dashed lines in the printed output do not display with gaps at the vertices.

Line Cap
Used to define the way end caps appear on lines in the printed output. Choices are Flat, Square, Round, or Triangle.

Line Join
Used to define the way that line joins appear in the printed output. Choices are Bevel, Miter, Round, or Butt.

BASIC
Used to indicate that you want the element to be passed to a MicroStation BASIC macro function (as an MbeElement). When you select this check box, the Macro File and Function fields are enabled — prompting you to identify the MicroStation BASIC Macro source file and the function within it. Unless this option is selected, the Macro File and Function fields remain disabled.
You should not check the BASIC check box until your macro is fully prepared. This means you must have already used the BASIC Editor to debug the macro and to define a Pen Table Print Element Hook entry point in your program. See "Using Macros to Specify Pen Table Output Actions" in MicroStation BASIC Help for more information.



Element symbology comparison mode
Affects how the element selection criteria operates when level symbology is enabled. There are two modes from which to choose:
As stored in element header — The pen table processes your specified element selection criteria against the symbology as it is stored in the element header.
As displayed in view — The pen table processes your specified element selection criteria against the symbology as it is currently displayed in the view.

Match multiple element selections
Allows you to set up a pen table to apply more than one section to an element. By default, only one section is applied to an element.

Complex/Compound Element Options
Controls whether the pen table processing will treat any or all of the following types of elements — unshared cells, shared cells, dimensions, multi-lines, and tags — as single units or as individual elements. When treating them as a single unit (the check box is off), only the complex/compound header is processed by the pen table; all of its children inherit any output actions applied to the header. When treating them as individual elements (the check box is on), the complex/compound header is ignored by the pen table.

•Explode cells — If this check box is on, cells are treated as individual elements.
•Explode shared cells — If this check box is on, shared cells are treated as individual elements.
•Explode dimensions — If this check box is on, dimensions are treated as individual elements.
•Explode multilines — If this check box is on, multi-lines are treated as individual elements.
•Explode tags — If this check box is on, tags are treated as individual elements.

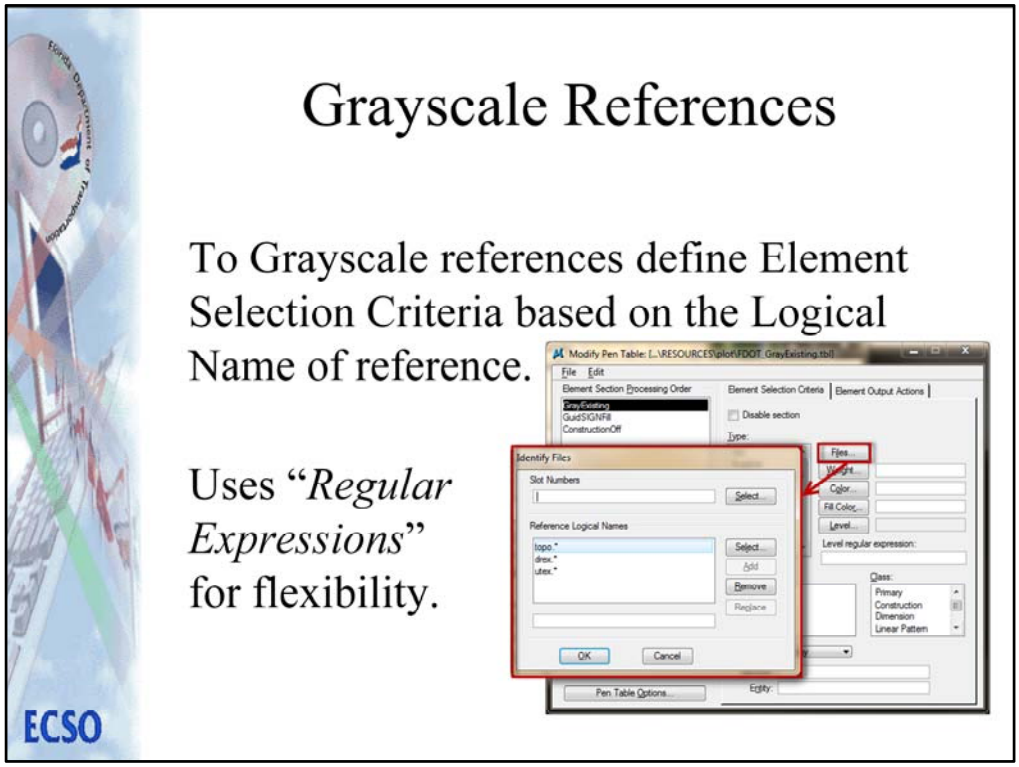
Pen Table Demo

New color filled key maps provide a perfect example of the power of pen tables.

Turn this:

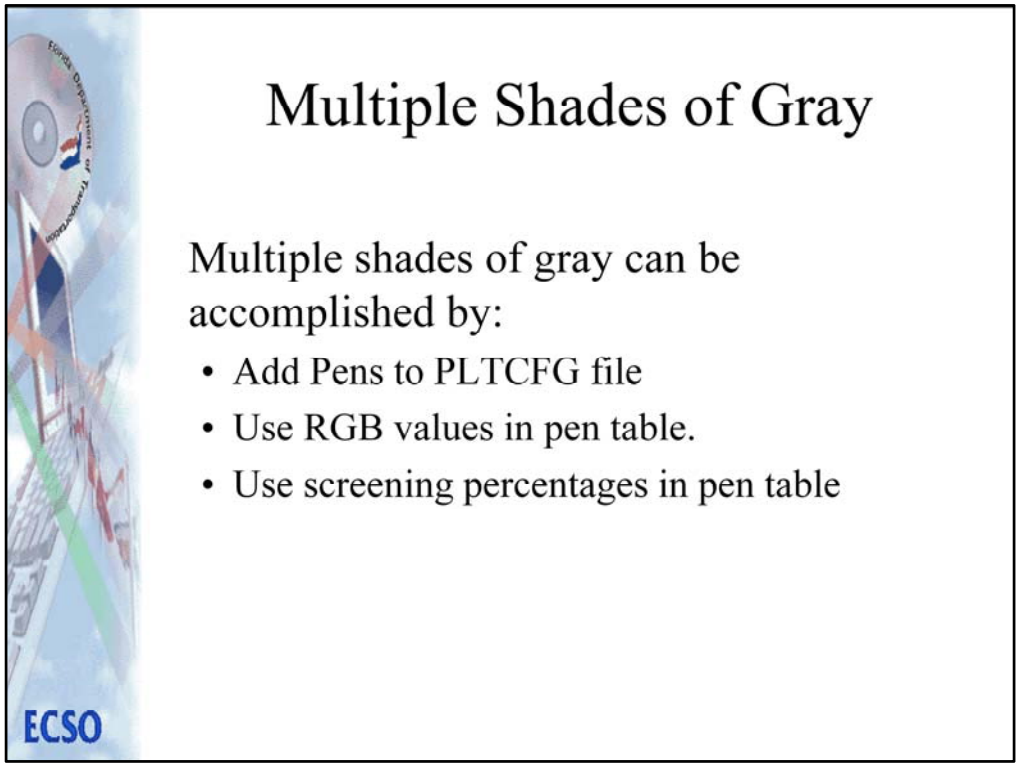
Into this:

ECSO



Reference Logical Names

Displays (by logical name) the references that will be selected by the pen table for processing. You can use regular expressions to select the references. For example, if you type a.*, the pen table section will match every reference beginning with a. The comparisons are not case sensitive.


Multiple Shades of Gray
Multiple shades of gray can be accomplished by:
• Add Pens to PLTCFG file
• Use RGB values in pen table.
• Use screening percentages in pen table
ECSO

Transparencies without Rasterized

You can accomplish the effect of Transparencies without using the Rasterized option on the Print dialog.

Benefits include:

- Increase the speed of printing
- Reduce file size
- Searchable text in PDF files.

XS Pen Table

Are you cross sections printing slow?

- There is an issue when printing files with many references using pen tables that causes them to get slower the more references you have.
- Use XS.tbl for cross sections
  - No resymbolizatation

Questions

- Questions about this process can be sent to ecso.support@dot.state.fl.us.