



QC Reports & QA of Electronic Delivery Projects



*Bradley C. Eiler
Engineering/CADD Systems Office
CADD Support Specialist
Phone (850) 245-1600 SC 205-1600
E-Mail brad.eiler@dot.state.fl.us*



**Engineering / Cadd Systems Office
Florida Deptment of Transportation**



CADD Quality Assurance/Quality Control



- ① FDOT provides tools to ensure the creation of the project directory structure, file names and the standard symbology.
- ① FDOT provides software to check a design file's adherence to the standard symbology tables during the life of the project and at the end, before Electronic Delivery.
- ① FDOT delivers software programs that allow for the automatic checking of files (**OverVuQC**), or checking initiated by a user (**QuikChek**).
- ① FDOT delivers a program to create reports (**QCReporter**) on the results of the **OverVuQC** or **QuikChek** process.



Methods of Correction



Five Methods of Error Correction

- ① **Method 1: Best Guess**
- ② **Method 2: Rules Pull Down Menu**
- ③ **Method 3: Text List Box**
- ④ **Method 4: Graphic Element**
- ⑤ **Method 5: Text String Search**

Note: If errors are being "lumped together" by **QuikChek**, it may mean that the **Rule Generation Criteria** will need adjusting.

Method 1: Best Guess

The screenshot displays the MicroStation software interface. The main workspace shows a road design with a green rectangular sign that reads "DO NOT CROSS SOLID LINE RIGHT OF CENTER LINE". The sign is tilted and has a yellow circle at its top-right corner. To the left of the sign, the text "S-8" is visible. Below the sign, there are yellow rectangular markers with the following text: "700-40-1", "700-46-11", and "1120+10". To the left of these markers, the text "SOLID WHITE" is partially visible. The QuikChek dialog box is open in the foreground, showing the "Options" tab. The "Rule File" is set to "\\tecsrv01\fdotdeliver2002\eng\qc_rules\st". The "Error" is 6 of 8, and the "Occurrence" is 1 of 4. The "Correction" section has a green highlight under "Analyze". The "Rules" list includes "Pavement Marking", "Solid Traffic Stripe 6\"", "6\" Solid Traffic Stripe Yellow (Paint) N", "6\" Solid Traffic Stripe White (Paint) NM", and "6\" Solid Traffic Stripe White (Paint) LF". The "Guess" button is highlighted. The "Fix All", "Fix Single", and "Make Exception" buttons are also visible. The software title bar shows the file path "G:\Make Cd\Flug Data Set\New Folder\DSGNP00.DGN (2D) - MicroStation/J - [Plot Scale=40, Units=Metric, AS= 0.9, TX= 8.0, LS= 1.0, CLS=40.0]". The status bar at the bottom shows "Execute User Keyin" and "Level = 6".

Method 2: Rules Pulldown Menu

The screenshot displays the MicroStation software interface. The main workspace shows a pavement design with yellow traffic stripes, a green line, and various annotations. A red circle highlights a specific element. The QuikChek dialog box is open, showing the following details:

- Rule File: \\flesrv01\fdotdeliver2002\eng\qcrules\st
- Error: 2 of 8
- Occurrence: 1 of 41
- Correction: Analyze
- Rules:
 - Pavement Marking
 - Solid Traffic Stripe 6"
 - 6" Solid Traffic Stripe Yellow (Paint) N
 - 6" Solid Traffic Stripe White (Paint) NM
 - 6" Solid Traffic Stripe White (Paint) LF
- Buttons: Guess, Select Rule, Clear Selection, Fix All, Fix Single, Make Exception

Annotations on the drawing include:

- 12" WHITE (pointing to a purple line)
- WHITE (TYP.) (pointing to a purple line)
- 24" (pointing to a purple line)
- 100' (vertical dimension)
- 6" (dimension for a traffic stripe)
- 24X24 W11-2 (circled)
- 700-40-1
- 1054+89
- W16 (circled)

The status bar at the bottom indicates "Level = 6".

Method 3: Text List Box

The screenshot displays the MicroStation software interface. The title bar shows the file path: C:\e\Projects\Flug Data Set\DSGNP00.DGN (2D) - MicroStation/J - [Plot Scale=40, Units=Metric, AS= 0.9, TX= 8.0, LS= 1.0, CLS=40.0]. The menu bar includes File, Edit, Element, Settings, Tools, Utilities, Workspace, Applications, Window, and Help. The toolbar contains various icons for file operations and editing. The main workspace shows a road design with yellow traffic stripes. A pink line points to the text "6" SOLID WHITE" in green. The QuikChek dialog box is open, showing the "Rules" tab. The "Rule File" is \\tlecsrcv01\fdotdeliver2002\eng\qrc_rules\st. The "Error" is 5 of 9, and the "Occurrence" is 1 of 19. The "Correction" section has "Hilite/UnHilite" and "Analyze" buttons. The "Rules" list includes: Pavement Marking, Solid Traffic Stripe 6", 6" Solid Traffic Stripe Yellow (Paint) N, 6" Solid Traffic Stripe White (Paint) NM, and 6" Solid Traffic Stripe White (Paint) LF. The "Set Select By" dialog box is also open, showing checked options for Level, Symbology, Type, Properties, and Class. The bottom status bar shows various icons for zooming and navigation.

Window 1

Standard CellApps Locks Utils Roadway Typical Sections Traffic Plans Traffic Control

Element Selection

QuikChek

Options Rules Help

Rule File: \\tlecsrcv01\fdotdeliver2002\eng\qrc_rules\st

Error: 5 of 9

Occurrence: 1 of 19

Correction:

Hilite/UnHilite Analyze

Rules:

- Pavement Marking
- Solid Traffic Stripe 6"
- 6" Solid Traffic Stripe Yellow (Paint) N
- 6" Solid Traffic Stripe White (Paint) NM
- 6" Solid Traffic Stripe White (Paint) LF

Guess Select Rule Clear Selection

Fix All Fix Single Make Exception

Set Select By

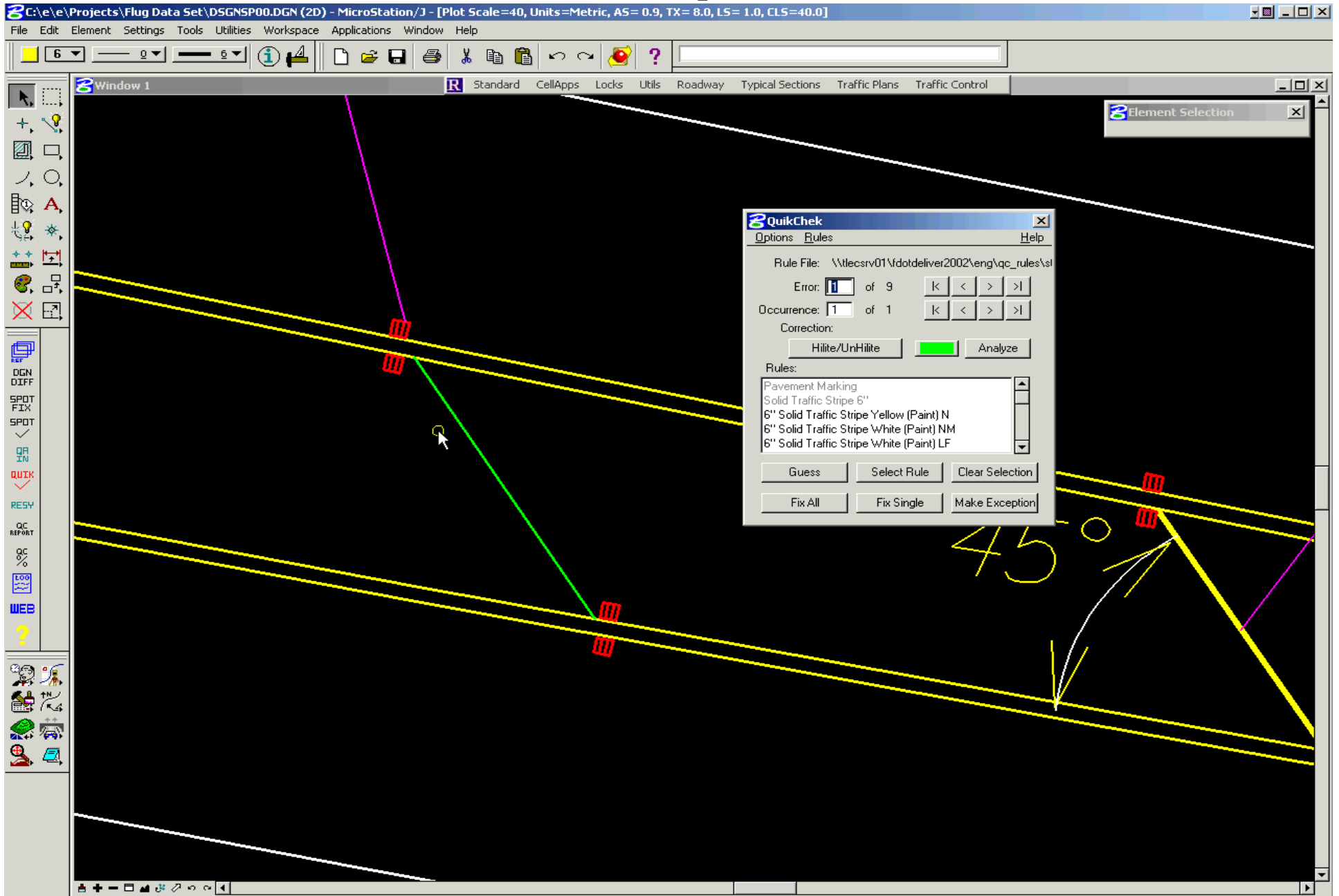
- Level
- Symbology
- Type
- Properties
- Class

6" SOLID WHITE

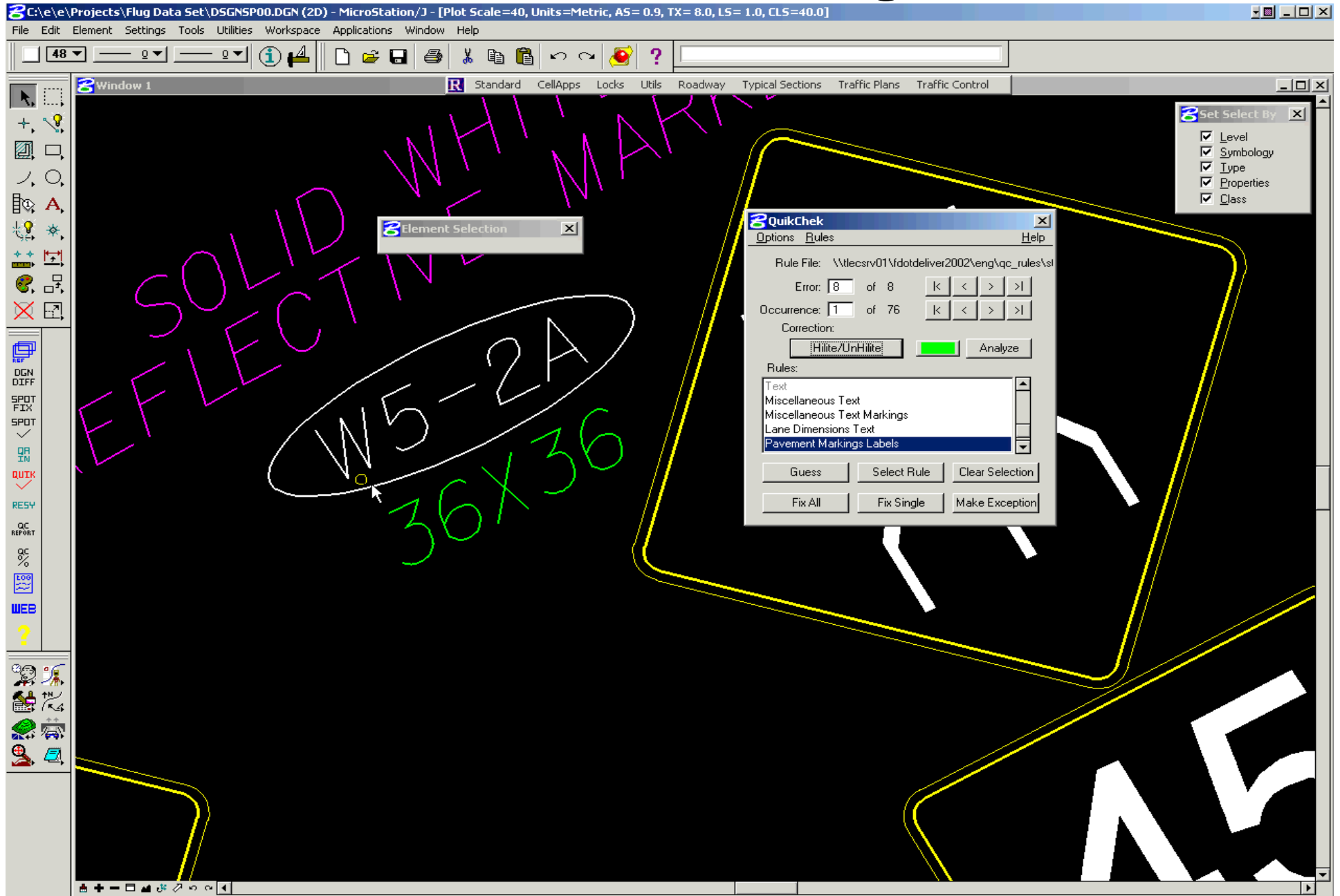
12'

12'

Method 4: Graphic Element



Method 5: Text String Search



MicroStation / QuikChek

The screenshot shows the MicroStation software interface with the QuikChek tool active. The main workspace displays a yellow triangle and two red concentric circles on a black background. The QuikChek dialog box is open, showing the following details:

- Rule File:** \\tlecsrv01\dotdeliver2002\eng\qc_rules\st
- Error:** 4 of 9
- Occurrence:** 1 of 39
- Correction:** Hilit/UnHilit (highlighted in green)
- Analyze** button
- Rules:**
 - Pavement Marking
 - Solid Traffic Stripe 6"
 - 6" Solid Traffic Stripe Yellow (Paint) N
 - 6" Solid Traffic Stripe White (Paint) NM
 - 6" Solid Traffic Stripe White (Paint) LF
- Buttons:** Guess, Select Rule, Clear Selection, Fix All, Fix Single, Make Exception

The interface also shows a menu bar (File, Edit, Element, Settings, Tools, Utilities, Workspace, Applications, Window, Help), a toolbar, and a vertical toolbar on the left with various tool icons. A 'Set Select By' dialog box is also visible in the top right corner, with the following options checked:

- Level
- Symbology
- Type
- Properties
- Class

Making Exceptions



- ⑥ **Make Exception:** The rule file may not include an element or Cell not specified in our standards. **QuikChek** identifies such items as "errors" when they may be valid elements. **(Example: Company Logos or Position Titles, Company address or names that are District or Company/Firm Specific.)**

- ⑥ Enter an identifying name **(minimum 12 Characters)** in the **Name the exception** field. Describe the exception **(minimum 25 Characters)** in the **Describe the exception** field.

- ⑥ This action does two things. First, an **Exception Rule File** is created (or extended if it already exists) with same name as the current Rule File, but with a special extension of .xcp I the eng_data folder.

- ⑥ Second, a Type 66 MicroStation (non-graphic) Element is created in the design file with the exception information stored in that element. The **EXCEPTION(s)** can be viewed in the **Rules Pull Down** Menu under the **EXCEPTIONS** Title.

Make Exception

The screenshot displays the MicroStation interface with a road design project. The main window shows a road layout with yellow lane markings and red dashed lines. A purple line indicates a +90.44 degree angle. A '50'' dimension is shown. A 'QuikChek' dialog box is open, showing the following details:

- Rule File: \\tlecsrv01\dotdeliver2002\eng\qc_rules\st
- Error: 8 of 9
- Occurrence: 1 of 30
- Correction: Hilit/UnHilit (green button), Analyze
- Rules list: Text, Miscellaneous Text, Miscellaneous Text Markings, Lane Dimensions Text, Pavement Markings Labels (selected)
- Buttons: Guess, Select Rule, Clear Selection, Fix All, Fix Single, Make Exception

A 'Set Select By' dialog box is also visible, with the following options checked:

- Level
- Symbology
- Type
- Properties
- Class

An 'Element Selection' dialog box is also present. A purple note at the bottom right reads: "SEE INDEX 518 FOR DETAIL ON RAISED RUMBLE STRIPS".

OverVuQC Overview



- ① **OverVuQC** is to assist the user in maintaining compliance to symbology standards.
- ② **OverVuQC** will run **QuikChek** in a "silent mode" whenever a design file is closed or when MicroStation is exited using a "Text Look Up Table" (**QCFILELIST.txt**).
- ③ **OverVuQC** is not "used" or specifically loaded by a MicroStation User, rather the program is setup to run automatically.

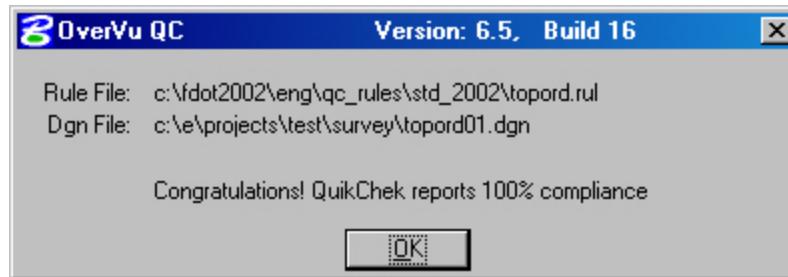




Using OverVuQC



- © **OverVuQC** will report the Compliance percentage of the current design file to the user in a dialog box that will briefly display before MicroStation closes.

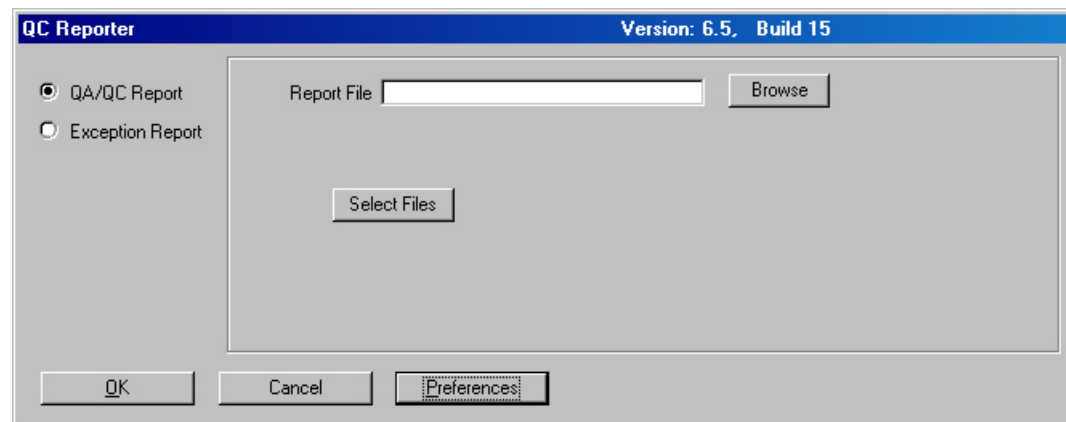




QCReporter Overview



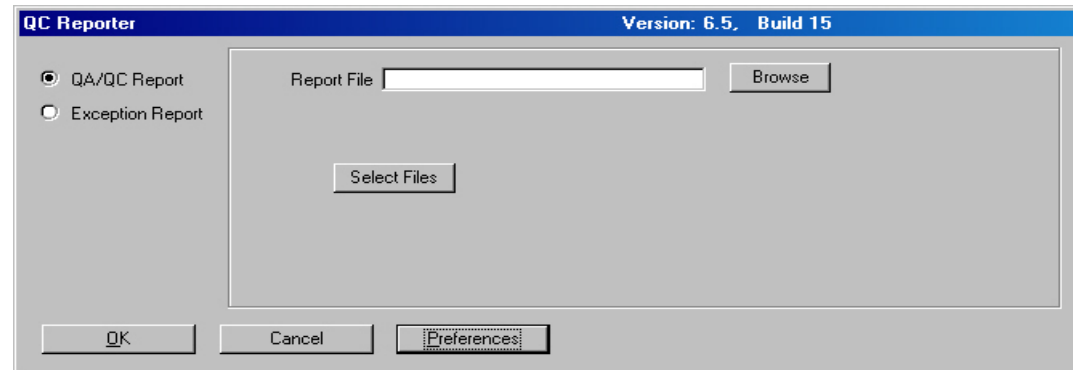
- ① **QC Reports** is a simple tool to produce **Reports** on design files based on statistics recorded in the file by the various **QC** processes that are run (**QuikChek**).



- ① **QCReporter** has three functions.
 - ① **Normal QC Reports**
 - ① **Exception Reports** (reporting only non-compliant files)
 - ① **Preferences** (access to the .ini File to control functions)



Using QCReporter



- 1. Browse to the **eng_data** folder of the discipline the current design file is located in the project directory.
- 2. Name the report file.
- 3. Click the **Select Files Button** and select the files to run the reports on.
- 4. Click the ok button on the **QCReporter Dialog Box** to run the report process.





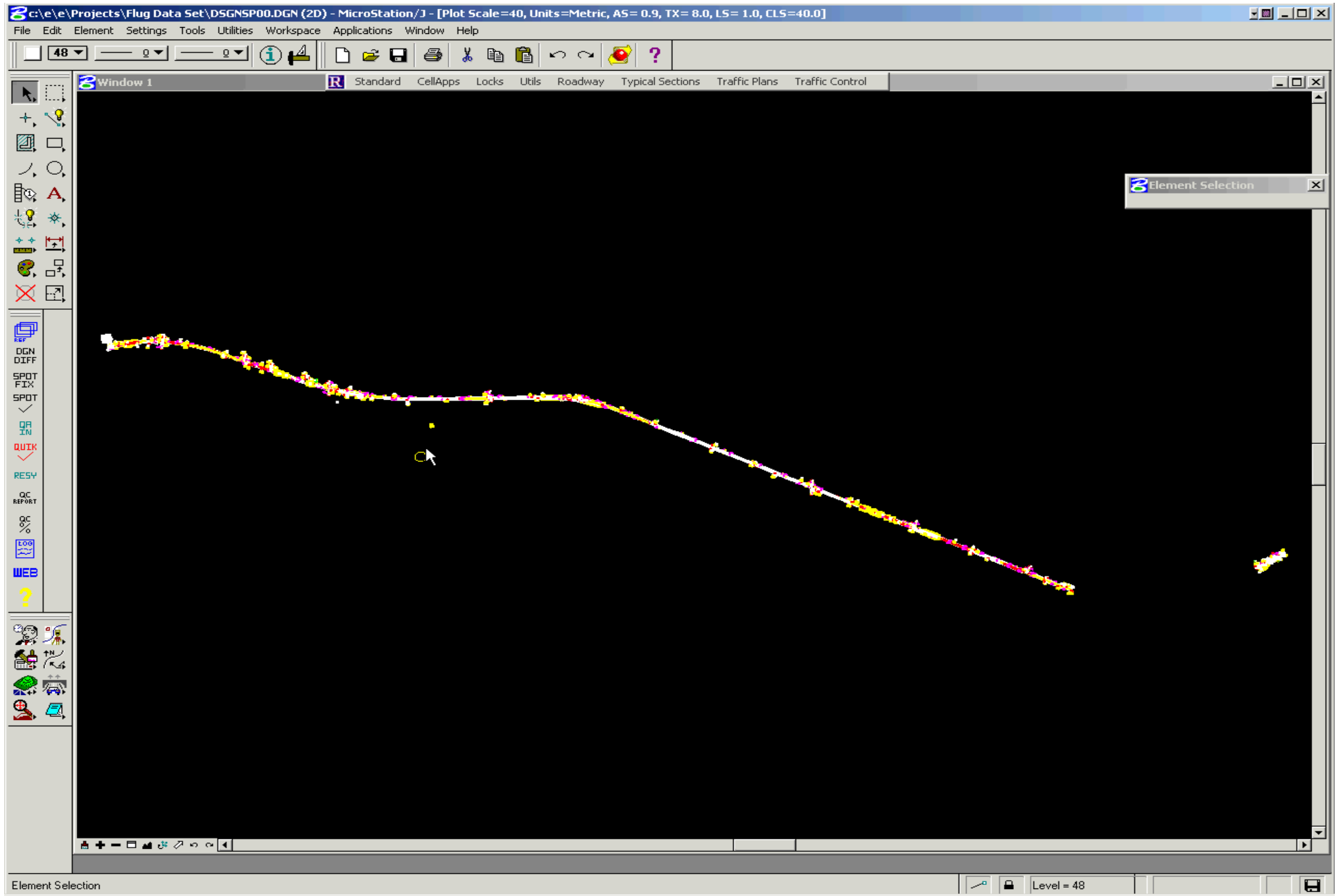
Using QCReporter



- ☉ QCReporter will check for a type 66 element embedded in the MicroStation design file by QC MDL programs. If the type 66 element is present in the design file, it shows the file has previously been checked and records the compliance of the file with respect to the FDOT standard symbology as specified in the corresponding “rule” file.
- ☉ From this embedded information, QCReporter will produce a report in the form of an ASCII text file in the .. \Project \discipline \eng_data directory. This report contains the Rule file name that QuikChek was initiated with, the design file name(s) checked, the date the file was processed, and the percentage of compliance for each design file and any defined exceptions.



Running a Report





What the Report is For



The quality of the design files will affect downstream use of the data and the archiving processes. Therefore, every design file shall meet the threshold of compliance as defined by the district. This may be in the producers' approved CADD quality control plan or scope. All critical design files; design files that are shared across disciplines, or that is used in quantity calculations for pay items, or used in automation by downstream applications, shall meet a 95% threshold of compliance. If the submitted files do not meet these requirements, a written variance from the FDOT Project Manager with supporting documentation shall be included in the project Journal. This report file is a critical indicator of the quality of the symbology found in the MicroStation files. Though this report is not a definitive means to judge the compliancy of the design file, the compliance report is a good tool to gauge whether or not the proper procedures and standards are being met. The QC compliance report shall be submitted as part of the electronic delivery.



The End



Engineering / CAD Systems Office
GD&M Software Products

