

III. CURRENT SYSTEM

A. Existing System Function Processes

CAiCE Visual Transportation 10 from Autodesk is Caltrans' current Roadway Design Software (RDS). It is used in the preliminary design up to completion of Plans, Specifications and Estimates (PS&E). It is used to calculate quantities, including earth material, that are needed to construct a project, as well as material needed to build the roadbed, such as concrete and asphalt. The alignment of the road, both the horizontal and vertical position, is designed using CAiCE. Surveyors use it to process and store existing terrain data for engineers to use in their base mapping. CAiCE also assists the engineer in visualizing the roadway in a 3-dimensional view, and it is used during construction for change orders.

MicroStation is the official drafting software for Caltrans that is used during preliminary and final design to develop contract plans for roadway and structures projects. It is used to delineate the work to be done by a contractor in a 2-dimensional plan view, and to generate and develop the plans showing location of work, items to be constructed, and the quantities associated with the work. MicroStation is also used in construction to delineate the changes made in the field to develop the as-built plans.

Approximately 4,000 users statewide use CAiCE, including engineers and surveyors. Currently, CAiCE training is provided annually on the following:

- Introduction to Roadway Design
- Advanced Design
- Alignment
- Digital Terrain Modeling for Engineers
- Visualization Tools

B. Information Flow

CAiCE files interface with MicroStation in two ways:

- The first method is through translation, whereby a CAiCE file is converted to a graphic file that is viewable by other programs and imbedded as graphical elements in the MicroStation file. Engineers and delineators export files back and forth between MicroStation and CAiCE. These translations result in inefficiencies and usually require editing of files.

- The other method is to use a program within CAiCE called Cadlinks. The Cadlinks utility provides a link from the CAiCE file to the MicroStation file and vice versa. The Cadlinks program allows the user to interactively view and access information in a CAiCE file as well as in MicroStation. This allows changes to be made to the original CAiCE file and viewable in the MicroStation file.

C. Hardware Configuration that Supports the Above Elements

Caltrans currently uses the CAiCE roadway design software as a desktop application running on Windows (2000 and XP) workstations deployed statewide. Approximately 80% of the desktops are three years old or older, running on Windows XP with the specifications as listed below. The other 20% of the desktops are running with the specifications as listed in Section IV.E.

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1. Hardware:

- HP xw4300 or equivalent:
 - Intel Pentium 4 630 (3.0 GHz) Single-Core CPU
 - 1 GB RAM
 - 80 GB Hard Drive (Partitioned 40GB C: Drive, 40GB D: Drive)
 - ATI FireGL V3100 128 MB Video Card
 - 10/100/1000 Broadcom NetXtreme Gigabit Network Interface
 - RealTek Sound Card

2. Operating System:

- Microsoft Windows XP Professional SP3

3. Installed Software:

- Microsoft Office Professional 2003
- Bentley MicroStation V8 2004
- Autodesk CAiCE Visual Transportation 10 SP6
- Microsoft Internet Explorer 6.0
- Novell Client 4.91 SP4
- Novell ZenWorks Client 7.0.1.4
- McAfee Enterprise Viruscan 8.5.0.781
- Hummingbird NFS Maestro Ver. 10
- Bentley InterPlot Client 8.5.2.89
- ESRI ArcGIS 9.3
- Transoft Solutions AutoTURN 6.0
- SignCAD 8.18
- Lotus Notes 6.5.4

4. Network:

- Novell Directory Services
- NFS by mapped drive.
- Windows Active Directory (CIFS/SMB)

Project files are stored by work locations on file servers located in the respective Districts and Headquarters (HQ). Access is through mapped network resources. Once projects have been constructed and accepted by Caltrans, files are archived for future reference. ▼

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