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Chapter 16 – Engineering Software

# 16.1 Software Utilized in the Electronic Development & Delivery of Plans

## 16.1.1 Overview

The Virginia Department of Transportation (VDOT) has established standards and procedures for the electronic development and delivery of Right of Way and Construction plans.

As the first step in this process, the VDOT CADD Committee adopted **MicroStation** as its standard graphics package. **MicroStation** is a drafting package developed, marketed and sold by Bentley Systems Inc. The committee adopted **GEOPAK**,by Bentley Systems Inc., as its standard road design system with modifications to meet VDOT standards, and **FALCON** as our file management system. Likewise, the Department has selected **GEOPAK Drainage** as the preferred design package for the production of ***Storm Sewer Profiles***, as outlined in Chapter 9 of the [VDOT CADD Manual](http://www.virginiadot.org/business/locdes/vdot_cadd_manual.asp).

The utilization of one standard drafting and design package provides standards for files that can be utilized by survey, designers, and construction. In addition, VDOT's project management, construction estimating and other computerized design systems for Traffic Engineering, Right of Way/Utilities, Structure and Bridge, Environmental Quality, and Materials are being interfaced to utilize the standard files created by the drafting and design programs.

The system operates on a Personal Computer (PC) running the latest Department version of the MicroSoft Windows operating system. Specifications for these computers are available.

The adoption of a standard drafting and design package allows the Department to utilize electronic data that has been developed by consultants to complete projects that might be recalled or re-assigned. This would also apply to those projects being designed by the Department and assigned to a consultant to be completed.

In addition, the Department has developed standards for the delivery of electronic files to the private sector contractors for design and construction bidding. This process utilizes VDOT Standards for design files and our file Management system.

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## 16.1.2 VDOT CADD Manual

The [VDOT CADD Manual](http://www.virginiadot.org/business/locdes/vdot_cadd_manual.asp) will include standards for all Preliminary Engineering Divisions including the addition of separate chapters for Structure and Bridge, Landscape and Hydraulics. Although the manual will be maintained by Location and Design Division, each of the Division's support groups will be responsible for setting and maintaining the standards for their respective division. The Location and Design CADD Support Group, as the manager of the Automated Engineering System, will provide support and guidance to other divisions as needed to insure that their standards blend with the AES system.

This manual will be revised by the respective support groups as needed to insure that it is up to date with VDOT standards.

The standards set forth in the [VDOT CADD Manual](http://www.virginiadot.org/business/locdes/vdot_cadd_manual.asp) were developed to be used in conjunction with and to meet the requirements of the policies and procedures as stated in the [VDOT Road Design Manual](http://www.virginiadot.org/business/locdes/rdmanual-index.asp), the [VDOT Drainage Manual](http://www.virginiadot.org/business/locdes/hydra-drainage-manual.asp), A Policy on Geometric Design of Highways and Streets by AASHTO, [Divisional Instructional and Information Memoranda](http://www.virginiadot.org/business/locdes/rd-ii-memoranda-index.asp), and other guidelines as set forth by the Virginia Department of Transportation.

## 16.1.3 Software Packages

The software packages used by the Virginia Department of Transportation for electronic plan design are as follows:

**MicroStation:**  A Computer Drafting software package. This product is marketed and distributed by Bentley Systems Inc. of Exton, Pennsylvania.

**GEOPAK:** An Engineering Road Design Software Package. This product is marketed and distributed by Bentley Systems Inc. of Exton, Pennsylvania.

**GEOPAK Drainage:** A module within the GEOPAK Design Software Package used for the design of roadway drainage systems and the production of storm sewer profiles. This product is marketed and distributed by Bentley Systems Inc. of Exton, Pennsylvania.

**Falcon:** An Oracle based file (document) management system. A TSA Advet product.

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# 16.2 Hydraulic/Hydrologic Engineering Software in Use by The Department

## 16.2.1 Introduction and Disclaimer

The following section provides a link to the current list of all hydrologic and hydraulic engineering software in use by the Department.

It should be noted that the Department does not necessarily prefer everything that is included on the list for a given application nor does it necessarily reject software that is not included. The list is intended only to represent such hydrologic and/or hydraulic engineering software that the Department either currently uses or has at least summarily tested. It serves as a recommendation, not a requirement. If there is any question as to the application of hydrologic and/or hydraulic engineering software either on Department projects or those projects that will ultimately come under the Department's jurisdiction, an inquiry should be made to the Department's Central Office Hydraulics Section (in Richmond) to:

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## 16.2.2 Link to Appendix 16A-1

Appendix 16A-1 Hydrologic/Hydraulic Engineering Microcomputer Software in Use by the Department (revised 5/2012)

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# 16.3 VDOT Web-Based Hydrologic/Hydraulic Applications

## 16.3.1 Introduction and Disclaimer

The following section provides a link to a list of all the current web-based hydrologic and hydraulic applications in use by the Department. A User’s Guide for all of the applications can be accessed on the Sign-In page.

VDOT assumes no responsibility for the use/misuse of these software products. The application of these software products is the sole responsibility of the user. There are no expressed or implied warranties. No user support for this software will be provided by VDOT.

Most of these web-based WINDOWS software modules were created to replace older DOS-based programs that will no longer function in the latest MICROSOFT WINDOWS environments. The Department longer supports or distributes these DOS-based programs.

## 16.3.2 Link to Appendix 16A-2

Appendix 16A-2 VDOT Web-Based Hydrologic/Hydraulic Applications (revised 5/2012)

## 16.3.2 Link to VDOT Web Applications Usage Agreement Form

The following is a link to the VDOT Web Applications Usage Agreement Form for External Customers (Consultant):

[VDOT Web Applications Usage Agreement Form](http://www.extranet.vdot.state.va.us/locdes/pdf/Hydraulics_Web_Form.pdf)

External Customers will be required to complete and submit this form, before being issued a sign-in ID and Password.

## 16.3.2 Link to VDOT Web Applications Sign-In Page

The following is a link to the VDOT Web Applications Sign-In Page for External Customers (Consultant):

[VDOT Web Applications Sign-In Page (External)](http://lndhydraulicsext.vdot.virginia.gov/SignIn.aspx)

VDOT Internal Customers can access the applications through this link:

[VDOT Web Applications Sign-In Page (Internal)](http://lndhydraulics/)

1. Chapter 16 added to Drainage Manual July 2012 [↑](#footnote-ref-1)