



DP VAULT 2014 IMPROVEMENTS

- ▲ Now supported on Windows and Mac platforms
- ▲ Interface enhanced to provide better user feedback with highlighted text and labeled tabs
- ▲ Keyboard shortcuts added for power users
- ▲ Program window resizes properly with Windows Snap
- ▲ Scalable graphics display clearly in any window size
- ▲ Riser designs with internal support now possible
- ▲ Improved buoyancy calculations - includes reduction for openings in slabs and walls
- ▲ Forced one-way design for top and bottom slabs is now possible
- ▲ User defined special live loads possible in addition to standard HS20, HS25 or Pedestrian
- ▲ Check for internal hydrostatic loading now available
- ▲ Includes hydrostatic loading check for base slab
- ▲ Additional code references and variable descriptions added

For additional information on **DP VAULT** or to place an order, please contact

Alaleh Tavakoli, PhD
Senior Project Engineer

607-352-1692
atavakoli@delta-eas.com

Dimitris Valioulis, EIT
Project Engineer

607-231-6643
dvalioulis@delta-eas.com

DP VAULT 2014

PRELIMINARY VAULT DESIGN AND MATERIALS ESTIMATING SOFTWARE

WHAT IS DP VAULT?

DP VAULT is a newly updated, unique software package developed and licensed by **Delta** that allows precast manufacturers to determine member thickness and reinforcing requirements for nearly any square or rectangular underground vault. **DP VAULT** runs as an independent application on Windows or Macintosh computers. Projects submitted to **Delta** through **DP VAULT** are expedited in our project development pipeline and are completed in three business days or less or the design is free of charge.

HOW DP VAULT WORKS

The powerful built-in design function in **DP VAULT** analyzes each structure based on a user defined set of conditions including live load, earth cover and water table depth. The user also identifies how the structure is to be built by selecting a combination of separate top slabs, monolithic top sections, riser sections, monolithic or integral base sections, and/or separate base slabs. Monolithic top section and bottom section walls are analyzed for bending moment using a unique algorithm that estimates plate coefficients based on the ratio of length to element height. Riser walls are analyzed using moment distribution. The program guides the user with regard to design adequacy through a series of red and green indicators. A percent field next to the red/green light shows how far over or under the current attribute is from the required value.

WHAT DP VAULT DELIVERS

DP VAULT output displays and prints total concrete quantity for each component in both cubic feet and cubic yards. Rebar quantities are displayed in pounds, both by component and by bar size. Component weights are also displayed. Once the structure is sold by the precast manufacturer, the design can be immediately transmitted to **Delta** for review and stamping by a licensed engineer. Detailed calculations sealed by a professional engineer (limited to certain states) can be requested as well.

DP VAULT INTERFACE

The screenshot displays the DP VAULT software interface. At the top, there are input fields for Project Name (Config F - 5 ft Fill), Structure ID (F 2), and Date (Jan 3, 2014). Below these are radio buttons for Top Slab (Separate, Monolithic, None), Middle Riser Section(s) (Single, Multiple, None), and Base Slab (Separate, Monolithic, None). A table of dimensions follows: Length (12.0 ft), Width (8.0 ft), Height (10.5 ft), Wall Thickness (10.0 in), Base Thickness (14.0 in), Cover Thickness (12.0 in), Earth Fill (5.0 ft), Water Table Depth (0.0 ft), and Design Load (HS-20). A 'Submit To Delta' button is present. Below this is a 'Project Information' section with checkboxes for various design options. A table of analysis results follows, showing 'Forces' (Flexure, Shear) and 'Serviceability' (Cracking, Spacing, Steel Stress, Steel Ratio, Minimum Steel) for different locations (Location 5, Location 6, Location 11, Location 12). The results are color-coded (green for 'Passed', red for 'Failed'). On the right, there are diagrams: a 'PLAN VIEW' showing 'TRANSVERSE BARS' and 'COV 11', and a 'SECTION VIEW' showing 'WALL THICKNESS', 'SLAB THICKNESS', and various locations (LOC11, LOC12, LOC3, LOC4, LOC5, LOC6, LOC19, LOC20, LOC19).

