VBent™

VIATHOR, INC.

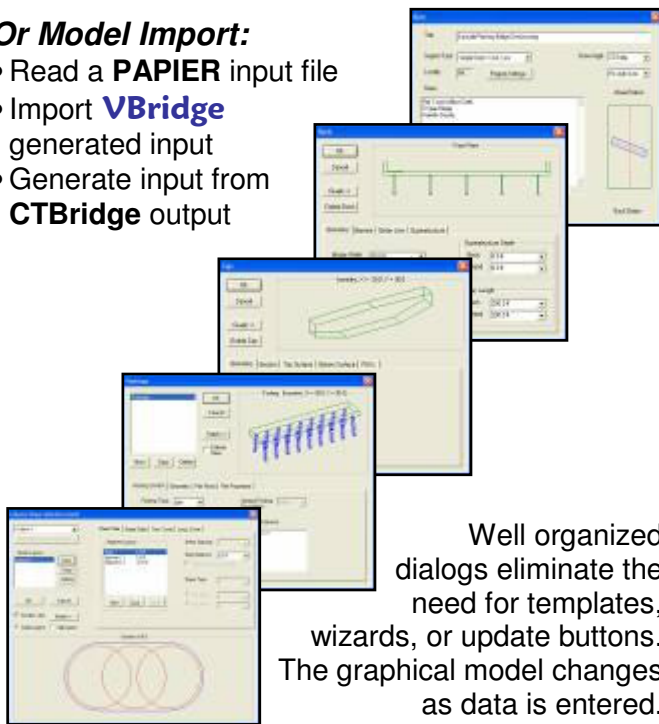## Pier / Bent Analysis Program

VBent is a powerful software tool created specifically to assist the bridge engineer in simplifying concrete substructure analysis and design. Confidently design pier caps, columns, footings, and spread or pile foundations faster than ever with this comprehensive, yet easy to use, program.

Model Generation:
Quickly build a pier model with **VBent's** state of the art Graphical User Interface.

Or Model Import:
- Read a **PAPIER** input file
- Import **VBridge** generated input
- Generate input from **CTBridge** output

Well organized dialogs eliminate the need for templates, wizards, or update buttons. The graphical model changes as data is entered.

Why **VBent**?
- One program does it all – no need for separate cap, column, and footing programs
- Developed, written, and supported by practicing professionally registered bridge engineers with over 35 years of experience
- Increase productivity by quickly designing piers to current LRFD or LFD AASHTO standards
- Easy to use – minimal effort to become a proficient user with no need for templates or wizards
- Interfaces with **PAPIER**, **VBridge** and **CTBridge**

The Industry's First –
Analyze Integral or Non-Integral Bents and Piers using one program.

Key Features:
- LRFD / LFD specifications and US / SI units
- Regional (PA, CA, US) specific program settings
- Easily apply self weight, live load, wind, stream flow, temperature, etc. with automatic loading algorithms
- Automatically generate Limit State load combinations
- Comprehensive pier types include single and multiple column piers, pier walls, part height walls, and integral bents
- Exhaustive search for critical load conditions and force combinations
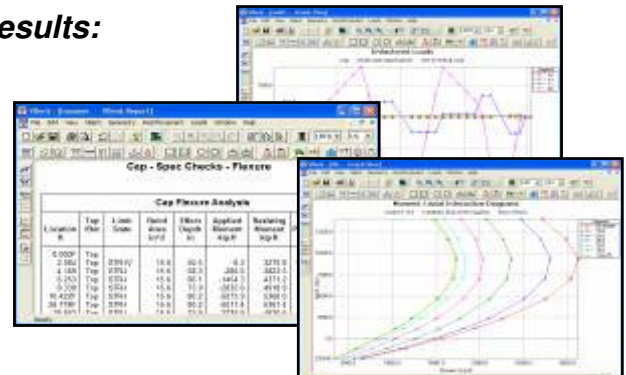
Results:
- Tabular and graphical results
- Easily navigate output with hyperlinks
- Custom report selection for cap, column and footing results

VBent ™

Program Features:

Easily Toggle Between
- LRFD or LFD specifications
- AASHTO or State (CA, PA,…) Default Settings
- US or SI units

Superstructure Support Conditions
- Integral Bent
- Continuous
- Simply Supported
- Simple Dead Load, Continuous Live Load

Pier Types
- Wall Piers
- Hammerhead Piers
- Single Column Bents
- Multi Column Bents
- Multi Column Bents on part height Pier Walls

Column Shapes
- Rectangular
- Circular
- Oblong
- Octagonal
- Hexagonal
- Non-prismatic, stepped, and mid-height offsets
- *And More*

Foundations
- Spread Footings
- Pile Footings (with pile layout generator)
- Columns on Drilled Shafts
- Combined Footings

Reinforcement
- Cap / Column / Footing
- Cap and Footing shear stirrups
- Copy reinforcement patterns to other columns or footings in pier
- Clear cover calculator
- Traveling section viewer

Modeling and Analysis
- Moment magnification
- Finite element model generation and solution
- Full bridge frame modeled for integral bents
- Fix or pin columns at bottom or top
- Unlimited structure size and loads
- Exhaustive search for critical load conditions and combinations
- Footing stability checks
- Intuitive user interface – no need for a wizard

Load Combinations
- Automatically generated LRFD limit states / LFD load groups
- Modifiable load factors
- Comprehensive program generated load cases / load maximizations
- Default and user defined load combinations

Live Loads
- Advanced live load algorithm to determine critical vehicle placement
- Longitudinal live load force generator for simply supported bridges
- Default Design Vehicles (HL93, HS20, etc.)
- Default Permit Vehicles (CA & PA)
- Default Fatigue Vehicle
- User defined live load vehicles
- User can limit number of loaded lanes
- Vehicle loads represented by uniform distribution or point loads

Specification Checks
- Service checks (crack control, fatigue)
- Flexure
- Shear
- Pile and spread footing checks

Cap Shapes
- Prismatic or tapered
- Rectangular, T-Beam, or Flanged

Loads
- Dead Load (superstructure, substructure)
- Additional Dead Load (wearing surface, utilities)
- Vehicular Live Load (design, permit, fatigue)
- Braking
- Centrifugal
- Pedestrian
- Water and Ice
- Wind (on structure, on live load, overturning)
- Temperature
- Shrinkage
- Prestress (from superstructure post tensioning)
- Earth Vertical
- Differential Settlement
- Earthquake
- User Loads (on cap, column, footing, bearings) can be point, distributed, or moments

Results
- Tabular results (user selected)
- Standard and detailed reports
- Easy to navigate Table of Contents
- User controlled output locations
- Modify face-of-support locations

System Requirements
- Windows XP, 2000, ME, 98, NT 4.0
- PC with Pentium Processor
- 256 MB RAM
- 30 MB free space on hard drive

Pricing
Individual and network licenses are available. Please contact Viathor for a complete pricing schedule.

About Us:

www.viathor.com

VIATHOR, INC. is staffed by professional engineers who possess a unique combination of bridge design and software development experience. Our engineers have been creating LRFD and LFD commercial bridge engineering software across the U.S. for more than 19 years, and have had instrumental roles in transitioning a number of state DOT's to LRFD compliance. In addition, our engineers have played active lead and support roles in designing and analyzing a wide variety of bridge structures for more than 20 years. *The result is high quality software that is easy for bridge engineers to use.*

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Made in the USA

The most user-friendly pier analysis program available!

FREE Demonstration Licenses Available!