Index Table

What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697



In this issue, we discuss the new modeling features, i.e., Coupled Vessel Impact Analysis (CVIA) and Extra Member Connectivity, of FB-MultiPier Version 5.0.

The articles Technical Corner and Discussions are open for input from all readers. If you have a topic that you think should be discussed, let us know. Did you create a great model with features that you want to share? Everyone is welcome to submit articles for possible inclusion in subsequent issues.

Please contact BSI at **BSI@ce.ufl.edu** with your ideas.

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: bsi.ce.ufl.edu Email: bsi@ce.ufl.edu Fax: (352) 392-3697

What's New at BSI

We are pleased to announce the release of FB-MultiPier v5.0. This program and other structural analysis software are available for download from the **BSI** website. The new version of FB-MultiPier contains fixes to the latest reported bugs and also includes a number of new features.

Technical Corner - New Features

Coupled Vessel Impact Analysis (CVIA)

An example is used to demonstrate the Coupled Vessel Impact Analysis (CVIA) module and the One Pier Two Span (OPTS) modeling technique. A six-span portion of a bridge is modeled using structural bridge plans. Pier 59 from the bridge plans (i.e., Pier 3 of the FB-MultiPier bridge model) is the pier of interest (i.e., the impacted pier).



Figure 1 A sketch of FB-MultiPier v5.0 bridge model.

Bridge Software Institute - Newsletter

spring **2016**

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status

Page 17 FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI

Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

The FB-MultiPier v5.0 finite element analysis (FEA) model of Pier 3 is shown in **Figure 2**. The following walkthrough explains how to use the CVIA module to facilitate streamlined vessel collision analysis of bridge-pier-soil systems (detailed information can be found in the Help Manual, Secs. 6.11, 6.12, and 6.15).



Figure 2 FB-MultiPier v5.0 FEA model of the impacted pier.

CVIA is performed by carrying out the following steps:

1. Select the "Dynamic" analysis option in the Analysis Type panel on the "Analysis" page (**Figure 3**).

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

| Problem | Pile Behavior | Soil Behavior | |
|---------------|--------------------------------|--------------------------------|---|
| Analysis | C Linear | | Print Control |
| AASHTO | Non Linear | Include Soil in Analysis | Pile Displacements |
| Dynamics | Pier Behavior | Tin Stiffness 0 kin/in/rad | Pile Element Forces |
| - Pier Data | Non Linear | np stanless | Pile Properties |
| Pile Cap | Section Properties | Interaction Diagram Phi Factor | Pier Displacements |
| - Pile | Transformed | User-defined phi | Pier Element Forces Disc Properties |
| Soil | └─ Section | | Soil Perponse Forcer |
| Pier | Iteration Control | Design Options | Soil Data per Laver |
| - X-Members | Iters. 70 | AASHTO Combinations | Soil Data per Pile Node |
| Load | Toler. 1 kips | | Soil Graph per Pile Node |
| Mass/Damper | Analysis Type | Stiffness Options | Unbalanced Forces |
| | Static | | 👿 Bridge Span Displacements |
| 🖃 Bridge Data | Oynamic | Stiffness Node | < |
| Bridge | | | |

Figure 3 Select Analysis Type.

2. On the "Dynamics" page, select the "Vessel Collision" dynamic loading type. Enter the Time Step and number of Time Steps. Note that Rayleigh Damping Factors can be calculated by the engineer, or alternatively, FB-MultiPier can be used to generate and import the damping parameters (see Sec. 2.4 of the Help Manual).

| Problem Analysis Type Dynamic Relaxation Loading Option Analysis Imme Step Integration Static Dead Load Pistic Dead Load Imme Step Integration Dynamics # Modes Imme Step Integration Static Dead Load Pistic Dead Load Imme Step Integration Pier Data Advanced Import Global Damping Ground Acceleration Pile Cap Mass Stiffness Pier 0.15548: 0.014491 Pier Average Acceleration Soil 0.15548: 0.014491 Acceleration = Scale Factor * g * Time Function Mass/Damper Wilson Theta Damping Ratio Imme Step 0.0025 Sec Imme Step 0.0025 | Global Data | Dynamics | |
|---|---|---|--|
| - Bridge # Steps 000 Soil Mass | - Problem - Analysis - AASHTO - Dynamics - Pier Data - Pile Cap - Pile - Soil - Pier - X-Members - Load - Springs - Mass/Damper - Retained Soil - Bridge Data - Bridge | Analysis Type Time Step Integration Advanced Time Stepping Parameters Average Acceleration Unicent Acceleration Wilson Theta Time Step 0.0025 sec # Steps 000 | Dynamic Relaxation Loading Option Image: Static Dead Load Price Control (Load vs. Time) Global Damping Import Image: Damping Import Rayleigh Damping Factors Ground Acceleration Mass Stiffness Pier 0.15548: 0.014491 Soil 0.15548: 0.014491 Acceleration = Scale Factor * g * Time Function Scale Factor * g * Time Function Damping Ratio Import Import |

Figure 4 Select the Vessel Collision option on the "Dynamics" page.

What's New at BSI Page 2

FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

3. Select "Pier #3" from the toolbar and navigate to the "Load" page (**Figure 5**) to apply the dynamic vessel collision load.

| 🖃 Global Data | Load | | | | | | |
|-----------------|------|--------|-------------------------|---------|----------------|----------|------------------|
| Apalysis | | | Load Case | No | ode Applied | | Node # |
| AASHTO | Сору | Load C | ase 1 | Self \ | Weight | ^ Table | 0 |
| Dynamics | Add | | | S Beari | ing 1L | Add | Distributed Loa |
| Pushover | - Au | | | S Beari | ing 2L | - du | |
| Pier Data | Del | | | S Beari | ing 3L | - Del | Vessel Collision |
| Pile Cap | | Pre | Load Thermal Load | Prescr | ibed Displacem | ent B.C. | |
| Soil | | 0 | Xp Load, kips | 1 | Self Weight | Factor | |
| X-Members | | 0 | Yp Load, kips | 1 | Buoyancy F | actor | |
| Load Springs | | 0 | Zp Load, kips | | | | |
| Mass/Damper | | 0 | Moment About Xp, kip-ft | | | | |
| Retained Soil | | 0 | Moment About Yp, kip-ft | | | | |
| Bridge Data | | 0 | Moment About Zp, kip-ft | | | | |

Figure 5 "Vessel Collision" button on the "Load" Page.

4. Open the "Vessel Collision" dialog by clicking on the "Vessel Collision" button.

| Vessel Weight | 0 | kins | | | v | essel B | ow Force | -Deforma | tion Rel | ationship |) |
|-------------------------|--------------|--------------------------------------|----------|---------|----------|-----------|-----------|------------|------------|------------|----------|
| · | | | | 1600 | | | | | | | |
| Vessel X Velocity | 0 | ft/sec | | 1400 | | Γ | | | | | _ |
| Vessel Y Velocity | 0 | ft/sec | G | 1200 | | / | | | | | |
| mpact Conditions | | | ie (kip | 800 | | | | | | | _ |
| Collision Type | Collision | n on Flat Surface 🔹 🔻 | For | 600 | \vdash | | | | | | _ |
| Collision Width | 0 | ft | | 400 | / | | | | | | |
| Yield Load | 0 | kips | | 200 | / | 2.00 | 4.00 | 6.00 | 8.00 | 10.00 | 12.00 |
| Crush Depth | 0 | in | | | | 2.00 | De | formation | (in) | 10.00 | 12.00 |
| | |] | W | ide Vie | w | | | | | Loa | ding Cun |
| | Edit l | oading and Unloading Curves | | | | | | | | | |
| Notes | | | | | | | | | | | |
| L. Vessel Collision Loa | ad can be ap | plied only to a single node in the r | nodel (b | earing | nodes | are not p | permitted | to be used | as the imp | pact node) | |

Figure 6 "Vessel Collision" dialog.



What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

5. Enter the vessel weight, velocity, and collision type (**Figure 7**). To model the stiffness of the vessel bow, a force-deformation curve can be automatically created (or user-defined, if so desired).



Figure 7 Definition of impact conditions.

Note that the barge bow force versus deformation curve is calculated in the "Vessel Collision" dialog, in accordance with **Figure 8**. Additionally, note that the vessel collision impact-load history is generated automatically during CVIA analysis. Alternatively stated, bridge response is calculated simultaneous to calculation of the impact-load history. In this way, computed pier response is coupled to loading, crushing, unloading, and reloading of the vessel bow. Please refer to Step 8 for instructions on accessing the computed impact-load history.

Index Table

What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697



Figure 8 Flow chart with empirical equations for calculating barge bow force-deformation (after Getter and Consolazio 2011).

6. From the "Load" page, select the impact location (node 12) on Pier 3, using "3D View" and the "Load" page, and toggle the "S" to "D" to signify application of dynamic loading at node 12.

Issue #18



Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI

Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

Figure 9 Application of vessel collision load at node 12.

7. The model input necessary to make use of the CVIA feature is now complete, and the dynamic vessel collision analysis is now ready to be carried out, by clicking the "Lightning Bolt" icon.

8. The vessel impact-load history is generated automatically by FB-MultiPier during the analysis and stored in the .VES file (**Figure 10**). This file (the .VES file) is saved in the same folder as the input file. The full impact-load history, excerpted from the .VES file generated as part of the current example, is shown in **Figure 11**.

```
COUPLED VESSEL IMPACT ANALYSIS RESULTS
      IMPACTING VESSEL CHARACTERISTICS
Vessel Weight = 11430.0000 kips
X-Velocity = 10.0000 ft/sec
       =
Y-Velocity
          0.0000 ft/sec
 IMPACT FORCE-HISTORY
 TIME IMPACT FORCE CRUSH DEPTH
         kips
     sec
                       in
0.2500000E-02 0.4105445E+03 0.2986457E+00
0.5000000E-02 0.8195913E+03 0.5962017E+00
0.7500000E-02 0.1225229E+04 0.8912778E+00
0.1000000E-01 0.1626717E+04 0.1183335E+01
0.1250000E-01 0.2023399E+04 0.1471896E+01
0.1500000E-01 0.2414660E+04 0.1756514E+01
```

Index Table

What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status

Page 17 FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697



Figure 11 Vessel collision impact-load history.

The impacted pier considered above, pier 3 is now used to create an OPTS model (One Pier Two Span model). The OPTS modeling technique increases computational efficiency by transforming the bridge model (multiple-pier, multiple-span model) to an equivalent model with one pier and two spans. Concentrated spring stiffnesses and masses, connected at the ends of the two retained spans, are used to represent the stiffness and inertial resistance of the multiple-pier, multiple-span bridge model. The OPTS modeling technique substantially decreases computational time while still producing accurate results. A detailed example for an OPTS model can be found in the Help Manual Secs. 6.13, 6.14, and 6.15.

1. Open the full bridge model in FB-MultiPier and navigate to the "Problem" page (**Figure 12**).

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI

Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697



Figure 12 Problem Type Page.

2. On the "Problem" page, click on the "One Pier Two Span" problem type (Figure 13).

| Global Data | Problem | | | |
|--|---|--|-----------------------------|--|
| - Problem - Analysis - AASHTO - Dynamics - Pushover - Pier Data - Pile Cap - Pile | Problem Type General Pier Pile and Cap Only Single Pile High Mast Light/Sign Retaining Wall Sound Wall | Project Data Client FDOT Project Name SR20 / Apala Project Mana | e achicola River Iger | |
| Soil Pier X-Members Load Springs | Stiffness Pile Bent Column Analysis Bridge (Multiple Piers) One Pier Two Span | Date 12 / 2012 Project Descr | Computed By | |
| Mass/Damper Retained Soil Bridge Data Bridge Span Load | | widel for v | essei impact | |

Figure 13 Select the "One Pier Two Span" (OPTS) Problem Type.

Page 11

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status

Page 17 FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

3. When the "OPTS Conversion" dialog opens, select Pier 3 and click the "OK" button (**Figure 14**).

| OPTS Conversion | × |
|---|--|
| Pier List Pier 2 Pier 3 Pier 4 Pier 5 Pier 6 | Select the pier to be used in forming an 'One Pier Two Span' (OPTS) model. Piers with only one connecting span are not eligible for conversion to an OPTS model. |
| | OK Cancel |

Figure 14 OPTS Conversion dialog.

4. As part of the OPTS model formation, a special analysis is automatically carried out to calculate the span end concentrated stiffness and mass values. The resulting OPTS model is shown in **Figure 15**.



Figure 15 Automatic generation of an OPTS model (from the FB-MultiPier bridge model).



What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

5. For the OPTS model, the "Bridge" page has an additional option where engineers can modify the stiffness and mass data at the model extents, if so desired. Such modifications are made by navigating to the "Bridge" page, and then clicking the "Edit" button to open the "OPTS Data" dialog. For more information on how to calculate the spring stiffnesses and mass values please refer to Help Manual Sec. 6.14.



Figure 16 "OPTS Data" dialog.

6. The OPTS model is now fully prepared for analysis.



What's New at BSI Page 2

FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

Computational Robustness of the OPTS Modeling Approach

On an ordinary desktop PC*, the computational time required for carrying out CVIA using the full bridge model is 40 min. In contrast, when using the same ordinary desktop PC* to analyze the CVIA-OPTS model, only 30 sec. are required. **Figure 17** shows the resultant shear force in global X-direction at the base (Node 1 in **Figure 15**) of the impacted column. The vessel collision impact-load history (**Figure 11**) shows two slightly different stiffnesses during unloading from 1.34 sec. to 1.78 sec. Similar behavior can be seen for resultant shear force at Node 1 in global X-direction (**Figure 17**).

* The analysis was performed using Windows 7[©] desktop PC with specification of 16 GB of RAM and use of an Intel® Core[™] i7 3.4 GHz processor.



Figure 17 Resultant shear force in global X-direction at the base of the impacted column (Node 1).

The maximum Demand/Capacity (D/C) ratio occurs at Node 148 (refer to **Figure 15**). In **Figs. 18** to **21**, displacements and forces at Node 148 are compared between the full- bridge and OPTS models. While the displacements are generally conservative among the OPTS model results, computed time-histories of axial force, shear force, and moment show good agreement between both models.

Index Table

What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697



Figure 18 Global X-Displacement at Node 148.



Figure 19 Resultant axial force at Node 148.



What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697









Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI

Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

Extra Member Connectivity

Element end conditions for extra members have been enhanced in FB-MultiPier v5.0 such that end-fixity can be specified by the engineer. This enhancement allows for either end or both ends of a given extra member to be "pinned" (no moment transfer) or "fixed". For example, consider the extra member element modeled as a strut between column nodes 86 and 105 (**Figure 22**). From the "Extra Members" page (**Figure 23**) in the FB-MultiPier user interface (UI), an "End Condition" drop-down menu allows for the assignment of any one of several end-fixity conditions.



Figure 22 General Pier model with Extra Member (highlighted).

| 👽 Model Data | | |
|-----------------------------|--|--|
| Global Data | X-Members | |
| Problem Analysis | Edit Cross Sections Add Element Delete Element Bernent 1 | |
| Dynamics Pushover | Element I-Node J-Node Cross Section End Condition 1 86 105 Extra 1 - Custom I-Node Pin . | |
| □- Pier Data Pile Cap | Fix-Fix · · · · · · · · · · · · · · · · · · · | |
| Pile Soil | Pin-Pin · · · · · · · · · · · · · · · · · · · | |
| ···· Pier ···· X-Members | | |
| Load Springs | Notes | |
| Retained Soil | The Section Description is currently 'Full Cross Section', and must match the Section Description set on the Pier Page. | |
| Bridge Span Load | 2. Extra members cannot connect two nodes along the same pile. | |
| | | |
| | | |

Figure 23 Selection of "End Condition" on the "Extra Members" page.

Page 17

spring **2016**

Index Table

What's New at BSI Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

Contact BSI Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

BSI Program Status



FB-MultiPier V5.0 <u>Download a FREE demo today!</u>

Released: March 31, 2016 - Continuing Development - Technical Support Available

FB-MultiPier allows for the modeling of a bridge that consists of multiple piers that are connected with bridge spans. In addition to the multiple load cases and the AASHTO coefficients that are available in FB-MultiPier, the program is also capable of performing dynamic analysis for the bridge. For more information about FB-MultiPier, click <u>here</u>.

FB-Deep V2.04 Download a FREE demo today!

Released: May 28, 2012 - Continuing Development - Technical Support Available

The FB-Deep computer program is a Windows based program used to estimate the static axial capacity of drilled shafts and driven piles. The methodology is based upon Federal Highway Administration (FHWA) reports. FB-Deep guides the user through pile and shaft materials data, shape and dimensional inputs, soil properties, and boring log info. FB-Deep presents the data analysis in both clear graphical and text form. For more information about FB-Deep, click <u>here</u>.



<u>Atlas V6.04</u>

Released: December 8, 2011 - Limited Web Support Available

Atlas is a finite element analysis program that is used for the design/ analysis of cable supported traffic signal systems. The Atlas program models dual cable supported systems including single-point or twopoint attachments and suspended box systems. For more information about Atlas, click <u>here</u>.

Index Table

What's New at BSI

Page 2 FB-MultiPier v5.0

Technical Corner Page 2

Program Status Page 17

FB-MultiPier v5.0 FB-Deep v2.04 Atlas v6.04

For Technical Support Page 18

<u>Contact BSI</u>

Page 18

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611

> Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

For Technical Support

Technical support questions. When requesting technical support for any BSI software, it is recommended to email the input file (.in file for FB-MultiPier and Atlas or .spc file for FB-Deep) to the BSI address <u>bsi@ce.ufl.edu</u> along with a brief explanation and any supporting documentation of the issue. This will allow the support staff to provide the users prompt technical support.

Identifying the program version. It is important that users have the current most upto-date version of the BSI software. Thus we recommend that users regularly visit the home page of the **BSI** website. To identify the current version of program installed on your computer, open the program and go to Help > About to see the program version number.

Contact BSI

If you need to contact BSI for any reason you can use any of the methods below:

Cary Peterson Online: <u>bsi.ce.ufl.edu</u> Email: bsi@ce.ufl.edu Fax: (352) 392-3697

Mailing Address:

Bridge Software Institute University of Florida PO Box 116580 Gainesville, FL 32611