PENNDOT e-Notification

Bureau of Information Systems
Application Development Division

PAPIER No. 013 August 7, 2006	**Release of Version 1.3.0.0**

The Department's Pennsylvania Pier Analysis (PAPIER) program has been revised as described on the attached "Summary of August 2006 Revisions – Version 1.3.0.0".

The new program has been placed on PENNDOT servers for use by the Districts. Consultants and others, who have a current license agreement for PAPIER **Version 1.2**, can obtain the updated version for an **update fee of $500 for private organizations and $50 for governmental agencies**. Updates for PAPIER **Version 1.1 or earlier** will require an **update fee of $1,000 for private organizations and $100 for governmental agencies**. The Software Update Request form and Request for PENNDOT's Engineering Software License form can be downloaded from the web site at http://penndot.engrprograms.com.

Please direct any questions concerning the above to:

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Attachment

SUMMARY OF AUGUST 2006 REVISIONS — VERSION 1.3.0.0

Below is the list of corrections made to the PAPIER computer program and incorporated into Version 1.3.0.0.

1) When computing the magnitude of the buoyancy force caused by the column being submerged, the program was using the column cross-section at the bottom (top of footing.) Hence, the buoyancy force was not completely accurate for columns that were non-prismatic or had a change in cross-section in between the bottom of the column and the water level. [IR #26]

2) The program was allowing user specified forces via the UCP command for wall type piers. Since a wall pier is not considered to have a cap, the loads were never applied, yet F.E. load cases were generated for them and a cryptic error message was reported before the program terminated. The program now reports a more pertinent error message for this case. [IR #188]

3) Update Papier to follow the new LRFD crack control requirements as described in AASHTO 2003 AGENDA ITEM #19D. [IR #194]

4) Cleaned up code for a previously removed service limit state that was introduced for the permit vehicle for an LFD analysis. Other changes were made to keep the user from modifying load factors for this defunct combination. [IR #195]

5) Restriction that Special Live Load must be 'DESIGN' Type when 'SLL Only' is specified in the LLC Command is now being enforced. [IR #176]

6) FE Engine Maintenance. Revised several small bugs in the FE engine. Very specific and unusual input description was needed to trigger bug, which would make only small differences in the results. [IR #204]

7) Inconsistent memory manager behavior. Fixed initialization code so that all allocated data is initialized before it is used. No known bugs due to previous behavior reported, but changed code will prevent possible future problems. [IR #205]

8) Dump File Maintenance: The dump line counter was off for a single caisson footing. An error in logic was preventing the report of some shaft ice information. The header for printing ice load cases had parallel and normal switched. The table of contents line count was one line off. The reporting of handles in the dump file was eliminated since users do not need this information. [IR #206]

9) Improper load case for cap buoyancy load. In rare cases, it was possible for a submerged pier cap to be loaded at the above high water level. [IR #208]

10) Ice loading data not properly initialized. This could potentially lead to errors. [IR #209]

11) A tolerance was added when computing the number of live load steps to be applied. In some cases, it was possible for the live load to be applied in one less step than specified. [IR #210]

12) When computing the wind on live pressure in the longitudinal direction under simple dead, continuous live or continuous conditions, the fixity for bearing line 1 was checked twice rather than the fixity for line 1 and 2. Also, for a continuous support type, the wind on live longitudinal force should only be applied if at least one bearing is fixed. However, when the line is expansion, the back frame portion of the load is not included but the ahead frame portion is included due to some logic lapses. The code has been clarified and is consistent with the way wind on superstructure is applied. [IR #211]

13) There was a lapse in the logic when dealing with user defined water load on circular column shapes. The lapse involved a special case – it is unknown how often this occurs in reality. If the longitudinal pressure was overridden, and the program was left to calculate the transverse pressure, the transverse pressure was undefined. [IR #212]

14) Wearing surface loads may not be considered in rare cases. When determining bearing load applicability, wearing surface loads were not considered. This would only be a problem if the wearing surface load is the only load applied that acts on the bearings. [IR #213]

15) The minimum pedestrian sidewalk width was 2 ft for US units and 400 mm for SI units. 400 mm corresponds to 15 in and is inconsistent. The SI value has been changed to 600 mm. [IR #214]

16) The value for GRAVITY had the SI/US units switched. Previously, a gravity value of 9.81456 was used for SI units, instead of 9.807. The only place where this value is used is computing the centrifugal force for an LRFD analysis. [IR #215]

17) An error computing the left overhang distance to the first bearing was fixed. This error occurred for the simple dead, continuous live support condition. The program was mistakenly using the back bearing line distance for the ahead bearing line. The error should be small unless there is a high skew. [IR #216]

18) If the cap geometry was such that the cap width left no room for reinforcement, a cryptic program error message was reported to the user. This message has been replaced with a more user-friendly data error. [IR #217]

19) The program was computing incorrect torsional stiffness for rectangular section with semi-circular ends if the rectangular section length was very small. PAPIER computed the torsional stiffness based only on the rectangular properties. Now the torsional stiffness is computed for the entire section. [IR #218]