MIDAS
Release Note

Civil 2006 *Release No. 2*

- **Fixed Bugs**

  I. Pre & Post processor
  II. Analysis Part

- **Improvements in Analysis Functionalities**

Fixed Bugs

I. Pre & Post processor

1. An error that a pre-defined Box shape section was incorrectly imported into “Fiber Division of Section” has been corrected.
2. An error that “Avg. Nodal” results of plate/solid elements were incorrectly produced with respect to UCS has been corrected.
3. When 4 or more piers were entered and the initial ages of the piers were all differently entered in FCM Wizard, construction stages were not completely composed. This error has been corrected for 4 or 5 pier cases.
4. Shear coefficients Qyb and Qzb of “PSC Value Section” were incorrectly calculated, which caused incorrect shear stresses at centroid.
   - Qyb and Qzb can now be correctly calculated based on Z2 (centroid).
5. For a section created from “Transverse Analysis Model Wizard”, Notational Size of Member “h” was not calculated correctly by “Property > Change Element Dependent Material Property”. This error has now been corrected.
6. When “z Vector” was specified and “Solid Face Polygon Select” Mode was selected in “Local Direction Force Sum”, Text Output was incorrect. This error has now been corrected.
7. An error that the sections with Section ID of five figures or more were improperly sorted in the “Properties” dialog and the Names were incorrectly displayed has been corrected.
8. Plastic modulus of a Value type section was incorrectly calculated. It can now be correctly calculated based on the entered section dimensions.
9. The data input in the “Prescribed Temperature” dialog box were incorrectly displayed in the Works Tree. This error has been corrected.
10. When “Plane Strain (Edge)” was selected for the Element Type in the “Pressure Load” dialog box, P1 and P2 shown in the guide diagram were transposed, which is incorrect. The incorrect guide diagram has now been modified.
11. An error in the “Transverse Analysis Model Wizard” has been corrected.
    - When the web was perpendicular to the top slab in the “Transverse Analysis Model Wizard”, an element was duplicated at the intersection between the web and the top slab.
12. When a User type section was defined from the Composite Section tab, the section shape was incorrectly displayed. This error has been fixed.
13. In Tendon Arrangement Table, the number of tendons was displayed as 0, which is incorrect. This error has now been fixed.
14. In the analysis in which time dependent material properties were not considered, PSC Beam Stress results at PostCS due to Creep, Shrinkage and Tendon load cases were incorrect. The error has been fixed
    - When time dependent material properties were not used, the corresponding results should have been 0.
15. When the model saved in V6.7.1, with "Check to Reflect Initial Forces into Geometric Stiffness" option of “Initial Force Control Data” checked on, was imported

into V7.0.1, the initial force was not reflected in buckling analysis as if the option was checked off. The error has been fixed.

16. When a Tapered Size-J section was defined importing PSC-nCELL2 type section with “JI” Joint option checked on, "JI" Joint option became checked off automatically. This error has been fixed.

    - The problem arouse only when Symmetry was checked on and JO = Off, JI = On or JO = On, JI = Off.

II. Analysis Part

1. When Pretension Type tendon was used and “x Axis Direction” of the tendon was opposite to the “Local Direction” of the beam element to be assigned with the tendon, the prestress loss due to elastic deformation was incorrectly calculated. Also when the pre-tensioned members were not numbered consecutively, the prestress loss due to elastic deformation was incorrectly calculated. These errors have now been corrected.
2. An error in the calculation of Anchorage Slip Loss of Tendon has been corrected.

    - When the friction loss was constant at the anchorage zone, the anchorage slip loss was incorrectly calculated.

3. An error in the geometric nonlinear analysis of Tension-only Truss elements has been corrected.

    - When Pretension Force was applied to Tension-only Truss elements and the geometric nonlinear analysis was performed, some Tension-only Truss elements were taking small compression.

4. When the construction stage analysis using composite sections and the Beam Section Temperature analysis were performed simultaneously, the program abnormally terminated. This error has now been corrected.
5. An error that the stresses of plate elements due to temperature loads were incorrectly calculated has been corrected.

    - For 4-node and 3-node plate elements with Drilling DOF, in-plane moment for temperature loads was ignored. This error has now been corrected.

6. When Unbonded Type Tendon was used and construction stages were not defined, general Beam Stress was incorrectly calculated. The error has now been corrected.

    - In the old version, for the unbonded type tendon without construction stages, gross section was used in the calculation of general beam stress, which is incorrect. In the new version, it has now been fixed to use the net section (concrete gross sectional area – duct area).

7. The error encountered when both ends of General Link were constrained has been fixed.

    - When both ends of General Link were constrained, analytical error was encountered while performing eigenvalue analysis using Strain Energy Proportional Damping or time history analysis.

Improvements in Analysis Functionalities

Some analysis functions have been improved in Civil 2006 V.7.0.1 Release No. 2. The improvements may bring about the discrepancies between the result from the older version and the result from the updated version. The discrepancies can be mistaken for bugs. This report presents the anticipated differences between the old version and the new version so as to assure the reliability of the program and to prevent the differences from being considered as bugs.

1. The method of calculating External Type cable forces has been improved

   - In the old release, when the Pretension was entered as External Type, cable forces of cable elements were calculated as in truss elements (an identical force was applied at each end of the element). However, in the new release, cable forces are calculated considering that the internal forces at each end of the cable element are different. With this improvement, there will be a difference of around 1~2% between the two releases. In addition, as the analysis is performed considering the cable stiffness, the number of iterations will increase. Accordingly, the convergence can be poorer.

2. The convergence of cable elements for linear analysis has been improved

   - In the old release, while carrying out the linear analysis for cable elements (equivalent truss elements), the results sometimes could not converge when the initial cable force was very small. In the new release, the convergence has been improved. This improvement can cause a slight difference between the old and new results, but as long as the convergence tolerance is small enough, the results will be almost the same.

3. The method of calculating Tendon Slip Loss has been improved

   - In the case of transverse tendon whose length is relatively short, the anchorage slip loss is relatively large and sometimes spreads over the center of the tendon. The tendon slip loss calculation for this case has been improved. When both ends are anchored and the anchorage slip losses at both ends spread over the center of the tendon, the result from the new version can be different from the result from the old version (In general, effective prestress in the new version will be smaller than that in the old version). Also in the event of one-end anchorage, the result from the new version can be different from the result from the old version though it is not very common.

4. Section to be used to calculate the self-weight and the section stiffness of the prestressed beam has been changed

   - In the old version, for the case prestress load was not applied and construction stage was not defined, gross section was used for calculating the self-weight of the prestressed beam. From the new version, instead of the gross section, net section will be used.

   - In the old version, for the case when unbonded type tendon was used and construction stage was defined, transformed section was used to compute the section stiffness of the prestressed beam. In the new version, net section will be used instead.