

SAP2000 Version 11.0.0

Release Date: 2007-01-25

PLEASE READ THIS FILE!

It contains important information that is more current than what is in the Manuals.

Contents

1. Installation Instructions for SAP2000 Version 11.0.0
2. File Compatibility
3. Updating older Version 10
4. New Features in SAP2000 Version 11
5. Changes in Analysis Results from Version 10

1. Installation Instructions for SAP2000 Version 11.0.0

The installation instructions are available in three places:

- The “SAP2000 Installation Card” link on the SAP2000 CD browser.
- A printed document included with the program package.
- In the file *SAP_Install_Instructions.pdf* in the root folder of the CD.

The instructions include information about the software protection system used and installation options and instructions. You can choose between a Standalone or Network installation.

For new Network installations, see the *System Administrator's Help* for more detailed information about the License Manager and the License Manager Administration program “WlmAdmin.exe”.

This installation contains Sentinel RMS License Manager 8.0.5. You **MUST** install this version to serve network licenses for SAP2000 Version 11. If you are currently running an earlier version of SentinelLM then it must be uninstalled prior to installing this version. **IMPORTANT!** All commuter licenses should be checked in before uninstalling the old version. Note that Sentinel RMS License Manager 8.0.5 will recognize older licenses for Computer and Structures products. Please refer to the SAP2000 Installation Card or the *SAP_Install_Instructions* file for information on how to do this.

For Network installations you can create a text file, *Level.txt*, and put the Program Level in it. Save this file to the License Manager sub-folder of the SAP2000 folder. This file will cause the program to find the license faster. Note that this file will be included when a new license is sent.

If you experience problems with the license please refer to the appropriate “*License Trouble Shooting Guide...*” located in the SAP2000 folder.

2. File Compatibility

SAP2000 Version 11 can open model files (*.SDB) from older versions of SAP2000, as well as import older SAP2000 database files (*.S2K, *.\$2K, *.XLS, and *.MDB.) Note that once you save or run these models in Version 11, they will not be usable by older versions of the program, so you may want to save them under a new name after opening or importing them in Version 11.

3. Updating older Version 10

SAP2000 Version 11.0.0 is a full installation and can coexist with older versions of SAP2000.

4. New Features in SAP2000 Version 11

SAP2000 Version 11.0.0 is a new version, and is a direct upgrade from Version 10.1.2. New features include the following:

GUI

- OpenGL graphics added to main model window for fast drawing and display
- Drawing significantly improved with several intelligent snaps and constraints
- On-the-fly working plane added for modeling at arbitrary orientations
- New selection methods added, including parallel to object, polygon fence and poly-line intersection, and by supports and constraints
- Selection by any combination of input or output values using database tables
- Right button information forms now allow editing of all items
- Forms requiring previously defined items now allow adding/editing of those items
- Materials redone to improve usability
- Frame Sections redone to improve usability
- User notes can be added to all properties
- Fireproofing assignment added to frame objects
- Automated undeformed geometry modifications using displaced shape
- Database table display improved, including filters and selection
- Help topics added to some forms

External Interfacing (needs API add on; works only with Advanced)

- SAP2000 API now available for custom programming and interfacing to other programs

New Object Types

- Area objects can now be general polygons with more than 4 nodes
- Area object meshing improved to account for general polygons

- Catenary cable object/element added

New Automated Lateral Loads

- Automatic generation of lateral Notional loads for design
- IBC 2006 Seismic load and response spectrum function added
- IBC 2006 Wind load added

Analytical Model

- Spring assignments to Line, Area and Solid objects can now be distributed, nonlinear links
- Null property assignments to Line and Area and Solid objects are now allowed
- Analysis model (element level) displays added, including loads and assignments
- Analysis model information available for any element with right-button click

Bridge Modeler Add-On (works with Advanced and Plus)

- Bridge Wizard enhanced
- Easier variable-section assignment for bridges
- Advanced concrete box girder bridge section added
- I and U precast bridge girder sections added
- Specify prestress tendon jacking using force or displacement
- AASHTO and NCHRP Project 20-07 response spectrum functions added
- Caltrans Section Designer sections added to database tables

Analysis

- New deformation loads added to Frame and Cable elements
- Automatic iteration for target forces in Frame and Cable element
- 64 bit support added for analysis engine

Design

- ACI 2005/IBC 2006 concrete design added
- AISC 2005/IBC 2006 steel design added
- Canadian 2004 concrete design added

Documentation

- Help updated
- Analysis manual updated
- Tutorials updated
- Design manuals are being updated
- Verification Manual updated
- Automated lateral loads manual is being added
- “Watch & Learn Movies” updated
- A – Z examples updated
- API manual added

5. Changes in Analysis Results from Version 10

Several changes have been made to the analysis engine to improve the convergence behavior for nonlinear static and time-history analysis. These changes may cause some analysis results to change from Version 10 to Version 11. These are discussed in the *CSI Analysis Reference Manual* that ships with Version 11 (in PDF file format), and are briefly described below:

- Negative slopes of Frame hinges are now limited by the elastic stiffness of the elements. The purpose of this is to decrease convergence difficulties that can result from elastic snap-back that is caused by rapid strength loss. Nonlinear analysis results may change significantly from Version 10 for models with frame hinges that exhibit strength loss. If you want to retain the sharp drop-off behavior, you can mesh your Frame objects to use smaller, stiffer elements. However, we would like to encourage you to use realistic negative slopes whenever possible.
- Automated displacement control has been added to the conjugate displacement method for nonlinear static pushover analysis. This may cause some nonlinear static analysis results to change slightly due to following a different iteration path.
- An automated line-search algorithm has been added to the iteration strategy for nonlinear direct-integration time-history analysis. This may cause some analysis results to change slightly due to following a different iteration path.