



# ACE Structural Engineering Applications LLC

## ACE FrameWorks Utilities

### ACE Convert SDNF v3 File to SDNF v2 File Documentation

Mar 15, 2013

#### ACE Convert SDNF v3 File to SDNF v2 File (ACE\_S32.MA)

(Versions - FWP 3.1.x.x/3.2.x.x rel 2.0.1 & FWP 7.0.x.x rel 7.0.1 & FWP 7.1/7.2/7.3 rel 6.0.1 & FWP 8.0.x.x rel 8.0.1 & FWP 9.0.x.x rel 9.0.1 & FWP 10.0.x.x rel 10.0.1 & FWP 11.0.x.x rel 11.0.1 & FWP 12.0.x.x rel 12.0.1)

The convert steel detailing neutral file (SDNF) from version 3 to version 2 application can be utilized to read a SDNF file (version 3) and create a SDNF version 2 file. Intergraph's FrameWorks can produce version 3 or version 2 SDNF files. This application was written to aid the situation where you receive a version 3 SDNF file and wish to import the basic SDNF components (thereby throwing away all SDNF version 3 extensions assuming they exist) into FWP utilizing the ACE FrameWorks Utility – SDNF Version 2 Import. SDNF version 3 is a non-backward-compatible file format extension of the SDNF version 2 file format. Both file formats were developed and are maintained by Intergraph. SDNF version 3 extensions include: linear member fabricator data & extended attribute data; round (circular plates) solids; complex (line-arc formed plates) solids; solid member fabricator data & extended attribute data; holes in solids and round-tripping capabilities. All SDNF version V3 extensions are removed and the resulting SDNF file is a version 2 SDNF file. Reference the ACED\_SNF documentation for a complete description of the SDNF version V2 format and SDNF Import capability provided by the ACE FrameWorks Utilities. For information on the SDNF version 3 format and/or software (provided by Intergraph) required to read SDNF version 3 files into FWP, reference the Intergraph Steel Detailing Neutral File Reference Format Guide (this is included with Intergraph FrameWorks Plus software – help/printable guide/FrameWorks Plus Reference Guide). **IMPORTANT:** If you wish to import version 3 files with any of the extensions listed above you will need to utilize the Intergraph developed SDNF version 3 import software (contact Intergraph).

The dialog box for the Convert SDNF v3 file to SDNF v2 file is shown below. The steps for conversion are



simple. First select the SDNF v3 file. The SDNF v3 file and/or search path can be defined with the environment variable ACE\_SDNFV3\_FILE. If a complete path & file is defined with this variable and the file is a SDNF v3 file, that file will be displayed upon startup. If a valid path is defined with the ACE\_SDNFV3\_FILE, the SDNF v3 file location dialog box will begin at that directory (be sure to include the trailing slash “\”). The second step is selecting the SDNF v2 file name &

location. The SDNF v2 file and/or search path can be defined with the environment variable ACE\_SDNFV2\_FILE. If a complete path & file is defined with this variable and the file does not exist, that file will be displayed upon startup. If a valid path is defined with the ACE\_SDNFV2\_FILE, the SDNF v2 file location dialog box will begin at that directory (be sure to include the trailing slash “\”).

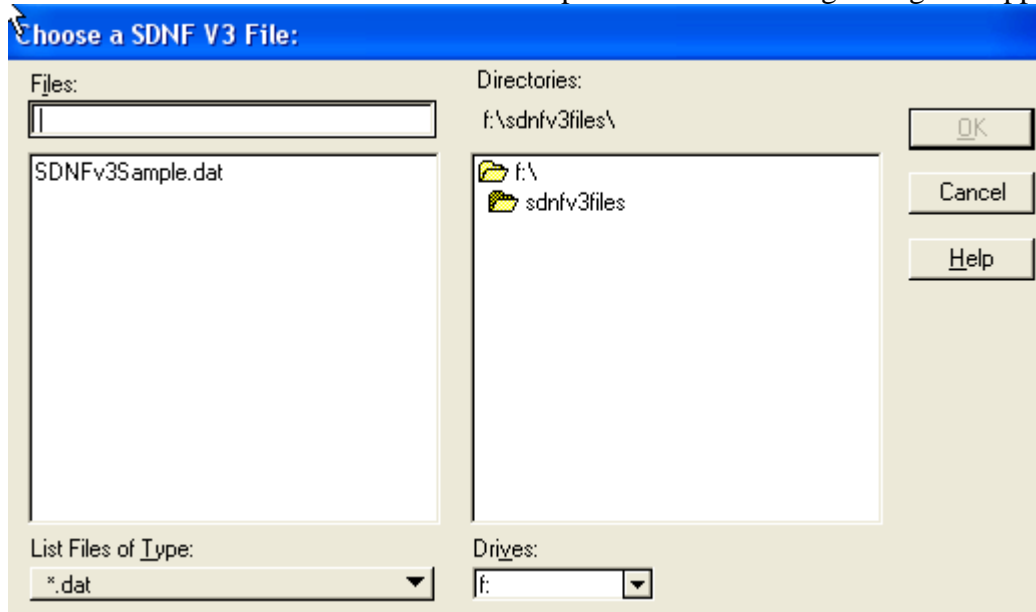
Once the SDNF v3 file is defined/selected, the “Verify SDNF File” button will activate, allowing a read/verify of the SDNF v3 file. Once both the SDNFv3 file & the SDNF v2 file are selected/defined, the “Convert SDNF File” button will activate, allowing the file to be converted. The basic operation is shown on the next page.

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

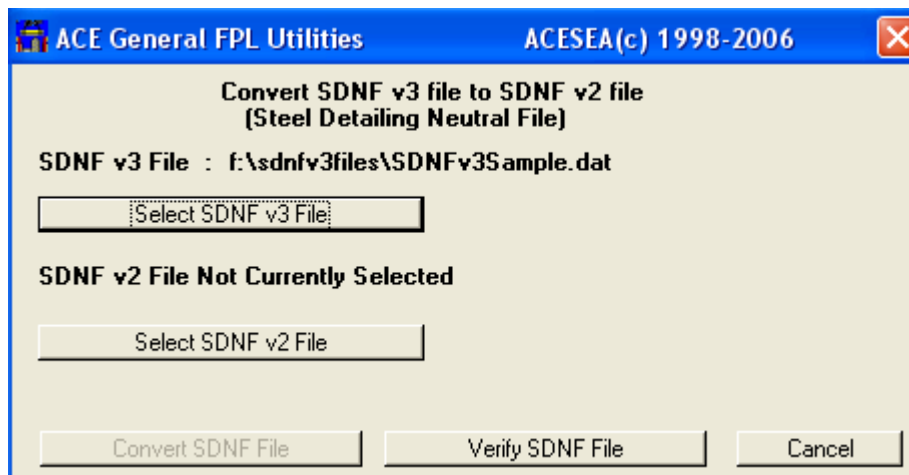
## Convert SDNF Ver 3 File to SDNF Ver 2 – Basic operation

### Select the SDNF v3 File

When the select “SDNF v3 File” Button is pressed the following dialog box appears:



For this example the environment variable ACE\_SDNFV3\_FILE was set to f:\sdnfv3files\ thus the search starts off at that directory. Select the file SDNFv3Sample.dat and press OK and the dialog box looks like:



### Notes About Environment Variable ACE\_SDFNV3\_FILE

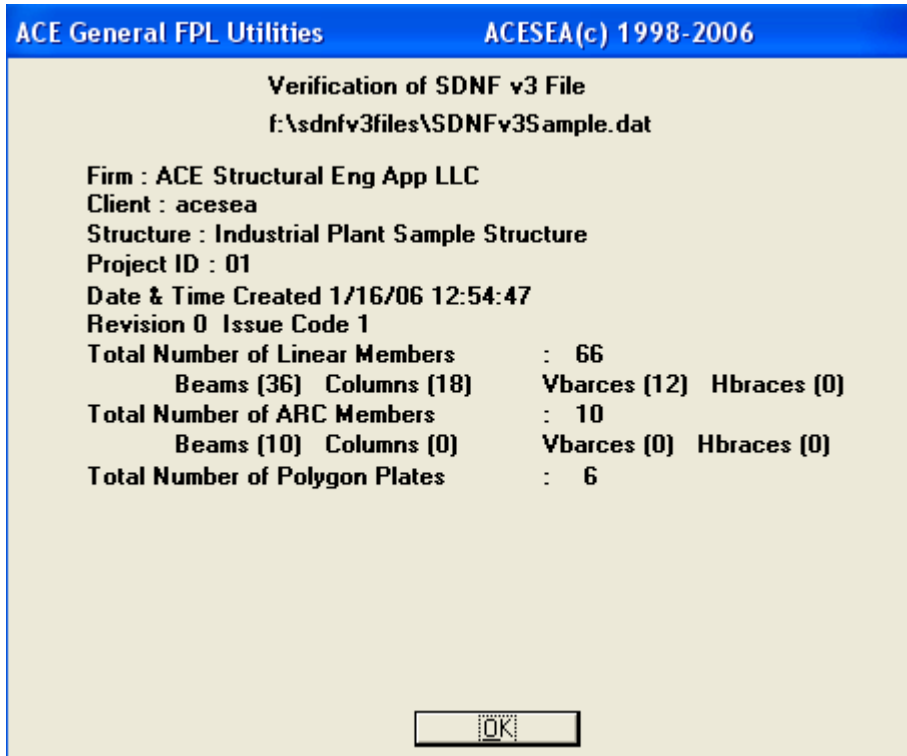
If the variable is not defined the search will start in the C drive root directory. If the variable is defined and points to a valid directory & file, that file & directory will be shown in the opening dialog box. Any subsequent searches will begin at the directory specified by the variable. If the variable is defined and points to a valid directory but the file is not found, the message SDNF v3 File Not Currently Selected will be shown on the opening dialog box. Any subsequent searches will begin at the directory specified by the variable.

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Convert SDNF Ver 3 File to SDNF Ver 2 – Basic operation (con'd)

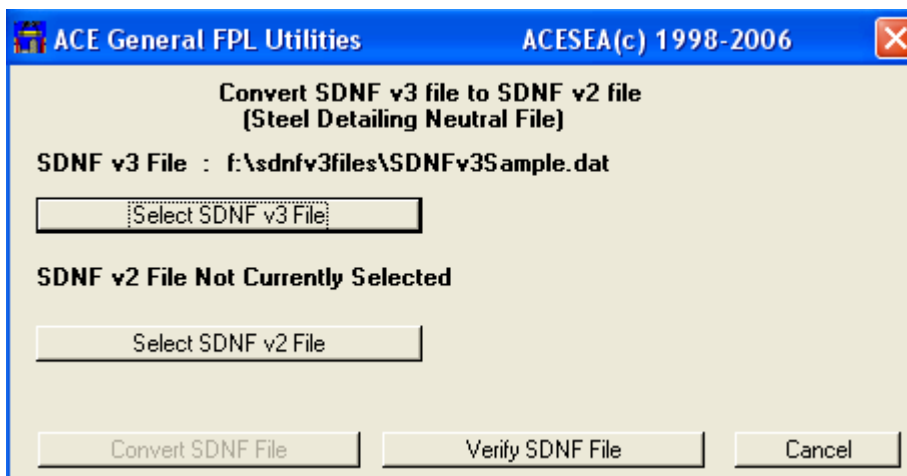
### Verifying the SDNF v3 File

Once the SDNF v3 File has been selected, the file may be verified by pressing the “Verify SDNF File” button. Pressing will yield:



This dialog box shows how many linear members, arc members, polygon plates, circular plates (to be discarded), complex plates (to be discarded), plate holes (to be discarded), member loads, grid definitions & connection details that were found in the SDNF v3 file.

When OK is pressed the previous dialog box appears,



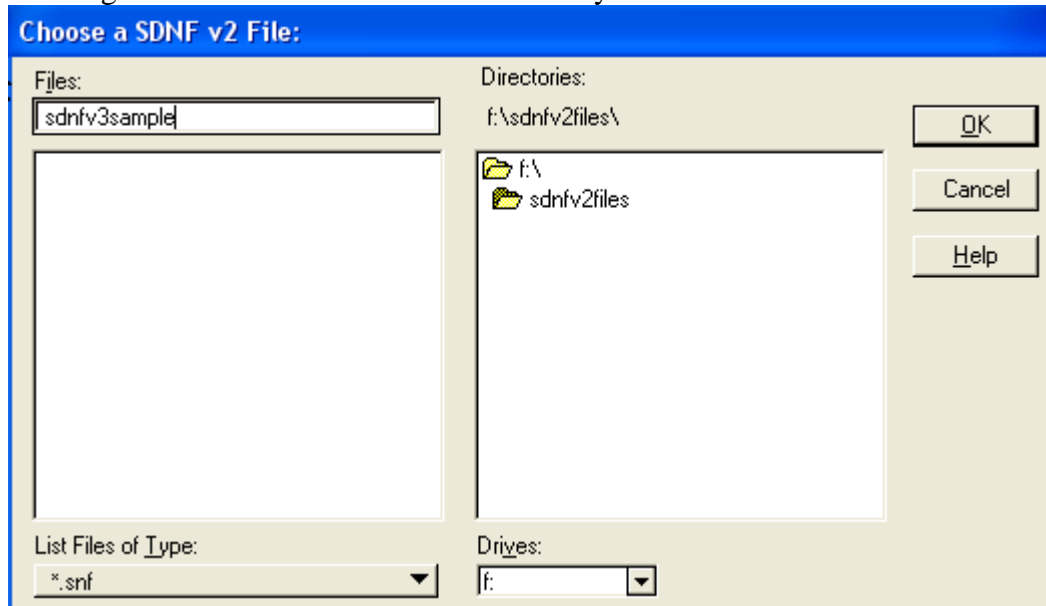
The SDNF file to create (or overwrite) may be selected by pressing the “Select SDNF v2 File” button.

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Convert SDNF Ver 3 File to SDNF Ver 2 – Basic operation (con'd)

### Selecting the SDNF v2 File

Pressing the Select SDNF v2 File button will yield:



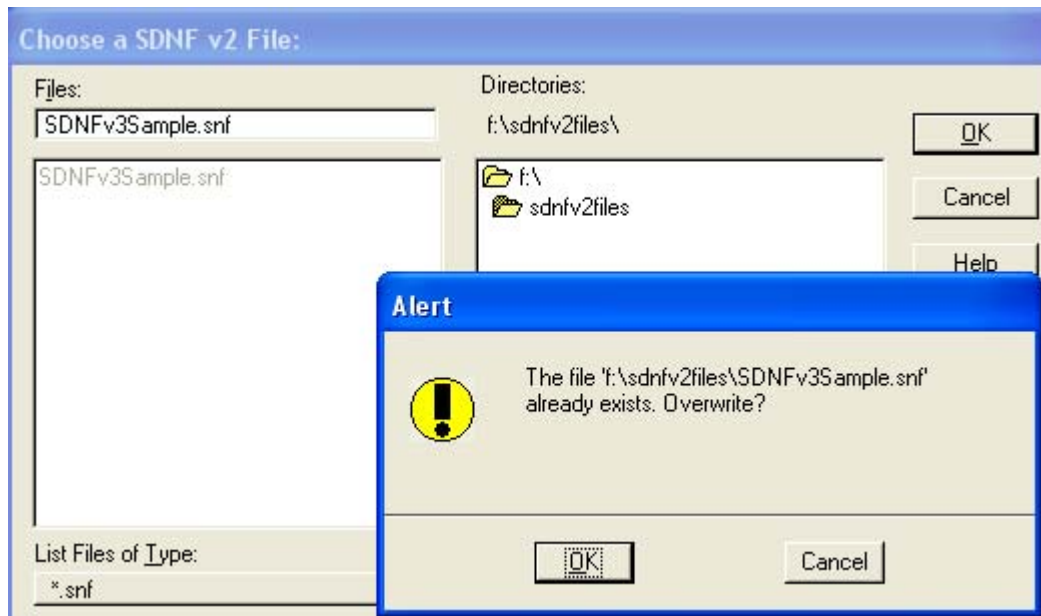
By default this application will name the v2 SDNF file with a .snf extension. A different extension may be forced but SNF is highly recommended. The ACE FrameWorks Utilities SDNF v2 Import application looks for files with a .snf extension.

### ***Notes About Environment Variable ACE\_SDFNV2\_FILE***

If the variable is not defined the search will start in the C drive root directory. If the variable is defined and points to a valid directory & file, the message SDNF v2 File Not Currently Selected will be shown on the opening dialog box (cannot specify an existing file from the start but can from the selection dialog box). A v2 file search will begin at the directory specified by the variable. If the variable is defined and points to a valid directory but the file is not found, that file & directory will be shown in the opening dialog box. Any subsequent searches will begin at the directory specified by the variable.

Existing files can be overwritten. If an existing file is keyed in, the following dialog box appears:

## ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

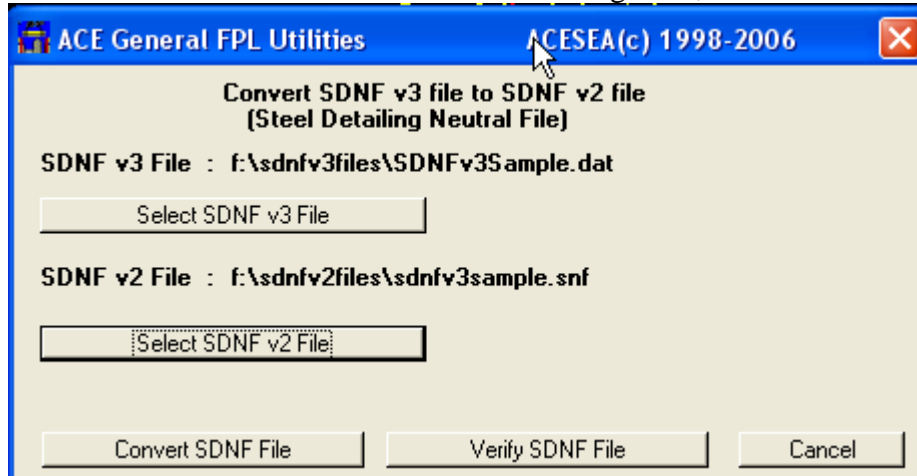


# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

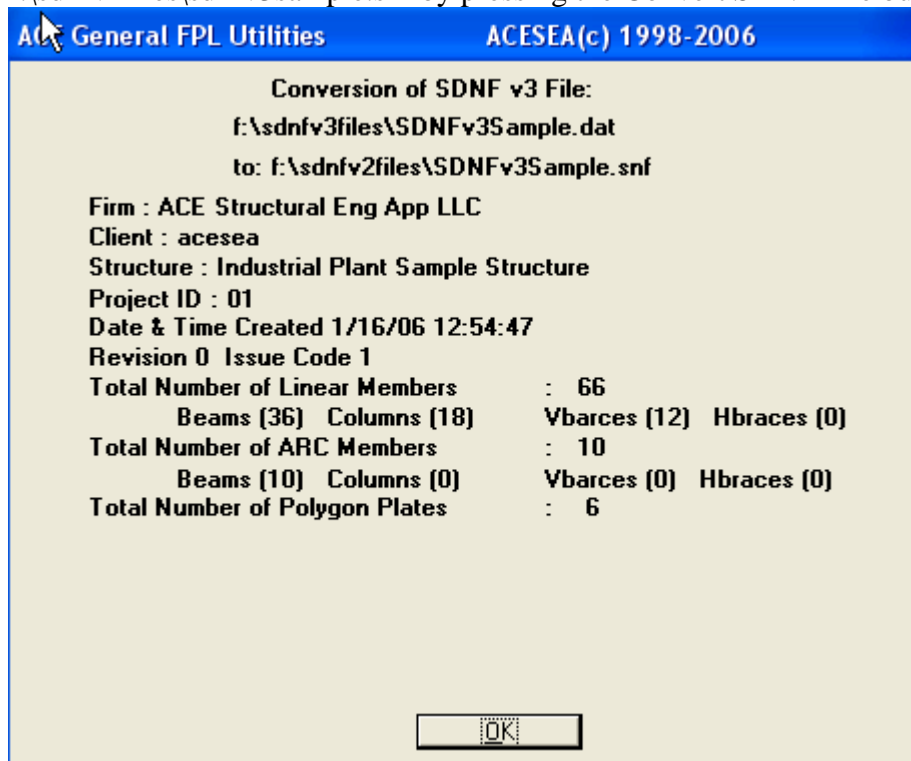
## Convert SDNF Ver 3 File to SDNF Ver 2 – Basic operation (con'd)

### Converting the SDNF v3 file to a SDNF v2 file

Once valid SDNF v3 & v2 files have been designated, the “Convert SDNF File” button will activate.



At this point the SDNF v3 File f:\sdnfv3files\SDNFv3Sample.dat can be converted to a SDNF v2 file named, f:\sdnfv2files\sdnfv3sample.snf by pressing the Convert SDNF File button. Pressing this button will yield:



This dialog box shows conversion results which includes: the number of linear members, arc members, polygon plates, circular plates (discarded), complex plates (discarded), plate holes (discarded), member loads, grid definitions & connection details that were found in the SDNF v3 file and written into the SDNF v2 file.

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Conversion Steps for SDNF File Conversion

### General Handling of SDNF (version 2) File Packets

All comment statements are retained in the file and a comment statement is added at the top stating file is a converted SDNF file with date & time stamp. Each SDNF packet is discussed in the ensuing paragraphs.

### PACKET 00 - General Project Information

The only difference between a version 3 & version 2 Packett is the version 3 identification. The version three identification is removed and the remainder of the statements remain the same.

### PACKET 10 - Linear Member Packet

The first 2 statements for version 3 & version 2 are identical. For each member there is a set of 10 records in a SDNF version 3 file. A version 2 SDNF file has 6 statements for each member. In creating the version 2 SDNF file, member statements 7 thru 10 are removed from the version 3 SDNF file. These statements fabricator data, connection data, & extended attribute data which are not supported by SDNF version 2.

### PACKET 20 – Plate Element Packet

The first 2 statements for version 3 & version 2 are identical. For each plate there is a variable set of records. Version 3 SDNF files recognize three types of plates: polygon plates, circular plates & complex (formed with line/arc segments) plates. Version 2 SDNF only supports polygon plates. All circular & complex plate statements are deleted – the report indicates how many circular & complex plates were deleted. For a polygon plate, the first two statements are read and written. Since vertices are handled different for versions 2 & 3, only a subset of the vertices coordinates are written into a SDNF version 2 file. For example, for a 5 vertices plate (rectangular plate) in a SDNF version 3 file there would be only 4 vertices in a SDNF version 2 file. The version 3 file would contain 11 vertices statements whereas a version 2 file would have 4 vertices statements. The proper number of vertices are written and the connection flag (utilized by SDNF version 3) is removed. In creating the version 2 SDNF file, the last 4 statements for arc member statements are removed. These statements contain fabricator data, connection data, & extended attribute data which are not supported by SDNF version 2.

When circular and/or complex plates are removed the number of plates specified on the first statement following Packet 20 must be reduced. This reduction takes place after the SDNF v3 file has been completely processed and the SDNF version 2 file has been written. ONLY 1 Packet 20 statement can be in a SDNF file.

### PACKET 22 – Hole Element Packet

Only version 3 SDNF files support Packet 22. The entire Packet 22 is removed for the version 2 SDNF file. The number of removed holes is reported.

### PACKET 30 - Member Loads Packet

The member loads packet for version 2 & 3 is identical thus it is replicated in entirety.

### PACKET 40 – Connection Details Packet

The connection details packet for version 2 & 3 is identical thus it is replicated in entirety.

### PACKET 50 - Grid Packet

The grid packet for version 2 & 3 is identical thus it is replicated in entirety.

### PACKET 60 – Arc Member Packet

The first 2 statements for version 3 & version 2 are identical. For each arc member there is a set of 10 records in a SDNF version 3 file. A version 2 SDNF file has 7 statements for each member. In creating the version 2 SDNF file, member statements 8 thru 11 are removed from the version 3 SDNF file. These statements fabricator data, connection data, & extended attribute data which are not supported by SDNF version 2.

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Electronic Version Recognition of SDNF Files

A version 3 SDNF file can be recognized by the statement immediately following the Packet 00 statement. As defined in the standard, Packet 00 & following statement should be as follows:

*Packet 00*

*"SDNF Version 3.0"*

The standard also states the following would be acceptable.

*Packet 00*

*3*

This application opens the file, finds the Packet 00 statement and then reads the following statement to determine the SDNF version type. If the file is not a version 3 it is assumed to be a version 2.

## Environment Variables for SDNF Files

Environment variables allow initial directories (and also specific files) to be specified.

### SDNF Version 3

This application will by default look for SDNF version 3 files as \*.dat (i.e. a dat extension – same extension that FWP utilizes by default) files in the root of the C drive - c:\. The initial search directory for the SDNF v3 file (.dat file) can be specified with the following environment variable: ACE\_SDNFV3\_FILE (such as: ACE\_SDNFV3\_FILE=f:/sdnfv3\_files/). In this case a directory is specified and this directory will be utilized for the search when the “Select SDFN v3 File” button is pressed. If the search dialog box is used to change directories, subsequent searches will start where the dialog box is last left.

If the environment variable specifies both a valid directory & valid v3 file, that file will be shown in the dialog box when the application is initiated and the “Verify SDNF File” button will be activated. Note that file extensions other than DAT may be utilized. However use of DAT for a SDNF v3 file extension is highly recommended.

### SDNF Version 2

This application will by default write SDNF version 2 files as \*.snf (i.e. a snf extension – same extension that ACE FrameWorks Utilities – ACE SDNF Import Utility utilizes) files in the root of the C drive - c:\. The initial search directory for the SDNF v2 file (.snf file) can be specified with the following environment variable: ACE\_SDNFV2\_FILE (such as: ACE\_SDNFV2\_FILE=f:/sdnfv2\_files/). In this case a directory is specified and this directory will be utilized for the search when the “Select SDFN v2 File” button is pressed. If the search dialog box is used to change directories, subsequent searches will start where the dialog box is last left.

If the variable is defined and points to a valid directory & file, the message SDNF v2 File Not Currently Selected will be shown on the opening dialog box (cannot specify an existing file from the start but can from the selection dialog box). A v2 file search will begin at the directory specified by the variable. If the variable is defined and points to a valid directory but the file is not found, that file & directory will be shown in the opening dialog box. Any subsequent searches will begin at the directory specified by the variable.



# **ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation**

## **LOG FILES**

All applications can write log files if the environment variable ACE\_DUMP is set to 1. There have been reports that some sites lock the C root drive and under certain conditions a locked C drive can cause a system fault 5.

This application will produce a log file (default c:\ace\_s32.log )which will contain: Packet 00 information, information on linear members placed, information on plate elements placed, error information and summary placement information. This particular application will ALWAYS WRITE to a log file. This application WILL FAIL with a locked C drive. The environment variable ACE\_LOG\_PATH must be utilized for this application if the C drive is locked.

All applications have been modified to warn of a locked drive/file and then gracefully exit. All applications now look for the environment variable ACE\_LOG\_PATH. If it is found, that is the directory where the log files will be placed. If the directory is locked or non-existent or if file is locked a warning will be given and the C drive will be tried. If it is locked or the file is locked a warning will be given and application will gracefully exit.

Usage of the variable ACE\_LOG\_PATH to control log file locations is similar to ACE\_DEF\_PATH to control DEF files. However there is one very important difference: ACE\_LOG\_PATH should NEVER point to a network drive (this is highly recommended for ACE\_DEF\_PATH). Everyone writes to the same named log file and if they are on a network drive there will be bad consequences. ALWAYS point ACE\_LOG\_PATH to a local drive (perhaps a temp off C root).

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Sample of Converted SDNF v2 File (partial file SDNFv3Sample.snf)

This converted SDNF v2 File was created by utilizing this utility to convert sample\_SDNFv3.dat into sample\_SDNFv2.snf Only 2 members from Packets 10, 20 & 60 are shown due to file length. The entire file is distributed with the utilities.

```
# SDNF File converted from SDNF v3 to SDNF v2 Date: "5/8/2006" "23:36:18"
# Frameworks Plus Version : 08.00.00.09
Packet 00
"ACE Structural Eng App LLC"
"acesea"
"Industrial Plant Sample Structure"
"01"
"5/8/06" "12:54:47"
0 "1"
"AISC"
0
Packet 10
"feet" 66
00200001 5 0 0 "Column" "" 0
"W14X90" "A36" 90.000000 0 0
1.000000 0.000000 0.000000 35.0000 60.0000 0.0000 35.0000 60.0000 18.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
00200002 5 0 0 "Column" "" 0
"W14X82" "A36" 90.000000 0 0
1.000000 0.000000 0.000000 0.0000 40.0000 0.0000 0.0000 40.0000 18.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
➔ 64 LINEAR MEMBER RECORDS NOT SHOWN
Packet 20
"feet" "feet" 6
00200001 0 0 6 "slab" 0
"" "A36" 0.083333 4
35.500000 40.500000 0.000000
35.500000 39.500000 0.000000
34.500000 39.500000 0.000000
34.500000 40.500000 0.000000
00200002 0 0 6 "slab" 0
"" "A36" 0.083333 4
35.500000 60.500000 0.000000
35.500000 59.500000 0.000000
34.500000 59.500000 0.000000
34.500000 60.500000 0.000000
➔ NOTE: 4 PLATE RECORDS NOT SHOWN
Packet 60
"feet" 10
00200001 8 0 0 "Beam(Arc)" "" 0
"W8X24 > W8X31" "A36" 0.000000 0 0
20.0000 50.1948 51.3430 0.000000 75.936894 -1.000000 0.000000 0.000000
0.000000 0.000000 1.000000 20.0000 50.0000 61.5000 20.0000 60.0000 54.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
00200002 8 0 0 "Beam(Arc)" "" 0
"W8X31 > W8X24" "A36" 0.000000 0 0
20.0000 49.8052 51.3430 0.000000 75.936881 -1.000000 0.000000 0.000000
0.000000 0.000000 1.000000 20.0000 40.0000 54.0000 20.0000 50.0000 61.5000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
➔ NOTE: 8 ARC RECORDS NOT SHOWN
```

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Sample of a Source SDNF v3 File (partial file SDNFv3Sample.dat)

This Sample v3 File comes from the ACE FrameWorks Utilities Sample Industrial Plant. This is the structure with baseplates (models ? & ?). This particular SDNF v3 file was generated with FWP 8.0.0.09 using the SDNF v3 export capability. Only 2 members from Packets 10, 20 & 60 are shown due to file length. The entire file is distributed with the utilities.

```
# Frameworks Plus Version : 08.00.00.09
Packet 00
"SDNF Version 3.0"
"ACE Structural Eng App LLC"
"acesea"
"Industrial Plant Sample Structure"
"01"
"5/8/06" "12:54:47"
0 "1"
"AISC"
0
Packet 10
"feet" 66
00200001 5 0 0 "Column" "" 0
"W14X90" "A36" 90.000000 0 0
1.000000 0.000000 0.000000 35.0000 60.0000 0.0000 35.0000 60.0000 18.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
0 "" 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0.000000 0 0 0.000000 0.000000
0 0 0 0 0 0
00200002 5 0 0 "Column" "" 0
"W14X82" "A36" 90.000000 0 0
1.000000 0.000000 0.000000 0.0000 40.0000 0.0000 0.0000 40.0000 18.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
0 "" 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0 0 0 0 0 0 0 0 0 0
0 0 0.000000 0 0 0.000000 0.000000
0 0 0 0 0 0
```

➔NOTE: 64 LINEAR MEMBER RECORDS NOT SHOWN

# ACE Convert SDNF Ver 3 File to SDNF Ver 2 File Documentation

## Sample of a Source SDNF v3 File (partial file SDNFv3Sample.dat) (Con'd)

```
Packet 20
"feet" "feet" 6
00200001 0 0 6 "slab" 0
" " "A36" 0.083333 5 0.000000 0
35.500000 40.500000 0.000000 1
35.500000 39.500000 0.000000 1
34.500000 39.500000 0.000000 1
34.500000 40.500000 0.000000 1
35.500000 40.500000 0.000000 0

35.500000 40.500000 -0.083333 1
35.500000 39.500000 -0.083333 1
34.500000 39.500000 -0.083333 1
34.500000 40.500000 -0.083333 1
35.500000 40.500000 -0.083333 0
0 " " 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0
0 0 0.000000 0 0
0 0 0 0 0 0
00200002 0 0 6 "slab" 0
" " "A36" 0.083333 5 0.000000 0
35.500000 60.500000 0.000000 1
35.500000 59.500000 0.000000 1
34.500000 59.500000 0.000000 1
34.500000 60.500000 0.000000 1
35.500000 60.500000 0.000000 0

35.500000 60.500000 -0.083333 1
35.500000 59.500000 -0.083333 1
34.500000 59.500000 -0.083333 1
34.500000 60.500000 -0.083333 1
35.500000 60.500000 -0.083333 0
0 " " 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0
0 0 0.000000 0 0
0 0 0 0 0 0
```

➔ **NOTE: 4 PLATE RECORDS NOT SHOWN**

```
Packet 60
"feet" 10
00200001 8 0 0 "Beam(Arc)" " " 0
"W8X24 > W8X31" "A36" 0.000000 0 0
20.0000 50.1948 51.3430 0.000000 75.936894 -1.000000 0.000000 0.000000
0.000000 0.000000 1.000000 20.0000 50.0000 61.5000 20.0000 60.0000 54.0000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0 0
0 " " 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0 0 0 0 0 0 0 0 0
0 0 0.000000 0 0 0.000000 0.000000
0 0 0 0 0 0
00200002 8 0 0 "Beam(Arc)" " " 0
"W8X31 > W8X24" "A36" 0.000000 0 0
20.0000 49.8052 51.3430 0.000000 75.936881 -1.000000 0.000000 0.000000
0.000000 0.000000 1.000000 20.0000 40.0000 54.0000 20.0000 50.0000 61.5000 0.000000 0.000000
0.000000 0.000000
0.0000 0.0000 0.0000 0.0000 0.0000 0.0000
0 0 0 0 0 0 0 0 0 0 0
0 " " 0 "5/8/06" "10:24:49" "5/8/06" "10:24:49" 0 0
0 0 0 0 0 0 0 0 0 0 0
0 0 0.000000 0 0 0.000000 0.000000
0 0 0 0 0 0
```

➔ **NOTE: 8 ARC RECORDS NOT SHOWN**