



S A D S

**Data Link
Demonstration**

Gold Sun

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1 Introduction

1.1 Overview

In **SADS**, there are 2 enhanced modules, Generating **SADS** Data Command and Linking ETABS Data Command. The Generating **SADS** Data Command is using MDB file that generated by ETABS to generate **SADS** data. The Linking ETABS Data Command is mapping ETABS data and **SADS** data to allow user import ETABS forces files to **SADS** database and amend ETABS input file (e2k file) using **SADS** database. This document will demonstrate these 2 modules step by step.

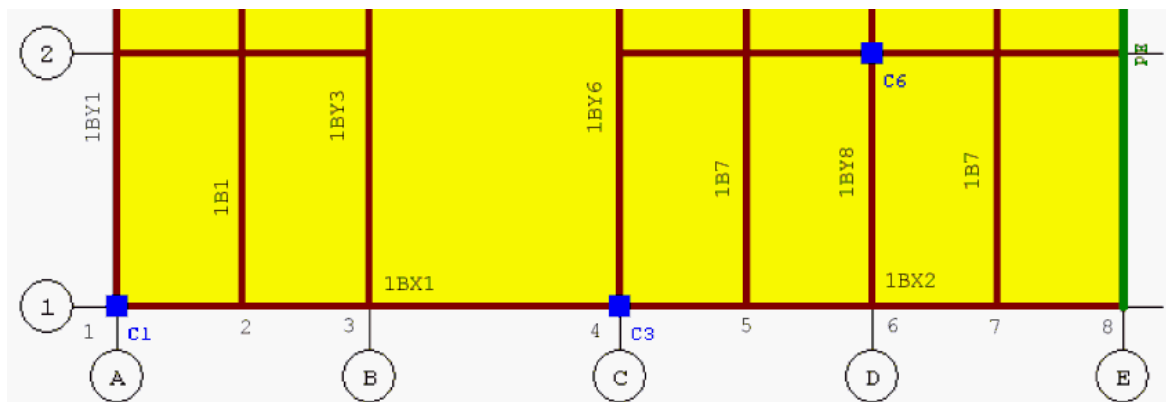
1.2 Recommendation

The recommendations for computer hardware:

1. Dual monitor or large size wide screen monitor to display framing plan in these modules;
2. Color printer to print framing plan in these modules.

The recommendations for preparing ETABS data:

1. Delete unnecessary material names in ETABS data.
2. Make the material names in ETABS same as the concrete grade name in **SADS** and assign all material names by less than or equal to 10 characters long;
3. Make the level names in ETABS same as the floor codes in **SADS** and assign all level names by 4 characters long exactly;
4. Make the pier names in ETABS same as the wall marks or sub-wall marks in **SADS** and assign all level names by 4 characters long exactly;
5. Make the line names in ETABS same as the column marks in **SADS** and assign all line names by less than or equal to 8 characters long ;
6. Do not define multiple bays for one span of beam in **SADS** when there is no framed beam and/ or column on the beam. If the beam has loading from framed beam and column, you should split the bay to multiple bays using the points of these loads.

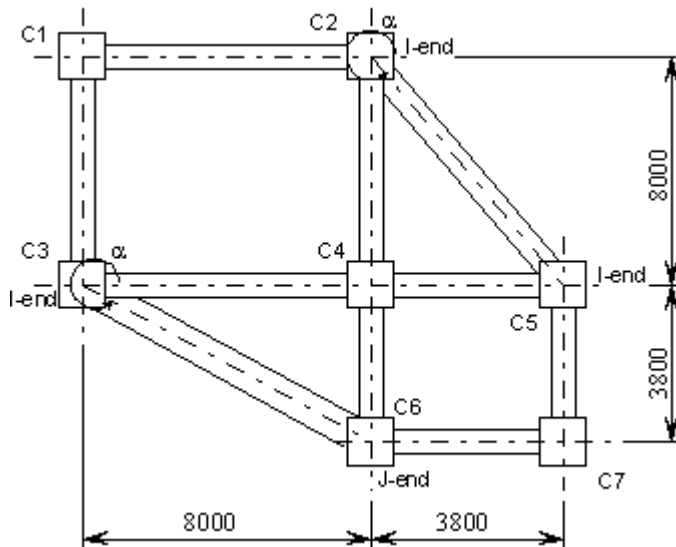


For example, the 1BX2 is a span of beam. The beam has 3 beam loadings 1B7, 1BY8 and 1B7. The beam loading 1BY8 is a framed beam. The beam should consist 2 bays point 4 to 6 and point 6 to 8. The beam loadings 1B7 is secondary beam, it is not necessary to break the bay on point 5 and point 7.

8. Delete unnecessary load cases in ETABS.
9. Set the first character in section ID of beam as below:
 - A -- for associate beams, e.g. AB400X1000;
 - G -- for girder, e.g. GB400x600;
 - L -- for lintel beams, e.g. LB250X600;
 - S -- for secondary beams, e.g. SB300X500;
 - B -- for other beams, e.g. B400x700.

If your ETABS MDB file does not meet the recommendation, the Generating **SADS** Data and Linking ETABS Data modules will still accept these MDB files. But, you may make more key strokes and **SADS** will do more works.

ETABS has a rule for defining I-end and J-end of bays. This rule may not match with the rule for defining LHS end and RHS end in **SADS**. The following example demonstrates the different between **SADS** and ETABS.



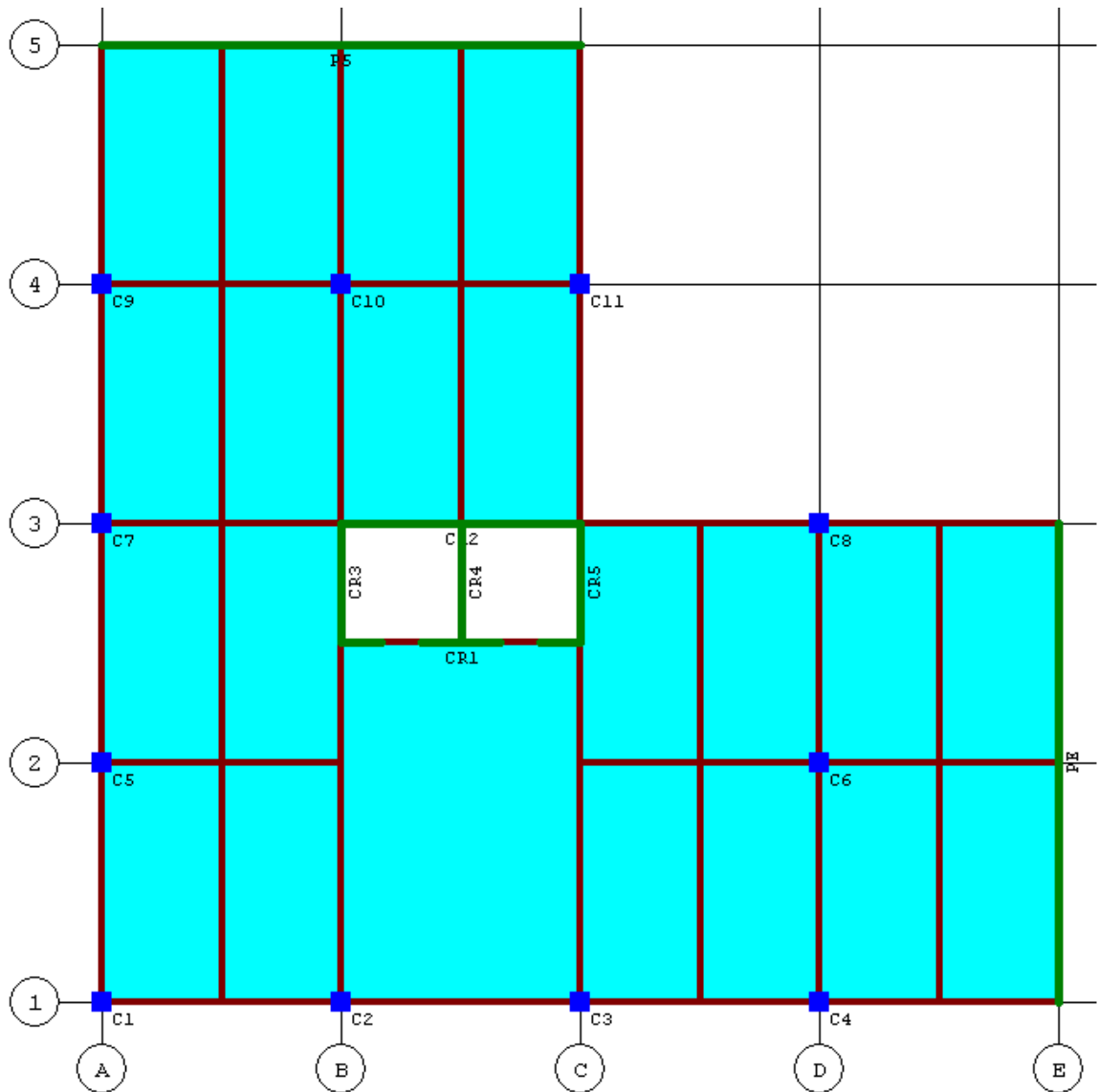
- For horizontal bay, ETABS sets the I-end to left end and J-end to right end. For example, the bay between C1 and C2, the I-end is taken at C1 and J-end is taken at C2. This is then same as **SADS**
- For vertical bay, ETABS sets the I-end to lower end and J-end to upper end. For example, the bay between C1 and C3, the I-end is taken at C3 and J-end is taken at C1. This is the same as **SADS** also.
- For diagonal bay, **SADS** is using blocked region to define LHS and RHS ends. The blocked region can be changed in these modules. The default blocked region is 120° to 300° . For bay between line C3 and C6 in above example, the incline angle $\alpha = \text{ArcTan}[(-3800)/8000] = 334.59^\circ$. This angle is in un-blocked region and **SADS** sets line C3 as LHS end and line C6 as RHS end. For this bay, ETABS sets C3 as I-end and C6 as J-end. It is matched. For bay between line C2 and C5 in above example, the incline angle $\alpha = \text{ArcTan}[-8000/(3800)] = 295.41.41^\circ$. This angle is in blocked region and **SADS** sets line C5 as LHS end and line C2 is RHS end. But, ETABS sets C2 as I-end and C5 as J-end. It is reversed.

SADS will scan all bays and flags all bays that need to reversed.

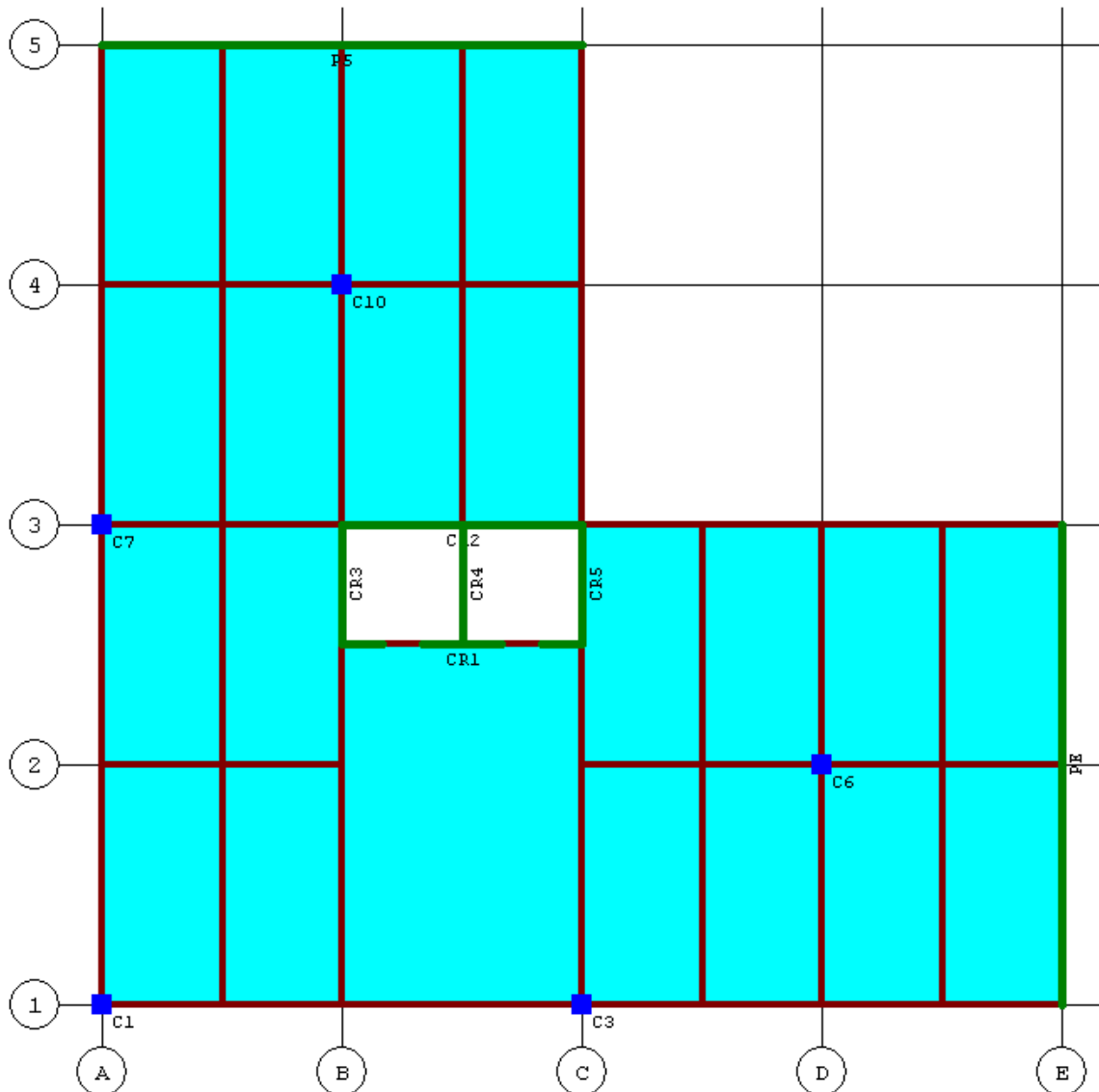
1.3 Demonstration Building

We will use a virtual building described below to demonstrate the Linking ETABS Data and Generating **SADS** Data command. In the framing plan, the columns are displayed by blue color, the beams are displayed by maroon color, the slabs are displayed by aqua color and the walls are displayed by green color.

The building has roof floor, typical floors (13th. floor to 2nd. floor) and 1st. floor. There are 4 bays in X-X direction and 4 bays in Y-Y direction. The framing plans of roof floor and typical floor are the same.



There is a core wall that formed by 5 sub-wall, CR1, CR2, CR3, CR4 and CR5. There are 2 lintel beams on the core wall. There are 2 shear walls PE and P5 on the ends of building. On grid line B, the beam between line C2 to core wall is formed by 2 bays. **SADS** will consider the elements in 2 bays as associate beams. The grid line C has the same condition with grid line B. The slabs cover all floor area except inside core wall. The Line C2, C4, C5, C8, C9 and C11 are ended at 2nd. floor. The 1st. floor plan is shown as below.



When preparing the ETABS data, beams between line C1 and C3, line C3 and pier PE, pier CR2 and PE, line C1 and C7, line C7 and pier P5 and pier CR5 and P5 are formed by 2 bays. So, these beams are girders and the horizontal elements on these bays are associate beams.

2 Framing Plan

2.1 Overview

The most powerful part of Linking ETABS Data and Generating **SADS** Data commands is framing plan function. These 2 commands can generate framing plan based on ETABS MDB file.

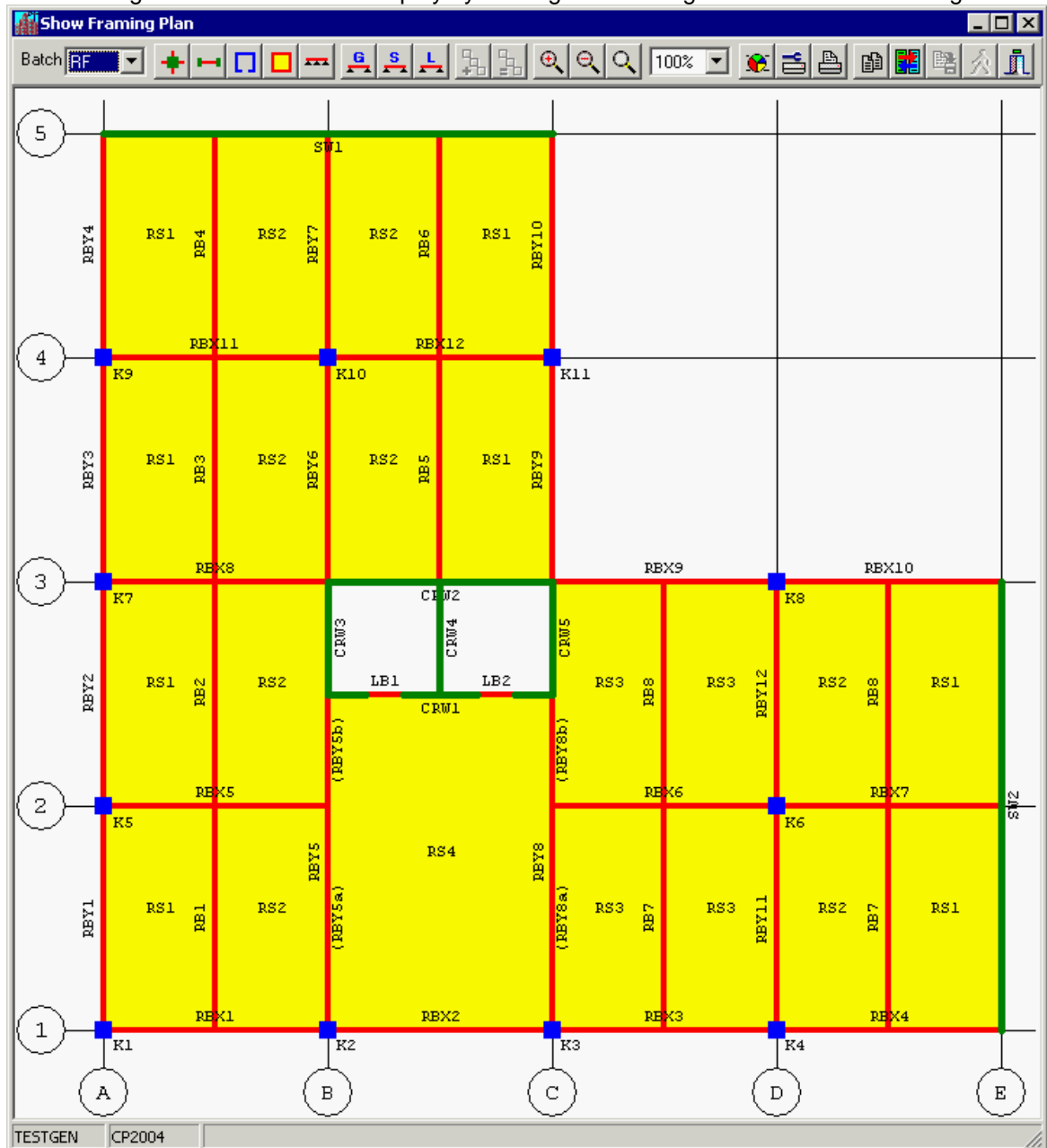
1. You can zoom in and zoom out the framing plan;
2. You can print the framing plan;
3. You can edit the slab mark, beam mark, column mark and wall mark from the framing plan.

Before we start the demonstration, we need to introduce the features and functions of framing plan module.

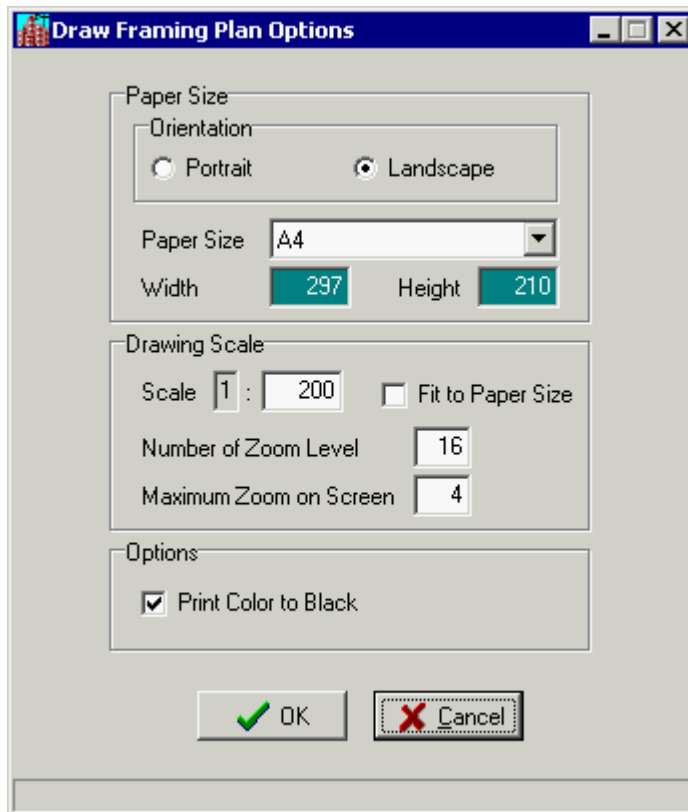
The framing plan window can be displayed by clicking Framing button in main Function Page of Linking ETABS Data or Generating **SADS** Data commands. When you just complete the mapping of lines and then you click the Save button, the framing plan window will be displayed automatically.

2.2 Configuring Framing Plan

The Framing Plan window can be display by clicking the Framing button on Functions Page.



You may click the Framing Plan Setup button  to display the Draw Framing Plan Options dialog box.



Paper Size group box:

Orientation: You may select Portrait or Landscape. The default value is landscape.

Paper Size: You may set paper size for consistence with the paper of your printer.

Width & Height: If you select Custom size, you need to enter the paper size to these edit boxes.

Drawing Scale group box:

Scale: You may specify the scale of your drawing. The default is 1:200.


Fit to Paper Size: If your Scale is not set properly with the paper size, the framing plan may be drawn too large or too small. You may check this check box to ignore the defined scale and fit the framing plan to the specified paper size automatically.

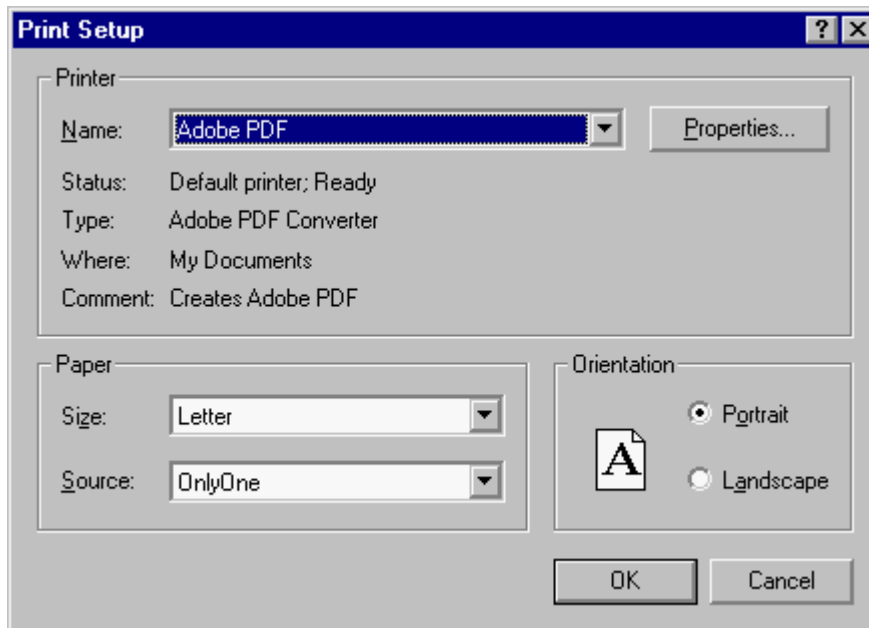
Number of Zoom Level: You may define the zoom level number. The default value is 16, i.e. from the original size to the maximum size, you need to click the Zoom In button 16 times.

Maximum Zoom on Screen: You may specify the maximum zoom ratio. The default value is 4, i.e. the maximum size of on screen drawing is 4 times of original size.


Print color to black: If your printer is not a color printer, you may check the check box to print color framing plan to black.

2.3 Printing Framing Plan

Before you print your framing plan to printer, you may click the Printer Setup button  to display the Print Setup dialog box to select the printing options. This dialog box may different on your computer according the Windows and printer configuration.



You may select your printer, paper size, orientation, etc to consistent with your [drawing setup](#).

After you select these options, you may click the  button to print your framing plan to your printer.

2.4 Handling Framing Plan

By clicking the following buttons, you may zoom in, zoom out and zoom all the framing plan.



- Click this button to zoom in the framing plan to next level.



- Click this button to zoom out the framing plan back to previous level.



- Click the button to zoom the framing plan to original size.

After you zoom in you framing plan, the framing plan will not be fitted in the window. Some part of framing plan will be invisible. You may push and hold the left button of the mouse, and then drag the mouse. You will find that you can move the framing plan around and you can see any invisible part of framing plan. But, you cannot drag the framing plan when one of the member is [selected](#).

2.5 Selecting Member of Framing Plan


You may use the mouse to select slab, beam, column and wall.

Column: Move the cursor to the square symbol of column until the color is changed.

Beam and lintel: Move the cursor to the line of beam until the color is changed.

Wall: Move the cursor to the one of the panel of column until the color is changed.

Slab: Move the cursor to the center of slab until the color is changed.

Continuous Beam: You should click down the Continuous Beam button  first. Then, move the cursor to one of the line of beam until the color is changed.

The changing of color indicates the member is selected for further processing. After the member is selected, you may click the mouse to display edit dialog box to enter the mark and other data for this member.

2.6 Display Options

By clicking the following buttons, you may display additional information to the framing plan.



- Click this button to display line number in ETABS to the line.



- Click this button to display the bay name in ETABS to the bay.



- Click this button to display the panel name in ETABS to the panel.



- Click this button to display the area name in ETABS to the area.



- Click this button to display continuous beam.



- Click this button to display the girder / associate beam with purple color.



- Click this button to display the lintel beam with purple color.



- Click this button to display the secondary beam with purple color.

You may use these display options to understand your framing plan.

2.7 Colors in Framing Plan

Slab: Use yellow color for mapped slab and aqua color for un-mapped slab.

Beam: Use red color for mapped beam and maroon (dark red) color for un-mapped beam.

Column: Use blue color for mapped column and navy (dark blue) color for un-mapped column.

Wall: Use green color for both mapped and un-mapped wall.

Slab Mark: Use black color for valid slab mark and red color for slab that does not exist in database.

Beam Mark: Use black color for valid beam mark and red color for beam mark that does not exist in database.

Column Mark: Use black color for valid column mark and blue color for column mark that does not exist in data base.

Wall Mark: Use black color for valid wall mark and green color for wall mark that does not exist in data base.

2.8 Function Buttons

By clicking the following buttons, you may perform particular function in the framing plan.



Duplicate button - Duplicate the mapping data of beams and / or slabs from upper floor to lower floor using prefix mapping.



Map button - Map the beam marks using selected options in Function Page.



Save button - After you have entered or edited beam mark and/or column marks, you may click this button to save those data.



Restore button - Before you click the Save button or change to another batch code, you may click this button to restore the previous mapping data.



Close button - You may click this button to close the Framing Plan window. If there are some you have changed, **SADS** will save these data before closing the window.

2.9 Selecting Framing Plan

The framing plans are generated for each different batch code. In the demonstration project, a roof floor framing plan is generated for roof floor, a typical floor framing plan is generated for 13th. floor to 2nd. floor, and a 1st. floor framing plan is generated for 1st. floor.

You may use the [Batch Code combo box](#) to select which framing plan you want to display.

3 Generating SADS Data Command

3.1 Overview

The requirement of project data files for running this demonstration are listed as below.



1. A set of blank **SADS** project data files;
2. A valid ETABS MDB file;

The following data will be generated by the command.

1. Batch code data;
2. Floor data;
3. Slab data;
4. Beam batch data;
5. Beam data;
6. Beam load data;
7. Column data;
8. Column beam data;
9. Wall data;
10. Wall section data;
11. Wall load data;
12. Lintel beam data;
13. Lintel beam load.

After you install **SADS 16** to your computer, you may run **SADS** and select TESTGEN project code to start the demonstration.

3.2 Function Page

On **SADS** main window, you may click Module / Analysis / **SADS** Data menu or click  and then click  to run the Generating **SADS** Data Command and display the following window.

At the beginning of the demonstration, there is no mapping files in the project folder. So, the Functions page is displayed first and the Generate button in this page is disabled. The Material page, Floor Map page, Batch Map page and Bay Map page are always displayed. The Line Map page is displayed when there is column (line) in ETABS MDB file. The Pier Map page is displayed when there is wall (pier) in ETABS MDB file. The Area Map page is displayed when there is slab (areas) in ETABS MDB file and the Ignore slab element check box is un-checked. All these pages are blank right now.

ETABS Model:

ETABS Name: The ETABS name is retrieved automatically from the file name of ETABS MDB file in project data folder. If you have more than one MDB files, you may select the desired MDB file from the drop down combo box. In the demo project, there is only one MDB file MODEL.MDB.

Smart Mapping: The demo project is a blank project. We can un-check the check box. This check box should be checked when you are amending an existing mapping data.

Smart Generating: You can also un-check this check box for a blank project.

Mapping Option:

Copy Material Name: Check the check box if you want to use the material name as the concrete grade name. In this demo, please check the check box.

Copy Level Name: Check the check box if you want to use the level names as the floor codes. In this demo, please check the check box.

Copy Pier Name: Check the check box if you want to use the pier names as the wall marks. In this demo, please check the check box.

Beam Options:

Mark Option: You may select the marking convention.

1. Prefix appended by bay name.
 2. Prefix appended by character 'B' and sequential number. The sequential numbers are set by following order. The beams in X-X direction, from the lower row to the upper row, from the left to right. The beams in Y-Y direction, from the left row to the right row, from lower to upper. The beams in diagonal direction, the end-I location from lower to upper, from left to right.
 3. Prefix appended by character 'B' and character 'X' for beams in X-X direction, character 'Y' for beams in Y-Y direction plus a sequential number. The sequential numbers are reset to 1 for X-X, Y-Y and diagonal direction.
 4. Enter beam marks manually.
- Please select the 3rd option for this demo.

Search Asso Beam Option:

- Search by section ID: If you select this option, **SADS** defines girder / associate beam based on the first character equal to "G" in section ID in ETABS.
- Search by support condition: If you select this option, **SADS** defines girder / associate beam based on the support condition of beam.

Please select Search by section ID for this demo.

Search 2nd Beam Option:

- Search by section ID: If you select this option, **SADS** defines secondary beam based on the first character equal to "S" in section ID in ETABS.
- Search by support condition: If you select this option, **SADS** defines secondary beam based on the support condition of beam.

Please select Search by section ID for this demo.

Check Wind Every: This option is use to generate lateral load data in beam batch data. The default is 3.

Max. Different Angle: If two or more beam in a straight line, we should consider these beams form a continuous beam. For more flexible, we set this small angle to allow 2 adjacent beams with different incline angles to form a continuous beam. The condition is the different angle not larger than Max. Different Angle.

Column Options:

Mark Option: You may select the marking convention.

1. Use the line names as column name.
2. Use a character 'C' appended by sequential number. The order of sequential number is from lower to upper, from left to right.
3. Enter column mark manually.

Please select the 2nd option for this demo.

Braced Column: Set whether the column is braced or not.

Hinged Footing: Set whether the footing of column is hinged or fixed.

Maximum Reduction: Set the maximum reduction factor of vertical imposed load.

Check Code X at XX floors: Set the default check code ('S', 'E', 'U' or 'C') and how many floors the check code applies.

Default Concrete Cover: Set the concrete cover. You may change these covers using Floor Data Command after you generate **SADS** data.

Slab Option:

Ignore slab elements: If the ETABS output MDB file contains area elements and you don't want to generate slab using these elements, please check this check box. Please don't check this check box for this demo.

Wall Options:

Check Section Every XX Floor: Set the number of floors to be check once.

Default Concrete Cover: Set the concrete cover of wall. You may change these covers using Floor Data Command after you generate **SADS** data.

Lintel Options:**Mark Options:**

1. **LB+Sequential number:** **SADS** will generate lintel marks as characters "LB" plus a sequential number. The sequential numbers are sorted by positions of lintels, from left to right and from lower to upper.
2. **Enter lintel mark by hand:** You may select to generate the beam marks by entering these marks manually.

Please select the 1st option for this demo.

Search Lintel Option:

- Search by section ID: If you select this option, **SADS** defines secondary beam based on the first character equal to "LS" in section ID in ETABS.
- Search by support condition: If you select this option, **SADS** defines secondary beam based on the support condition of beam.

Please select Search by section ID for this demo.

Check section every XX floors : You may specify a interval number of floor for checking lintel sections.

Default concrete cover : The default value will be used to generate lintel beam data.

Batch Options: You may use these options to generate the batch code and prefix of the slab and beam marks.

Batch Code: Enter the character number of batch code, let SADS cuts the first specific

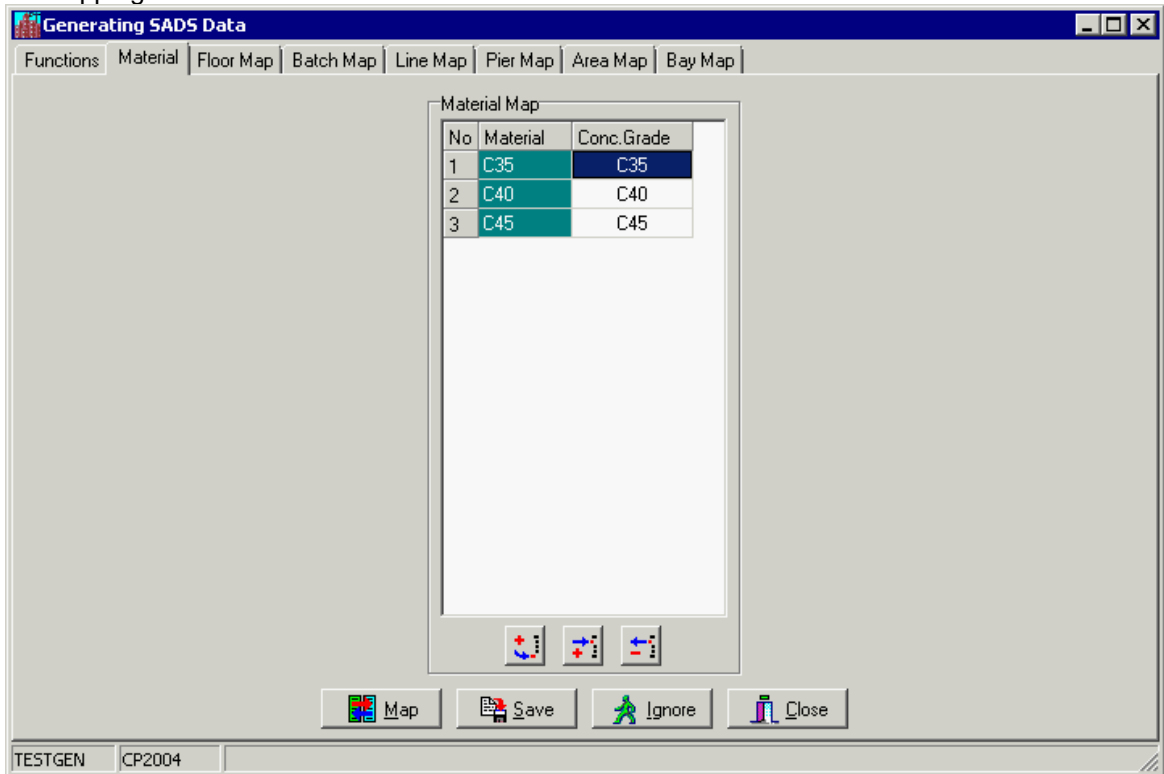
characters from floor code for batch code.

Mark Prefix: Enter the character number of mark prefix, let SADS cuts the first specific characters from batch code for prefix of slab and beam.


After you set all options properly, you must click the map page in sequence of Material page, Floor Map page, Batch Map page, Line Map page (if any), Pier Map page (if any), Bay Map page and Area Map page (if any).

3.3 Material Page

After you click the Material TAB, the Material page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. The data is displayed in Material Map grid. You may delete the un-used material by clicking the Delete

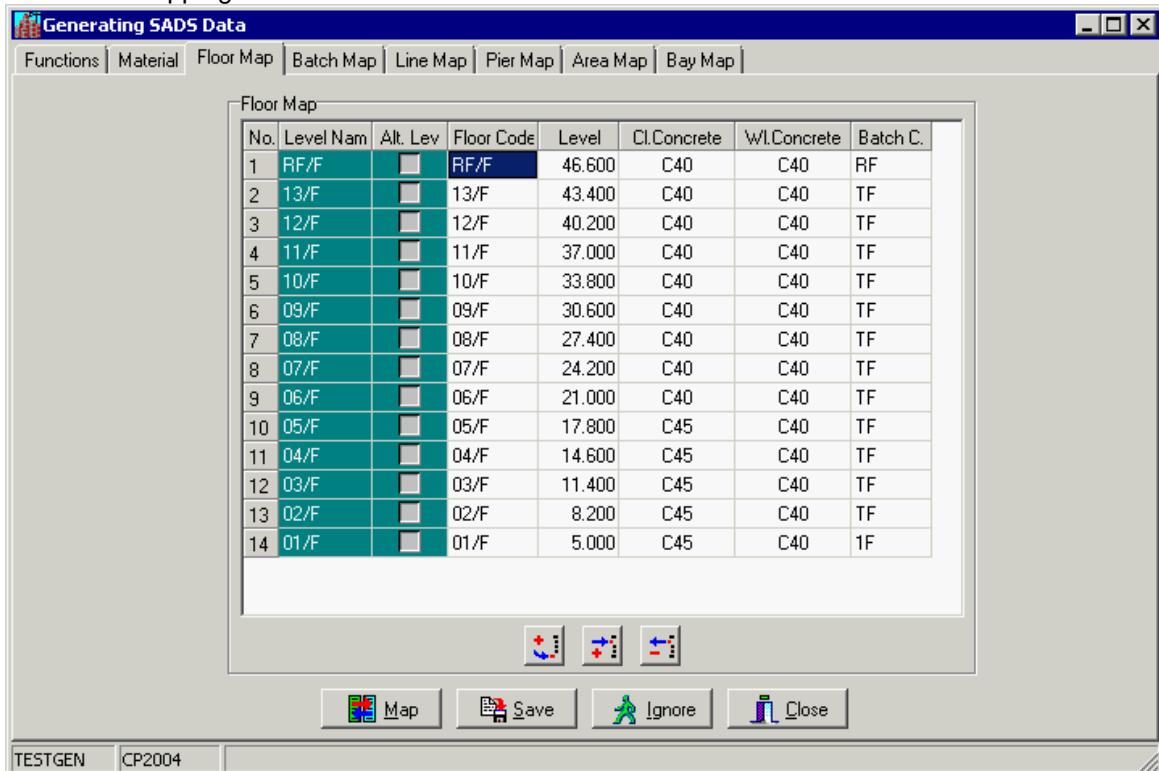
button . If you check the Copy Material check box in Function page, **SADS** takes the material name as concrete grade name. Otherwise, **SADS** defines the concrete based on the value of elastic module in MDB file. If you un-check the Copy Material Name in Function page and the values of elastic module in MDB file are not set properly, the concrete grade may not reflex the correct concrete in your project properly. You should amend these concrete grades by selecting the combo box.

If you find any problem in mapping data, you can click the Ignore button to rollback the mapping data to previous status. If all mapping data is set properly, you may click the Save button to save these concrete grades

You may click the next TAB - Floor Map TAB for further mapping.

3.4 Floor Map Page

After you click the Floor Map TAB, the Floor Map page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. The data is displayed in Floor Map grid. Because you have checked the Copy Level Name check box in Function Page, all level names are copied to floor codes and displayed on the grid. Also, you have entered "2" to batch code character number and the "Similar To" in Story Data table in MDB file are assigned to 13/F on 12/F to 02/F. So, the batch code on 13/F to 02/F are assigned as 13. You may change one of 13 to TF (typical floor). You may see all 13 are changed to TF. For better presentation, you can change 01 to 1F.

The Generating **SADS** Data command will use the batch codes to generate batch map data. After all batch codes are assigned properly, click Save button to save these floor map data, or click the Ignore button to rollback to previous status.

You may click the next TAB - Batch Map TAB for further mapping.

3.5 Batch Map Page

After you click the Batch Map TAB, the Batch Map page is displayed and you will see the grid is blank - no mapping data.

No	Batch	Prefix	Concrete	B.B.C.	B.T.C.	B.S.C.	Bm Qk.	S.B.C.	S.T.C.	Sb. Fin.	Sb. Part.	Sb qk	Sb Qk
1	RF	R	C35	25	25	25	0.000	15	15	1.250	2.500	0.000	0.000
2	TF	T	C35	25	25	25	0.000	15	15	0.750	1.000	5.000	0.000
3	1F	1	C40	50	50	50	0.000	25	25	1.000	0.000	7.500	0.000

You can click the Map button to generate the mapping data between ETABS and **SADS**.

SADS uses the Prefix as the prefix of beam and slab marks. Because you have enter "1" to mark prefix character number in Function page, the prefixes are assigned automatically. If you prefer to mark the slabs and beams on typical floor as S1, S2, S3, etc. and B1, B2, B3, etc., you can erase the characters in Prefix column. The following symbols are described as below and you should enter a proper values.

B.B.C.: concrete cover of beam at bottom of section, unit: mm.

B.T.C.: concrete cover of beam at top of section, unit: mm.

B.S.C.: concrete cover of beam at side of section, unit: mm.

Bm Qk.: the minimum concentrated Qk of beam, unit: kN.

S.B.C.: concrete cover of slab at bottom of section, unit: mm.

S.T.C.: concrete cover of slab at top of section, unit: mm.

Sb. Fin.: the weight of slab finish, unit: kN/M².

Sb. Part.: the weight of slab partition: kN/M²

Sb. Live: the imposed load of slab: kN/M²

Sb Qk.: the minimum concentrated Qk of slab, unit: kN/M.

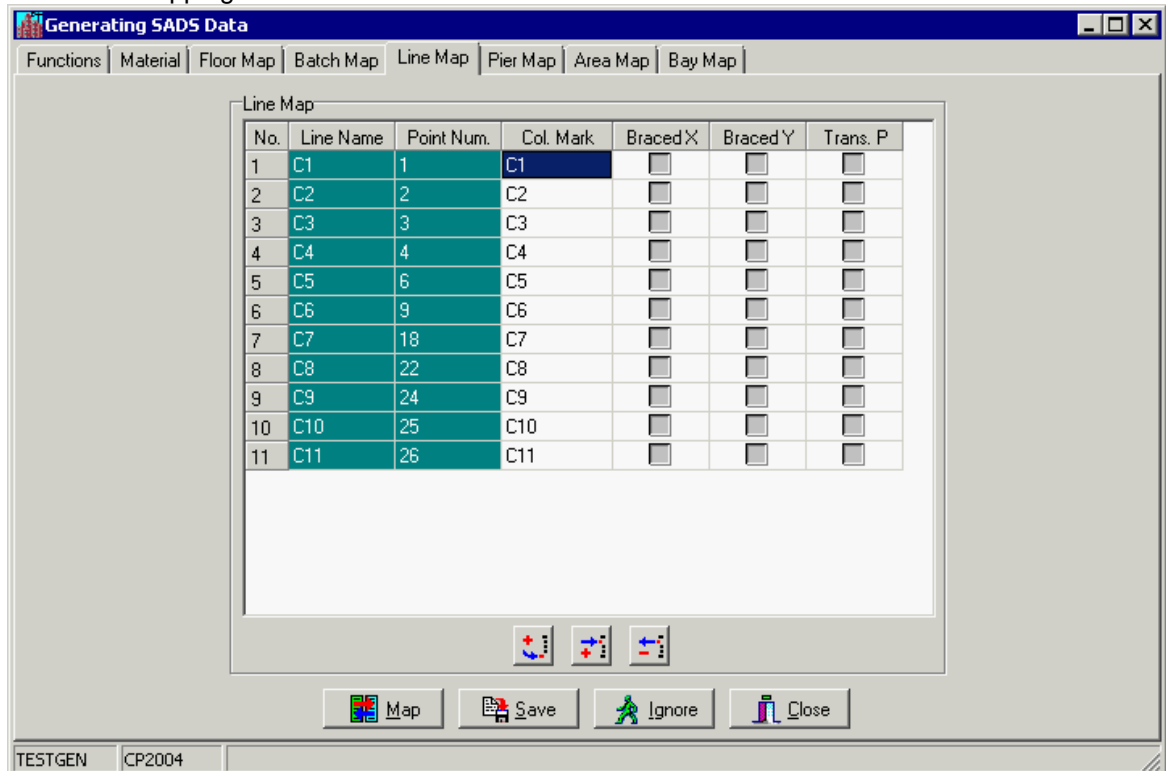
If you don't select multiple concrete cover in Master Data, some of covers are disabled.

If you find any problem in mapping process, you can click the Ignore button to rollback to previous status. If you complete data entry properly, you may click the Save button to save the mapping data.

Finally, you can click the next TAB - Line Map TAB for further mapping.

3.6 Line Map Page

After you click the Line Map TAB, the Line Map page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. You have selected the Line Name option on the Functions Page. SADS assigns line names to column marks.

You may check the Braced X and / or Braced Y check boxes if the columns are braced in X and / or in Y direction. Also, check the Trans. P check box when the top of column is connected to transfer plate.

You may check the Save button after the data entry is completed correctly or click the Ignore button to rollback the mapping to previous status.

Tips:

1. If there are too many lines in the project and you cannot complete all mapping of lines now, you may click the Save and Close button instead of Save button to save that data and close the Generating **SADS** Data window and you may close **SADS** application. When you launch SADS and select Generating **SADS** Data command next time, you may click the Line Map Tab to continue the mapping of remaining lines.
2. When the Line Map Page is displayed, the Framing Plan window is displayed at the side of Generating **SADS** Data window automatically. If you have a complex building framing plan and hard to map lines using Line Map grid, you may use the [framing plan](#) to map these lines. Finally, you may click the next TAB - Pier Map TAB for further mapping.

3.7 Pier Map Page

After you click the Pier Map TAB, the Pier Map page is displayed and you will see the grid is blank - no mapping data.

No.	Pier Name	Wall Mark	Sub-wall	Main Wall	Bend X	Bend Y
1	CR1	CR1	<input checked="" type="checkbox"/>	CW1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	CR2	CR2	<input checked="" type="checkbox"/>	CW1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	CR3	CR3	<input checked="" type="checkbox"/>	CW1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	CR4	CR4	<input checked="" type="checkbox"/>	CW1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	CR5	CR5	<input checked="" type="checkbox"/>	CW1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	P5	P5	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
7	PE	PE	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Because you have checked the Copy Pier Name check box in Function Page, all pier names are copied to wall marks and displayed on the grid. There are 4 more data you need to provide for generating **SADS** data.

Sub-wall: check the check box if the pier is a sub-wall in **SADS**;

Main Wall: enter the mark of main wall for this sub-wall;

Bend X: check the check box if you consider the X-X bending moment effect for the wall;

Bend Y: check the check box if you consider the Y-Y bending moment effect for the wall.

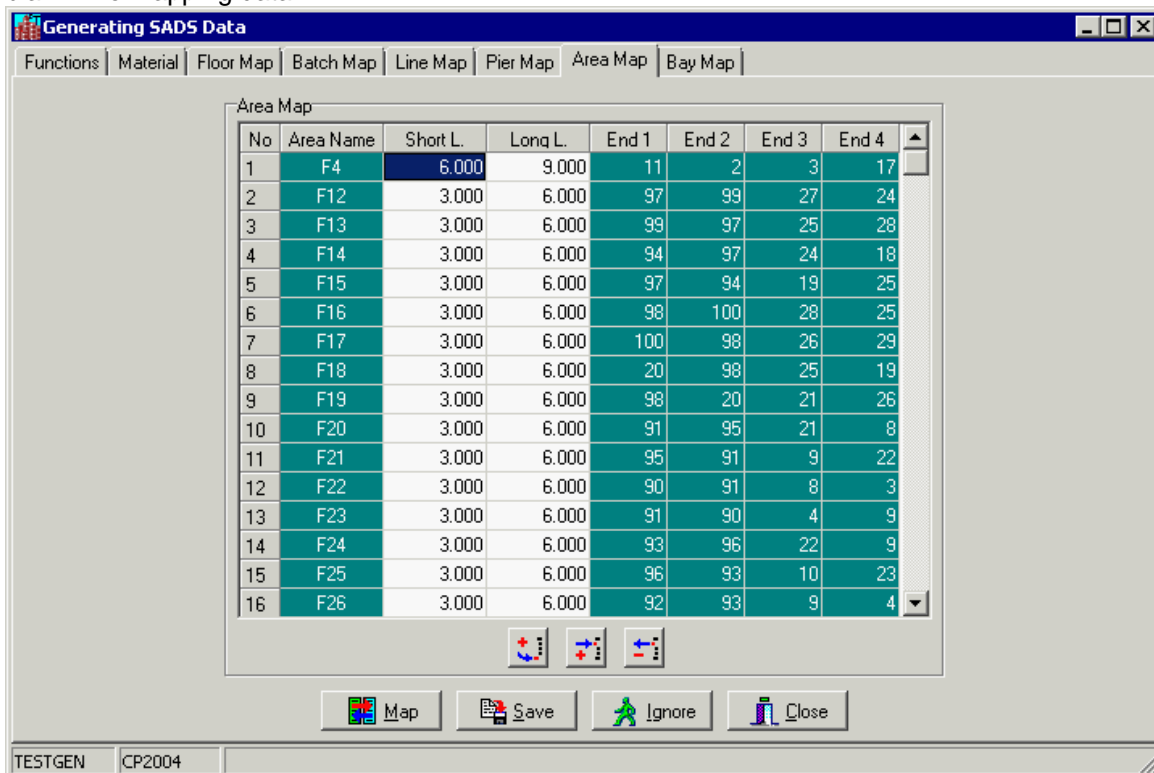
In the demonstration project, CR1 to CR5 are the sub-wall of core wall CW1. You need to check the Sub-wall check boxes and enter the CW1 to Main Wall edit boxes. The P5 is a shear wall along X-X, you should check the Bend X check box, and the PE is a shear wall along Y-Y, you should check the Bend Y check box. All results are shown as above.

If you find any problem in mapping process, you can click the Ignore button to rollback the mapping to previous status. If you finish the data entry properly, you may click the Save button to save these pier map data.

Please refer to tips in [Line Map Page](#) for complex building. Finally, you may click the next TAB - Area Map TAB for further mapping.

3.8 Area Map Page

After you click the Area Map TAB, the Area Map page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. In this mapping window, you need to verify the short spans and long spans of slabs. Spans of all rectangular slabs are calculated by **SADS** and displayed in the window automatically. Most of these spans are correct. But, some of slabs located at the side of building, the actual spans may different than spans calculated from center to center. In this case, you must adjust the span values to actual spans. Furthermore, **SADS** does not calculate the spans for triangular slabs and non-rectangular slabs. The span values for these slabs are zero. You must provide the span values for these slabs.

if you find any problem in mapping process, you can click the Ignore button to rollback the mapping to previous status. If all spans are provided correctly, you may click the Save button to save the mapping data.

Finally, you may click the next TAB - Bay Map TAB for further mapping.

3.9 Bay Map Page

After you click the Bay Map TAB, the Bay Map page is displayed and you will see the grid is blank - no mapping data.

No	Bay Name	Is Lintel	Lintel Mark	Is Asso	2nd.B	Span	Line I	Line J	Reverse
1	B1	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C1	C2	<input type="checkbox"/>
2	B2	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C2	C3	<input type="checkbox"/>
3	B3	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C3	C4	<input type="checkbox"/>
4	B4	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C4	W1	<input type="checkbox"/>
5	B5	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C1	C5	<input type="checkbox"/>
6	B6	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C2		<input type="checkbox"/>
7	B7	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C3		<input type="checkbox"/>
8	B8	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	6.000	C4	C6	<input type="checkbox"/>
9	B9	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	6.000	C5		<input type="checkbox"/>
10	B10	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	6.000		C6	<input type="checkbox"/>
11	B11	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	6.000	C6	W6	<input type="checkbox"/>
12	B12	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.000		W7	<input type="checkbox"/>
13	B13	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.000		W9	<input type="checkbox"/>
14	B14	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	6.000	C5	C7	<input type="checkbox"/>
15	B15	<input checked="" type="checkbox"/>	LB1	<input type="checkbox"/>	<input type="checkbox"/>	1.000	W2	W3	<input type="checkbox"/>
16	B16	<input checked="" type="checkbox"/>	LB2	<input type="checkbox"/>	<input type="checkbox"/>	1.000	W4	W5	<input type="checkbox"/>

You can click the Map button to generate the mapping data between ETABS and **SADS**. You are selecting the Search by section ID for girder / associate beam, secondary beam and lintel beam in Main Function page. So, all girder / associate beams, secondary beams and lintel beams are defined based on the first character in section ID.

For this demo project, the first character in section ID of bay B15 and B16 are "L". **SADS** defines these 2 bays as lintel beams and checks the Is Lintel check boxes and assigns the lintel marks LB1 and LB2 to the Lintel Mark column. The first character in section ID of bay B29 to B39 are "S". **SADS** defines these bays as secondary beams and checks the appropriate 2nd B check boxes. The 1st. floor framing plan in the demo project, the first character in section ID of bay B1, B2, B3, B4, B19, B20, B5, B14, B21, B26, B6, B12, B7, B13, B23 and B28 are "G". **SADS** defines these bays as girder / associate beam and checks the Is Asso check boxes for you.

If you find any problem in mapping process, you can click the Ignore button to rollback the mapping to previous status. If you finish the data entry correctly, you may click the Save button to save these bay map data.

Now, you can turn to Show Framing Plan window to map the beam marks.

3.10 Editing Beam and Column Marks

After you have finished the mapping of floor, line, pier, area and bay, you can turn to Show Framing Plan window. Because we don't map the beam between ETABS and **SADS**, all beams

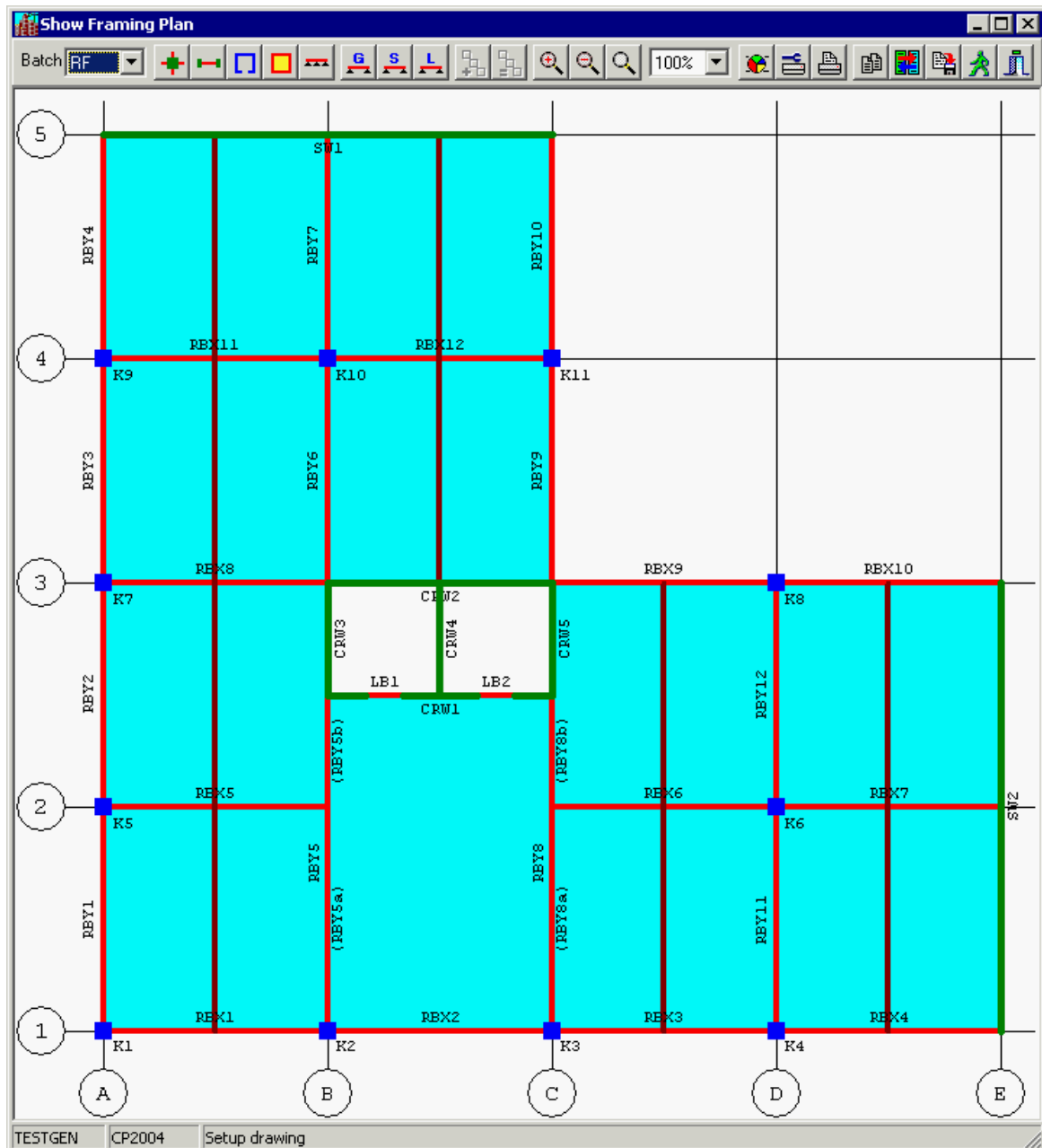
have no marks. You can click the Map button  to process the mapping. After you click the Map button, an option dialog box will be displayed.



If you select Mapping beams in single batch option, **SADS** will map the beams in current batch only. This option allows you to rollback the mapping to previous status.

If you select Mapping beams in all batches option, **SADS** will map all beams in all batches. But, this option can not rollback the mapping to previous status.

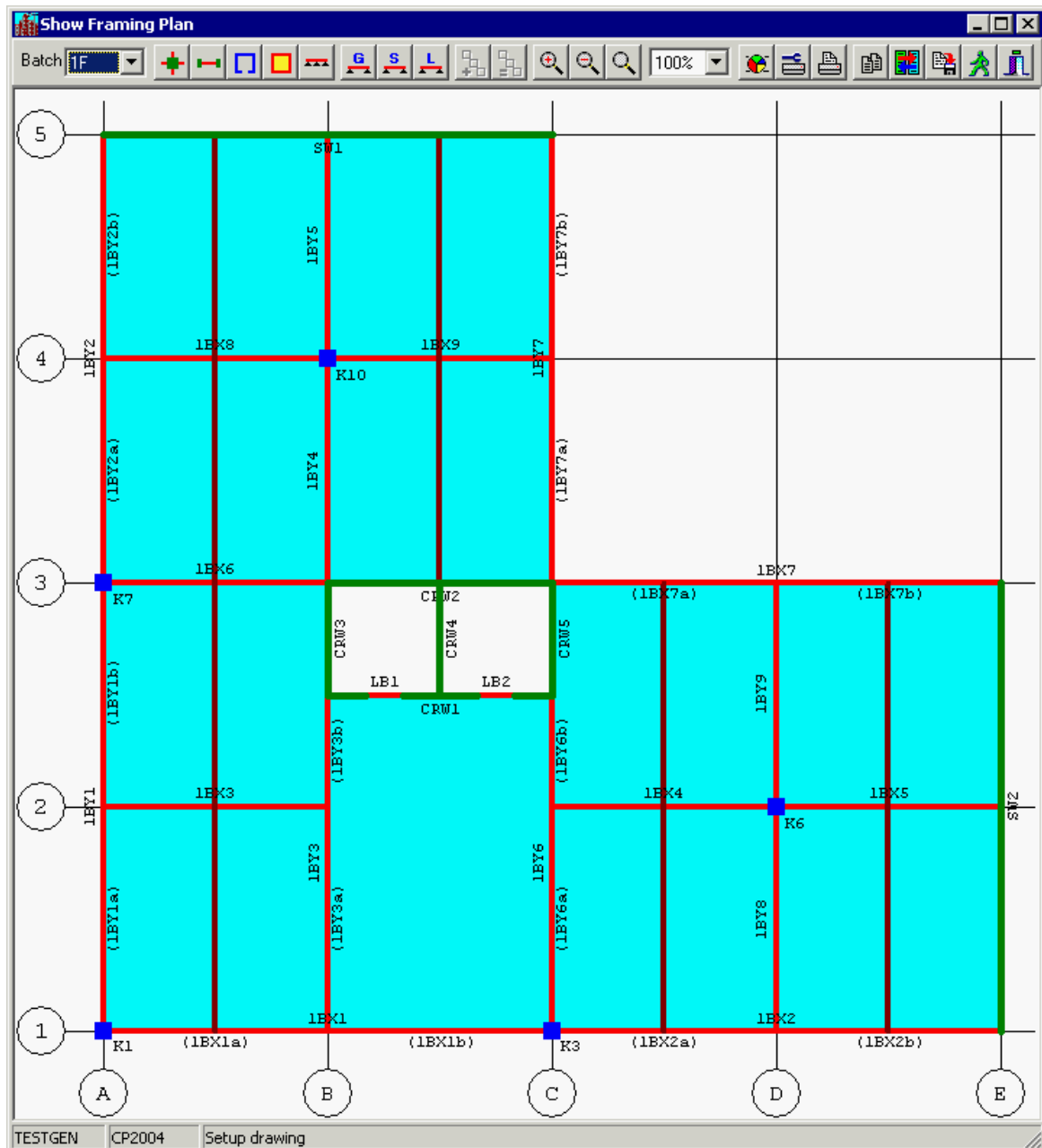
After you click the OK button, **SADS** will search the necessary information of beams from ETABS MDB file. If your MDB file contains correct information, most of bays will be mapped with beam marks automatically. Because it is possible to assign duplicated beam mark to secondary beams, the secondary beams can not be assigned with beam marks




You may see all bays are mapped with beam marks. But, you may notice some brown lines on the framing plan. These are secondary beams. Generate SADS Data Sub-command does not map all secondary beams due to these beams may have duplicate marks. Auto mapping cannot perform this job. Also, slabs may have more duplicate marks. So, all slab marks are blank. You must enter these beam mark and slab marks by selecting these beams and slabs one by one. Please refer to [Excessive Editing Marks](#) topic.

In the framing, the color of beam marks is red, the color of column marks is blue and the color of wall marks is green. These colors mean the beams, columns and walls with these mark do not exist. It is not a problem. After you click Generate button in next topic, the beams, columns and walls will be generated and the color of beam marks, column marks and slab marks will be changed to black.

You may check the framing plan on other batch. The following window shows the framing plan on 1st. floor.




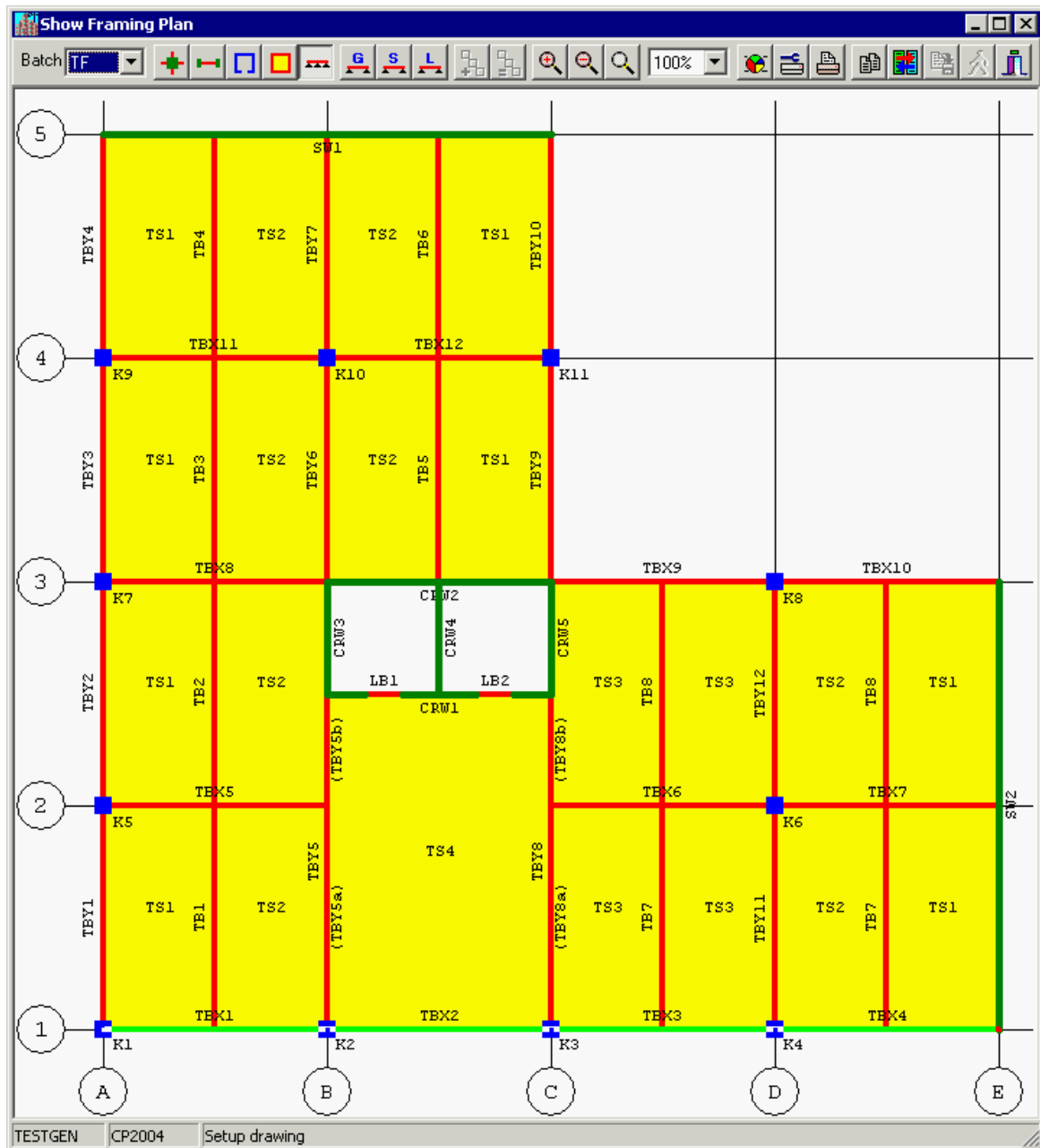
It is the same situation. The secondary beams and slabs marks need to be mapped by yourself. If you complete the mapping of slabs and secondary beams do not find any problem in framing

plans on all batches, you may click the  button and close the framing window. Now, you can click the Function TAB to return to Main Function page.

3.11 Editing Continuous Beam

SADS 16 can edit the composed beams of continuous beam. When you click down the

Continuous Beam button  and move the mouse cursor to one of the beam, SADS shows the whole continuous beam as below.



If you click the mouse button, the following dialog box is displayed.

The 'Edit Beam' dialog box is titled 'Continuous Beam'. It contains a table with the following data:

No	Beam Mark	Number
1	TBX1	100
2	TBX2	100
3	TBX3	100
4	TBX4	100

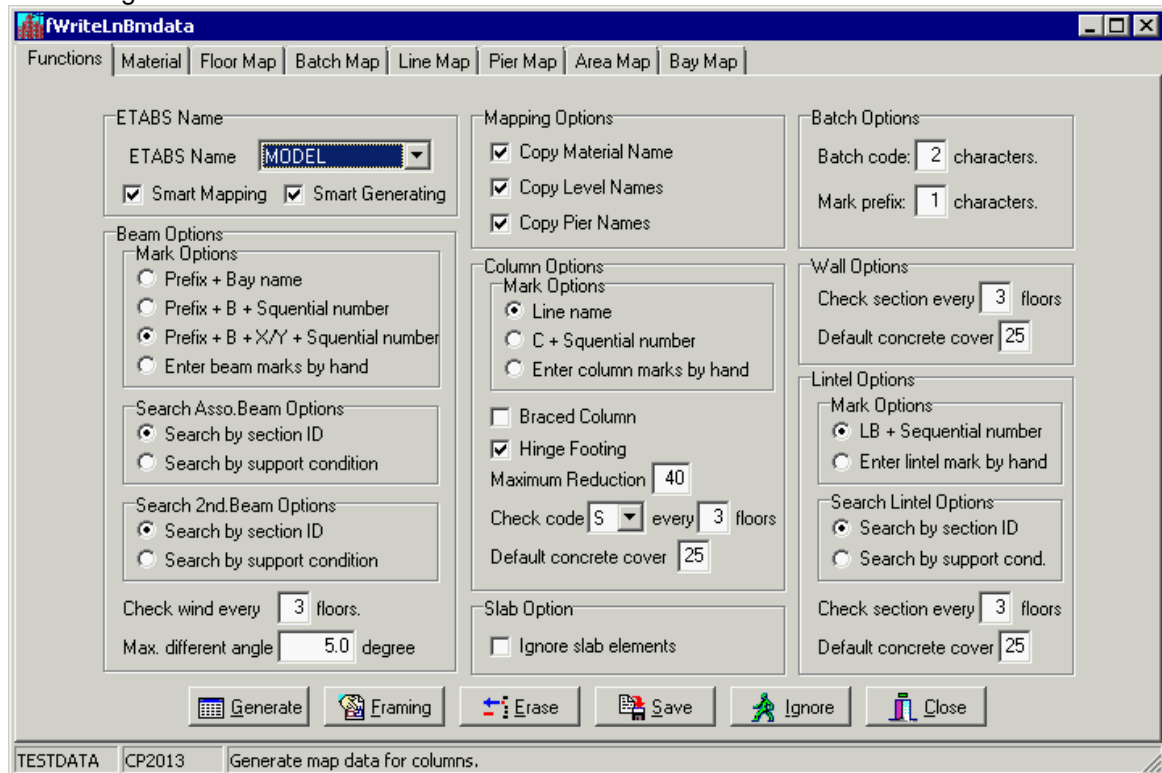
At the bottom of the dialog box, there are two buttons: 'Save' and 'Cancel'.

All beams in one continuous beam are assigned the same sequential number. The sequential numbers of two adjacent continuous beams has 100 increment. If you need to break the TBX1~TBX4 to 2 continuous beams, e.g. TBX1~TBX2 and TBX3~TBX4, you can change the

sequential numbers of TBX3 and TBX4 from 100 to 150. You may click the Save button to save the data and close the dialog box. Now, you may move the mouse cursor to TBX1. You will see SADS highlights TBX1 and TBX2 only, i.e. the highlighted continuous beam consists TBX1 and TBX2. The TBX3 and TBX4 composes another continuous beam TBX3~TBX4. Also, you can change the sequential numbers of beam in two or more continuous beams to the same sequential numbers to collect two or more continuous beams to one continuous beam.

3.12 Processing Page

When the mapping is completed and return to Main Function page, the main function page has a little change.



You may notice that the Generate button is enabled. This change indicates the mapping is done and you can start to generate **SADS** data using ETABS MDB file.

Before you generate **SADS** data, you must set a correct Smart Generating option. In the demo project, the SADS database is blank. You can un-check the check box. If you already have a usable **SADS** data, you must check the Smart generating check box. **SADS** will reserve all usable data when perform generating data. After this option is set correctly, you can simply click the Generate button and done.

You may check the generated **SADS** data listed in [Overview](#) topic. If the database is blank previously, you must enter all necessary data that not be included in ETABS output data.

If you want to repeat the procedures of generating **SADS** data, you may run Restore Sub-command and select <Project Data List Folder>\BACKUP\ folder, TESTGEN file name, bck extension name and check the "Clean all files before restore data" check box.

4 Linking ETABS Data Command

4.1 Overview

The requirement of project data files for running this demonstration are listed as below.



1. A set of valid **SADS** project data files;
2. A valid ETABS MDB file;
3. A valid ETABS e2k file if you want to amend ETABS input file using **SADS** database.

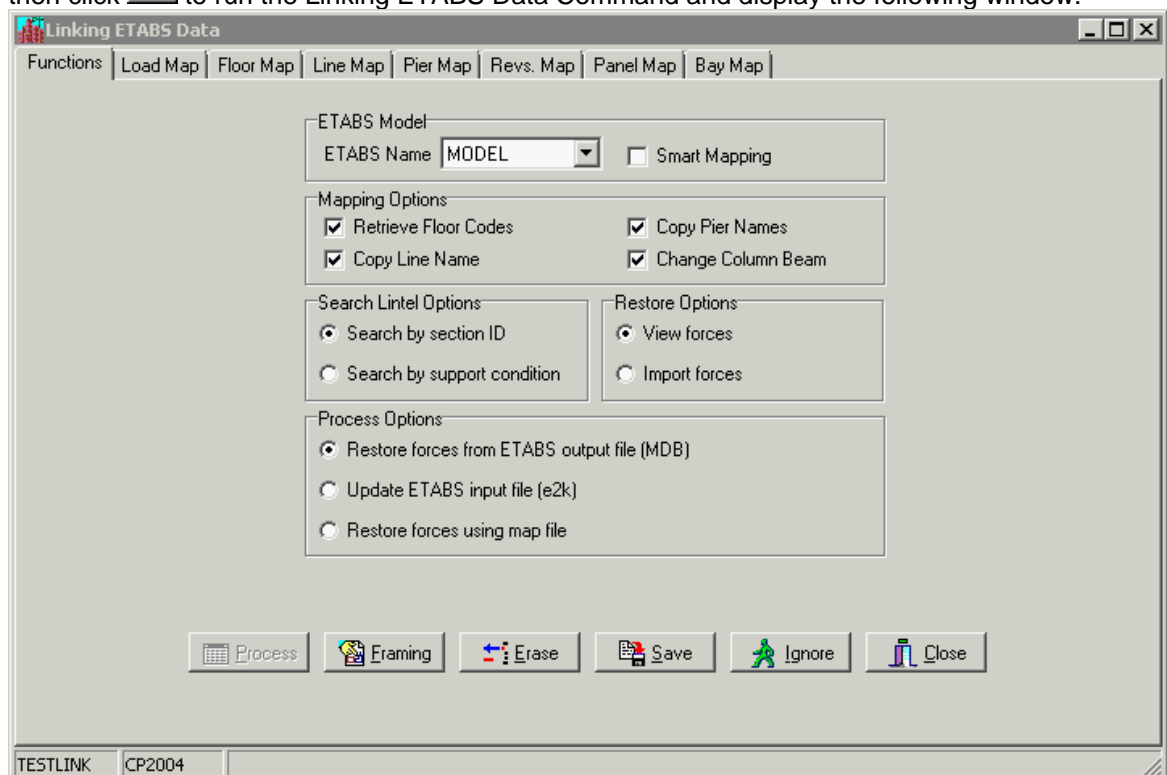
After you install **SADS 16** to your computer, you may run **SADS** and select TESTLINK project code to start the demonstration.

In this command, the slabs and secondary beams are not necessary. You don't need to includes these elements in your ETABS MDB file.

Also, If the building contains associate beams, SADS does not specify this "associate" attribute to these beams. The import forces function takes the same action for regular beams and associates beams.

4.2 Function Page

On **SADS** main window, you may click Module / Analysis / ETABS Link menu or click  and then click  to run the Linking ETABS Data Command and display the following window.



At the beginning of the demonstration, there is no mapping files in the project folder. So, the Functions page is displayed first and the Process button in this page is disabled. The Load Map page, Floor Map page and Bay Map page are always displayed. The Line Map page is displayed when there is column (line) in ETABS MDB file. The Pier Map page, Revs. Map page and Panel Map page are displayed when there is wall (pier) in ETABS MDB file. All these pages are blank right now.

ETABS Model:

ETABS Name: The ETABS name is retrieved automatically from the file name of ETABS MDB file in project data folder. If you have more than one MDB files, you may select the desired MDB file from the drop down combo box. In the demo project, there is only one MDB file MODEL.MDB.

Smart Mapping: The demo project is a blank project. We can un-check the check box. This check box should be checked when you are amending an existing mapping data.

Mapping Option:

Retrieve Floor Codes: If the floor structure of ETABS is the same as **SADS**, you may check the check box. Same floor structure does not mean that the level names of ETABS the same as the floor codes of **SADS**. For example, the floors in both ETABS and **SADS** from lower to

upper are lower ground, ground floor, 1st. floor, 2nd. floor, etc. The level names in ETABS are L/GF, GR/F, 01/F, 02/F, etc. The floor codes in **SADS** are L/FL, G/FL, 1/FL, 2/FL, etc. You may consider the floor structures are the same and check the check box. In the demo, we can check the check box.

Copy Line Name: If you follow the recommendation in Recommendation topic, all line names are same as the column marks in the project, you may check the check box. In this demo project, the line names are different with the column marks. So, we should not check the check box.

Copy Pier Name: If you follow the recommendation in Recommendation topic, all pier names are same as the wall marks in the project, you may check the check box. In this demo project, the pier names are different with the wall marks. So, we should not check the check box.

Change Column Beam: When linking ETABS data, **SADS** can check the column beam data that input by users. If you check the check box, **SADS** will correct any error in column beam data.

Search Lintel Option:

- Search by section ID: If you select this option, **SADS** defines secondary beam based on the first character equal to "LS" in section ID in ETABS.
- Search by support condition: If you select this option, **SADS** defines secondary beam based on the support condition of beam.

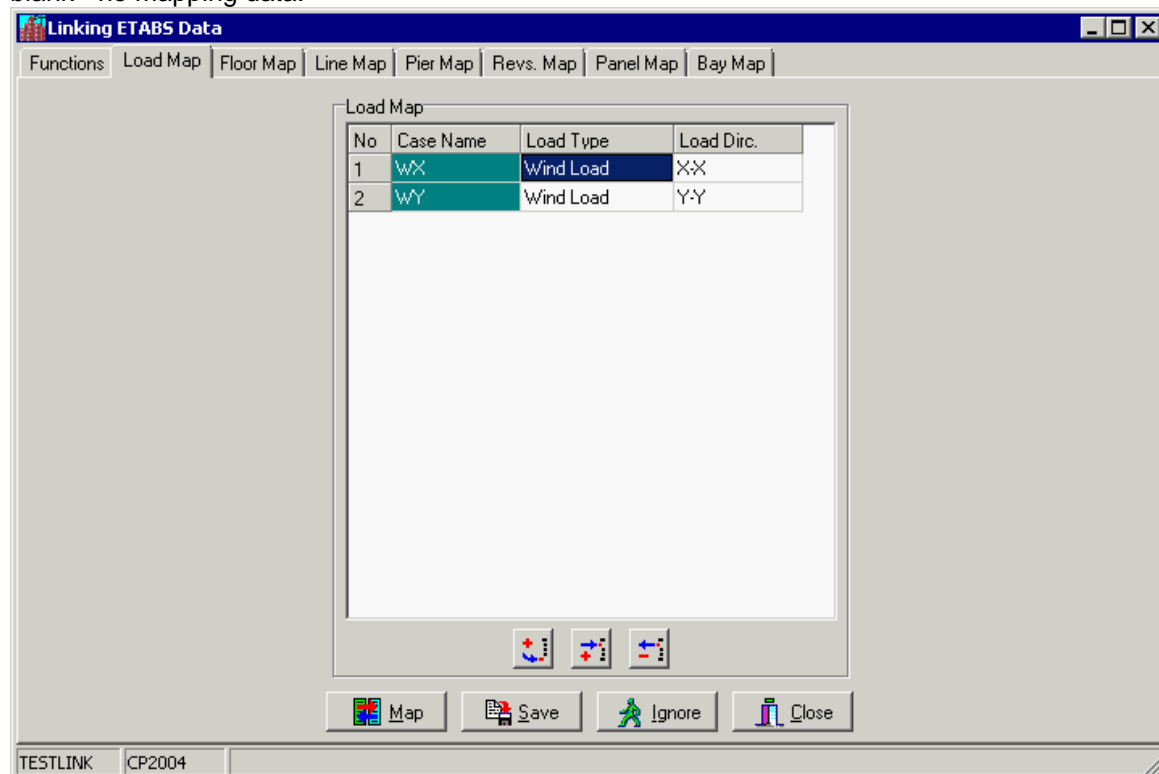
Please select Search by section ID for this demo.

In the current stage, all other options are not usable. We may click the Map button to start the mapping procedures.


After you set all options properly, you must click the map page in sequence of Load Map page, Floor Map page, Line Map page (if any), Pier Map page (if any) and Bay Map page.

4.3 Load Map Page

After you click the Load Map TAB, the Load Map page is displayed and you will see the grid is blank - no mapping data.



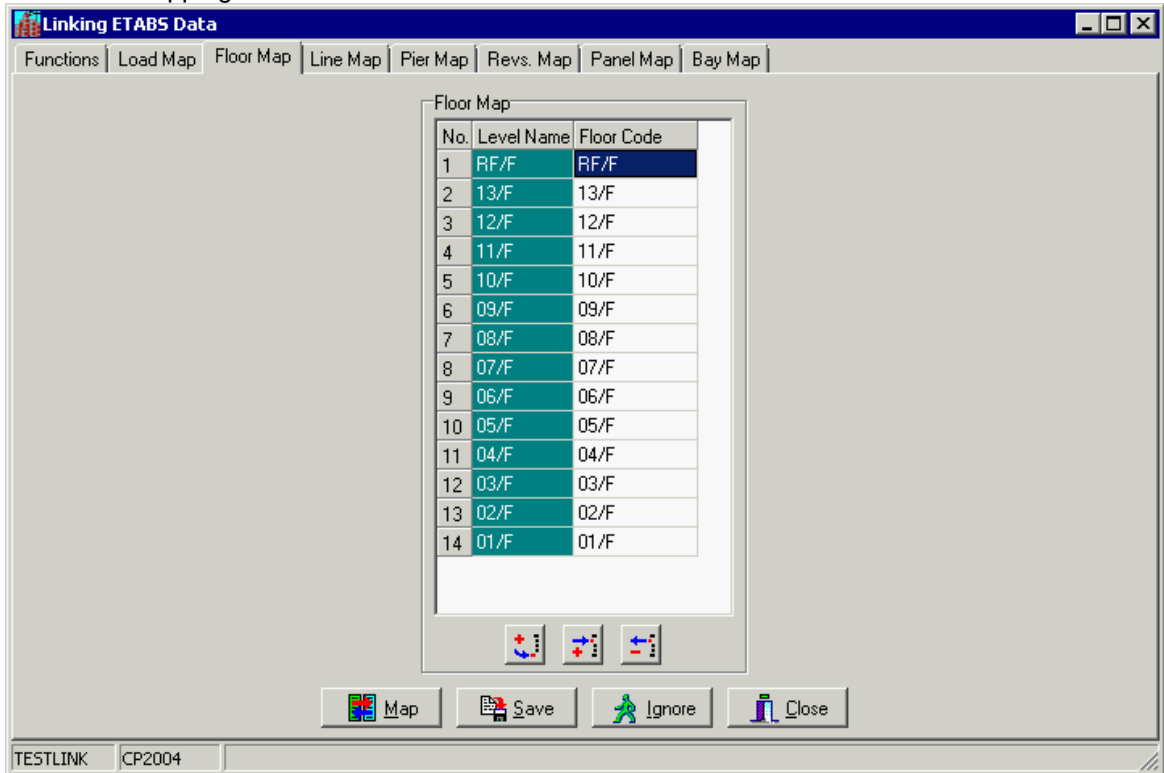
The DEAD and LIVE load cases are not used in **SADS** database. You should click the Delete

button  to delete these load cases. The case WX is wind load in X-X direction. You may click the Load Type combo box and select Wind Load, click the Load Dirc. combo box and select X-X

direction. The case WY is wind load in Y-Y direction. You may use the similar method to select Wind Load and Y-Y direction. If you find any problem in the mapping process, you can click the Ignore button to rollback to previous mapping status. If the Load Type and Load Dir are set properly, you may click the Save button to save these load map data. Finally, you may click the next TAB - Floor Map TAB for further mapping.

4.4 Floor Map Page

After you click the Floor Map TAB, the Floor Map page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. Because you have checked the Retrieve Floor Codes check box, all floor codes are retrieved and displayed on the grid. You may review these floor codes and make amendment if there is an error.

Suppose the floor structure is not the same and you don't check the Retrieve Floor Codes check box, you may use the drop down list box at Floor Code column or type in the floor code to the cell of grid directly.

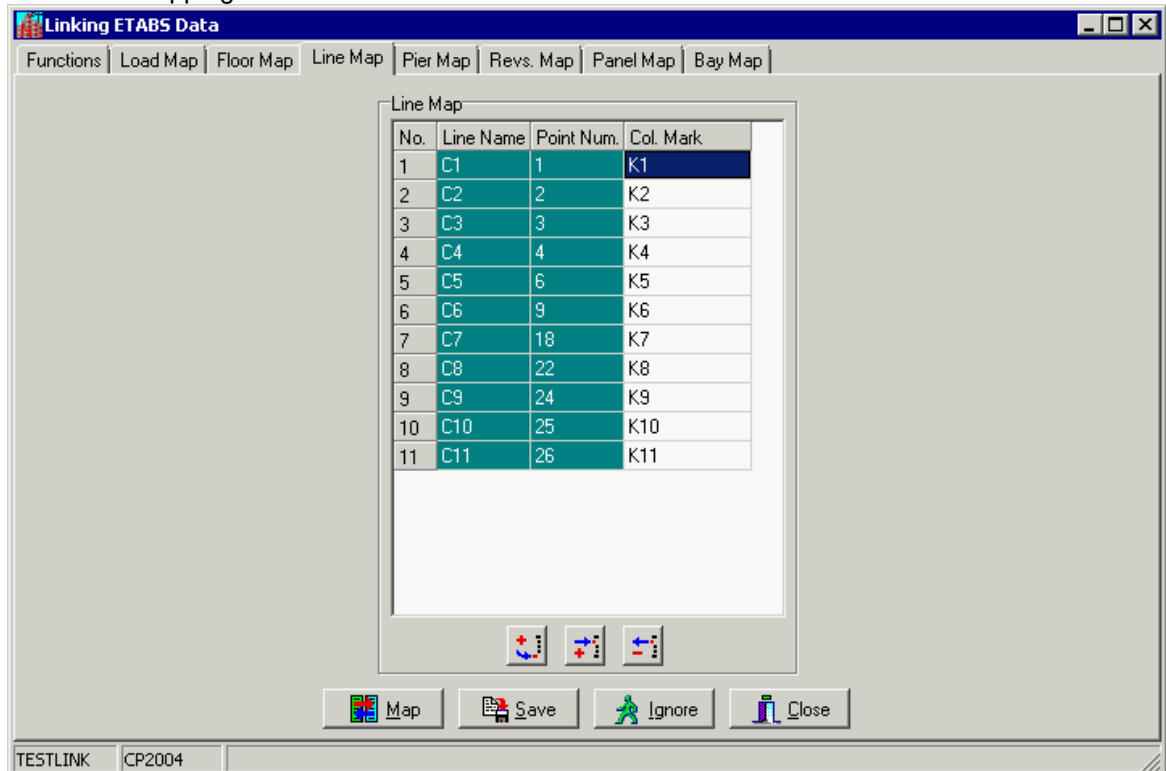
If all floor codes are set properly, you may click the Save button to save these floor codes.

Otherwise, you can click the Ignore button to rollback the mapping data to previous status.

Finally, you may click the next TAB - Line Map TAB for further mapping.

4.5 Line Map Page

After you click the Line Map TAB, the Line Map page is displayed and you will see the grid is blank - no mapping data.



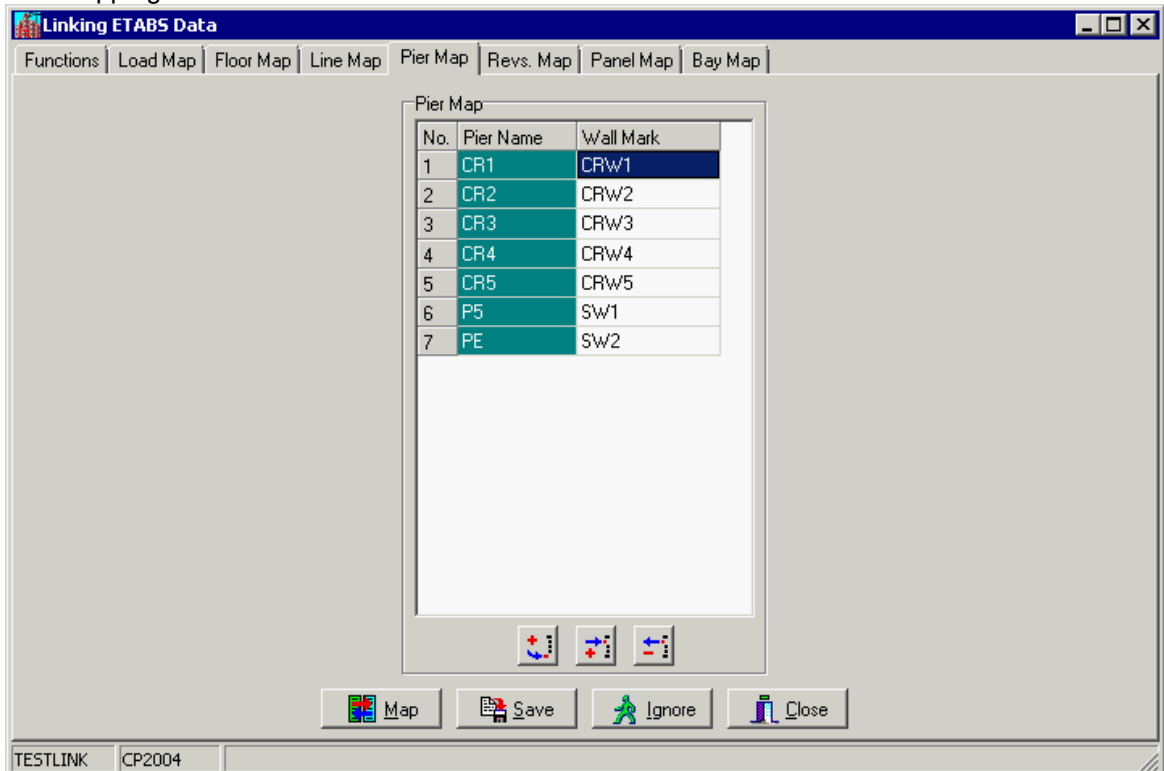
You can click the Map button to generate the mapping data between ETABS and **SADS**. Because you have not checked the Copy Line Names check box, all column marks are blank. We should enter the mapping column mark by hand.

The cell of Column Mark is implemented as combo box. You can select the mapping column mark by selecting a valid mark from drop down list box. When you have a large number of columns, it is very hard to find out the desired mark from the drop down list box. So, we implement incremental search in the combo box. You can type in the desired column mark partly or wholly and the combo box will search the valid column mark for you. This function is implemented for entering floor codes in Floor Map page, wall marks in Pier Map page and lintel marks in Bay Map page also. You may select or enter the column marks K1, K2, K3, K4, K5, K6, K7, K8, K9, K10 and K11 to map with lines C1 to C11.

If all column marks are entered properly, you may click the Save button to save these column marks. Otherwise you can click the Ignore button to rollback the mapping data to previous status. Finally, you may click the next TAB - Pier Map TAB for further mapping.

4.6 Pier Map Page

After you click the Pier Map TAB, the Pier Map page is displayed and you will see the grid is blank - no mapping data.



You can click the Map button to generate the mapping data between ETABS and **SADS**. Because you have not checked the Copy Pier Names check box, all wall marks are blank.

You may select or enter the wall marks CRW1, CRW3, CRW4, CRW5, CRW2, SW1 and SW2 to map with pier names CR1, CR3, CR4, CR5, CR2, P5 and PE.

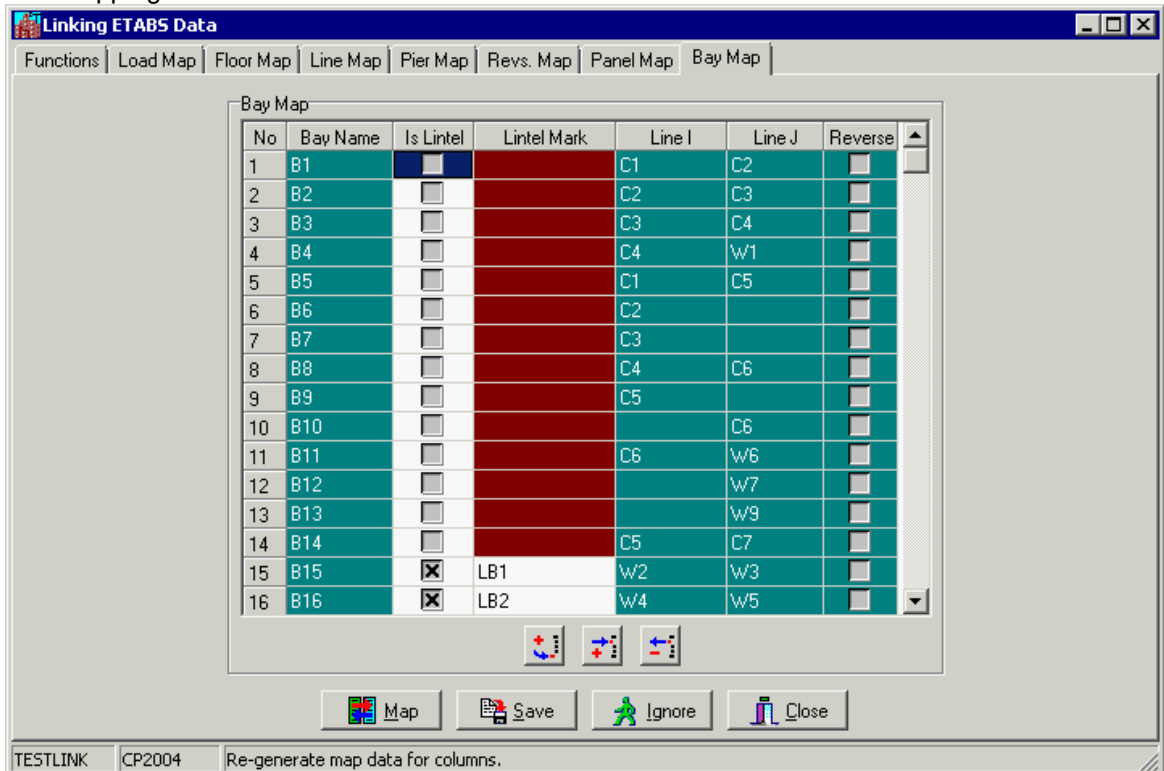
If all wall marks are entered properly, we may click the Save button to save these wall marks.

Otherwise, you can click the Ignore button to rollback the mapping data to previous status.

You may click the Revs. Map TAB and Panel Map TAB to review the major direction of piers and the thickness of panels. There is no mapping procedures in these pages. Finally, you may click the next TAB - Bay Map TAB for further mapping.

4.7 Bay Map Page

After you click the Bay Map TAB, the Bay Map page is displayed and you will see the grid is blank - no mapping data.




You can click the Map button to generate the mapping data between ETABS and **SADS**. Because you have select the Search by section ID, **SADS** will search lintel beams base on the first character in section ID, i.e. if the first character is "L", the beam is defined as lintel beam automatically. The only thing you need to do is selecting lintel marks form combo box, i.e. selecting LB1 for bay 15 and LB2 for bay 16.

If you find any problem in the mapping process, you can click the Ignore button to rollback the mapping data to previous status. if you finish the data entry properly, you may click the Save button to save the bay map data.

Now, you can turn to Show Framing Plan window to map the beam marks.

4.8 Editing Beam and Column Marks

After you have finished the mapping of floor, line, pier and bay, you can turn to Show Framing Plan window. Because we don't map the beam between ETABS and **SADS**, all beams have no

marks. You can click the Map button  to process the mapping. After you click the Map button, a option dialog box will be displayed.

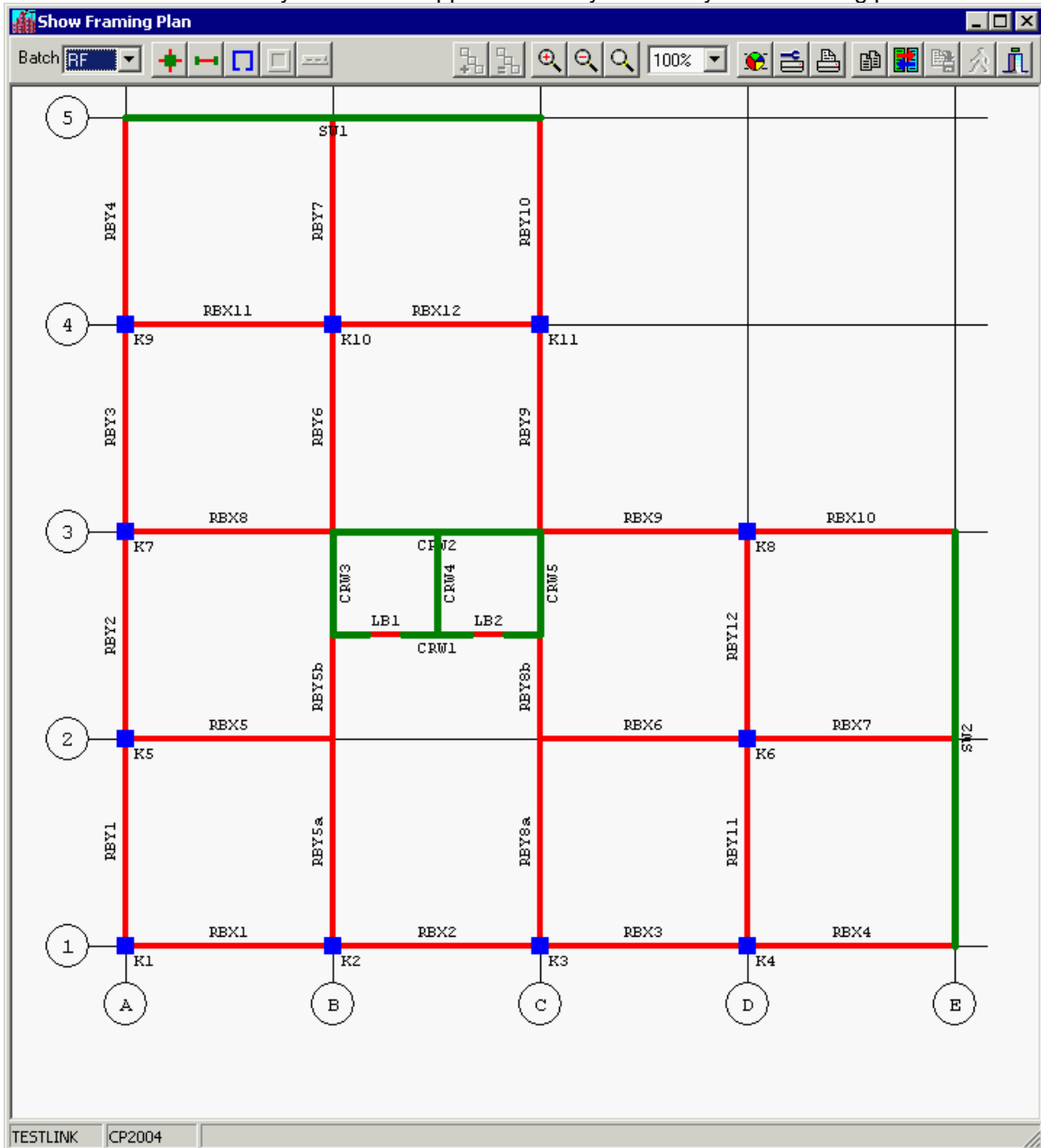


If you select Mapping beams in single batch option, **SADS** will map the beams in current batch only.

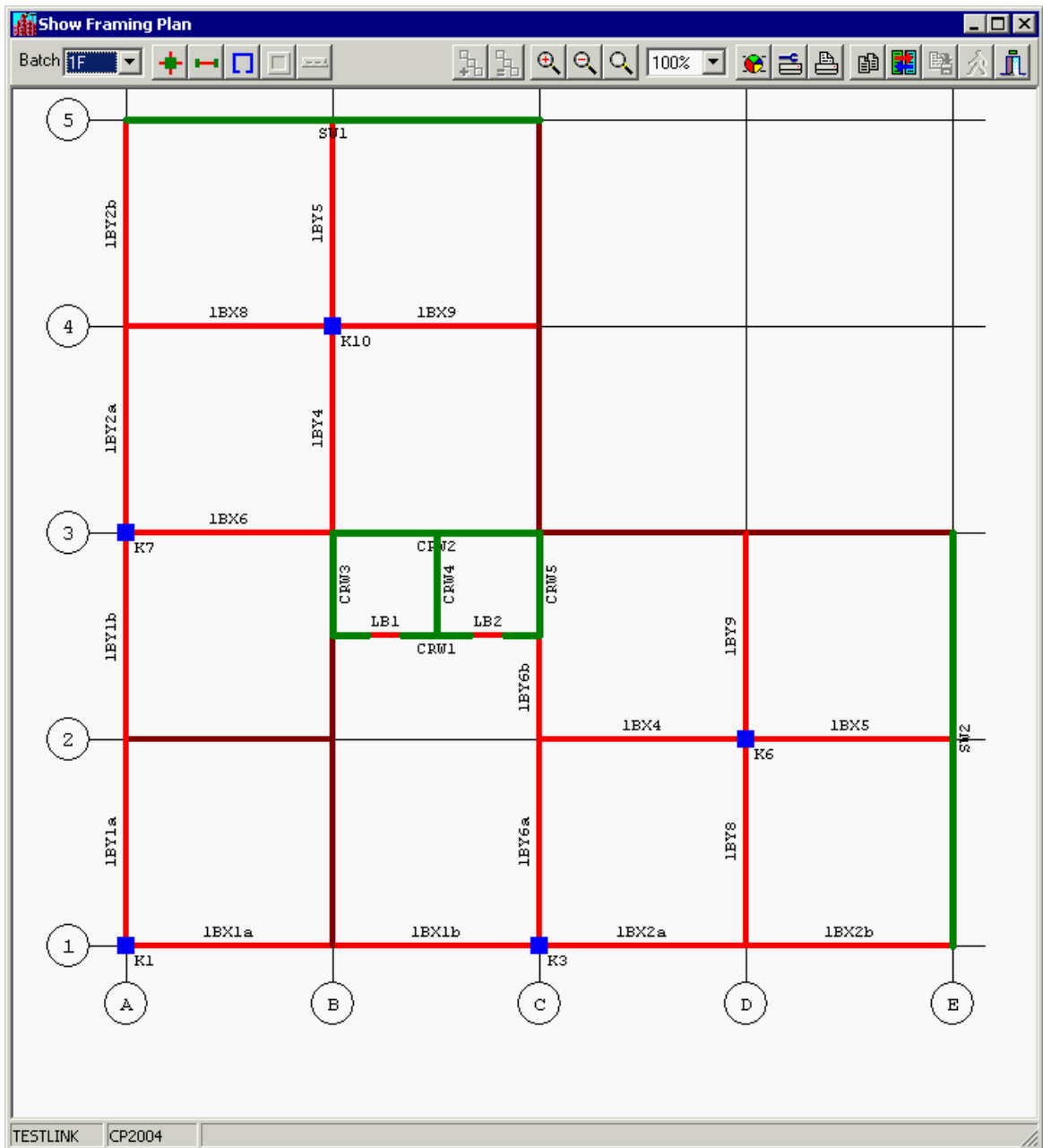
This option allows you to rollback the mapping to previous status.

If you select Mapping beams in all batches option, SADS will map all beams in all batches. But, this option can not rollback the mapping to previous status.

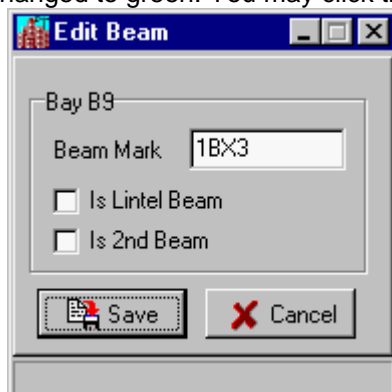
After you click the OK button, **SADS** will search the necessary information of beams from **SADS** database in depth. If your database contains correct information, most of bays will be mapped with beam marks automatically. The most important sources are taken from column data. So, the bays that connected to columns are likely mapped to beams in **SADS**. The bays that not connected to column in both ends will lack data to mapped to beams. **SADS** will leaves these beam marks to blank and you should mapped these bays manually in the framing plan.



In RF batch and TF batch, all bays are connected to column in one end or both ends, so all bays are mapped with beams successfully. You don't need to do any thing in this batch. When you change the batch to 1F, you may find some bays have no beams marks and the color of these bays become brown. These beams have no column connected to both ends.




Now, we need to map the bays that missing beam mark. The bay in grid 2 and between grid A and B is a simply supported beam 1BX3. You may move the mouse toward the bay until the color is changed to green. You may click the mouse to display the following dialog box.



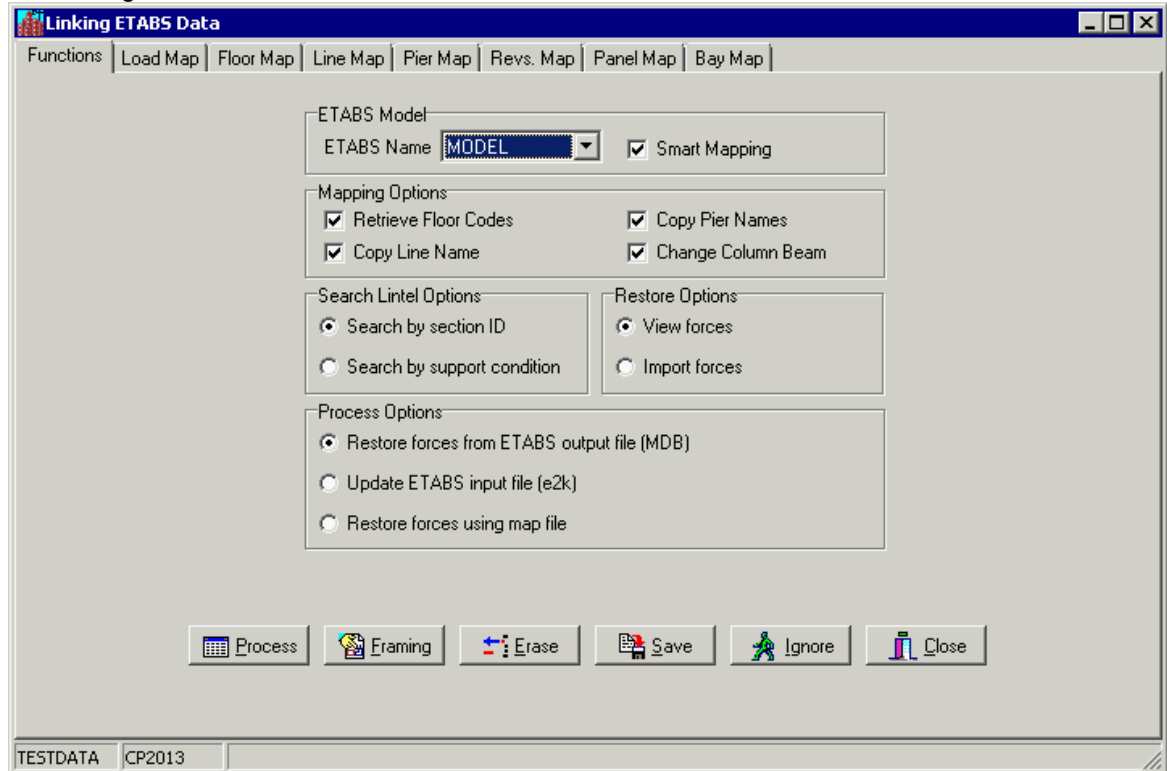
Enter the beam mark 1BX3 to Beam Mark edit box and un-check the Is Lintel Beam check box. You should click the Save button to apply the mapping. You may see the bay color is changed to red and the beam mark is displayed on the bay.

Using the same procedure, you can map 1BX7a and 1BX7b to bays on grid 3 between grid C to E, map 1BY3a and 1BY3b to bays on grid B between grid 1 to core wall, map 1BY7a and 1BY7b to bays on grid C between core wall to grid 5. Actually, these 6 beams are associate beams. But, you don't need to specify the "associate" attribute in Linking ETABS Data Command.

After you complete all mapping, you should click the  button to save the mapping beam marks. Now, you can click the Function TAB to return to Main Function page.

4.9 Processing Page

When the mapping is completed and return to Main Function page, the main function page has a little change.



You may notice that the Process button is enabled. This change indicates the mapping is done and you can start to import ETABS forces and update ETABS input file (e2k file).

The import ETABS forces function uses MDB file directly. You don't need to generate text files from MDB file. You may select View forces option and Restore forces from ETABS output file (MDB), and then click Process button. The imported forces will be displayed to the window. If the Import forces option is selected, the forces will be imported to **SADS** database.

After you perform pre-design of beams, columns, walls and lintel beams, and you have adjusted the sections of these members, you may select Update ETABS input file (e2k) option. When you click the Process button, the e2k file will be updated according the new sections in **SADS** database.

Notes: To update the sections of beams, columns and lintel beams, you can use the Beam Data, Column Data and Lintel Data command. To update the wall section, you should open the Panel Map page on the window displayed above and change the appropriate thickness of panels. The Restore forces using map file option is not covered in the demonstration, please refer to help file of **SADS 16**.

If you want to repeat the procedures of linking ETABS data, you may run Restore Sub-command and select <Project Data List Folder>\BACKUP\ folder, TESTLINK file name, bck extension name and check the "Clean all files before restore data" check box.

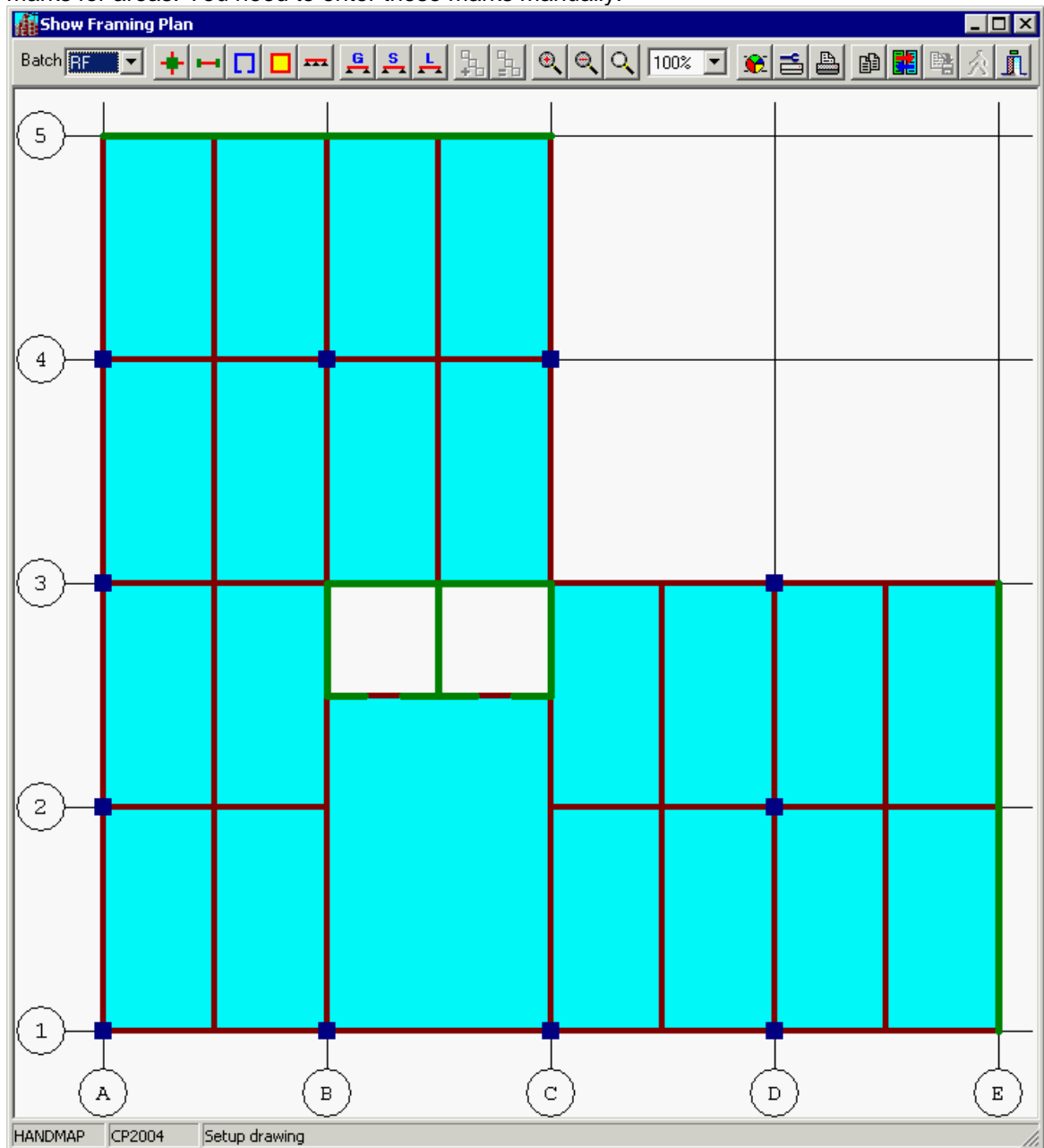
5 Mapping on Framing Plan Manually

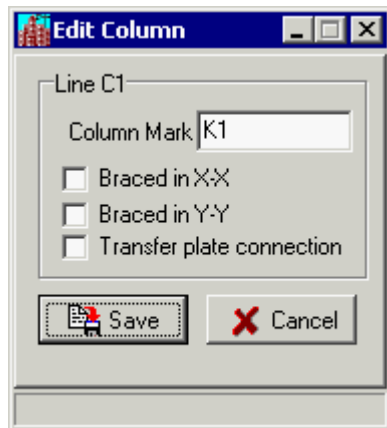
5.1 Start Framing Plan


For building with irregular plan, the automatic mapping of columns, walls, beams and/or slabs may not meet your marking requirement. In this case, you may select Enter Beam Marks By Hand in Beam Options and/or select Enter Column Marks By Hand in Column Options, i.e. you need to complete all mapping of columns, walls, beams and/or slabs manually.

You may run **SADS** and select HANDMAP project code to start the demonstration.

You can run Generate **SADS** Data Sub-command and click the Framing button. Your framing plan is displayed as below. There are no column marks for lines, no beam marks for bays and no slab marks for areas. You need to enter these marks manually.





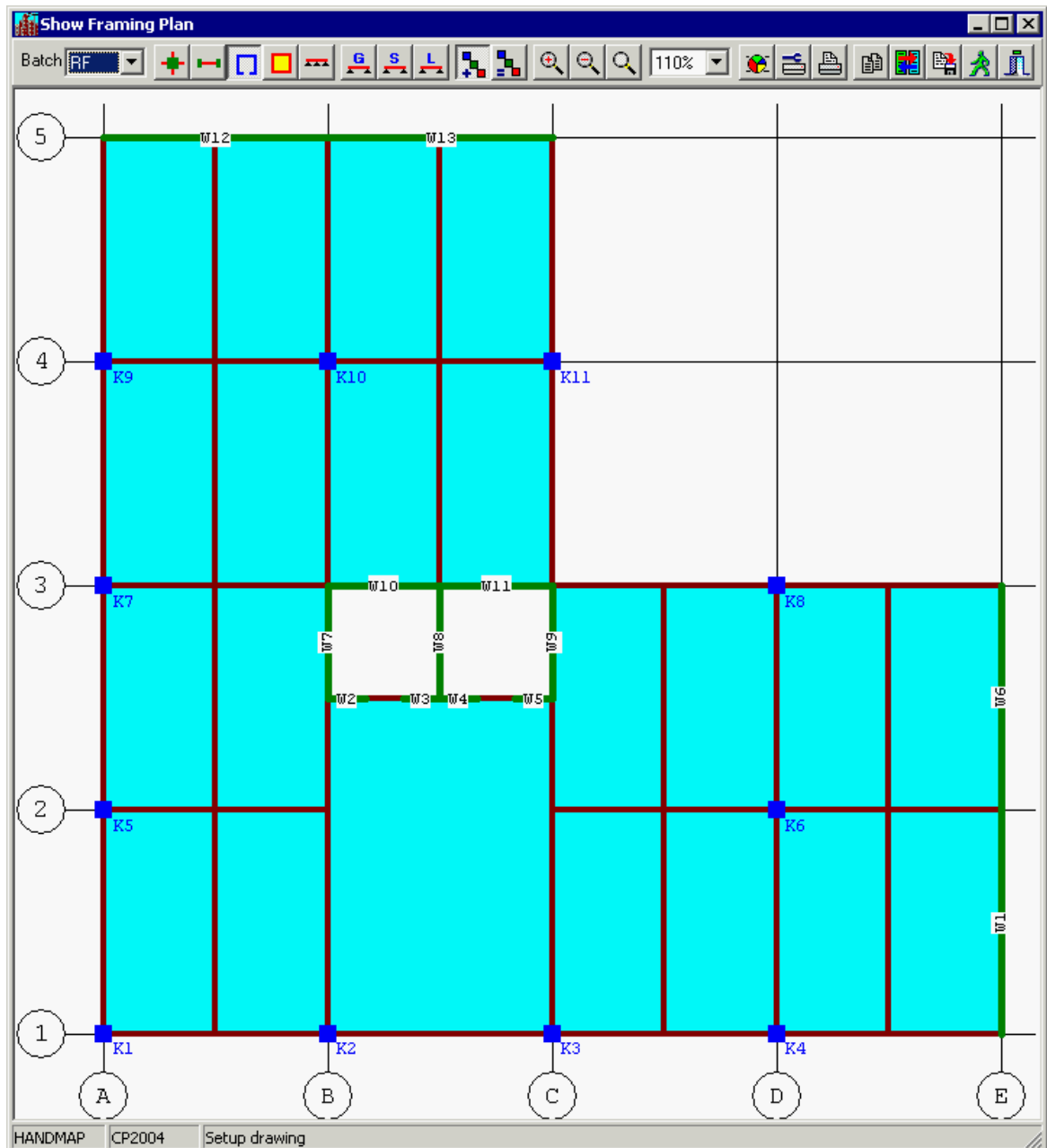
- 2 Enter K1 to Column Mark edit box, check or un-check the check boxes according the column condition and press the TAB key. You may see a column mark K1 is assigned the line #1.
- 3 Click down the Repeat Incremental button .
- 5 Move the mouse cursor to line #2 and click the left mouse button. The column mark K2 is assigned to the line #2.
- 6 Repeat this procedure to line #3, #4, #6, #9, #18, #22, #24, #25 and #26.
- 7 Now, all column marks are assigned to appropriate lines, you should click Save button to close the dialog box and turn up the Repeat Incremental button. The framing plan is shown at next topic.

5.3 Mapping Walls

Click up the Show Line button to remove the line numbers.

Currently, the wall marks in framing plan are blank. You have 2 choices.

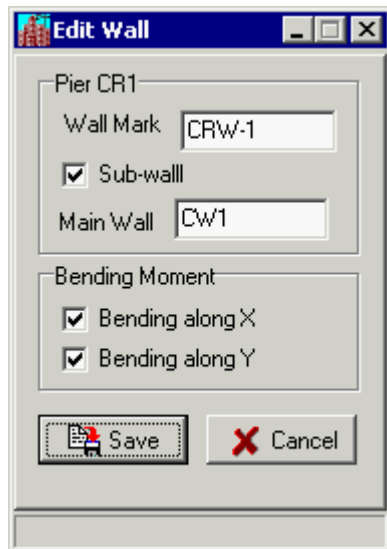
1. Enter the mapping wall marks from Pier Map page;
2. Enter the mapping wall marks from framing plan directly.




If the framing contains too many walls (piers), the second method may be a better choice. We use this topic to demonstrate how to map wall marks from framing plan.


Our goal is assigning shear wall mark SW1 to panel W1 and W6 (pier PE), SW2 to panel W12 and W13 (pier P5), assigning sub-wall mark CRW-1, CRW-2, CRW-3, CRW-4 and CRW-5 to panel W2~W5 (pier CR1), W10~W11 (CR2), W7 (CR3), W8 (CR4) and W9 (CR5). The procedures are listed as below.

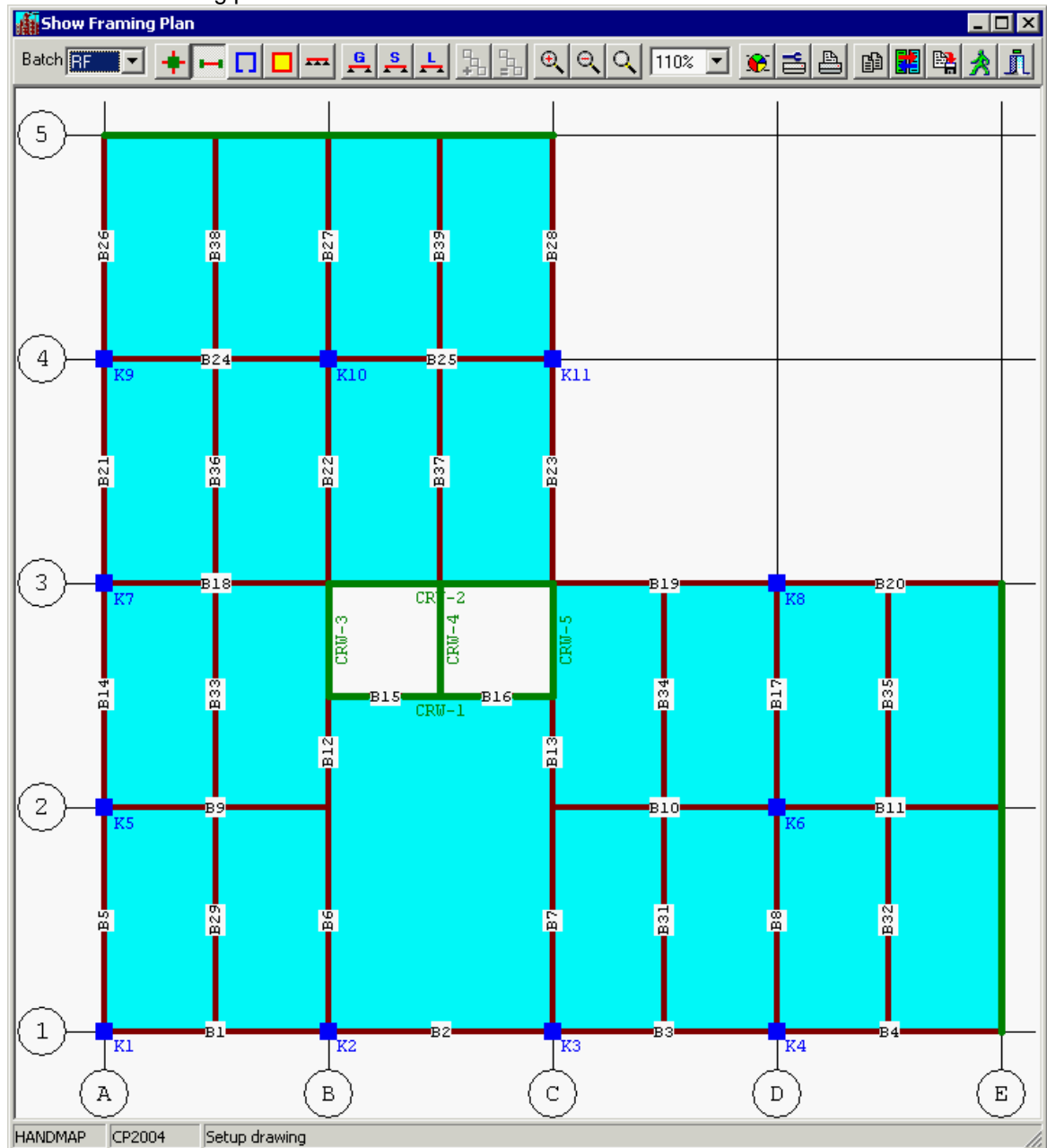
1. Move the mouse cursor to one of the panel in pier CR1 to select the pier and click the mouse button to display Edit Wall dialog box.



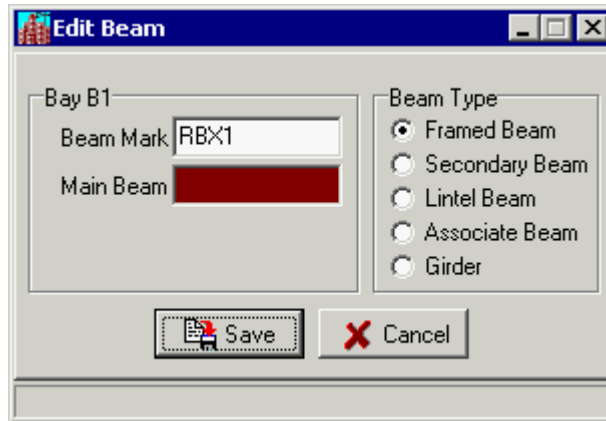
2. Enter CRW-1 to Wall Mark edit box, check the Sub-wall check box and enter CW1 to Main Wall edit box. Press TAB key to assign CRW-1 to selected pier.
3. Click down the Repeat Incremental button .
4. Move the mouse cursor to one of the panel of pier CR2 and click the mouse button, a wall mark CRW-2 is assigned to selected pier.
5. Repeat this procedure for piers CR3, CR4 and CR5 to assign CRW-3, CRW-4 and CRW-5 to these piers.
6. Click the Save button to close the Edit Wall dialog box and turn up the Repeat Incremental button.
7. Move the mouse cursor to pier P5 and click the mouse button to display the Edit Wall dialog box.
8. Enter SW1 to Wall Mark Edit box, un-check the Sub-wall check box, check the Bending along X check box and un-check the Bending along Y check box. Click the Save button to close the Edit Wall dialog box.
9. Move the mouse cursor to pier PE and click the mouse button to display the Edit Wall dialog box.
10. Enter SW2 to Wall Mark Edit box, un-check the Sub-wall check box, un-check the Bending along X check box and check the Bending along Y check box. Click the Save button to close the Edit Wall dialog box.
11. Now, all wall marks are assigned to appropriate piers, you should click Save button to close the dialog box and turn up the Repeat Incremental button. The framing plan is shown at next topic.

5.4 Mapping Beams

For easy to explain the editing procedures, click down the Show Bay button  to show the bay name on the framing plan.





- 1 Move the mouse cursor to bay B1 and click the mouse bottom to display the Edit Beam dialog box.

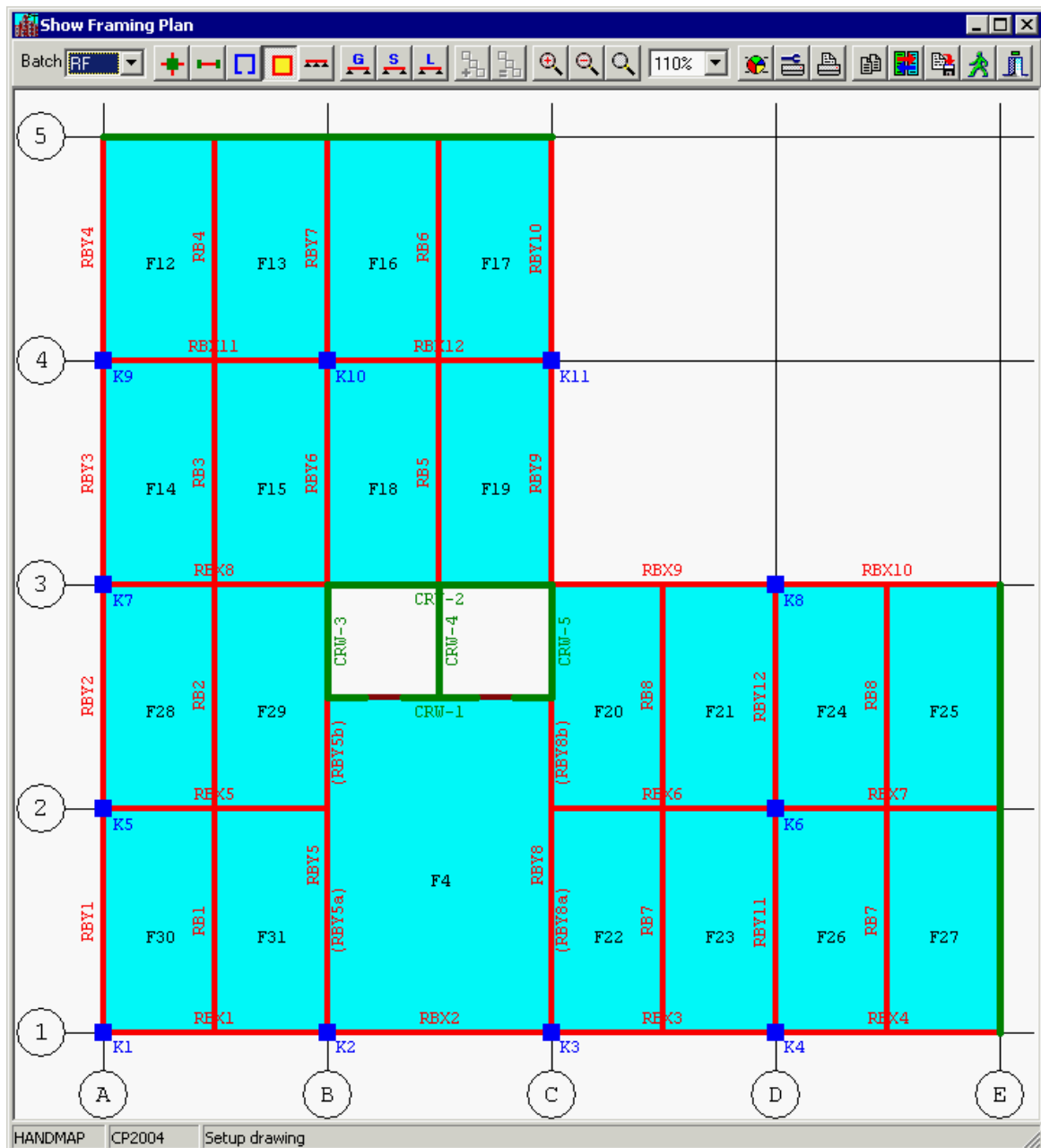


- 2 Select Framed Beam option, enter RBX1 to Beam Mark edit box and press the TAB key. The beam mark RBX1 is assigned bay B1 on roof floor .
- 3 Click down the Repeat Incremental button.
- 4 Move the muse cursor to bay B2 and click the mouse button. The beam mark RBX2 is assigned to bay B2.
- 5 Repeat this procedure to bay B3, B4, B9, B10, B11, B18, B19, B20, B24 and B25 for assigning beam marks to bays in X-X direction. The bay 15 and bay 16 are skipped. These bays contain lintel beams and will be mapped later.
- 6 Click the Save button to close Edit Beam dialog box. You may start to map bays in Y-Y direction.
- 7 Move the mouse cursor to B5 and click the mouse button to display Edit Beam dialog box.
- 8 Enter RBY1 to Beam Mark edit box and press the TAB key. A beam mark RBY1 is assigned to bay B5.
- 9 Click down the Repeat Incremental button.
- 10 Move the muse cursor to bay B14 and lick the left button of mouse. A beam mark RBY2 is assigned to bay B14.
- 11 Repeat above procedure to bay B21, B26, B6(skip B12), B22, B27, B7(skip B13), B23, B28, B8 and B17 for assigning beam marks to bays in Y-Y direction.
- 12 Now, all main beam mark on roof floor are assigned to bays except the lintel beams, associate beams and secondary beams. Click the Save button to close the Edit Beam dialog box and turn up the Repeat Incremental button.
- 13 Move the mouse cursor to bay B15 and click the mouse button.
- 14 In the Edit Beam dialog box, select the Lintel Beam option, enter LB1 to Beam Mark edit box and press TAB key. The lintel mark LB1 is assigned to bay 15.
- 15 Click down the Repeat Incremental button and move the muse cursor to bay B16.
- 16 Click the mouse button. A lintel mark LB2 is assign to bay 16. Click the Save button to close the Edit Beam Dialog box.
- 17 Move the mouse cursor to bay B6 and click the mouse button. Change the beam mark RBY5 to RBY5a, select the Associate Beam option, enter RB5 to Main Beam edit box and click the Save button to close the Edit Beam dialog box.
- 18 Repeat these procedures for bay B7, B12 and B13.
- 19 The last procedure is mapping secondary beams. Move the mouse cursor to bay B29 and click the mouse button to display Edit Beam dialog box.
- 20 Select Regular Beam option, enter RB1 to Beam Mark edit box and press the TAB key. The beam mark RB1 is assigned to bay B29.
- 21 Click down the Repeat Incremental button.
- 22 Move the muse cursor to bay B33 and click the mouse button. The beam mark RB2 is assigned to bay B33.
- 23 Repeat above procedure to bay B36, B38, B37, B39, B31 and B34 for assigning secondary beam marks RB3, RB4, RB5, RB6, RB7 and RB8. Click the Save bottom to close th Beam Edit dialog box and turn up the Repeat Incremental button.
- 24 The secondary beams on bay B32 and B35 are same as bay B31 and B34, You can assign mark RB7 to bay 32 and RB8 to bay B35.
- 25 Follow the procedure 19 to 23 to assign the last 2 secondary beam marks. Click the Save button to close Edit Beam dialog box,

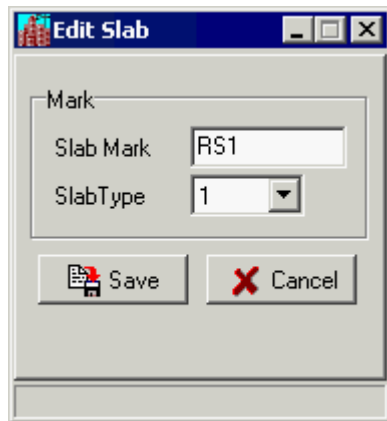
- 26 Finally, click the Save speed button  on the top of framing plan to save all mapping data. The new framing is shown in next topic.



5.5 Mapping Slabs

Click up the Show bay button  and click down the Show Area button  to show the area name on the framing plan for easy to explain the editing procedures. In a framing plan, there are many slabs are duplicated. Duplicated slabs can be assigned a same slab mark. For example, slabs on area F12, F14, F28 and F30 have the same span, same support condition, same loading, etc. You can use slab mark RS1 to assign to these 4 slabs.




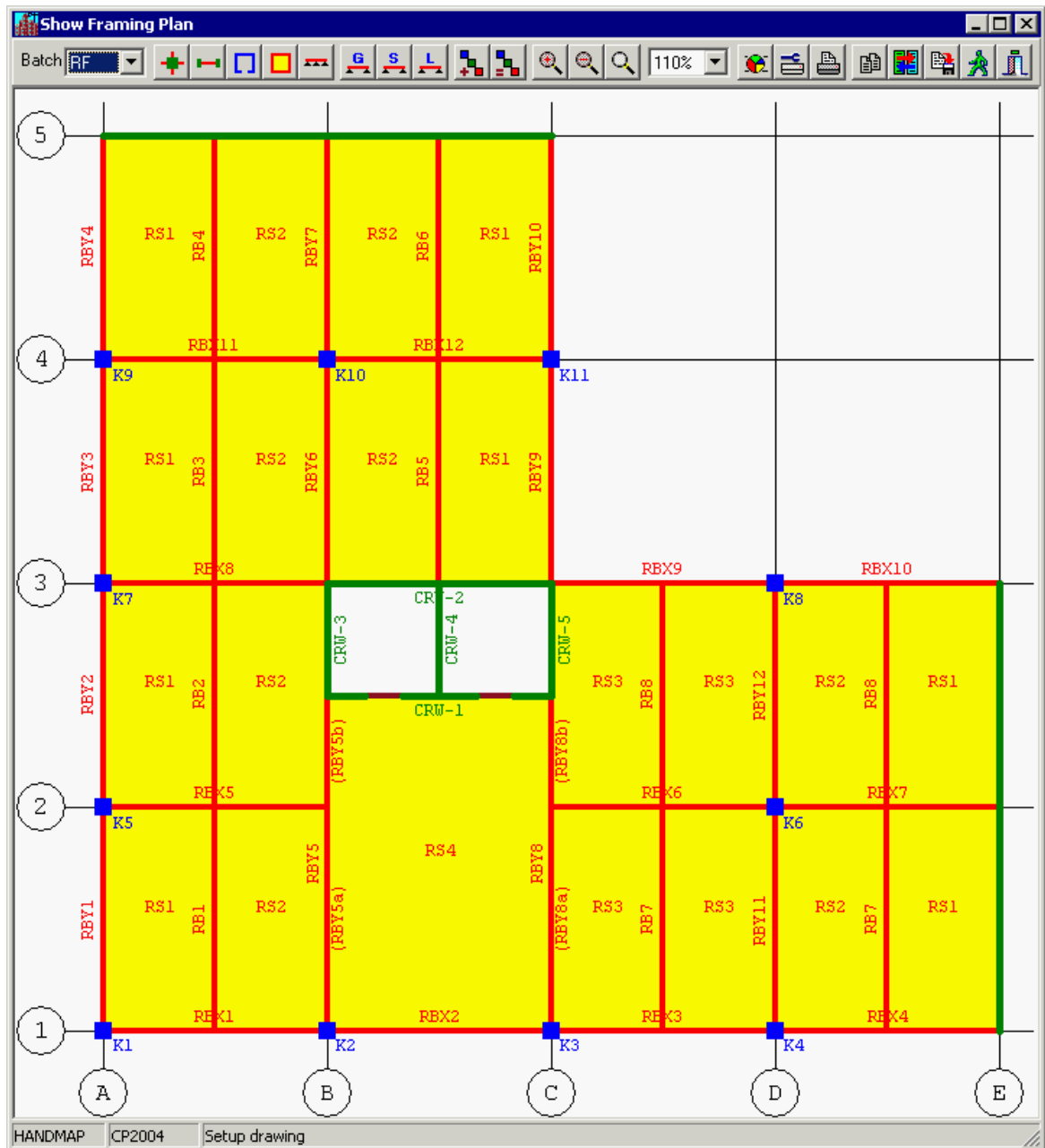
1. Move the mouse cursor to the center of area F30 and click the mouse button to display the Edit Slab dialog box.



2. Enter RS1 to Slab Mark edit box, select type 1 from Slab Type combo box and press TAB key. The mark RS1 is assigned to area F30.
3. Click down the Repeat Equal button .
4. Move the mouse cursor to area F28 and click the mouse button, the same slab mark RS1 and slab type 1 are assigned to area F28.
5. Repeat this procedure to areas F14, F12, F19, F17, F27 and F25. All these areas are getting slab mark RS1 and slab type 1.
6. Click the Save button to close Edit Slab dialog box and turn up the Repeat Equal button.
7. Repeat procedure 1 to 6 to assign slab mark RS2 and slab type 2 to area F31, F29, F15, F13, F18, F16, F26 and F24.
8. Repeat procedure 1 to 6 to assign slab mark RS3 and slab type 3 to area F22, F20, F23 and F21.
9. Move the mouse cursor to the center of area F4 and click the mouse button to display Edit Slab dialog box.
10. Enter the RS4 to Slab Mark Edit box and select type 10 for "2 opposite long edges continue slab" (refer to SADS User's manual).
11. Click Save button to close Edit Slab edit box.
12. Finally, click the Save speed button  on the top of framing plan to save all mapping data. The new framing is shown in next topic.

5.6 Duplicating Framing Plan

The beam marks and slab marks have mapped correctly. This building has typical floors that the layout same as roof floor. In this case, you don't need to repeat the procedures for roof floor to typical floors. The solution is using Duplicate button .



Click the Duplicate button to display Duplicate Beam Marks dialog box.

Duplicate Beam Marks

Select

- ☒ Slab
- ☐ Framed Beam
- ☒ Secondary Beam

Batch Code

Source Batch: RF

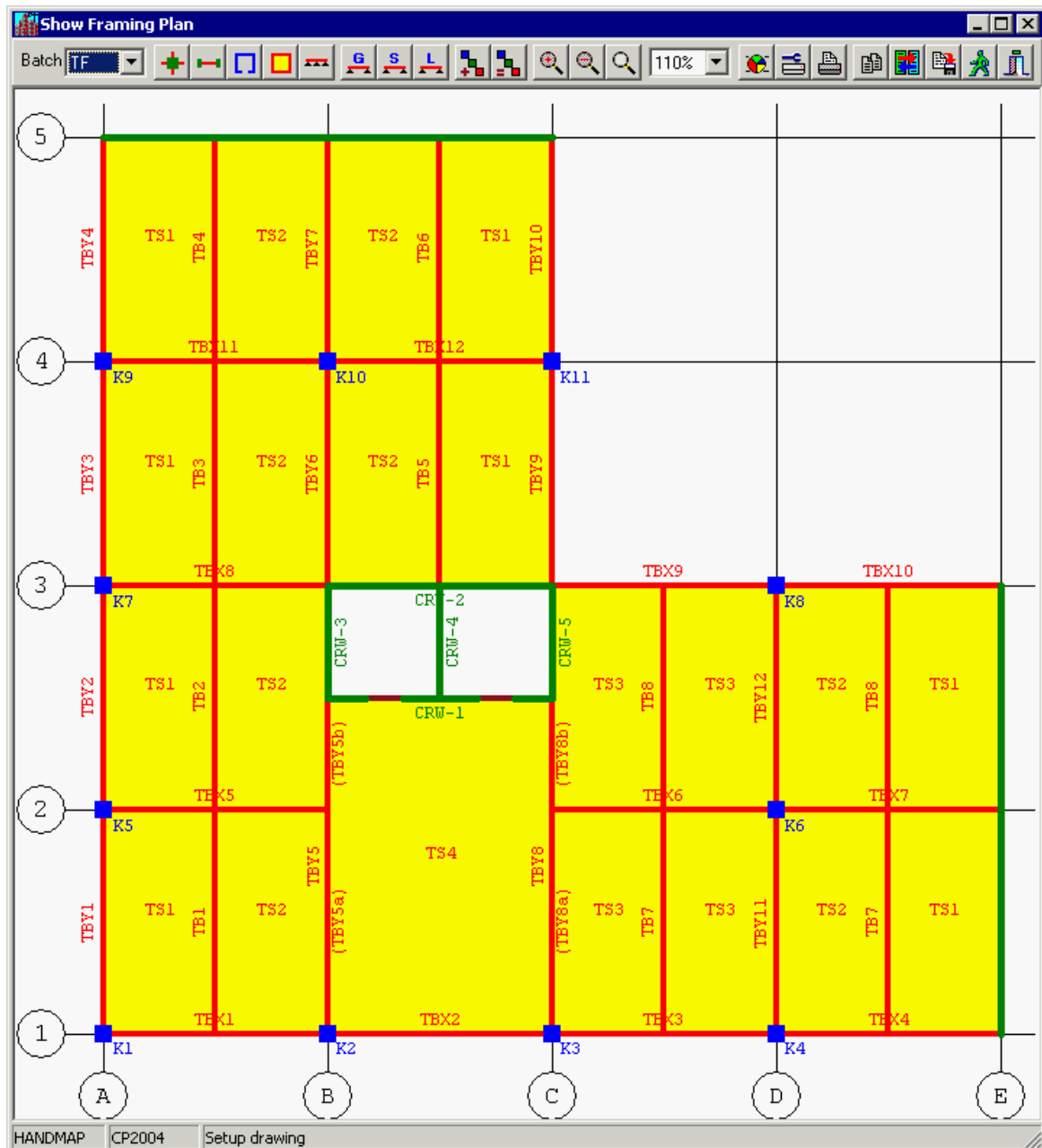
Destination Batch: TF

Prefix Map

R	To	T
	To	
	To	
	To	
	To	

OK Cancel

Please select RF batch code in the Source Batch combo box and select TF batch code in Destination Batch combo box; the prefix mapping are set to R to T by default. Please check both Slab Map, Framed Beam and Secondary Beam Map check boxes. Finally please click the OK button. **SADS** will duplicates the beam marks from roof floor to typical floor using the prefix mapping and display the typical floor framing plan as below.



Using the same method, you can duplicate the roof plan to 1st. floor. But, you can duplicate the slab map and secondary beam only. The framed beam marks need to be mapped using procedures in [Mapping Beams](#) topic.

If you want to repeat the procedures of mapping framing plan manually, you may run Restore Sub-command and select <Project Data List Folder>\BACKUP\ folder, HANDMAP file name, bck extension name and check the "Clean all files before restore data" check box.

6 Smart Mapping Data

6.1 Overview

If you have minor amendment of structural model in ETABS and you follow the requirement mentioned below, the smart mapping can save your effort and time. The amendment of your model can include following items.

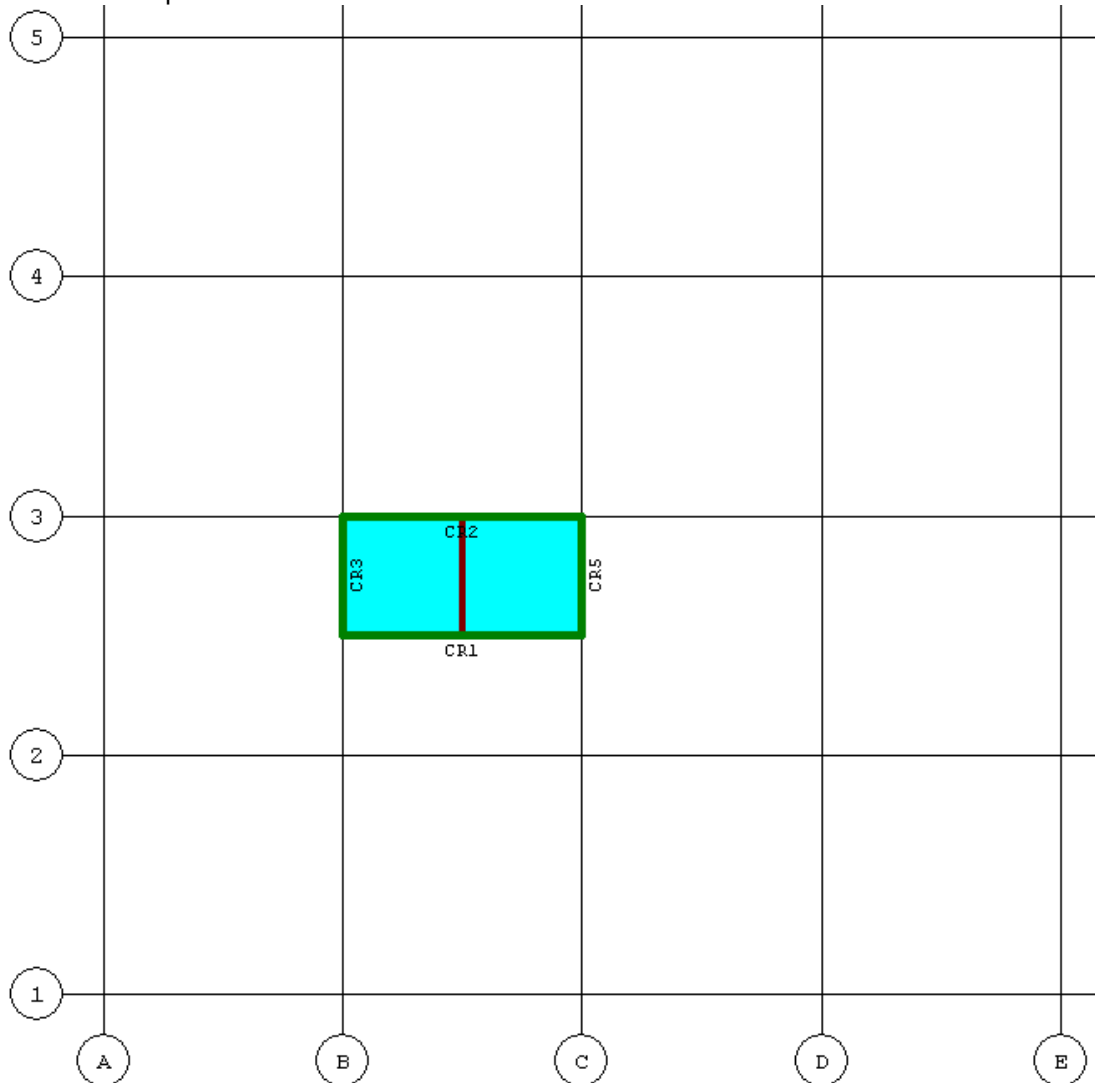
1. You can add or remove levels (floors) from your model.
2. You can expand or shrink the floor plan from your model.
3. You can add or remove the loads combinations from your model.

When you are changing the model, please following requirements.

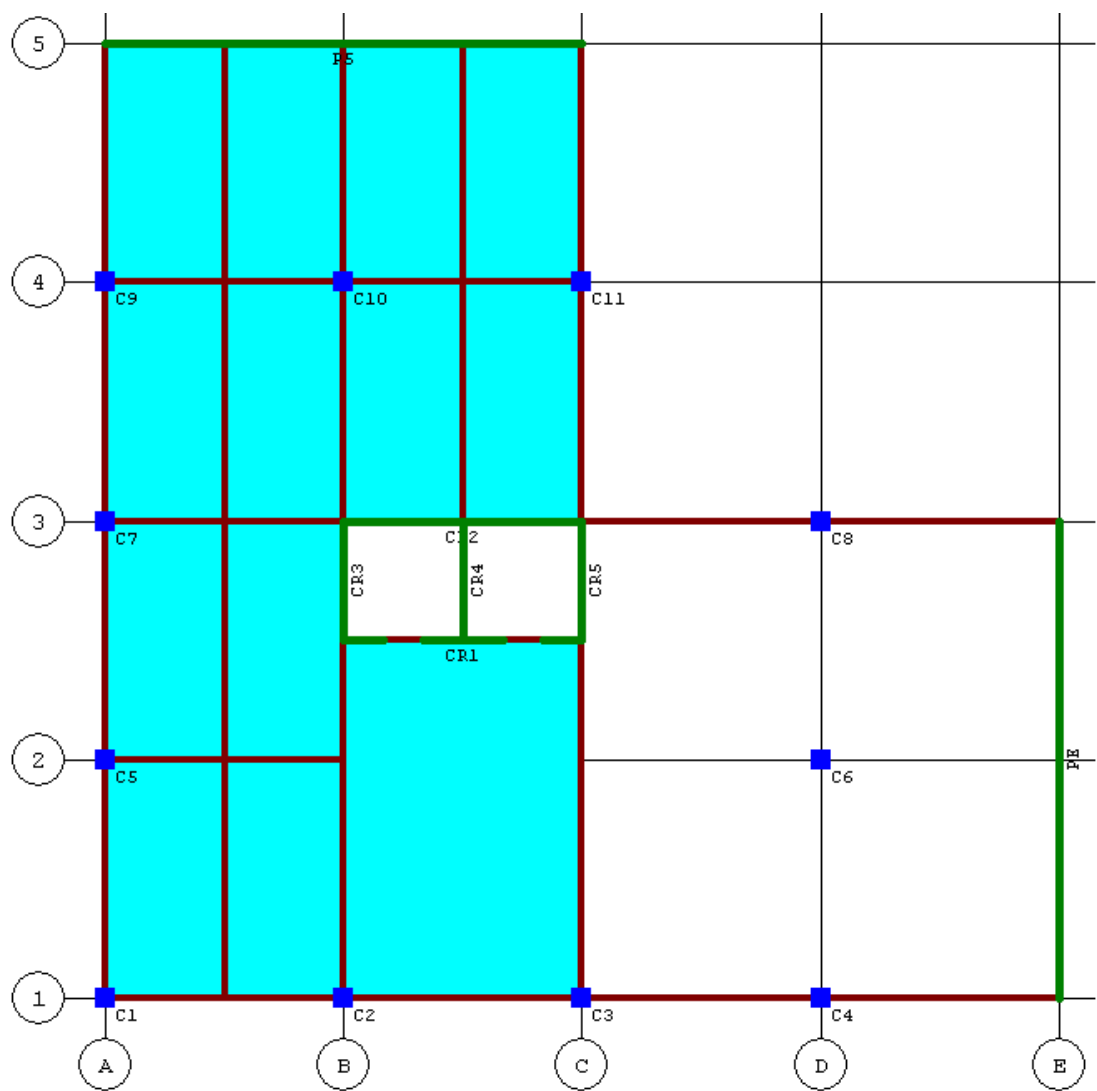
1. When you add levels to the model, you must keep the existing level name un-changed.
2. When you expand the floor plan, you must keep the line name, pier name, area name and bay name inside existing floor plan un-changed.
3. When you add load combinations to model, you must keep the existing load combinations un-changed.

For demonstrating the smart mapping procedures, we change the [demonstration building](#) using ETABS. The changing includes the following items.

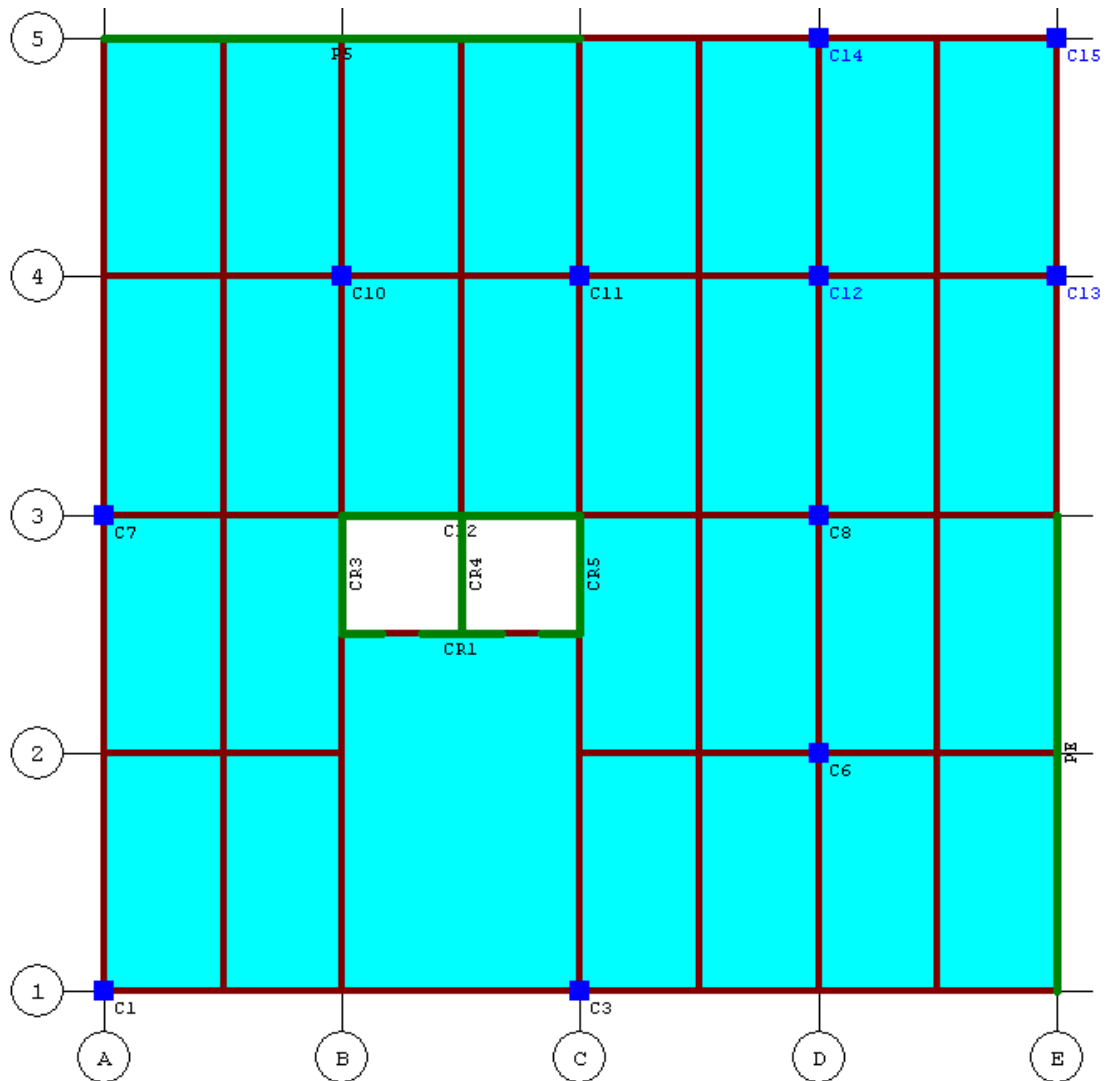
1. Add level U.R. above ROOF level and add level GRD. below 01/F level.
2. The floor plan on U.R. level is shown as below.



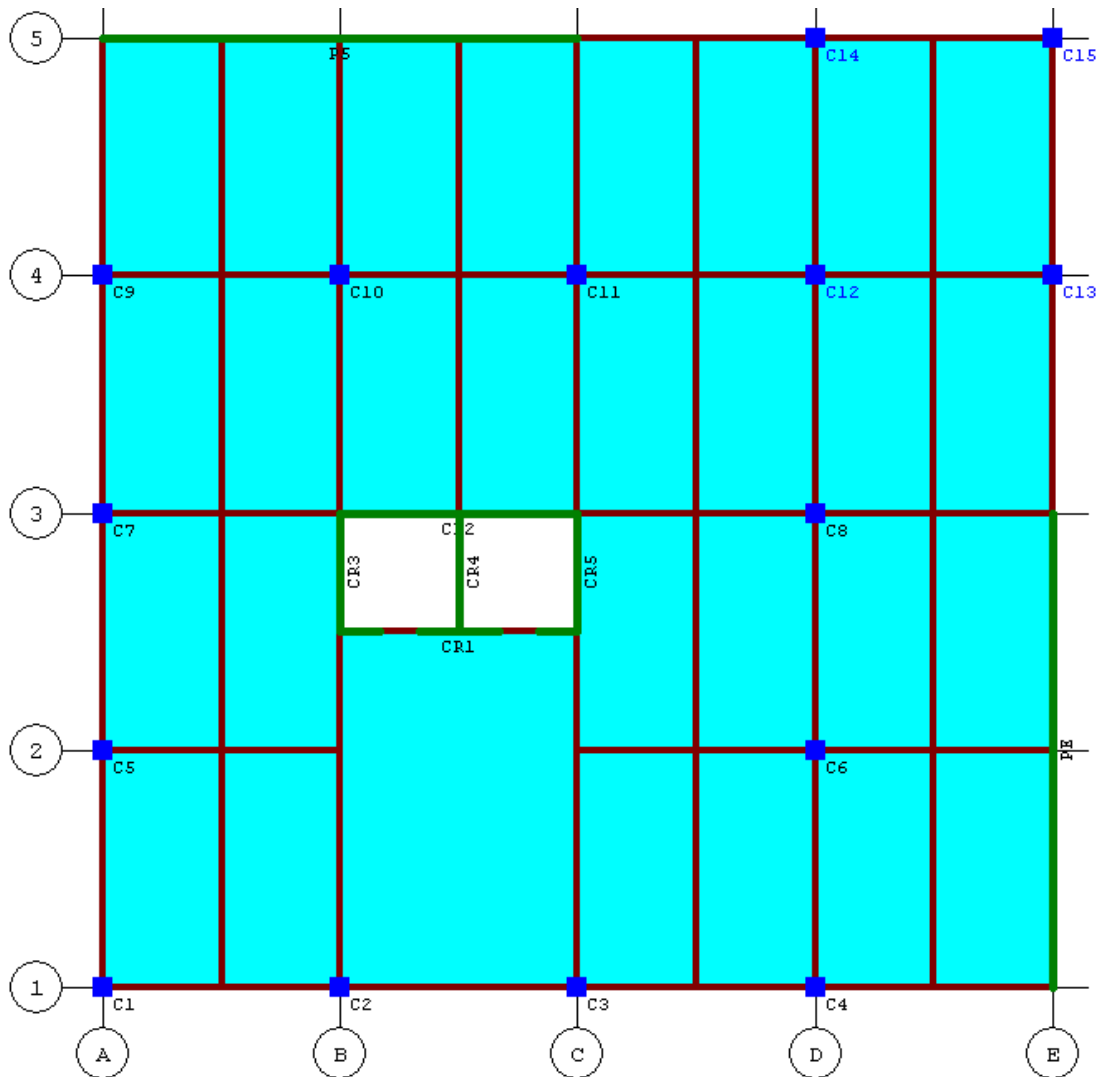
3. The floor plan on 13/F level is changed as below.



4. The floor plan on 01/F level is expand as below.



5. The floor plan on GRD. level is shown as below.



Before you start the re-mapping process, you should decide which mapping you need to do. You can do following mapping in this demo project.

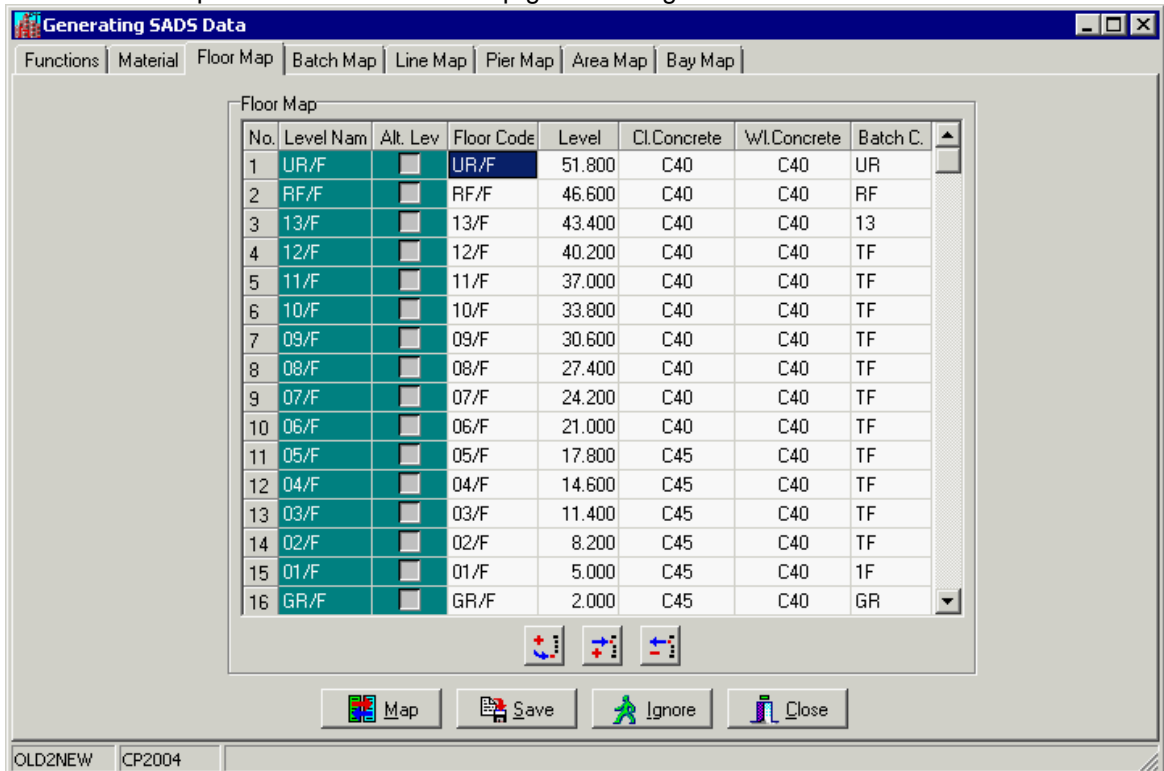
1. There is no amendment in material data. You may skip the re-mapping for material.
2. There are 2 levels (floors) added to the new model. You must re-map the level data in Floor Map page.
3. Also, there are 3 batch codes added to the new model. You must re-map the batch code in Batch Map page.
4. There are 4 lines (columns) added to the new model. You must re-map the lines in Line Map page.
5. There is no pier (wall) added to the model. But, the existing piers are extended to U.R. and GRD. levels. You need to re-map the pier data in Pier Map page also.
6. There are many bays (beams) added to and removed from new model. You must re-map the bay data in Bay Map page.
7. There are many areas (slabs) added to and removed from the new model. You must re-map the area data in Area Map page.
8. Finally, you need to re-map the beam map on U.R., 13/F, 01/F and GRD. level.

You may run **SADS** and select SMARTMAP project code to start the demonstration.

Before you start the procedures listed above, you must click the Smart Mapping in [Main Function page](#). Each mapping procedures are described in following topic. You can click the Floor Map TAB for the first mapping processing.

6.2 Floor Map

After you click the Floor Map TAB, the Floor Map page is displayed with [old mapping data](#). You can click the Map button and the Floor Map grid is changed as below.



Because you check the Copy Level Name in Main Function page, the Floor Code, Level, Cl. Concrete and Wl. Concrete on new levels UR/F and GR/F are generated automatically. For batch codes, **SADS** keeps existing batch codes from ROOF to 01/F un-changed. Because, you enter the character number of batch code in Function page, the new batch codes on UR/F and GR/F levels are assigned to UR and GR automatically. You need to change the batch code TF on 13/F to 13 to reflex the changes of floor plan on 13/F only.

If you find any problem in mapping process, you can click the Ignore button to rollback to previous status. After you enter the new batch codes, you can click the Save button to save the new floor mapping data.

You can click the Batch Map TAB for mapping processing.

6.3 Batch Map

After you click the Batch Map TAB, the Batch Map page is displayed with [old mapping data](#). You can click the Map button and the Batch Map grid is changed as below.

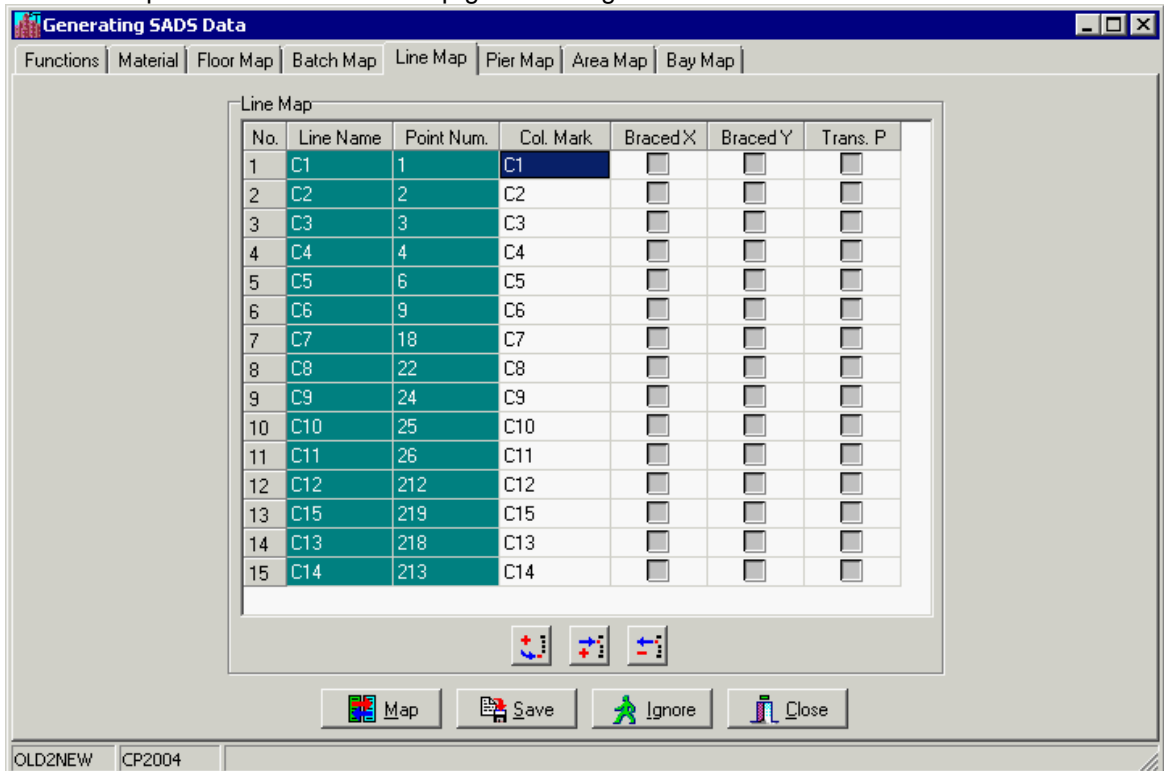
No	Batch	Prefix	Concrete	B.B.C.	B.T.C.	B.S.C.	B.Min.LL	S.B.C.	S.T.C.	Sb. Fin.	Sb. Part.	Sb. Live	S.Min.LL
1	UR	U	C35	25	25	25	0.000	15	15	1.250	0.000	2.500	0.000
2	RF	R	C35	25	25	25	0.000	15	15	1.250	0.000	2.500	0.000
3	13	13	C35	25	25	25	0.000	15	15	0.750	1.000	5.000	0.000
4	TF	T	C35	25	25	25	0.000	15	15	0.750	1.000	5.000	0.000
5	1F	1	C40	50	50	50	0.000	25	25	1.000	0.000	7.500	0.000
6	GR	G	C40	50	50	50	0.000	25	25	1.000	0.000	7.500	0.000

You can see the batch map data for RF, TF and 1F are kept un-changed. you need to provide batch map data for new batch codes UF, 13 and GF only.

After you enter the new batch data correctly, you can click the Save button to save the new mapping data. You can click the Line Map TAB for next mapping processing.

6.4 Line Map

After you click the Line Map TAB, the Line Map page is displayed with [old mapping data](#). You can click the Map button and the Line Map grid is changed as below.

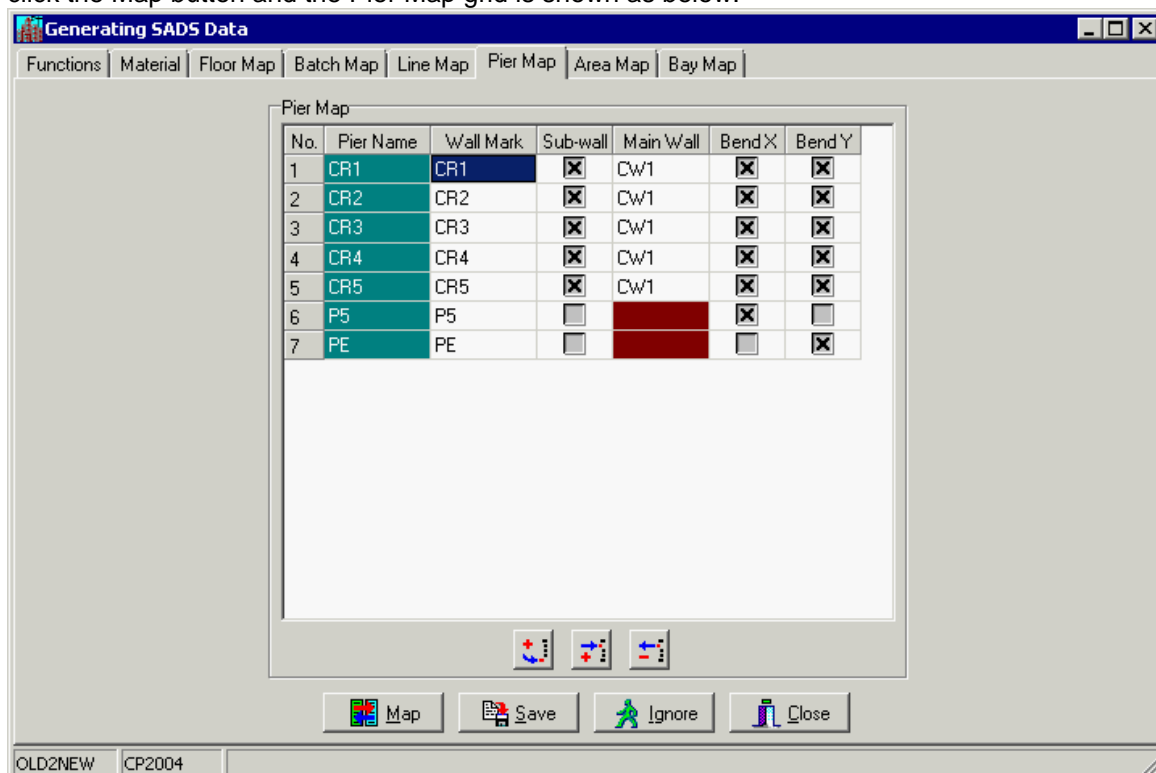


Because you select C + sequential number option in Main Function page, the 4 new lines C12, C13, C14 and C15 are mapped to C12, C15, C13 and C14 automatically. You can do nothing on this page.

You may click the Save button to save the new mapping data and click the Pier Map TAB for next mapping processing.

6.5 Pier Map

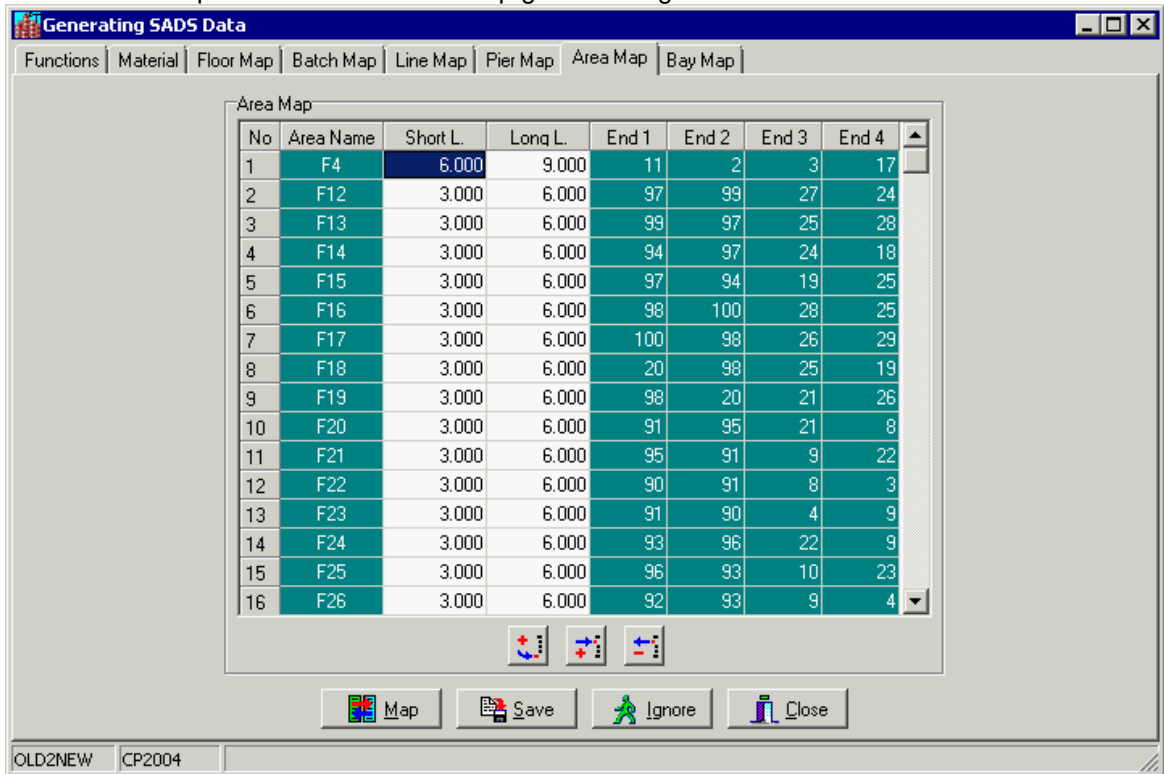
After you click the Pier Map TAB, the Pier Map page is displayed with [old mapping data](#). You can click the Map button and the Pier Map grid is shown as below.



You may see the Pier map grid does not be changed after you click the Map button. But, it is necessary process. **SADS** will extend the piers to U.R. and GRD. levels. Also, you don't need to provide any new data in this page. But, you must click the Save button to save the new mapping data. You can click the Bay Map TAB for next mapping processing.

6.6 Area Map

After you click the Area Map TAB, the Area Map page is displayed with [old mapping data](#). You can click the Map button and the Area Map grid is changed as below.



Because all areas (slabs) are rectangular, **SADS** can calculate the spans of these slabs. So, no additional data need to be added. You can click the Save button to save the new mapping data. You can turn to Show Framing Plan window to re-map the beam data. You can click the Bay Map TAB for next mapping processing.

6.7 Bay Map


After you click the Bay Map TAB, the Bay Map page is displayed with [old mapping data](#). You can click the Map button and the Bay Map grid is changed as below.

No	Bay Name	Is Lintel	Lintel Mark	Is Asso	2nd.B	Span	Line I	Line J	Reverse
1	B1	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C1	C2	
2	B2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C2	C3	
3	B3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C3	C4	
4	B4	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C4	W1	
5	B5	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C1	C5	
6	B6	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C2		
7	B7	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C3		
8	B8	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C4	C6	
9	B9	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C5		
10	B10	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000		C6	
11	B11	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C6	W6	
12	B12	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		3.000		W7	
13	B13	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		3.000		W9	
14	B14	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		6.000	C5	C7	
15	B15	<input checked="" type="checkbox"/>	LB1	<input checked="" type="checkbox"/>		1.000	W2	W3	
16	B16	<input checked="" type="checkbox"/>	LB2	<input checked="" type="checkbox"/>		1.000	W4	W5	

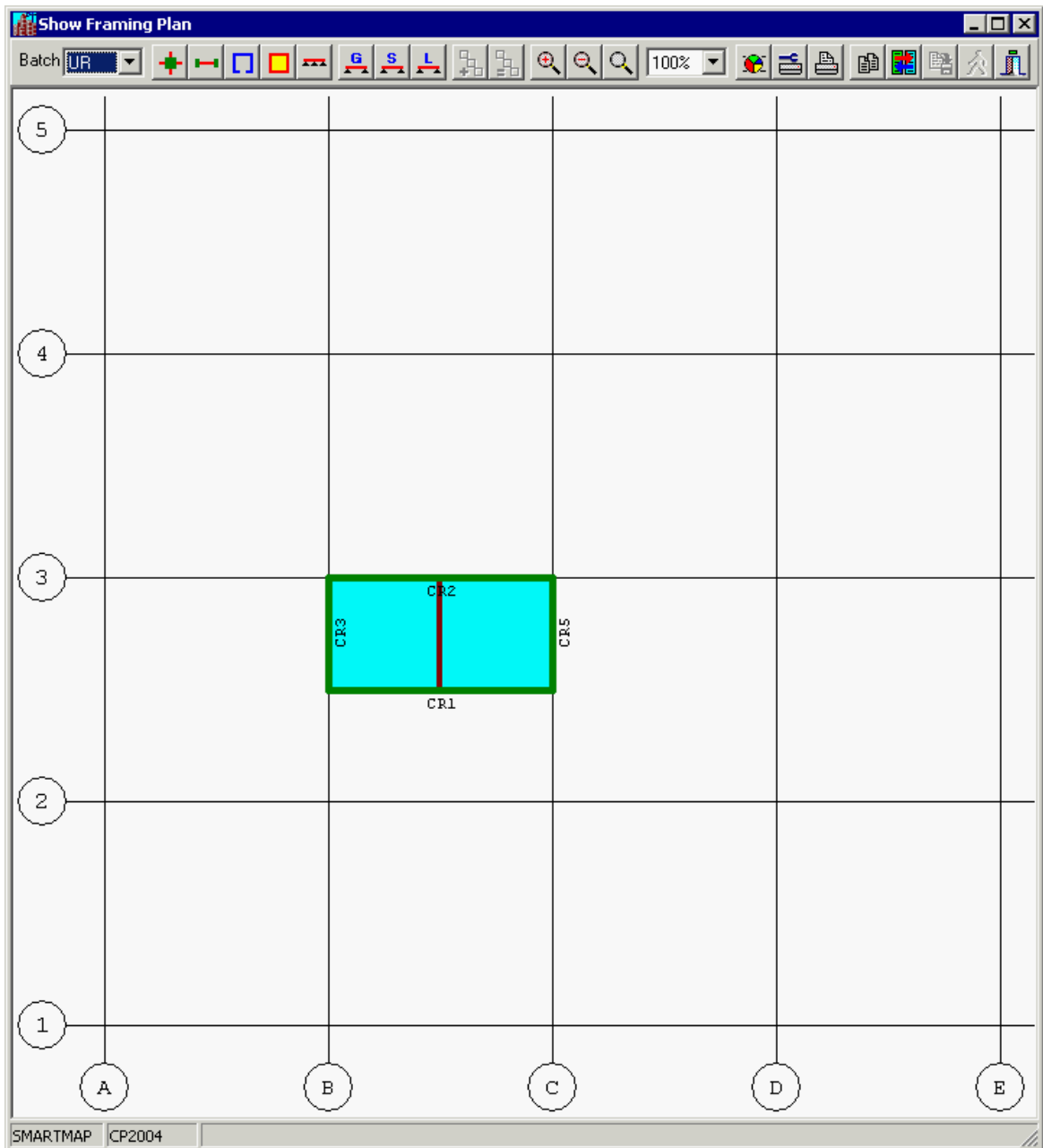
In Main Function page, you have select automatic marking option and searching by section ID option, you can do nothing in the mapping page. If it is necessary, you can check the new mapping data. If you find any problem, you can click the Ignore button to rollback the mapping to previous status. If all mapping are correct, you can click the Save button to save the new mapping data.

6.8 Editing Beam Mark

After you have finished the mapping of floor, line, pier, bay and area, you can turn to Show Framing Plan window. **SADS** can show all slab marks and beam marks in existing floor plan. In

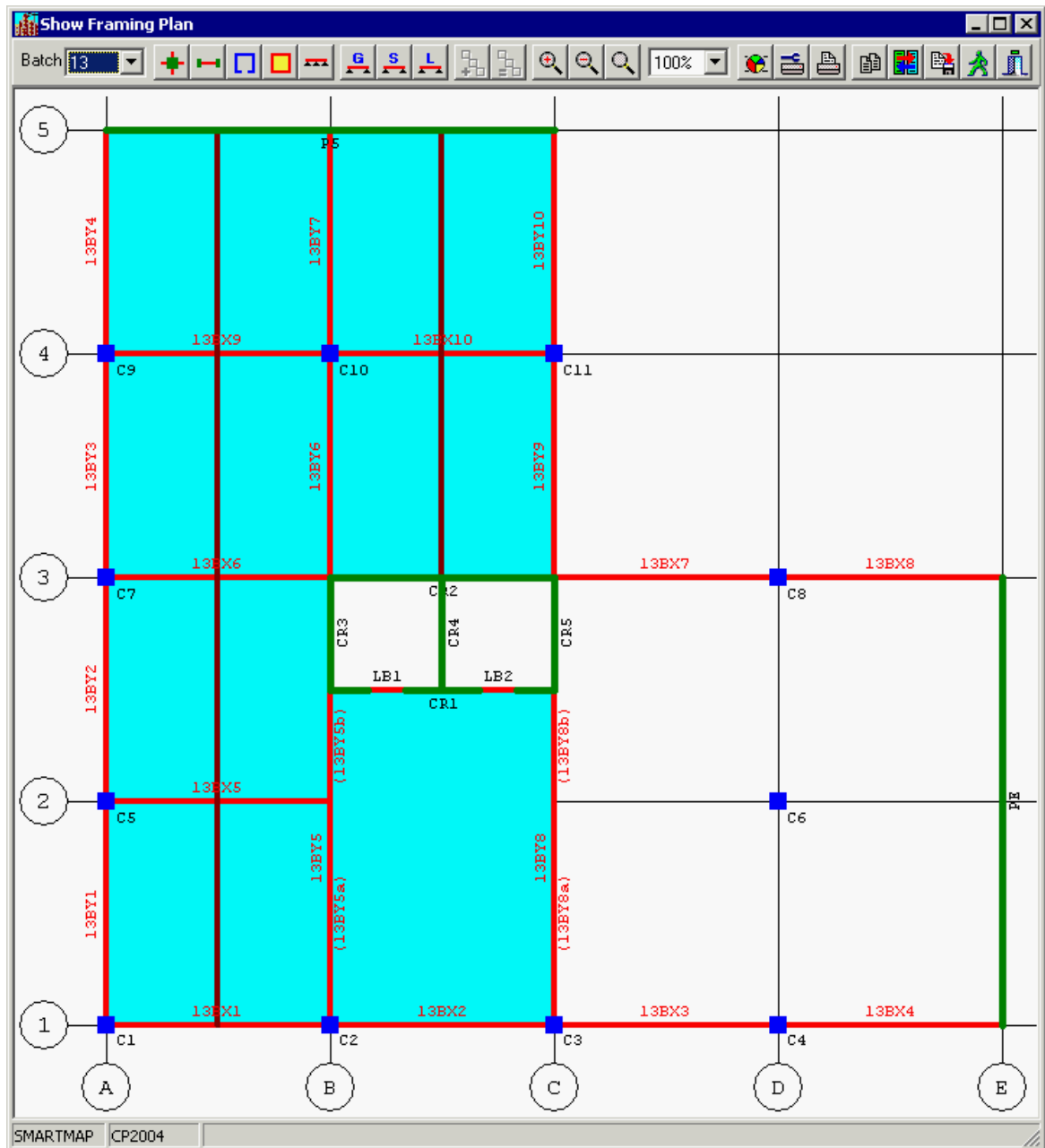
the new expanded floor plan. You can click the Map button  to process the mapping on expanded floor plan.

On the U.R. floor, you need to provide marks for 2 slab and 1 beam.

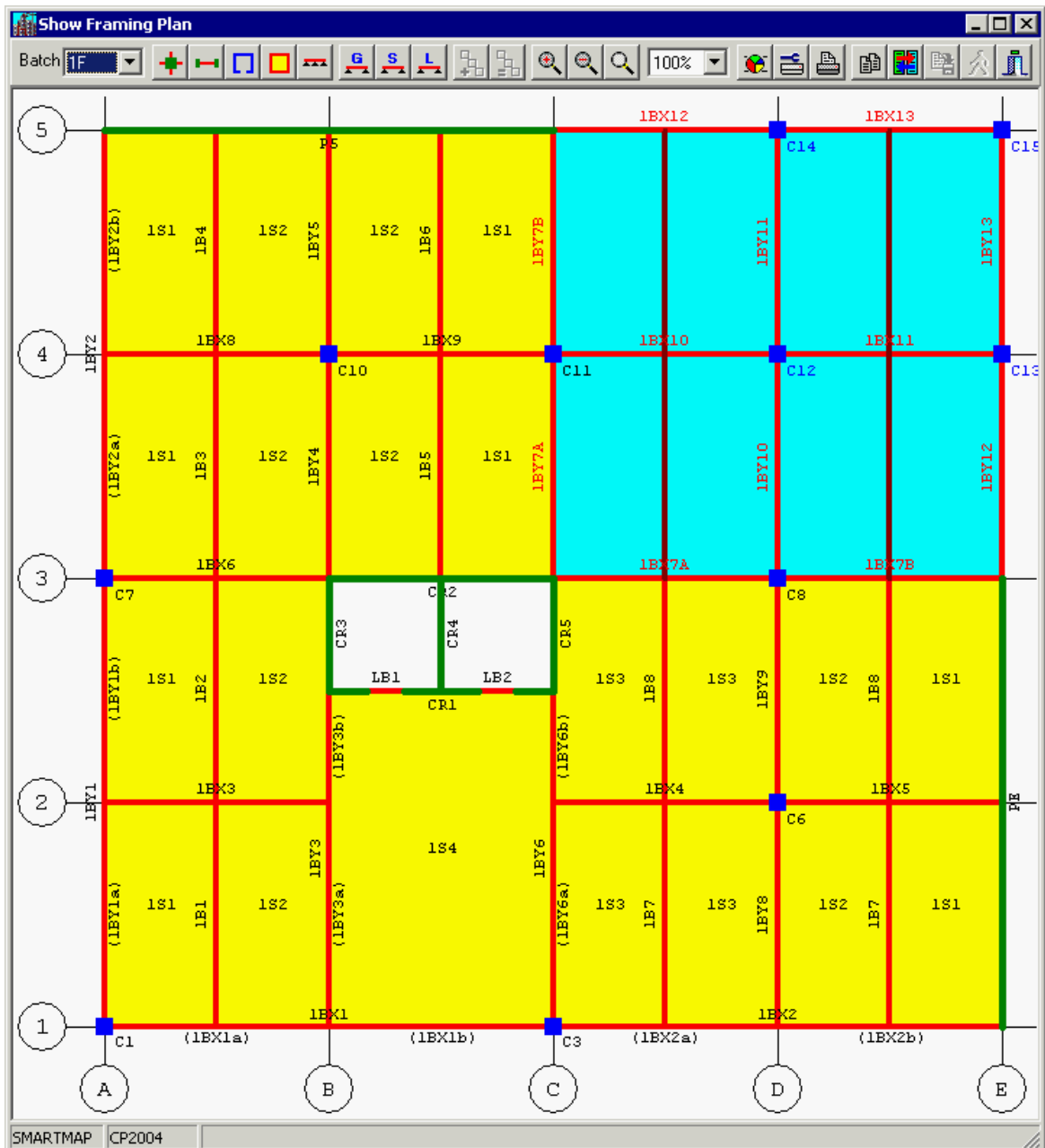


On ROOF and typical floors (12/F to 02/F), the framing plans are un-changed and you don't need to provide any thing.


On 13/F floor, you can use the [duplicate function](#) to duplicate slab marks and secondary beam marks.



On 01/F floor, you need to provide slab marks and secondary beam marks between grid C to E and grid 3 to 5 only.



On GRD. floor, you need to provide all slab marks and all secondary beam marks. But, you can click the Duplicate button to [copy the slab marks and secondary beam marks](#).

After all beams and slabs get proper marks, you need to click the Save button  to save the new mapping data. All re-mapping process is done.

There is a same Smart Mapping check box in Main Function of Linking ETABS Data Command. It's function is same as Smart Mapping check box described in this topic. You may try by yourself.

Finally, you can click the Function TAB to return to Main Function page to use smart generating option to re-generate **SADS** data..

7 Smart Generating Data

7.1 Overview

After you generate **SADS** data using [Generating SADS Data command](#), you need to adjust many generated data and enter a lot of data that not included in ETABS output file. If you re-generate **SADS** data due to the changing of framing, you will loss all of these data. The smart generate data option can solve this problem. The batch code table, slab data table, batch data table, beam load table, column data table, column beam data table, wall data table, wall load table, lintel data table and lintel load table in **SADS 16**, we add an important field - Auto field. This field can identifies whether the data is generated by Generating SADS Data Command or input by user. For example, the slab data in **SADS 16** is shown as below.

The Auto Generate fields is checked for slab RS1. It indicates that the slab RS1 is generated by Generating **SADS** Data Command. You may view all other auto field by opening the appropriate window.

7.2 Start Re-generate SADS Data

Before you start the re-generating process, you must click the Smart Generating in [Main Function page](#). When you click the Generate button with this option, **SADS** will generate the new database using following rules.

1. When Auto field of the existing data is false, **SADS** keeps this data unchanged.
2. When Auto field of the existing data is true, **SADS** uses this existing data.
3. If there is no existing data, **SADS** generates a new data.
4. If this is existing data with true auto field and no ETABS data corresponding to it, **SADS** deletes this data.

Follow these rules, all your useful data will not be deleted or changed.

Before you click the Generate button, you can add new data or change some existing data in current **SADS** database, e.g. batch code, slab data, batch data, beam load, column data, column connected beam, wall data, wall load, lintel data and lintel load. For verification, you can write down all data that you added and changed. After you click the Generate button, you can do following checking.

1. You can check all data on the new added floor U.R. and GRD.
2. You can check all data on new expanded floor plan on 01/F floor.
3. You can check all data that your added and changed.

If you want to repeat the procedures of smart mapping and smart generating data, you may run Restore Sub-command and select <Project Data List Folder>\BACKUP\ folder, SMARTMAP file name, bck extension name and check the "Clean all files before restore data" check box.

8 Mapping Ramp structure

SADS has ability to map ramp structure from ETABS to **SADS**. You can run **SADS** and select TESTRAMP project code to understand how to map the ramp structures. Also, the project data includes the ETABS input data RAMP.EDB. You can open this file by ETABS application to look how to prepare the ETABS data for structure with ramp floor.