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## Close Combat series of games

# 5CC - The Manual

(a description of my CC map editor for PC- & Mac)

## Table of contents

Installation and System Requirements.....	2	Windows "OVM" and "MMM" .....	23
Introduction .....	3	Window "Map properties" .....	23
Short guide to map making .....	4	Window "Roof informations" .....	23
The menu bar .....	7	Window "Visible layers" .....	24
Menubar item "File" .....	7	Window "Trees" .....	24
Window "Preferences" .....	10	The layer concept.....	27
Menubar item "Edit" .....	13	Window "LOS actions" .....	27
Menubar item "Roof" .....	15	<b>Tactics.....</b>	<b>28</b>
Menubar item "Actions" .....	15	Roof defining .....	28
Menubar item "Visibility" .....	16	CC2 bridge image defining .....	30
Menubar item "Color" .....	16	CC2 bailey bridge data defining.....	33
Menubar item "Help" .....	16	<b>Element coding and roof's in-game</b>	
The windows.....	17	appearance .....	35
Window "Editing" .....	17	Problems with the 5CC.ini file .....	36
Window "Tools" .....	18	Used and recommended sources from the	
Window "Terrain Elements Table" .....	22	Internet.....	38
Window "Coordinates" .....	23		

## Credits and all my thanks to the following programing gods:

Mick Conmy (mick xe5), Adam 'The Man' D'Arcy (who made public the file formats for the CC2 map graphics), Gerry Shaw (aka TinTin), Vincent Viaud (for solving the LOS file structure), Andrew (The Naked Foot) Glenn (for his great MapMaking Guide), The Other Dave (David R. Tidy, for his CC2Faq.wri), Chris Ellens (for his great CCEdit for Mac), Cpl\_Filth (for his great map editor 3C.exe for PC), Sgt\_Wilson, kwp ... and all the other people not mentioned above, who helped CC-editing to come true.

Special thanks for beta-testing to Jim Martin, Francisco Arias "Nembo", Darren Tejszerski "tejszd" and Keith Postuchow "kwp" and all the others not mentioned here!

**The 5CC map editor is not endorsed or promoted by the original game manufacturers. You will use this program entirely at your own risk. I recommend that you work only on backups of your datas and that you save your work often!**

## Installation and System Requirements

To install 5CC just copy the program file to your HD. I recommend to create a separate folder for 5CC, and to store the accompanying files (manual, readmes, terrain elements files) in the same folder.

The PC version of 5CC should work under Win95, Win98 and WinXP.

The Mac version of 5CC is a carbonized application and should work under MacOS-X 10.2.8 or newer (PPC processor) and under MacOS 8.5 – 9.2.2 (requires CarbonLib 1.6 or newer). **You must ensure to give 5CC enough (more than 100 MB) RAM in MacOS Classic's Finder! Otherwise a system breakdown with loss of data might occur!**

5CC is storing the entire map datas in RAM, so you will need a large amount of RAM to make 5CC working with large maps. Some example calculations:

for a 20x20 deployment tile map (= 2400x2400 pixels) you will need:

basic object code installation:	5000 KB
internal map data table:	450 KB
internal LOS tables:	2500 KB
background graphic:	11250 KB
additional interior graphic:	11250 KB
additional shadow/trunk layers:	33750 KB
OVM and MMM graphics:	1500 KB
assuming 50 roof entries:	7800 KB

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63600 KB

for a 40x40 standard RtB/CCM map (= 4800x4800 pixels) you will need drastically more:

basic object code installation:	5000 KB
internal map data table:	1800 KB
internal LOS tables:	10000 KB
background graphic:	45000 KB
additional interior graphic:	45000 KB
additional shadow/trunk layers:	135000 KB
OVM and MMM graphics:	1500 KB
assuming 50 roof entries:	7800 KB

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251100 KB

For a CCM-Big map you will need approxm. 500 - 1040 MB RAM! Keep this in mind when creating/editing such large maps. Use my tool CC2Tools (Mac & PC) to split/join maps if you run into memory troubles. Memory exceeding is not handled by 5CC and a program crash might cause loss of data! Please make backups of your work! And with all such modding software: you are using 5CC entirely at your own risk!

## Introduction

5CC is intended to modify map datas of the CloseCombat series of computer games, ranging from CC2 to the latest CCM version. "Close Combat - A Bridge Too Far" (abbreviated CC2, ABTF, CC2-ABTF) was the second game of the CloseCombat-series created by Atomic and presented by Microsoft to the Mac- and PC-community in 1997. CC2 was the last game of this series for the MacOS. The series was then continued by SSI, UbiSoft and Destineer for PCs only (up to day CC3, CC4, CC5, CCM, The Road to Baghdad released in January 2004, abbreviated: RtB, CCM v4 released to the USMC in summer 2005 and the actually planned CCMRAFRag of Feb. 2006). The last release to the public was CloseCombat Marines 3.1 in late 2004.

During the last years since 1997 many people made excellent works on unveiling the secrets of Close Combat map making. All games of the Close Combat series store their map datas and map graphical datas in several files. File formats differ slightly between CC2 and the later releases, also the file names and the storing location differs. First of all you must know what is stored in what kind of file:

- **map data file:** contains numerical description of the map's size and its terrain structure (terrain type and height). In CC3 and newer it is also stored here the name of the map and further map descriptions (general terrain type, display color in the user interface). The file format is plain ASCII text, with TAB-separated columns and CR-delimited lines in CC2 respectively CR+LF-delimited lines in CC3 or newer.
- **map los file:** contains line-of-sight informations for the entire map area. Identical file format throughout the whole CC series.
- **background graphics file:** stores the entire background of the map in 16-bit uncompressed RGB-format similar to TARGA-graphics format. The game will use this graphic as a battleground.
- **overview graphics file:** stores a shrunk overview of the background graphics in the same format as the background graphics file. The game might use this graphic in the deployment screen and perhaps when zooming out during battle.
- **monitoring graphics file:** stores a drastically shrunk minimap of the background graphics in the same format as the background graphics file. The game uses this graphic during battle for monitoring where the actual screen cutout is located on the map and as a "map icon" during map selection.
- **roof file:** stores multiple pairs of exterior and interior views of buildings together with coordinates informations. The interior view is pasted over the background graphic when a soldier enters a building, and the exterior view is pasted over the background when all soldiers have left a building during battle.
- **bridge file:** stores the graphic of the blown bridge and can contain in addition a graphic of the repaired bridge (Bailey Bridge). This kind of file is only available in CC2. During gameplay the bridge of your map can be blown by Axis troops. CC2 will do this by issuing a massive explosion, pasting shellholes over the bridge. When the game continues, some or all of these shellholes might disappear, because CC2's amount of displayable shellholes is limited. So the makers of CC2 needed this additional graphic to make the bridge blow effect visible throughout the whole battle. Repaired bridge graphic will be only pasted over the background graphic when XXX Corps reaches the bridge in Operation/Campaign play. This type of file is nearly identical with a CC2 roof file.
- **BTDF file/Scenario file:** these files store informations about victory locations, forces setup and map connections. Such files cannot be edited with 5CC.

The graphic files in CC2 use the Macintosh/Motorola byte order BIG Endian, the graphic files of CC3 and newer releases use the Intel byte order LITTLE Endian. Except for the roof file their file formats are mainly identical. The roof file of CC3 is much more complex than it is in CC2. But the differences between these file formats are not so great to prevent tool makers like Gerry Shaw "Tin Tin", Cpl\_Filth, Chris Ellens (and at last me) from making map editors for the whole CC series. The following table shows the main differences:

	CC2	CC3 and newer
folder to store map data file	../Data/Maps	../Maps
folder to store los file	../Data/Maps	../Maps
folder to store graphics files	../Graphics/Maps	../Maps
name of map data file	Map###	*.txt
map data file format	ASCII, TAB-seperated, CR-delimited lines	ASCII, TAB-seperated, CR+LF-delimited lines
name of los file	Map###.los	*.los
name of background graphics file	BGMap###	*.bgm
name of overview graphics file	OVMMap###	*.ovm
name of monitoring graphics file	MMMap###	*.mmm
name of roof graphics file	Roof###	*.rfm
name of bridge graphics file	Bridg###	not available
byte order of the graphics files	BIG Endian	LITTLE Endian

## Short guide to map making

This map editor is not intended to generate/manipulate graphics. To do this please use your favorite graphics editor. Remember that all the CC graphics are stored in 16-bit! In the past the TARGA graphics format was used as the "de facto" standard for storing graphics to be imported by tools to manipulate CC files. 5CC will follow this rule. It can import external graphics in 16-bit uncompressed TARGA. In some cases it might be able to import further graphics formats:

- via the clipboard: 16-bit or better,
- on PC: depending on your operating system, 5CC should at least be able to import BMP-graphics,
- on MAC: depending on your MacOS version, 5CC should be able to import PNG-graphics (10.4 or newer) and perhaps PICT-graphics (MacOS 8.5 – 9.2).
- drag and drop of graphics is not supported!
- when importing external graphic files, 5CC will automatically convert the graphics to 16-bit (that is the reason why the import of graphics takes so much time, calculating each pixel).

The export of graphics depends again on your operating system. Minimum is exporting as 16-bit uncompressed TARGA.

Before editing it, you must know what a "CC map" really is. A CC map is a non-repeating rectangle of limited size. The size limitation depends on the game version:

Version	max. map size...		
	...in pixel	...in deployment tiles	...in elevation tiles
CC2 (MAC & PC)	2280x2280	19x19	57x57
CC3	2880x2880	24x24	72x72
CC4	3000x3000 <sup>1</sup>	25x25	75x75
CC5	3840x3840 <sup>2</sup>	32x32	96x96
RtB	4800x4800	40x40	120x120
CCM (standard map)	4800x4800	40x40	120x120
CCM (BIG map)	19200x4800	160x40	480x120

For unit setup and for controlling the battle's progress a map is divided into tiles. These tiles are called inside the original CC2 files "Mega-Tiles". Each Mega-Tile has a size of 120x120 pixels. Because these tiles are used to define the deployment zones on battle start, we commonly refer to them as "deployment tiles". LOS-files (the files containing the line-of-sight informations) use the same logical tiling. A "LOS tile" is identical with a "deployment tile". If you know the map's size in deployment tiles, you can calculate the size of its background graphic (and vice versa).

The map data file describes the terrain type and terrain elevation in smaller tiles. Each line containing such datas in this file is numbered sequentially (starting from 0). Each line contains 16 columns of terrain type values and 16 columns of terrain height values (in case of CC2: only one column of height definition for the entire line). Because CC2 uses only one height for the entire line, we commonly refer to this kind of tile as an "elevation tile". An elevation tile has the size of 40x40 pixels. It is divided into 16 smaller "terrain tiles" of the size 10x10 pixels. The terrain tiles inside of each elevation tile are counted from 0 to 15, starting in the upper left edge of the elevation tile and going left-to-right, top-to-bottom.

The sequence of the elevation tiles starts also in the upper left edge of the map, but their numbering goes from left-to-right and top-to-bottom without respecting the deployment tiles. If you want to edit terrain datas or elevation, you must know where to edit: which elevation tile and which terrain tile inside this elevation tile. For battle setup and relating logics you must know the position in the deployment tile grid.

Because the elevation tiles are numbered sequentially from 0 to its (maximum - 1), I think an internal absolute CC map size limit might be the largest possible long-integer value 65535. But the actual game you which to modify may have much smaller map limits. In some cases not only the map size may be limited but also the amount of roof file entries and/or trees. In case you may run into trouble with your map, and you will be forced to shrink your map: for this reason I have published a tool (for Mac & PC) to shrink/expand/convert/rotate/join maps: CC2Tools.exe / CloseCombat2Tools.

After this technical basics let us setup a map making tactic. Please use actual and older map making guides and FAQs published by the CC community for more specific concepts:

#### Map size

- decide if you want to make a map for only one CC game or several ones,
- decide which size (in pixels: must be a multiple of 120 pixels),

<sup>1</sup> david\_Michael reported in 2006 that max. CC4 map size is 2880x2880 pixels like in CC3!

<sup>2</sup> In a thread of Feb. 2006 at CSO forum Buck\_Compton reported the possible map size of 3840x3840 pixels for CC5. Before his report we all assumed that 3600x3600 is the allowed maximum.

- remember that in CC the sun direction is from top-left to bottom-right,
- map's rectangle: CC2 maps are mainly oriented horizontally, CC5 maps are often oriented vertically, RtB and CCM-standard maps must have a size of 4800x4800 pixels.
- remember the CC scale: 5 pixels per meter. But newer CC games shows often larger details on their maps.

#### Making the background graphics

- make your first artist's impression of your new map in your favorite graphics editor program. I recommend to save several stages of your work.
- make a basic background without shadows and without buildings.
- then add buildings and their shadows. Keep this stage of your work!
- for CC3 or newer you must then add the tree shadows, for CC2 you can omit this step because the tree shadows are stored in the "Terrain" file.

#### Making a background graphic with interior views of the buildings

- if you have more than one building on your map, I recommend to duplicate your final background graphic,
- paint the interior views of your intended roof-areas.

You can create graphics for the overview and map-monitoring files, if you like.

For CC2 only: if needed create a blown bridge and (if needed, too) a repaired bridge graphic.

#### With 5CC you can then

- create a map filled with default datas,
- import your graphics as background (and if available separate layers containing background with interior views, tree shadows and tree trunks),
- edit/define your terrain values (you will view always your background graphic),
- edit/define your elevations (including elevation generating from an imported greyscale image),
- define your roofs,
- for CC2: define your bridge blown graphics area - and if necessary: defining the datas of the repaired bridge and the repaired bridge graphics area,
- generate LOS, with the ability to edit LOS (LOS will be calculated while respecting the elevation, terrain type's height and the terrain type's level),
- generate your OVM and MMM graphics,
- save your work into files according the filename rules of your intended CC game.

And of course you can modify your (and others) work by editing existing maps. Please remember: save your work often. But also remember: make backups of your work, 5CC will not do this for you. When loading a map, 5CC will detect its file format: CC2 map data files will be identified easily because they have a different two byte header. LOS files have always the same file format (luckily!). CC2 background maps will be identified as CC2 files only if they are loaded together with CC2 map data files or if their header contains the correct CC2-BGMap#### sequence: 4D 41 50 49 00 02 00 00 hex. Roof (and bridge) files can be again identified easily by their unique header.

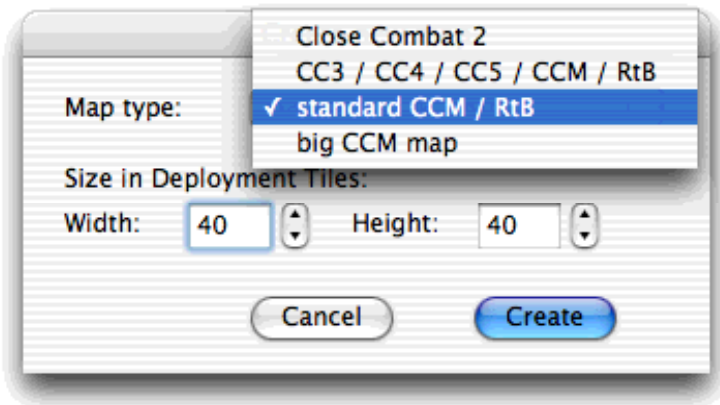
OVM and MMM maps do not have a header showing a CC-version dependend entry. They will be interpreted as a CC2 file if they are loaded together with a CC2-BGMap#### file. This might cause a program crash when you try to load a CC5 \*.mmm together with a CC2 map. Dont do this! Dont mix CC2 map files together with map files from other CC games. Use my other tool (as told above) to convert maps between CC versions.



## The menu bar

### Menubar item "File"

Use from the menu bar "File>New..." to create a new map from scratch. The following window will appear:



You must select whether you want to create a CC2 map or a map for newer CC games. When you select "standard CCM / RtB", then map's width and height will be automatically set to 40x40 deployment tiles. Same for "big CCM map", result will be width / height 160x40 deployment tiles. For all other kind of maps you must fill in the desired map size, counted in deployment tiles (a deployment tiles is a square of 120x120 pixel). When you select "Close Combat 2", you can enter the map's slot number (its range can be from 100 to 999). This slot number will be used for displaying a file name suggestion when you save the map.

If you want to load an existing map, use "File>Open..." or "File>Open recent". Up to 16 recently loaded map data files will be remembered by 5CC. The file-search and -open dialog box (and its quality) is provided by the runtime environment and depends on the operating system you are using. 5CC will automatically detect the map data file's version by identifying the two byte header. If a CC2 header is found, 5CC will search for a suitable graphics file folder using the search path "../Graphics/Maps". For CC3 maps (or newer), 5CC will search for the graphics files in the same folder where the data file resides. 5CC will strictly obey the CC filename conventions: if the map data file name is "Map100", then 5CC will look of course for "BGMap100". And for CC3 files (or newer) it will change only the extension (example: "Andorra.txt" as data file, "Andorra.bgm" as background graphics file).

If a background graphics file cannot be found, 5CC will ask you for a valid file. It must be a CC file. External graphics files (TARGA, BMP, ...) cannot be loaded this way. After loading this file 5CC will do the same with the OVM and MMM files. If these files were not found, 5CC will create internally these graphics (a little bit time consuming process). Then it will look for a roof file and for CC2 only will look for a bridge file. LOS files will be not loaded automatically, but you can enable this in 5CC's "Preferences window".

For saving your work use "File>Save". 5CC will use the file names and paths from which the map was loaded. It will overwrite existing datas without warning. But it will only save datas or graphics that have been changed. Example: if you have loaded a map using the "File>Open..." command without OVM and MMM found, then the next "File>Save" command will save the created OVM and MMM graphics into CC files at the corresponding path of your map data file.

You can control in the "Map properties window" which datas / graphics have been changed.

Saving your entire map under a new name or to a new folder, use the "File>Save as..." command. All datas and graphics actually loaded will be written to disk, even if they were not changed. Special case CC2: if valid paths "../Data/Maps/" and "../Graphics/Maps/" were not found, then 5CC will store the files altogether in the same specified folder. You must ensure that you use a valid CC2-map data file name: "Map####" (where # stands for a single digit), otherwise the saving will fail! For Windows-users only: to get correct CC2 filenames without extension, you must add a dot "." at the end of the filename to prevent the adding of an extension!

The commands "File>Save" and "File>Save as..." will check the map terrain and elevation datas for negative values. If there are such values, then 5CC will give a warning. A map containing such negative values will not work in the CC game. But you can save your work anyway and it is recommended to correct these values. Use the command "File>Scan for negative values" to make a search for negative values without saving the map's datas.

Using the "File>Close" command will close the active window. For PC only: if the editing window is the active window, then 5CC will quit when issuing this command.

In all other cases you must use the "File>Quit" (MacOS-X: "5CC>Quit") command to terminate the program. If there are unsaved changes present, 5CC will ask you before quitting.

The command "File>Generate LOS" is intended for generating the whole LOS datas for a loaded map. In the "Preferences window" you can determine which LOS-generating routine will be used. And you can determine there if you restrict LOS distances to the same values as they are selected in the "LOS actions window". 5CC will keep all these settings in its preferences file "5CC.ini".

The subsection "File>Import..." gives you the ability to import single CC files or external graphic files to your loaded or created map. Example: you have only the map data file ready, but not yet the graphics. Create a new map of the needed size in 5CC using the "File>New..." command and then load the already existing data file via "File>Import...>Import Map#### / TXT file..." command. The "File>Import...>Import Map#### / TXT file..." command will create a complete new map in RAM erasing all already existent map datas (data, graphics, roofs, bridges). In other words: the "File>Import...>Import Map#### / TXT file..." command is identical to the "File>Open..." command except for the fact that only the map data file (Map#### / \*.txt) will be loaded.

All other "File>Import..." commands will add the imported graphical datas to the already loaded map datas (data and graphics). In this case the imported map graphic can be of different format (CC2 or CC3-and-newer) than the already loaded map data file: you can for example create a CC2 map in 5CC and can then import a CC4 background BGM file to be used as background graphic. What you must obey is that the imported graphic fits to the size of the already loaded map. Mixing CC2 maps with CC3-or-newer BGM files requires to load the OVM and/or MMM separately, and vice versa.<sup>3</sup>

5CC is also able to import external graphic files. Import of 16-bit TARGA graphics is a separate command. These graphics must be oriented left-to-right. Right-to-left oriented TARGAS can not be

<sup>3</sup> When importing BGM, the window "Coordinates" will not update the monitoring map graphic. You must use the menu commands "File>Generate>OVM from BGM" and "File>Generate>MMM from OVM" to get actual monitoring map graphic in this window after importing a BGM.



imported. 5CC is able to import top-to-bottom and bottom-to-top TARGAS if their header is correct. The other graphics import functionality depends solely on your operating system (and might be extended if you have QuickTime® installed). Minimum should be BMP-graphics import on PCs and PNG- (perhaps JPEG-) graphics import under MacOS-X 10.4 or newer. 5CC will automatically convert the imported graphics to 16-bit.

But remember: importing datas or graphics will erase the existing datas in RAM. Example: if you import a roof file, the existing roof definitions will be lost.

For special cases use the subsection "File>Add...". Using the "File>Add...>Add Roof file..." will add the imported roof definitions without erasing existing datas in RAM. This subsection is also intended for importing external graphics for a second background layer. This second background graphics layer can store the background view with buildings' interiors painted on. It will be used when new roof definitions will be made, but it is not part of a CC file and therefore will not be saved when a "File>Save" or "File>Save as..." command occurs.

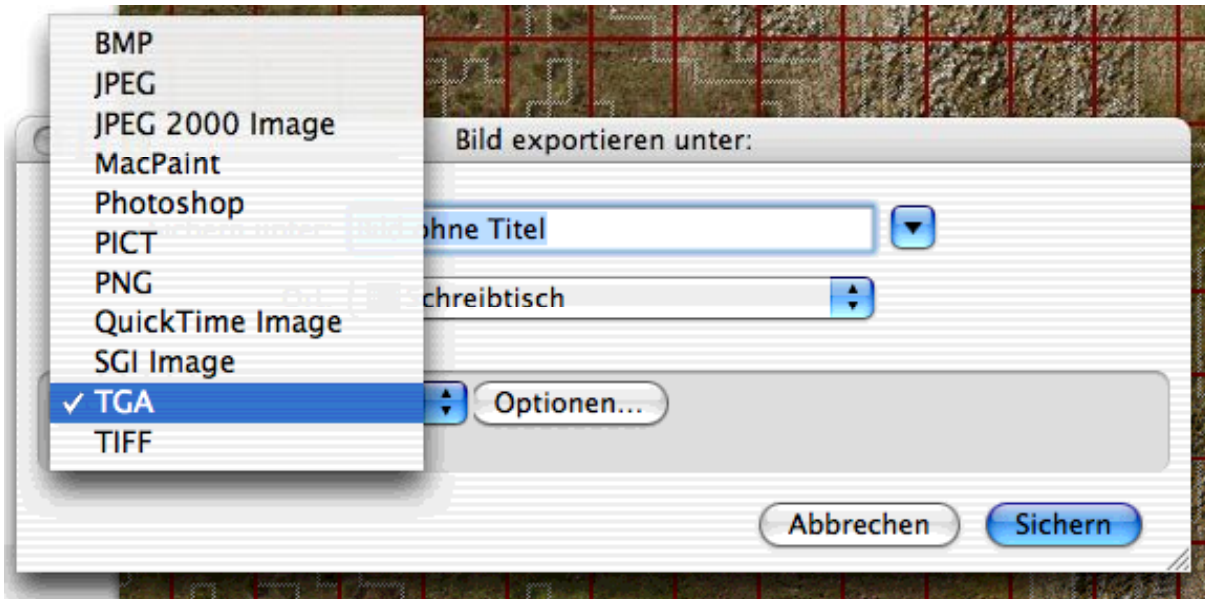
In the subsection "File>Add..." you will also find import commands for already made tree shadow layer and tree trunks layer graphics. And you will find here the commands for importing greyscale images for defining the map's elevation. When you import such a greyscale image (it must be in fact a RGB 16-bit color graphic with shades of grey) the color black (= RGB(0,0,0)) will be interpreted as elevation = 0. The color white (= RGB(255,255,255)) will be interpreted as elevation = 255. 5CC will calculate the medium color of all pixels of a 10x10 pixel-square to get the elevation for a terrain tile (for CC2: 5CC will calculate the medium color of allpixels of a 40x40 pixel-square to get the elevation for an elevation tile).

Another special subsection: "File>Generate...". Here you can generate OVM and MMM graphics from the BGM graphic already in RAM. These graphics will be saved to disk only if you issue a "File>Save" or "File>Save as..." command. The command "File>Generate...> interior background picture from BGM and Roof" will combine the BGM background graphic in RAM with the interior views of your roof definitions in RAM. 5CC will take only non-white pixels out of the interior roof graphics. And it will respect the "Visual Width" value of CC3-or-newer roof definitions. With this command you can create the background view with buildings' interiors painted on in the second background layer discussed above. To save this created graphic you can only use the "File>Export...>interior background picture..." or the "File>Export...>interior background as 16-bit TARGA..." command described in the next chapter.

The subsection "File>Export..." gives you all the abilities for exporting datas / graphics corresponding to the contents of the import or add subsections. You can export:

- map data file and LOS file,
- the background image as BGM file or picture file,
- the background image combined with the tree shadow and tree trunks layer as BGM or picture file,
- the tree shadow and tree trunks layer as picture files,
- the roof exterior or interior views pasted over the background image as picture files,
- the roof exterior or interior views pasted over a white image as picture files,
- the elevation values translated into a greyscale picture file,
- a "screenshot" of the entire map graphics with all actually visible editing grids / numberings / highlightings / borders painted on.
- OVM and MMM images as OVM/MMM or picture file,
- roofs as roof file,

- CC2 bridge images as Bridg### file,
- and you can create here an empty roof file for CC5/RtB/CCM.



When exporting CC graphics as external graphics you can choose either exporting as 16-bit TARGA or you can use the graphics export functionality of the runtime environment. Its options depends on the operating system you are using. On PCs the export as BMP graphics should be possible, on Mac you should have all QuickTime® compatible formats available. The picture above shows what will be offered under MacOS-X 10.4.

The command "File>Preferences..." (on Mac: "5CC>Preferences...") will bring the "Preferences window" to front. Here you can select various default settings of 5CC. All these settings (and much more) are saved to the preferences file "5CC.ini" when 5CC quits. The file is automatically loaded when 5CC starts up. The location where this file is saved depends on your operation system. You can view this location by switching to the "About" subsection in the "Preferences window".

## Window "Preferences"

### General settings:

- enable "Undo command" for all terrain and elevation editing tools.
- enable LiveScroll: enable this if you have a fast cpu to see smooth real-time scrolling.
- enable double graphics buffering to avoid screen flickering. When enabled the graphic's speed depends mainly on the cpu speed.
- use faster renderer: only necessary for MacOS-X: use the old (but faster) QuickDraw engine instead of the newer Quartz engine.
- select which windows will be shown immediately after program startup. For PCs the main editing window will be always present.

### Map settings:

- default terrain value to be used when creating a new map. This terrain element value will be used for the entire map for all CC versions. Possible range is "-1" (representing "not defined value" = "illegal value") to "254".

- default elevation value to be used when creating a new map for the entire map and for all CC versions.
- prefer CC2 editing: when enabled then the popup-menu, the "Create new map dialog window" will show "CC2 map" as default on its first show up. And all file saving/opening dialog boxes will default to search for "any file".
- enable always try to load LOS file when loading a map with the "File>Open..." command.
- enable always create OVM and MMM when loading a BGM file (via "File>Open..." or "File>Import..." subsection) and the OVM and MMM files were not found.
- enable automatically "Coordinates window" on when a map is created or loaded.
- define here what will happen when the "File>Generate LOS" command is issued. You can select one out of three different LOS calculation ways. And you can combine this with the LOS distance restrictions selected in the "LOS actions window" (see page 26f of this manual)

### Select "Terrain Elements File":

select one out of 9 terrain element files to be used to interpret / edit the terrain datas (stored in the map data file). 5CC will recognize CC2's and CC3's original terrain element files as valid input files. Since v1.03 5CC will need an additional column in these files for terrain category grouping. If this column is missing, you will see only one single category (without heading) in 5CC's window "Terrain". In addition to these two formats 5CC can use its own terrain element file format:

- plain ASCII, TAB-seperated columns, line-end delimiter doesn't matter (CR or CR+LF),
- first line must contain a three byte header "5CC",
- the file must have 5 columns: first column must contain "element name", followed by columns for "terrain class number", "terrain height", "terrain level (for multistoring buildings)" and "terrain category".
- the header line can be followed by comment lines,
- data start must be indicated by a line containing a "&" at its start,
- data end must be indicated by a line containing a "#" at its start.

This format is similiar to the one used by the original CC2 and CC3 elements files except for stripping the not used columns. The following table shows the differences (columns counted from 0):

<b>Terrain Elements File version</b>	Header ID (string)	Element name is located in column	Terrain class number is located in column	Terrain height is located in column	Terrain buildings level is located in column	Terrain category
<b>CC2</b>	46	0	1	2	39	42
<b>CC3</b>	14	0	1	2	42	47
<b>5CC</b>	5CC	0	1	2	3	4

The terrain category in the last column can be of any kind of character string. You can use as many categories as you like. The two reserved categories "Negative value" and "Unknown value" will be generated by 5CC at runtime to store map terrain elements not defined in the actual selected "Terrain Elements File". If you dont like my predefined category names, feel free to change them in the "Terrain Element Files". Terrain elements with identical category will be bundled together in the window "Terrain".

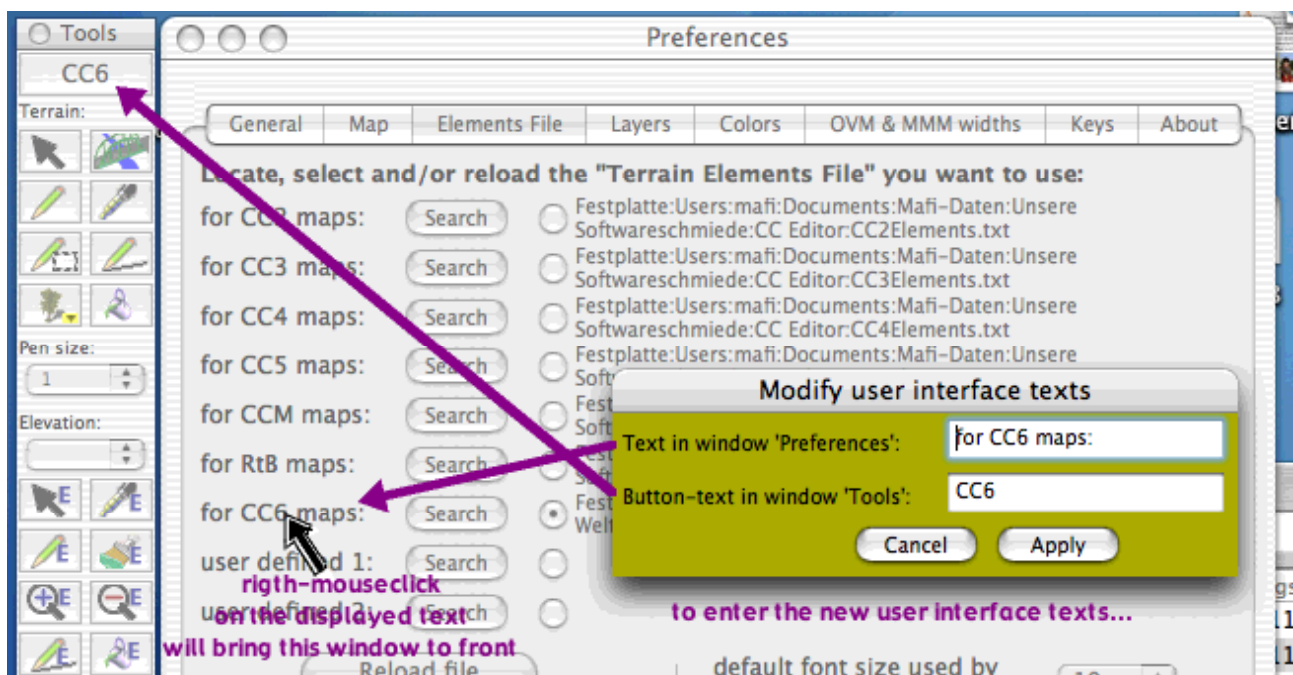
When you have updated your external "Terrain Elements File" while 5CC is running, you can reload this file by pressing the "Reload" button. The 5CC package contains ready-to-use terrain

element files for CC4, CC5, RtB and CCM in CC3-format, too. These files were generated using QClone tool made by Sgt\_Wilson (modified manually).

In this preferences section you can also define the default font size of the texts of the window "Terrain". One exception: for the PC version you cannot use a character size less than 10pt. When you select 9pt or less on a PC you will get only lower text lines.

Since 5CC's version 1.04 you can enable the adding of the "not defined" = "illegal" terrain element value to the actually selected elements table in RAM. When enabled, "-1" will be added to the terrain element table in RAM automatically every time a element table is loaded from disk without changing the files on disk themselves<sup>4</sup>. Another checkbox in this section let you enable to allow this illegal value to be written by the map terrain editing tools.

Since 5CC's version 1.05 you can customize the texts of 5CC's user interface which describe the 9 available slots for terrain element files. Make a right-mouse click (on Mac: Ctrl-mouse click) on the texts of the window "Preferences". The following window will come to front:



You can enter here new texts used in the window "Preferences" and new texts for the top-most button of the window "Tools".

### Layers:

When placing a tree shadow patch element, you might want to avoid to have shadows to be stacked upon each other. In this preferences section you can select if you allow such doubled/overlying shadows or if you want to avoid them.



<sup>4</sup> you can establish terrain element table files containing negative class numbers, in this case 5CC will treat them as regular values (perhaps necessary for future expansions of CC). When doing so, you should disable the "add '-1' to the element table when it is loaded".

For optimized use of the exported shadow layer graphics in your favorite graphic editor I recommend to set default opacity to 100% and to reduce the shadow opacity later on in your graphic editor. An opacity of 55% - 45% is recommended only if you use 5CC to generate the new BGM composed of shadow layer and BGM layer.

And you can set here the position of the window displaying the visible layers. This window is usually only 20 pixels high. The MacOS-X version of 5CC will display it as a floating window in the upper right edge of the main editing window's titlebar. You can change the horizontal placement offset counted in pixels from the right side of this window. The PC version of 5CC will place the window "Visible layers" as a normal window at the top of the main editing window. In this case the horizontal placement offset is counted in pixels from the left side of this window. You can change also the vertical placement offset (negative values are allowed) and the bounding to the editing window's top or bottom. It is also possible to bound the window "Visible layers" to other windows (coordinates, tools, terrain or to none).

### Colors:

You can modify the colors used by 5CC in the "Editing window". All color settings are bundled together to color themes. The number of possible color themes is limited to 99. Pressing the "+" button will add a color theme. Double clicking the theme's name gives you the ability to change the theme's name. To verify this changing press the "Apply color changes" button. Clicking on the colored rectangles let you change the specified colors. Again you must verify the changes by pressing the "Apply color changes" button. You can select the color theme which will be used in the "Editing window" in the menubar item "Colors". Two color themes are implemented by default and cannot be deleted, but you can change their color values.

### OVM and MMM widths:

enter here which image width 5CC must use as a maximum limit when creating OVM from BGM graphics and MMM from OVM graphics. If height will be greater than width, then these values will be used as limit for the height calculation. Press the "Restore defaults" button to get the built-in default values. The maximum values found in original CC files are listed in the following table:

CC version	Max. OVM size in pixel	Max. MMM size in pixel
CC2	1142x646	144x144
CC3	1024x716	160x160
CC4	1024x716	160x160
CC5	1024x716	160x160
RtB / CCM standard map	716x716	160x160
CCM big map	1024x256	640x160

### Keys:

enter here keyboard shortcuts for the tools available in the window "Tools". The setting is case sensitive. Special characters (like TAB, spacebar, ...) are not allowed. The digits "0".."9" are reserved for entering elevation values.

### Menubar item "Edit"

"Edit>Undo" is implemented for the following situations:

- you can undo the clearing of a complete roof (that means: when you have used the "roof erase tool" or the command "Edit>Clear" on the highlighted roof showing the exterior view),



- you can undo the erasing of all roofs (when you have used the command "Edit>Clear all Roofs"),
- and you can undo the data and the graphic changes when you have used the "tree shadow patch tool".
- all other terrain and elevation editing tools can be made undone if "Undo" is enabled in the window "Preferences" section "General". In this case the entire map data is backed up internally prior to using a command. Might be RAM / time consuming when editing large maps. That is the reason why you can disable undo there.

The commands "Edit>Cut", "Edit>Copy" and "Edit>Paste" are available when a roof exterior or interior view is highlighted. "Edit>Copy" will copy the highlighted roof view (or the visible CC2 bridge image) to the clipboard. "Edit>Paste" will paste in the clipboard contents (if it is a picture) into the highlighted roof view only if its size fits exactly to the roof size. Same to say for the CC2 bridge images. "Edit>Cut" will clear the roof interior view (a black rectangle will indicate this) only, if you have selected "interior roof view" ON. If you have selected "exterior roof view" ON, then the "Edit>Cut" command will delete the entire roof entry without warning. So if you want to "delete" only the roof exterior view contents, use the "Edit>Paste" command and paste in something graphical artwork.

A CC2 special: If you are in terrain editing mode for repaired bridge data, then the "Edit>Cut" command will disable the selected elevation tile from being a repaired bridge data area.

The "Edit>Define as Roof" command will define the selected map area (selected by rectangle tool or by polygon tool) as a roof entry, setting the roof entry's coordinates (and vertices in case of CC3-or-newer roofs) and cutting out the background's area. This cut-out will be used for the roof exterior view and will be also pasted automatically to the clipboard (a technique introduced by Chris Ellen's CCEdit). You can use the clipboard graphic in your favorite graphics editor to paint the interior view over it, copy it back to the clipboard, switching to 5CC, selecting "interior roof view" ON and pasting this interior view in for the highlighted roof entry. The opportunity of this way is that you must not think about the cut-out size. If you have added a background view with buildings' interiors painted on in the second background layer (via the "File>Add...>Add interior background picture..." command), a cut-out from this layer will be transferred to the roof interior view when the "Edit>Define as Roof" command is issued. A technique introduced by Cpl\_Filth's tool Groof. Recommended for maps with more than only few roofs or for maps with overlaying roofs.

The subsection "Edit>Update all Roof graphics" is intended for some special cases. In case you have already made several roof definitions and then decide to rework your background artwork, you would be usually forced to redo all roof definitions. To avoid this hard work use the commands out of this subsection to reload the graphic cut-outs for roof exterior view from the BGM graphic and / or the graphic cut-outs for roof interior view from the second layer (background view with buildings' interiors painted on) **without** changing the roof entries' coordinates!

The command "Edit>Clear all Roofs" will ask the user prior to erasing all roofs. This command can be undone using the command "Edit>Undo". The command "Edit>Clear all Roofs outside map" will eliminate all roof entries which are entirely outside the map's borders. This command cannot be made undone!

The command "Edit>Select/Edit tree shadow patch..." will show the window "Trees", where the user can edit (and select) his tree-data and -graphics patches.



## Menubar item "Roof"

Use the commands here for toggling the visibility of the roof images (or CC2 bridge images). It is only possible to view the roof exterior views or the roof interior views or the CC2 blown bridge image or the CC2 repaired bridge image or nothing of all these 4 (then the BGM will be shown). Usually the BGM view will be identical with the view "roof exterior view" ON. But there is another CC easter egg: during gameplay the roof exterior images will be pasted over the background not at map startup, but only if a soldier is leaving the building. You can use this feature on your custom map giving roof exterior views a slightly different image than used on the BGM (perhaps to indicate that the building was "visited"). Two custom maps using this feature are: CC2-ModifiedVeghelMap300 by Mick "xe5" Conmy (to simulate a ford) and my CC2-Settore-L map (to simulate minefield sweeping).

Changing the views is possible in all editing modes. So you can view your interiors when defining your terrain (otherwise you will not know where to place a window or door). If you are in roof editing mode and change the view to blown bridge view you will also switch to bridge image editing. And vice versa: if you are in bridge image editing and change the view to roof exterior / interior view, you will automatically switch to roof editing mode.

The "Roof>Rectangles or Polygons..." subsection is intended for roof editing mode. You can select here what kind of roof boundaries you will see of the already defined roof entries.

The new command "Roof>Rectangles or Polygons...>Shift all roof vertices one pixel to the left" is intended to be used on CC3-CC6 maps to correct a logical bug if the map was created by the "Groof2.exe" tool. This command will not change the roof graphics and not the X/Y-position of the roof graphics on the map but only the logical vertices. Their X-coordinates will be moved one pixel to the left.

## Menubar item "Actions"

The subsection "Actions>BGM actions" give you the ability to clear the background graphics / layers and to adjust all layers to the map's size in case you have imported a larger or smaller BGM file (after the import of a smaller BGM the not filled map areas will be shown in white. After issuing the "Actions>BGM actions>Adjust all layers to map's size" command the formerly not filled areas will be painted black).

The command "Actions>LOS actions..." will bring a window to front to generate LOS or edit single LOS layers with more specifications. Will be discussed on page 26f of this manual.

The command "Actions>Data actions..." will bring a window to front to manipulate map's terrain and elevation datas in whole. The actions available for elevation will either have effect to the entire map or can be restricted to a selectable range of existing elevation values. Three actions are available: elevation filling, elevation adding (works like an elevator) and elevation multiplication (can be used to expand the contrast between minimal elevation differences). The elevation multiplication must be entered in your **localized** number format (examples: for US/UK: a period must be used for entering decimal values; for GE/FR: a comma must be used for entering decimal values) like it is shown in the information text in this window.

The actions available for terrain can have also effect to the entire map or can be restricted to a single terrain value or to all values of a category. Only a filling action is available. In this window you can also toggle all terrain elements' write-protection (on / off / invert).

### **Menubar item "Visibility"**

The "Visibilty>Grid..." subsection let you select what kind of grid will be displayed. Because the "Coordinates window" shows you in which tile (elevation and deployment tile) the mouse pointer is located, you will not use this feature often I suppose. "Visiblity>Grid...>Grid coordinates show" might be usefull for boot camp modders, because CC3-or-newer uses for deployment of troops in boot camp files the elevation tile numbering and for moving these troops an elevation tile coordinate grid (like CC2). All other commands are intended to bring several additional windows to front and / or to arrange them.

### **Menubar item "Color"**

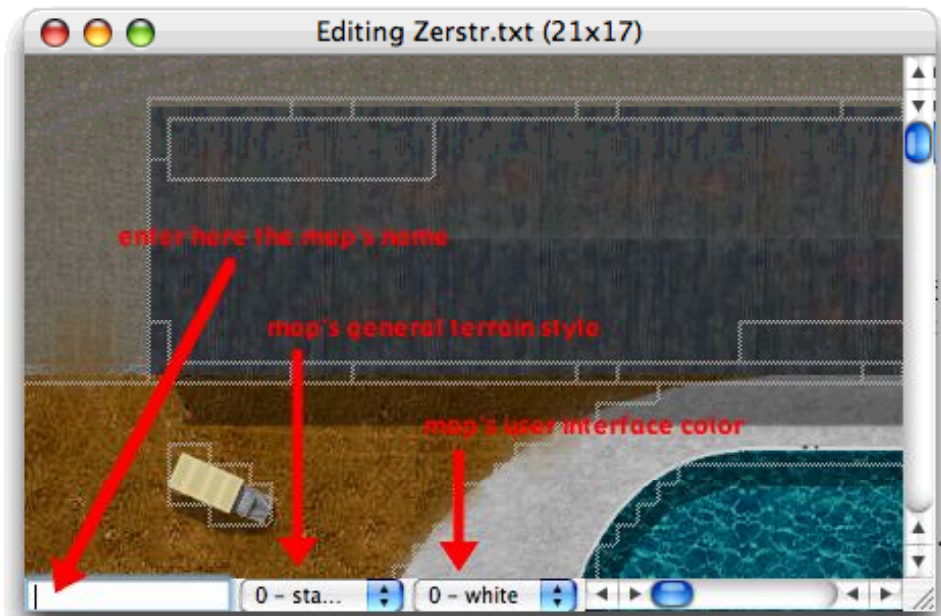
Select here which color theme to use in your "Editing window". Its a dynamically menu item, and its (perhaps strange) behavior depends on your operating system (it is optimized for MacOS-X).

### **Menubar item "Help"**

Some additional help texts about map making basics and 5CC's limits.

## The windows

### Window "Editing"



(the image shows the CC3-Zerstoror map by Andrew Glenn "Naked Foot" in the "Editing window". This map package contains an excellent CC3-map making guide)

This is the window where you will edit your map. In the window title you will find the map data file name and the map's size counted in elevation tiles.

For CC3-or-newer maps you can enter in the lower window area the map's name and you can select the map's general terrain style and user interface color.

What will happen when clicking with the mouse pointer on the editing area depends on the selected editing mode. Selecting an editing mode is only possible in the "Tools window".

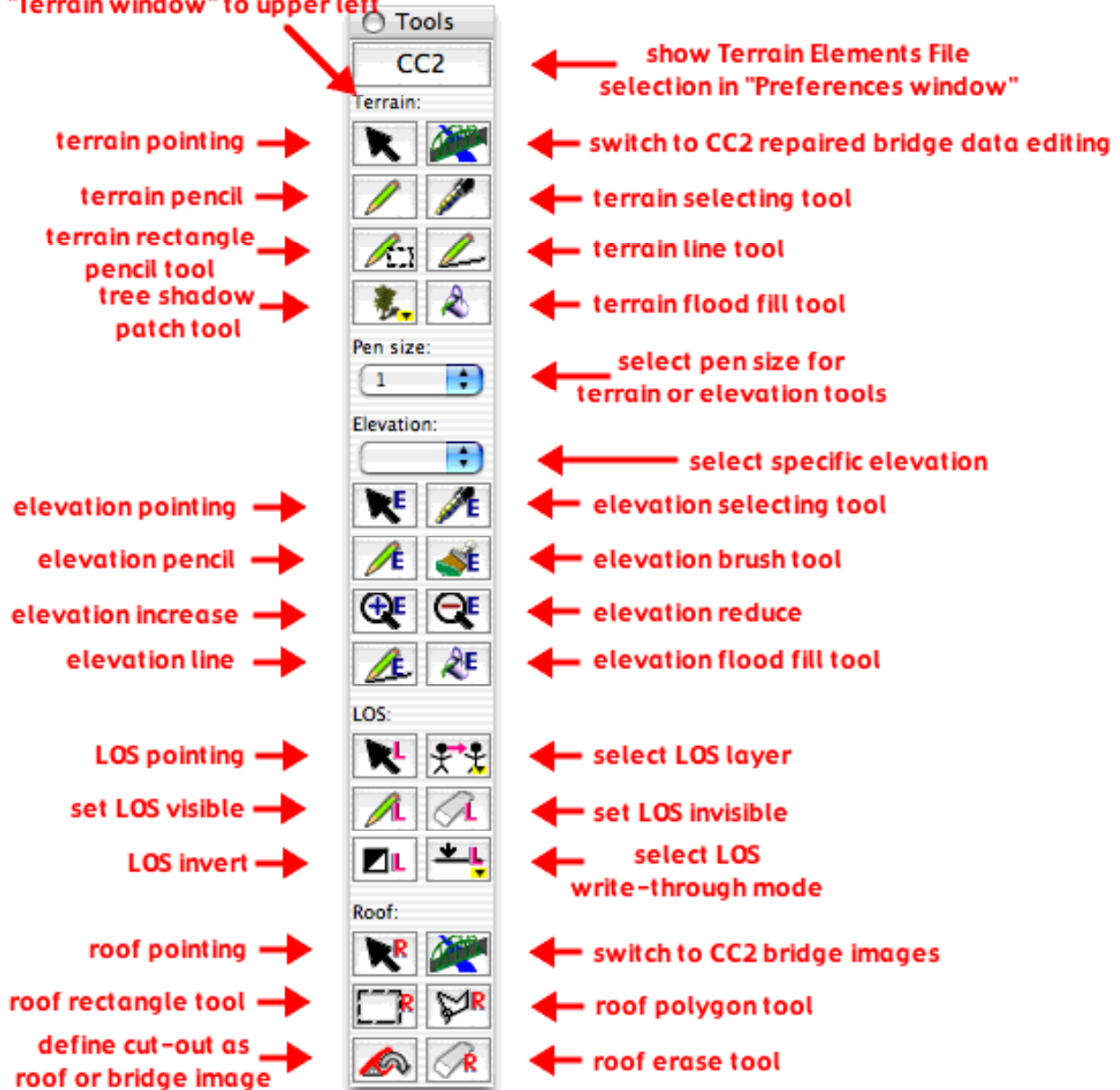
Changing the map's terrain values, the map's elevation values or the roof rectangles/polygon points must be done with the left-mouse click. When you are in terrain editing mode, you can use the right-mouse click (CTRL-mouse click on Macs) to bring a context popup menu to front displaying the last 10 used terrain elements, the default terrain element, the terrain element directly under the mouse pointer and the actual selected terrain element. You can change easily the desired terrain value using this way without moving across the screen to the window "Terrain" and back (and it will be a good replacement for the missing "terrain eraser tool"). Similiar functionality is available for LOS-editing.

In addition to the mouse you can use your keyboard to enter elevations when you are in elevation editing mode. This works identical to CCEdit: you must enter two digits via the keyboard to change the selected terrain/elevation tile's elevation. If you want to enter values below 10 you must press "0" and the desired digit. Entering elevations greater than 99 is only possible via the window "Tools".

## Window "Tools"

This window contains a tool palette. Selecting a tool here will change the editing mode in the "Editing window". Not every tool is available for CC3-or-newer maps.

position "Tools window" and  
"Terrain window" to upper left



The top most button of the palette will bring the "Preferences window" to front showing the "Terrain Element File" selection. When you click on the text "Terrain:" below, the "Tools window" will be positioned in the upper left edge of the screen. The "Terrain window" will be positioned at its right side.

### The terrain editing tools:



**terrain pointing:** it is the default tool. Clicking with this tool on the editing area of the "Editing window" will only select internally the actual elevation tile and terrain tile. Special for CC2: if you have selected CC2-repaired bridge data editing, then this tool will let you activate the selected elevation tile as a valid "repaired bridge data area".

These elevation tiles will be added at the CC2 data files end in the second data section. Look into CC2's original "Map300" file and my text "CC2Guide-Bridg-files\_v6.pdf" available on the internet. To deselect such a tile you can only use the "Edit>Clear" command.



**switch to CC2-repaired bridge data editing:** only available in CC2. After pressing this button all other terrain editing tools will only have effect on the defined repaired bridge data area. All other map areas are pasted over with a colored pattern. When "repaired bridge data editing" is ON, then elevation editing is not possible. Only terrain editing is possible.



**terrain pencil:** define the clicked terrain tile with the actual terrain value. Pencil size depends on the selection set in the popup-menu "Pen size".



**terrain selecting tool:** click on a terrain tile to use its terrain value as actual terrain value. Alternatively you can select the actual terrain value in the "Terrain window".



**terrain rectangle pencil tool:** click and drag will fill the selected terrain tiles with the actual terrain value. This tool is not available for CC2-repaired-bridge data editing.



**terrain line tool:** will draw a terrain line from the first selected position to the next selected position. Line size depends on the selection set in the popup-menu "Pen size". The placing of the first selected position will look like the use of the "terrain pencil" tool. Sorry to say that no animated cursor is available to see the spinning line between the first selected position and the actual mouse cursor position. You can scroll prior to place the second selected position to draw lines larger than the visible editing window size. This tool is not available when editing CC2's repaired bridge datas.



**terrain brush tool:** will fill the entire elevation tile with the actual terrain value. If you want to see the placement area prior to using this tool I recommend to set the visibility of the elevation tile grid to "ON". Only available when editing CC2's repaired bridge datas.



**terrain tree shadow patch tool:** let you select the actual tree shadow patch and will turn tree shadow patch placing on. The placement of the selected patch depends on the position of the mouse pointer and the position of the patches hotspot. If your actual patch has a graphic associated, then not only the data values out of the patch will be placed but also all black pixels will be transferred to the layer "shadow" and all other non-white pixels will be transferred to the layer "trunks". Such a patch placement can be made undone using the command "Edit>Undo". This tool is not available for CC2-repaired-bridge data editing.



**terrain flood fill tool:** will fill the area surrounding the clicked terrain tile as long as it contains the same terrain value. Filling an entire CCM-Big map will take about 10 seconds on slow cpus. The used algorithm is a non-optimized non-recursive linear 4-neighbours flood fill (for those who will be afraid to get a stack overflow). To work properly this tool needs a lot of RAM (for heap). Don't use it under RAM-critical conditions. This tool is not available for CC2-repaired-bridge data editing.

The terrain writing of negative terrain element values is only possible if this is enabled in the window "Preferences" section "Terrain Elements file". The overwriting of terrain datas is only possible if they are not write-protected. Write-protection can be toggled on/off in the window "Terrain" and in the window "Data actions" section "Terrain".

**The popup-menu "Pen size":** use this popup-menu to set the actual elevation / terrain pen size for the tools "terrain pencil", "terrain line", "elevation pencil", "elevation line", "elevation increase" and "elevation decrease".

### The elevation editing tools:



**select specific elevation:** use this popup-menu to set the actual elevation.



**elevation pointing:** use this tool to select the actual elevation tile (CC2 map) or terrain tile (CC3-or-newer map). The selected tile will be highlighted and its height will be shown numerically. The elevation height of all other tiles will be shown only if their neighbours have a different height.



**elevation selecting tool:** click on an elevation tile to use its elevation as actual elevation value. Alternatively you can select the actual elevation via the "select specific elevation" popup-menu.



**elevation pencil:** clicking with this tool on an elevation tile (CC2 map) or terrain tile (CC3-or-newer map) will change the tile's elevation height to the actual value as selected in the popup-menu above. Pencil size depends on the selection set in the popup-menu "Pen size".



**elevation brush tool:** for CC3-or-newer maps this tool will set the actual elevation value for the entire elevation tile. For CC2 maps the highlighted elevation tile and its four neighbours will get the actual value.



**elevation increase:** will increase the highlighted tile's value in step by 1. Pencil size depends on the selection set in the popup-menu "Pen size".



**elevation reduce:** will decrease the highlighted tile's value in step by 1. Pencil size depends on the selection set in the popup-menu "Pen size".



**elevation line tool:** works similar to the tool "terrain line". Pencil size depends on the selection set in the popup-menu "Pen size".



**elevation flood fill tool:** works similar to the tool "terrain flood fill".

### The LOS editing tools:



**LOS pointing:** use this tool to select the actual deployment tile. This tile will be highlighted. And the LOS from this tile to all other tiles will be shown for the selected "LOS layer". LOS can be "ON" or "OFF" (= line of sight is free or blocked). The deployment tiles with LOS "ON" will be shown clearly, those with (blocked) LOS "OFF" will have a pattern pasted over. The color of this pattern can be defined in your actual color theme. So if you click with this "LOS pointing tool" on various deployment tiles, you will get different results, because every deployment tile can have different LOS to the other tiles. That's normal. - **All LOS editing tools are only available if a LOS table is present in RAM (via generating or via loading).**



**select LOS layer:** in CC the LOS is not only defined for line-of-sight from deployment tile to other deployment tiles. There are four LOS definitions for every relation:

1. Soldier viewing Soldier (abbreviated SvS),
2. Soldier viewing Vehicle (SvV),
3. Vehicle viewing Soldier (VvS),
4. Vehicle viewing Vehicle (VvV).



I will refer to these four LOS relations as "LOS layers". They are 4, because it is defined this way in all CC games since CC2. Internally the LOS files stores these relations in 4 bit-fields, filled up to full byte length with padding zero bits for every deployment tile<sup>5</sup>.



**set LOS visible:** when switching this tool or to the next one you will not change the actual deployment tile but you can set LOS "ON" for the deployment tile you are clicking on (usually LOS is "ON" for each tile to itself. You can control the effectiveness of the LOS calculation algorithm by checking if LOS is set "ON" for every tile to itself).



**set LOS invisible:** with this tool you can set LOS "OFF" for the relation between the actual highlighted deployment tile and the tile you have clicked on with the mouse pointer.



**LOS invert:** with this tool you will invert the LOS value below the mouse pointer.



**select LOS write-through mode:** at the moment two "modi operandi" are selectable: writing with the "set LOS visible", "set LOS invisible" and "LOS invert" tools only to the active selected "LOS layer" or (to make LOS editing/correcting a little bit faster) writing with this tools to all 4 LOS layers at the same time (but only one layer will be visible for you in the editing window).

### The roof editing tools:



**roof pointing:** select with the mouse pointer a roof entry and highlight it (= making it to the actual roof entry). If the "Roof informations window" is visible, then all the roof entry's values (including the graphics) will be ported to this window. The roof entry's graphic you will see in the "Editing window" depends on what you have selected via the menubar item "Roof>...": roof exterior view, roof interior view, blown bridge, repaired bridge or only the roof coordinate boundaries. Which roof entry boundaries will be shown can be selected via the commands of the "Roof>Rectangles or Polygons..." subsection. Warning: roof exterior view will be set automatically to "ON" when switching to roof editing! And blown bridge view will be set automatically to "ON" when switching to bridge image editing.



**switch to CC2 bridge images:** only available for CC2: switching to editing / defining CC2 blown (and if necessary repaired) bridge images. Warning: bridge blown view will be set automatically to "ON" when switching to bridge image editing! Because there is always one image allowed for blown bridge and one image for repaired bridge, these images will be always highlighted. "Edit>Copy" and "Edit>Paste" commands will have effect on this one and only image.



**roof rectangle tool:** use this tool to select a cut-out for roof defining. The only possible tool when defining CC2 bridge image areas. It is a click-and-drag tool: the selected cut-out will get a pattern painted over which color can be set in the actual color theme<sup>6</sup>. To use this cut-out as a new roof entry, you must use the "define cut-out as roof or bridge image" tool or the "Edit>Define Roof" command.

<sup>5</sup> Cpl\_Filth wrote in this comment in his cclos.h: ...file is made up of <number of deployment tiles> \* 4 \* <Ceiling(number of deployment tiles / 8)> byte rows; each row is a bitfield (0 can't see, 1 can see) from that mega tile to every other mega tile; the 4 rows correspond to: soldier viewing soldier, soldier viewing vehicle, vehicle viewing soldier, vehicle viewing vehicle; vehicle is used for standing soldier; los files are only used for strategic ai and therefore have no effect on 2 player games; a file with all zeros is valid but the AI wouldn't play worth a shit.

<sup>6</sup> a bug in certain MacOS-X environments: the pattern might vary if you are using some very light grey colors.



**roof polygon tool:** again a tool for selecting a cut-out for roof editing, compatible to the "12 vertices concept" of CC3-or-newer roof files. This tool is not available for CC2 bridge image cut-out selecting. Click with the mouse pointer on the edges of your desired roof area polygon (up to 12 points are allowed, I recommend to use the upper-left edge as a starting point). If the last click is near enough to the starting point, then 5CC will automatically close the polygon, otherwise it will be closed when the 12th point was set. The selected cut-out will get a pattern painted over which color can be set in the actual color theme<sup>2</sup>. To use this cut-out as a new roof entry, you must use the "define cut-out as roof or bridge image" tool or the "Edit>Define Roof" command. When you have selected your cut-out with this tool, you can toggle to "roof rectangle tool" to use the surrounding rectangle as a cut-out (and you can toggle back unless you have not defined the cut-out as roof). This gives you (even when editing a CC2 map) the opportunity to select the edges of a building even if you want to define rectangles and no polygons. If you use this tool for defining CC2 roofs, the polygon will be automatically converted into the corresponding surrounding rectangle.



**define cut-out as roof or bridge image:** same effect as the "Edit>Define Roof" command. This tool will define the selected map area (selected by rectangle tool or by polygon tool) as a roof entry, setting the roof entry's coordinates (and vertices in case of CC3-or-newer roofs) and cutting out the background's area. This cut-out will be used for the roof exterior view and will be also pasted automatically to the clipboard (a technique introduced by Chris Ellen's CCEdit). You can use the clipboard graphic in your favorite graphics editor to paint the interior view over it, copy it back to the clipboard, sitching to 5CC, selecting "interior roof view" ON and pasting this interior view in for the highlighted roof entry. The opportunity of this way is that you must not think about the cut-out size. If you have added a background view with buildings' interiors painted on in the second background layer (via the "File>Add...>Add interior background picture..." command), a cut-out from this layer will be transfered to the roof interior view when the "Edit>Define as Roof" command is issued. A technique introduced by Cpl\_Filth's tool Groof. Recommended for maps with more than only few roofs or for maps with overlaying roofs.



**roof erase tool:** if you have selected "Interior roof view ON" then this tool will delete the interior view image of the actual highlighted roof entry. If you have "Exterior roof view ON" (or a CC2 bridge image view ON) then this tool will erase the entire roof (or bridge) entry without warning. Works identical like the "Edit>Clear" command and can be undone via "Edit>Undo".

## Window "Terrain Elements Table"

This window contains a three-column listbox. The first column contains the terrain element class numbers of the actual "Terrain Elements File", the second column the corresponding terrain element names and the third one the checkboxes to toggle the write-protection for the terrain element (default is unchecked = no write-protection). Categories are marked with a light green rounded rectangle. These categories are user defined. See page 11f of this manual. If the actual "Terrain Elements File" does not contain a column "Category", you will see one single category with empty title only. The categories "Negative value" (for values less than zero) and "Unknown value" are reserved and generated by 5CC when loading a new map: these reserved categories will contain map terrain values found in the map which are not defined in the actual loaded "Terrain Elements File". The category "Negative value" will be added automatically if you have enabled "add '-1' to

terrain tables in RAM" in the window "Preferences" section "Terrain Elements File". See page 12 of this manual.

Open a category by clicking on it's disclosure triangle / plus-icon and select a terrain entry to change the actual terrain element for terrain editing tools to be used in the "Editing window". If you click on the listbox's headings, the columns will be sorted alphabetically (that's why I have entered the numbers with leading zeros). When you enlarge the window you will see further columns containing terrain's height, level and category definitions. Under normal conditions, these values are needed for map editing. You can use right-mouse click (CTRL-mouse click on Mac) to bring a context popup menu to front which will let you sort the list using different criterias, changing the font's size or toggle the view from "grouped" to "show all" and back.

### **Window "Coordinates"**

This window will show the position of the mouse pointer in your "Editing window" in absolute map pixel coordinates (counted from 0,0 = upper left corner) and translated into it's position counted in elevation and in deployment tiles. It shows also a minimap graphic (which is identical with the map's monitoring map (MMM) graphic). The actually displayed map cut-out in the "Editing window" is shown on this minimap as a rectangle. Clicking on this minimap will change the "Editing window" map cut-out. And the terrain element value and elevation under the actual mouse pointer position will be shown here.

### **Windows "OVM" and "MMM"**

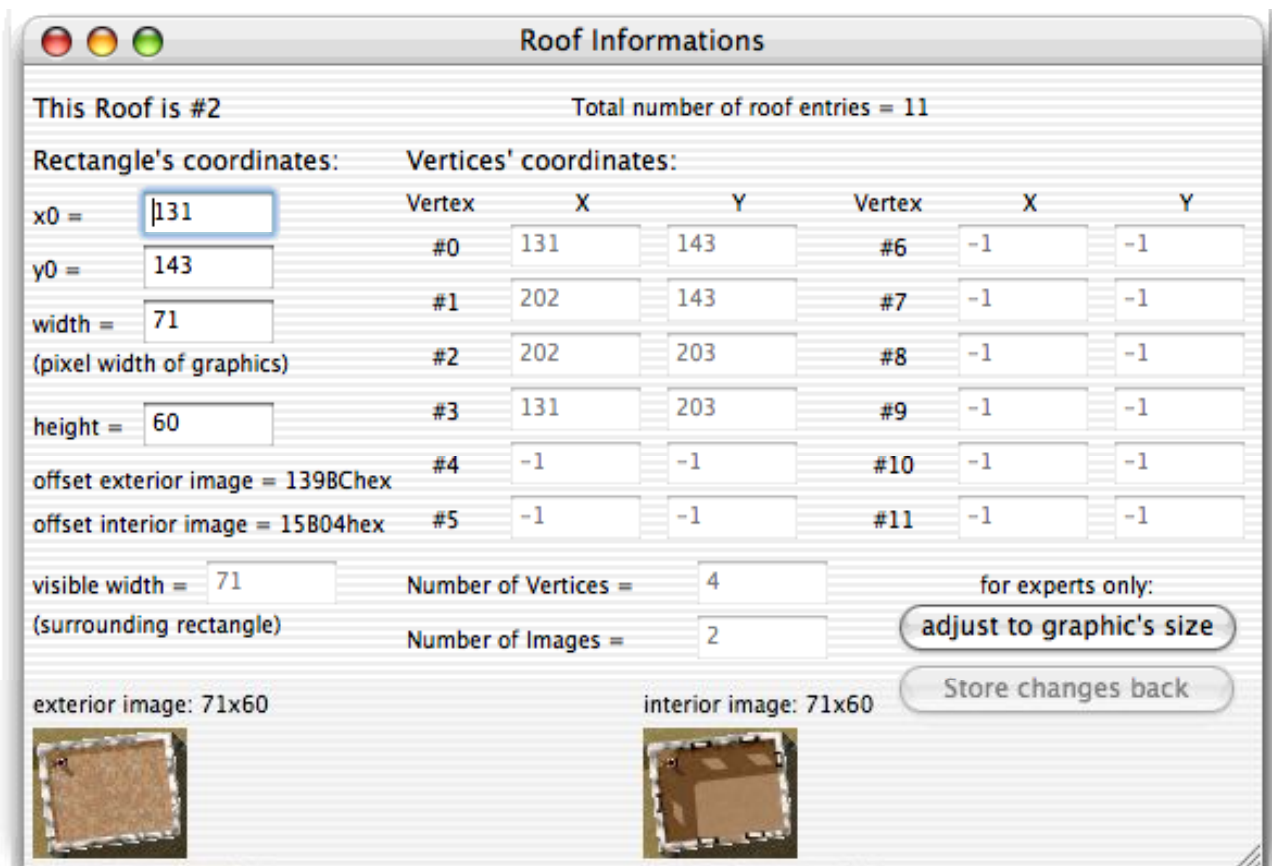
These windows are only able to show the OVM and MMM graphics. Editing is not possible there. To change the OVM and/or MMM graphics use the commands of the "File>Import..." or "File>Generate..." subsections.

### **Window "Map properties"**

Here you can control the names of the loaded files. Datas marked with a pencil icon have been changed. And you can get informations about the map's size.

### **Window "Roof informations"**

If you are in roof editing mode, this window will contain all datas of the actual highlighted roof entry (together with the total number of roof entries). For compatibility reasons 5CC will generate a basic set of four vertices (describing the roof rectangle) even for CC2 roof entries. You can change all numerical entries (except for the roof entry's sequence number and the graphic offsets) in this window and you can write these changes back to the roof entry in the "Editing window" by pressing the "Store changes back" button. The roof exterior and interior view graphics are not editable here. Please use the "Editing window" instead. Pressing the new button "adjust to graphic's size" will check the vertices' coordinates to be inside the graphics. A possible way to compensate the "Groof2.exe"-bug. A better way to do this is the command "Roof>Rectangles or Polygons...>Shift all roof vertices one pixel to the left" which will correct this for all roofs by one click.



(the screenshot shows a roof entry of my CC2-EIHamma map in the "Roof informations window". Vertices are calculated for CC2 roofs, too, but they can not be edited. This is only allowed for CC3-or-newer maps.)

## Window "Visible layers"

After loading/creating a map this small window will appear (usually on top of the title of the main window "Editing"). In the left part of this window there are 3 buttons to toggle the visibility of the BGM, shadow and trunks layers. Maps without placed tree shadow patches and without imported shadow / trunks image files will have the shadow and trunks layer buttons disabled. Turning BGM layer off will give you a white background. That will not mean that the BGM is erased!

In the right part of this window the actual selected terrain / elevation value will be displayed or the selected editing mode. The placement of this window differs between Mac and PC version of 5CC. See the section about the window "Preferences" in this manual on page 12.

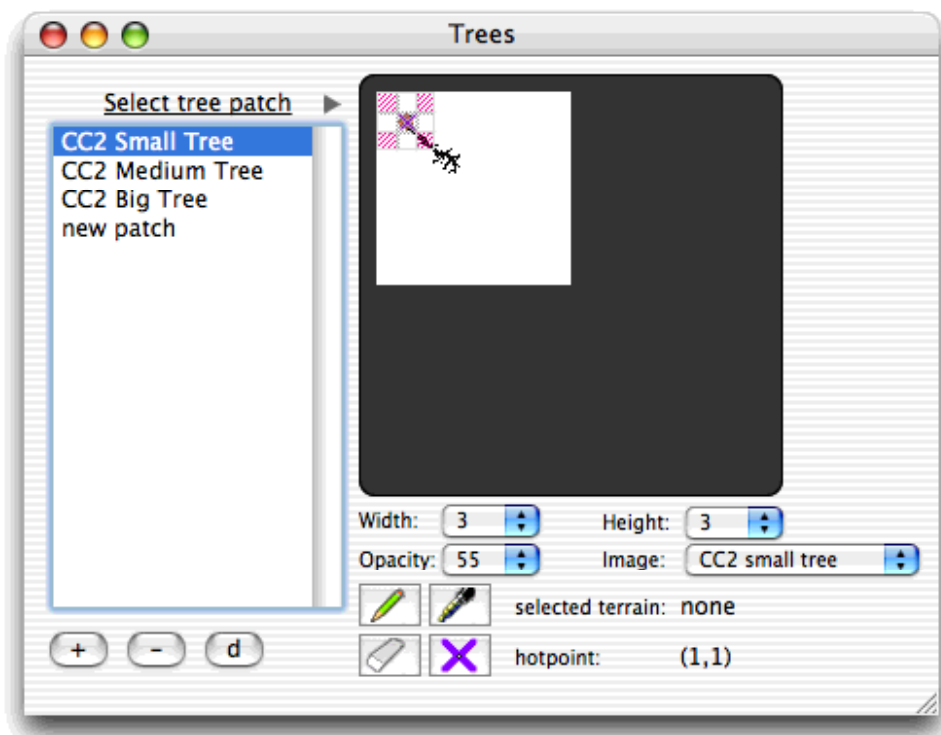
## Window "Trees"

This window was introduced together with the layer concept and the "tree shadow patch tool" in v1.03 of 5CC. The goal was to give the user the capability to place a user defined pattern of terrain elements. Simultaneously a relating graphic should be placed on the background image. And this graphic patch should consists of shadow and solid graphic. This feature is mainly needed for placing trees on CC maps. Without such a tool the map background creation must be done with trees painted on (CC2: tree trunks and a small central trunk shadow; all other CC versions: a small trunk and a complete tree shadow). The problem was always that the artist must know and respect the grid boundaries of CC when placing the trees and later on every tree must be recoded in the

terrain editing. Cpl\_Filth invented his own tree tool some years ago. 5CC is now combining all these needs together in one tool. And this gives the user the opportunity not only for using this feature for trees but it can be used also for building placing and the placement of terrain patterns without related graphics (like coast lines, streams, roads etc.).

Prior to using the "tree shadow patch tool" from the window "Tools" the user must create his own patches. The needed graphics must be created outside 5CC and can be imported only as 16-bit uncompressed TARGA graphics. It is also possible to import these graphics via clipboard, but in this case these graphics will be not saved when 5CC quits. The patch defining must be done in the window "Trees" (use command "Edit>Select/Edit tree shadow patch..." from to menu bar to bring it to front).

The left part of this window shows a listbox containing the defined tree patches. Their definitions are stored in the preferences file "5CC.ini". The predefined patches can be edited, deleted and 5CC will work even without any patch defined in the preferences file. Click on a list entry to change the entry's name. The name is only for your own personal reference. Leading blanks are not allowed. Sorting the list is not possible and only allowed when you edit the file "5CC.ini" with an external text editor. Below this listbox you will find three buttons: use the <+> button to add an entry, use the <-> button to delete an entry and use the <d> button to duplicate an entry. Use the disclosure triangle right to the heading to shrink the window's size and you will have a window showing only this listbox.



The right part of this window shows a black rounded rectangle. The maximum size of a tree shadow patch can be 20x20 terrain tiles. The coordinates start in the upper-left edge, counting from 0,0. After selecting an entry from the listbox the next step you have to make is to define the size of your custom patch. Use the "Width" and "Height" popup menus to select the patch's size. Use the popup menu "Image" to select a built-in graphic for this patch or to import an external file. When you select to import an external file, it must be a 16-bit uncompressed TARGA graphics file. 5CC will store the absolute path of this file in his preferences file. If you move this file on your HD later on, 5CC will no longer find it and you must redo your link to this file.



The graphic associated with such a tree shadow patch must obey the following rules:

- must be stored externally as 16-bit uncompressed TARGA file,
- can be of any size (and is usually larger than the patch's defined data area),
- only the upper-left 200x200 pixels will be visible in the window "Trees", but the whole image will be placed when the patch is used,
- white pixels will be always treated as "transparency",
- black pixels will be always treated as "shadow", these pixels will be transferred to the layer "shadow". When opacity is set lower than 100 then the pixel will be placed as a grey value to this layer. If you are using multiple patches with different opacities you will have different shades of grey in the layer "shadow" (example: smaller trees less opacity = less shadow, big trees more opacity, buildings solid opacity). In this case I strongly recommend to disable "double/overlying shadows" in the window "Preferences", section "Layers". And you should place first your patches with solid opacity and the patches with less opacity last. So will have the "less" shadow added only in the areas where shadow was not placed yet.
- All other non-white/non-black pixels will be transferred to the layer "trunks". Your graphic must not contain such pixels at all. And it must not contain shadow pixels.

The layers will be pasted over the background in the window "Editing". Their visibility can be toggled using the buttons in the window "Visible layers". Their storing concept will be discussed later.

As mentioned already you can define the opacity for your shadow pixels. Use the popup menu "Opacity" for it. Below this menu you can see buttons for tools to set the terrain values of your tree shadow patch. They are only active if you have set a valid size for your patch. The "terrain pencil tool" and the "terrain selecting tool" work identical to the tools of the window "Tools" (pen size = 1 only!). You can select the desired terrain from the window "Terrain Elements Table" as you would do when editing a map. Use the "terrain erase tool" to set the clicked terrain element to "transparent" (this is not possible in map editing). Such transparent terrain elements will not change the map contents when the tree shadow patch will be placed. If you select the negative value "-1" from the window "Terrain" it will have the same effect like using the "terrain erase tool".

Use the "hotpoint center tool" to define the patch's hotpoint. The hotpoint is the terrain element of this patch which will be placed on the map at the mouse pointer's location. The window "Trees" will show in the lower-right corner the actual defined hotpoint coordinates (counted from 0,0 = upper-left edge of the patch) and the actually selected terrain element value. Selecting a terrain element value in the window "Terrain Elements Table" will have side-effects to both window "Editing" and window "Trees".

Now look on the example of the screenshot on the previous page: selected is the first entry named "CC2 Small tree". It uses a 3x3 data patch with transparent edges (at the moment no terrain element value is selected = transparency is selected). In the middle is the terrain element value set to "small tree" and the hotpoint is located at this position. The terrain elements "leaves" are grouped around this center/hotpoint/trunk like a cross. The patch is associated with an intrinsic graphic which is larger than the data patch. For CC2 it is not necessary to define the entire tree shadow in the background image, because CC2's Terrain file contains these graphics (don't know why they omitted this feature in CC3 and later on). For CC2 only a trunk with a little central trunk shadow is used on the original maps.



## The layer concept

When you use the "tree shadow patch tool" for the first time on a map, 5CC will create three (3) additional background graphics to store the graphics pasted in by this tool. This patch placement can be redone using the command "Edit>Undo", but the additional background graphics will remain in RAM until you load/create a new map. These additional background graphics will be used by 5CC like layers with transparency (white pixels). You can toggle the visibility of these layers using the buttons in the window "Visible layers".

When you are ready with your tree shadow patch placing, you will have changed your map's datas. But you will not have changed your internal BGM graphic, because the shadow and the trunks are stored in separate layers. Essential:

- When you use the command "File>Save" or "File>Save as..." your changed map datas will be saved as a new CC data file (in case of "File>Save" : overwriting the existing one).
- Your BGM file will not be saved when you use "File>Save". Only the layers "shadow" and "trunks" will be saved as separate TARGA files (should use the same folder where the BGM file resides).
- When you use "File>Save as..." then your BGM file will be saved and the layers "shadow" and "trunks" will be saved as separate TARGA files (should use the same folder where the BGM file resides).
- But you can use the "File>Export>Export BGM / background" subsection to create a BGM (or a picture) with all layers pasted over the original BGM.
- OVM and MMM will not be changed when placing tree shadow patches.
- Roof entries / roof graphics will not be changed when placing tree shadow patches.
- CC2-bridge images will not be changed when placing tree shadow patches.
- If you must interrupt your work with 5CC you can reload manually your saved files. 5CC will not automatically load the shadow and trunks TARGAs.

Why saving the layers in different files? In most cases shadows placed in 5CC must be reworked later on. Just think about a tree shadow hanging over a cliff or placed over a remarkably higher other object. In these cases the shadow must be clipped off. If you have the layers stored in separate layer files you can import them as layers back into your favorite graphics editor.

All in all I recommend to do the graphical background artwork first without tree shadows painted on the map. The roofing should be one of the last steps. Making CC2-bridge defining and LOS calculating should be last.

## Window "LOS actions"

Generating a LOS (= line-of-sight) table will be done in RAM by 5CC. The result can be saved later using the commands "File>Save", "File>Save as..." or "File>Export>Export LOS file...". The window "LOS actions" offers various manipulations to the entire LOS table or to one of the four LOS layers:

1. Soldier viewing Soldier (abbreviated SvS),
2. Soldier viewing Vehicle (SvV),
3. Vehicle viewing Soldier (VvS),
4. Vehicle viewing Vehicle (VvV).

The first section of this window "initialize complete LOS" offers you the ability to generate LOS in four ways:

- without checking terrain values (respecting only the elevation),
- emulating the original way as it was described by Gerry Shaw "Tin Tin", "JM" and Vincent Viaud (it is only an emulation, not the original code implemented – this method checks terrain obstacles and elevation in steps by terrain tiles 10x10 pixels),
- checking LOS in steps by elevation tiles 40x40 pixels (will be faster than the original way with nearly the same result),
- checking LOS in steps by deployment tiles 120x120 pixels (less effective, but very fast).

For all these methods it is possible to restrict the LOS checking distance from "no limitation" = time consuming to "nearest neighbours only" = very fast = emulating "fog". And this restriction can be set for each LOS layer individually.

The second section of this window "set entire layer" can be used to initialize single LOS layers to "LOS on" or "LOS off". The third section "layer copy" can be used to copy the values of an entire LOS layer to another layer.

The LOS generating methods which check the terrain and elevation values require a valid "Terrain Element File" loaded into RAM. Otherwise only the method "Generate LOS without checking the terrain values" will work. Prior to LOS generating the routines will check the entire map for negative values and will give a warning if there are such values found. LOS will take place anyway because negative or unknown terrain values in the map data will be ignored and only their elevation will be taken for LOS calculation.

The LOS generating methods used by 5CC require multiple checkings of visibility from one deployment tile to all other deployment tiles. If you use the original way, 5CC will perform this walking through the map from the center from every deployment to all other deployment tiles by checking every terrain tile's (10x10 pixels) elevation, terrain's level and terrain's height. In case of the two faster method not only the amount of checks is reduced by using larger tiles, but also by calculating the medium values (of elevation, terrain's level and terrain's height) of these tiles prior to generating the LOS table. This requires a little more RAM but saves a lot of time.

## Tactics

### Roof defining

Here a short introduction to roof defining with 5CC. The easiest way is the one introduced by Cpl\_Filth for creating new maps:

- make your map basic terrain and elevation definitions in 5CC.
- create two BGM graphics: one with the exterior views, and another one with the interior views painted on. Both BGM graphics must have the same size fitting to the map's size.
- use the "File>Import...>Import background as 16-bit TARGA..." command to import the exterior view graphic.
- use the "File>Add...>Add interior background 16-bit TARGA..." command to import the interior view graphic.
- switch to roof editing mode via the "tools window", tool "roof pointing".
- turn roof exterior view "ON" using the "Roof>Roofs" command (if it is not already set). Then define your roofs using the following sequence:

- for CC2 maps select the tool "roof rectangle", for CC3-or-newer maps select the tool "roof polygon" (but you can use both tools for "both worlds", 5CC will automatically adjust roofs for CC2 to rectangles if they were defined using the "roof polygon" tool),
- use the mouse pointer to point and drag the desired cut-out rectangle or use the mouse pointer to point the polygon points,



- use the tool "define roof" or the "Edit>Define as roof" command to define the cut-out area as roof entry. Because you have both BGM layers (exterior and interior graphics) present, 5CC will create both roof graphics automatically (when you have used "roof polygon" tool, then the surrounding space will be filled automatically with white color = transparency area, but only if it is a CC3-or-newer map. In case of CC2 maps roof entries will be set automatically to rectangles (see picture below)).



- repeat these steps for all roof entries.
- save your work.

If you want to change an existing roof entry: I recommend to save the existent roof graphics first:

- switch to roof editing mode via the "tools window", tool "roof pointing",
- select the roof you want to change with this tool (it will be then highlighted),
- turn roof exterior view "ON" (if it is not already on) via "Roof>Roofs" command,
- use "Edit>Copy" command to transfer the graphics to the clipboard,
- use your graphics editing program to import this cut-out, saved it,
- go back to 5CC, turn roof interior view "ON" via "Roof>Interiors" command,
- use "Edit>Copy" command to transfer the interior graphics to the clipboard,
- use your graphics editing program to import this cut-out, saved it, too,

Now you can use several ways to make changes:

- delete the highlighted roof entry with the "roof erase" tool and define a new one.
- or use the "roof informations window" to change the coordinates.

Then you must adjust the roof entry's graphics:

- use the "Edit>Update all roof graphics..." commands to correct the exterior (and perhaps the interior if the BGM interior layer is loaded) graphic,
- turn roof interior view "ON" via "Roof>Interiors" command,
- paste in the new interior graphic in using the "Edit>Paste" command (after you have made the necessary artwork in your graphics editing program).

Alternative way making roofs if you have only the exterior view graphics ready:

- make your map basic terrain and elevation definitions in 5CC.
- create the BGM graphic with the exterior views, its size must fit to the map's size.
- use the "File>Import...>Import background as 16-bit TARGA..." command to import the exterior view graphic.
- switch to roof editing mode via the "tools window", tool "roof pointing".
- turn roof exterior view "ON" using the "Roof>Roofs" command (if it is not already set). Then define your roofs using the following sequence:
  - for CC2 maps select the tool "roof rectangle", for CC3-or-newer maps select the tool "roof polygon",
  - use the mouse pointer to point and drag the desired cut-out rectangle or use the mouse pointer to point the polygon points,
  - use the tool "define roof" or the "Edit>Define as roof" command to define the cut-out area as roof entry. 5CC will create the exterior roof graphic automatically and it is copied to the clipboard automatically (when you have used "roof polygon" tool, then the surrounding space will be filled automatically with white color = transparency area, so I recommend to use the "roof rectangle" tool when creating a CC2 map).
  - switch to your graphic editing program, create a new graphics there and use there the "Edit>Paste" command to paste in the exterior cut-out graphics. Make the necessary painting to get the interior view (avoid anti-aliasing). Copy this new graphic to the clipboard (must have same size like the exterior cut-out).
  - go back to 5CC, turn roof interior view "ON" using the "Roof>Interiors" command.
  - you will now see a highlighted black rectangle / polygon.
  - use "Edit>Paste" command to paste in the interior graphic.
  - repeat these steps for all roof entries.
- save your work.

After the roof defining is all done, you can adjust the terrain definitions to your graphics. To view the interiors just turn interior view "ON" using the "Roof>Interiors" command when you are in terrain editing mode (use tool "terrain pointing" or any other terrain editing tool).

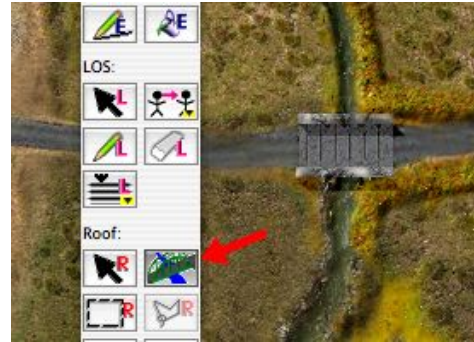
## CC2 bridge image defining

Use the corresponding way as described for roof entries:

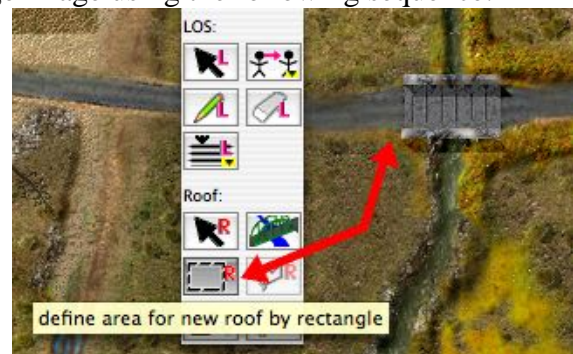
- make your map basic terrain and elevation definitions in 5CC.
- create the BGM graphic with the exterior views, its size must fit to the map's size.
- use the "File>Import...>Import background as 16-bit TARGA..." command to import the exterior view graphic.



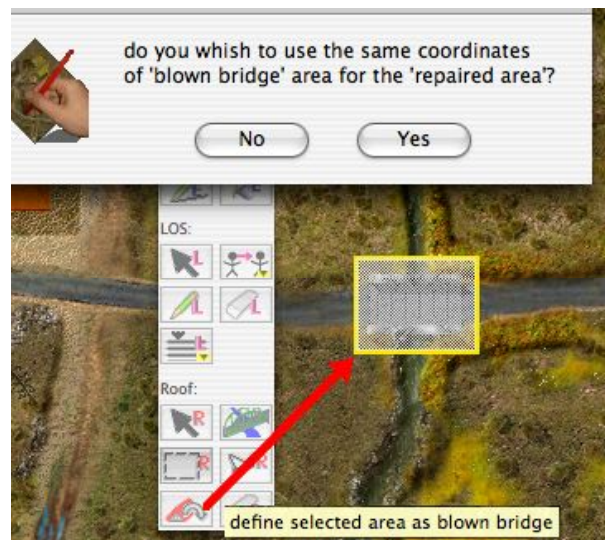
- switch to bridge image editing mode via the "tools window", tool "switch to CC2 bridge images".



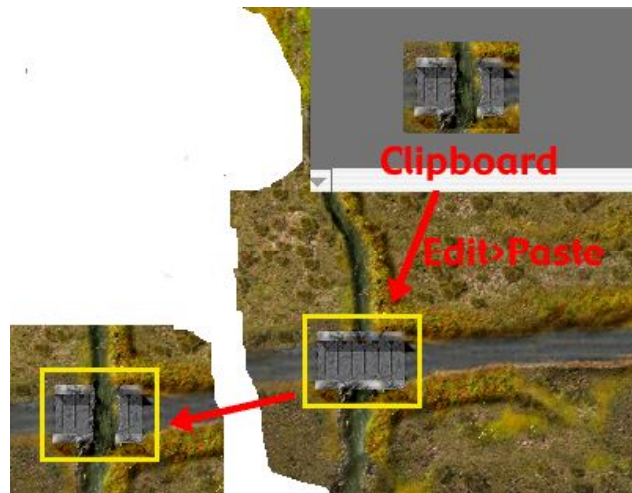
- turn blown bridge view "ON" using the "Roof>Bridge blown" command (if it is not already set). Then define your one and only blown bridge image using the following sequence:
  - select the tool "roof rectangle",
  - use the mouse pointer to point and drag the desired cut-out



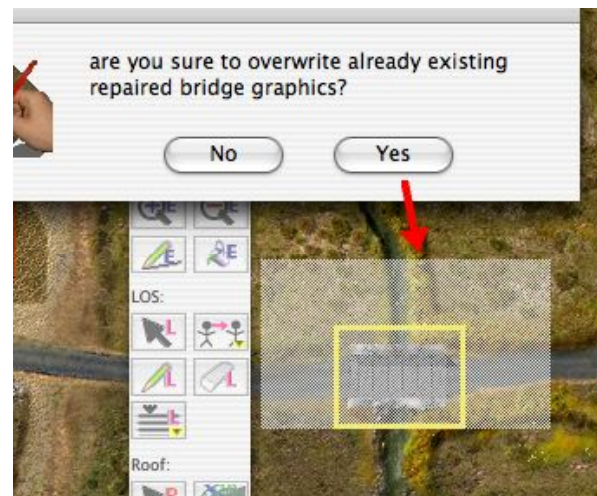
- use the tool "define bridge image" (same button as "define roof") or the "Edit>Define as blown bridge" command to define the cut-out area as blown bridge image. 5CC will take the cut-out as blown bridge graphic automatically and it is copied to the clipboard automatically.
- you will be asked if you want to have the same cut-out coordinates to be used for the repaired bridge image. Answer "NO" if you don't want to have a repaired bridge image.



- switch to your graphic editing program, create a new graphics there and use its "Edit>Paste" command to paste in the cut-out graphics. Make the necessary painting to get the blown bridge view (avoid anti-aliasing). Copy this new graphic to the clipboard (must have same size like the cut-out before).
- go back to 5CC, keep blown bridge view turned "ON" using the "Roof>Bridge blown" command.
- you will now see the BGM cut-out area still highlighted.
- use "Edit>Paste" command to paste in the blown bridge graphic.



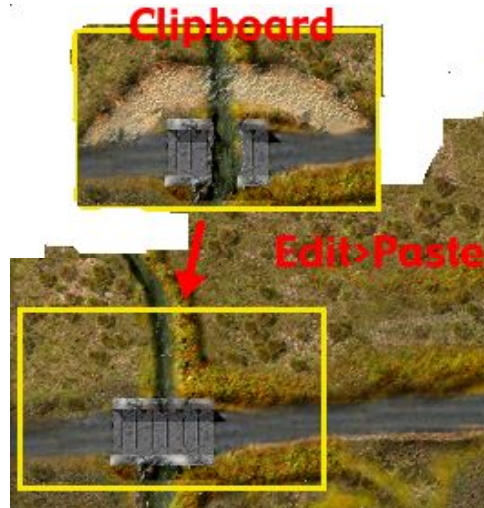
- if you want to have repaired bridge graphic, turn repaired bridge view "ON" using the "Roof>Bridge repaired" command. Then define your one and only repaired bridge image using the following sequence:
  - if you want to change the coordinates of the repaired bridge graphic, then define a new one using the tools "roof rectangle" and "define bridge image". You will be asked if you want to overwrite the already existing definition. You must use the "Edit>Copy" command to get this new cut-out to the clipboard. Transfer this cut-out to your graphic editing program.



- switch to your graphic editing program, take the blown bridge image and make the necessary paintings to get a repaired bridge image (avoid anti-aliasing). If your repaired bridge area has different coordinates than the blown bridge area, copy this image over the cut-out coming from the repaired bridge image definition from 5CC (to get the correct image size). Copy this new graphic to the clipboard (must have same size like the cut-out before).



- go back to 5CC, keep repaired bridge view turned "ON" using the "Roof>Bridge repaired" command.
- you will now see the BGM cut-out area still highlighted.
- use "Edit>Paste" command to paste in the repaired bridge graphic.

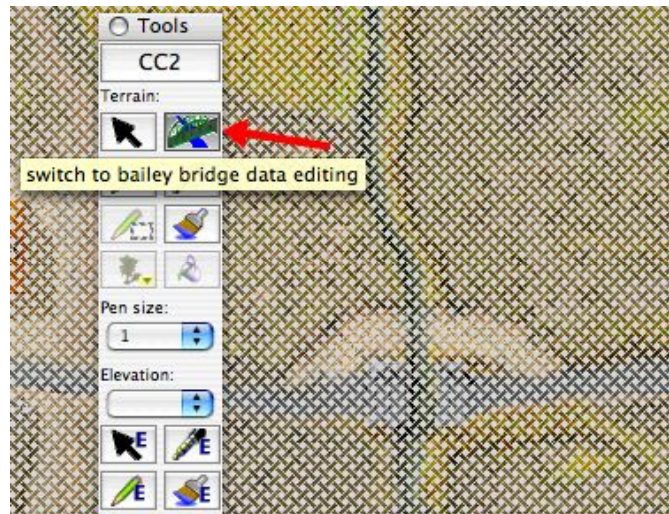


- save your work.

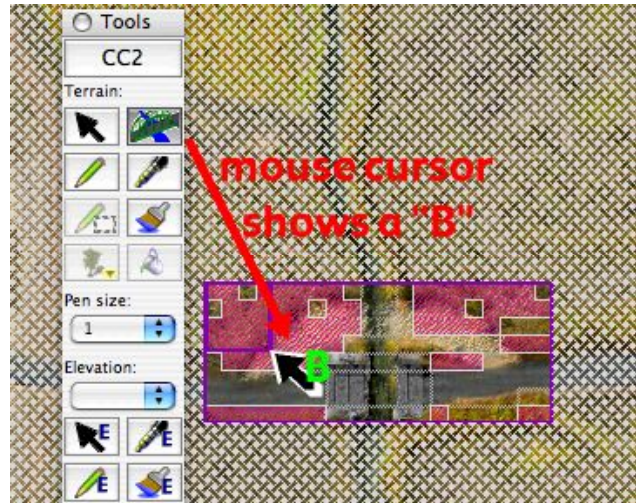
### CC2 bailey bridge data defining

At runtime CC2 will paste in new terrain datas for the repaired bridge area (if XXX Corps has reached the bridge, operation/campaign play only). And of course the repaired bridge graphic. XXX Corps uses Bailey bridges to cross the rivers (watch how it works in the motion picture "A Bridge Too Far"). These terrain datas are located in the "Map###" data file behind the first "#". Only the changed elevation tiles will be redefined here. 5CC is the first tool to make editing/creating these datas easy:

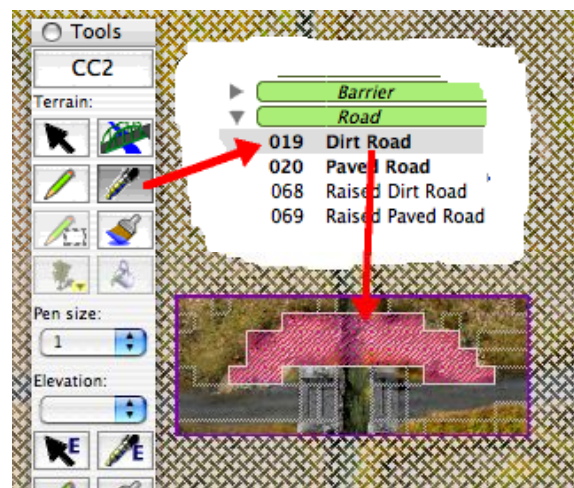
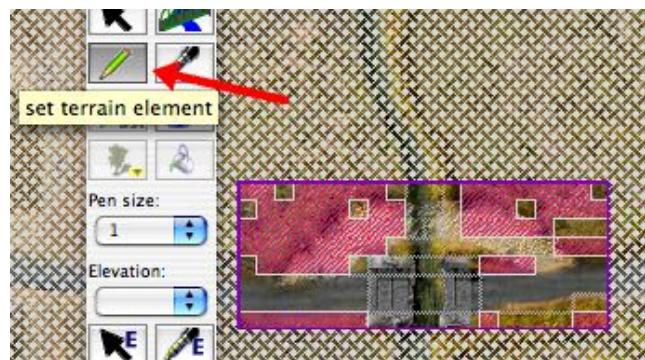
- make your map complete terrain and elevation definitions in 5CC.
- make all your BGM and roof graphics ready,
- make your CC2 blown and repaired bridge graphics ready,
- defining the bailey bridge datas is the very last step:
- turn repaired bridge view "ON" using the "Roof>Bridge repaired" command,
- use the tool "switch to CC2-repaired bridge data editing",
- you will now see the entire BGM graphic patched with a (light grey) pattern, indicating that there is nothing defined as bailey bridge area.



- use the mouse pointer (MacOS: arrow with a green "B") to define the elevation tiles you want to have as bailey bridge area. To undefine such an elevation tile use the "Edit>Clear" command. The already defined area will be highlighted (in purple) and the (light grey) pattern will be removed.



- use the tools "terrain pencil", "terrain selecting", "terrain rectangle pencil" and/or "terrain brush" to redefine the terrain of this area (other tools are not available in this mode). By default the basic terrain and elevation values are copied when an elevation tile is defined as bailey bridge area. Sorry to say you cannot change the elevation (in case you will really need it set the basic terrain with your bailey bridge elevation values, define the bailey bridge data area and then change the basic elevations).



- save your work.

For more details on the Bailey bridge data and graphics of CC2 please read my "CC2Guide-Bridge-files\_v6.pdf".

## Element coding and roof's in-game appearance

This discussion is taken from CSO forum of April 2006, suggestions made by Pvt\_Grunt and Tejszd:

Pvt\_Grunt: ... I do remember a few problems with some elements where the game refused to change to the interior until I changed the element type. It was an RSR CC5 map I coded. I wanted to use pavement so that tanks could enter the building. It seemed to need a certain percentage of the elements to be "interior" type, but not all of them.

Tejszd: ... I agree with you pvt\_Grunt there is some problem, at least with CC5, and the roof requiring some element or number of elements for the roof to work.

A couple more tips (for CC5) on the elements:

2 Dirt  
35 Dirt Road  
92 Leaves & Dirt  
117 Bare Branches & Dirt  
Change to mud because of rain.

16 Wreck

Is hard coded in the CC5.exe. For a 2nd battle on a map the CC5.exe adds the wrecked tank graphic and recodes the elements below the tank to #16.

9 Stone Fence  
112 Small Hedge

Are crushable elements that get an updated graphic and the coding changed to the crush to #. Other elements do not get crushed even if the crush to # is set.

Pvt\_Grunt made a reference to a forum's discussion of June 2004:

**Question:** I'm having trouble coding the interior of this large building so that tanks and armoured cars can enter it. I originally copied GJS map collombelles which has the big factory, it uses "pavement" element, but this screwed up the roof file. The roof would re-appear sometimes even with a unit inside. I used "stone floor" element instead, now the roofs work but I keep getting "No Clear Path" from the tanks, as the element file has a zero for tracked vehicles for this element. The map is finished now but I would like to change it to be able to drive a tank into the building during the battle. Any ideas????

**Answer by pt11070:** trick is to use combination of interior and exterior code elements. Like you experienced if you have only pavement can't see inside and if you use only wall element you can't get tank in. Two ways to do this is to:

1. make a new elment in "element.ini" that would require some resesarch and time.

or

2. make a base of the floor pavement, and put every so often an interior element( tall wall or factory wall/floor) that would enable the interior to be shown in the game.

**Answer by CSO\_Linebacker:** pt's idea is the easiest. For my BreccourtV2 map (although not vehicles), I have all of the hedges coded so the foliage disappears and you can see you units



underneath. I coded the trunks as Wood Wall, used the Leaves Filler tool to add 'Dirt Floor' element all around it, and then coded the rest as bocage. Works fine.

**Conclusion by Pvt\_Grunt:** Hi, thanks for the help.

Firstly, I was wrong about the steelworks floor in Colom map. It is mostly brick floor with occasional dock crane elements. I don't know why I thought it was pavement, must have been a 3C brain overload. I emailed BobD, who made the map to ask him how he did it. He said it's been a while since he made any maps, but was helpful anyway, thanks to him.

I ended up using a mix of stone floor and dock crane / interior wall. It seems that when there is a large area of an exterior element, like pavement, the roof files will screw up. There doesn't seem to be any exact size, it doesn't always happen everytime. Also, vehicles will still sometimes go into the buildings, again it seems to be random. I got a Marder to drive in, but not a Staghorn. I don't think CC was made for these kind of maps, I don't remember any original maps with large buildings like hangers or garages.

For some of the larger buildings I broke the roofs up into smaller pieces, this seems to help. It's more realistic too, as you can't see every room in a building from the entrance.

## Problems with the 5CC.ini file

This discussion is again taken from CSO forum of April 2006, help description by me:

**Problem:** you made a new elements file for 5CC but your 5CC is presenting them all together in one category without any level informations, and for this reason the LOS-generating failed, too.

**My suggestion:** the reason is that 5CC is not importing the level column and the category column.

Only possible solution:

- remove your actual 5CC.ini file, there must be a fault in the 5CC-file format definition inside this file.
- restart 5CC and re-select the NewElements.txt
- if you will see the new categories, then the error depends solely on the old 5CC.ini contents.

You can restore your previous 5CC.ini contents into the new one except for all the three terrain elements file format definitions. I think I introduced the "category" in v1.04, so your 5CC.ini may contain older infos not overwritten by the new version.

Make a search for your 5CC.ini file. In Windows, the 5CC.ini is hidden in the system folders. It is created by 5CC at runtime when the application is closing.

Use 5CC itself to determine where the file is stored:

- launch 5CC and
- use command "About 5CC...", look at the lines BELOW the http-url-texts in this little window, there is a text telling where the 5CC.ini is stored!

Make a search in WinXP INCLUDING hidden & system files. It will show you this file. You can edit it! Although it is hidden! Go into 5CC.ini and please look what is entered for the values 1620, 1621, 1622, 1623, 1624, 1625, the correct values must be 5CC, 0, 1, 2, 3, 4, 5. Take a look there. The fault must be there. I was able to rebuild your situation by changing the values for 1624 and 1625. But it maybe also some kind of RAM problem.

The values inside 5CC.ini should be

1620 = 5CC

1621 = 0

1622 = 1

1623 = 2

1624 = 3

1625 = 4

If not, adjust these values for 5CC file format. Please look again into 5CC.ini if the CC3-file format is missing, too, otherwise please add the lines:

1610 = 14

1611 = 0

1612 = 1

1613 = 2

1614 = 42

1615 = 47

## Used and recommended sources from the Internet:

MICK "XE5" CONMY: CC2 Editing FAQ ("cc2eFAQ.zip"), July 1998.

MATTHEW DAVID HILLS: several texts from his site, September 1998.

ANDREW GLENN "NAKED FOOT": CC2 Map Making Guide ("MapFAQ.zip" inside the "MapMaker.zip"), November 1998.

ANDREW GLENN "NAKED FOOT": Naked Foot's Close Combat III Map Making Guide, Edition 2 ("CC3 Map Making.doc" inside his map "zerstorer.zip", October 1999.

GERRY SHAW "TIN TIN": several file format texts from his site, 1998-2002.

DAVID R. TIDY "THE OTHER DAVE": CC2 FAQ ("CC2Faq.wri"), June 1998.

VINCENT VIAUD: source code and readmes of his tool "cclos.exe", June 1998.

FRANK FIJNEMAN: running CC2 mods from HD under MacOS, 1999.

"UGUR": a new method adding CC2 maps "<http://home.wanadoo.nl/cclinks/morecc2maps.html>", January 2001.

PEKKA SAASTAMOINEN "CPL\_FILTH": CC3-roof file format, readmes from his tool "3C.exe", 1999.

CHRIS ELLENS: CCEdit manual and readmes, 2000.

"SGT WILSON": "QClone.exe" tool results to get the terrain definitions of CC4-RtB.

SHANE CAMERON "SOUTHERN\_LAND": Southern\_land's map making guide ("Southern\_Land\_Map\_Guide.doc"), January 2003-2006.

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MANFRED "MAFI" FISCHER: The Batnames-File Guide ("CC2Guide-NewBattlesMaps\_v6.pdf"), March 2002-2005.

MANFRED "MAFI" FISCHER: The CC-series Map File Formats ("CC2Guide-TxtfMapLosRoof.pdf"), January 2006.

## Some actual forums for CC-users:

CloseCombat HQ: <http://www.ryanross.net/cc/>

CSO: <http://www.closecombat.org/>

CCS: <http://www.closecombatseries.net/>

Mafi

[closecombat2@claranet.de](mailto:closecombat2@claranet.de)

<http://www.geocities.com/cc2revival/>

<http://members.fortunecity.de/closecombat2/>

<http://www.closecombat2.claranet.de/>

<http://www.ftf.claranet.de/>