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Close Combat 2 "A Bridge Too Far"

The Bridge-File Guide

(Pc- & Mac-version of CC2)

What it is

"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-community. It was also the last game of this series for the MacOS. The series was then continued by SSI (now by UbiSoft) for PCs only (up to day CC3, CC4, CC5). The game was released in 1997 on a hybrid-CD, running on PCs and under the MacOS 7.5 up to 9.2.2 / MacOS X 10.2.6 / 10.3 (in Classic environment) as well. Later (localized) releases of CC2 were for PCs only. A trial demo of CC2 was also released in 1997.

During the four years from 1997 to 2001 many people made excellent works on unveiling the secrets of Close Combat 2 map making. The program Close Combat 2 stores its graphical datas in several types of files. For each map, the background picture is stored in a BGMap### file, smaller overviews of this picture are stored in the MMap### and OVMa### files, pictures of the buildings used on the map and their interiors are stored in the Roof### file. Additional datas are stored in the Map### (terrain heights and terrain element descriptions) and Map###.los (line-of-sight description) file. For some maps, additional graphics for blown bridges are stored in Bridg###-files, similiar to the Roof###-files. This document is an in-depth description on how to use/how to patch these Bridg###-files and their relating files.

Credits and all my thanks to the following programing gods:

Mick Conmy (mick xe5) (for his excellent texts on his site <http://users.intrepid.net/~mconmy/>), Adam 'The Man' D'arcy (who made public the file formats for the CC2 map graphics), Gerry Shaw (aka TinTin) (for his great tools Texture Maker v.2 and TM3), 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), NL_Oxcart for his Guadalcanal1-CC3-map (as an example for rivers in PacificFront arena), George Thanos, Taki (for his PacificFront mod, my first encounter to CC2-editing), GS_Marcks, Chris Ellens (for his great CCEdit for Mac), Cpl Filth (for his great SprTool), Frantz 'Fritz' Pergolini, Robert Valerian 'Cappy' Ellison Ralph, Marcus 'Zorbo' Hofbauer, Piotr 'Czolg' Lewandoski, Kyle Scott 'Fish', Riccardo Mariani, Hikehara, Mizuchi, Kelly Kranendonk, Konrad, David Vilmen ... and all the people not mentioned above, who helped CC2-editing to come true.

Very special thanks must go to Kyle Scott 'Fish' and Chris Ellens for their e-mails concerning this guide and their extraordinary work. And to the team at Atomic Inc. to make such a great game for the Macintosh community.

This file uses texts from following sources on the Internet:

- <http://users.intrepid.net/~mconmy/MapFAQ.zip> <-- first of all
- <http://users.intrepid.net/~mconmy/cc2faq.zip>
- <http://users.intrepid.net/~mconmy/cc2eFAQ.zip>
- http://members.nbci.com/naked_foot/CC3%20Map%20Making.zip
- http://www.btinternet.com/~thewizard/cc/Downloads/Maps_New/cc3/Guadal1.zip
- <http://www.closecombat.org/>

Roof### files vs. Bridg### files

The three original maps 100, 300 and 311 are accompanied each by a file containing one or two bridge-images. These files ("Bridg100", "Bridge300", "Bridg311") are located in the ABTF/Graphics/Maps folder after full installation of CC2 (on a PC. On a Mac these files reside in the Close Combat:Data:Graphics:Maps folder). These three files are build up very similiar to the roof files.

Extracting two bridge images from Bridg###

Please notice: I will demonstrate it using the original file "Bridg311". Two make the differences between Roof files and the Bridg files obvious, I will take the same text as **Mick Conmy** (**mick xe5**) did for explaining the roof files (<http://users.intrepid.net/~mcconmy/MapFAQ.zip>).

1.
 - a. Open the Bridg311 file (ABTF/Graphics/Maps folder) in HexEdit (Note: HexEdit cannot copy data more than 32kb in size so you may want to use a similar app, UltraEdit for handling building image data larger than this. However HexEdits Hex to Decimal conversion utility, Bconv32, and its hex calculator, Calc32, are invaluable for some of the tasks you must accomplish. Both can be used as stand-alone apps with UltraEdit). On the Mac you can use freeware/shareware too, named "HexEdit" by Jim Bumgardner and the calculator "ProCalc" by Jim Brochu.
 - b. The first line in a Bridg### file is the 16 byte CC2 header. Using Bridge311 (Son Bridge) which has 1 bridge as an example, you will see the first 3 lines of the file in HexEdit as -





```
42 52 44 47 00 00 00 02 00 00 00 00 00 00 00 00
01 0A 01 E2 02 D5 03 AF 00 00 00 00 00 00 00 01
01 0A 01 E2 02 D5 03 AF 00 01 6F E0 00 00 00 02
```

 (the file Bridg100 contains only two header lines, it contains only one image; the files Bridg300 and Bridg311 contain three header lines and therefore two images).
 - c. The first four bytes are the word "BRDG". The 8th byte in the first line (02, which in this case is also equal to the decimal value '2') is the hex value for the number of bridge-images in the file. The second and third lines are 16 byte headers, one for each of the bridge-images in the file. Every bridge-image gets a 16 byte header. They are not handled as a pair (this is different to the roof files!). If you are not sure how many bridge-image headers there are in a bridge file you can always count the blowable bridges on the map and count down from the beginning of the file the same number of lines + one to include the CC2 header at the start of the file)
2. The second 16 byte line (the header for the first bridge-image in the Bridg311 file) is translated as follows :
 - a. 1st, 2nd bytes: The x1 coordinate of the upper left corner of the bridge-image on the map - 01 0A in hex = 266 in decimal
 - b. 3rd, 4th bytes: The x2 coordinate of the lower right corner of the bridge-image on the map - 01 E2 = 482
 - c. 5th, 6th bytes: The y1 coordinate of the upper left corner of the bridge-image on the map - 02 D5 = 725
 - d. 7th, 8th bytes: The y2 coordinate of the lower right corner of the bridge-image on the map - 03 AF = 943
 - e. Thus the pixel coordinates for the upper left and lower right corners of both bridge-images in this example are identical (148,448 and 216,508), the x values representing the horizontal axis and the y values the vertical axis. These values correspond to the pixel coordinates of both bridge-image corners where they would be found on the bgmap file when it is viewed as a TARGA-graphics file in Photoshop or PaintShopPro. Use the ruler and set its measurement to pixels to determine this.
 - f. The next 4 bytes are the offset (offset addresses are found in the left hand column in HexEdit and UltraEdit) of the start of the bridge-image. These offsets give you the image addresses !!!AFTER the headers have been cut!!! (see step 3 below) NOT with the CC2 and roof headers still at the beginning of the file!!!. An offset address is merely a

numerical ID system in hex to locate any particular 16 byte line or particular byte within that 16 byte line. Use the 'Go To Address' function described in 4b. below to get an idea of how the offset addressing system works.

- g. The last four bytes are the internal number of this bridge-image (sequence number?), CC2 will paste in the first bridge-image, when the bridge is blown-up by the Axis, and it will paste in the second bridge-image after the Allies have build a new provisional bridge.
3.
 - a. Select the 3 headers in Bridg311 (1 CC2 header and 2 bridge-image headers) and cut them (CTRL-X)/(Cmd-X).
 - b. Create a new document and paste (CTRL+V)/(Cmd+V) the cut headers into the new doc.
 - c. Cutting the headers has exposed the start of the roof image data for the first roof pair, ie the first byte of the data you now see in line 1 (offset address 00 00 00 00) is the first byte of the first image.
 4.
 - a. The next offset (00 01 6F E0) is the start of the data to the second bridge-image. The bridge-image data for the first bridge-image lies entirely between these two offsets.
 - b. Use the 'Go to Address' function in the Search menu and input the offset address of the start of the interior image (00 01 6F E0). Then use 'Go to' to input the first images offset address (00 00 00 00) and hold the shift key down while you click OK. You will have then selected (highlighted) all the data for the first bridge-image.
 - c. Copy this data (CTRL+C)/(Cmd+C), create a new document and paste (CTRL+V)/(Cmd+V) the copied data into it.
 5.
 - a. Now do some calculations using the HexEdit's hex calculator/ProCalc. Subtract the smaller x coordinate (x1 from step 2b. above) from the larger (x2 from step 2c.) [eg x2 (01 E2) - x1 (01 0a) = 00 D8; the decimal equivalent is 482-266=216, 216 being equal to 00 D8 in hex]. This is the pixel width of the image, the x values again representing the horizontal axis.
 - b. Then subtract the smaller y coordinate (y1 from step 2d.) from the larger (y2 from step 2e.) [eg y2 (03 AF) - y1 (02 D5) = 00 DA; the decimal equivalent is 943-725=218, 218 being equal to 00 DA in hex] This is the pixel height of the image, the y values again representing the vertical axis.
 - c. The size of the resulting (uncompressed) 16-bit-color image is $216 \times 218 \times 2 = 94176$ bytes, this is equal to 01 6F E0 hex. This is the next offset address in the third header line of this file. In this example both images have the same dimensions and therefore the same size.
 - d. Use the insert function in HexEdits edit menu to insert the following 16 byte header at the beginning of your roof image file from step 4b to create a Texture-file (TXTF). -
 74 78 74 66 00 01 00 00 00 00 00 00 D8 00 00 00 DA
 or you can insert the following 16 byte header at the beginning of your bridge-image file from step 4b to create a Map-file (MAPI). -
 4D 41 50 49 00 02 00 00 00 00 00 00 D8 00 00 00 DA
 In all cases you have to create a header for these extracted bridge-image files.
 - e. Save this file as txtr000 to the folder where Tin's Texture Maker is located. Run the totga.bat file there and Texture Maker will convert the txtr000 file (your bridge-image) to txtr000.tga. (Note: this is written for Tin Tin's Texture Maker v.1. The updated Texture Maker v.2 ("CCTGA.EXE") doesn't need filename changing. Be carefull: TextureMaker3 TM3 by Tin Tin is not working with CC2-files (TM3 is for CC3-files)! You must use version v.1 or v.2!)
 6.
 - a. Continue to extract images from the bridge file by using the Go To function and selecting the data between the next offsets (or the last offset and the end of file), pasting it in a new doc. Do your x and y calculations (in most cases the bridge-image files for the same map will use identical new headers, so you can copy and paste that header from the finished bridge-image file).

Examples from CC2, original version

Filename	First image	Second image
Bridg311		
Bridg300		



Picture: provisional bridge in action on the original map 311 "Son Bridge" when playing a campaign.

Example from my own map: MosquitoBridge311

File header:

42	52	44	47	00	00	00	02	00	00	00	00	00	00	00	00
01	09	02	AB	02	D4	03	AE	00	00	00	00	00	00	00	01
01	09	02	AB	02	D4	03	AE	00	02	C7	F0	00	00	00	02

My two Bridg311-images (blown bridge and provisional repair bridge) have both the same size and the same starting position: x1=265; y1=724; width=418; height=218 (different from the original).



bridge



...blown

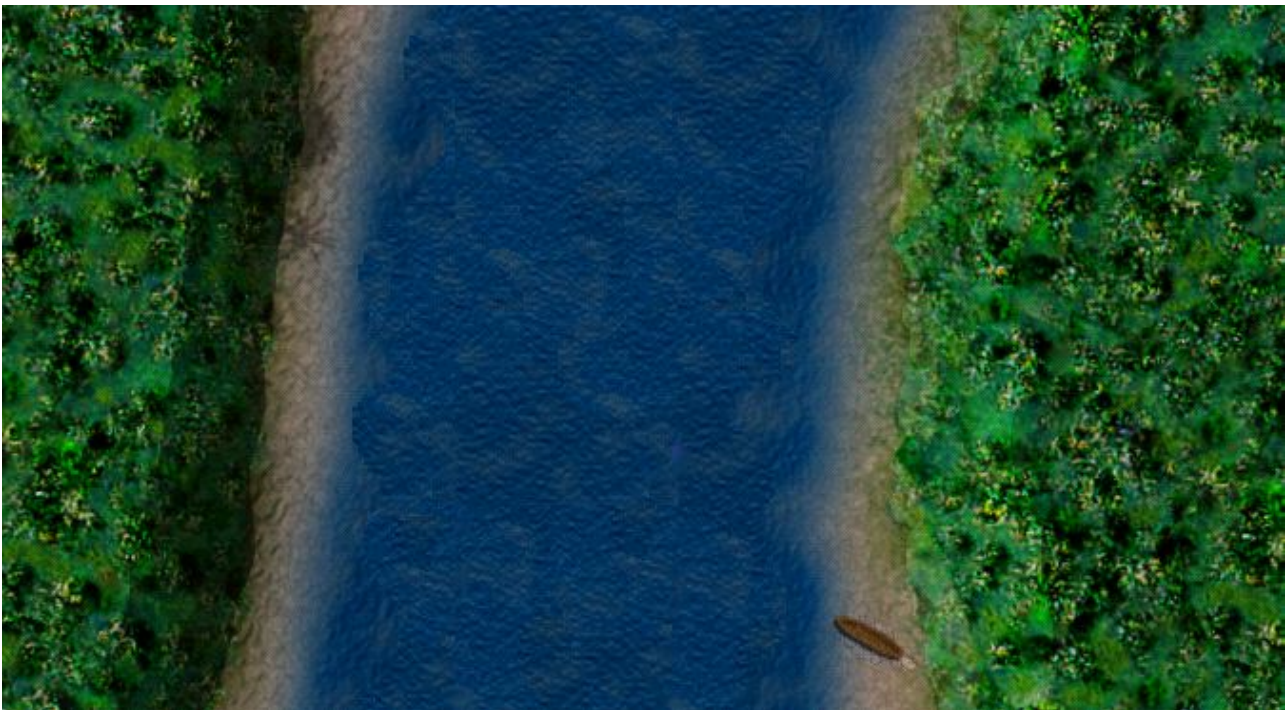


provisional

Down and dirty Bridg### file 'building'



1. In your graphics editor, paste the new bridge onto your new map where you want it. Do any necessary graphics work to the exterior landscape surrounding the pasted bridge image NOW. Remember - any graphic changes done within the boundary of the bridge cut-out you copy in the step below, after you copy this cut-out, will not displayed when the game 'patches' in the 'blown-bridge' or 'repaired bridge' images during play.



Picture: a map with a river (adopted from the map Guadalcanal1 by NL_Oxcart).



Picture: a map with a river with a wooden railroad bridge, suitable for PacificFront mod.

2. Cut out a part of your map with the bridge. Take enough surrounding landscape to place a secondary bridge (Bailey Bridge) as a 'provisional repair'. Modify this cut-out image as it will fit to the 'blown-bridge'-situation using your graphics editor. I think CC2 uses a gap of approx. 80 pixels of water between the two remaining parts of the bridge after the 'blow', but it is also possible to place the provisional bridge nearer or directly over the blown bridge. Save your artwork as your bridge image No. 1. Now duplicate this cut-out image and paste in any provisional secondary bridge 'build by the Allies'. To fit the positions of the original Bridg311 file, it is necessary to place the secondary provisional bridge 85 pixels 'downwards' of the blown bridge. Save this artwork as your bridge image No. 2. Remember: both bridge images can have the same dimensions and the same positions on your map, but it is not required!



Picture: blown bridge.



Picture: blown bridge with provisional repair.

3. Convert your two bridge images to .tga format (TARGA).
4. Then use Texture Maker (version v.1 or v.2) to convert the two .tga images (naming them txtr000.tga and txtr001.tga, if you are using Texture Maker v.1) and using the fromtga.bat file to create txtr000 and txtr001 (again please note this step in Texture Maker refers to v.1 of that fine tool). If you use the Texture Maker v.2 you can convert the .tga images by using the command: `C:>tgacc <source>.tga <target> -texture`
5. In HexEdit delete the 16 byte CC2-texture header from the converted file for the bridge image No. 1 you want to use and paste the remaining data into a new document. !!!NOTE!!! the offset address of the last line in this data (add blank bytes '-20' values to fill in any missing bytes to create a full 16 byte last line). The offset for the bridge image No. 2 is going to be the next line. !!!IMPORTANT!!! to keep track of this as you will need to input this offset value in the header you will create for this Bridg#### file (the offset address for the bridge image No. 1 data in the file is always 00 00 00 00).
6. Then delete the 16 byte CC2-texture header from the converted file for the bridge image No. 2 and paste the remaining data into the new document on the line following the bridge image No. 1 data.
7. To create the header for this Bridg#### file its hex calculator time again. If you had noted the pixel coordinates of the bridge image when you cut it off your new map as 700 (x1), 840 (y1) for the upper left and 780 (x2), 900 (y2) for the lower right - these decimal values would translate (using HexEdits base conversion tool, Bconv32.exe or a character table) as:
 700 (= 02 BC in hex) for x1.
 780 (= 03 0C in hex) for x2.
 840 (= 03 48 in hex) for y1.
 900 (= 03 84 in hex) for y2.
 Please notice: the Bridg####-file coordinates (like the Roof####-file coordinates) are **starting from x1=0; y1=0** in the upper left corner! Some graphic editors are starting with their coordinates from x1=1; y1=1 instead. This might cause some trouble, if you don't keep it in mind.
8. The first 8 bytes (specifying the bridge image No. 1 corner coordinates on your map) of the new header are going to be: 02 BC 03 0C 03 48 03 84
9. The next 4 bytes (the offset for the bridge image No. 1 data) will be 00 00 00 00 so the new header is now: 02 BC 03 0C 03 48 03 84 00 00 00 00
10. The last 4 bytes are the (sequence?) number of this image: in this case it is No. 1: 00 00 00 01
 The finished header for the first image is: 02 BC 03 0C 03 48 03 84 00 00 00 00 00 00 00 01
11. Insert this at the beginning of your new Bridg####-file in line 1.

12. Now you have to do the same for the second bridge image in this file (if you want to have two images as used by Map300 or Map311). Assume, the size and position of both images were set equal by you, then the first 8 bytes of the header will look similar like the first header: 02 BC 03 0C 03 48 03 84
 13. The next 4 bytes (the offset for the bridge image No. 2 data) will be taken from step 5 (above) 00 00 25 80 so the new header is now: 02 BC 03 0C 03 48 03 84 00 00 25 80
 14. The last 4 bytes are the (sequence?) number of this image: in this case it is No. 2: 00 00 00 02
The finished header for the 2nd image is: 02 BC 03 0C 03 48 03 84 00 00 25 80 00 00 00 02
 15. Insert this at the beginning of your new Bridg### file in line 2 right after the first header, which pushes the image datas down to line 3.
 16. Then insert a CC2 header for Bridg### files for two images (42 52 44 47 00 00 00 02 00 00 00 00 00 00 00 00) at the beginning of your new Bridg### file in line 1 (which pushes the first bridge header down to line 2). Save as Bridg### in the ABTF/Graphics/Maps folder and play.
- In the meantime (Nov. 2003) I have made a tool for MacOS (and a time-limited demo for PCs) called **"CC2Tools"** which is able to do for you the steps 4 to 16 mentioned above. See my site(s) for download.

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Have fun.

Addendum 2nd edition (April 2001)

Here a short e-mailing concerning this Bridg###-File-Guide from March 2001:

Chris Ellens wrote:

Thanks! I wasn't aware of how bridges were handled in CC2 (never even thought about it actually). It would be neat to add bridge editing to CCEdit (when I have the time), based on the info you've provided. However, there's one thing that has me confused:

The terrain data file would contain entries indicating a bridge at the location that it appears in the background file. When a replacement bridge is created, the terrain data needs to be changed so that soldiers/vehicles will cross the river in the right place. I assume the game modifies the terrain data in memory when this occurs, but how does it know where the new bridge is? Any ideas?

If it's hard-coded in the logic for handling bridges (i.e. "on map 311 the new bridge is x pixels below the original one"), that means that you wouldn't be able to design a map from scratch with a bridge and replacement bridge in arbitrary locations.

--

Chris Ellens

My answer:

Actually I do not know at all how ABTF handles the modification of the terrain data on runtime. I haven't found any information about it on the web. I believe that both versions, Mac and PC handle it in the same way. But I have never seen a bridge replacement during the gameplay at all, so I was unable yet to lead troops over the replacement-bridge.

But Kyle Scott 'Fish'

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<http://members.nbc.com/Kretaforcc2/>

has recently released a new map for his CC2-Kreta-Mod with a new Bridg###-file for a map, which has no Bridg###-file in the original version before: the Map222 'Chania - 42nd Street'. I think, that Kyle knows how ABTF handles the terrain-data modifications. Infos about Bridge-Blowtime and -Rebuildtime is located in the Scenario-files. It could be possible that the modification-infos are located in the Map###-file, the Scenario-file for the map or in the Campaign-files or in the code of the main program. I don't know. Sorry. But I'm also interested in the answer like You.

The pictures in my .PDF-file were build according to the location-situation of the original Map311. But my river is larger. I think, building a map from scratch with a bridge and replacement bridge can be done in two ways:

- using the same locations and distances from an existing map, only changing the pictures (but I haven't it tested yet)
- or understanding how Kyle Scott has managed the problem.

The best thing I believe should be to ask one of the experienced programing Gods.

So here is our question to Kyle: how does ABTF change the terrain-data after bridge-blowing? Many thanks for Your answer!

Greetings from *Mafi*

... and the answer from Kyle Scott:

Hi Guys,

Sorry, but I dont think I will have the answers that you are looking for..... The way that I did the data for the new map was by faking it at bit..... I just coded the part where the bridge would show up as a crossing point, but it seems to work ok. Unfortunately, I was unable to figure out now the original game sorts this out, but after searching everywhere dicide that it is prob. in the exe somewhere (hardcoded) If you do figure this out, let me know :-)

the pics are done in the same fashion as roof files.

Cheers, Kyle.



Picture: Building a provisional bridge at "Son" by British troops. Picture taken from the movie "A Bridge Too Far" as it was shown by German television (Kabel1) on March 10th, 2001. Copyright by MGM.

Blowing the bridge by pressing the button "Blow Bridge" in the original gameplay is only possible on the maps 100, 300 and 311. And only if you are playing the Axis part in a single map-battle or a operation/campaign on this maps (when playing Allies the computer AI will blow the bridge if suitable). It doesn't work if you add Bridge###-files to other maps **until you change the corresponding Scenario-file**. And it doesn't work when playing battlemaker-scenarios. Later on I will show you how the program ABTF manages it to place the explosions correctly around the bridge. The changes of the terrain-data elements for the blown bridge area is done by the explosion itself (see 3rd addendum). After blowing the bridge, units cannot cross the river/bridge.

The original file Map311 will serve as an example:

Version-No	41																	
Number of 40 x 40 pixel tiles	39 X Max																	
Heading	33 Y Max																	
	Idx	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	Elev
First tile = 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
Second tile = 1	1	0	0	8	8	0	0	8	8	0	0	8	8	0	0	8	8	29
Tiles are counted from left to right and from top to bottom.	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
	3	0	0	0	0	0	0	0	0	0	0	90	90	0	0	90	89	29
	...																	
	...																	
	...																	
Son-Bridge area (deep water = 7).	709	0	0	7	7	16	0	7	7	16	16	140	140	2	35	35	35	25
	710	7	7	7	7	7	7	7	7	140	140	140	140	35	35	35	35	20
	711	7	7	7	7	7	7	7	7	140	140	140	140	35	35	35	35	20
	712	7	7	7	7	7	7	7	7	140	140	140	140	35	35	35	35	20
	713	7	7	0	0	7	7	0	16	140	140	16	16	35	35	35	20	24
	...																	
	748	20	35	35	35	20	35	35	35	20	35	35	35	16	16	140	140	25
	749	35	35	35	35	35	35	35	35	35	35	35	35	140	140	140	140	20
	750	35	35	35	35	35	35	35	35	35	35	35	35	140	140	140	140	20
	751	35	35	35	35	35	35	35	35	35	35	35	35	140	140	140	140	20
	752	35	35	35	20	35	35	35	20	35	35	35	20	140	140	16	16	25
	...																	
	787	16	0	7	7	0	0	7	7	0	0	7	7	0	0	7	7	25
	788	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	789	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	790	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	791	7	7	0	16	7	7	0	0	7	7	0	0	7	7	0	0	25
	...																	
Deep water where the Bailey bridge will be build later.	826	0	0	7	7	0	0	7	7	0	0	7	7	0	0	7	7	25
	827	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	828	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	829	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	830	7	7	0	0	7	7	0	0	7	7	0	0	7	7	0	0	25
	...																	

	#																	
The addendum: the description after the bridge is blown and the provisional bridge (Bailey bridge = 62) is build.	709	0	0	7	7	16	0	7	7	16	16	16	7	2	20	20	7	25
	710	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	711	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	712	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	713	7	7	0	0	7	7	0	16	7	16	16	16	7	20	20	20	24
	748	20	20	20	7	20	20	20	7	20	20	20	7	16	16	16	7	25
	749	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	750	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	751	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	20
	752	7	20	20	20	7	20	20	20	7	20	20	20	7	16	16	16	25
	787	16	0	7	7	0	0	7	7	0	0	7	7	0	0	62	7	25
	791	7	7	0	16	7	7	0	0	7	7	0	0	7	62	0	0	25
	826	0	0	62	62	0	0	62	62	0	0	62	62	0	0	62	7	25
	827	62	62	62	62	62	62	62	62	62	62	62	62	7	7	7	7	20
	828	62	62	62	62	62	62	62	62	62	62	62	62	7	7	7	7	20
	829	62	62	62	62	62	62	62	62	62	62	62	62	7	7	7	7	20
	830	62	62	0	0	62	62	0	0	62	62	0	0	7	62	0	0	25
	#																	



Picture: Map311 in Cedit with terrain-element datas from the addendum pasted in the main area. The place where the original bridge was placed is marked as 'Deep Water', and the river where the Bailey bridge will be build is marked as 'Bailey Bridge'. Note that the 40x40 pixel – tiles are counted from 0.

The building of a provisional bridge depends on the (historical date) of the arrival of XXX. Corps on the map. Its presence is marked in the saved operation/campaign-files in the folder „C:\A Bridge Too Far\Games\Save“. An example:

...							
737	15	1	0	1	0	-1	-1
1	311	1	1	1 // OOB Used, Battle, Bridge Blown , Captured, Repaired			
44	9	19	8 // Date				
1	1	0	130	// OOB Bonus Receive Allied/Axis, Controlled by, Allied VLs			
12 // Number of damage locations							

and determined in the Ops-file of the operation (for Map311: „C:\A Bridge Too Far\Data\Ops\31\Ops“): again the datas for Map311 as an example from the corresponding Ops-file:


```

47
Son                                     // Op name
31                                     // Op number
310                                   // First battle
44  9   17  12                       // Historic start
44  9   21  20                       // Historic end
44  9   18  08                       // Link with XXX
3   9                                   // Badges
1   1   1   1   1   1   1   1   1   1 // Supply
30  30  60  80  80  80  80  80  80  80 // Expected control
80                                   // Value of op
3                                   // Number of battles
310 311 312 -1  -1  -1  -1  -1        // Battle list
3   4   1   0   0   0   0   0        // Multiplier

Son Town                               // Name
311 -1                                // Progression
1   14                                // Time between
0   0   0   0                        // Date of first counter-attack
0   0   0   0                        // Date of second counter-attack
-1  0   0                            // Operation reinforced
0   0                                // Force bonus
0   0                                // Bonus on retreat
1                                     // Road: yes
0                                     // Bridge: no
0                                     // LZ: no
0                                     // Bridge blow time
0                                     // Bridge repair time
1

Son Bridge                             // Name
312 -1                                // Progression
1   14                                // Time between
0   0   0   0                        // Date of first counter-attack
0   0   0   0                        // Date of second counter-attack
-1  0   0                            // Operation reinforced
0   12                                // Force bonus
0   0                                // Bonus on retreat
1                                     // Road: yes
1                                   // Bridge: yes!
0                                     // LZ: no
3000                               // Bridge blow time: 4 minutes and 30 seconds
14                                 // Bridge repair time (14h = Overnight)
1

Son South
-1  311
...

```

Addendum 3rd edition (May 2001)

How the bridge blowing is handled during gameplay

Above you could read how ABTF handles the bridge repair. But what about the blowing of the bridge? As stated earlier, now I will show you how the program ABTF manages it to place the explosions correctly around the bridge, and I'm sure that I do know how ABTF changes the terrain-data elements for the blown bridge area: it is not hardcoded in the program, but the explosion itself will do this. Please look at the original maps 100, 300, 311: where the explosion will occur, there is a

victory location. And it is always the first victory location defined in the corresponding "Scenario"-file. Again the Map311 will serve as an example: look in the "Scenario"-file in the folder "Data\Battles\1311":

44	Version			
Map311	Map name			
Son Bridge	3	6	40	"Name, Location (X, Y) and Value of Objective"
North Approach	4	6	20	"Name, Location (X, Y) and Value of Objective"
South Approach	1	6	20	"Name, Location (X, Y) and Value of Objective"
Garrison HQ	8	6	10	"Name, Location (X, Y) and Value of Objective"
Gun Pit	4	0	10	"Name, Location (X, Y) and Value of Objective"
Toll House	4	5	20	"Name, Location (X, Y) and Value of Objective"
Manor House	10	3	20	"Name, Location (X, Y) and Value of Objective"
Road to Son	12	6	20	"Name, Location (X, Y) and Value of Objective"
Warehouses	4	9	10	"Name, Location (X, Y) and Value of Objective"
None	0	0	0	"Name, Location (X, Y) and Value of Objective"
2400				Bridge Blow Time
0	Side to use for initial setup			
...				

The first definition of a victory location (VL) is the bridge itself! If you change the „Value of Objective“ of this first VL to 20 and increase the „Value of Objective“ of any other VL in the sequence to 40, the blowing will take place again at „Son Bridge“. The „Value of Objective“ has no effect (as name and location too) on where the blowing will take place. Now change the sequence of the VLs and you will see, that the blowing will take place at another VL (the one defined first), for example ...

44	Version			
Map311	Map name			
Gun Pit	4	0	10	"Name, Location (X, Y) and Value of Objective"
Son Bridge	3	6	40	"Name, Location (X, Y) and Value of Objective"
North Approach	4	6	20	"Name, Location (X, Y) and Value of Objective"
South Approach	1	6	20	"Name, Location (X, Y) and Value of Objective"
Garrison HQ	8	6	10	"Name, Location (X, Y) and Value of Objective"
...				

... will cause blowing your own gun pit, damaging or killing your own soldiers! The pasting-in of the pictures from the corresponding Bridg###-file is not influenced by the datas in the „Scenario“-file. So it belong to the programmer to calibrate Bridg###-file and „Scenario“-file. To proof this, I changed the „Scenario“-file as shown above, using the original Bridg###-file. Playing Axis, pressing the button „Blow Bridge“ when the time has come and the explosion happend top of the gun pit in the upper part of the map. And the first picture from the Bridg###-file is pasted in by ABTF. But my soldiers can still cross the bridge (look at the following screen shot).



Picture: Map311 with blown gun pit and pasted picture, but the troops still can cross the bridge!

So it is clear for single battle and operation/campaign play (battlemaker play has no bridge-blowing):

- ABTF allows for Axis-players to press the „Blow Bridge“ button, if in the corresponding „Scenario“-file a bridge blow time greater than 0 is defined.
- On the original maps 100, 300 and 311 pressing this button when playing Axis will cause an **explosion** at **the first victory location defined** in the corresponding „Scenario“-file, if this victory location is hold by Axis troops. If this VL is hold by Allies, the blowing will fail. From the corresponding Bridg###-file the first **picture** is pasted in **at the location defined in the header of the Bridg###-file**.
- On any other map (and this is new to all of us I believe) it is necessary only to change the bridge blow time to a value greater than 0, and ABTF allows for Axis-players to press the „Blow Bridge“ button too. And pressing this button when playing Axis will cause an **explosion** at **the first victory location defined** in this corresponding „Scenario“-file, if this victory location is hold by Axis troops exactly in the same way as on the original maps 100, 300 or 311. If your troops are under pressure by the Allies, the blowing might fail. The missing Bridg###-file will cause, that no picture is pasted in after pressing the button, but it will have no other effect to the gameplay (except for the big explosion). **You are free to create your own Bridg###-files for all the original CC2-maps or any custom CC2-map, but don't forget to change the Scenario-file and the Map###-file too.** This is proven by several new made custom CC2-maps: ElAdemCC2, RamelleCC2, MosquitoBridge-311 etc.

So now imagine this for your own maps, you will create in the future: you cannot only blow bridges anywhere on the map, but also buildings, airfields, minefields, roads, dams, airplanes, ships, railways, bunkers, ammunition depots, oil tanks ...

Addendum 5th edition (March 2002)

... and how about the CC2-trial-demo?



From my map RamelleCC2: blown bridge ...



... and provisional bailey bridge.

All custom maps can be played with the CC2-trial demo, which can be downloaded free from the internet. The Batnames-file must be patched to play all maps (set the last value for each map definition to 1 = visible). And in the demo you can blow bridges too, if the Scenario-file is patched as mentioned above. Good news for all who want to test new custom maps.

Addendum 6th edition (Nov. 2003)**Bridge-File data format and the results of my work during the last 18 months****Bridg###-File Data Format**

```
//datas encoded in Big Endian = Motorola style, MacOS compatible
//header (16 bytes):
char(4)      // "BRDG"
long         // number of images in this Bridge-file
long         // unknown, always zero
long         // unknown, always zero

//for each image in the Bridge-file:
short        // two bytes: upper-left horizontal position on map
short        // two bytes: lower-right horizontal position on map
short        // two bytes: upper-left vertical position on map
short        // two bytes: lower-right vertical position on map
long         // offset of image data from top of data
long         // index of this image (1 or 2)

//followed by the pixel datas (16 bit) for each image, Big Endian
data1        // required (one image at least is necessary)
data2        // optional
```

As mentioned on page 8: the coordinates for the images in the header entries **are counted from (0, 0) = upper left corner of the map**. If you take the coordinates of your "blown clipouts" to create your Bridge-file, ensure that your graphics editor program uses also (0,0)-based coordinates. You are free in the calculation of the coordinates for the upper-left position of the image(s) on the map as long as the image can be entirely pasted into the map during runtime.

The lower-right coordinates for the the header entries must be calculated as "lower-right-horizontal-pos = upper-left-horizontal-pos + width-of-image" and "lower-right-vertical-pos = upper-left-vertical-pos + height-of-image" (or much more mathematical: $x_2 = x_1 + \text{width}$; $y_2 = y_1 + \text{height}$). If the lower-right coordinates are less than the upper-left coordinates, then no image will be pasted in during runtime when pressing the "Blow Bridge"-button (the same as for the Roof###-files).

How large can an image be inside a Bridg###-file?

When creating the KoudekerkeBunkers-map, I made a very large image to be pasted in when blowing the "bridge", simulating a "flood" around the bunkers. In this case it was necessary to paste in the image at a position different from the "blown" victory location (blowing the dam, the corrections to the dam-graphics are done by the explosion itself, and the water must be shown at a different position behind the dam). The image in this Bridg###-file has a size of 383x1042 pixels, the largest Bridg###-file ever published until now. But it has only graphical effects. It has (like all other Bridg###-file images) no effects to the actual terrain element values! The terrain element values are only changed by the explosion itself when pressing the "Blow Bridge"-button or by the using of the additional data lines in the Map###-data files after the bridge repair during an operation.

I hope this will help and encourage map making with Bridg###-files!

Mafi

May 19th, 2001

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<http://www.geocities.com/cc2revival/>
<http://members.fortunecity.de/closecombat2/>
<http://www.dieppe.claranet.de/>

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<http://www.closecombat2.claranet.de/>
<http://www.cc2.claranet.de/>
<http://www.mappa.claranet.de/>