

Start with:

$a_{11}$	$a_{12}$	$a_{13}$	$a_{14}$
$a_{21}$	$a_{22}$	$a_{23}$	$a_{24}$
$a_{31}$	$a_{32}$	$a_{33}$	$a_{34}$
$a_{41}$	$a_{42}$	$a_{43}$	$a_{44}$

$a1:$

$a_{11}$	0	$a_{13}$	0
0	$a_{22}$	0	$a_{24}$
$a_{31}$	0	$a_{33}$	0
0	$a_{42}$	0	$a_{44}$

$a2:$

0	0	0	0
$a_{21}$	0	$a_{23}$	0
0	0	0	0
$a_{41}$	0	$a_{43}$	0

$\ll 12 \rightarrow$

0	$a_{21}$	0	$a_{23}$
0	0	0	0
0	$a_{41}$	0	$a_{43}$
0	0	0	0

$a3:$

0	$a_{12}$	0	$a_{14}$
0	0	0	0
0	$a_{32}$	0	$a_{34}$
0	0	0	0

$\gg 12 \rightarrow$

0	0	0	0
$a_{12}$	0	$a_{14}$	0
0	0	0	0
$a_{32}$	0	$a_{34}$	0

$a:$

$a_{11}$	$a_{21}$	$a_{13}$	$a_{23}$
$a_{12}$	$a_{22}$	$a_{14}$	$a_{24}$
$a_{31}$	$a_{41}$	$a_{33}$	$a_{43}$
$a_{32}$	$a_{42}$	$a_{34}$	$a_{44}$

Then  $b1$  is the top right  $2 \times 2$  block,  
 $b2$  is bottom right  $2 \times 2$  block, swap  
 them and we're done.