

Application Notes on Using Hybrid in Collage

Producing the best printed results using Hybrid depends greatly on the content of the image, as well as the usual printing issues (substrate, inks, and so on). When using Collage's Hybrid to improve the image before engraving, the settings that affect the results are: the Hybrid filter, the Linework Threshold and Threshold Difference, and the Gamma curve. To determine the best values for your specific situation requires testing. This document provides some general notes to get you started and hopefully some guidelines to minimize your testing.

These are not rules, but just suggestions based on our testing here. Your images will be different and you may find different settings are better for you.

For most customers, for most work, using only the Hybrid Quality, LW Threshold, and Threshold Difference (on the Gravure Parameters, Specialty Options page) will be adequate. The Edge Enhancement settings are generally only used with Selective Area Hybrid (see the Collage online Help for more information).

Note: We recommend ripping the PDF image to a high resolution. Images with very fine linework or very small text may need to be ripped at 3000 DPI.

Soft-Proofing

Soft-proof the job in Collage before engraving. In most cases, soft proof at Print Resolution with Sharpness (if any) and Gamma turned on, but do not turn on Specialty (Hybrid). Closely examine the areas that could cause problems: small text, fine line work, continuous tone with text. If the areas look correct, they will engrave correctly with Hybrid.

When adjusting the LW Threshold and Threshold Difference, you must soft proof with Specialty turned on to see the results.

Edge View

Edge View is a feature that shows the operator areas where Hybrid edge effects are occurring. This feature is a mix between Prepress Resolution and Specialty Resolution (Hybrid), displaying a clear view of Hybrid edging that is easier to see than when displaying with Specialty alone.

Note: Edge View reduces the image tones in order to highlight Hybrid edging. The tone range is compressed, so the measured value will be wrong in Edge View. Do not expect the displayed result to be accurate for color/density.

Selective Area

For many images, values can be set for the entire image (Hybrid filter, Threshold, Threshold Difference, and Gamma). For other images, you may need to define Selective Areas to apply different values. For example, an area of negative text may need different values than positive text.

Hybrid Quality: Normal

Use this setting when only (or mostly) horizontal edges need to be improved. This setting is good for the CMY separations of a process job where the text is larger and easier to read. Hybrid Normal engraving is slower than non-Hybrid engraving, so use this only when necessary.

Normal Quality Hybrid can be engraved using Spiral or Step Over engraving modes. Seamless image, where the image wraps at the 1 Rev, can be achieved with both Spiral and Step-Over. See the chart under Seamless Engraving on page 4.

Hybrid Quality: Fine

Use this setting when both horizontal and vertical edges need to be improved, such as the K separation with text and bar codes, where smaller features need improvement for reading. Hybrid Fine engraving is slower than Hybrid Normal engraving. Hybrid Fine engraving moves half the horizontal distance from one rev to the next compared to Hybrid Normal engraving. Using selective area in only the areas that need Hybrid Fine is recommended.

Fine Quality Hybrid can be engraved using Spiral or Step-Over engraving modes. Seamless image, where the image wraps at the 1 Rev, can only be achieved with Step-Over mode only. See the chart under Seamless Engraving on page 4.

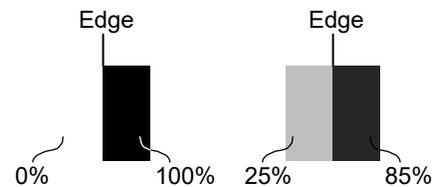
LW Threshold (Linework Threshold)

The LW Threshold should be set with the gamma applied to ensure the correct density value.

The darkest tones in an image are considered linework. This may be positive text or it may be the solid background around negative/reverse text.

Reverse text is never considered linework.

LW Threshold defines the linework portion of the image and is used to detect an edge. An edge occurs where two image densities meet. This could be solid text (100%) touching a white background, or with negative/reverse text where the text meets a solid background. An edge can also occur between two tones, as the graphic to the right shows.

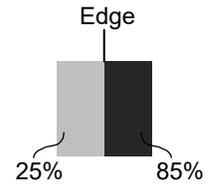


The LW Threshold value defaults to 98% which assumes text and linework of high density (98 to 100%). This value causes the Hybrid edging to be applied only to image areas of 98% and higher.

If the text has a lower density value, adjust the LW Threshold accordingly. For example, if the text is 80%, change the LW Threshold to 78%. With the LW Threshold, be careful of CT areas with 80% (and higher), because Hybrid edging will also be applied here. Using Selective Area may be helpful. Threshold Difference will also help to prevent unwanted edging in CT areas.

TIP! To measure image density and ensure the correct LW Threshold is set, use the Soft Proof function of Collage. Be sure to turn Gamma ON in the Soft Proof properties since LW Threshold is considered after any Gamma is applied. Move the cursor over the dark tone and read the density percentage in the Value column. You do not need Print Resolution turned on to measure density.

Look at the image to the right for an example of defining LW Threshold. Normally linework is 100%, but in this case the LW tone is 85%. Setting the LW Threshold to 98% will not produce any Hybrid edging. In this case, the 85% tone is considered linework so set the LW Threshold to 83%. Set the LW Threshold slightly below the darkest tone to provide a cushion in case the tone varies slightly. Densities of 83% and greater will have Hybrid edging applied to it.



For positive text, where the linework is 100%, the LW Threshold should be set for 98%.



The same is true for reverse text where the text is 0% and the background around the text is 100%. Also set the LW Threshold for 98%.



A few more examples of how to set LW Threshold.

Where text is less than 100%, set the LW Threshold slightly less than the tone value of the text. For this example, the text is 75% so set the LW Threshold to 73%.



For reverse text shown in this example, set the LW Threshold at 73%, just under the background tone value.



Another situation is where the reverse tone is something other than 0%. For this example, set the LW Threshold to 98%, slightly under the background value.



Note: Setting the LW Threshold to zero (0) prevents any Hybrid edging from occurring. This is done where the majority of an image does not need Hybrid, but a small portion of the image will use Selective Area Hybrid.

Threshold Difference

Threshold Difference defines the amount of tonal difference at a tone/text edge that must occur before Hybrid edging happens.

The Threshold Difference is applied after the gamma (if any) is applied.

The default for Threshold Difference is 10. This setting applies Hybrid edging to any edge with a 10% or greater tone difference. Increasing the Threshold Difference reduces the range where Hybrid edging takes place. A 50% setting only applies Hybrid Edging when the edge difference is at least 50%. A 0% setting applies Hybrid edging anywhere the Threshold is achieved.

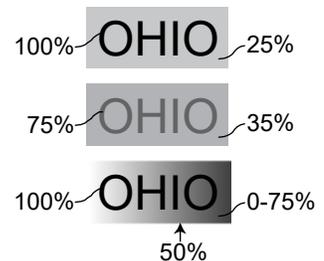
Note: Collage software versions before 4.1.7 default to a Threshold Difference of 0.

With Threshold Difference set at 50%:

The top image – Hybrid edging applied to all the type edges.

The center image – No Hybrid edging applied because the edge difference never reaches 50%.

The bottom image is unique with the vignette background. Hybrid edging occurs where the difference between the text and the vignette is 50% or more. Hybrid edging stops when the 50% difference between the text and vignette ends.



Text

When the smallest text in the entire job is 10 points and higher, the Normal filter will probably work well. The vertical edges may not be as crisp as the Fine filter, but the text is enhanced. Most importantly, the engraving time will be affected the least.

One exception is a font that has very thin line weight. Fonts can have a lot of variation in their line thickness and a Fine filter is needed for fonts with thin line weights. See Linework below.

For text below 10 points, use the Fine filter to improve edging.

For positive text 6 to 10 points, no extra gamma curve is needed.

For text at 6 points and below, use some gamma adjustment. That is, in the Selective Area, change the gamma curve from the job-level curve to one that corrects this small text. Use the provided Hybrid Positive gamma curves or create your own.

For positive text that is 4 point or below, using a Hybrid Positive gamma curve in the Selective Area improves results.

For negative text of 6 point or above on a background of 100% density, remove the job-level gamma in the Selective Area so there is no gamma being applied.

For negative text 6 point or below on 100% density background, using a Hybrid Negative gamma curve in the Selective Area improves results.

For negative text 6 point or below on a background than 100% density, you may need to develop special gammas: the goal is to open the text without adversely affecting the background. Soft proof with different curves to see the results before engraving.

Linework

For fine lines (less than .3 mm thickness) use Fine filter.

Continuous Tone (CT)

Set the LW Threshold to 0 for CT areas: this turns off the edging. Selective Area Hybrid can still be applied to user defined areas.

Seamless Engraving (image wraps across the 1-Rev)

Both Hybrid types work for seamless engraving using either Spiral or Step.

Fast Advance and Hybrid

When Fast Advance is turned on, Collage determines the right places for Fast Advance just like in a non-Hybrid job.

Text on Tone

An area of negative text on a light vignette (continuous tone) area can be problematic. For images like below, the use of Min Diff is the best option. Set the Density slightly above the darkest tone and select LW | CT. Edging is then applied to each edge in varying amounts to achieve the Density defined.



Hybrid Edge Enhancement

Note: Starting in Collage version 4.3.23, you can choose to hide the Hybrid Edge Enhancement area. To do so, go to User Preferences, Misc. Options. Under Specialty Options, clear the check box next to Advanced Hybrid Settings.

The Hybrid Edge Enhancement, also referred to as HyEE in this document, is not used with every Hybrid engraving. Typically, setting the Quality, LW Threshold, and Threshold Difference is sufficient for Hybrid work. HyEE is used for specific applications where linework falls on a tone.

Hybrid Edge Enhancement values are normally only used for Selective Area Hybrid.

There are several settings for the Hybrid Edge Enhancement which are described in the following text.

Type

Defines the style of HyEE that is applied to the image.

OFF (Default)

Hybrid edge enhancement will not be applied.

Min Diff (Minimum Difference)

The edge is boosted as needed so the density difference between the LW and CT edge meets the Density set. If the current edge is a 30% difference and the Density is set to 50%, HyEE adds edging that creates a 50% difference in the edge. Where the 20% increase is added depends on the Area selected.

Min Diff works with these Areas: LW
LW & CT
LW | CT
CT

Add

The linework edge has the specified Density amount added to it regardless of the adjacent tone density. For 100% linework, edging takes place but no cell size increase is seen. For linework less than 100%, the linework edge is pushed up to a maximum of 100%.

Add works with these Areas: LW
LW & CT

Subtract

The linework edge has the specified Density amount subtracted from it regardless of the adjacent tone density. This reduces the size of the cells along the edge of the linework.

Subtract works with these Areas: LW
CT

Fixed

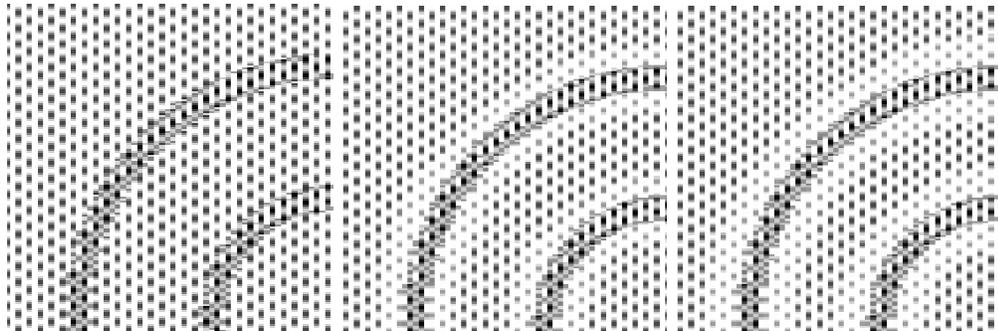
The linework edge is set to the specified Density value regardless of the adjacent tone density. This forces the cell to a specific density.

Fixed only works with these Areas: LW

Cells

Specify the number of edge cells to adjust. Default value is 1 cell. Valid values are 1 to 4 cells. Larger values produce a wider edging that is easily visible to the eye.

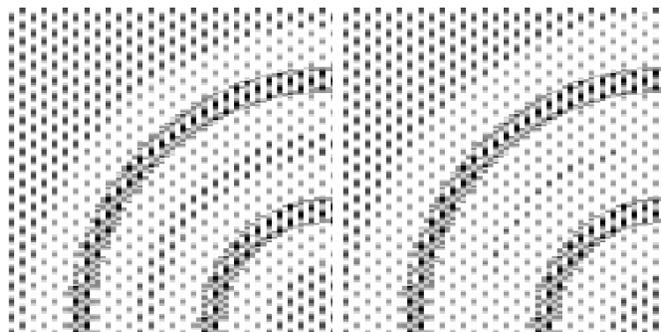
Pictures of linework on tone showing different Cell values. For the following four examples, the CT is being reduced 20% along the edges. As the number of cells increases, the effect becomes easier to see, appearing as a lighter ring around the darker circles.



No edging

1 Cell edging

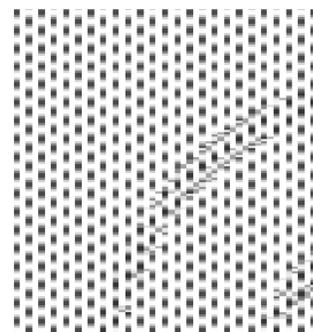
2 Cell edging



3 Cell edging

4 Cell edging

The following picture shows the LW being reduced 20% rather than the CT. Note how the circle is hard to see against the CT background because the circle's tone value is being decreased by 20%.



1 Cell edging

Density

Enter the density percent as the value to be used for the HyEE Type selected.

For Min Diff and Add, the density percent is increasing/decreasing the cell size along the linework edge.

For Subtract, the density percent is reducing the cell size of CT or linework edge.

For all Types except Fixed, the default is 10 and the valid values are from 1 to 100.

For Type Fixed, the default is 50 and the valid values are from 0 to 100.

The pictures to the right show the results of density changes.

All examples use

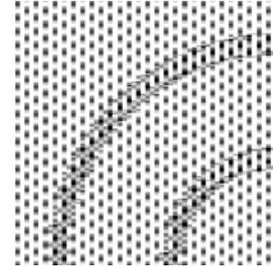
- Cell = 1
- Area = Subtract

Density 0 has no change to the edge.

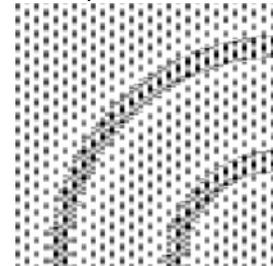
Density 20 shows the CT being decreased along the edge by 20%.

Density 40 shows the CT being reduced by 40%.

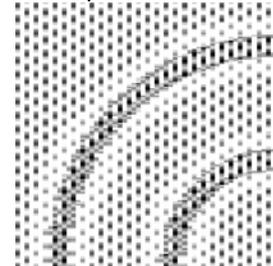
Density 60 shows the CT being reduced by 60%.



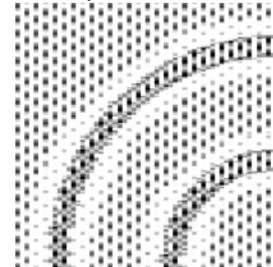
Density = 0



Density = 20



Density = 40



Density 60

Area

This field specifies the image area (LW, CT, or both) where Hybrid Edge Enhancement is applied.

Note: LW is defined by the LW Threshold.

All example images in the Area section use the original image shown to the right, a 70% LW circle on a 40% background CT. Image values are all with Gamma applied.



The original image, a 70% LW circle on a 40% background CT.

LW (Linework)

Apply HyEE only to the LW using Min Diff, Add, Subtract or Fixed.

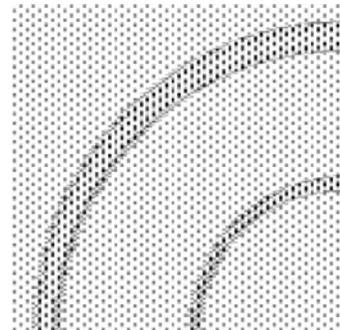
LW is valid for: Min Diff
 Add
 Subtract
 Fixed

Min Diff increases the LW value value to achieve the set Density. No modification takes place in the CT.

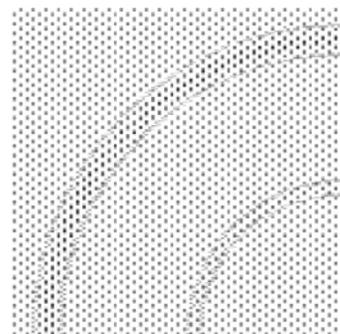
Add increases the LW edge by the set Density, making the cells larger to a maximum of 100%.

Subtract decreases the LW edge by the set Density, making the cells smaller.

Fixed sets the LW to the Density.



LW - Adding 20% to 1 cell along the LW edge.



LW - Subtracting 20% from 1 cell along the LW edge.

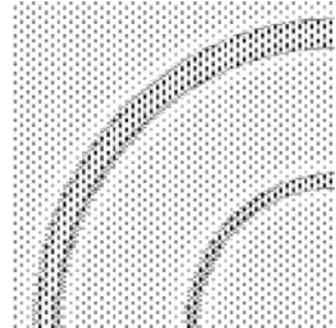
LW & CT (Linework & Continuous Tone)

Apply HyEE to the text/tone edge in equal amounts. LW is increased and CT is decreased in equal amounts.

LW & CT is valid for: Min Diff
Add

Min Diff increases the LW and decreases the CT in equal amounts until the Density difference is achieved.

Add increases the LW edge by the set Density, making the cells larger to a maximum of 100%.



LW & CT with Min Diff – LW is increased and CT is decreased.

LW | CT (Linework then Continuous Tone)

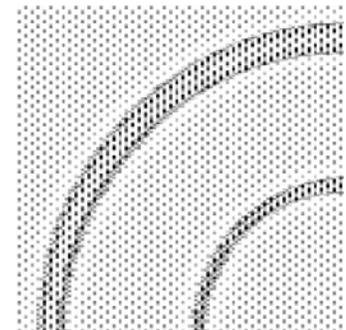
Apply HyEE to the text/tone edge in unequal amounts. The linework will have edging added until a 100% density is reached. Any remaining edging is then subtracted from the CT.

LW | CT is valid for: Min Diff

Min Diff increases the LW until Density difference is achieved, making the cells larger to a maximum of 100%. If 100% is not reached, then no CT edging takes place. If the LW edge reaches 100%, then difference will be achieved by subtracting from the CT reducing the cell size.

For example:

Consider our original image, 70% Linework on a 40% background CT. Min Diff is selected with LW | CT set to a 80% Density. The LW edge will be increased by 30%, reaching a maximum of 100%. The CT is decreased by 20% to achieve the 80% Density difference.



LW | CT – Adding 30% to the LW, then 20% subtracted from the CT.

CT (Continuous Tone)

Apply HyEE only to the CT edge. The CT has edging subtracted.

CT is valid for: Min Diff
 Subtract

Min Diff decreases the CT value to achieve the Density difference. The modification takes place in the CT only.

Subtract decreases the CT edge by the set Density, making the cells smaller.



Subtracting 20% from 1 cell along the CT edge.

Example of a Hybrid Setup

The example shows the original artwork (top) of 100% LW circles on a 50% background tone. The bottom shows the circle with edging applied and the CT along the edges decreased slightly. To create the result on the bottom, the Hybrid setup would be:

LW Threshold = 95
Threshold Difference = 20%
HyEE Type = Subtract
HyEE Cells = 1
HyEE Density = 20%
HyEE Area = CT

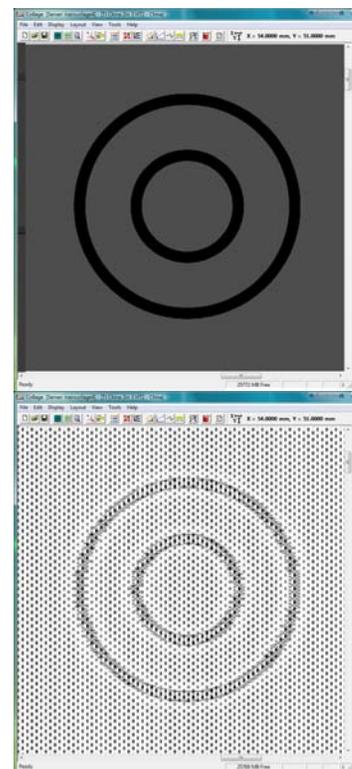
In others words:

LW Threshold identifies all densities of 95% and over to be linework. The 100% circle meets these criteria.

Threshold Difference defines the area where Hybrid edging takes place, in this case all edges where the LW density and CT density are at least 20% different. In this example, all edges have a 50% difference – 100% LW, 50% CT.

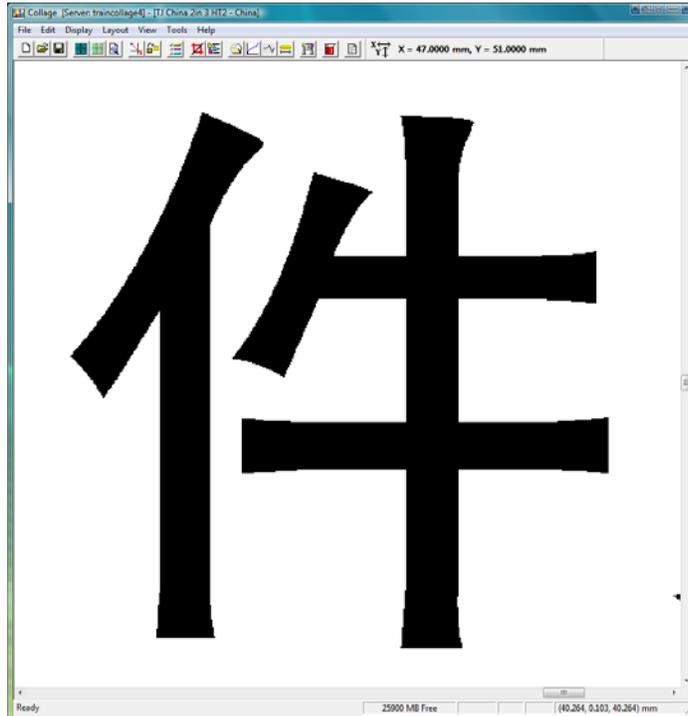
The HyEE Type, Cells, Density and Area determine the style and amount of edging to take place. The HyEE Type is set to subtract 20% from the background CT, and is not to exceed one cell in distance from the edge.

This is a simple example; the following pages show several other examples of Hybrid and the settings to achieve the results.

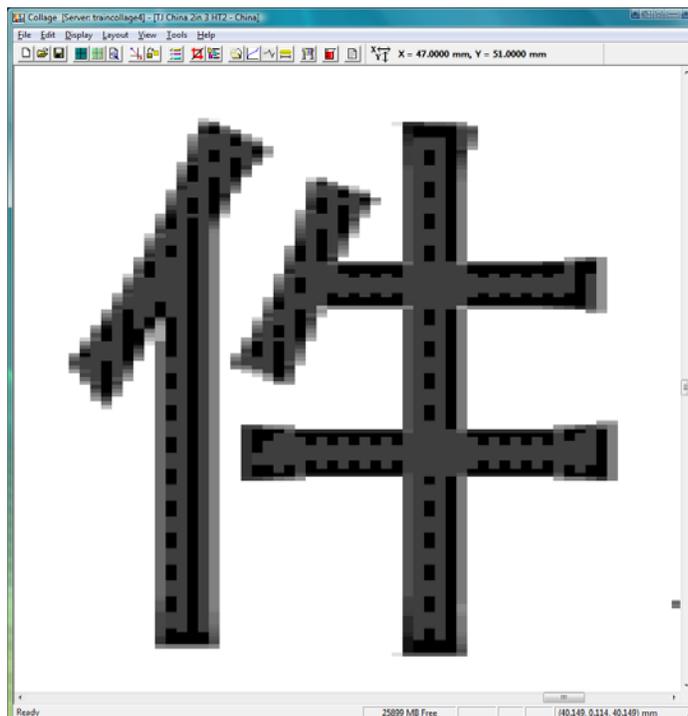


Hybrid Examples

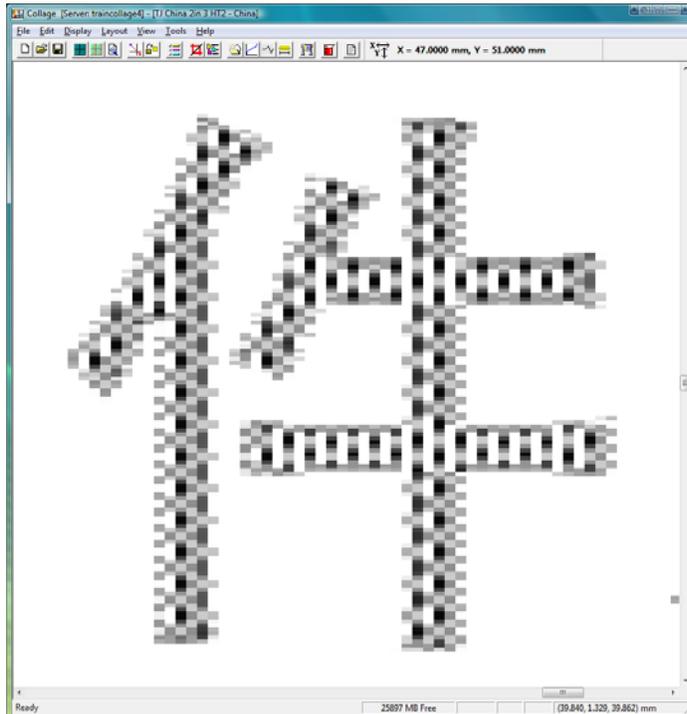
Black linework on white background



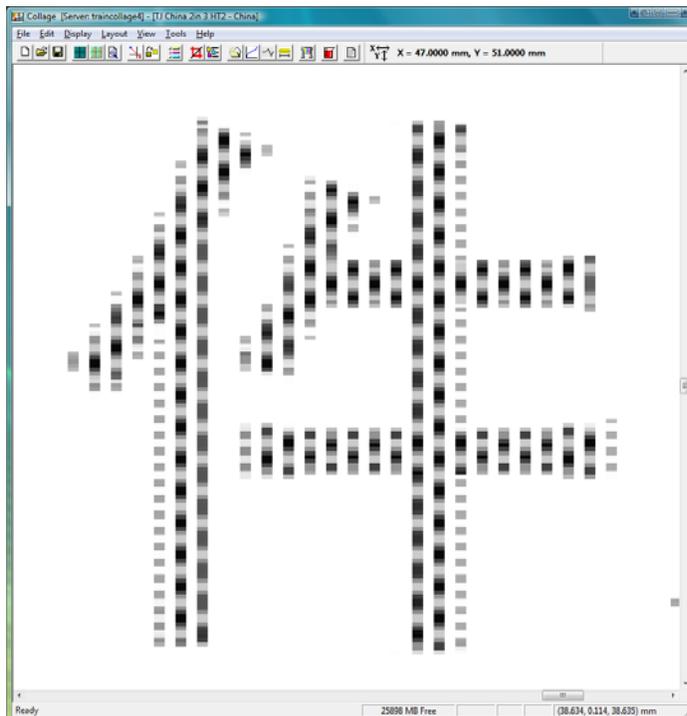
Prepress Resolution
Original Artwork
Text/Linework at 100%
Background CT at 0%



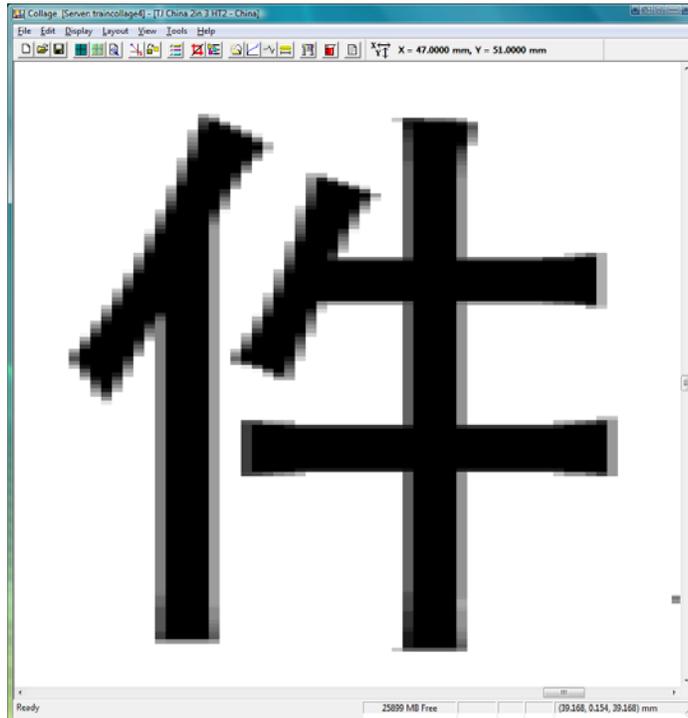
Edge View Resolution
Hybrid edging
LW Threshold = 98
Threshold Difference = 0



Specialty View
Hybrid edging
Hybrid Quality = Fine
Hybrid Edging clearly visible
around text edges.

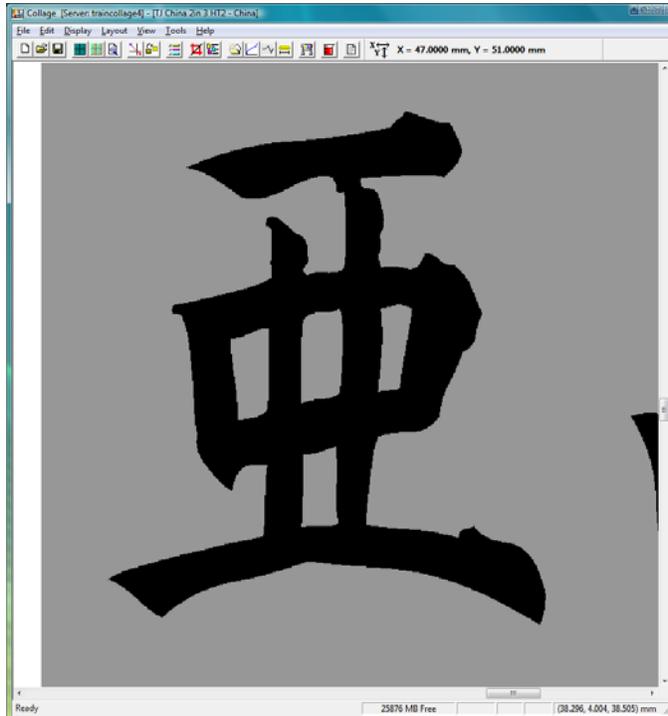


Specialty View
Hybrid edging
Hybrid Quality = Normal
Compare to Hybrid Fine
image, note the missing half-
rev cells along the edge.

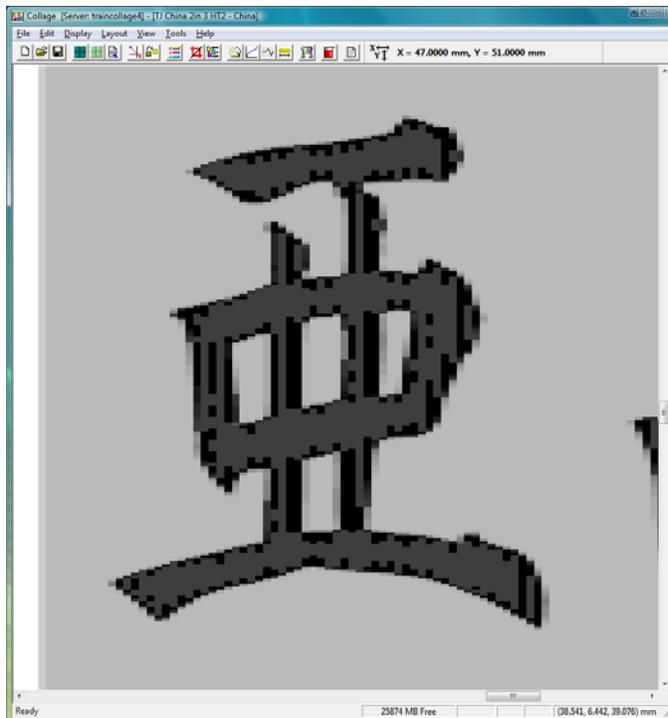


Print Resolution
For comparison with Hybrid
images.

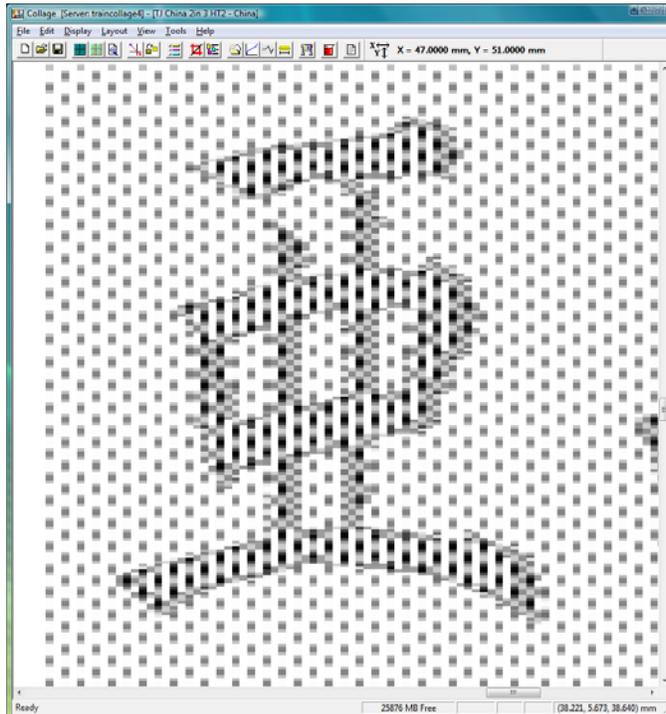
Black linework on tone background



Prepress Resolution
Original Artwork
Text/linework at 100%
Background CT at 25%



Edge View Resolution
Hybrid edging
LW Threshold = 95
Threshold Difference = 25

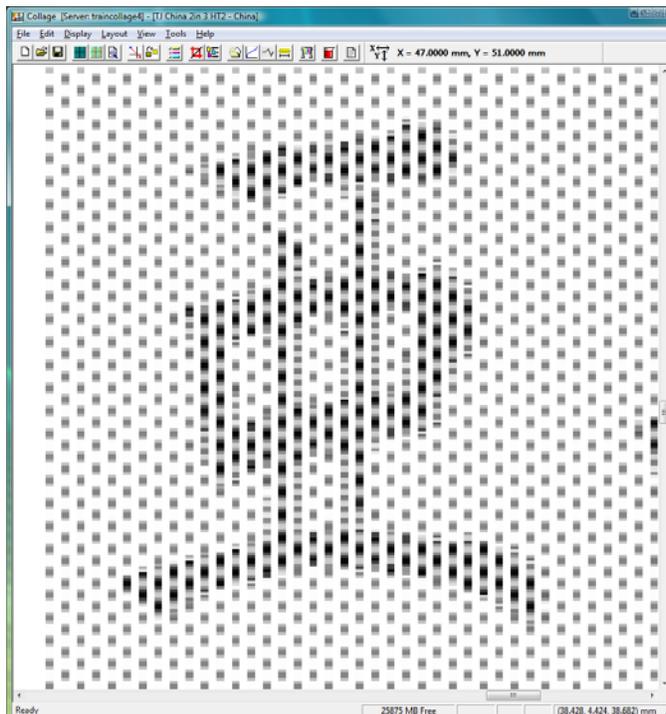


Specialty View

Hybrid edging

Hybrid Quality = Fine

Hybrid Edging clearly visible
around text edges.

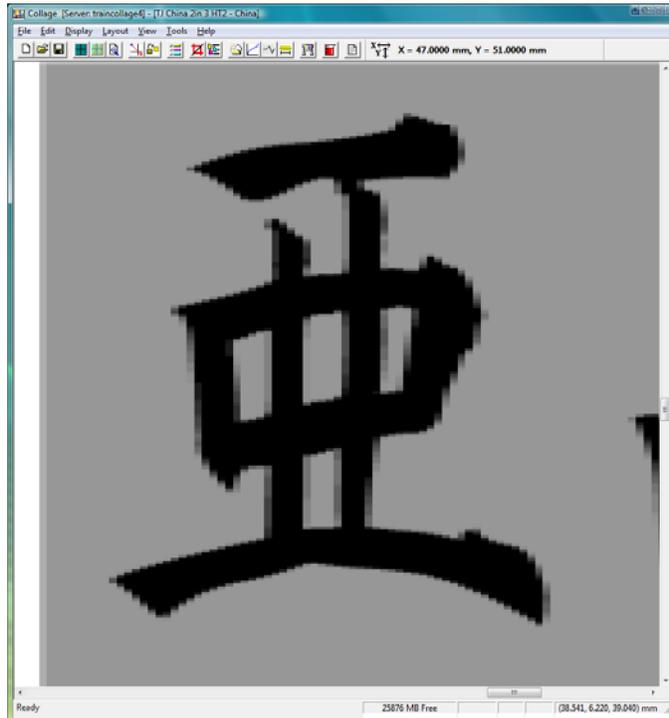


Specialty View

Hybrid edging

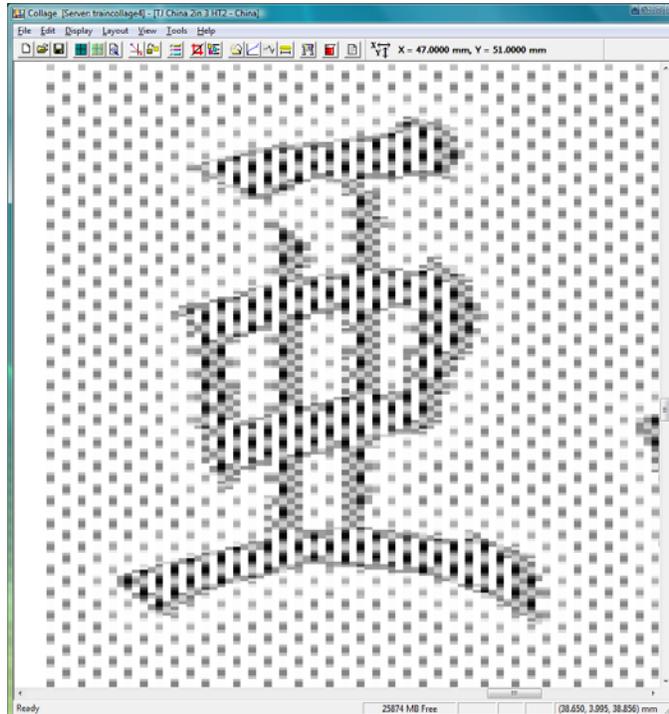
Hybrid Quality = Normal

Compare to Hybrid Fine image
above - note the missing half-
rev cells along the edge.



Print Resolution

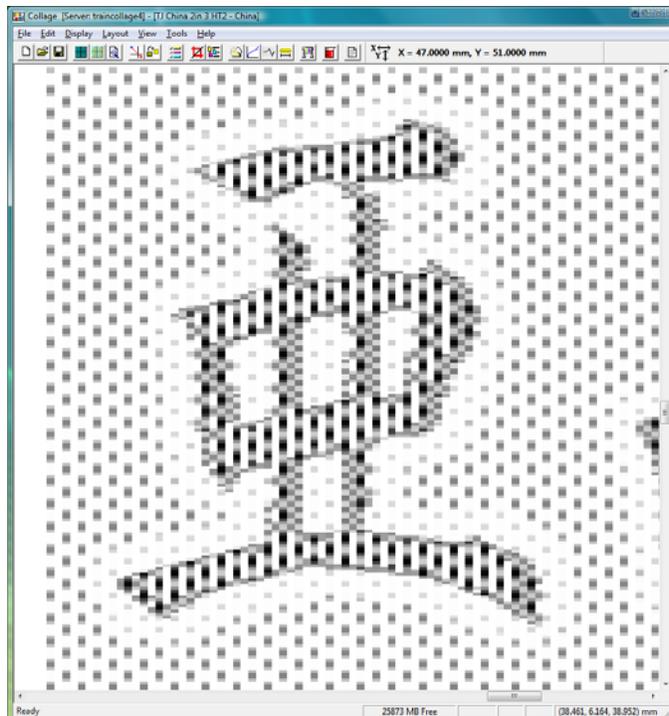
For comparison with Hybrid images.



Specialty View
Hybrid edging

Hybrid Quality = Fine
Hybrid Edge Type = Subtract –
Reduces the LW/Text or CT
depending on Area selected.
Cells = 1 – Number of cells
being affected in Area selected.
Density = 20 – Amount of
reduction in Area selected.
Area = CT – The image area
being affected by Edge Type. In
this example, the Continuous
Tone is being modified.

20% reduction in CT density
around text.

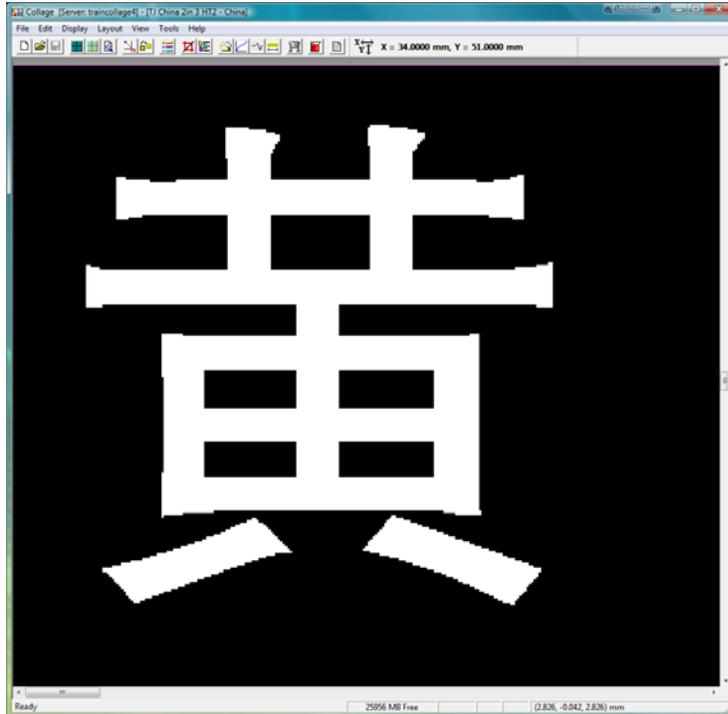


Specialty View
Hybrid edging

Hybrid Quality = Fine
Hybrid Edge Type = Subtract
Cells = 1
Density = 50 – Greater amount
being subtracted from CT.
Area = CT

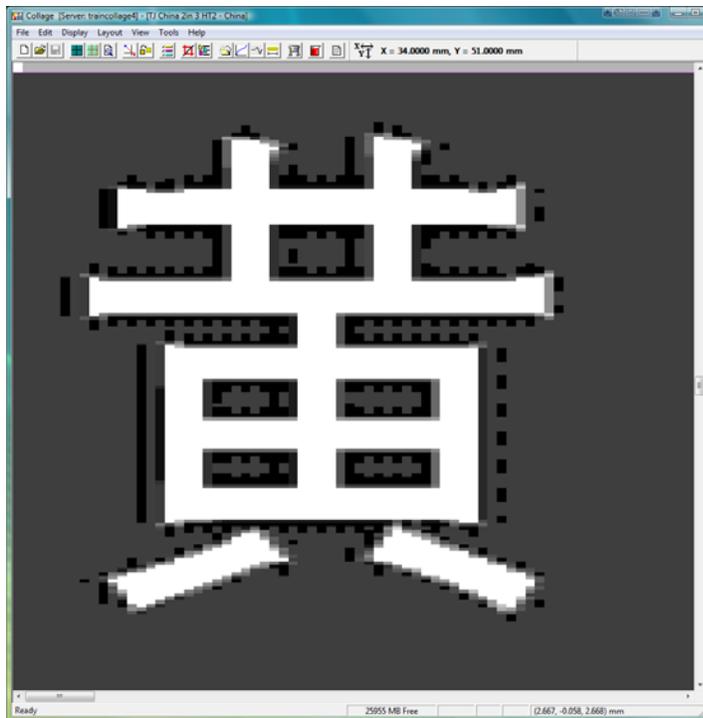
50% reduction in CT around
text. No change to text.

Negative linework on black background



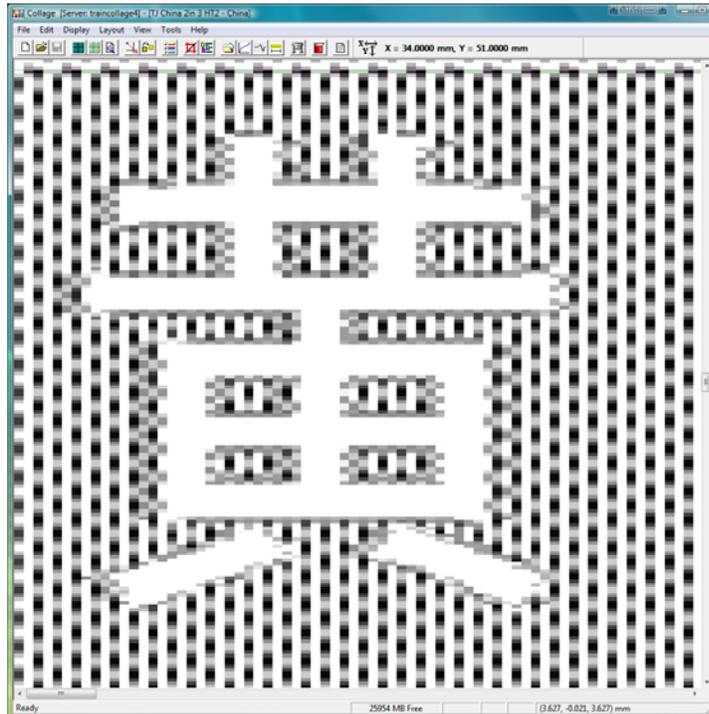
Prepress Resolution
Original Artwork
Background is the
Text/Linework at 100%.
Negative text is the
background CT at 0%.

Remember! LW is the
darkest tone, not the
image that you might
consider to be the
linework.

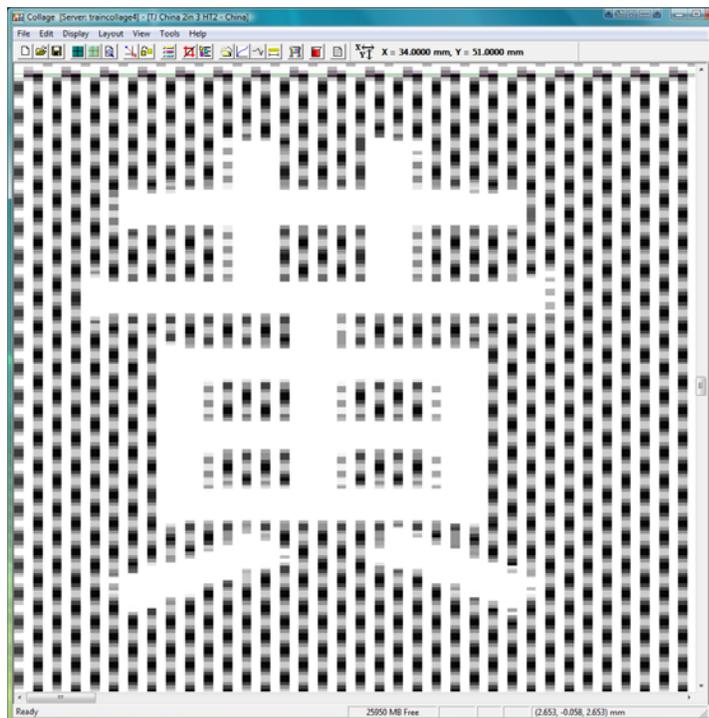


Edge View Resolution
Hybrid edging

LW Threshold = 95
Threshold Difference = 0



Specialty View
Hybrid edging
Hybrid Quality = Fine
Hybrid Edging clearly visible
around text edges.

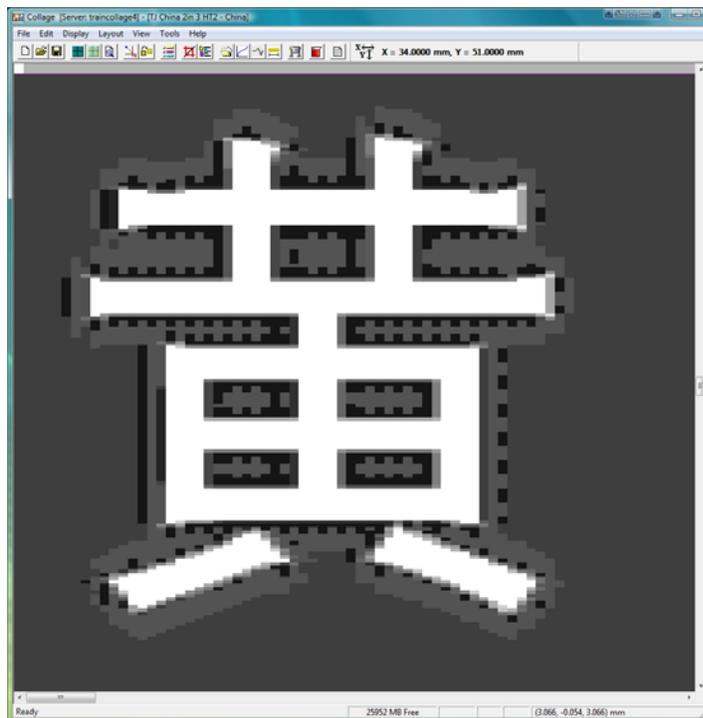


Specialty View
Hybrid edging
Hybrid Quality = Normal
Compare to Hybrid Fine
image above - note the
missing half-rev cells along
the edge.



Print Resolution

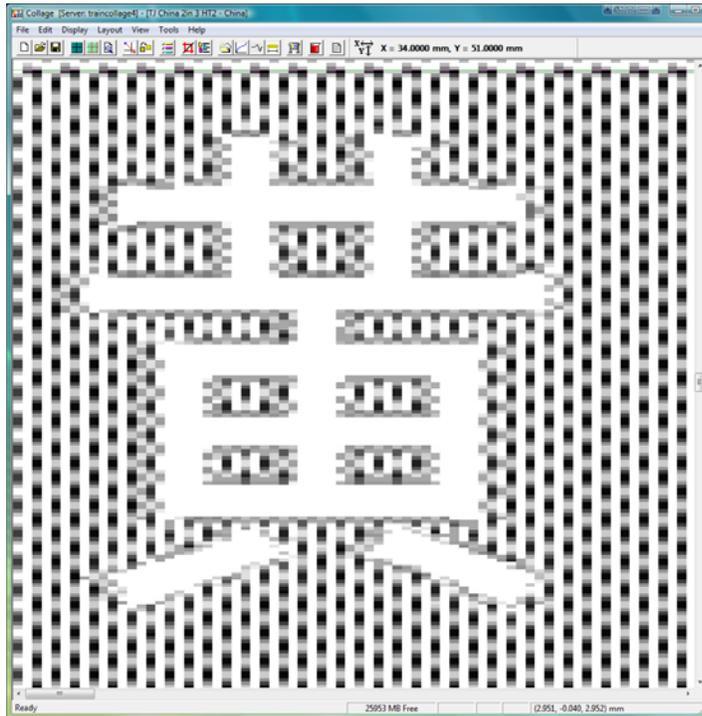
For comparison with Hybrid images.



**Edge View Resolution
Hybrid edging**

LW Threshold = 0
 Threshold Difference = 0
 Edge Type = Subtract
 Cells = 1
 Density = 10 – Subtracting
 10% from the edge.
 Area = LW – Only the
 linework will be reduced.

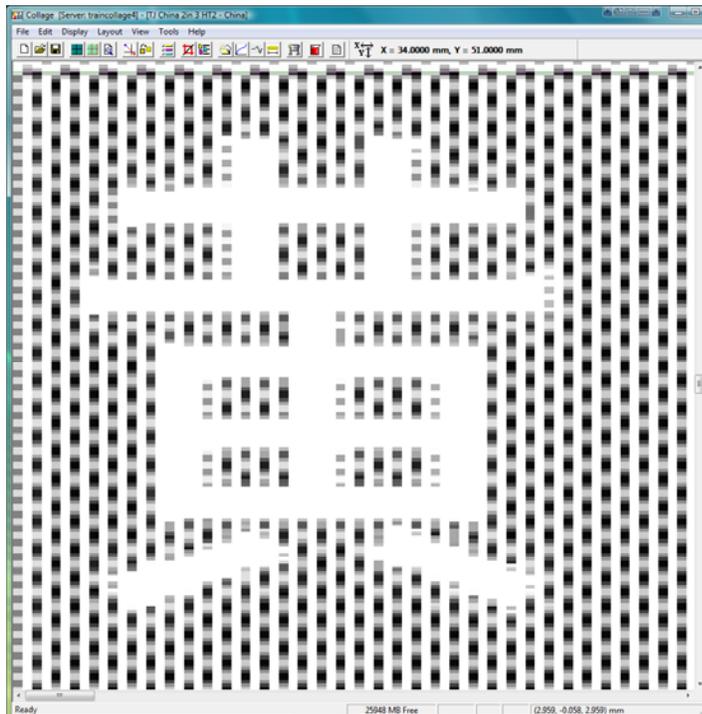
The reduced area created
 by subtracting 10% is easily
 seen on Edge View.



Specialty View
Hybrid edging

Hybrid Quality = Fine

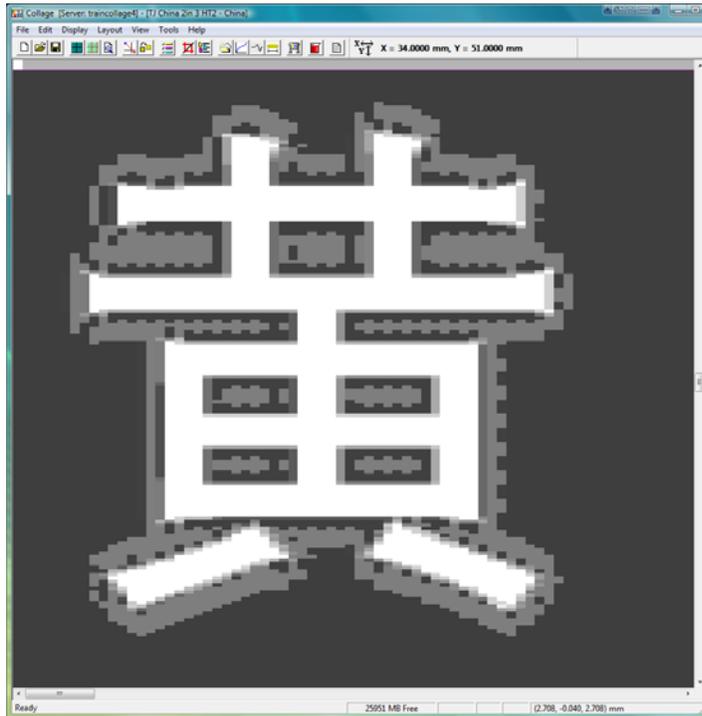
The 10% subtraction along edges is difficult to see, but visible when measuring density. It is more apparent in the small black areas inside the text compared to the background.



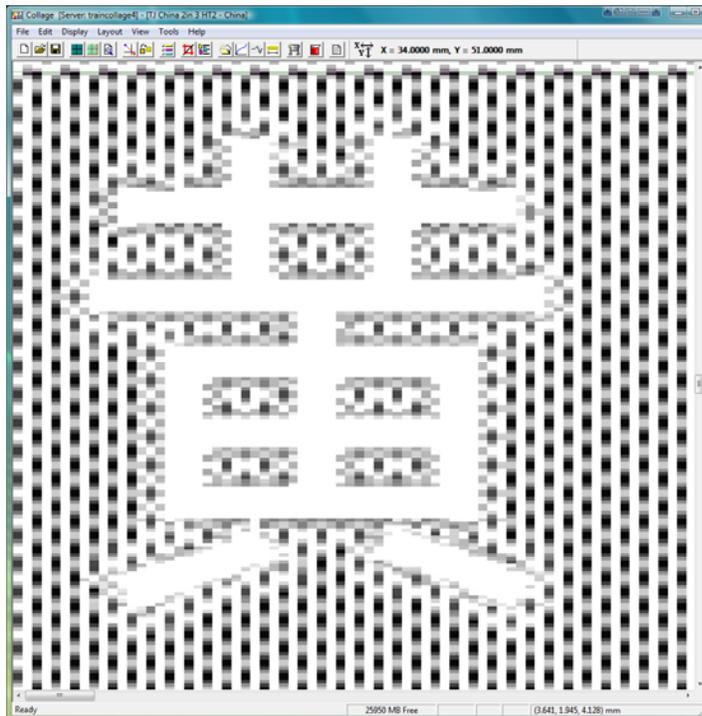
Specialty View
Hybrid edging

Hybrid Quality = Normal

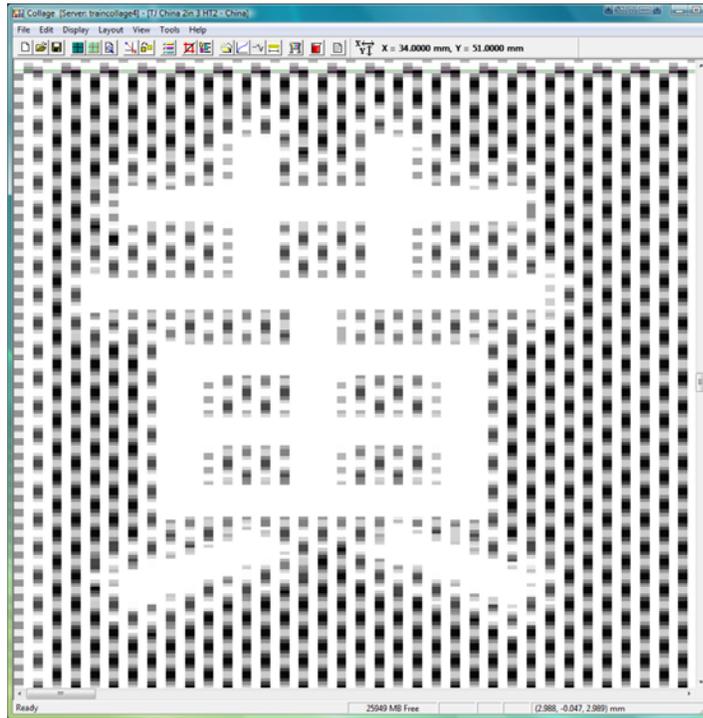
The 10% subtraction along edges is difficult to see, but visible when measuring density. It is more apparent in the small black areas inside the text compared to the background.



Edge View Resolution
Hybrid edging
LW Threshold = 0
Threshold Difference = 0
Edge Type = Subtract
Cells = 1
Density = 30 – Subtracting
30% from the edge.
Area = LW



Specialty View
Hybrid edging
Hybrid Quality = Fine
The 30% subtraction along
the edge is now easier to
see, especially in the small
black areas inside the text
compared to the
background.



Specialty View

Hybrid edging

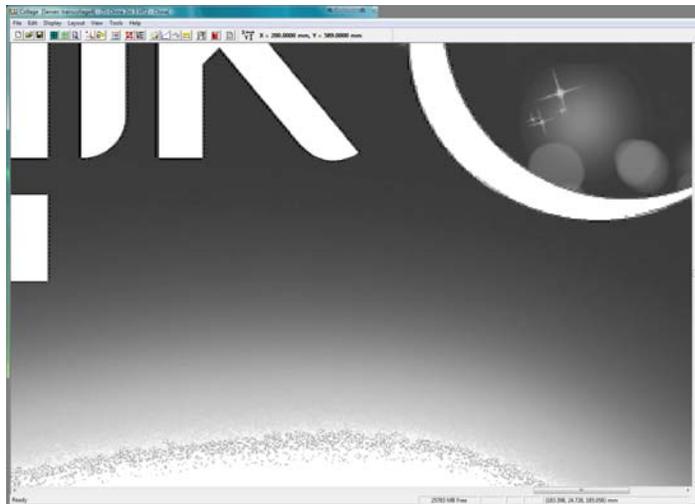
Hybrid Quality = Normal

The 30% subtraction along the edge is now easier to see, especially in the small black areas inside the text compared to the background.

Negative linework on tone background



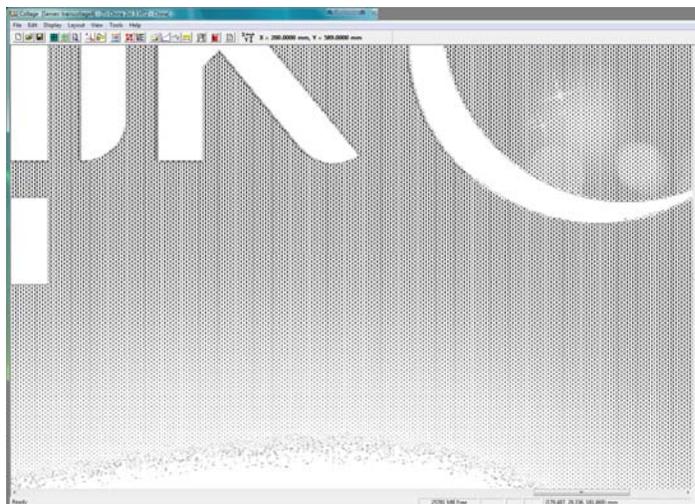
Prepress Resolution
Original Artwork



Edge View Resolution
Hybrid Edging

LW Threshold = 1
Threshold Difference = 0

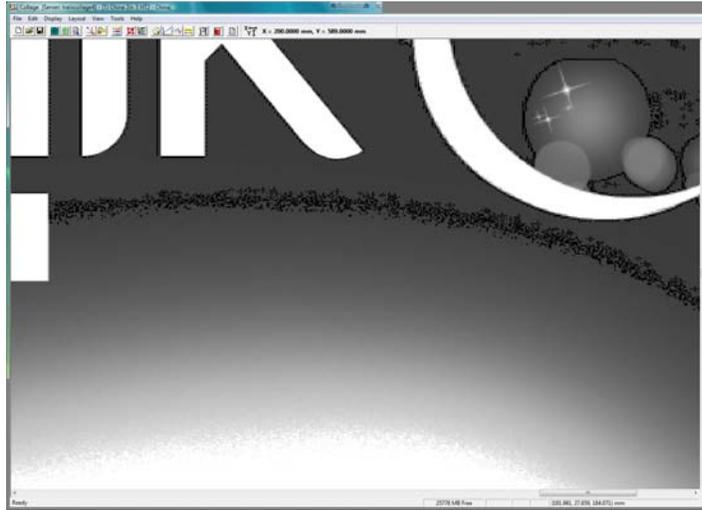
Note the edging effects along the bottom of the vignette due to the Threshold Difference being 0. These will be visible in the engraving.



Specialty View Resolution
Hybrid Edging

LW Threshold = 1
Threshold Difference = 0

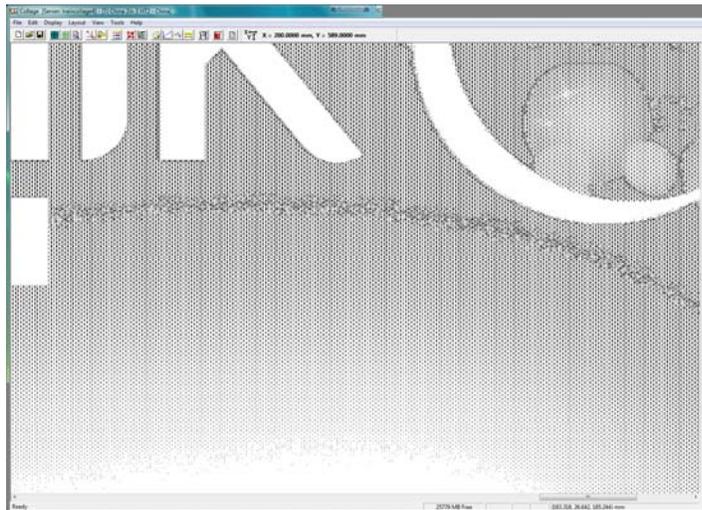
Edging effects visible in the vignette.



Edge View Resolution
Hybrid edging

LW Threshold = 98
Threshold Difference = 0

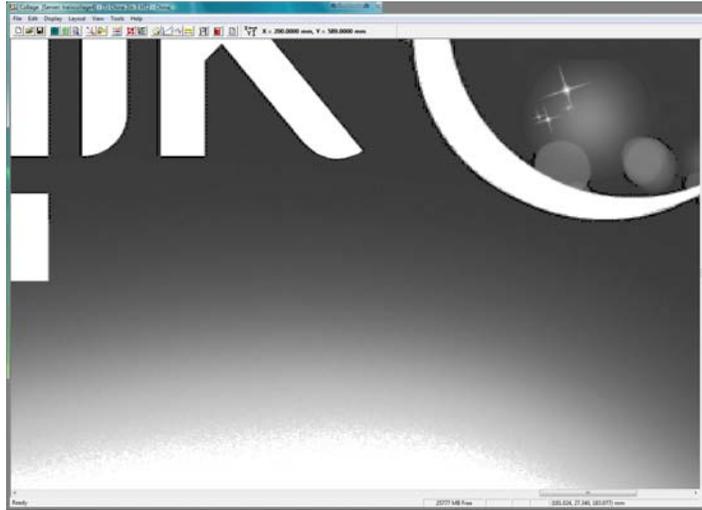
Note the edging effects below the text in the vignette due to the Threshold Difference being 98. These will be visible in the engraving.



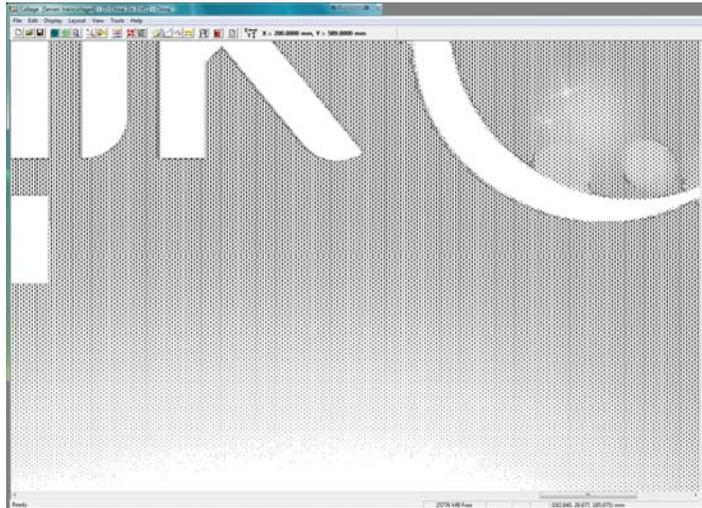
Specialty View
Hybrid edging

LW Threshold = 98
Threshold Difference = 0

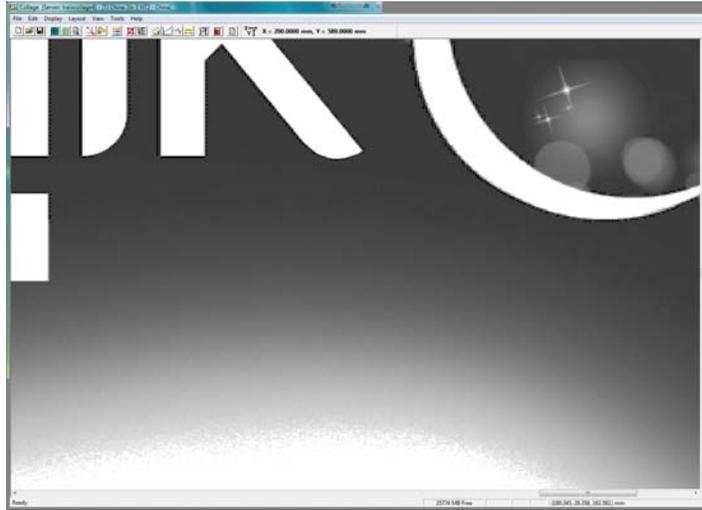
Again showing the edging effects in vignette and also around the various features in the top right.



Edge View Resolution
Hybrid edging
LW Threshold = 98
Threshold Difference = 10
The vignette is clean but there is still some edging around the background.



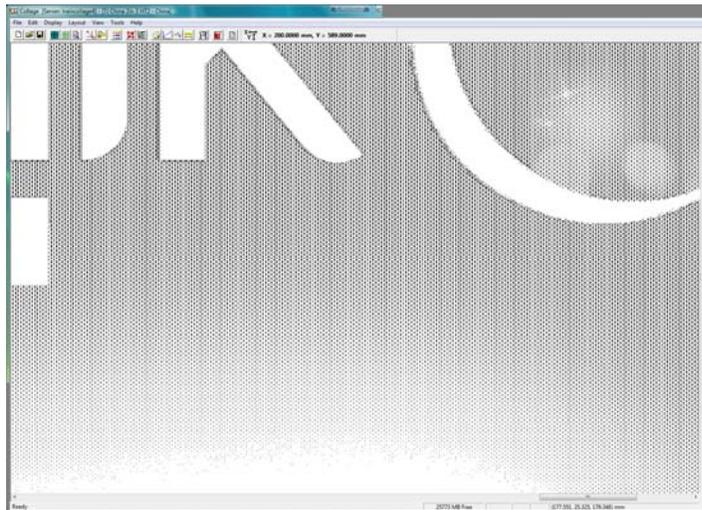
Specialty View
Hybrid edging
LW Threshold = 98
Threshold Difference = 10
Clean vignette but some edging still in background features.



Edge View Resolution
Hybrid edging

LW Threshold = 98
Threshold Difference = 30

The unwanted edging effects
in the vignette background
are softening with the
increase in the Threshold
Difference.



Specialty View Hybrid edging

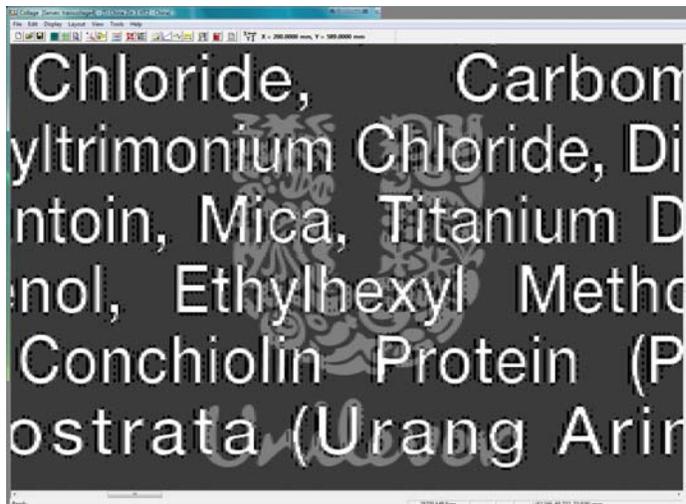
LW Threshold = 98
Threshold Difference = 30

Clean vignette with good
background features. Hybrid
edging is only visible on the
edges of the white text and
the crescent.

Negative Linework on Tone – Example 2



Prepress Resolution
Original Artwork
Background is 100%
Text is 0%
Watermark tone is 66%



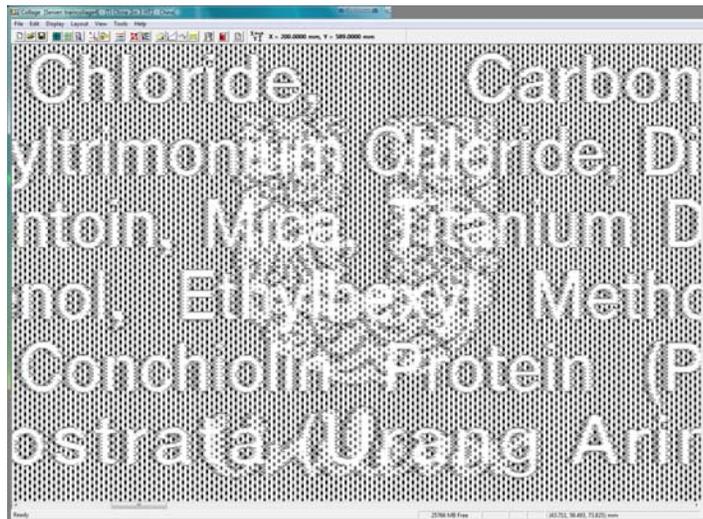
Edge View Resolution
Hybrid edging
LW Threshold = 1
Threshold Difference = 0



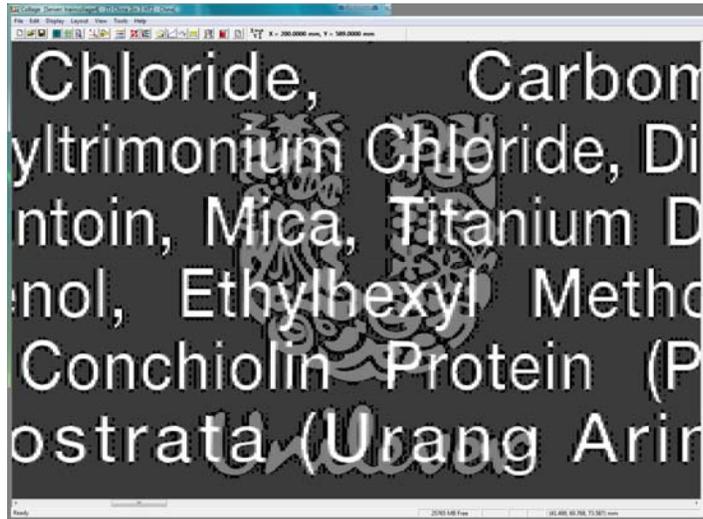
Specialty View
Hybrid edging
LW Threshold = 1
Threshold Difference = 0



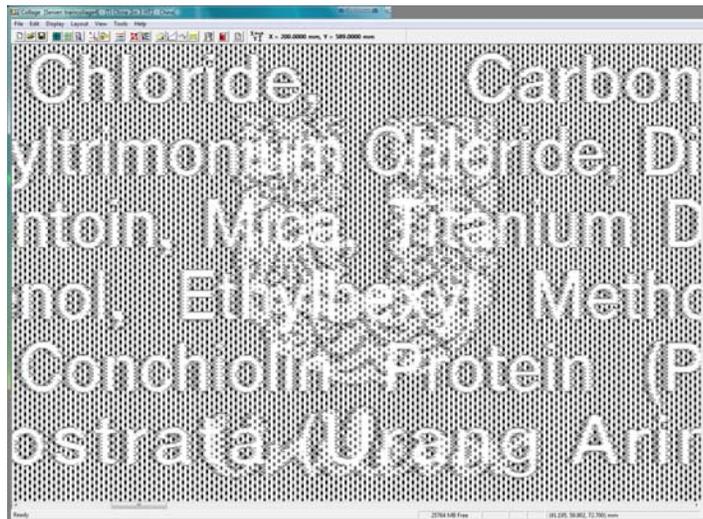
Edge View Resolution
Hybrid edging
LW Threshold = 98
Threshold Difference = 0



Specialty View
Hybrid edging
LW Threshold = 98
Threshold Difference = 0

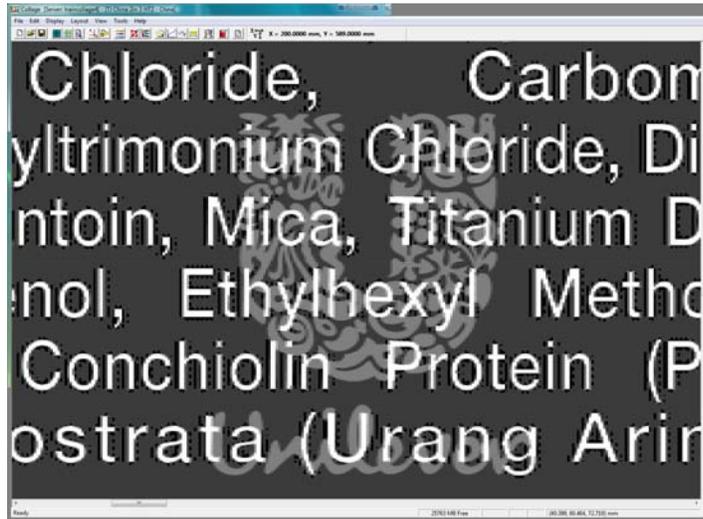


Edge View Resolution
Hybrid edging
LW Threshold = 98
Threshold Difference = 30



Specialty View
Hybrid edging
LW Threshold = 98
Threshold Difference = 30

FYI – You may wonder the reason for the Threshold Difference = 30. This watermark image and the previous Crescent images are in the same image. While increasing the Threshold Difference from 30 to 40 will have little effect on the crescent moon, it would have a large effect on the watermark, as shown in the next images.

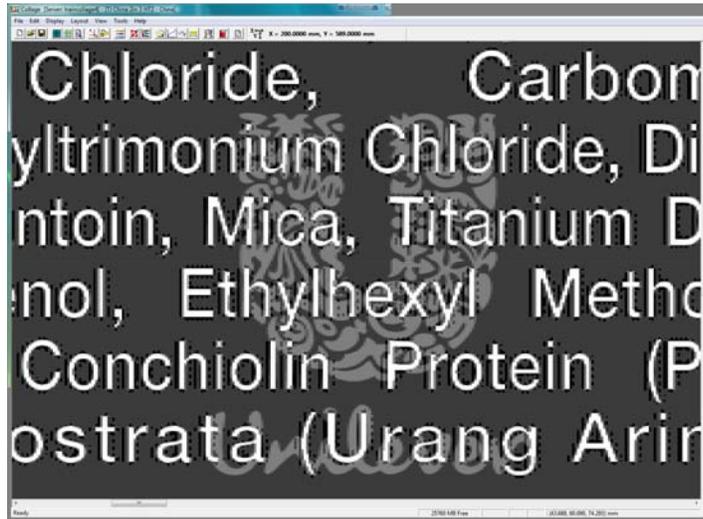


Edge View Resolution
Hybrid edging
LW Threshold = 98
Threshold Difference = 40



Specialty View
Hybrid edging
LW Threshold = 98
Threshold Difference = 40

FYI – Remember, the darkest tone (background) is 100%.
 The watermark tone density is 66%.
 LW Threshold = 98% – This means there is an edge between the two tones.
 Threshold Difference = 40% – The difference between the two tones is not enough for Hybrid edging to be applied.
 Compare the Edge View above with the Edge View on the previous page. You can clearly see edging on the 30% Threshold Difference image and none on the 40% image.



Edge View Resolution
Hybrid edging
LW Threshold = 32
Threshold Difference = 30



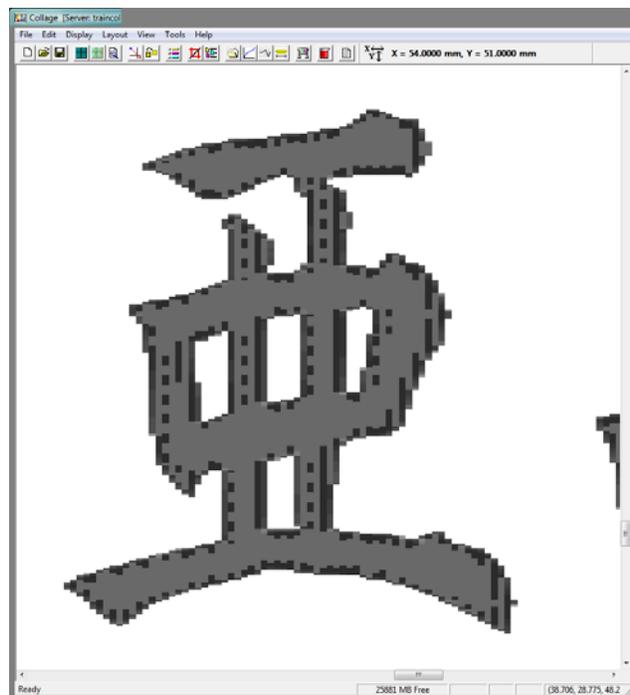
Specialty View
Hybrid edging
LW Threshold = 32
Threshold Difference = 30

FYI – The darkest tone (background) is 100%.
 The watermark tone density is 66%.
 LW Threshold = 32% – Defines edges as points where tones go from above 32% to below 32% or from below 32% to above 32%.
 Since the watermark and darkest tone are above 32%, no edging occurs between the two.

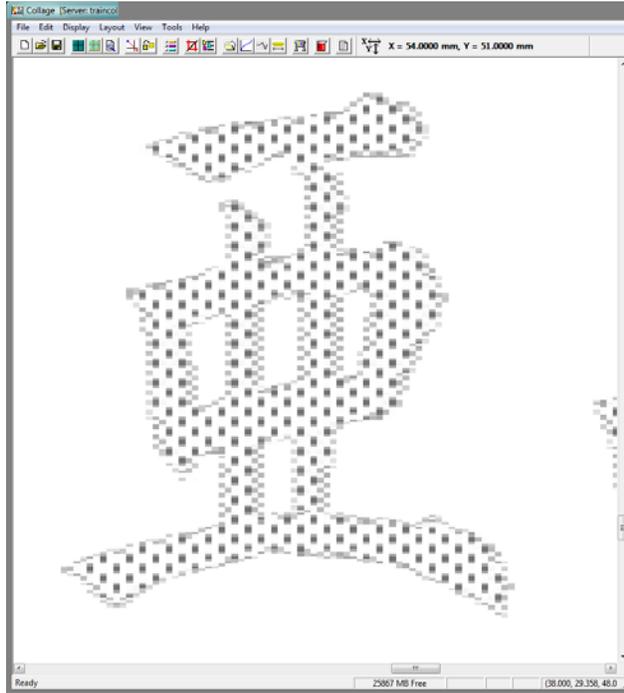
Tone linework on white background



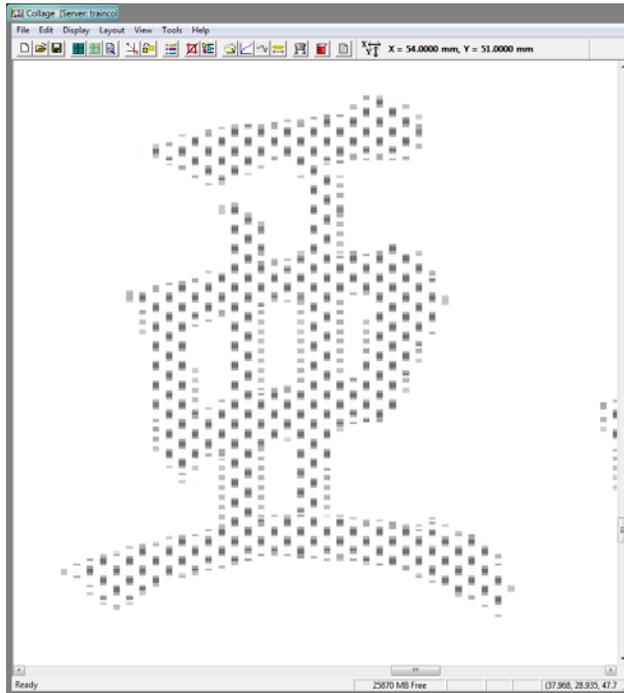
Prepress Resolution
Original Artwork
Text at 50%
Background CT at 0%



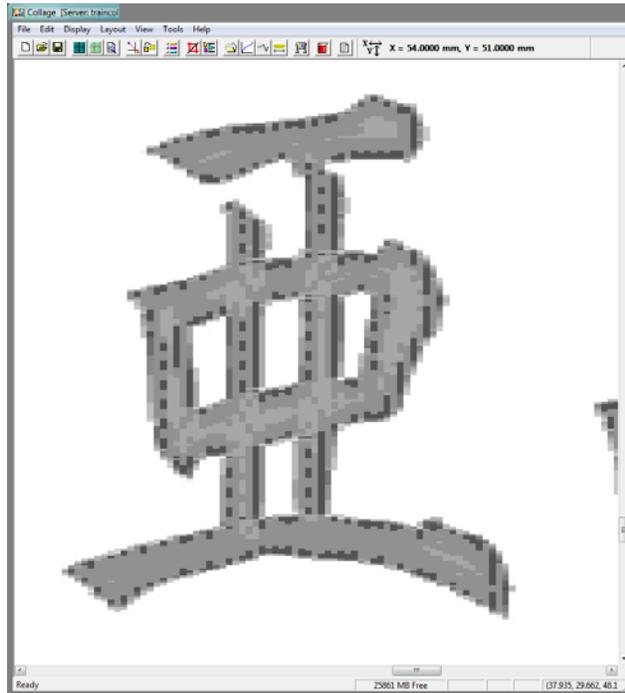
Edge View
Hybrid Edging
LW Threshold = 50
Threshold Difference = 0
Hybrid Edge Enhancement = Off



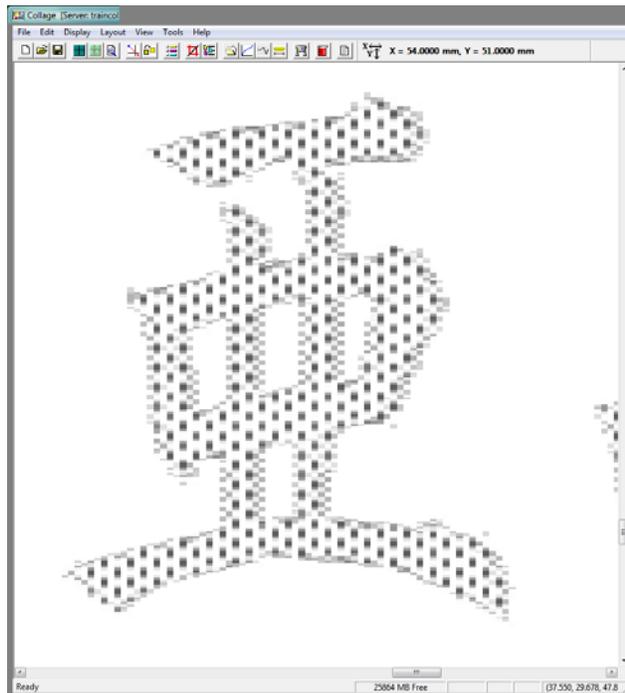
Specialty Resolution
Fine Quality
LW Threshold = 50
Threshold Difference = 0
Hybrid Edge Enhancement = Off



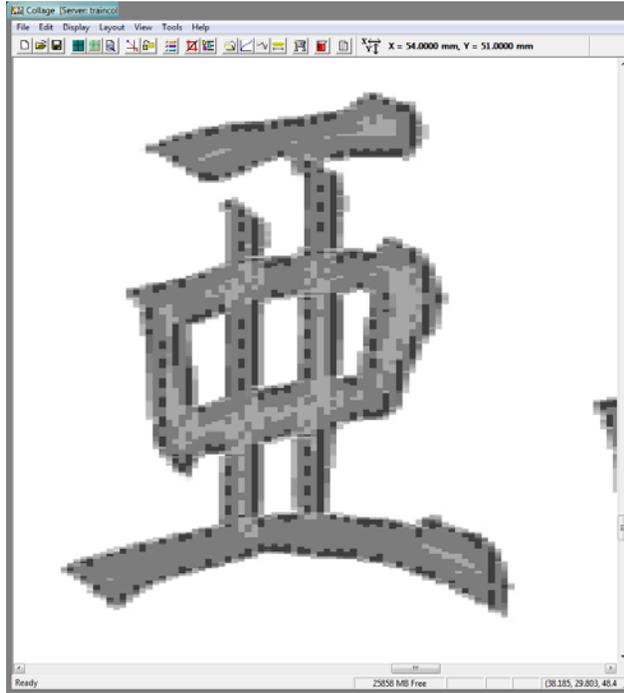
Specialty Resolution
Normal Quality
LW Threshold = 50
Threshold Difference = 0
Hybrid Edge Enhancement = Off



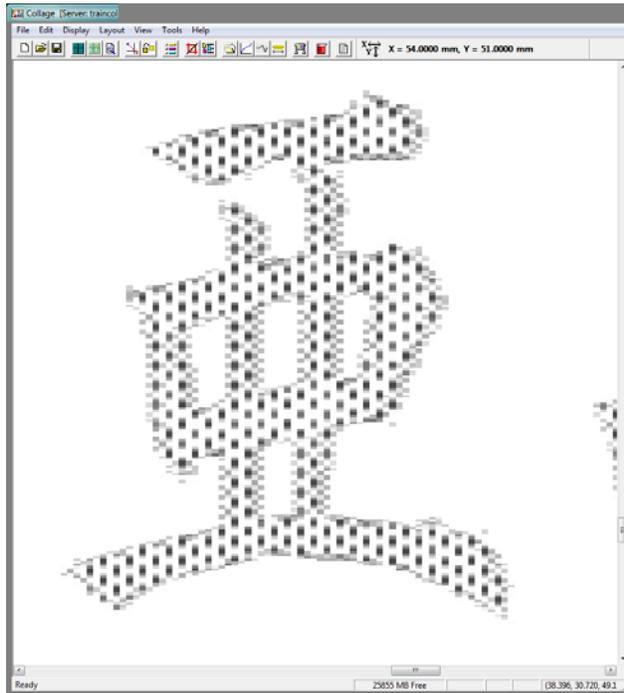
Edge View
 Hybrid Edging
 LW Threshold = 50
 Threshold Difference = 0
 Hybrid Edge Enhancement = On
 Type = Add
 Cells = 1
 Density = 10
 Area = LW



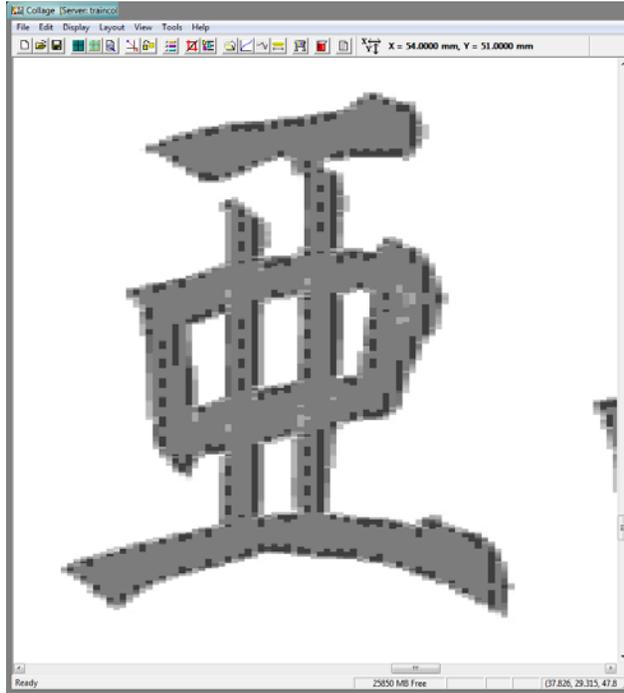
Specialty Resolution
 Fine Quality
 LW Threshold = 50
 Threshold Difference = 0
 Hybrid Edge Enhancement = On
 Type = Add
 Cells = 1
 Density = 10
 Area = LW



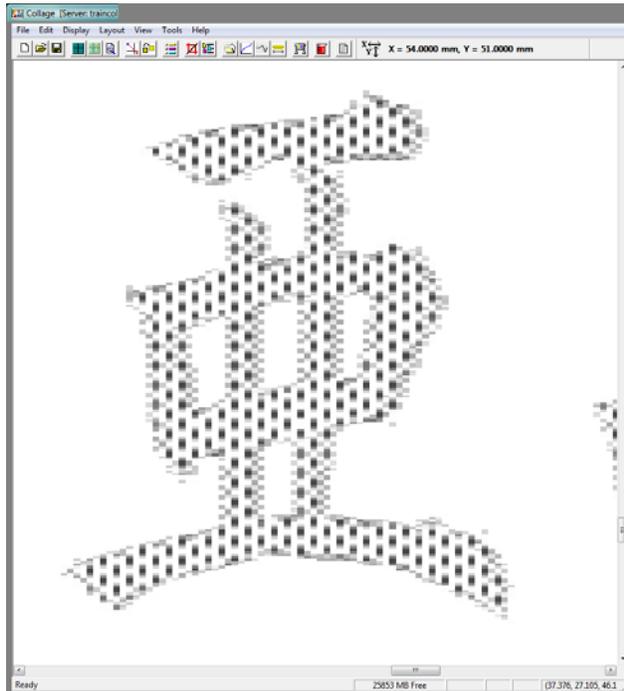
Edge View
 Hybrid Edging
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 1
 HyEE Density = 20
 HyEE Area = LW



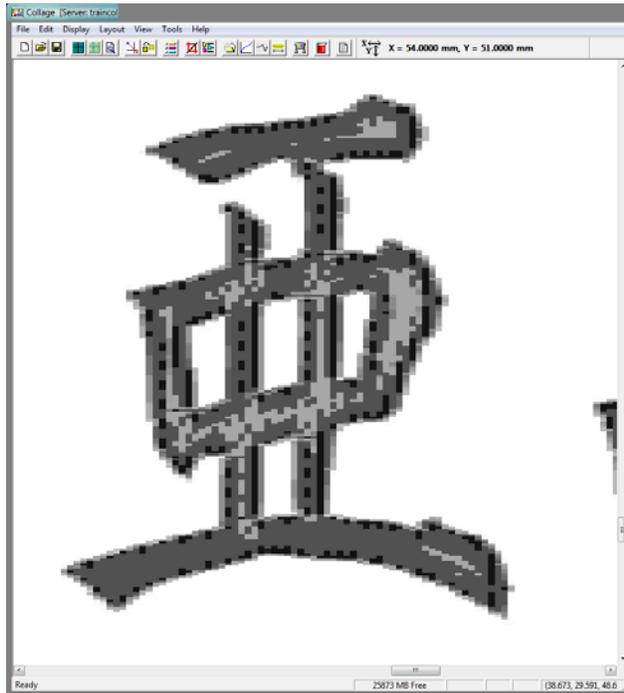
Specialty Resolution
 Fine Quality
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 1
 HyEE Density = 20
 HyEE Area = LW



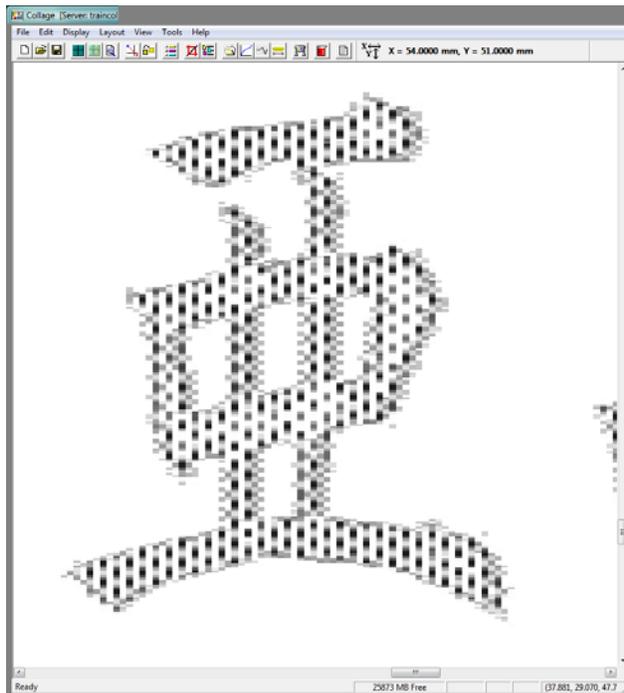
Edge View
 Hybrid Edging
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 2
 HyEE Density = 20
 HyEE Area = LW



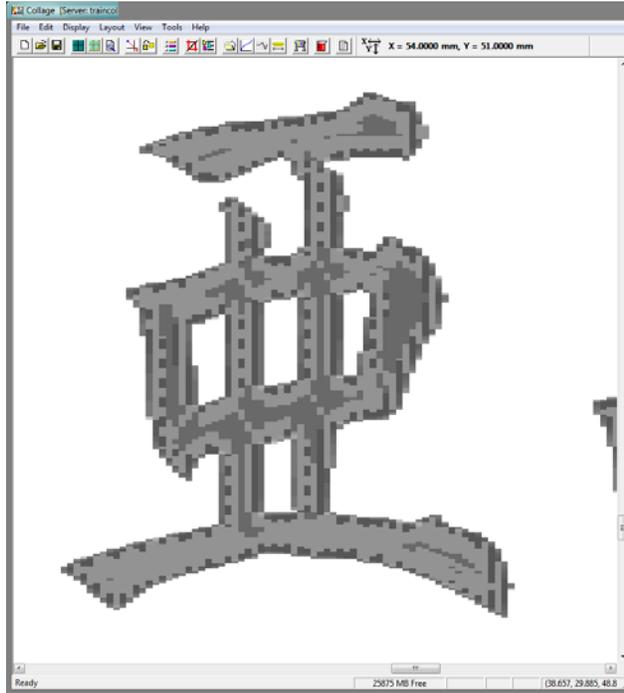
Specialty Resolution
 Fine Quality
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 2
 HyEE Density = 20
 Area = LW



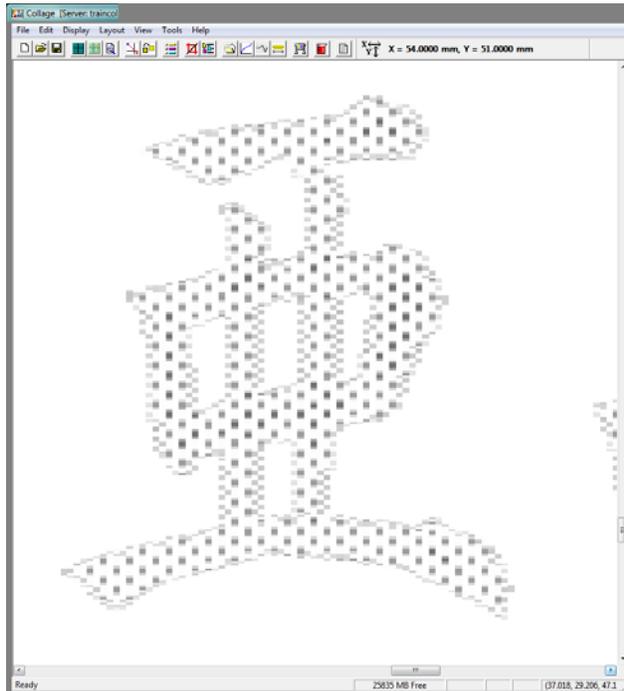
Edge View
 Hybrid Edging
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 1
 HyEE Density = 40
 HyEE Area = LW



Specialty Resolution
 Fine Quality
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Add
 HyEE Cells = 1
 HyEE Density = 240
 Area = LW

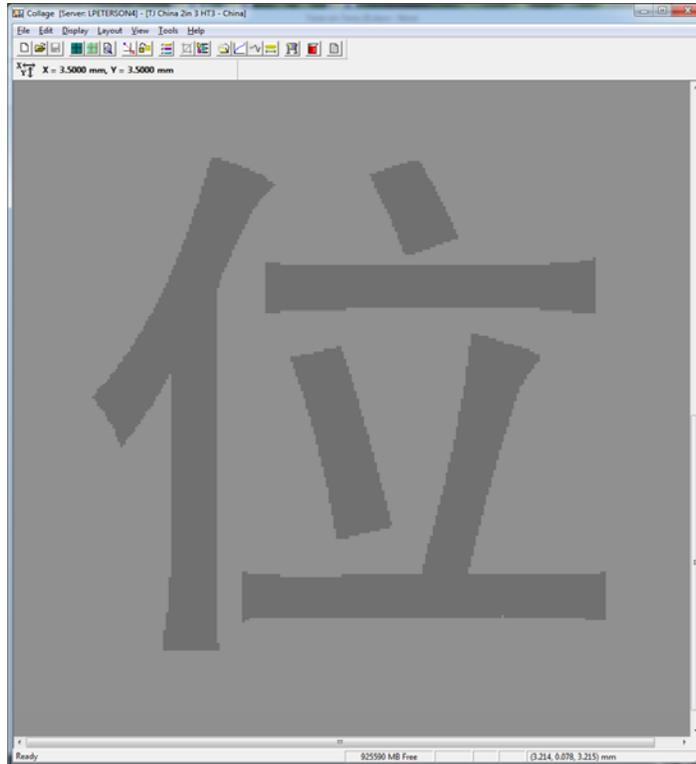


Edge View
 Hybrid Edging
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Subtract
 HyEE Cells = 1
 HyEE Density = 20
 HyEE Area = LW

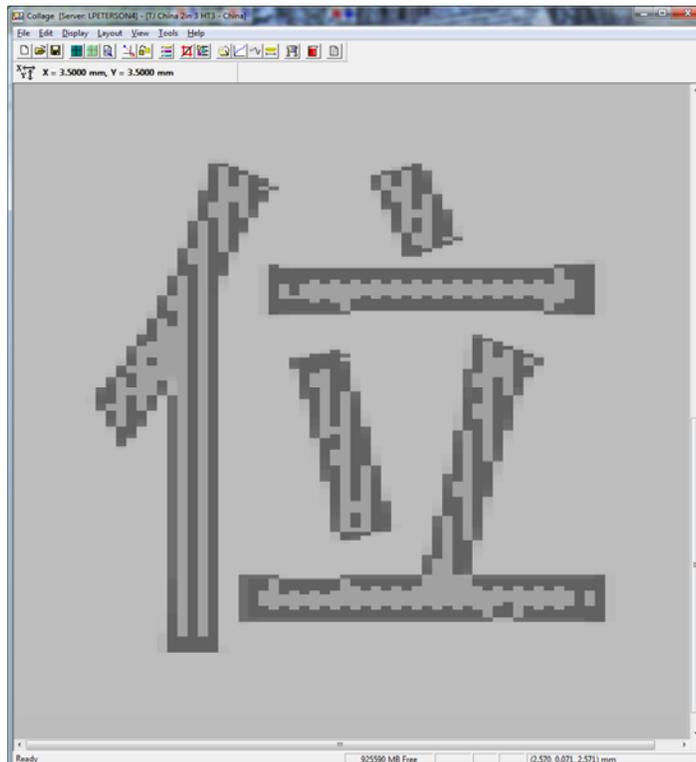


Specialty Resolution
 Fine Quality
 LW Threshold = 50
 Threshold Difference = 0
 HyEE Type = Subtract
 HyEE Cells = 1
 HyEE Density = 20
 HyEE Area = LW

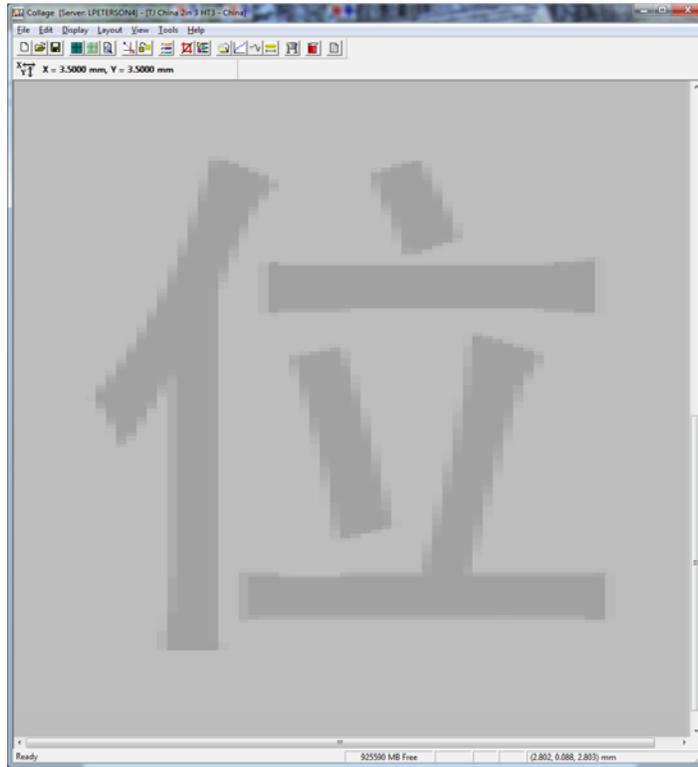
Tone linework on tone background



Prepress Resolution
Original Artwork
Text at 56%
Background CT at 44%



Edge View
Hybrid edging
Text at 56%
Background CT at 44%
LW Threshold = 50
Threshold Difference = 0
HyEE = Off
Edging takes place because the Text (56%) is greater than the LW Threshold (50%).
FYI – The Threshold Difference = 0 is the actual setting for this job. Temporarily setting the Threshold Difference = 50 can make it easier to see the effect of HyEE. Following images may have this done for clarity.

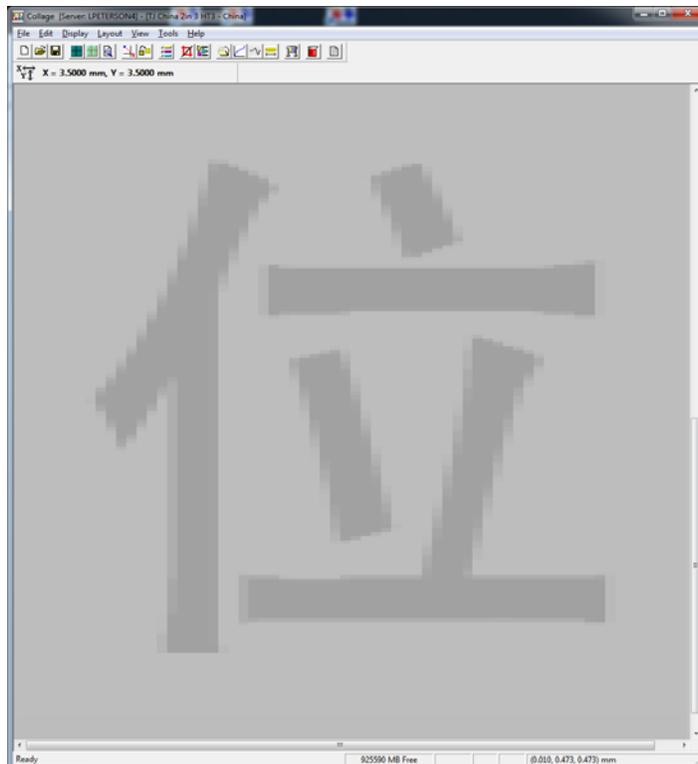


Edge View
Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Off

Threshold Difference at 50%
turns off Hybrid edging
because no edge difference
reaches that level.

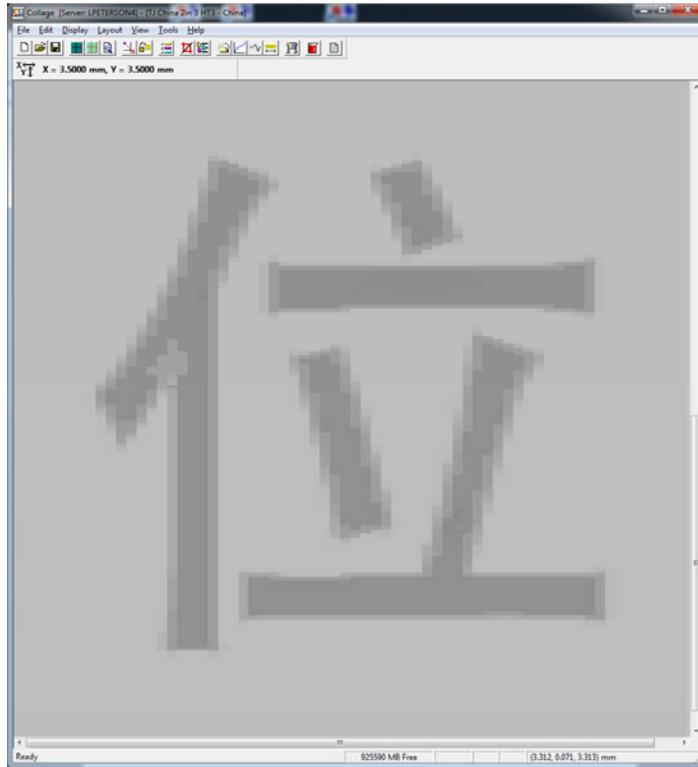


Edge View
Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 10
HyEE Area = LW

Min Diff is set to 10 to create
a 10% difference in the edge.
Because the text is 56% and
the CT is 44%, a 12%
difference already exists so
no change occurs.

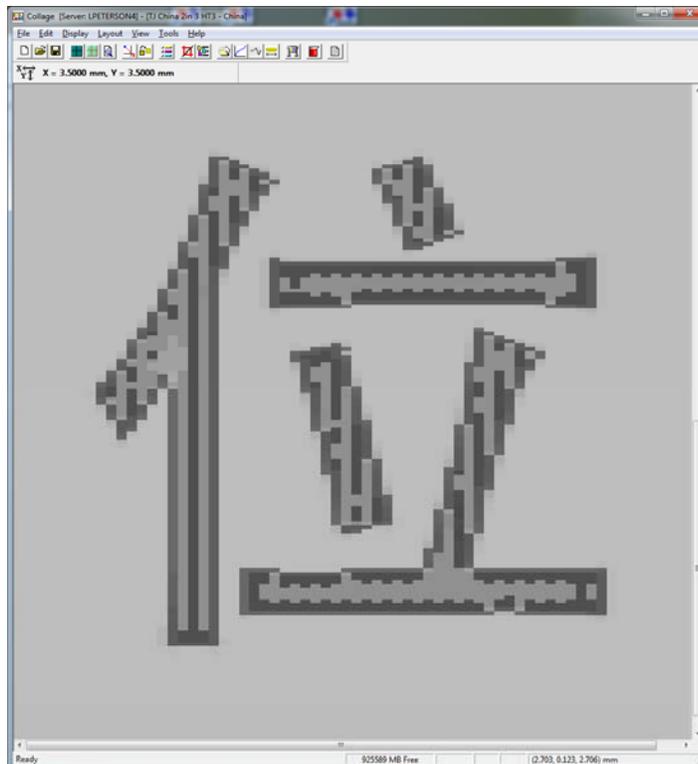


Edge View Resolution
Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW

With the Min Diff ON and Density set to 20, Hybrid must increase the edge difference from the current 12%. The text is INCREASED in density from 56% to 64% to achieve a 20% difference.

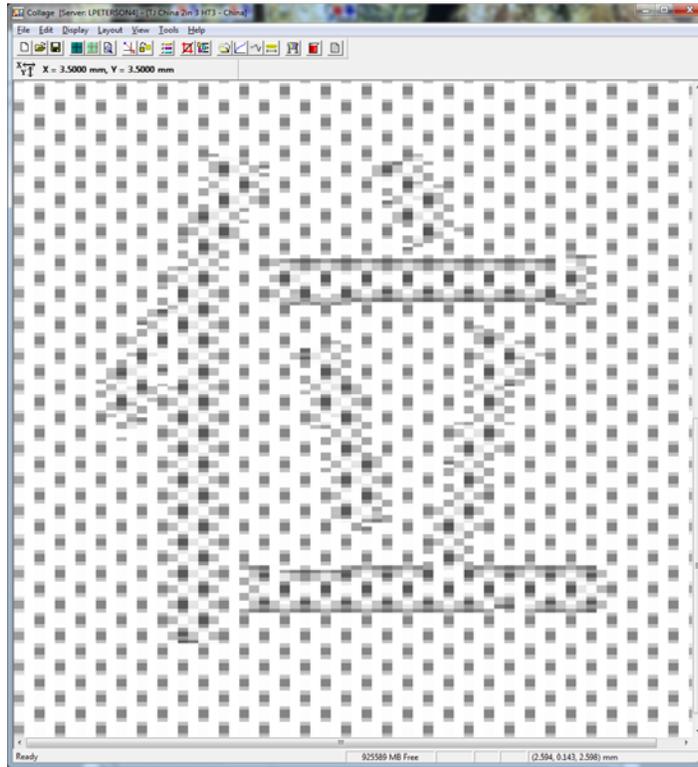


Edge View
Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 0
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW

A second view, but with the Threshold Difference set to 0 to increase the Hybrid effects. Like above, the text is increased to achieve a 20% difference in tone value with the background CT.

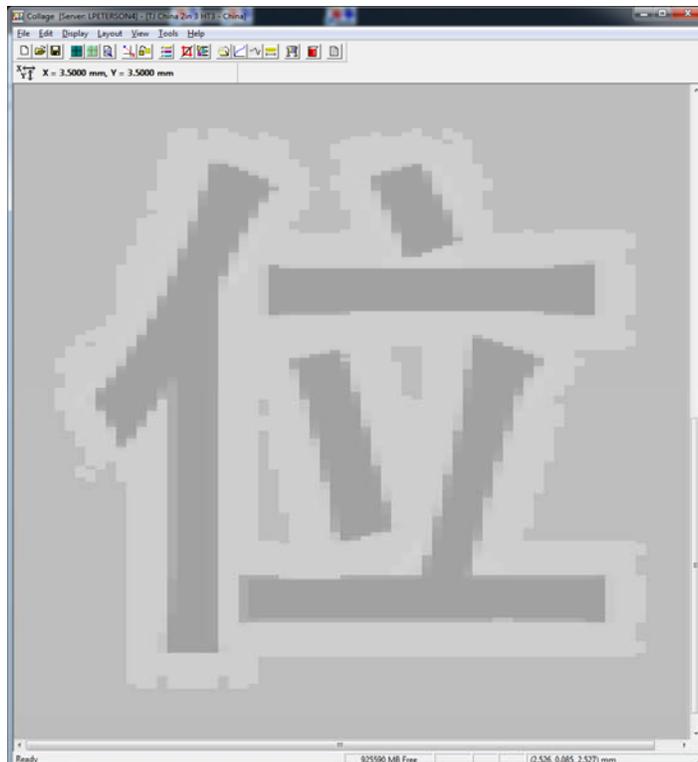


Specialty Resolution
Fine Quality

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 0
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW

A third view, this in Specialty Resolution. Like above, the text is increased to achieve a 20% difference in tone value with the background CT.

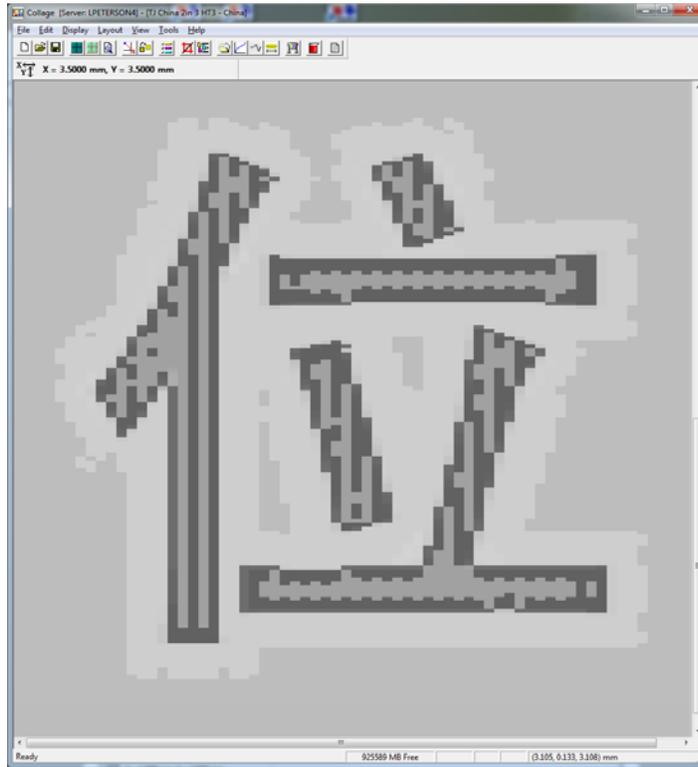


Edge View
Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = CT

This example shows the Min Diff affecting the CT rather than LW. Here Hybrid DECREASES the CT from 44% to 36% to achieve a 20% difference.



Edge View

Hybrid edging

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

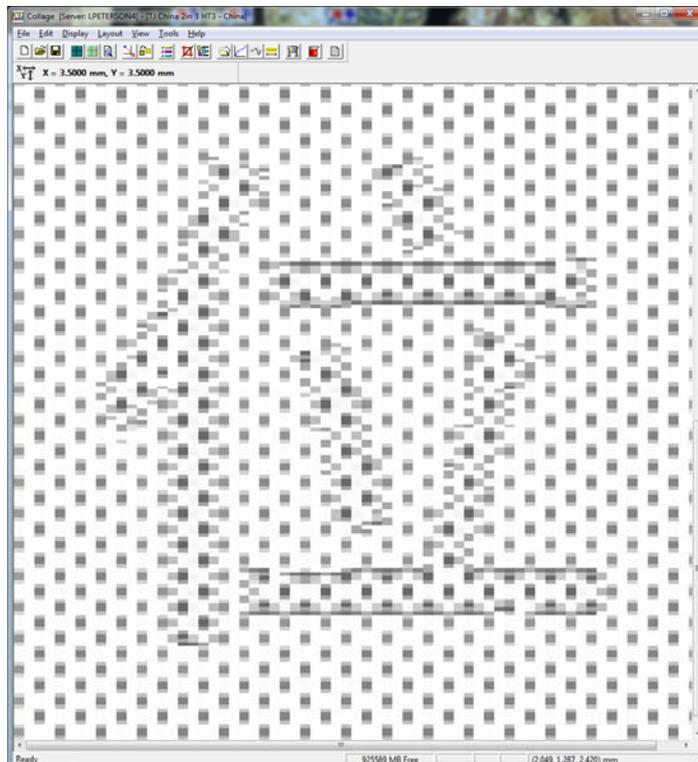
HyEE Type = Min Diff

HyEE Cells = 1

HyEE Density = 20

HyEE Area = CT

A second view, but with the Threshold Difference set to 0 to increase the Hybrid effects. Like above, the CT is decreased to achieve a 20% difference in tone value with the text.



Specialty Resolution

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

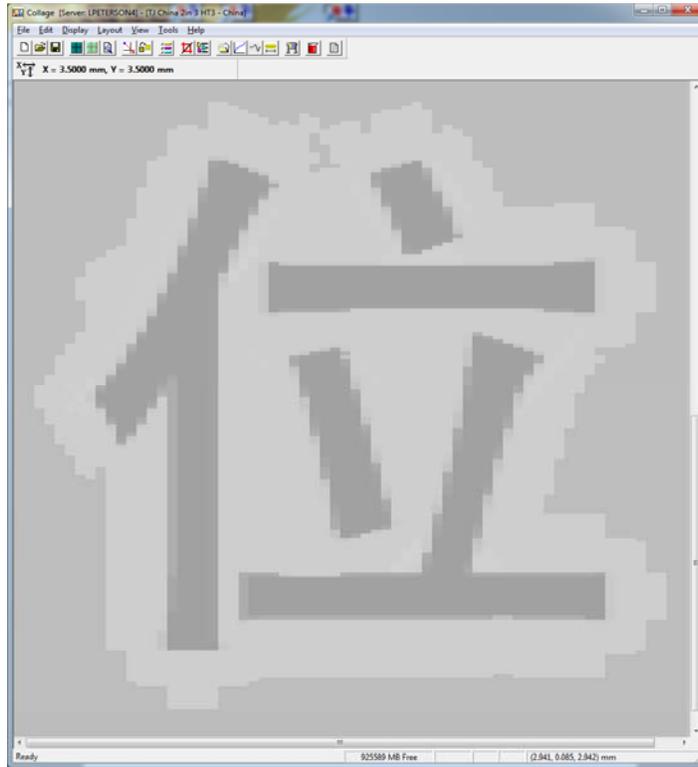
HyEE Type = Min Diff

HyEE Cells = 1

HyEE Density = 20

HyEE Area = CT

A third view, this in Specialty Resolution. Like above, the CT is decreased to achieve a 20% difference in tone value with the text.



Edge View

Hybrid edging

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 50

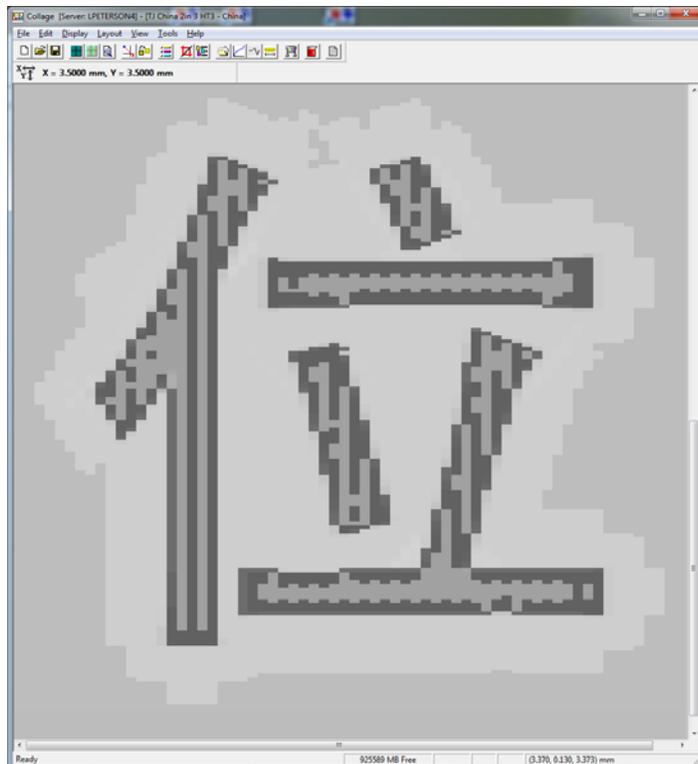
HyEE Type = Min Diff

HyEE Cells = 2

HyEE Density = 20

HyEE Area = CT

In this example the Cells are set to 2. This expands the area where the CT is decreased.



Edge View

Hybrid edging

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

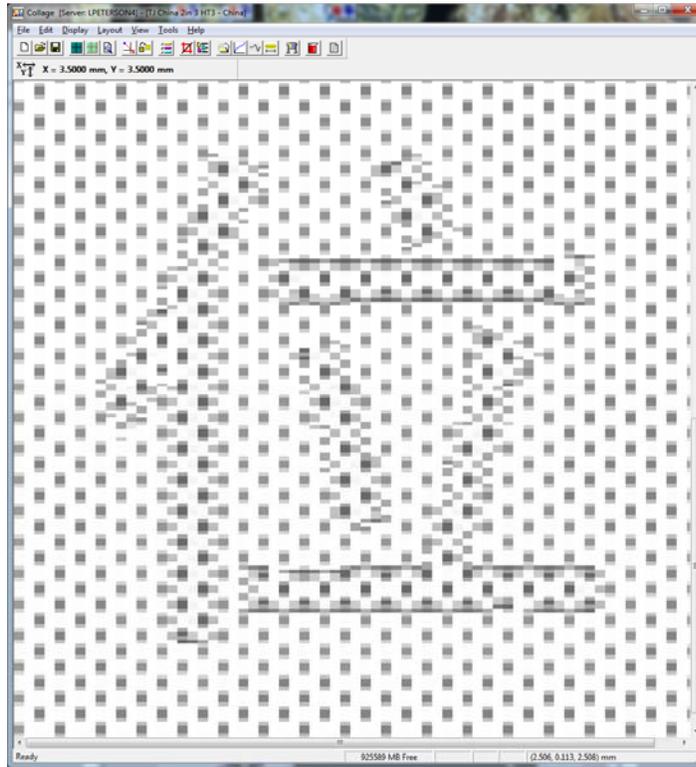
HyEE Type = Min Diff

HyEE Cells = 2

HyEE Density = 20

HyEE Area = CT

A second view, with the Threshold Difference set to 0. Like above, the CT is decreased 2 cells from the edge.

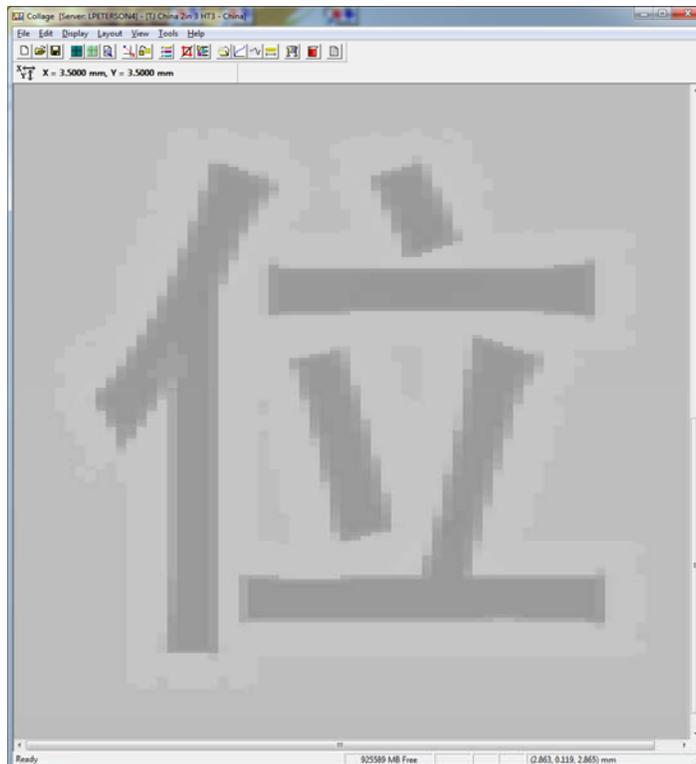


Specialty Resolution

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 0
HyEE Type = Min Diff
HyEE Cells = 2
HyEE Density = 20
HyEE Area = CT

The view in Specialty Resolution. Like above, the CT is decreased for 2 cells to achieve a 20% difference in tone value with the text.



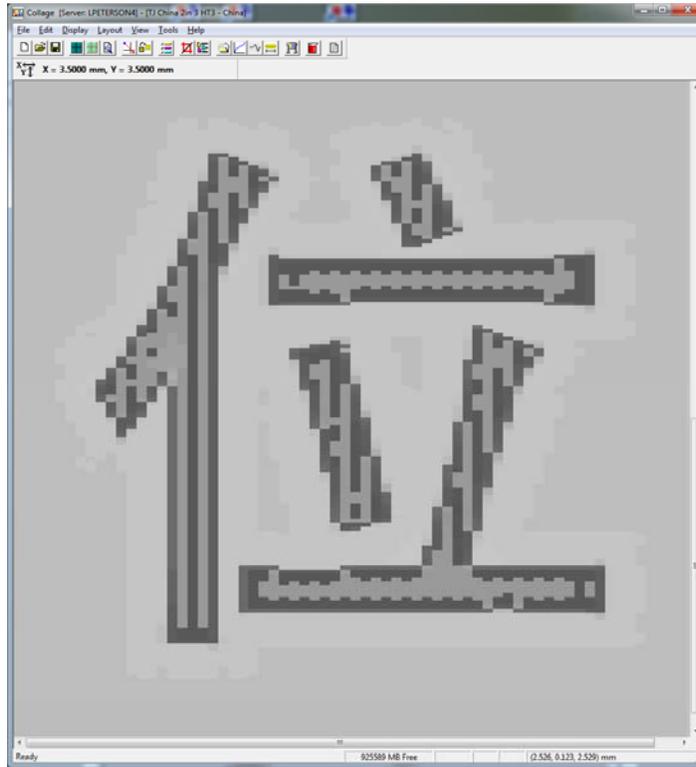
Edge View

Hybrid edging

Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW & CT –
Change is split evenly
between LW & CT.

Here the Area is changed to LW & CT. This splits the effect evenly between the text and CT. Text is increased 4% to 60% while CT is decreased by 4% to 40%. This achieves the Minimum Difference of 20% between tones.



Edge View

Hybrid edging

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

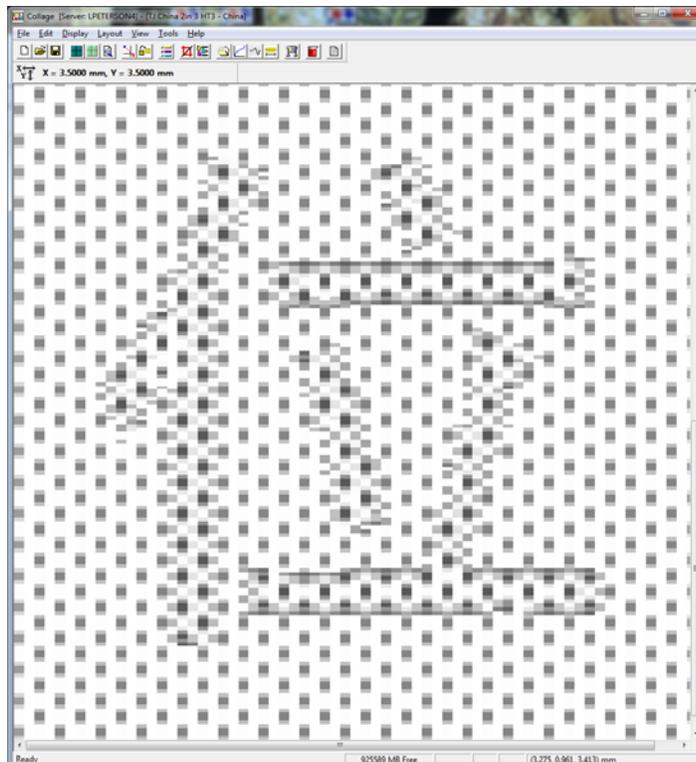
HyEE Type = Min Diff

HyEE Cells = 1

HyEE Density = 20

HyEE Area = LW & CT

With Threshold Difference set to zero, the Hybrid effect is easily seen in both the text and CT areas.



Specialty Resolution

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

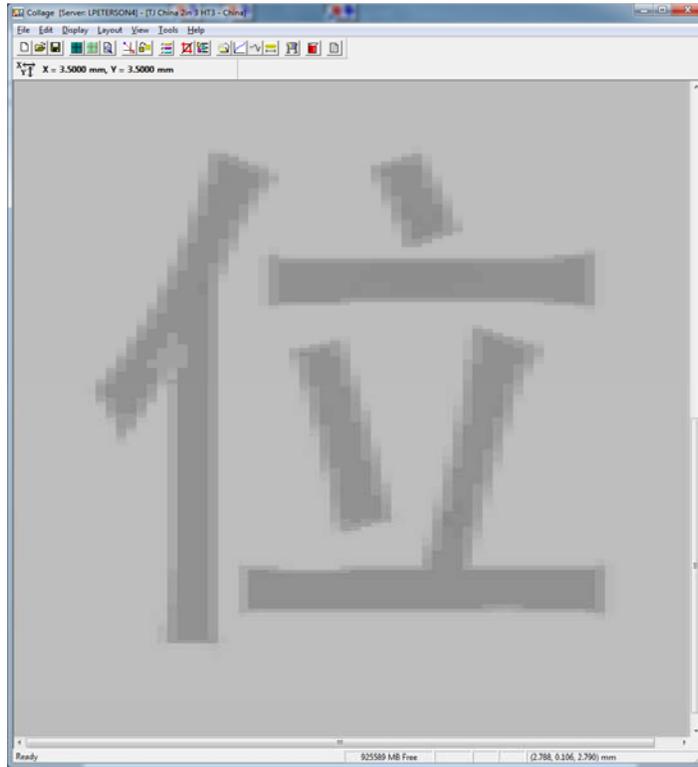
HyEE Type = Min Diff

HyEE Cells = 1

HyEE Density = 20

HyEE Area = LW & CT

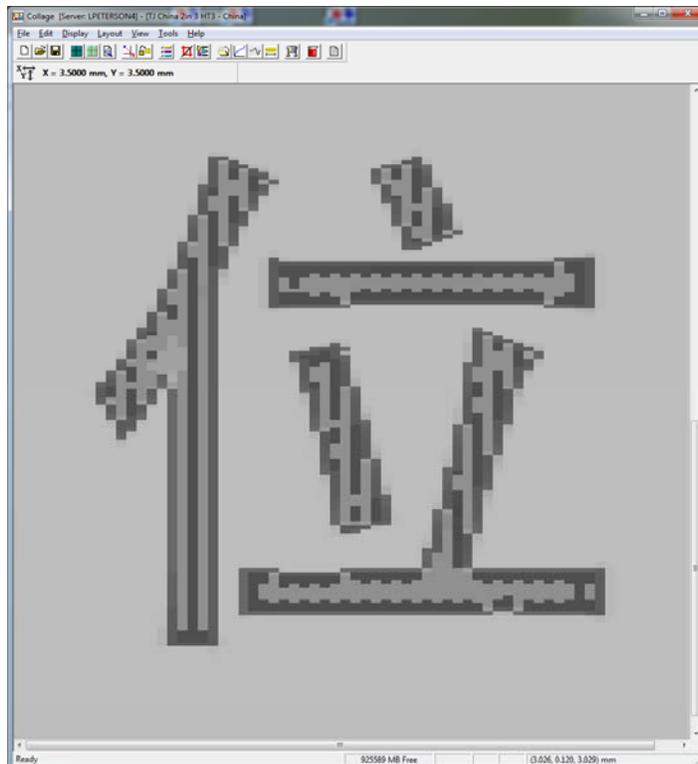
A third view showing the subtle effect of reducing the CT by 4% and increasing the LW by 4%. It is difficult to see looking at the image. Moving the cursor over the cell centers reveals the slight increase or decrease.



Edge View
Hybrid edging
Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 50
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW | CT

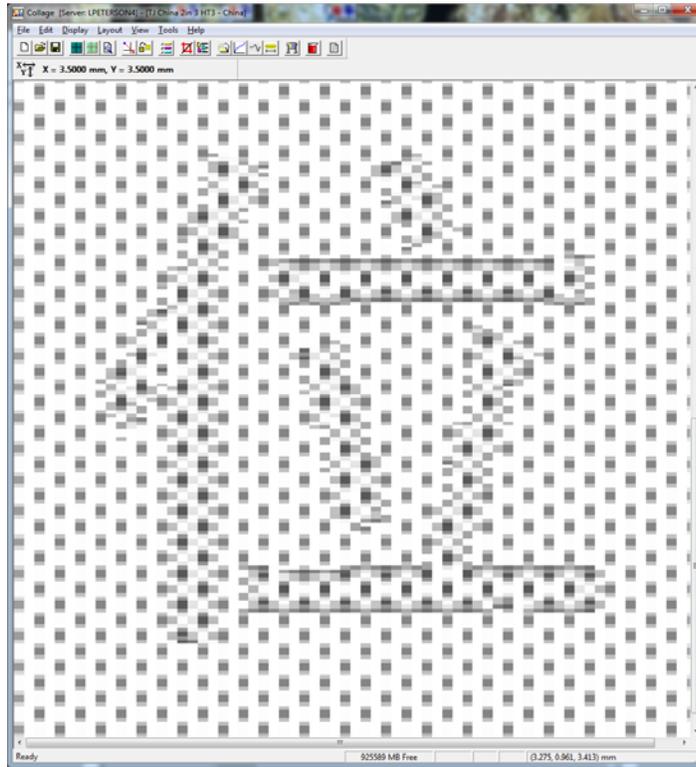
An example using Area LW | CT. This increases the text until it reaches a maximum to 100%, and then subtracts any remaining amount from the CT. In this example, because the text is only 56%, all 8% of the Density is added to the text and nothing is subtracted from the CT.



Edge View
Hybrid edging
Text at 56%
Background CT at 44%

LW Threshold = 50
Threshold Difference = 0
HyEE Type = Min Diff
HyEE Cells = 1
HyEE Density = 20
HyEE Area = LW | CT

The LW | CT example with Threshold Difference set to 0.



Specialty Resolution

Text at 56%

Background CT at 44%

LW Threshold = 50

Threshold Difference = 0

HyEE Type = Min Diff

HyEE Cells = 1

HyEE Density = 20

HyEE Area = LW | CT

The Specialty view of LW | CT example.