Layout Photography
Seeking the Look of the Prototype

Ed Merrin
Diamond Rails Forever
NMRA Pacific Coast Region Convention
Sacramento, California
May 4, 2019

Types of Model Railroad Photography

- Bird’s eye or Google Earth shots.
- People and model trains (includes Op Sessions).
- Layout visits - “Legacy Pictures.”
- Closeups of individual models or techniques.
- Replicate look of prototype scenes.

Today's Agenda

- Examine prototype photos, discuss how to emulate them with model subjects.
    - Composition issues.
    - Vertical perspective.
    - Depth of field.
- Role of smartphone cameras.
- Techniques and Software for Focus Stacking
    - iPhone vs. DSLR comparison
    - Software comparisons.
- Sample photos with critiques.

Train As Part of Scenery

Ted Benson

K LINE
BNSF
BNSF 48389
7944

Down on the Ground

Tracks Share the Image

MILWAUKEE
ROAD

Compositional Elements to Replicate

- Low Vertical Angle of View
- Wide Perspective
- Tracks Involved in Composition
- Depth of Field

Cameras

- Fixed Lens
  - Point and shoot, compact.

  - Smartphone
  - Bridge/Superzoom

- Interchangable Lens
  - Mirrorless

  - DSLR

Smartphone Cameras

- Lens low to “ground.”
- Small, fits within scenes.
- Close focusing.
- Amazing miniaturization.
- Shallow depth of field due to fixed wide aperture.
- Control of focus point and focal length imprecise;
- Limited manual controls (e.g. exposure mode).
- Files lower quality.

DSLRs and Similar Interchangeable Lens Cameras

- Precise manual focusing
- Aperture is adjustable for greater depth of field.
- Can shoot raw, more color depth, higher resolution.
- Large, relatively bulky.
- Higher “off the ground.”
- Does not focus as close.

Height of Lens Center Determines Vertical Perspective

Approximate Height (scale feet) From Layout Surface to Lens Center

	O	S	HO	N
DSLR	**6.3**	8.4	11.4	21.0
iPhone Wide Angle	2.2	2.4	3.3	**6.1**
iPhone on Stand	3.3	3.9	**5.5**	9.8

Focus Stacking Nuts and Bolts

- Macro and Landscape
- Layout Shots Closer to Macro but Different
    - Preserve focus over a deep area
    - Selective focus not a key technique
- Basic “Workflow”
    - Select scene.
    - Compose to emphasize main subject and select any (optional) framing components. Leave **space around edges** for artifact cropping.
- Choose number and location of focus points. Important to **overlap** focus fields. Smartphones require more.
- Set camera for desired focal length and (if possible) aperture.
- Using tripod or tripod equivalent and remote shutter release take shots at each focus point.
- Apply focus stacking software, crop as necessary.

Definitions etc.

Lens focal lengths are expressed in equivalents to a 35 mm film camera.

All editing work, including focus stacking, is done with Photoshop unless otherwise specified.

All final images are if TIFF format.

“Landscape” type model shots shot with DSLR

f/36, 135mm

f/32, 62mm

WATER CO.
SWIFT
REFRIGERATOR
LINE
10000
Swift's
Premium
Hams
Finest Quality
DAIRY PRODUCTS
15291

f/36, 180mm

NORTHWESTERN PACIFIC
37
RADIO EQUIPPED
RUBBER DRAFT GEAR
C-30-1
STOP

f/32, 72mm

SLO-MO
VIDEO
PHOTO
PORTRAIT
HDR
1×
SOUTHERN PACIFIC

Camera Comparison
iPhone XR vs Nikon D750 with zoom

Same scene shot at lowest elevation from ground at two focal lengths:

- iPhone XR - 26mm, 39mm
- Nikon D750 - 28mm, 50mm

Each set at fixed aperture:

- iPhone XR - f/1.8
- Nikon D750 - f/22

Number of focus points:

- iPhone XR - 6
- Nikon D750 - 4

Setup for Demonstration/Comparison Shots

iPhone XR
26mm

ISO 160-250
1/60 sec

iPhone XR 26mm Processed by Photoshop

iPhone XR 26mm cropped

iPhone XR 39mm

ISO 200-250, 1/50-1/60 sec.

iPhone XR 39mm cropped

SOUTHERN PACIFIC
5602
DCC
Brakeman

26mm

SOUTHERN PACIFIC
5602
DCC
Brakeman

39mm

D750 at 28mm

28mm full frame

28mm half frame

D750 28mm cropped

ISO 200 f/22 3 sec.

D750 50mm

SOUTHERN PACIFIC
5602
SOUTHERN PACIFIC 142436
Brakeman
Brakeman
Brakeman

D750 50mm cropped

SOUTHERN PACIFIC
5602
REDWOOD
SOUTHERN PACIFIC
DCC
Brakeman

28mm

SOUTHERN PACIFIC
5602
REDWOOD
SOUTHERN PACIFIC
DCC
Brakeman

50mm

iPhone XR vs Nikon D750

Focus Stacking Software

Photoshop (and Photoshop Elements)
with Bridge or Lightroom

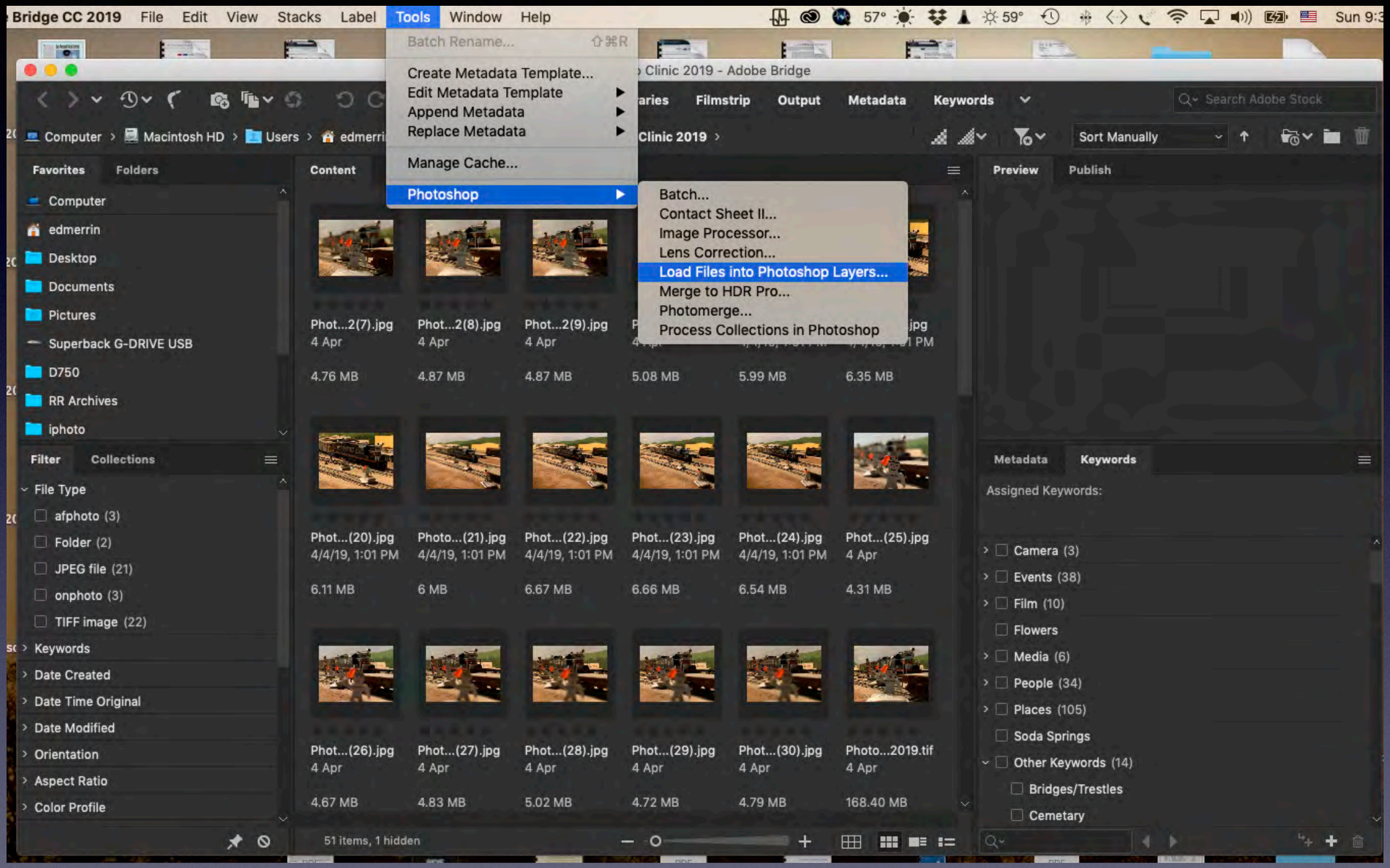
Helicon Focus

ON1 Photo Raw 2019

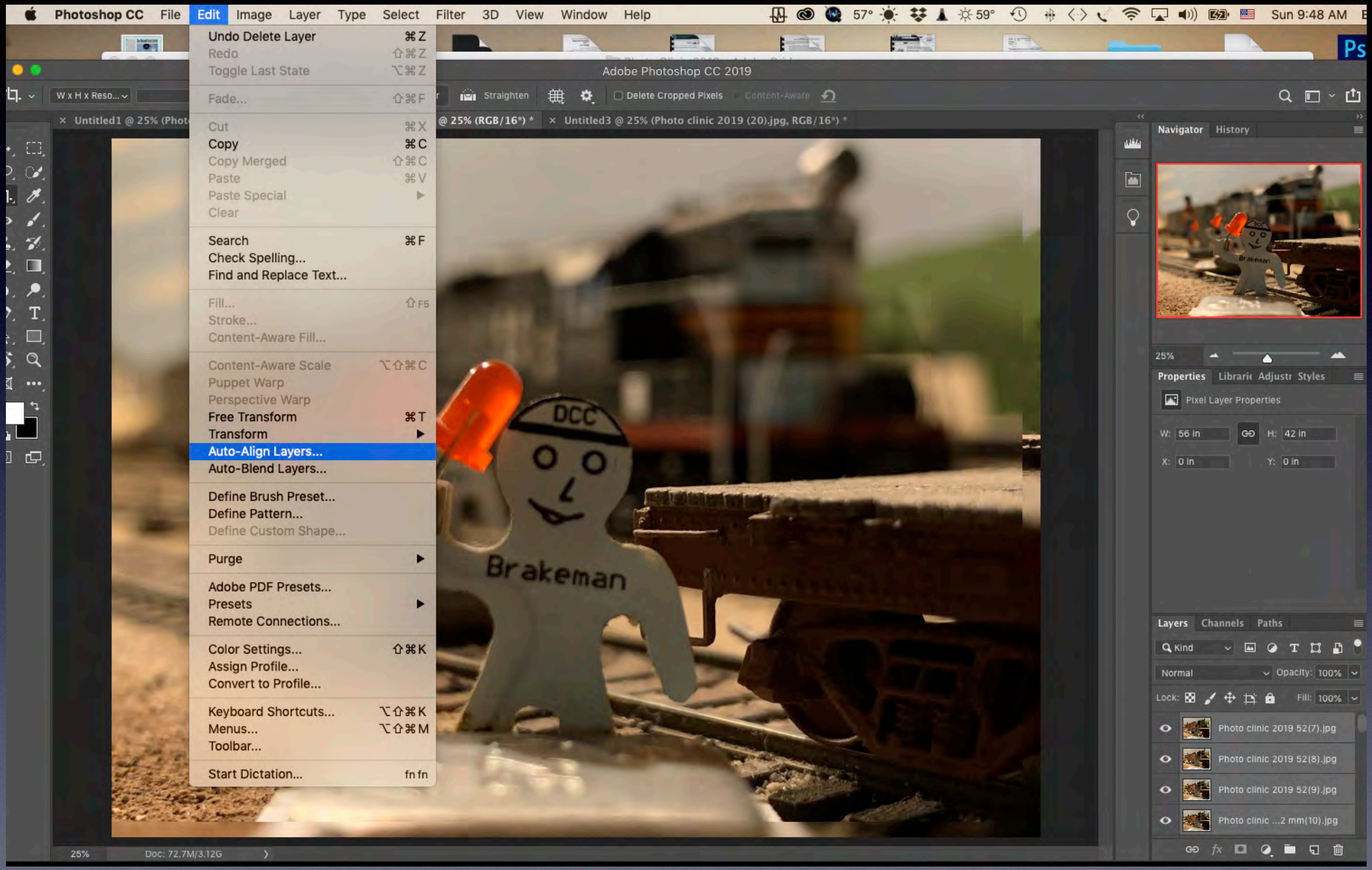
Affinity Photo

Zerene

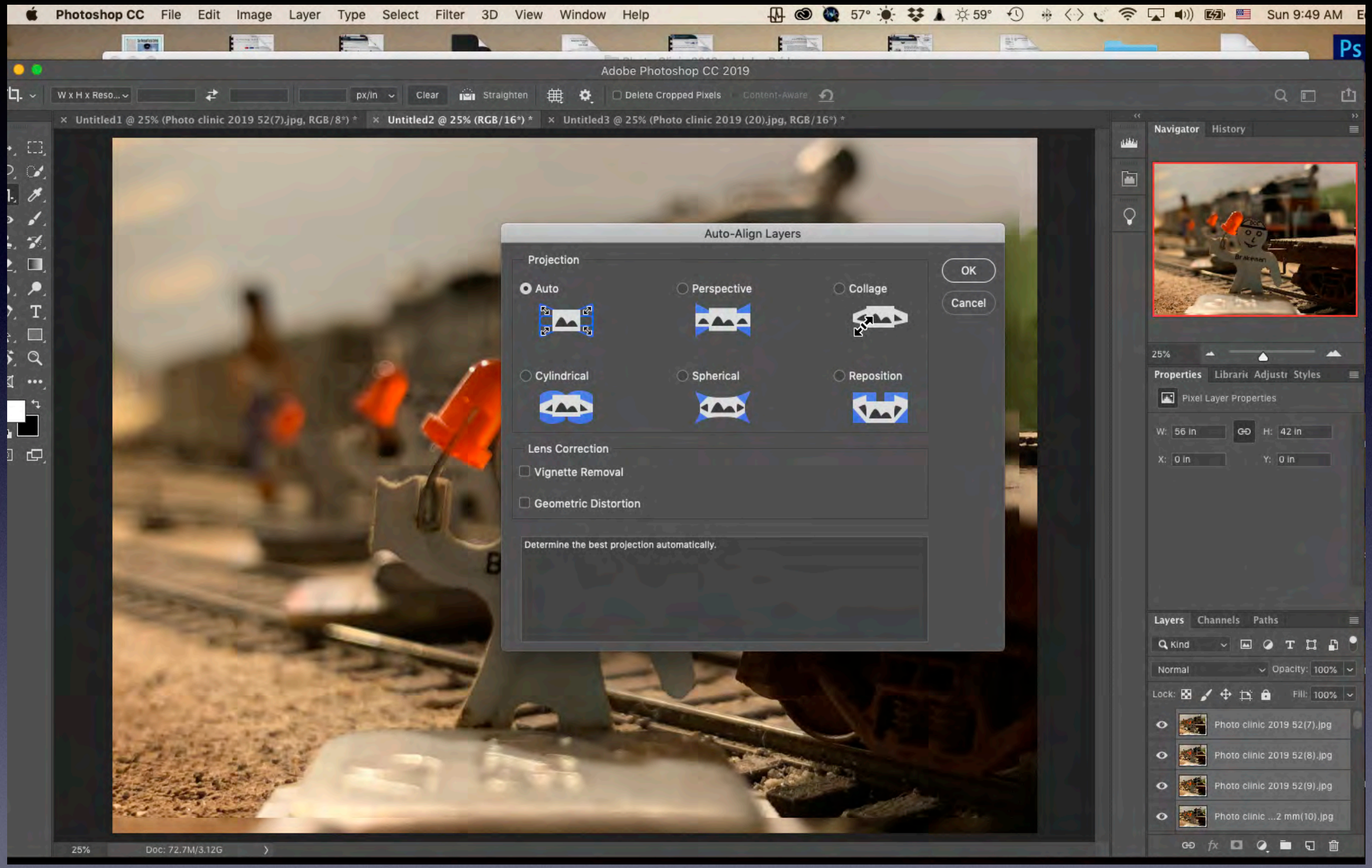
Bridge/Photoshop 1



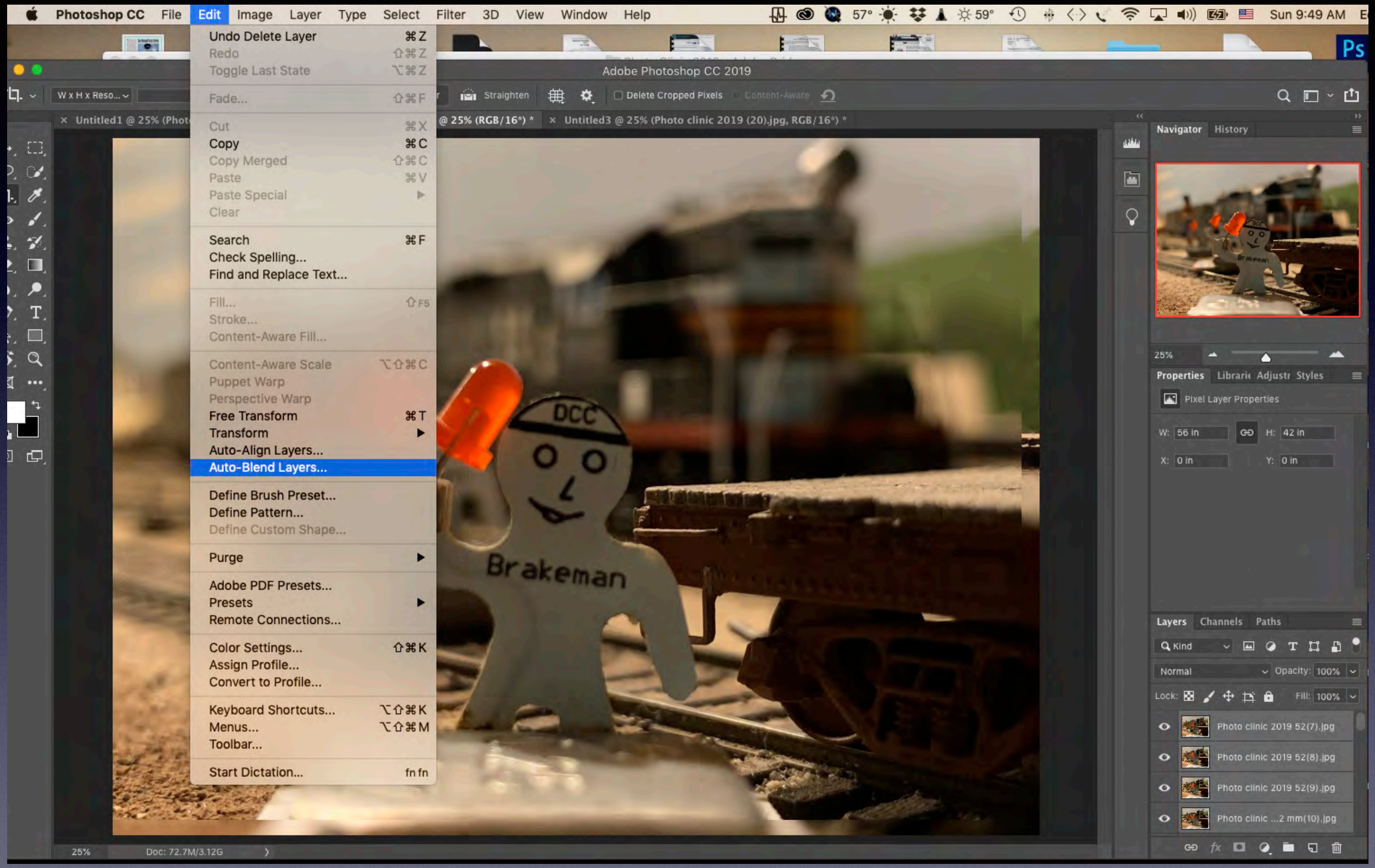
Bridge/Photoshop 2



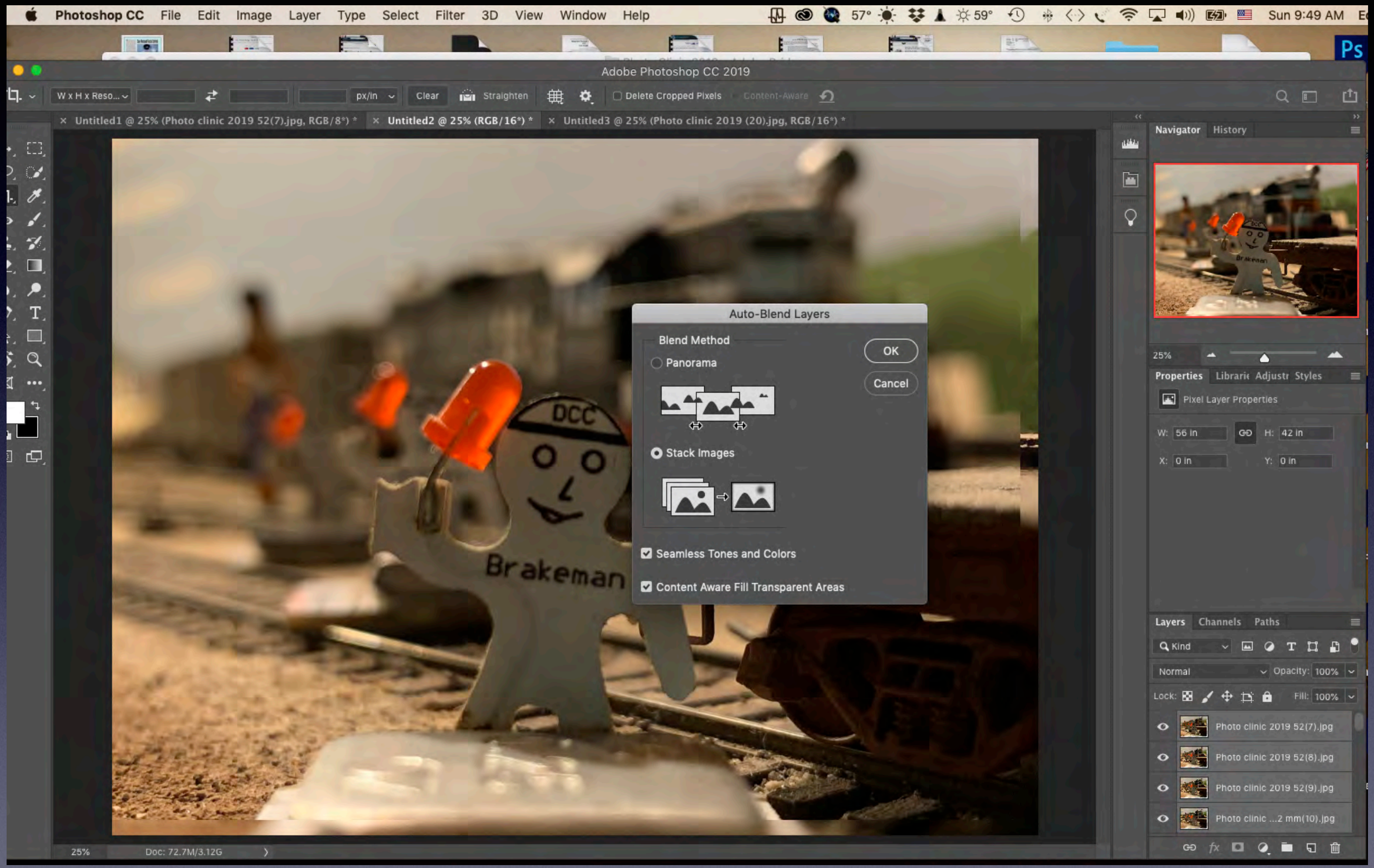
Bridge/Photoshop 3



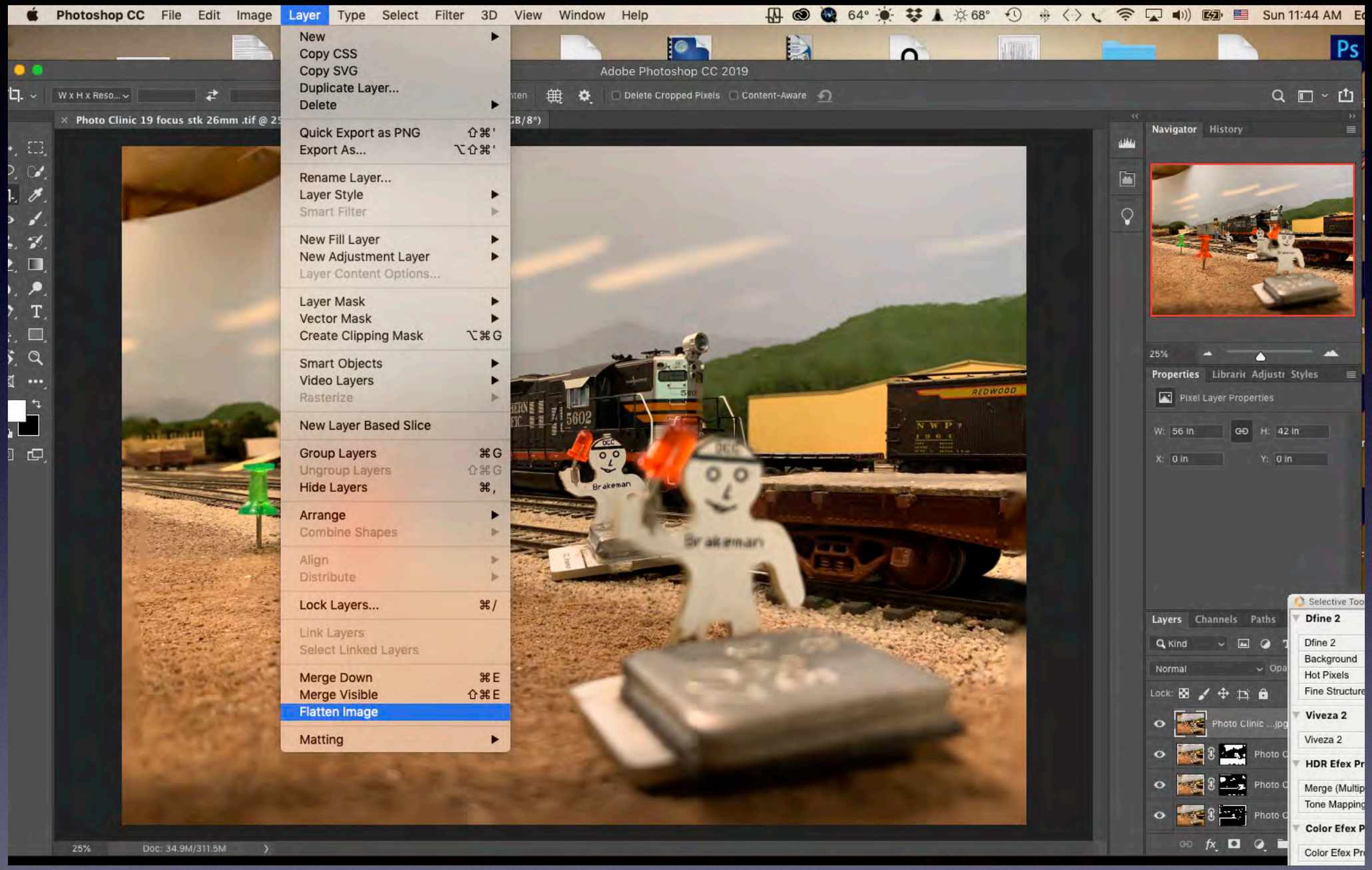
Bridge/Photoshop 4



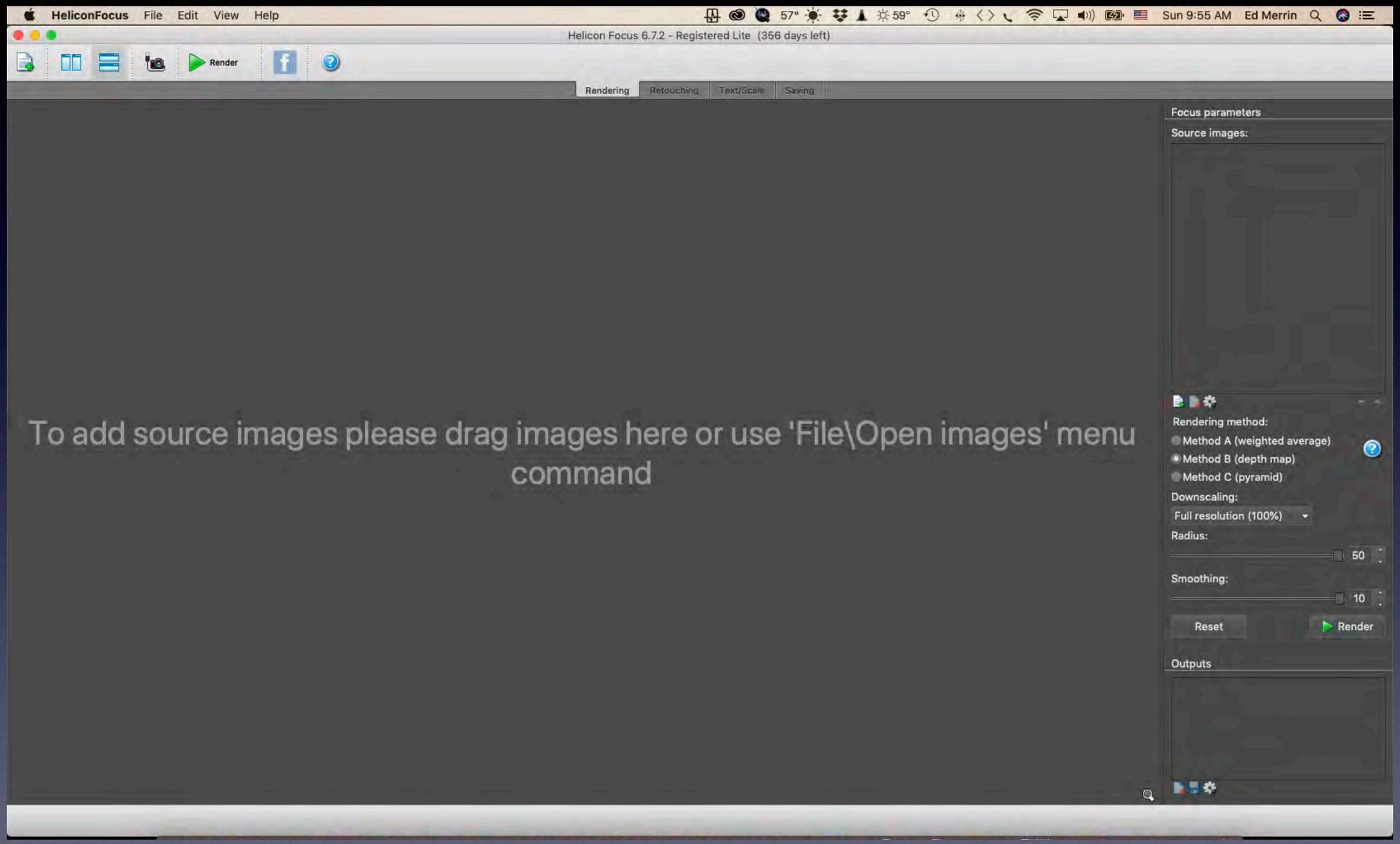
Bridge/Photoshop 6



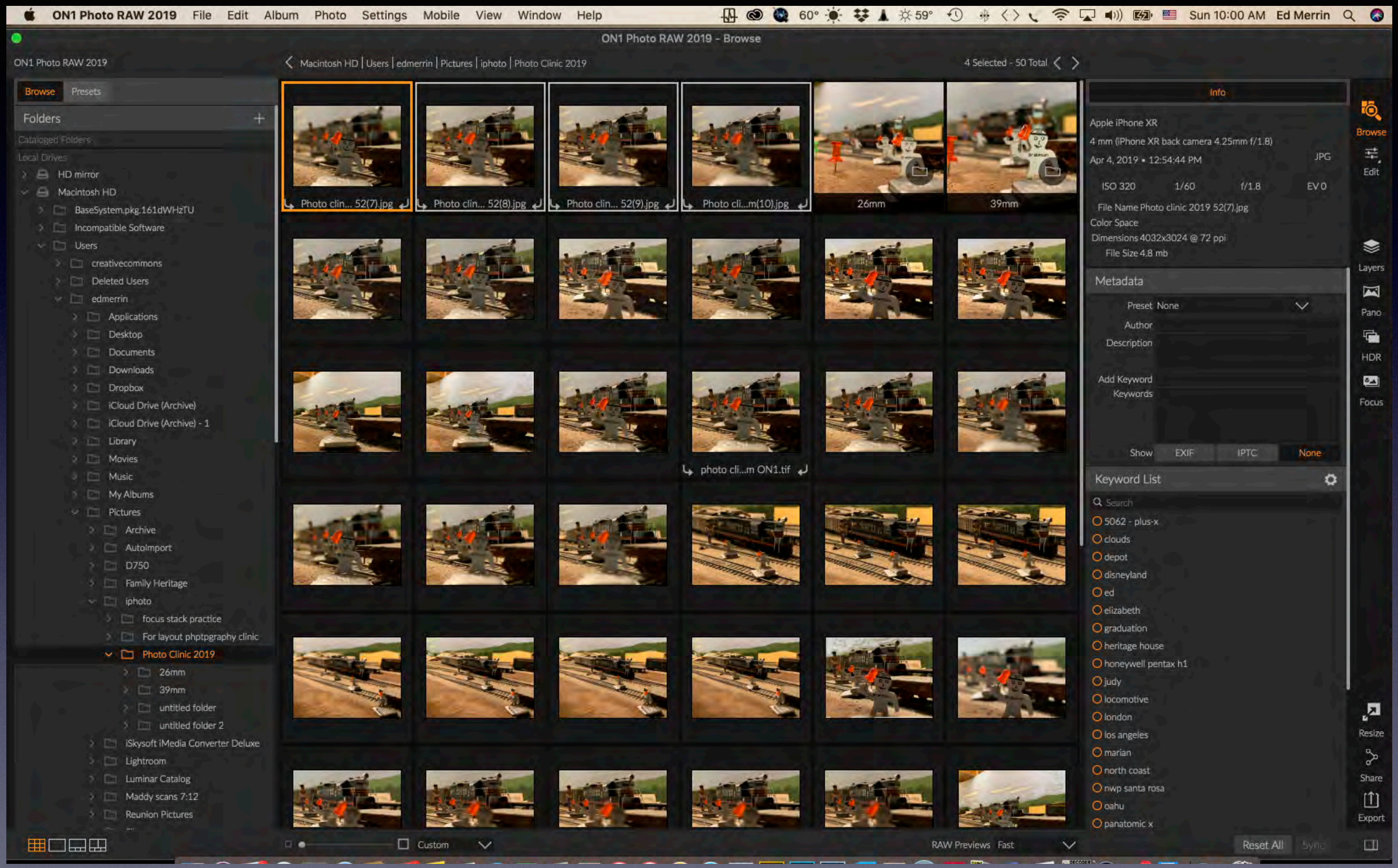
Bridge/Photoshop 7



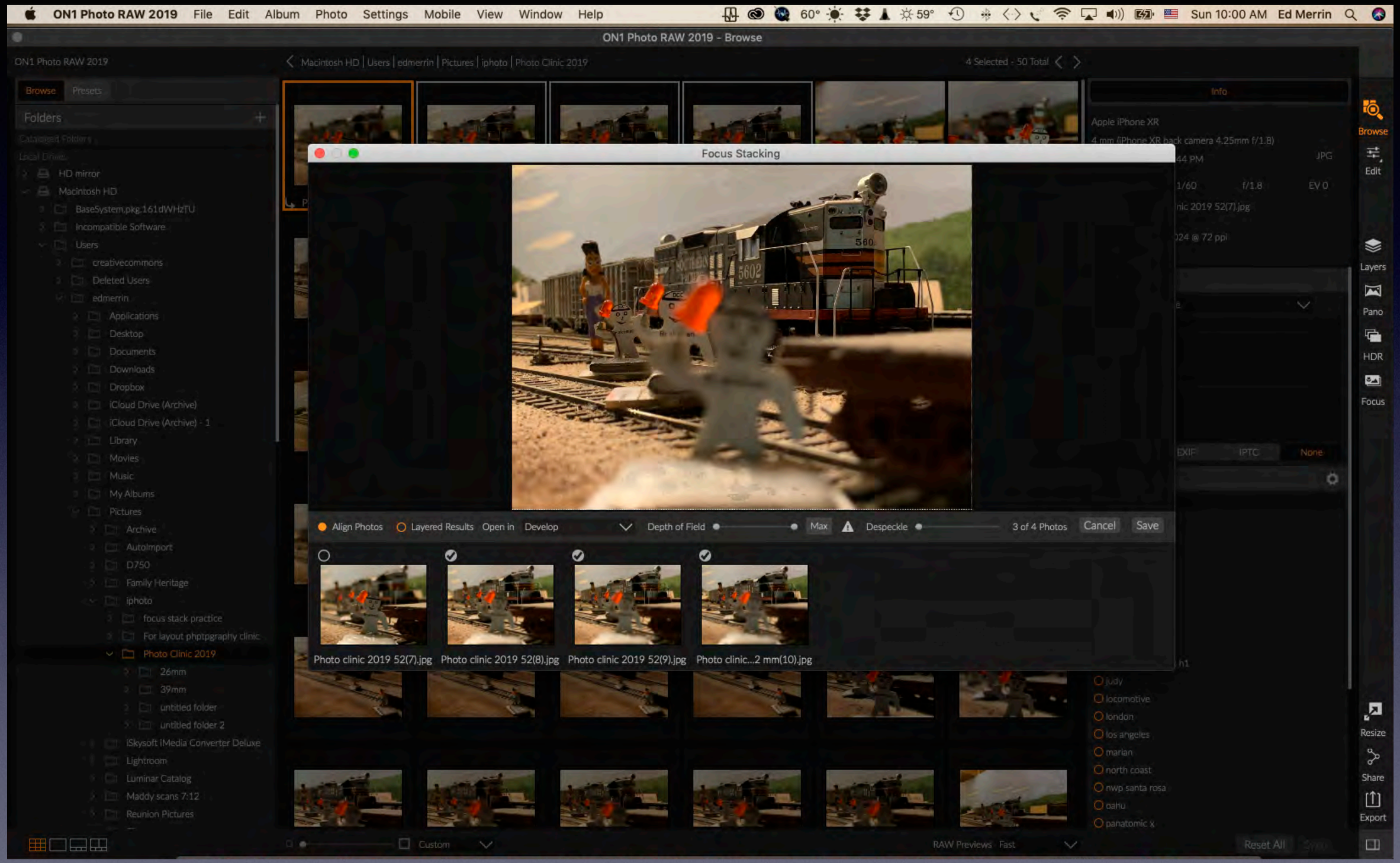
Helicon Focus



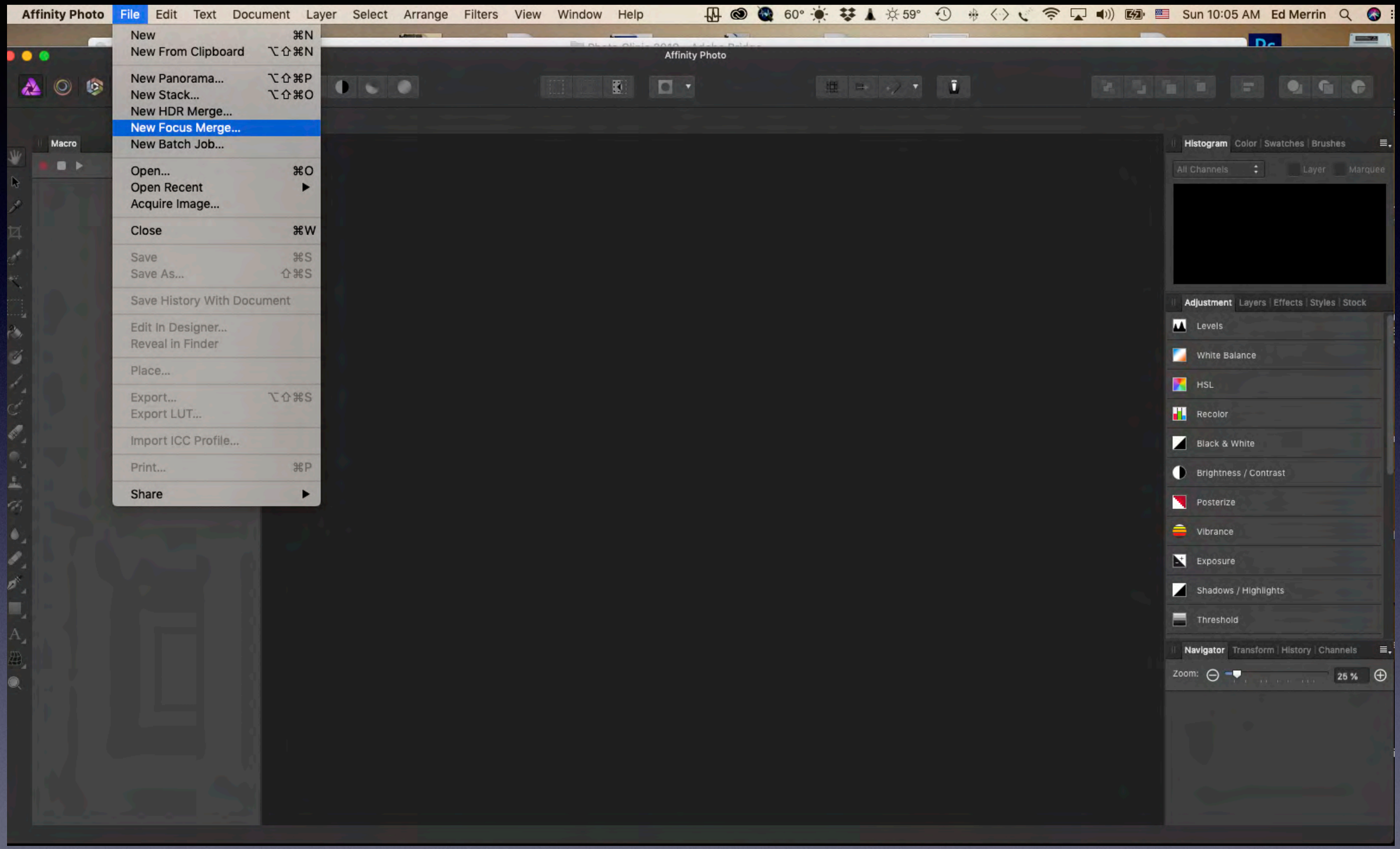
ON1 Raw 2019 1



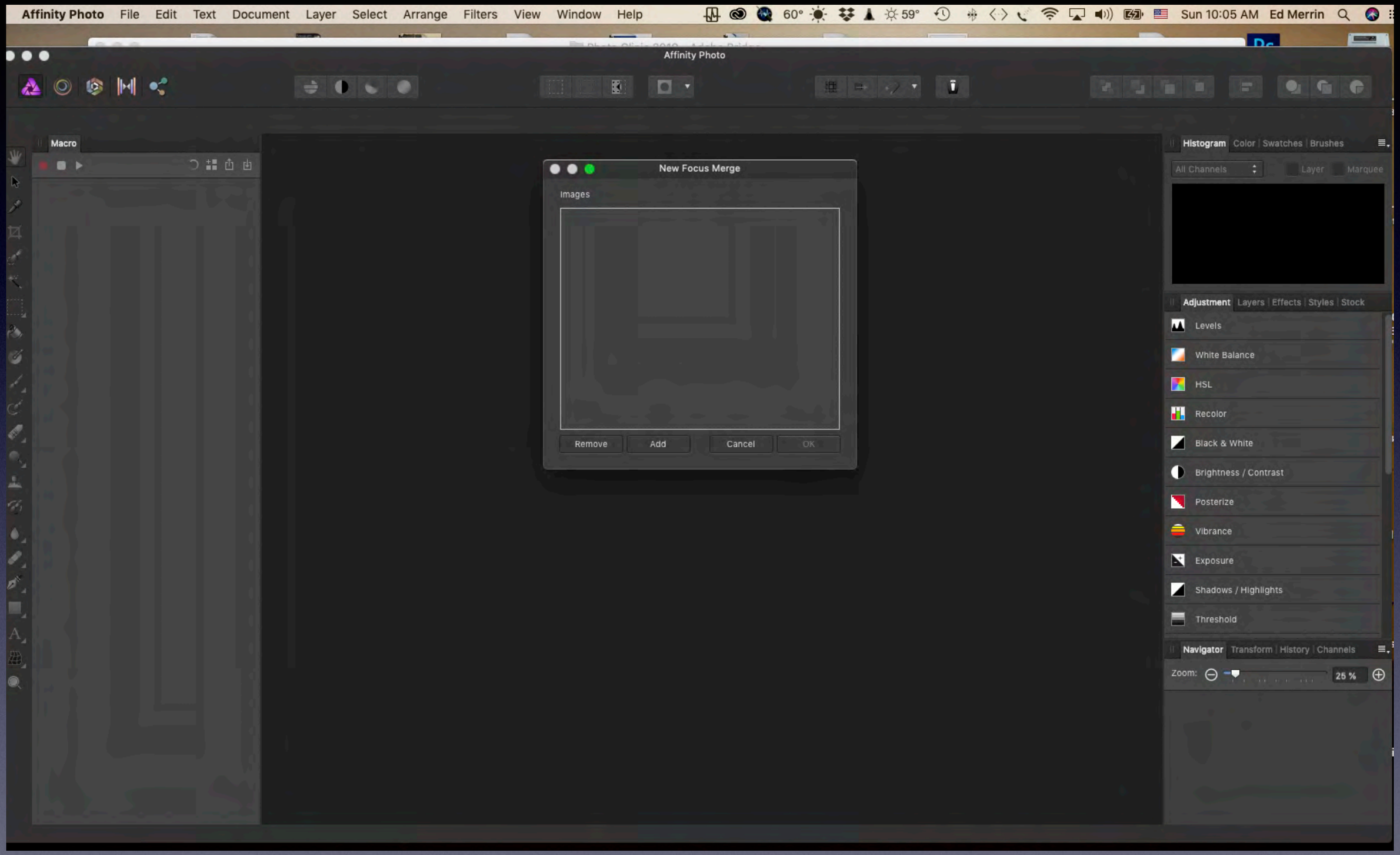
ON1 Raw 2019 2



Affinity Photo



Affinity Photo



iPhone XR 39mm (uncropped)

Photoshop

ON1

Helicon Focus

Affinity

DSLR 50mm (uncropped)

Photoshop

ON1

Helicon Focus

Affinity

Alternate Images (uncropped) from Affinity Photo

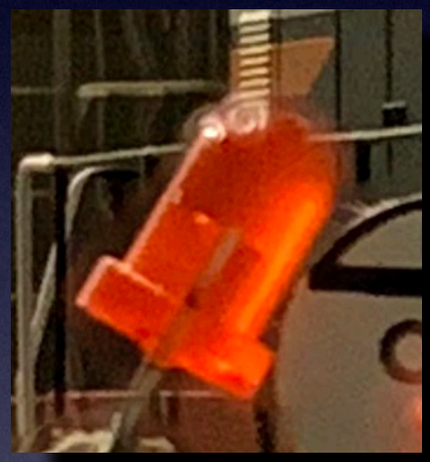
50mm f16

50mm DX f22

Size of Output File

Photoshop	300-800 MB
ON1 RAW	93 MB
Helicon Focus	35 MB
Affinity Photo	16 MB
Photoshop after flattening	13 MB

Artifacts



Trade Off: Image Quality

	Format	Approx Size	Color Depth	Resolution (ppi)
Nikon D80	RAW			
	TIFF	58 MB	16	300
Nikon D750	RAW			
	TIFF	70 MB	16	300
iPhone XR	HEIF	?	10	?
	JPEG	2-5 MB	8	72
	TIFF	37 MB	8	72

26mm

43mm

39mm

38mm

47mm

45mm