

# The new Terrace Hill photo

In 1930, San Luis Obispo photographer Frank C. Aston climbed to the top of Terrace Hill carrying a Kodak *Cirkut* camera. It was a stormy day and the sky was filled with dramatic clouds.

The camera held an 11-inch roll of black and white film (color film was still years away) that rolled through the camera as the camera turned, powered by a wind-up motor. Aston processed the film in his darkroom and then made prints from the finished film. His finished negative is 11 inches tall, and over six feet long.



After Aston's death in 1947, his film and photographs were divided up. Cal Poly, for whom Aston worked regularly, kept a large number of images – mostly those he shot on assignment for the college – while others fell into private hands.

A number of his panoramic photos and original negatives were acquired by Young Louis, son of San Luis Obispo businessman Ah Louis. Young Louis stored the film in his garage on Mission Street. Each roll was tightly wound, about an inch-and-a-half in diameter. Many of the photos were rolled together.

Other Aston photos found their way into a collection of photos that was created by two young men from Arroyo Grande – John Loomis and Gordon Bennett. They called their photo collection the *Bennett-Loomis Archives*, and it houses thousands of images. After their deaths, the archive was passed to their children who still maintain the collection.

In 1969, San Luis Obispo suffered a 100-year flood that caused the creeks to overrun their banks, and many buildings along the creeks to be flooded. Many of the photos in Young Louis's collection were submerged by the rising flood waters, and remained underwater for days after the storm. Mr. Louis did his

best to raise the boxes of photos above water level, but many retained water and were permanently damaged. The 1930 photo is one of those that sustained serious water damage.

When Young Louis died, his photo collection was transferred by his widow Elsie to Gordon Bennett and the Bennett-Loomis Archives.

The water-damaged photos were in a corrugated box in the collection until about 1975 when Bennett gave the water-damaged negatives to Brian Lawler, then proprietor of Tintype Graphic Arts in San Luis

Obispo. Their understanding was that Brian would attempt to soak the solidified rolls of nitrate film in a preservative solution, and – perhaps – rescue some of those images. The process worked on some, but not all of the images. The dirty creek water that soaked the films created a sticky gel that caused many of the images to be inseparable.

The panoramic photo was damaged, but the damage was limited to an area to the right of the remaining image – upper Johnson Avenue. It was just a few inches of damage on a six-foot roll of film.

Lawler was able to recover about half the film rolls in the box. The problem was that he didn't have a method for making photographic *prints* from these huge negatives. Doing so requires a contact printing frame larger than the film. Though it was possible, Brian never made a frame for printing the images, instead putting them in storage at Tintype.

When Lawler left Tintype in 1991 he took the photos home where they were stored until 2013.

That year he decided to try scanning the original rolls of film on an Epson digital scanner. He built a support table to make a larger working platform for the scanner, and began scanning the images in sections

– each section being about 8 inches wide and 12 inches tall. The scanning was done at a degree of quality that allows the grain in the original film to be seen in the scanned file – about 1,000 scan-lines per linear inch.

After scanning the images in sections, he used Adobe *Photoshop* to blend the sections back together into one huge digital image. There is an automated function in *Photoshop* that makes this easy.

Soon, Lawler was admiring numerous ultra-high-resolution images that had been converted from film to digital images.

The Aston panoramic image from 1930 became one image in Lawler's 2014 show at the San Luis Obispo Museum of Art entitled *SLO Pano*. He printed it to 14 feet in length and installed it in the museum for the two-month show.

Also in 2013, Lawler attempted to take a matching modern photo of San Luis Obispo from Terrace Hill, but found the image impossible to make.

*The reason:* Terrace Hill got *terraced* in 1947! The original photo was taken when Terrace Hill still had a peak. That peak was removed in the fall of 1947 for highway construction on the Cuesta Grade.

Here is a quote from the October 30, 1947 San Luis Obispo *Tribune*:

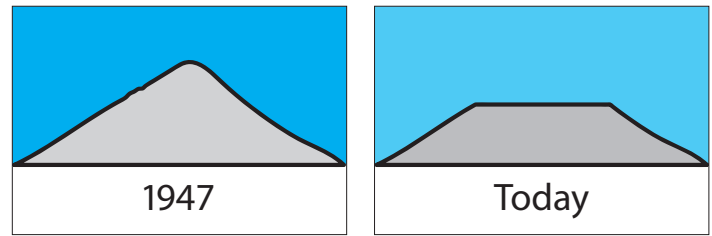
Now rushing to completion four-lane construction of 2.7 miles of Highway 101 between the northern limits of the city and the foot of Cuesta Grade, Fredericksen and Kasler are expected to move their equipment to the new project as rapidly as operations are completed north of the city.

#### ROUGH GRADING

Rough grading on much of the new Cuesta grade approach is virtually completed, the two large Culvert structures are practically done, and sufficient crusher-run aggregate has been hauled from the old railroad quarry near Santa Margarita to the new asphalt mixing plant on the job site, it was learned today.

Hauling of decomposed granite from Terrace Hill southeast of the city, is scheduled to commence within 10 days, as preparations are made to start paving operations at an early day.

The grading, rock-crushing and terracing ended in April, 1948. The hill lost about 60 feet from its top, contributing to the concrete pavement at the bottom of the grade. (The City Council didn't seem to object to the hilltop massacre.)



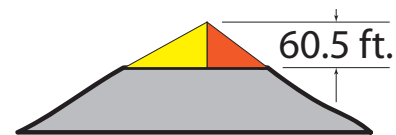
## Calculating the missing hilltop

In the years since the exhibition at the Museum of Art, Lawler has been trying to replicate the Aston photo exactly. That meant figuring out how much of the hilltop had been removed, then getting up in the air to the same altitude to make a modern image.

Working from another panoramic photo on display in City Hall, he scanned that original print, then reassembled the sections and printed a mural-size version of that photo for the offices at the City.

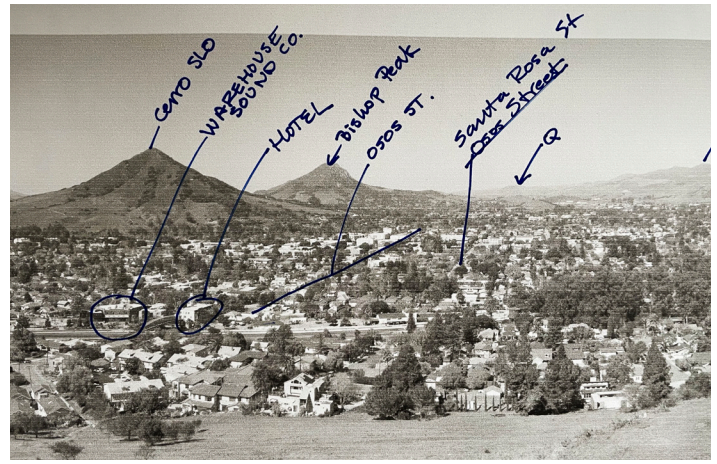
Then, using GPS coordinates and a 100-foot tape measure, Lawler measured and plotted the current surface of Terrace Hill.

Using the old photo, taken from the Lemon Grove on Cerro San Luis Obispo, and facing Terrace Hill, he was able to calculate the slope of the top of the hill in that photo.



Then he used geometry to calculate the short leg of a right triangle, and, knowing the base and angle of the triangle, he determined that the original peak of Terrace Hill was 60.5 feet taller in 1930 than it is today.

The problem then became how to get 60 feet in the air on top of the current terraced Terrace Hill to make an exact re-creation of the Aston photo. This would eventually result in the rental of a 65-foot hydraulic man-lift.



These are the photos from 1930 (left) and from the drone (right) used to compare the camera position. Identifiable buildings, streets and geographic landmarks were identified in both photos and used to determine the correct altitude for the new panorama.

## Droning on

Lawler asked his son Patrick, a cinematographer, to help test the geometry calculations by flying Patrick's drone to various altitudes at the top of the hill: 50 feet, 55 feet, 60 feet, and the two of them took 360-degree panoramic photos with the drone.

They printed those panoramas at the same size as the Aston photograph and superimposed them to see which photo fit best. It turned out that the 60-foot altitude was nearly perfect.

## ...and hoping for good weather

Lawler wanted brilliant green grass and blue skies (clouds would have been nice, but you can't have everything). The best months of the year to find such weather are March and April.

He contacted City Manager Derek Johnson and asked if it would be possible to take a man-lift up to the terrace of the hill. Mr. Johnson put him in touch with Greg Avakian, Director of Parks & Recreation, and he in turn got in touch with Doug Carscaden, Chief Ranger for Parks & Recreation.

Gambling that there would be two weekend days of beautiful clear weather, Lawler recruited his friend Chris Bahr to operate the man-lift (Chris is trained on that equipment).

They drove the lift up to the terrace on a Friday, April 16, and the next morning they mounted a sturdy tripod to the frame of the man-lift and raised it up to 60 feet. Once at that altitude, Lawler checked the perspective against a print of the 1930 panorama. They adjusted altitude until things matched perfectly, and

the photo session began, using the big tripod and a device called a *Gigapan* computerized camera mount.

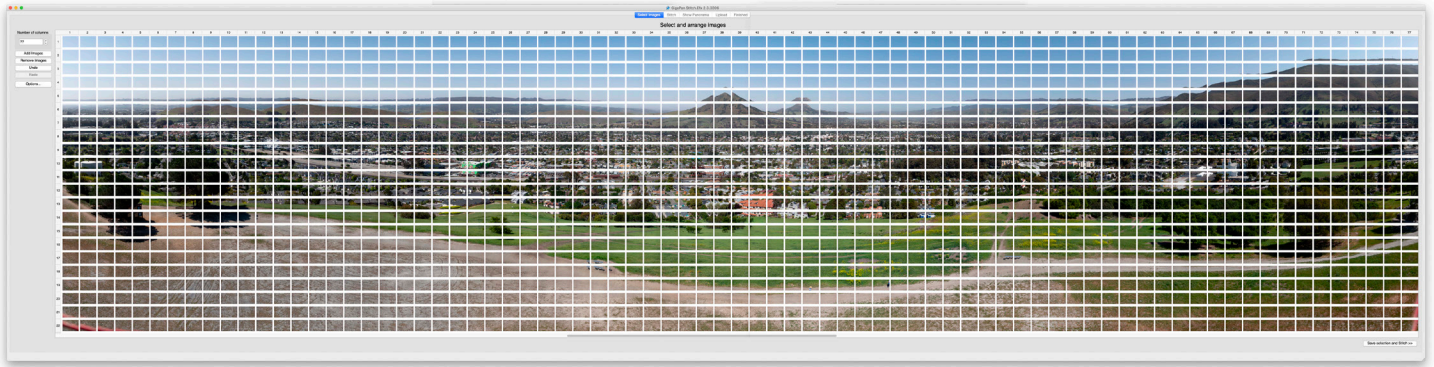
The final photo is made up of 1,694 digital images (each one is about 86 MB) that are blended with special software into one massive image. It takes about six hours for the stitching to be completed, then there is a significant amount of retouching that must take place. Usually this retouching is to remove partial images from the scene (moving objects in one frame, but not in the adjacent frame). There were a few of those.

The finished Terrace Hill panorama is about 14 gigabytes in size (this is a *reduced resolution* version).

The image was prepared for printing using a process called dye-sublimation. The image is printed – with the image reversed – on heavy white paper using a wide-format ink-jet printer. The paper is then put in contact with a specially coated aluminum material and then put under intense heat and pressure for several minutes. The dyes in the ink are transferred to the coating on the aluminum and the image is finished.

Because this photo is 24 feet long, it was imaged in three sections, each eight feet long. There was a small overlap printed between the images. The engineer machined the images to their final size on a computer-controlled cutting machine, then attached the panels on aluminum bar material that is mounted on the wall of the building.

The images had to be machined perfectly to prevent any visible seams or gaps. This involved getting a special cutter that drives aluminum chips



This is the screen of the panoramic stitching program on the computer. It takes the 1,694 source images and “stitches” them into one huge image with tremendous resolution. The stitching process took about six hours for this image. Retouching the resulting image took several days.

downward, away from the photo’s surface. This eliminates chipping and allows for the three panels to be aligned perfectly.

The new photo is a near-perfect match of the Frank Aston photo from 1930. This will become a record of how the city has changed in the 91 years that have passed since that original image was made.

Thank you to:

**City of San Luis Obispo**

Derek Johnson, City Manager

Greg Avakian, Parks & Recreation Dept.

Lindsey Stephenson, Parks & Recreation Dept.

Doug Carscaden, Chief Ranger

**Making the photo, printing and mounting**

Chris Bahr, lift operator

Rob Brewster, Millwright & Project Engineer

Bryn Forbes, Machinist’s mate 1st Class

Carlen and Jim Eckford, facilities

United Rentals, San Luis Obispo

**Additional Photography**

Patrick Lawler, cinematography, drone photos

Bryn Forbes, documentary photography

**Crew Wealth Management**

William Henry Crew

Harry Sturtz

Sarah Blackey

Ian Driskill

Sarah Jolly

This photo shows the man lift on Terrace Hill at 60 feet altitude with Brian Lawler and Chris Bahr aboard.

The camera, with its computerized controller, was mounted on a sturdy tripod on the corner of the lift cage.

Photo by Bryn Forbes





Above, Frank C. Aston's 1930 panoramic photo of San Luis Obispo from Terrace Hill.  
Below, Brian P. Lawler's panoramic image of San Luis Obispo from Terrace Hill, April, 2021.



Brian Lawler and Chris Bahr in the man-lift on top of Terrace Hill. The automated camera mount is on the tripod on the right, taking a photo about every six seconds for an hour and a half. Photo by Greg Avakian

**Technical information**

Camera: Canon 5D Mark III

Lens: Canon 100-400 at 400mm

Aperture: f14

Shutter speed: 1/250 sec.

Camera Mount: Gigapan Epic Pro

Number of source photos: 1,694

Format: Camera Raw/Adobe DNG

Stitching software: Gigapan Stitch

Retouching: Adobe Photoshop

Aluminum dye-sublimation printing by Photo Printing Pros, Goleta