

Making a Pre-exposure Light Source for 35mm Film

This is a project I had in mind for years, but I had little motive to pursue as I wasn't shooting that much 35. Presently, I returned to make some "candid" images at museums, where the lighting is usually subdued. Using Ilford HP5+ at E.I 800 usually allows me $1/60 @ f/2$, but even so, that means the low values, such as dark clothing, fall close to, at, or below the film's exposure threshold, and deep values in paintings can fall even farther down the scale.

Pre-exposure is an old technique, accompanied by controversy. It consists of giving an overall, even exposure to the film at a carefully measured, very low level before making the image exposure. Some insist that it is no different from unintentional fogging of the film and that printing the negative "through" the additional overall density created by the pre-exposure cancels any benefit (although some of the same persons use the technique with printing paper, to render highlight detail). Ansel Adams made good use of it, with appropriate caveats on its limitations. Some note that his published examples were made on Polaroid, which somehow works differently, due to the transfer process.

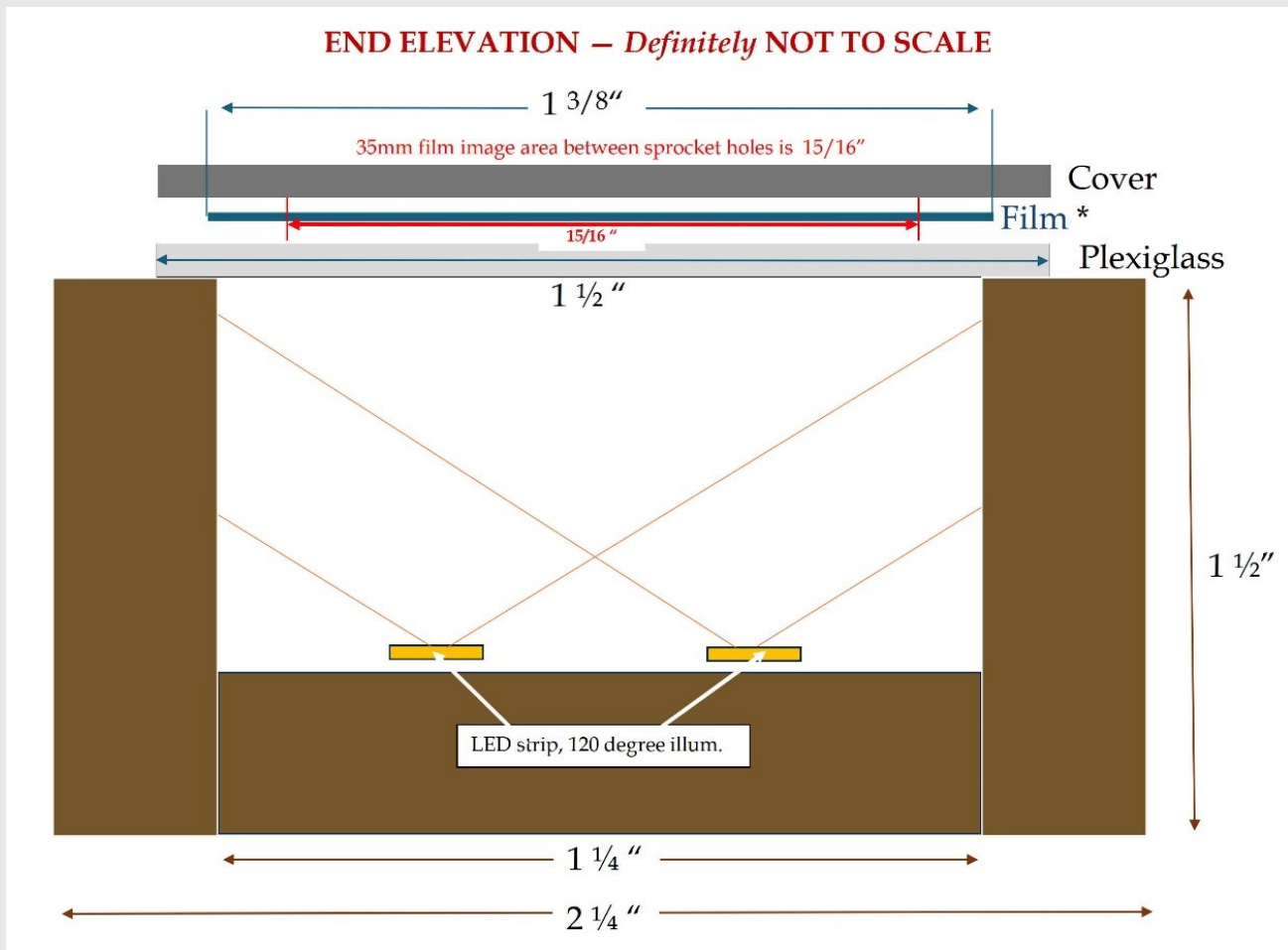
My experiments indicate that for certain conditions, a very slight pre-exposure can bolster detail in the negative and that very careful printing can reap the subtle improvement in low values. More than Zone II pre-exposure has not been successful for me, and I typically prefer a half-zone less.

The reason for this project is that pre-exposure in large and medium format is not an issue for me; both cameras allow multiple exposures. My 35, however, doesn't allow double exposure, and I typically need the whole roll pre-exposed anyway; pre-exposing frame by frame would be anomalous for the format's responsiveness in most cases.

The Construction

Building things has never been my *forte*. Not even close. I won't bore you with all the miscalculations I made on this project, though the design *concept* was fine. A neighbor's help with the main box construction was invaluable. Anyway, here's what I learned in finally arriving at a working model. You are welcome to use whatever you find useful.

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As shown above, my idea was to place white acrylic (Plexiglass) on top of a long, narrow box, evenly illuminated from within. In complete darkness, I would pull out the entire length of film, place it, emulsion down, on the acrylic, expose briefly, and reroll the film.

The Box – The image area of a roll of 36 exposures is about 55 inches long, so I made my light box 60 inches long externally by 1.25 inches wide x 2 inches high internally (I changed the height after getting and testing with the LEDs). I used a 4 x 2 ft. sheet of 1/2-inch plywood, cut into strips on my neighbor's table saw, which allowed making strips for the extra foot of length. He then tacked it together with a pneumatic mini-nail gun, saving me the manual nail & glue job.

Dimmable white LED strip lights – I had to buy 15 feet to get the two 5-ft. lengths I imagined I'd need. I bought the most closely spaced ones to ensure even lighting. I laid the two (self-stick) strips parallel in the box bottom, connected with a little connector at the far end. A dimmer from the same

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supplier allowed intensity adjustment. I found a supplier of 5-ft, 1.5-inch-wide white acrylic to lay on top of the box to diffuse the light; it came in a package of two, which was fine. I could use one as a cover to hold the film flat.

Reading the Light

Once assembled, I used my meter to measure the light. Wow! Bright! Long story shortened, my plan of laying the film emulsion down on the acrylic became a non-starter, even with the dimmer. I disconnected one of the strips and mounted the unit high up on a darkroom wall to bounce the light off the ceiling. With additional *heavy* N.D. filtration, *and* additional diffusion, I finally got the light level to be usable from a point on the dimmer that was reasonably repeatable and would give me about Zone I $\frac{1}{2}$ exposure in 3 seconds – for which I found that I needed an inline switch, between the dimmer and the light, since that is the only relatively instantaneous way to turn the light on and off without a brightness spike. I had to make a sort of mount for the switch as well.

My Gossen LunaStar meter would not measure the extremely low level needed. At a level it would measure, the film received far too much exposure, and I needed a time interval I could reliably repeat. (I had hoped for 6-8 seconds, to keep effective variance at a minimum.) I had to test, giving my eyes ten minutes to adjust in complete darkness, then raising the light level near where the film would be placed, to allow me to just barely discern a sheet of white card on a gray or brown surface, then testing for time. Yes, there's a subjective factor, but it seems to be repeatable for me within my needed tolerances. So far, at least.

The unplanned-for additional piece was a 5-ft piece of nice and flat 1x2, spray-painted matte black, for laying the film on. And, a way to lay the board evenly and securely a bit above waist-level, parallel to the light box but out a few feet from the wall. (Since I need to reach the switch, and due to other complication in my space, I can't put it further away to lengthen the exposure.)

Procedure—Set up the board, turn out room lights, walk back over, pull out the film and lay it on the board, ends held with rubber bands. A three-second “on” of the rocker switch. Reroll the film into its cartridge. Walk over and turn the room lights back on.

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The image below was my original idea of laying the film along the acrylic. It became instead the black board below the film.

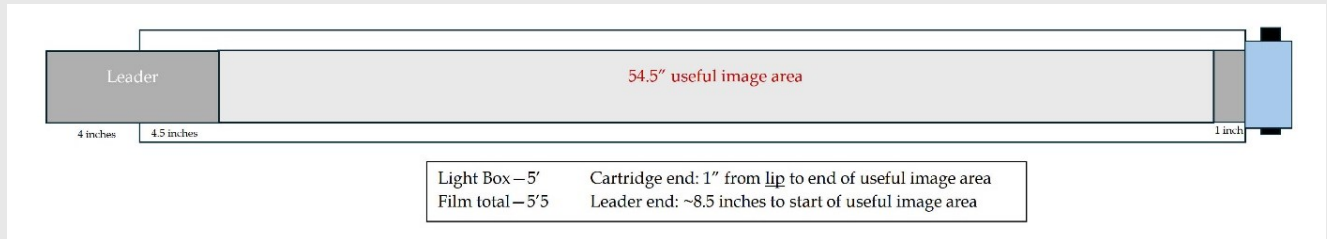


Photo below: the box sitting on L brackets. The top is the dome of white printer paper, which I cut and tucked into the black card collar pieces to further lower the light level. DC power cable at far right.



Continued

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Below left, a detail of the light box, showing the side join of the extra length of wood to make 5 ft. Also the black collar that spans the length of both front and back, blocking acrylic edge light, and the printer paper “dome” for extra light-reduction, tucked into the collar. Light blocking at the ends was also achieved with the black card stock.



Above right, electronics on adjacent wall: the rocker switch in the wooden mount I made for it, attached with hook & loop to the top of the dimmer. The lower wire goes to the AC-DC converter-plug. The black board stands next to them.

Summary – The advantage of wall-mounting the box is that it is out of the way and always available. Obviously, better wiring and other details could have been designed, had I known. Right now it works and I have other priorities. One could probably spend less by using several shorter LED strips and connecting them, and some with less native brightness would certainly do the trick.

I didn't mention end “caps” for the box. I used wood, filing a “mousehole” in one for the LED power wire to run through.

