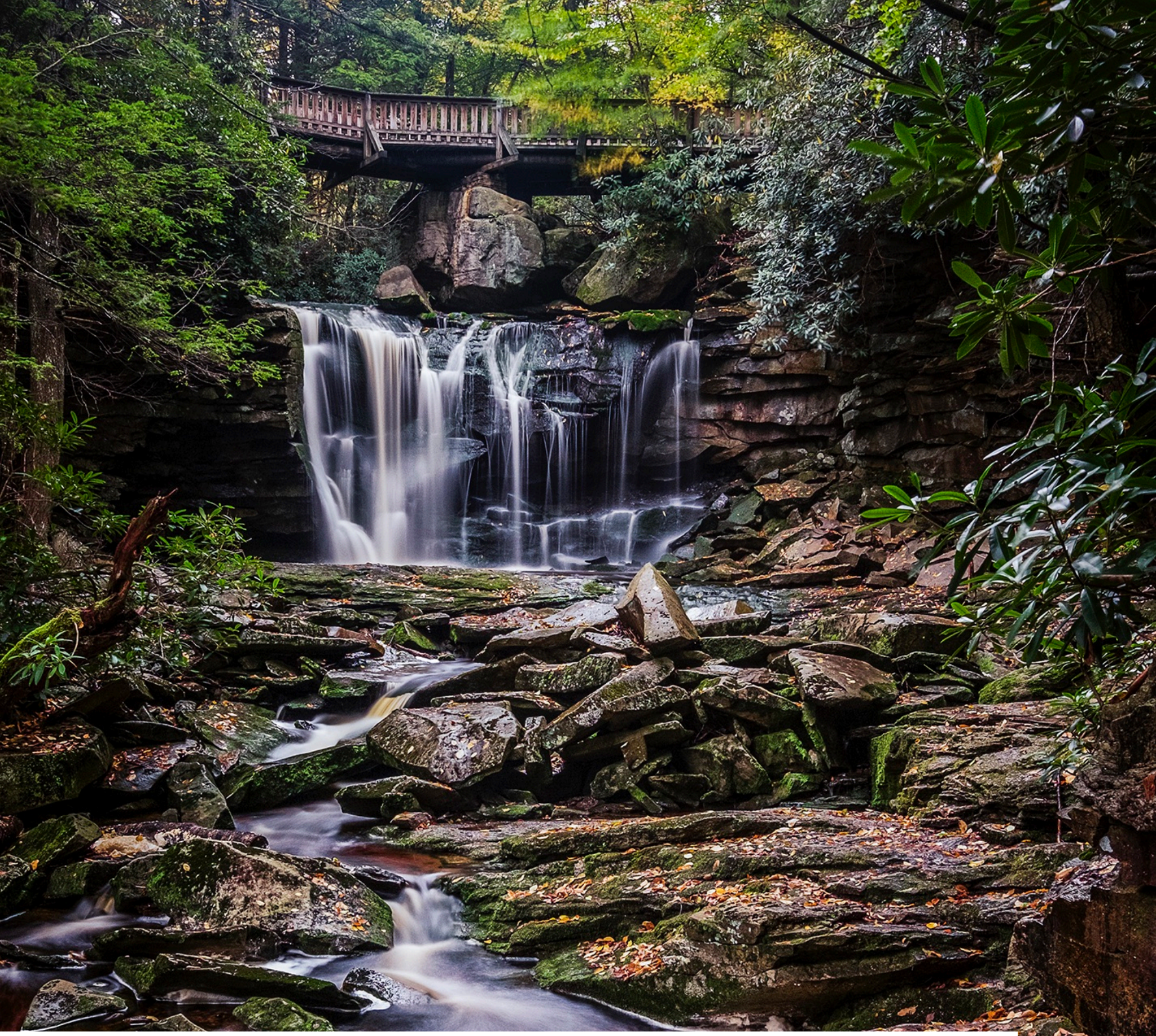


ROAD RUNNER
Photography Tours

DENISE SILVA

LONG EXPOSURE CREATIVITY

1

LONG EXPOSURE IMAGERY

As photographers, we are always looking for ways to express ourselves and share our vision. One way to do this is through capturing images with longer exposures. Essentially this means that instead of capturing a moment in time, the photographer is capturing the passage of time by showing the movement of the subject or elements in the scene.

SHARING VISION

By using long exposures to enhance imagery, the photographer allows the viewer to experience the circumstances under which the image was created. These images impart a sense of place, including the passage of time.

To illustrate this idea, let's look at two images of the Mt. Storm Power Plant in West Virginia. The first image, captured at 1/8000 of second at f/7.1, has clearly stopped the movement of the clouds and smoke plumes.

The second image was captured over 53 seconds at f/8. The viewer can experience just how windy it was that day because of the motion seen in the clouds and smoke plumes.

Let's look at another example that demonstrates how a long exposure can be used to show the flow of water.

The first image was captured at 1/750 of a second at f/7.1. So excited by the rainbow (faintly seen here), I fired off a shot just to capture it before it faded away.

The tremendous amount of water flowing over Dettifoss in Northern Iceland has been captured in its free fall. and although there is a sense of volume, there is little sense of motion.

Taken a couple of minutes later, after I had settled down and realized that the rainbow was not going to disappear immediately, this image (captured at 1.4 seconds at f/7.1) demonstrates not only the volume of water crashing over the edge of Dettifoss, but also better represents flow of water and how it looks when watching it happen. The longer exposure also resulted in a more prominent rainbow, so it was a win-win!

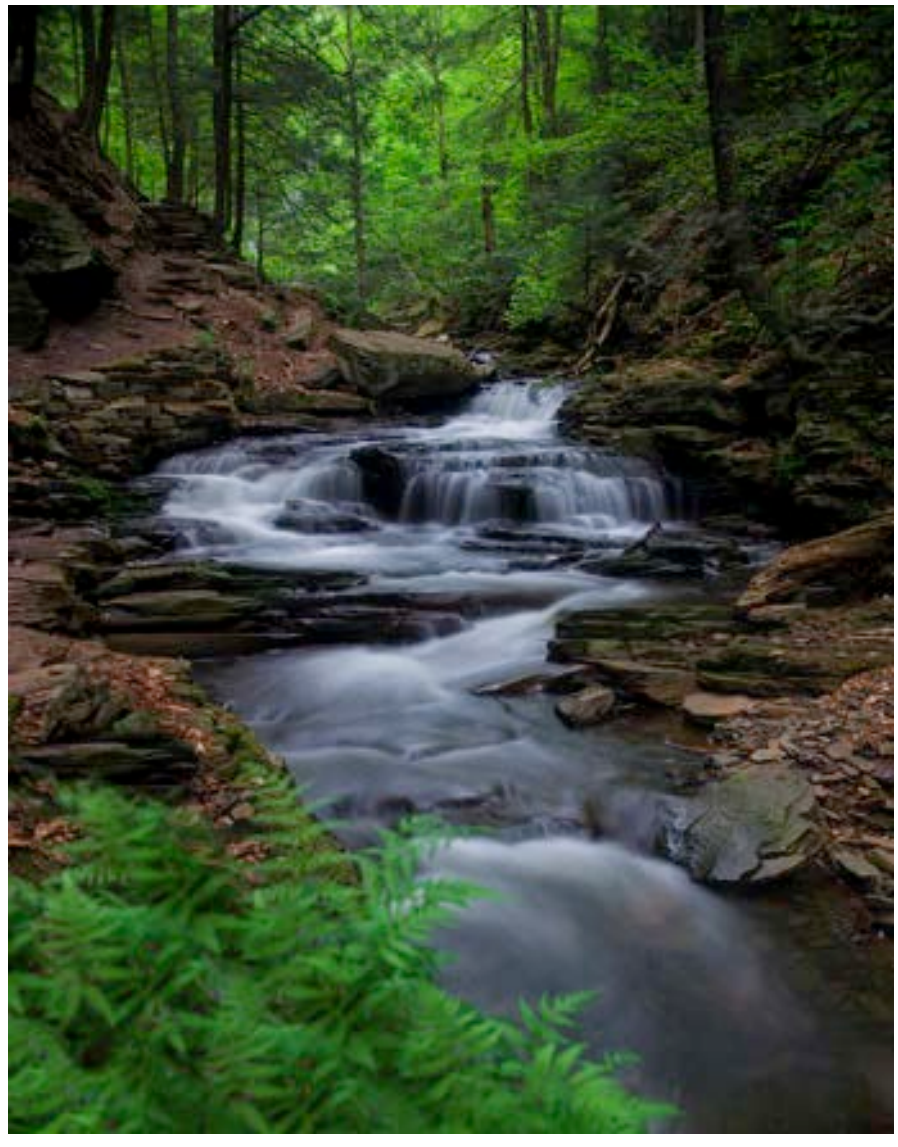
SHARING MOOD

As noted in the previous section, long exposures can be used to provide an alternative way to express one's vision. These types of images give the feeling of motion and movement, providing the viewer a sense of what the photographer experienced in that moment.

With a long enough exposure, the image can also create a sense of time passing, for example with clouds moving across the sky. Also, long exposure images capture a different mood than images captured with faster exposures.

These images can give the viewer a sense of place and mood. For example, this next image conveys a sense of solitude and peacefulness experienced when witnessing a river flowing through a forest on a sunny day.

While this next image imparts a sense of frenzy that comes from experiencing turbulent winds blowing sand across a beach on a stormy day.



3.2 SECONDS AT F/4.0

1/350 OF A SECOND AT F/6.7 (VERY FAST WIND)

2

TECHNIQUE

There are a number of techniques that can be used to create long exposure images. We will explore hand-held techniques, as well as the use of filters to extend the amount of time the camera shutter remains open.

HOW TO

Before we dive into the techniques, let's talk briefly about how to choose between shooting RAW or JPG images. I almost always shoot exclusively RAW images. RAW files provide more pixel data with which to work, provide more details in the highlights and shadows, allow for easier adjustment in post, and can handle being exposed to the right (i.e., brighter) to reduce noise in the image. Occasionally, I will shoot RAW and JPG when I plan to create time-lapse sequences with the images. This is because it is easier to work with JPGs since the files are smaller.

However, I never shoot only JPG. This is because I want to make all the editing decisions about my images and JPG images have processing edits (e.g., sharpening, contrast, saturation) embedded in them based on the manufacturer's specifications. Although I think Fujifilm (my camera manufacturer) produces beautiful JPGs, I still prefer to shoot RAW. I want to decide what the final image will look like and I don't want to do the extra work of "fixing" the embedded edits to get to the desired result.

Now let's talk about long exposures.

What is the best time of day to take long exposure images? Simple answer – any time of day! With the right gear, these unique images can be captured any time of day:

- Sunrise or Sunset
- Twilight
- Overcast
- Even in the Middle of the Day!

Long exposures can be captured using handheld techniques or using filters.

Handheld techniques include:

- Panning – Capturing the motion of the subject, while maintaining the subject in focus
- Swipes – Intentional camera movement (horizontal or vertical), resulting in the entire image being blurred
- Camera Movement – Intentional camera shake

These techniques tend to capture images that are less then 1 second in length. If the shutter is open too long, the blur in the image will not feel deliberate. It will feel like a mistake.

When not panning, swiping, or shaking, long exposure images will be captured with the camera mounted on a tripod. Generally, for most of us, capturing long exposures of greater than one second requires the use of a filter and a tripod. I say for most of us, because very few people can hold a camera steady for more than 1/30-1/60 of a second, even with the advancement of image stabilization. Tripods are key to quality long exposure images created with filters. In the next sections, we will look at how to capture long exposure images using both handheld techniques and filters.

HANDHELD

To capture handheld long exposure images, you need to get your camera set up properly. For each manufacturer, these settings may be a bit different, so make sure you take some practice shots to determine the right settings for what you are trying to create. In general, the camera should be set to manual mode. In other words, you will be controlling the aperture, the shutter speed, and ISO. This is because changing light and position of the subjects will require incremental changes in settings.

To determine the proper exposure to create an appropriate amount of blur you will need to experiment a few times. In general, for handheld techniques, using shutter speeds of 1/15 and 1/30 works well, but the conditions of the scene will dictate. The two most common handheld techniques are panning with the subject or swiping the camera (either horizontally or vertically) across the subject to achieve the desired effect.

First, let's look at panning. The idea with panning is to capture the subject in relative focus, depending on the effect the photographer hopes to achieve, while letting the background or foreground blur to show motion.

The easiest way to pan is to hold the camera steady, with arms and elbows in close to the torso. Then as the subject passes, move your torso (right to left/left to right) with the subject, in the direction the subject is moving.

Here are a few examples of images captured by panning. As you can see, the primary subject is in focus, while the background is blurred, giving the viewer the sensation of being passed by the subject.

1/30 SEC AT F/8, ISO 50

1/30 SEC AT F/18, ISO 200

Sunday mornings on a boardwalk provide great opportunities to practice this technique.

Another handheld technique is the swipe. Swipes can be taken horizontally or vertically. Some trial and error will find you the desired results.

For horizontal swipes, the camera movement looks like:

The resulting images will look similar to these:

1/7 SEC AT F/11, ISO 200

1/200 SEC AT F/6.3, ISO 500

For vertical swipes, the camera movement looks like:

1/8 SEC AT F/6.4, ISO 200

This next image is a combination of an upward vertical swipe with a little “wiggle.” The camera movement looks like this:

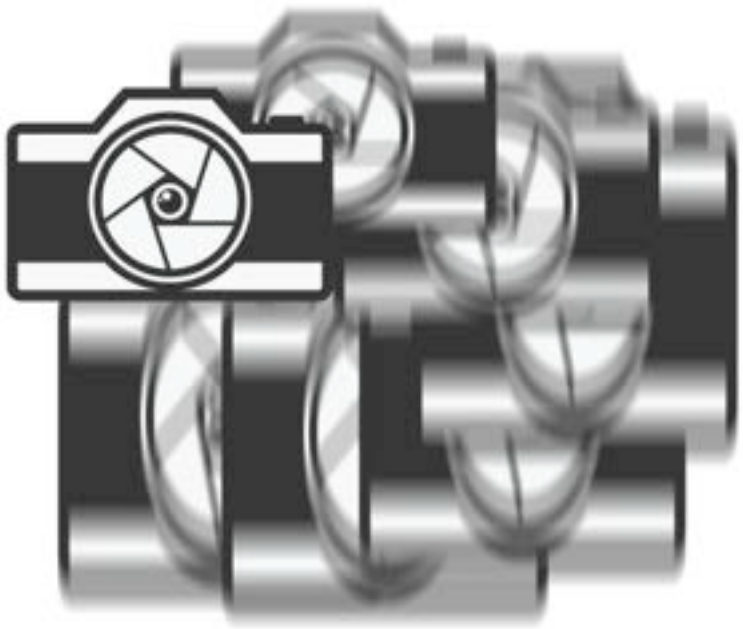
The resulting images will look similar to these:

1 SEC AT F/8, ISO 200

1/4 SEC AT F/14, ISO 200
DON ROSENBERGER

Another fun camera movement technique is to move the camera in small tight circles.

The camera movement looks like this:



The resulting images look like this:

1/4 SEC AT F/11, ISO 200
IMAGE BY DON ROSENBERGER

This last hand-held technique is a little different. For this technique the photographer should be the passenger in a car, shooting out the open passenger window. The goal is to grab a subject (below the subject is a flag), and keep the subject in focus as the car starts to pass by it. In other words, the photographer will pick up the subject with the camera facing toward the front of the passenger window and then follow the subject as the car passes until the camera is facing toward the back of the passenger window.

The end result is an image that has a bit of curve in the blurred background, with the subject (flag) mostly in focus. This technique takes a ton of practice and a very patient driver. The best results are achieved on an overcast day, when the car is moving around 35 mph. Country roads are the best location to try out this technique.

1/15 SEC AT F/13, ISO 200

Patience and Practice

All of the hand-held techniques take patience and practice. It may take a dozen images (swipes) or even a hundred images (car panning), to get the shutter speed set properly to achieve the end result the photographer is visualizing. Just remember, practice, practice, practice, because “practice makes perfect.” The more you try these techniques, the more creative you will become at using them.

GEAR

Creating long exposure images using a tripod can be done any time of day, as long as you have the appropriate filters to help lengthen the shutter speed. There are a few basic tools needed to capture these types of images:

- Sturdy tripod
- Remote shutter release for very long exposures
- Self-timer – which only works up to a 30-second in-camera time limit
- Filters (neutral density, graduated neutral density, polarizer, night sky filters)
- Which filter size should I buy?
- Which about filter thickness?

Although each long exposure image is unique, some basic camera settings are not. Camera settings include:

- Ability to achieve long shutter speeds (i.e., bulb feature on camera body)
- Camera release (this allows the shutter to be “locked up” in the open position for the duration of shutter speeds in excess of 30 seconds)
- Mirror lock-up mode (unless shooting a mirror-less camera) to reduce camera shake
- Disabling long exposure and/or noise reduction feature in camera
- Ability to set low ISO (e.g., 50, 100, 200)

Although most cameras are capable of capturing long exposure images, some are not as easy to set up as others. Many point-n-shoot and consumer-grade cameras tend to restrict the photographer’s ability to manipulate settings. Generally these cameras are geared to auto features, which aid in capturing great snapshots, but make it difficult to get creative. The challenge is that these cameras are set up to automatically get the “proper exposure” and overriding the “auto” mode is nearly impossible. When considering which camera body to use, it is important to make sure that the camera has a manual mode, bulb feature, adjustable aperture and shutter speed, and adjustable ISO.

Sturdy tripod: Assuming the camera body allows for the above-mentioned settings, the most important tool in the arsenal is having a sturdy tripod. Study tripods are key to getting beautiful long exposure images. If the tripod is wobbly or not heavy enough, it will be difficult to sustain a long exposure (e.g., 30 seconds, 2 minutes, etc.) without getting noticeable camera shake, resulting in a blurry (not in a good way) image.

When using a tripod, the photographer can capture motion and movement in water, clouds, people, animals, and more with the addition of various types of filters. With the camera on a tripod, the photographer can also create motion by manipulating the lens barrel to give a zooming forward or backward effect.

***Remote shutter release*:** Using a remote shutter release helps minimize camera shake by removing the need to touch the camera body to trigger the shutter. I prefer cabled remote shutter releases because I find that the wireless ones do

not consistently trigger the camera to capture an image. Today, many cameras can also be triggered to release the shutter from cellphone applications.

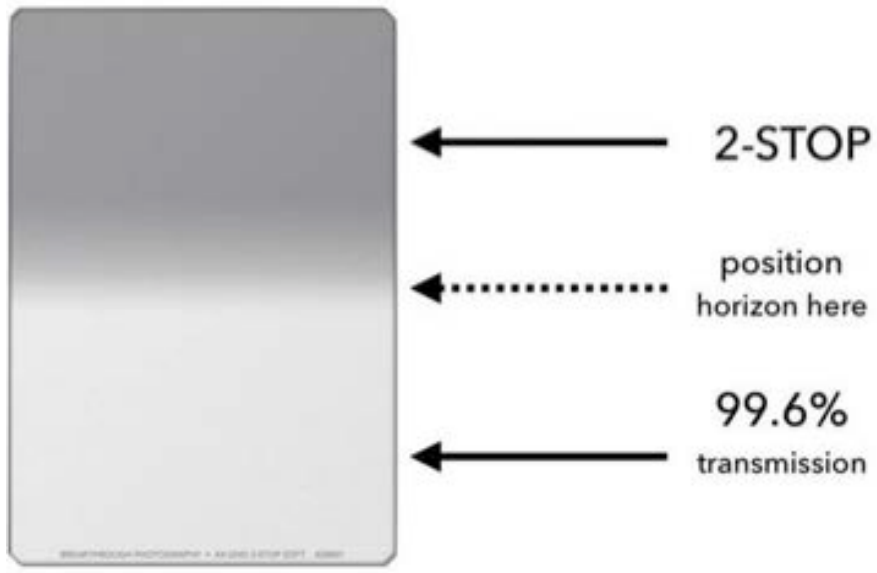
Self-timer: Many camera bodies come with a self-timer feature. This feature usually includes a 2-second or 10-second delay before the shutter releases to capture an image. The self-timer feature can be helpful when the photographer doesn't have a remote shutter release and only needs to obtain a shutter speed of 30 seconds or less. If the shutter needs to be open longer than 30 seconds, the photographer will need to put the camera in bulb mode. Bulb mode allows the shutter to remain open as long as desired, but to use it, the photographer will need to either have a remote release that can lock open or will have to maintain constant pressure on the shutter button by pressing down manually without causing camera shake (extremely difficult to do).

Filters: The last key piece to creating long exposure images using a tripod is the use of filters to drive the shutter to stay open longer. Without the use of filters, the photographer may try to extend the length of the shutter by setting the ISO to its lowest setting and by changing the aperture setting to f/22. However, this option provides very limited results and will not work in brightly lit situations. The use of filters really is the best and most reliable option for capturing long exposure images, and with practice can provide consistent and predictable results.

There are many kinds of filters, but here we will be looking at filters most commonly used to extend the length of time the shutter is open.

First, let's talk about graduated neutral density (ND) filters. Although these are neutral density filters, they are not really used for long exposure. These filters help vary the amount of light being transmitted to the camera sensor. Typically one-half of the filter is of neutral density (generally degrees of grey) which reduces the amount of light that passes through, while the other half is clear (generally colorless).

Here is an example of a soft-edged 2-stop graduated ND filter:



The photographer holds the graduated ND filter in front of the lens, usually placing the separation between grey and colorless fields along the horizon or portion of the image that the photographer wishes to modify the light. The line of separation between grey and colorless may be soft (feathered - as featured above) or hard edged, depending on the photographer's preference. Graduated ND filters come in a variety of different densities (levels of darkness), each having a greater impact on the image as they get darker.

Graduated ND filters are extremely popular with landscape photographers because they allow the photographer to hold the grey (darker)

portion over the sky section of the image, while leaving the clear (colorless) area positioned over the landscape. Generally, these filters are used more for darkening specific areas of an image, as opposed to extending the length of time the shutter is open.

Here is an example, where the sky has been “darkened” but the foreground remains brighter:

1/1000 OF A SECOND AT F/8

Neutral density filters also come in a circular style. Circular ND filters screw on to the front of the lens and block light consistently across the image. This type of ND filter is great for scenes in which the photographer wishes to slow down the shutter speed for the entire image (foreground and the sky), or the subject (river, waterfall, etc.). Much like the graduated ND filter, the circular ND filter comes in varying shades of grey, most commonly 3-stop (lightest grey shading), 6-stop, 10-stop, and 15-stops (darkest grey shading – in fact, it is nearly black).

Here is an example of a 6-stop circular ND filter:

Here is an example of a waterfall image, taken in the middle of day, where the extended length of the shutter has allowed the water to be captured with a soft silky feeling.

10 SECONDS AT F/5.6
10-STOP FILTER

Circular ND filters can be used any time of day. The choice of which filter to use (3, 6, 10) will depend on how much light the photographer wishes to block under the circumstances. For example, if the photographer wants to take a multiple-minute exposure in the middle of the

day, he or she may need to use the 15-stop filter. This filter is so dark, that even at high noon on a sunny day, you can achieve 2+ minute exposures.

Here is an example of an image captured over 2 minutes 3 seconds with a 15-stop ND filter:

2 MINUTES 3 SECONDS AT F/16 AT 11:15 AM
15-STOP

ND filters can open up an array of possibilities for the landscape photographer, opening up the hours of operation to all day long!

The biggest challenge with ND filters is that they can impart a colorcast to the image, particularly on the longest exposures. Some brands have a magenta cast, some have a cool or blue cast, some have a warm or yellow cast, and some have little to no cast. We have used Singh Ray, B+W, Lee, Benro, and Breakthrough Photography filters. In our experience, the best brand for having no cast is Breakthrough Photography and for having a pleasing warm cast, Benro. No colorcast at all or a slightly warmer tone is my personal preference, but each of the noted brands makes high-quality filters.

Now, let's talk about polarizing filters (a.k.a., polarizers). Polarizers can be used to lengthen the amount of time the shutter is open, but they definitely cannot achieve the lengths of time that circular ND filters achieve. Polarizers are primarily used to darken skies, add clarity and contrast to clouds, increase saturation on rainy days, manage reflections, or suppress glare from the surface of cars, rocks, rivers, or bodies of water. When used to darken skies, be cautioned that if not adjusted correctly, a polarizer can leave half of the sky dark and the other half light, which is really impossible to correct in post. So look at your LCD to confirm that you have achieved the result you expected.

Here is an example of a Circular Polarizer:

When used to enhance a sky, the optimal direction of the shoot will be at 90° to the sun. For other scenes, the polarizer can be adjusted to taste.

Here is an image taken on a rainy day enhanced by a polarizing filter.

1/5 SECOND AT F/6.4

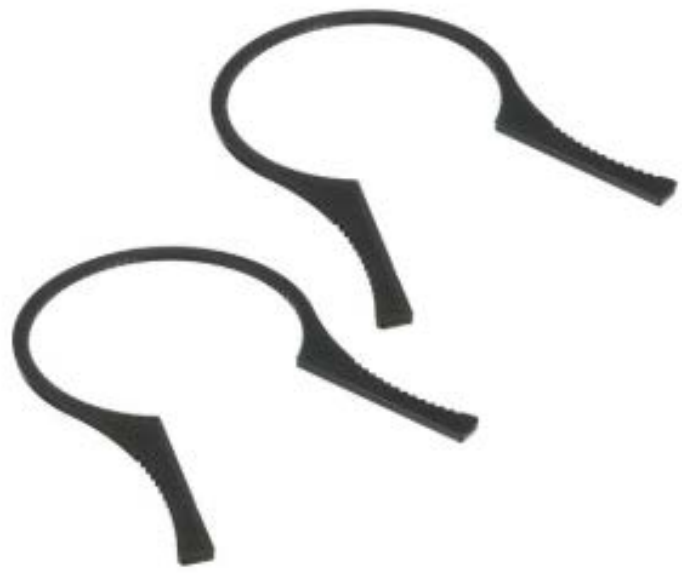
The type of filter used will depend on the goal of the photographer. If the photographer's goal is to capture a long exposure image showing movement, the best filter for the job is a circular ND filter.

Lastly, let's discuss night sky filters. This is a fairly new technology; the purpose of night sky filters is to cut down the light pollution that is often seen in night sky imagery.

The filter does this by restricting light transmission in the artificial light pollution ranges between 570 to 610 nanometers on the visible light spectrum. These filters can give you a cleaner, crisp image without the yellow tint that is visible in many night sky images. Breakthrough Photography is our preferred vendor for this type of filter.

Which filter size should I buy?

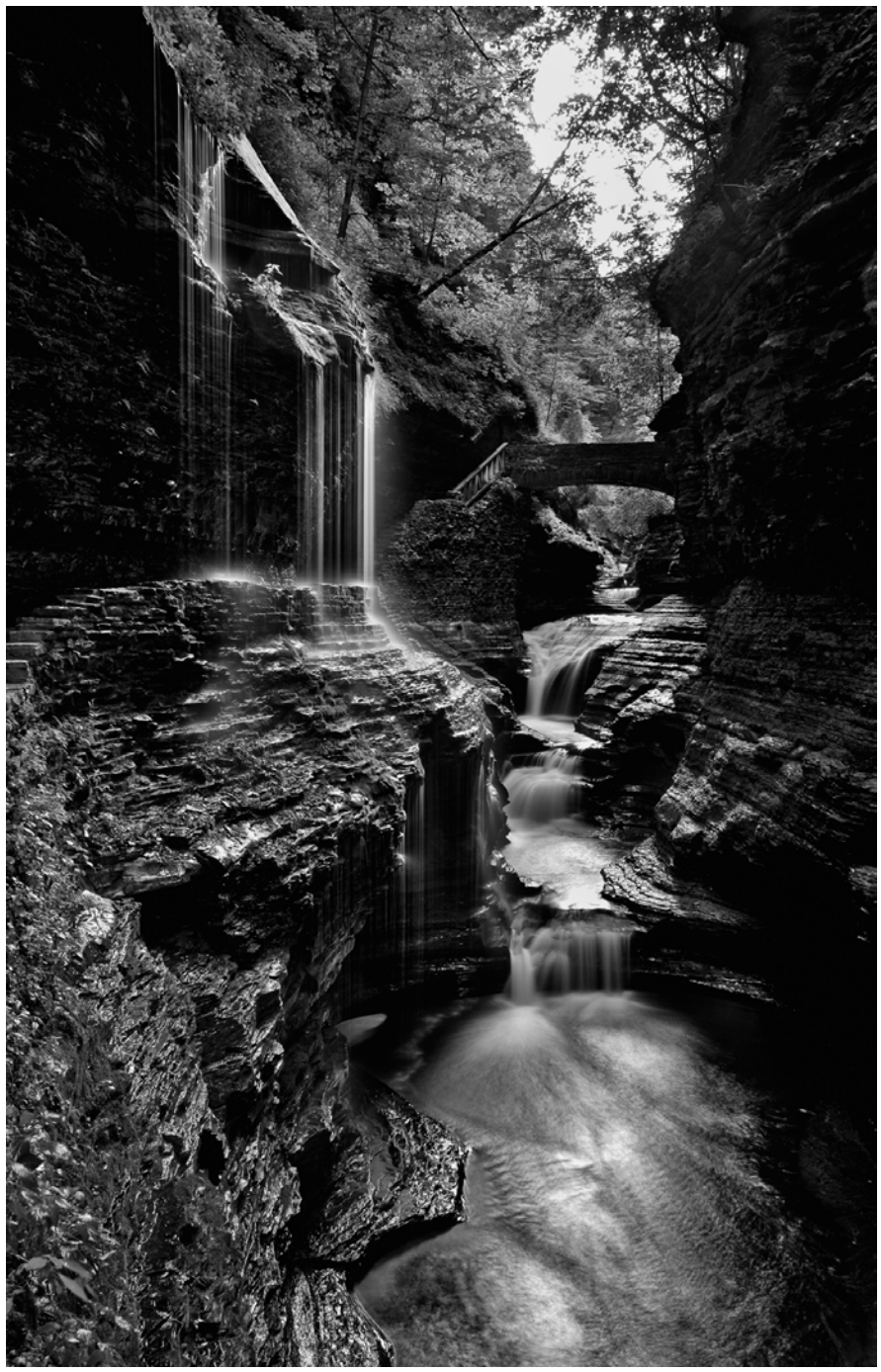
When starting out it is not unusual to have a variety of lenses with different size filter threads. Rather than have multiple filters in multiple sizes, as noted above, we recommend you purchase the filter that will fit your largest lens opening (e.g., 77mm) and then use adapter rings to fit this filter to your other lenses. Like many things in life, you get what you pay for when it comes to adapters. There are a lot of cheap aluminum adapters on the market. However, if you buy a set of these you will likely find they will get stuck on your filter (due to temperature changes in the field). These can sometimes be difficult to get off (there are filter wrenches that can be helpful). There is nothing more frustrating then being in the field shooting and having to lose time/light struggling with a filter.



To avoid this problem remember to never fully tighten your filter on the adapter and use higher quality filter adapters, like those made by Breakthrough Photography. They cost a little more, but they are worth every penny.

What about filter thickness?

Filter thickness comes into play when shooting with a wide-angle lens. A thick filter may produce what is called a vignette when used on a wide-angle lens. A vignette is the darkening of the corners of the picture do the edge of the filter being in the field of view. If you shoot a lot of wide-angle landscapes, it would be worth it to buy slim or thin profile filters when possible.



For discount codes and links to our favorite vendors, see Appendix A.

TECHNIQUE

Now that we have discussed the gear necessary to create long exposure images, let's take a look at next steps, which include:

- Setting ISO
- Determining which exposure mode to use
- Determining composition
- Determining focal length
- Focusing
- Determining the correct exposure

Setting ISO: When the camera body has the appropriate features, noted earlier, the photographer can choose to control the ISO setting on the camera; from auto ISO to a set figure (e.g., 50, 200, 12,800). By manipulating the ISO, the photographer can further manipulate the shutter speed to achieve the optimal exposure for which he or she is looking. Remember, lower ISO results in longer exposures and less noise in the image. Before

we decide which is best for long exposure images, let's talk about the differences between the options.

Determining which exposure mode to use: Let's talk about the differences between the options: shutter priority, aperture priority, and manual.

Shutter priority: When the camera is set to shutter priority (generally identified by "S" on the camera), the photographer is "dialing in" the speed of the shutter and letting the camera determine the appropriate aperture for the scene. In other words, the photographer is choosing 1/50 sec or 30 seconds and the camera is choosing the f-stop needed to achieve the set shutter speed. Generally, shutter priority is best for capturing action (e.g., kids running on a field). However, shutter priority can also be used for long exposure images, as noted above, when capturing images from a moving car or panning people riding on the boardwalk. The drawback to shutter priority is that the camera may default to an aperture that doesn't provide enough depth of field to get the entire subject in focus.

Aperture priority: When the camera is set to aperture priority (generally identified by an "A" on the camera), the photographer chooses the f-stop to achieve the desired depth of field. And the camera determines the shutter speed needed for that aperture. Aperture mode is great for most subjects, from landscape to street photography. I shoot mostly in aperture mode, because I like to determine the depth of field of my image (i.e., how much of the image is in focus) and I will control my ISO to drive the shutter speed I need to capture the image I desire.

Manual: When the camera is in manual mode, the photographer is selecting both the shutter speed and the f-stop. Manual mode can be used anywhere and at anytime. Some photographers swear by it, while others switch to manual mode for certain types of photography, for example, night photography. Considered the most difficult mode to master, manual mode may slow down a more novice photographer when in the field, resulting in missed opportunities. Additionally, when in manual mode, if the photographer sets the aperture and shutter speed to capture a "perfect" exposure, then really, using shutter priority or aperture mode will achieve the same result. That's why I default to aperture priority (controlling depth of field) and use shutter priority and manual mode only when it makes sense. Manual mode is most useful when capturing creative stylized images or images at night.

Determining composition: Composition is a whole topic unto itself, but I do want to touch on it briefly here. For long exposure images of landscapes, waterfalls, rivers, etc., composing the image with consideration of leading lines, diagonals, subjects in the power points of the rule of thirds will generally create the most pleasing imagery. Try to remember to keep the horizon out of the middle of the image, unless creating a true mirror reflection. The horizon line should generally be at the top third for images such as lakes, oceans, or far horizons, or at the bottom third when capturing the sky, clouds, or vast mountains.

For swipes (horizontal or vertical), composition should focus on creating the most appealing array of colors or textures.

For panning, it is important to compose the image so that the subject in motion (e.g., person on a bike, car speeding down a street, dog running across the lawn) has room to move into the frame. If the subject is panned with the "in focus" area at the edge of the image frame facing outward, it will appear that the subject is leaving the image, taking the viewer's eye with it. If the panned subject is facing into the image and has room to move forward into the frame, the viewer will be able to stay with the subject longer. Composition can be challenging and takes a lot of practice when panning.

Determining focus: For landscape images, the general rule is to set the focal point 1/3 of the way into the scene, providing focus in the foreground and in the background. However, the placement of the focal point depends on the f-stop you have chosen. Landscape photographers tend to set their camera aperture from f/8 to f/16, as these f-stops provide ample focus from the foreground to the distant background. Apertures from f/1.4 to f/3.5 create beautiful soft foregrounds and backgrounds, when the focal point is placed on the subject. These apertures are great for macro images. These apertures can also be used for portraits, but because the focal plane is so thin, it can be a challenge to get the tip of the nose, the eyes, and the ears in focus, which is often the goal when capturing images of people and pets. Apertures from f/18 to f/22 can be helpful in getting focus throughout the image and each will create (to varying degrees) a starburst effect on bright lights (e.g., headlights, street lights, holiday lights). F/22 is mostly commonly used to create this effect.

Focusing: Photographers have strong opinions on whether manual focus is the way to go or whether letting the camera auto-focus is more accurate. There is no need to debate which way is best, as the best one is the one you like most.

Focusing for long exposure images can be challenging and how to do it will have a lot to do with the type of camera you are using. For example, if the camera is mirrorless and has an electronic viewfinder (e.g., Fujifilm cameras), the photographer will be able to put a filter on the camera (sometimes as dark as 15-stop depending on the circumstances) and focus through the filter. However, if the camera has an optical viewfinder (e.g., most Nikon and Canon cameras), the photographer will not be able to see through darker ND filters. In other words, the photographer will need to determine the composition and obtain focus (either manually or auto-focus), then put the camera in manual focus, before putting the ND filter on the lens. If the photographer doesn't set the focus to manual before putting the ND filter on the lens, the camera will try to refocus (hunt), forcing the process to start again.

These are the steps to perform when the camera has an optical viewfinder:

- Mount the camera on a sturdy tripod
- Use auto focus or manual focus to get the image in focus, then switch to manual focus
- If focusing manually, use focus peeking to confirm focus

- Carefully screw the filter on without changing the focal length (telescope lens, such as 10-24mm) or touching the focus ring

Focusing can be particularly difficult when shooting night or star photography. If possible, find a bright light in the distance (greater than 30 feet away) or the brightest star in the sky and use it to set focus. You can also try to set the lens at infinity (if the lens has an infinity setting) and then back off slightly. Use manual focus peeking or the zoom feature on the LCD to confirm focus accuracy. Not every lens will have the same sweet spot for focusing, so this process can take some trial and error. Once the " sweet spot" for tack sharp stars has been identified, consider using tape to mark the spot on the lens to save time on future excursions.

Determine the correct exposure: The proper length of an exposure will need to be calculated when using filters. Again, cameras with electronic viewfinders have a leg up here, since they can see/focus through ND filters, and they can also set exposure (since most cameras meter off the focal point when not on manual mode). However, if the camera has an optical viewfinder, the photographer will need to perform a couple of additional steps. First, obtain the "proper" exposure for the scene without the filter. Pressing the shutter button ½ way after composing the scene should do this. Take note of the shutter speed. With this information, you can calculate the appropriate shutter speed based on the type of ND filter you are using (e.g., 3-stop, 6-stop, or 10-stop).

Calculating the shutter speed is not something you need to do in your head! There's an app for that. Essentially, with the app, the proper length of the shutter speed when the filter is in place will be calculated once the stop of the ND filter and the "proper" shutter speed have been entered.

In your cellphone's app store, look for something called Long Exposure or Long Exposure Calculator. Here is an image for the iPhone app:

In addition to the app, you can also look online for a long exposure calculator cheat sheet. Here is an example:

ND Filter:	3 stops	6 stops	9 stops	10 stops	13 stops	16 stops	20 stops
Exposure with no Filter:							
1/1000s	1/125s	1/15s	½s	1s	8s	1m	16m
1/500s	1/60s	1/8s	1s	2s	16s	2m	32m
1/250s	1/30s	¼s	2s	4s	32s	4m	1h
1/125s	1/15s	½s	4s	8s	1m	8m	2h
1/60s	1/8s	1s	8s	16s	2m	16m	4h
1/30s	¼s	2s	16s	32s	4m	32m	8h
1/15s	½s	4s	32s	1m	8m	1h	16h
1/8s	1s	8s	1m	2m	16m	2h	32h
1/4s	2s	16s	2m	4m	32m	4h	64h
½s	4s	32s	4m	8m	1h	8h	128h
1s	8s	1m	8m	16m	2h	16h	256h

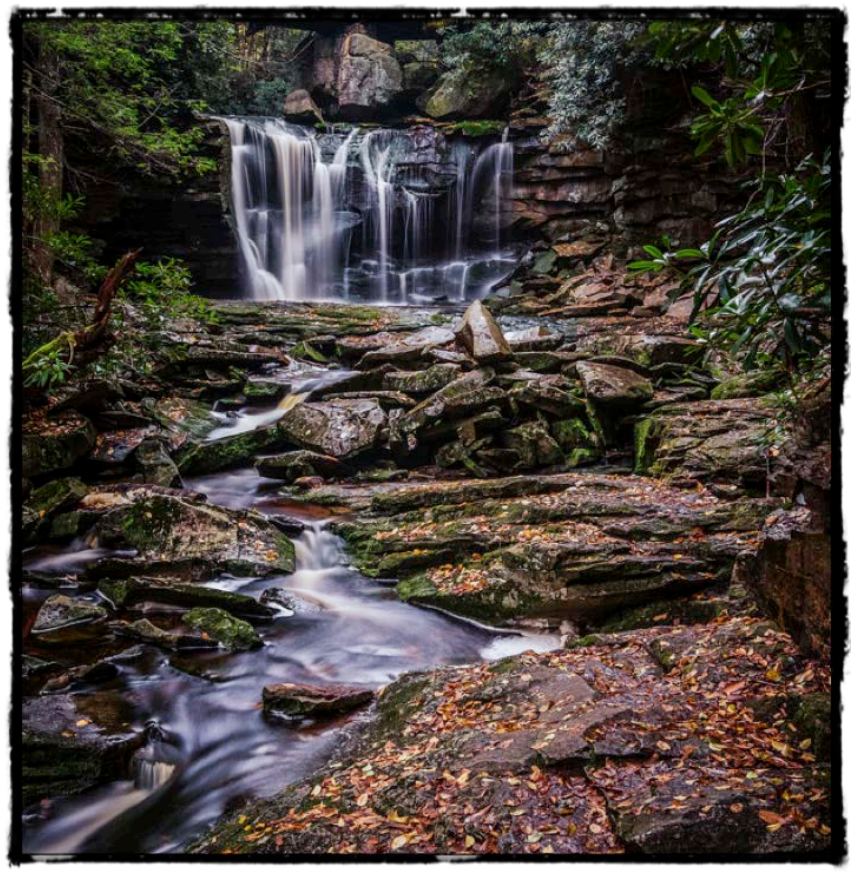
As the app image and the cheat sheet show, the results will be the same using either source. With a 10-stop filter, when the "proper" shutter length is 1/250, the length the shutter should be open with the filter in place is 4 seconds.

This brings us back to something mentioned earlier. Most cameras can only be set to 30 seconds. To achieve longer shutter speeds, the camera shutter will need to be set to Bulb mode. However, in Bulb mode, the camera shutter doesn't stay open on its own. It will need to be held open, either by hand or with a remote. Since it is nearly impossible to press a shutter button for multiple seconds without creating camera shake, a wired or wireless remote that locks in the open position is key to successful long exposure images.

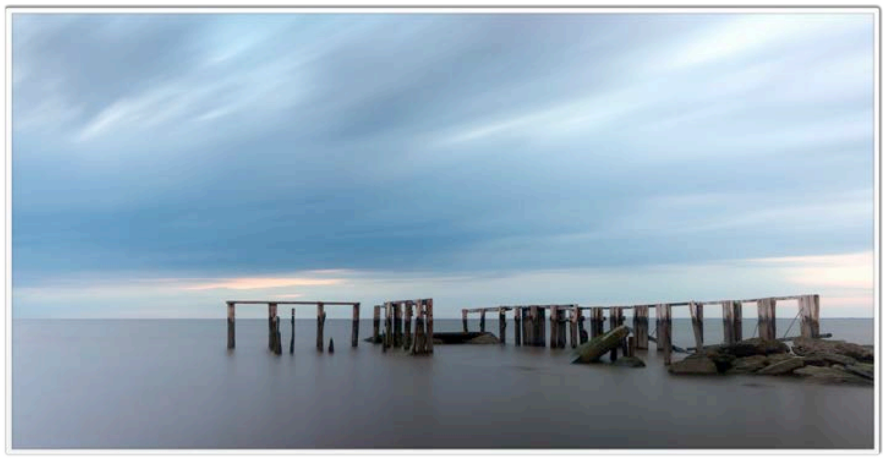
Let's take a look at some long exposure images created:

- Using filters
- Taking advantage of the time of day (early morning, late evening, night)
- Lens manipulation
- Long exposure images created in post process with the use of filters in programs such as Photoshop.

Using Filters:



10 SEC AT F/7.1, ISO 1250
10-STOP

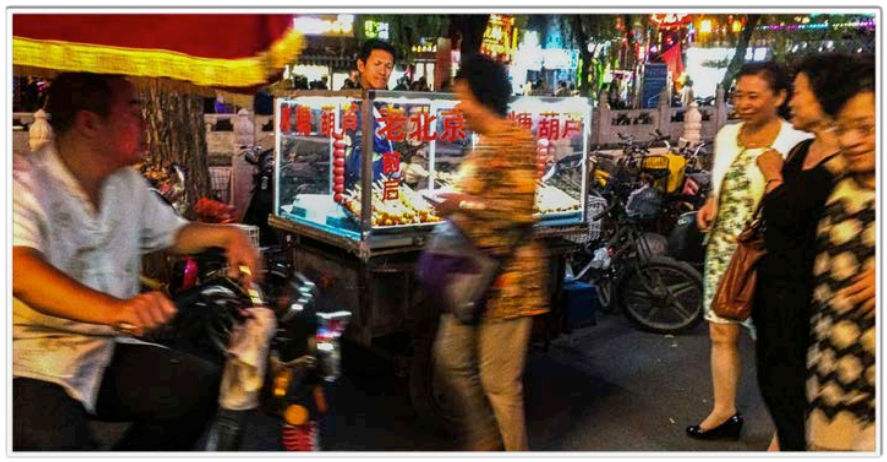


127 SEC AT F/9.5, ISO 50
10-STOP

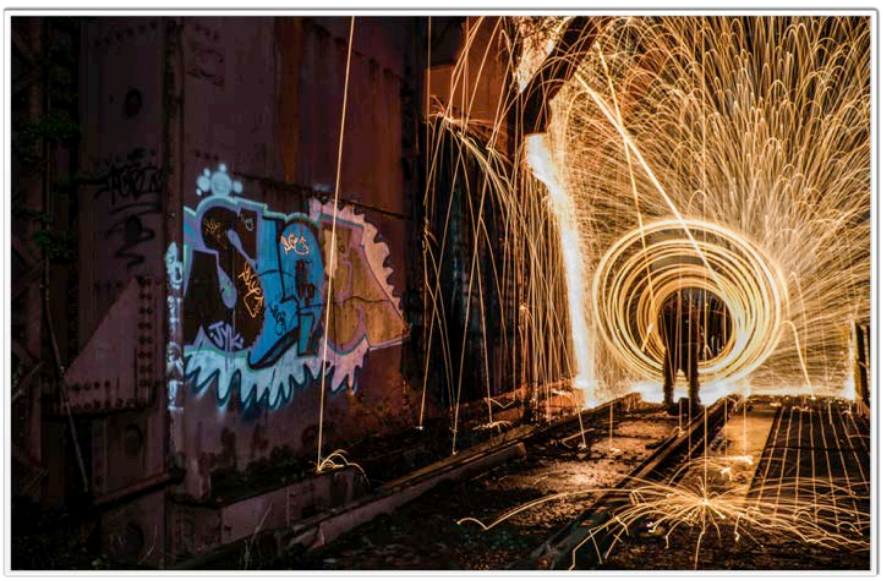
10 SEC AT F/1.O, ISO 1600
10-STOP

1.4 SEC AT F/7.1, ISO 640
10-STOP

Taking Advantage of the Time of Day:



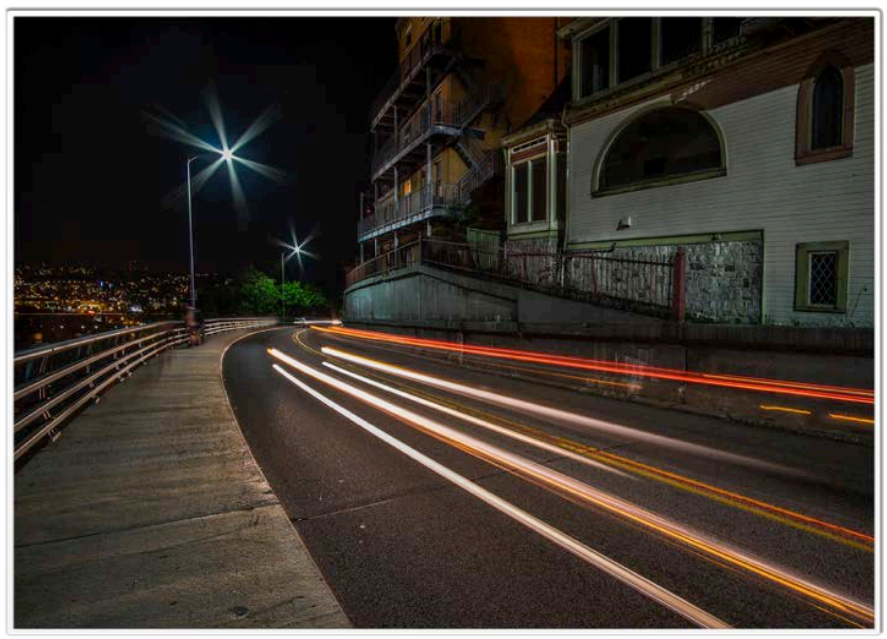
1/17 SEC AT F/2.2, ISO 800



25 SEC AT F/7.1, ISO 400

26 SEC AT F/22, ISO 200

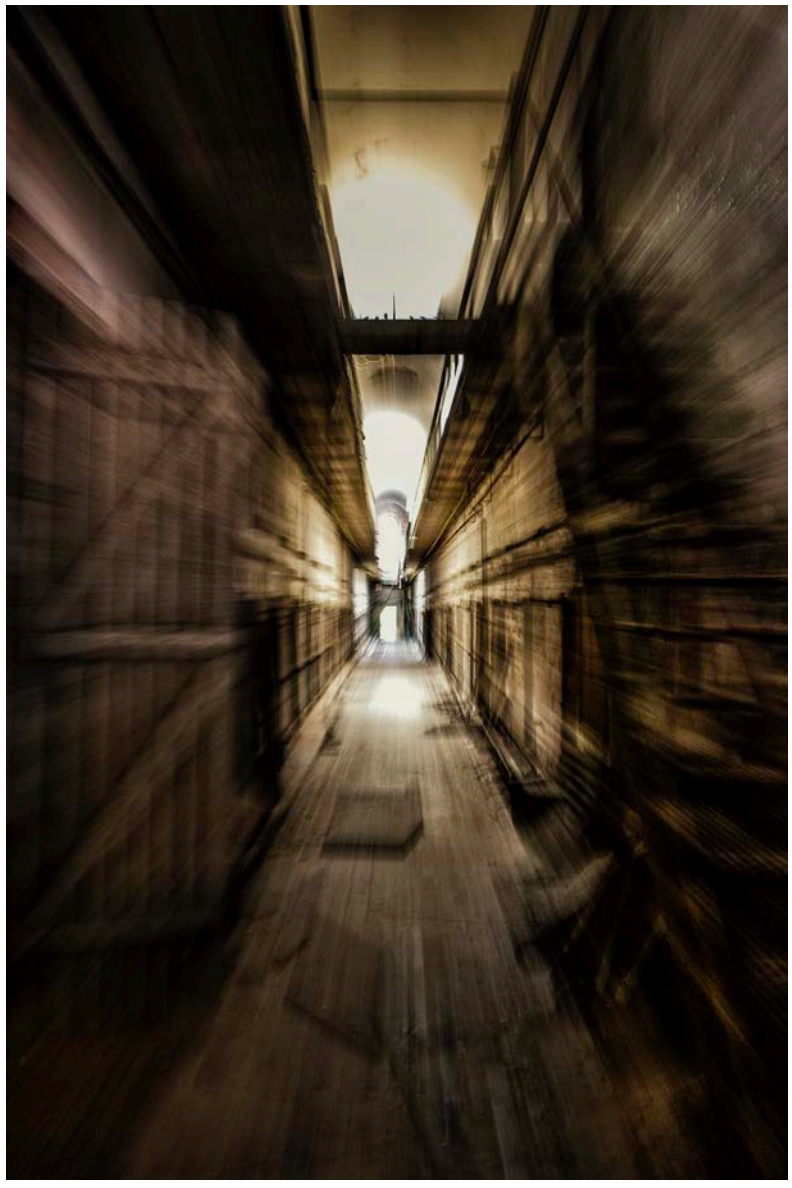
100 STACKED IMAGES, EACH 4 MINUTES EXPOSURES AT F/4, ISO 1250 FOR THE STARS, TENT IMAGE TAKEN SEPARATELY AND PLACED INTO THE FOREGROUND



8.5 SEC AT F/22, ISO 200

400 STACKED IMAGES, EACH 10 SEC AT F/4, ISO 2500

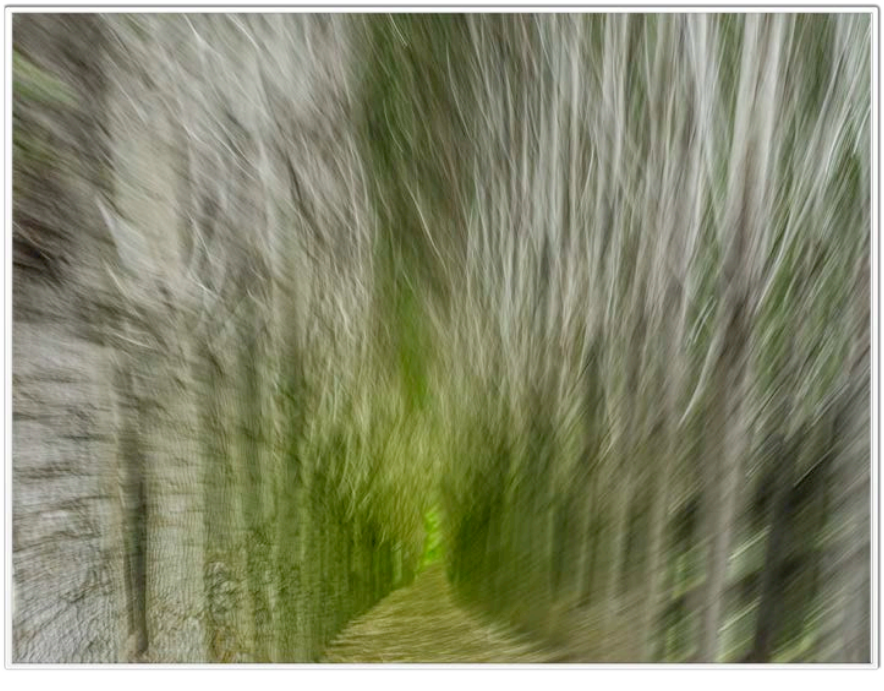
Lens Manipulation:



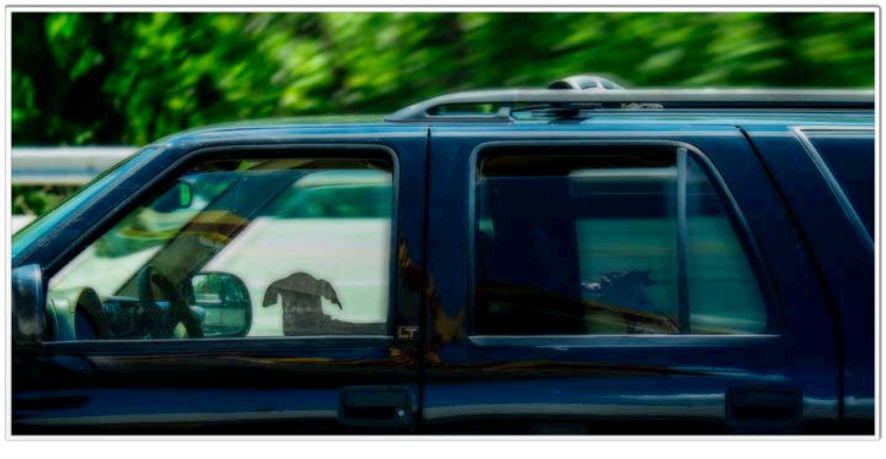
1/2 SEC AT F/9.5, ISO 320
LENS BARREL TWIST

1.3 SEC AT F/13, ISO 800
LENS BARREL TWIST

Long exposure created with filters in Photoshop:



1/20 SEC AT F/11, ISO 250
CAMERA TWISTED ON BALL HEAD



USE MOTION BLUR AND LAYERS/MASKS TO BLEND

FINAL THOUGHTS

As photographers, through our imagery, we are always looking for ways to share our experiences with other people. Learning the techniques that help capture long exposure images provides the photographer with more possibilities of expression.

Long exposures are another way to create unique images that tell a different story. They can place the viewer in the moment, where they can experience the sounds of waves, the crashing of water falling from great heights, or of the wind blowing the clouds through the sky.

Challenge yourself to tell a long exposure story on your next photography adventure!

For more information on our amazing photography tours, check out:

ROAD RUNNER
Photography Tours

www.roadrunnerphotographytours.com

Road Runner Photography Tours offers guided photography tours and adventures for beginner to advanced level photographers who are passionate about photography, enjoy travel, and prefer learning new techniques in the field and not in the classroom.

Most photography tours include a significant amount of classroom instructional time. However, we believe that when you travel, its important to spend time in the field learning how to use gear and maximizing photography opportunities. We are always there to help folks get comfortable with their camera equipment and if needed with image processing, but the photography tour itself will be focused on capturing images!

We created Road Runner Photography Tours to provide an alternative for photographers who prefer to focus on fieldwork. We believe that learning through practice, with camera, in hand is the best way to develop skills.

What differentiates us?

- We keep our photography tours small, with generally 3 or 4 participants to each leader, providing a great opportunity for learning.
- Our smaller group sizes allow for more flexibility, which allows us to take our folks off the beaten track to explore the sites other tours can't get to.
- We pre-scout our destinations and when needed have local guides with local knowledge of all the greatest locations!
- We do our best to accommodate our participants' "I must have this image" moments, while other tours won't even consider modifying the "tour" timing.

Our tours are for photographers who are looking to experience new places, build friendships, find photo-companions, and develop technique.

Let us show you all the great spots we have found so you can enjoy your photography tour vacation!

Welcome to the

Road Runner Photography Tours family!

About the Author – Denise Silva

Denise was the featured photographer in the July/August 2015 Photoshop User Magazine Who's Who in the KelbyOne Community Article. Additionally, Denise was recognized as one of the Top 200 Women Photographers Who Inspire by Nature Photo Guides and has had multiple articles published in Extraordinary Vision (EV) Magazine.

Denise finds every aspect of photography rewarding. From in-camera composition to post-processing. Photography is meditative, creative, and challenging. Her passion is to capture images and to share her experiences and knowledge with fellow photographers.

To this end, she and Don Rosenberger started Road Runner Photography Tours.

They look forward to sharing their passion for photography with you and know that their tours will not only take you to great places, but also give you an opportunity to build your network of photography friends while enhancing your photography skills through experience and knowledge sharing in a supportive environment. There is no better place to learn and develop your skills than in the field!

APPENDIX A

On the next page, we have listed the various vendors we use to supply our filters and other gear. In many cases, we are able to provide a discount code that may be used when purchasing.

Breakthrough Photography

http://breakthrough.photography?rfsn=689463.b29b8

Benro

www.benrousa.com

Discount Code = Roadrunner15

Singh-Ray Filters

http://www.singh-ray.com/

Discount Code = ROADRUNNER10