

Antelope Canyon

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GETTING THERE

Antelope canyon is famous for its colorful sculptured swirls carved in the pink sandstone by Antelope Creek as it drops into what used to be the Colorado River, and is now Lake Powell. The two most photographed sections of this slot canyon are located just 3 miles southeast of downtown Page, Arizona, just off of Hwy 98. The viewing site on the South side of Hwy 98 is referred to as the Upper canyon, and the site north of Hwy 98 is called the Lower canyon. Though the parking areas for each are only a half mile apart, the upper (southern) section is actually a 3-mile four-wheel-drive shuttle ride up the Antelope creek stream-bed from Hwy 98, making the two photographically interesting sections of the canyon about four miles apart.

Although both sites are on Navajo Indian tribal lands, there are separate Navajo-run pay booths for each, located on the north and south sides of Hwy 98 near the entrance into the Glenn Canyon Power Plant. To reach the sites, drive south from Page on Copper Mine Road until it runs into Hwy 98, then go east on Hwy 98 2.1 miles to the Antelope Canyon pay booths, which are just off either side of the road. The fees for visiting the sites are a few dollars each and depend on whether you pay at the door or hire a guide in Page.

The two sections of Antelope canyon are quite different in that the upper slots are much larger, with room-sized vaults and a level sandy floor, whereas the lower, northern section is extremely narrow—often 3 feet or less—with ladders used to allow access to the stream bed as it cascades steeply down toward lake Powell.



Upper Antelope Canyon



Lower Antelope Canyon

Upper Antelope

For the upper (southern) section of Antelope canyon ones leaves their car in the pay-booth parking lot and takes a 4x4 Indian shuttle truck up the broad sandy stream bed of Antelope wash. About 3 miles upstream, the flat wash ends abruptly, and Antelope Creek enters the slot canyon cut deeply through a quarter-mile-wide, 130-foot-high red sandstone bench. The 10-foot-wide floor of the slot is a continuation of the flat sandy wash, and offers easy walking and spacious areas for viewing and photography. What the upper Antelope slot is most famous for is the narrow shaft of sunlight that can beam down to the floor of the slot under the right viewing conditions. This offers a wonderful experience, but only occurs midday during the summer when the sun is able to pass down through the deep slot. At other times of the year, the sun beam is absent, but the views in the large spacious rooms of the slot are still dramatic.

Because of its remote location away from your car, one needs to be sure that you take all your needed clothing and photography essentials with you when boarding the shuttle. Also, the shuttle runs on a fixed schedule, typically offering about an hour up in the slot.

Lower Canyon

For the lower (northern) section one leaves their car in that area's pay-booth parking lot and simply walks 100 yards west to enter the 2-foot wide ground-level upper end of the slot where Antelope Creek starts its precipitous cascading fall toward Lake Powell. The slot bottom is as narrow as one foot in places and is connected by a series of ladders that allow access down its frequent dry waterfalls. Exit is via a multistory stairway ladder about a half mile below where you enter...or you can retrace your steps and exit back out the entrance.

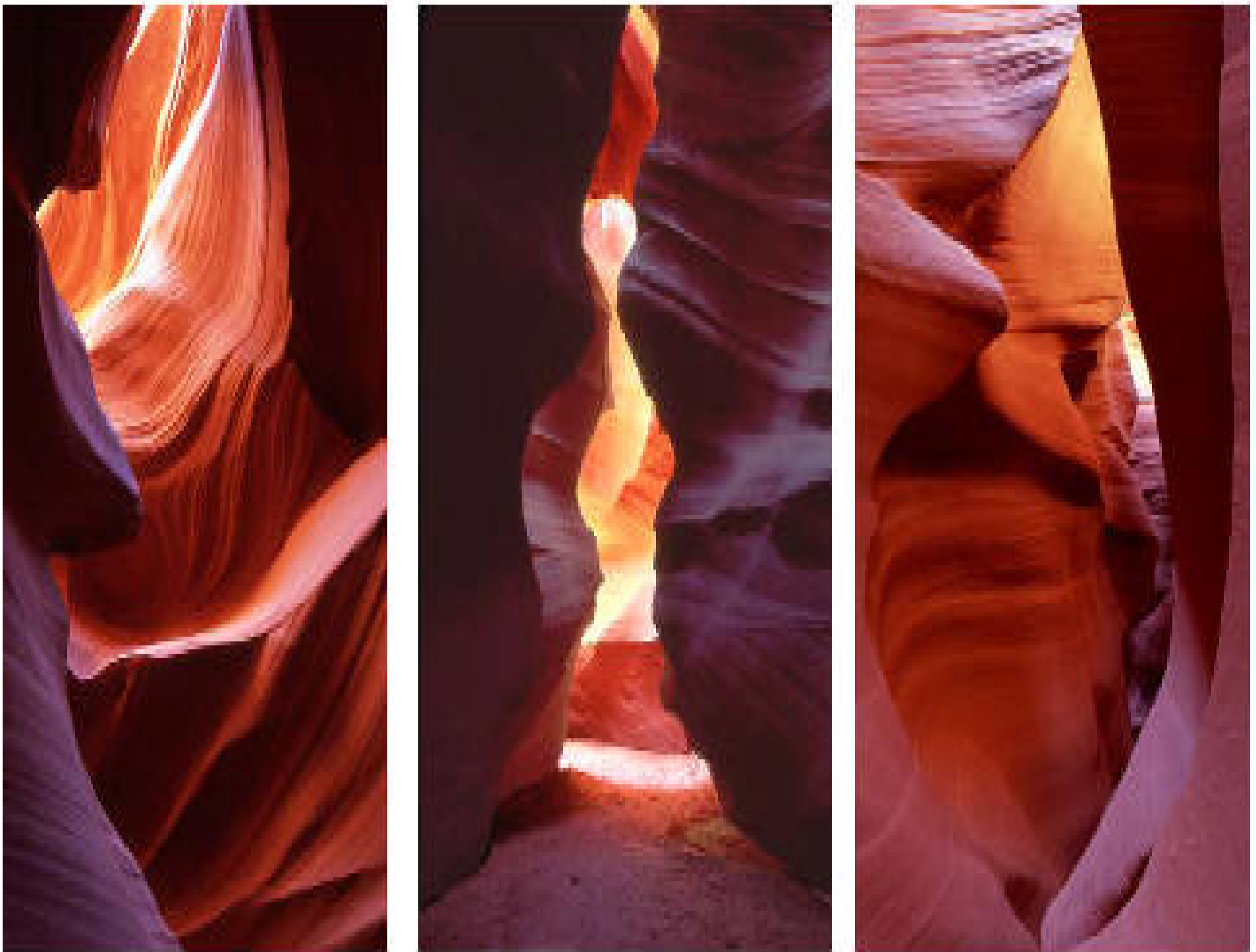
Though this location is walking distance from your car, one still needs to be sure that you take all your needed clothing, water, and photography essentials with you when heading into the slot—simply because of the difficulty of getting back to the car. However, there is no shuttle-imposed time limit on your stay, which is great, as the number of visually and photographically interesting subjects is endless, and the views change constantly as the sun moves across the sky, filtering the light softly across the stone walls.

PHOTOGRAPHIC GUIDANCE

The Antelope slot canyons are famous for their rainbow-hued sculptured swirls carved in the pink sandstone by Antelope Creek. What gives the slots their beautiful colors and shading is sunlight that has filtered deep into the slot through multiple reflections off the walls. By the time the sunlight reaches the bottom of the slot it has dimmed to the intensity and colors of candlelight, but with a beautiful diffuse character that provides wonderfully soft illumination of the carved sinuous shapes. The photographic challenge is to capture the beauty of the sandstone waves under this warm soft lighting.

Depth of Field

One of the first photographic challenges in the slot is the deep, narrow character of the fields-of-view — often containing both very near foreground (1 meter away) and more distant elements several meters away. To capture this type of subject with good sharpness requires careful manual focusing and use of a small lens aperture (*f*/11 to *f*/22) to achieve the necessary depth-of-field. This type of photography is not well supported by modern autofocus cameras that presume a prominent central subject to focus upon and need a minimum level of illumination to allow the autofocus to work well. The preferred approach for a slot canyon is to use a lens with a depth-of-field scale that



allows the lens focus point and aperture to be manually set for the range of subjects in the field-of-view. If a modern autofocus camera is used, try to achieve a focus 1/3 of the way from the nearest to the farthest objects in the field-of-view, and try to use a small lens aperture of $f/11$ to $f/22$ to get a sufficiently large DOF.

Lens Choice

Because of the nature of the slot with its large vertical and depth scale, yet very cramped quarters, I've found that a wideangle-to-normal zoom lens ends up as the workhorse lens. Although most zoom lenses lack depth-of-field scales, they offer very advantageous composition control. In general, moving toward or away from the subject is not possible in the cramped quarters of the lower canyon. Thus, a zoom offers the ability to precisely frame the picture without having to move the camera. A typical 28mm to 70mm zoom lens (35mm film-size equivalent) would be my first choice. I would also take an ultra-wideangle (18mm in 35mm film-size equivalent), and perhaps a short telephoto just for special shots.

One feature of the slot is that it tends to favor vertically oriented photographs, which tend to work less well with digital projectors and HDTV screens, which are invariably oriented horizontally. For these end-use applications, consider an ultra-wideangle lens that is capable of capturing the towering height of the slot across the image's short vertical dimension, while including interesting foreground material across the horizontal width.

Exposure Control

Competing with the desire for a small lens aperture, is the extremely low illumination level present in the photographically interesting parts of the canyon—often so dark that one can not read the camera's settings without a flashlight. Because use of a camera flash destroys the beautiful soft lighting and warm colors, it is critical that the exposures be made using natural lighting without flash. The images shown above were made using exposures on the order of 30 seconds to 2 minutes at $f/11$ with Fujichrome Velvia ASA 100 film. This film has no significant reciprocity problems, and thus maintains its film speed and superb color and grain quality even with these extremely long exposures. Exposures were determined using a professional-grade SLR with behind-the-lens auto exposure capability that easily accommodated these extremely long exposure times.

Nowadays most photography is carried out with Digital SLRs with a very different set of exposure and "film" capabilities. A key advantage of a digital SLR is its ability to immediately confirm the exposure adequacy of each shot, and thus to allow iterative determination of the optimal shooting parameters such as film speed, exposure time, and white balance. The exposure control of professional-quality digital SLR's seems to have the dynamic range necessary for these very low levels of illumination, but on a previous trip I confirmed that a popular point-and-shoot digital camera was unable to function at all at these illumination levels.

One issue with Digital SLRs is the high level of digital noise that can occur at low illumination levels. This should be carefully explored — preferably prior to arriving at the Antelope slots — to determine the preferred camera ASA speed and other settings for your particular camera. Something that should be factored in is the ability of noise reduction software, such as Noise Ninja, to smooth out the digital noise during image post-processing. See, for example, <http://www.michaelalmond.com/Articles/noise.htm> for a comparison of noise reduction software capabilities. It is also important to insure that the camera's automatic white-balance settings don't try and remove the lovely warm-tone hues that you've struggled so hard to capture. To allow multiple corrections to be applied later, such as white balance, shooting in RAW format is advisable.

Contrast Management

Another critical issue associated with exposure control is maintaining all elements of a given scene within a tolerable range of brightness. In this regard the Antelope slot canyons are about as challenging as it gets with the presence of deep shadowed areas and as well as central highlights associated with sunlit or skylit surfaces within the slot. The key point is to carefully manage the contrast range in each photo and to strictly limit inclusion of overly bright elements such as sky or brightly lit canyon walls, or overly dark areas that will turn totally black. Though images with significant areas of burned-out highlights or solid black are generally unsatisfactory, the best pictures seem to be those with the broadest range of brightness and color hues possible, consistent with remaining within the final image's dynamic-range capability.

Another capability made possible with digital images is the use of HDR (High Dynamic Range) image merging techniques. Here, one takes a series of (3 to 6) bracketed exposures of the same identical scene and uses HDR software, such as Photomatix, to merge the multiple images so as to capture and flatten the high dynamic range of the original scene into one that is viewable in a normal 24-bit color space. See, for example, http://www.naturescapes.net/072006/rh0706_1.htm for a discussion of HDR technology as implemented in Photomatix & PhotoShop CS2.

Tripod and shutter release

A final topic worth touching upon is support equipment. Because of the very dim light levels and resulting long exposures, hand-held photography is quickly ruled out, and a good sturdy tripod is an absolute necessity. But not just any tripod will work effectively in the tight cramped quarters of the lower canyon and meet the desire to quickly position the camera as desired to achieve an identified composition. Specifically, one needs a highly adaptable tripod, preferably with a ball head and highly articulating legs that can be quickly set up in any shaped crevice. I personally use a medium-sized Gitzo tripod with a height adjusting rack, legs that independently fold out up to 90 degrees, and a custom ball head mounted with two additional fixed rotary axes: a panning axis, and a roll about the lens axis (to allow quick horizontal to vertical format changes). Even then, positioning the tripod is invariably the weak link and most time-consuming task in getting the composition I want. Because classical tripods offer good vertical but poor horizontal adjustability, the addition of an adapter that allows the camera to be positioned horizontally up to a foot left or right of the tripod's central axis can be a useful addition.