

No Escape



Paul Cameron, ASC employs new tools to lend an old-school aesthetic to the police drama
21 Bridges

By Jay Holben

In the late hours of the evening, two masked men enter a restaurant and hold the manager at gunpoint, demanding he take them to the goods. The robbers discover 300 kilos of uncut cocaine worth millions on the streets. As they scramble to pack up their loot, the NYPD shows up at the restaurant. During the ensuing firefight, the robbers gun down eight of New York's finest.

When Detective Andre Davis (Chadwick Boseman) arrives on the gruesome crime scene, he knows he only has a few scant hours to catch the murderers before they're able to flee the city and disappear. To aid in the manhunt,

he orders that the island of Manhattan be cut off — all 21 bridges leading in and out will be shut down, along with tunnels, trains, river crossings and subways. It's a battle against time to find two suspects hiding in a city of 1.6 million.

21 Bridges was directed by Brian Kirk, who has built an extensive list of credits in the television arena, having helmed episodes of *Murphy's Law*, *The Tudors*, *Brotherhood*, *Luther*, *Penny Dreadful*, *Game of Thrones* and more. Joining Kirk for this action thriller was cinematographer Paul Cameron, ASC, whose previous work includes *Gone in 60 Seconds* (AC June '00), *Man on Fire*, *Collateral* (AC Aug. '04), *Total Recall* (AC Aug. '12), *Pirates of the Caribbean: Dead Men Tell No Tales* (AC June '17) and HBO's *Westworld*. "When I met with Brian," Cameron shares, "he said he wanted to do an old-school, New York, Sidney Lumet type of film, and I was absolutely on-board with that."

For *21 Bridges*, Cameron chose to capture in 6K with Sony's Venice full-frame camera, which features a 24x35.9mm 6K (6048x4032 photosites) imager. "I shot a short film for my wife, Laura Stabilini, on the Venice, with

Unit photography by Matt Kennedy. All images courtesy of STXfilms.

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Zeiss Supreme Primes — along with a couple of commercials — and I really liked the combination of the full-frame camera and those lenses,” the cinematographer says. “I was interested in doing the movie that way, but cropping the 6K spherical to 2.39:1.

“In testing for *Bridges*, I set up a couple scenarios with actors and police lights,” Cameron continues. “I also decided to try out the Servicevision Scorpio anamorphics, and they had this wonderful energy, especially when interacting with the police lights. They had good halation, but they didn’t blow out like a lot of anamorphics do; they take the hit from the

highlights and recover quickly. Both Brian and I gravitated to the energy of those lenses. The Scorprios are full-frame anamorphic [with a 2x squeeze], but they don’t have a lot of the anamorphic ‘flaws.’ They’re really

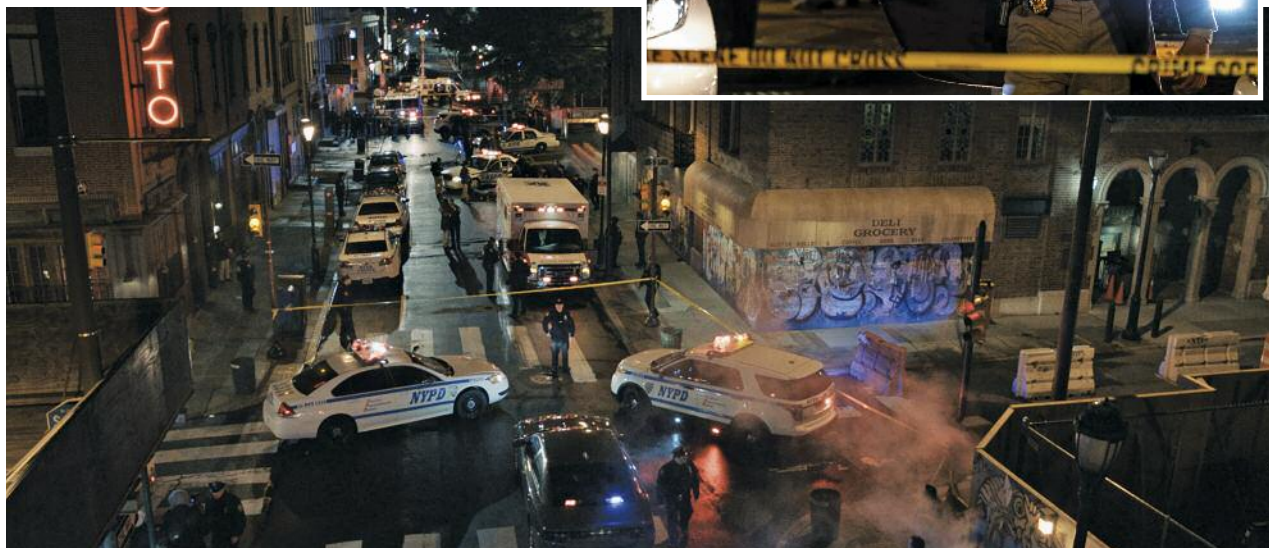
designed like spherical lenses.” [Ed. Note: see sidebar, page 54.]

“The Scorprios were a good choice for the film,” Cameron adds. “Many of the focal lengths are T2. They’re small and lightweight, and are great for Steadicam, car rigging and drone work. They also have an extensive range of focal lengths. The real thing for me was, ‘How do I get a nice, creamy anamorphic lens without the top and bottom of the frame being out of focus?’ That can drive me mad. The Scorprios don’t have that problem at all.”

For the production’s cameras and lenses, Cameron notes, “Once again I turned to Keslow Camera. [ASC associate] Dennis McDonald and Brad Wilson put together a fabulous package for the film and shipped it out to Philadelphia for us.”

The filmmakers’ choice to shoot in the full-frame format required the use of longer focal-

▲ Paul Cameron, ASC
lines up a Sony Venice
camera on the set of
21 Bridges.
▶ & ▼ Detective
Andre Davis
(Chadwick Boseman)
arrives on the scene.



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Actor Sienna Miller plays a fellow detective who joins Boseman's character in the manhunt.

length lenses to achieve an equivalent angle of view relative to Super 35mm. In turn, the use of longer focal lengths from the same camera-to-subject distance equated to less depth of field in the image. For example, if a close-up in Super 35 were to be shot with a 50mm spherical lens, in order to maintain the same subject size, distance to camera and horizontal angle of view when switching to anamorphic, the

lens would need to be a 90mm — and when switching to full frame, that lens would now need to be a 120mm anamorphic. The longer focal length means less depth of field for a given composition than in Super 35.

"Full frame is kind of the new frontier," the cinematographer muses. "It's not quite like 8-by-10 photos, but it is a bit like shooting medium format. Suddenly we're seeing a much shallower depth of field compared to a Super 35 sensor. With the Scorpios, shooting wide open [at T2.2] is the effective depth of field

about a T0.5 in Super 35 [for the equivalent field of view — i.e., shorter focal-length lens — at the same distance].

"Full frame seems like a more elegant frame in digital capture," Cameron continues. "We have been used to a Super 35mm-sized sensor for a while now, and we've been struggling with various codecs on different digital systems that required us to use less than the full sensor for higher frame rates. It was really the [introduction] of [Arri's] Alexa 65 that started to change things for me. The larger sensors combined with both anamorphic and spherical full-frame

The "spherical feel" of Servicevision's Scorpio full-frame anamorphic lenses is the result of their integrated rear anamorphosizers. When the anamorphot cylinders are placed behind the entrance pupil of the lens, rather than in front, many of the attributes associated with anamorphic photography aren't present — namely the horizontal flares and elliptical bokeh. This placement also eliminates much of the astigmatism, as well as the inconsistency in the plane of focus, that is common with many anamorphic lenses. All of this makes for a noticeably "cleaner" anamorphic look.



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Cameron confers with his crew regarding a camera move captured with the assistance of a Steadicam and rickshaw.



lenses are a positive step forward in digital capture.”

Cameron notes that he wasn’t always shooting wide open for *21 Bridges*. He explains that he would often light wide shots at a higher stop and then incorporate internal ND filters to shoot with a shallower depth of field; then, for close-ups, he would pull the internal NDs in order to stop-down the lens and increase the depth of field. “In the past four or five years, there’s been a rush on anamorphic movies, and cinematographers are shooting wide open quite often. I try

to be mindful with long-lens close-ups to avoid that feeling of the actor floating in an out-of-focus environment. You have no idea where the characters are or what their spatial relationship is to each other.

“I try to be conscious of managing that depth of field and keeping the characters grounded in their environment — making things feel much more real,” Cameron continues. “I’ll shoot at a deeper stop on a close-up, even at night, so that we get a sense of the background and it feels like a closer match to the wider shot. I’ll usually shoot my [nighttime] wide shots with an ND 0.6 and open up as wide as I can, and then I’ll pull the ND 0.6 on the close-ups and stop-down two stops. The background is still out of focus, but I’m managing layers of focus. This is something that is very personal and important to me.”

While *21 Bridges* takes place almost entirely on the island of Manhattan, the production chose to shoot the majority of the movie in Philadelphia.

“That was probably the biggest challenge of the film,” Cameron recalls. “We only had four days in New York to make a New York movie, and the rest was in Philadelphia. How do you tie it in? In the beginning of prep, you have a script and you’re scouting; you’re getting your main New York locations, and back in Philadelphia you’re finding locations to match, and you come up with lighting ideas and tie them together. But then, as the movie gets closer and pages change and the New York locations change, you’re trying to redo the same puzzle with new pieces. It’s quite a challenge.

“The key to mixing locations is to tie the fake location to the real one with careful planning,” Cameron asserts. “We might know that for [a particular] portion of a scene, we’re driving this way in Philly, and then we cut to a shot in New York. When you shoot the reverse in a different location, you bring in a set wall that matches the exterior location, and then when the characters go out the door it ties in perfectly. You go

TECH SPECS

2.39:1

Full-frame 6K digital capture

**Sony Venice,
Arri Alexa Mini (drone work),
DJI Zenmuse X7 (drone and handheld work)**

**Servicevision Scorpio full-frame 2x
anamorphic lenses**

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► The cinematographer embraced a mix of color temperatures for his night-exterior lighting. “This might be my last go-round with the mixed blue-green and oranges of the urban landscape,” he says. “The world is changing to LED.”

▼ Cameron and director Brian Kirk consider their next setup.



through that process of putting the pieces together. It's fun! I like doing that practically and trying not to rely on visual effects. I try to push the director to be fearless about connecting locations.”

Nearly the entire movie takes place at night, and predominantly on exterior locations. Within those environments, Cameron explains, “I was

going for an older, moodier look. Think back to Michael Chapman [ASC] and *Taxi Driver*, and Robby Müller [NSC, BVK] and *The American Friend*. Robby was a master at it — a natural look with a mix of color temps.”

About 15 years ago, Cameron worked with gaffer Philip Walker to design a fixture they called the T-Par,

which comprised a 12K housing lamped for a 1,200-watt sodium-vapor or metal-halide fixture — effectively delivering an output equivalent to a 4K sodium off of a small putt-putt generator. “I’ve never really been happy with gels to create the feel of sodium-vapor or metal-halide lamps — there is nothing like the real thing,” Cameron says. Thanks to the economy of the T-Pars, he adds, “I can get more condors and fewer generators, and I’m lighting with the real color temperature, both sodium vapor and metal halide.

“This film might be my last go-round with the mixed blue-green and oranges of the urban landscape,” the cinematographer notes. “The world is changing to LED, which is predominantly ‘white’ — that urban night-time look is changing all over the world. Shooting a contemporary movie in the city at night isn’t going to have the blue-green of mercury vapors or the orange of sodium; it will all be the cool-white of LEDs. That’s the modern look, like it or not. Luckily, however, there are sections of Philly that haven’t yet transitioned to



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◀ Davis meets with two of New York's finest, portrayed by J.K. Simmons (left) and Keith David.
◀▼ The filmmakers find their frame for a funeral scene.



LED, so we had some areas where we could still find sodium and mercury lights.”

Cameron used T-Par fixtures to augment those existing sodium- or mercury-vapor fixtures. “We had to

be economical about it,” he says. “We would work in a few condors and then work off rooftops for other sections. With the T-Pars and a couple putt-putt generators, we could light up five city blocks with minimal

The Venice camera features built-in neutral-density filters in eight steps from 0.3 to 2.4, eliminating the need for external ND filters and making it extremely fast to switch between densities. “I like that I can control the ND and the stop myself,” Cameron attests. “I can change it quickly on the fly and have full control over my depth of field.”

power and gear.”

The cinematographer also made use of the Venice’s dual-ISO function, which can switch the camera’s base ISO from 500 to 2,500. “I used the 2,500 ISO on some close-ups when I wanted that bigger stop but didn’t want to add light,” he says. “About 20 percent of the film was shot with 2,500 ISO. One of the locations where I used the higher ISO was a meat-packing plant with mostly practical lighting. I didn’t try to replace all the bulbs, but rather shot it at 2,500 with a touch of fill light and eye lights where needed.

“I could easily shoot an entire film at 2,500; it’s so clean,” Cameron says. “It adds a little noise, but it’s very little. There’s also a little loss of saturation, especially in the red channel, but we found we could put it back in with the LUT — which was mostly a [Kodak Vision3 500T] 5219 emulation done by Tom Poole of Company 3 in New York. The LUT also took a little contrast off the look of the Scorpios, with a soft roll-off to the whites.”

Poole also served as colorist for the final digital grade, during which “we also added LiveGrain,” Cameron notes. “For me, that’s the most elegant film-grain tool on the market. Whereas many grain programs are essentially overlays, this is a program where the grain responds as it would on film negative, but you have the range to enhance the size and contrast of the grain, and you also have the ability to select an IRE range and [adjust the grain] within. The bottom line is that [grain produced with] LiveGrain feels alive. It also essentially softens the film a touch, like some old higher-speed film stocks. I try to use it on every digital film.” →

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With the exception of the T-Pars and sodium and mercury vapors, Cameron mostly lit *21 Bridges* with LED fixtures, primarily LiteGear LiteMats. "I'd go in and box a set with pipes and half a dozen [LiteMat] 2L or 4L fixtures [that we fitted] with honeycombs," he says. "They're wireless and can be run off batteries; we could get them rigged up fast, and they're really versatile. I also worked in [Arri] SkyPanels on the ground. And with the high ISO, I could do car work with small Astera [LED] tubes suction-cupped or taped to a window and controlled from an iPad as we drove. This kind of stuff is really groundbreaking. I wish I'd had this technology on *Collateral*!"



The action surrounding the drug heist happens at a restaurant and in the street just outside, and it was shot over the course of a week. "For me," Cameron reflects, "it was about, 'How do you suspend 15 to 20 minutes of the movie at a single location and make it feel interesting and emotional?' I didn't want to rely on lighting these scenes with just police lights, but at times there's a definite energy and pathos to seeing the police lights on people's faces.

"The biggest challenge was, 'How do I move the camera 180 and

360 degrees around these characters and still light them effectively?' We designed a few very unusual rigs, basically attaching Astera Titan [LED tubes] and 2L and 4L [LiteGear] LiteMats along pieces of truss, and hanging them off of a condor over the street, to one side or another. We'd twist it selectively to use three tubes at the end at 50 percent, and another one at 25 percent for a backlight sodium look. We'd move this light bar around and switch between fixtures with the camera moving 180 degrees around Chadwick. There

were quite a few setups where we would do stop pulls and douse lights as the Steadicam would shift over, or we would shift lights from one end of the bar to the other so that as the camera moved I could still maintain the shape on the face. I don't like to give a general light; I'd rather take care and shape the faces. I'm usually looking for that three-quarter backlight that shows the structure of the face and lets the light fall off toward camera."

During the manhunt, Detective Davis is joined by another detective,

▲ Cameron fine-tunes the image. ▼ Davis confronts one of the suspects (Stephan James).



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For James' character, nothing about the heist — or its aftermath — goes according to plan.

played by Sienna Miller. This presented Cameron with the classic scenario of having to light for two different skin tones in the same shot. His solution, he says, was to “use larger sources for the reflective quality of black skin, and then we do a little power-windowing in post to bring out the eyes and faces a bit. We

sharpened the eyes a touch on many, many scenes, which helped to keep the film dark while still having detail in the faces.

“Eye lights are so very important, and I think they’re extremely underused in contemporary lighting,” Cameron opines. “A lot of people seem to feel that they’re an

antiquated and old-school approach to lighting a human being on the big screen, but every actor I know is looking for an eye light on every single camera setup to this day.

“There are subtle ways to do it,” he continues. “The key is to put that little ‘pop’ of light in the eye if you’re not already getting it from the main light source on the set. In the past I’ve seen a lot of people use a small or medium-sized Fresnel next to the camera and scrim it way down — that’s a really old-school way to do it. Others use a small LED or Kino on the camera; I’ve seen big movies with this stick reflected in people’s eyes, and it just doesn’t look right. It doesn’t look real.

“I try to use eye lights that are more natural,” Cameron says. “If there’s a window that has a certain shape, I’ll lean towards that with the eye light, and use a 4-by-4 panel with fabric over the diffusion or bounce,

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and I'll make it look like an actual window reflected in the eye. However you do it, I feel people need to connect with an actor's eyes to connect to the character. If they don't see the eyes because they don't have an eye light, then there's a lack of connection."

As many productions do these days, the cinematographer employed drones to shoot the action in the city streets. "We used an opticopter that flew an Alexa Mini for a number of shots, and we also used the DJI Inspire 2 with the [Zenmuse] X7 camera for a few shots. Specifically for finishing in 4K, we're getting good results from the X7, especially in situations where we couldn't use a larger copter."

The filmmakers also made somewhat unorthodox use of the X7 by taking it off of the drone, leaving the camera and gimbal to be used as a small, stabilized, handheld system for



Backlit by sodium-vapor units, the detectives continue their pursuit.

chasing Boseman and bad guy Stephan James as they hopped over turnstiles and fences and weaved through tight hallways. In this configuration, Cameron referred to the X7 as the "Warp Cam."

"Filmmaking today is a challenging industry," the cinematographer concludes. "Budgets are getting

tighter. We want to make these movies, and some will be successful, but we have to continue to take risks. Accept the challenge. You can't be in New York as much as you want to be? Take the leap of faith and figure out how to make it work. That's the job of the modern cinematographer." ♦

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