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## Managing the Risks of Ancient Artifacts By Matt Alderton

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Ancient artifacts are coming back to haunt project managers trying to deliver construction projects. Work on a supermarket expansion project in Paris, France this year had to be halted while a team spent two months excavating more than 300 medieval-era skeletons. And developers discovered 15,000 pre-Columbian artifacts along the route of the planned Nicaragua Canal—before they'd even broken ground. Now, further discoveries underground could threaten the US\$50 billion project's 2019 completion date.

Archeological findings can wreak havoc on a project's budget and schedule, as work has to stop while the discoveries are investigated, documented and excavated. Careful planning and communication, however, can prevent discoveries from throwing the project completely off track.

#### **Assess Before Distress**

Managers of the £14.8 billion Crossrail railway-line program in London, England held archeological investigations at each site before construction.

"That approach has paid off very well," says Jay Carver, lead archaeologist, Crossrail, London, England. "We've had no serious delays, although we've had some really, really excellent [archaeological] finds."

The preconstruction archeological assessments required extra time and money on the front end, but they allowed the project team to avoid unexpected delays and expenses later. "It allowed us to put some real meat on the bones and say, 'Look, we're going to need at least three months here, a month there and probably only a couple of weeks at this more minor site," Mr. Carver says.

Such planning was important. Equally critical, however, was planning together. "Each site team and each project manager literally sat around a table figuring out what the approach was going to be at each site, what the critical archaeology activities were going to be and where we should place archeology in the program" to minimize impacts to budget and schedule, says Mr. Carver.

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Of course, surprises still emerge, despite all the planning. That's why the plan also included backup mitigation measures, including program acceleration. "On several sites, we've used shift work and nighttime lighting to enable the archaeology work to accelerate," he says.

These mitigation measures, which help to minimize construction delays, were a real-time collaboration between archaeologists and project managers. "When the project manager knows the archaeology has to happen on his or her watch— when he or she takes a personal interest in it and makes sure team members are not banging their heads together to resolve possible program conflicts—it makes a huge difference," Mr. Carver says. "We couldn't have achieved anything as an archaeology team without dedicated support from the project managers."

### The Secret Ingredient

Since construction began in 2007, archaeologists working on a US\$5.3 billion expansion of the Panama Canal in Panama have recovered more than 2,000 artifacts belonging to all periods of human habitation. Panamanian law protects these irreplaceable cultural artifacts, says Zuleika Mojica, environmental specialist for the Panama Canal Expansion Program, Panama City, Panama.

Procedures established prior to earthmoving are the secret ingredient leveraged by the project team to protect both artifacts and project progress, Ms. Mojica says. "At the start of the project, the Panama Canal Authority [ACP] established a procedure for the management, protection, coordination and rescue of cultural and paleontological resources," she says. "When a finding is reported in project areas, the contractor, subcontractor or staff member must report the finding to the ACP and must deliver any archaeological, historical or paleontological remains."

Although work must stop immediately at the site of the finding, it can continue elsewhere, according to Ms. Mojica, who says the protocol has kept interruptions from becoming longer delays by ensuring a swift and expert response.

### Close Calls

A tunnel project that is part of the US\$3.1 billion Alaskan Way Viaduct Replacement Program in Seattle, Washington, USA had to be temporarily halted in October 2014 when archaeologists monitoring the work encountered pieces of historical seashells. The shells, it was thought, might indicate the presence of prehistoric artifacts significant to Native American tribes.

To handle such scenarios, the project team has an "unanticipated discovery plan" outlining what should happen next, says Steve Archer, cultural resources manager for megaprojects, Washington State Department of Transportation, Seattle, Washington, USA. This plan is foremost a communications plan, instructing the project team to stop work, create a buffer around the discovery and contact the appropriate stakeholders so they can advise on next steps.

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"For this project, we're consulting with five federally recognized [Native American] tribes. Very often when we run into something, we're not quite immediately sure whether it's significant," Mr. Archer says. "We got the call [about the shells] at 3 or 4 o'clock in the morning, and we were down there the same morning putting the discovery plan into motion."

Although the project has made national headlines for its stalled tunnel-boring machine, Bertha, the shell discovery was dealt with quickly. Work paused while archaeologists and tribal stakeholders investigated, and ultimately, it was determined that the shells were not indicative of Native American artifacts. Eleven days after the shell discovery, work resumed. Without the unanticipated discovery plan, the delay could have been much longer, Mr. Archer says.

Ongoing stakeholder communication is another key to minimizing the impacts of archaeological discoveries. Since the start of the Alaskan Way tunnel project, Mr. Archer has met monthly with staff from all of the consulting tribes, as well as kept in regular contact with the state's Department of Archaeology & Historic Preservation.

"Even if there isn't a whole lot going on, we reach out with updates. It really helps when we get into the crunch situation of an inadvertent discovery," he says. "Because those relationships are already there, we can get those folks to come out and take a look at something on a moment's notice."

Whether you're digging up shells or skeletons, the approach is the same, says Mr. Archer: "The better your communication and planning are, the more your schedule risks are mitigated."

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