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**Sediment and Erosion Control on
Construction Sites**

project profile

By Steve Stonehouse

Curbing Sediment on a Commercial Retail Site

In early 2005, Jackson Properties, a commercial builder based in Sacramento, CA, was preparing to mass-grade a 20-acre parcel in preparation to build a retail center. When reviewing the project's stormwater pollution prevention plan, Dan Jessee, Jackson Properties' general superintendent, thought about what he might use on the project for perimeter sediment control. He knew that Elk Grove, CA, the project location, had a tough and disciplined stormwater inspection team.

Rather than deploy the standard and long-accepted best management practices (BMPs), Jessee decided to consider a new approach. Until early 2005, the only practical choices for sediment control around the periphery of projects were either silt fence or wattles. Jessee found a new product—ERTEC's Sediment Control Roll (SCR)—which promised to save a substantial amount in project costs and improve sediment control over the life of the project. After thoroughly evaluating the SCR, Jessee decided to run a large-scale trial on this project. "I liked the concept. I liked the fact that several states' departments of transportation had approved it. It was comforting to know that several homebuilders were already using it successfully. And the university lab data indicating that this new system would

silt fence can become ineffective by allowing damming and undercutting. Or, as the straw or fence material decays, stormwater flow-through and overtopping can occur. SCRs are made of UV-stable high-density polyethylene with an integrated flow-through filter. The filter has been shown to retain up to 80% of the soil that would otherwise leave the site, and continues to perform at that level after multiple consecutive storms for many years with maintenance.

Commercial construction projects often last 18 months or more, and it is common that a large percentage of the wattle or silt fence installation must be maintained or replaced during the project. This field trial was conducted to determine whether SCRs could overcome the above concerns, provide better risk management, and provide an economic advantage to Jackson Properties. Reusability of the SCRs was also to be tested.

Product Installation

Installation of the SCR is similar to that for other sediment control devices. It must be trenched 1 or 2 inches. The pieces need to be inserted into each other, taking care to butt the pieces together to prevent the joints from popping apart under vehicular or foot traffic. The flap must be anchored with inexpensive 6-



soil, which forces water to flow through the filter. Sediment drops out upstream, preventing undercutting.

Once the product is properly installed, maintenance is fairly light. It is limited to removing sediment when the system reaches 50% of capacity, and reshaping the product after vehicle runovers. "One of the things I really liked is that when the product gets hit or run over by equipment, it can be easily reformed," says Jessee. One edge of the project was particularly close to street traffic. "Before we installed the chainlink fence around the project, long sections of the SCR were run over by cars, several times. Each time we could reshape the product to the vertical position in minutes," he adds.

With its cost advantages and strong sediment control performance, the SCR also has some limitations. "Since the SCRs are 8 inches tall, they have a limited capture zone of 4 to 6 inches," says John Buhl of ERTEC. SCRs should not be used where there is heavy concentrated flow. "For protection of large sloped areas, SCRs should be used in combination with other source control or erosion control measures, such as track walking, mulches, or soil amendments," adds Buhl.

Project Results

Jackson Properties installed over 4,000 feet of the SCR starting in March 2005. The system remained in place through one-and-a-half strong storm seasons until the site was landscaped about 14 months later, in May 2006. The site was fairly flat, so there were not many places where the flow concentrated heavily. "We spent nearly nothing on maintenance—except to clean sediment where it had accumulated," says Jessee. When sediment builds up in one section of the perimeter, it's necessary to move



Before installation of the fence, the perimeter sediment barrier was often run over.

perform significantly better in terms of sediment control led me to believe that this system was actually a best available technology that, at the same time, would actually cost us less," says Jessee.

The current best practice in northern California is to use either silt fence or wattles to keep sediment from moving offsite. In commercial construction applications, wattles and

inch nails (60D bright-common nails approximately every 2.5 feet) and then backfilled to prevent undercutting. "It installs about 20% to 30% faster than silt fence, and about the same speed as wattles," notes Tony Cervantes, the installer on the project. "Transportation and storage was easy since the product packs around three times as dense as wattles and is very light." The flap needs to be covered with

the sediment out of the flow path. The SCRs do not need to be removed for cleaning. In fact, it is better to leave them in place and not disturb the filter cake. This allows for more efficient filtering in subsequent storms.

It is very difficult to compare sediment control performance between BMPs in the field. "Overall, it seemed that sediment reaching the street was less, which is consistent with the lab data," says Jessee. Stopping all the sediment in flowing water is extremely difficult, especially for soils where the average particle size is low and a high percentage of clay and colloidal soil is present. Normally, the filter in the SCR develops a filter cake as the flow continues, making the filter more and more efficient, while resisting clogging. "The ERTEC SCR does a good job containing sediment when properly installed," says David Korfas, the City of Elk Grove's lead stormwater compliance inspector. "A particular benefit for builders is the product's dura-



bility and long-term sustained performance. Contractors and their subs are not supposed to drive over BMPs except for stabilized rock entrances and exits. This is difficult for superintendents to control, especially on residential projects, and so the ability of the SCR to be reformed after contractors drive over it provides the developer a big cost advantage," adds Korfas.

Jackson Properties confirmed that its costs on this initial project were less than what it would have spent with wattles or silt fence. As an additional savings the company will reuse

about 90% of the SCRs from this project. "The material from our Elk Grove project was in excellent condition after removal by the landscapers. We plan to transport and reuse almost all of it. On our next project we will have no material costs for the perimeter BMPs and expect our savings to reach nearly 50% after the first two projects. Then, we expect our savings to grow even further as we use the same material again on subsequent projects," says Jessee.

"Based on the successful outcome of this trial, we plan to use the SCR on future jobs. The product we've already purchased can probably be reused on a few more projects, and then at the end of life, I hope we can receive a credit from the recyclers. I understand the manufacturer is making several enhancements to the SCR system. We will keep a close eye on that," says Jessee. **EC**

Steve Stonehouse writes from California.