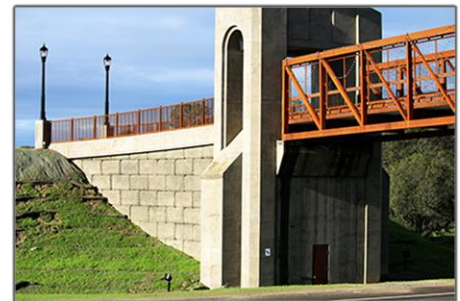


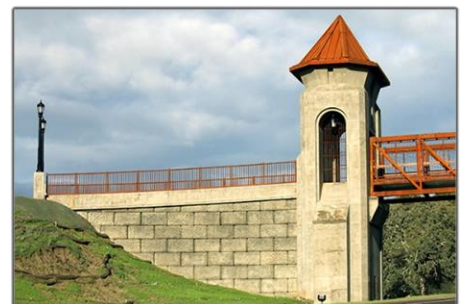
Ultrablock Case Study - Johnny Cash Trail

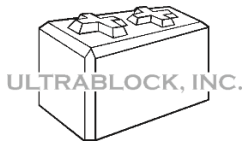


The famous singer Johnny Cash has been honored with a new trail in Folsom, CA. When designing the project many factors, including green alternatives, were taken into consideration. This included a focal point of the project, the trail bridge over Folsom Lake Crossing Road. Chuck Kull with Holdrege & Kull proposed an alternate design for the bridge abutments utilizing Ultrablocks, two-ton concrete blocks, which are made with recycled and reclaimed concrete.



The project brought a specific challenge with the adjoining concrete bridge walls spaced only 15 feet apart, face-to-face, and measuring up to 25 feet tall, stability was a concern. Engineers from Holdrege & Kull worked with Dokken Engineering to develop a unique and cost effective wall design solution. Typically, a wall of this magnitude would require geogrid to stabilize the wall. However, the walls were too close for the required length of geogrid, and the geogrid layers would overlap completely, compromising their effectiveness. The team was able to shorten the effective height of the wall by backfilling the lower 10 feet with cement-treated soil or a concrete slurry thus reducing the required length of geogrid. The adverse effects of overlapping the geogrids were minimized by taking advantage of the path's super-elevation to stagger the





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height of the blocks in the two opposing walls, providing for more than one foot of soil between successive layers of geogrid. Finally, the blocks were set on concrete leveling pads to minimize the potential for differential settlement, and the deck slab and copings were constructed as an integral unit pinned into the top of the blocks to provide a level of redundancy for seismic loads and further resistance to the effects of potential differential settlement.

To further the creativity of the project, Dokken Engineering re-designed the top of the wall to include coping compatible with the Ultrablock units. WestCon Construction out of Newcastle, California, the contractor on the project, used precast concrete to form the caps on the top layer of the wall to provide a unique look to the Johnny Cash Trail. The result was a unique and functional tribute that went further in providing economic and environmental benefits.