HOLDREGE & KULL
CONSULTING ENGINEERS • GEOLOGISTS

CONSTRUCTION ENGINEERING

Holdrege & Kull's construction engineering division engages in the design of temporary structures, quality assurance and quality control, building and site layout surveys, on-site materials testing, concrete mix design, cost estimating, procurement, and cost engineering and budgeting.

Value engineering is our strong suit. We review plans with contractors to determine if the foundation system, temporary shoring, and/or site grading appear to be adequately designed or if an alternative design would yield the same results with better cost savings.

Our involvement can occur during pre-bid or once the contract has been awarded. During pre-bid, we typically review the foundation plans and provide our input either verbally or with sketches regarding what we see that can be modified. The contractor or their estimators review our ideas and determine if there is a cost savings. Our initial consultation and preliminary design is of no cost to the contractor, so even the smallest project can be evaluated. Our cost savings ideas can be factored into the bid price or used as a value engineering proposal once the bid is awarded. A redesign may not always have a monetary value as far as material costs; however, it can result in an expedited schedule for the contractor, resulting in reduced labor and rental costs.

"Contractors know first hand where savings can be made."

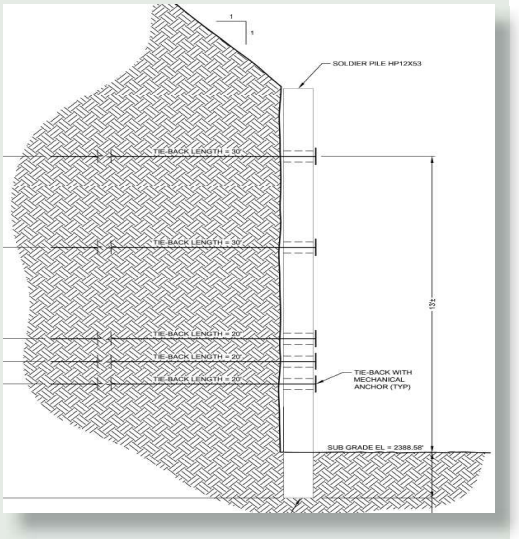
Generally, the contractor will call us regarding a project and comment that the foundation or shoring system appear to be over designed or they see a cost savings alternative. We review the design as well as the geotechnical design parameters and respond with either "Nope, they called it right" or "We see some alternate methods for design".

"The approach Holdrege & Kull took when designing the temporary shoring for two excavations on Yerba Buena Island for the new Bay Bridge probably saved Caltrans, and the California taxpayers, over $100,000 in shotcrete cost.

It was a refreshing change from what I'm used to with most engineers, when Chuck Kull listened to my recommendations regarding the shoring. I wish more engineers would apply value engineering principles on all their projects. Jobs would get done faster, more economically, and better."

Don Beldon
Neils Controlled Blasting

Some Cost Saving Examples



A 12-foot-tall retaining wall is planned to support a slope. The footing for the wall is 6.5 to 7 feet wide and 2 feet thick. The wall could be designed as a soil nail wall, which would eliminate the footing. Traditional retaining walls require that the slope behind the wall be cut back for safety and stability. A soil nail wall eliminates the need for the temporary cut slope behind the wall and reduces backfill material. Soil nail walls are becoming more popular as the equipment becomes more efficient and tie back anchor types are more readily available.

Footings are usually designed with bearing pressures that are between 1,000 p.s.f. and 2,500 p.s.f. Footings very rarely fail from a bearing failure, but rather from settlement. Performing a settlement analysis, along with a bearing capacity analysis, can usually result in higher bearing capacities. Structures with large or multiple footings can benefit from these analyses. If footing sizes can be reduced by 10 to 20 percent, the cost savings can be significant.

Pavement sections rely primarily on the R-value or resistance value of the subgrade soil. While the actual thickness of the asphalt is usually governed by the traffic index, the aggregate baserock is strictly a function of the subgrade soil. Selective grading can increase the R-value of the subgrade, thus reducing aggregate baserock sections.

Client Oriented - Solution Driven
Since 1993