

30 Road Crossing of the Union Pacific Railroad in Mesa County Colorado

Concept of Design: To eliminate the 30 Road 'at grade' crossing of the Union Pacific Railroad tracks thereby dramatically improving roadway safety. To improve 30 Road and Interstate 70 Business Loop (I70-B) intersection to more efficiently convey the current traffic volume of 42,000 vehicles per day through the intersection.

Outstanding Features: The most unique feature of the project was the retaining wall system. Three of the 4 properties abutting the underpass are

commercial and therefore constrained the project limits to existing Right of Way. For this reason, conventional tie-back or spread footer designs for the retaining walls could not be considered. The design team eventually settled upon a ledger beam and soldier pile foundation system for the retaining walls, with vertical piles in tension at the back of the walls, and battered piles (1 in 3 batters) in compression at the toe of the ledger beam. The bridge structure is comprised of three independent superstructures



constructed on common abutments cast on spread footers supported by deep foundation piling. A Pile Driving Analyzer® and CAPWAP software (equipment and services provided by **GRL Engineers, Inc.**) was utilized to develop pile driving criteria and reduce excessive pile installation for all piles installed on the project. ■

زوّدت شركة GRL Engineers البرامج الإلكترونية الخاصة للتدقيق في أعمال وضع الركائز الأساسية في مشروع تقاطع سكة الحديد في كولورادو. وتم استعمال برنامج الـ Capwap و Pile Driving Analyzer لتقليص وقت تركيب الركائز الأساسية.