

PROJECT

Post-Tensioned Masonry Soundwall
US 36 and Federal Blvd.
Westminster, Colorado

CLIENTS

Colorado Department of Transportation
Headquarters Office
Denver, Colorado

PROJECT DESCRIPTION

ANA designed and documented the installation of an innovative post-tensioned concrete masonry sound wall constructed as part of a widening and sound wall project along US 36, near Denver, Colorado. The wall was instrumented during construction to monitor the loss of prestress in the steel tendons over time due to steel relaxation and concrete masonry creep and shrinkage.

Concrete grade beams at the base of the CMU wall were cast, and the anchorage assemblies were inserted into the fresh concrete. Bearing plates were bedded in mortar against the top of the bond beam, and the tendons were tensioned. The walls were completed with the addition of one more course and a precast capstone. Grout was only installed in the reinforced bond beam at the top of the wall. The use of the post-tensioning system eliminated the need for grout in all the vertical cells. Strains in the tendons were monitored for two years to obtain realistic design values for post-tensioned losses.

SERVICES PROVIDED BY ATKINSON-NOLAND

- Designed post-tensioned masonry sound wall
- Structural monitoring



US 36 and Federal Blvd Post-Tensioned Masonry Soundwall



Hydraulic pump and ram used to tension the intermediate tendons.



Bond beam and tendons at top of post-tensioned wall.



Atkinson-Noland & Associates
Consulting Engineers
www.ana-usa.com

2619 Spruce Street
Boulder, CO 80302
303.444.3620

32 Old Slip, 10th Floor
New York, NY 10005
917.647.9530