

RISING TO THE CHALLENGE

Modified SRW Design Transports Chicago Metra Project to Success

Location: Chicago, Illinois

Scope: 50,000 square feet (4,645m²) of walls ranging from 55 to 1,245 linear feet (16.8 to 379.4m) and 3 to 12 feet (.9 to 3.7m) in height

Phase II Engineer: Ed Stauber,
Larson Engineering of Illinois

General Contractor: IHC Group

Landscape Contractor: Hoppy's Landscaping

Anchor Wall Systems Supplier:
Northfield Block Company

The challenge: Design and install 50,000 square feet of segmental retaining wall for Phase II of the Chicago Metra Northwest Line Rehabilitation project to match the appearance of walls constructed in Phase I. The catch was that the Phase I wall design was per NCMA guidelines. Phase II was modified to address American Association of State Highway and Transportation Officials (AASHTO) and NCMA retaining wall guidelines.

The solution: Extend geogrid to meet AASHTO requirements while holding firm with National Concrete Masonry Association (NCMA) guidelines for surcharge loads.



Northfield Block Company supplied the Anchor Diamond® block (featuring a straight face) for the project's 50,000 square feet (4,645m²) of walls.

The full story:

Chicago, Illinois is a thriving metropolitan area, home to nearly 3 million residents and neighbor to over 14 million people who live within a two-hour drive. Add a thriving tourism and convention business, and you've got a city that relies heavily on its public transportation systems. The Metra system, a network of commuter trains owned and operated by the Northeast Illinois Regional Commuter Railroad Corporation, moves hundreds of thousands of people to destinations within the city every day.

With over 500 miles of track, the Metra covers a lot of ground. Some of that ground is held steady through

an intricate pattern of Anchor Wall Systems segmental retaining walls, designed to retain soils on either side of the Metra's tracks. The walls were introduced to the Metra line through the Metra Northwest Line Rehabilitation Phase I and Phase II projects.

Phase I involved the installation of segmental retaining walls to rehabilitate old bridges on the Chicago and Northwestern Line. The series of 20 walls, constructed using Anchor Diamond® blocks, range from 40 to 1240 feet (12.2 to 377.9m) in length and from 2 to 11 feet (.6 to 3.35m) in height.

Phase II was initiated when it came time to lay more tracks for new trains, with a requisite need for 20 to 25 more walls on a stretch of the Metra line. The client wanted the Phase II walls to match the walls installed in Phase I. The challenge arose when the project structural reviewers for Phase II requested that the wall designs meet AASHTO guidelines. Phase I had been designed strictly in adherence to NCMA standards.

It was immediately clear to engineer Ed Stauber, Larson Engineering of Illinois, that designs adhering to AASHTO 100 percent would be cost- and space-prohibitive. AASHTO-compliant walls would require a more gradual slope, eating up precious real estate. Alternative poured pilings would greatly compound costs. Stauber looked for a way to combine AASHTO and NCMA guidelines to meet project requirements.

Stauber's engineering analysis determined that the walls as designed were more than sufficient for the applicable loads, which included daily commuter train traffic. Rather than adjust the designs to meet AASHTO surcharge load requirements, which would greatly alter the physical appearance and cost of the project, Stauber increased the grid length to meet the AASHTO requirement of 8 feet (2.4m) or greater. Says Stauber, "The AASHTO loads for use with designs near railroads, which are more stringent than NCMA, were not applicable in this situation. These walls, placed 15 to 25 feet (4.6 to 7.6m) on either side of the track and packed with granular fill on either side, were easily capable of sustaining optimal load capacity."



The Chicago Metra project features dozens of walls running alongside the Chicago Metra line.

The hybrid AASHTO/NCMA designs satisfied the project structural reviewers, allowing construction to proceed. Installation was completed by Hoppy's Landscaping in August 2000, with blocks supplied by Anchor Wall Systems manufacturer Northfield Block Company.

With both phases complete, the Metra trains on this stretch of track are running on time. And we're happy to report, they're also running on a series of very sturdy, as well as very attractive, segmental retaining walls.



Have you risen to the challenge with an Anchor Wall Systems retaining wall installation? Contact us at 800-473-4452, ext. 217 for consideration of **YOUR** story in a future issue.