

## NE 88th Street Improvement Vancouver, Washington

The stretch of NE 88th Street running from Highway 99 East to NE St. John's Road in the Hazel Dell area of Vancouver, Washington serves as a major route for commuters. When daily traffic became too much for the congested two-lane road, the state of Washington's Clark County decided it was time to move forward with a major improvement.

Improvement planning called for the road to be widened to accommodate additional lanes for vehicular traffic, including a continuous left turn lane, in addition to: a bicycle lane, planter strips, sidewalks, and curbs and gutters on both sides of the road. In order to meet the needs of the community, and accomplish such a large scale expansion, 38 different retaining walls (of various lengths and heights) needed to be built along the nearly two-mile stretch of road.

**Owner:** Clark County, Washington

**Engineer:** Harper Houf Peterson Reghellis Inc.

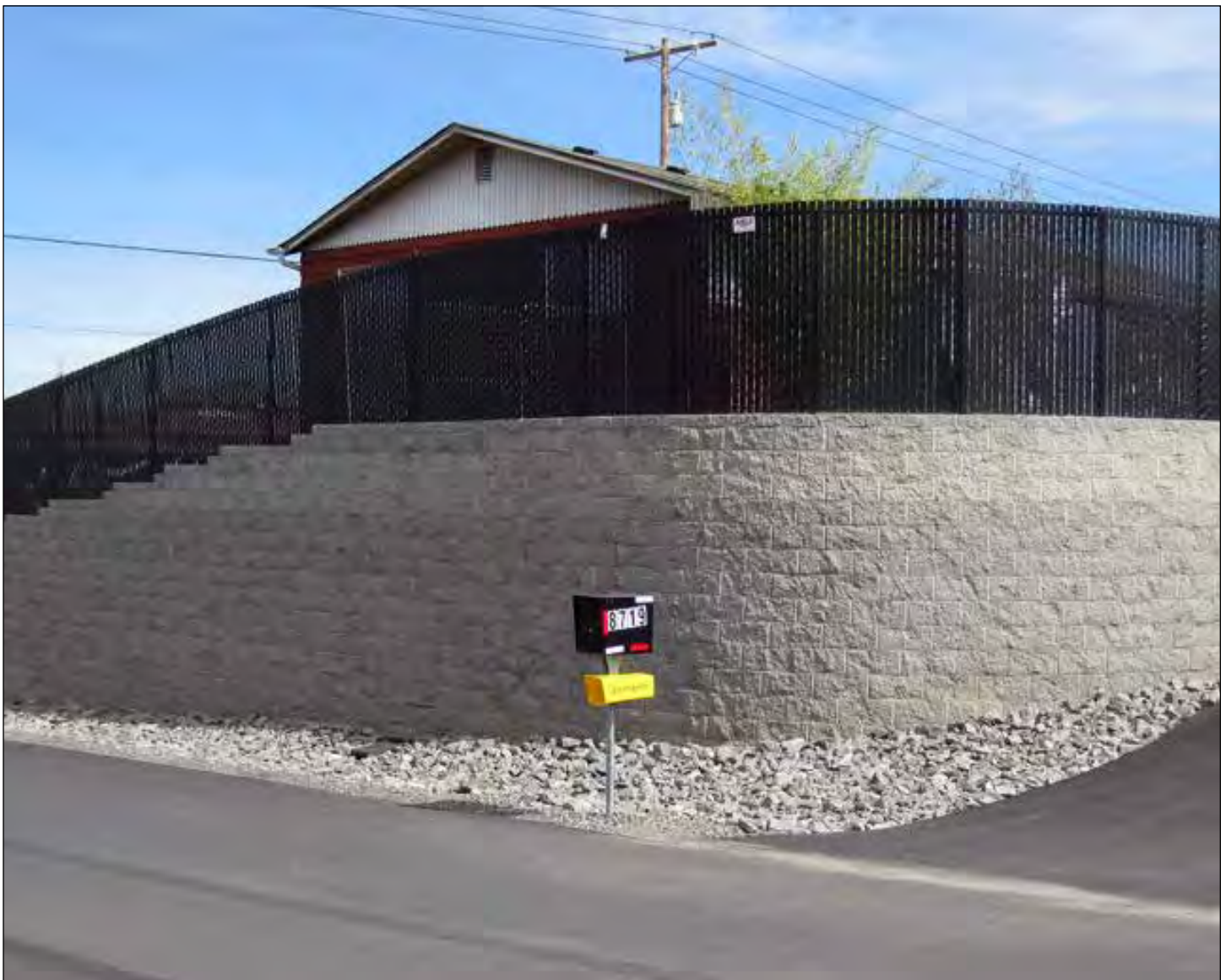
**Contractor:** Rotschy Inc.

**Keystone Producer:** Amcor Masonry Products

**Technical Description:**

- Keystone Compac® II - Straight Split, KeySystem II
- Total Wall Area: 30,000 sq.ft.
- Maximum Height: 17'
- Mirafi 3XT Geogrid

**Installation:** 2013





Clark County originally adhered to the Washington State Department of Transportation (WSDOT) specifications, which included Keystone's KeySteel SQ FT Panel System. After reviewing the Highway Innovative Technology Evaluation Center's (HITEC) evaluation that had been done on what is known as KeySystem II (KeyGrid), a combination of Keystone Compac II and Mirafi geogrid, KeySystem II/KeyGrid was added to Clark County's list of acceptable products. KeySystem II/KeyGrid offered a competitive bid scenario, high quality pin connection system and fit within the project plans and specifications outlined by civil engineers at Harper Houf Peterson Righellis, Inc.

Keystone Compac II also offered a major construction advantage as it can be built in a near vertical setback (0.25" per 8" course) maximizing the space available to widen the road. Most walls along the improvement are between zero and 10-feet high; the tallest wall, Wall W, reaches 17-feet in height. The wall design guidelines required American Association of State Highway and Transportation Officials Load and Resistance Factor Design (AASHTO LRFD) and Keystone's final engineering plans were in line with AASHTO code.

Rotschy Inc., Clark County's general contractor, began construction in early July 2012 and subcontracted the construction of the retaining walls to PSC Structures. The small cut and fill walls used 30,000 square feet of grey Keystone Compac II units, coupled with Mirafi 3XT geogrid, to support entrance drives, parking lots, sidewalks and backyard spaces.

As a whole, the widening project will be completed in three phases. Retaining wall construction precedes construction of other project elements, including sidewalks, utilities and the roadway itself. Limited site access and tight working conditions were the greatest challenges faced by construction crews. Project planners anticipated the limited space during preparation and took care to specify storm sewer pipes and structures, which had to be built behind the wall, did not fall within the reinforced soil zone. Additionally, planners arranged for Compac II units to be delivered on an "as needed" basis to help with on-site logistics.

The improvement is still under construction; and as of fall 2012, half of the improvement's retaining walls have been completed. Construction on the improvement's second phase begins in spring 2013. Retaining walls, along the improvement, will continue to be built prior to completion of other improvement elements.