

Greenwood Village, CO Open Space Berm Project



A park like open space was created by the berm project. Residential area is in the background.

THE city of Greenwood Village, CO open space site is located directly south of the Interstate 225 (I-225) portion of the Colorado Department of Transportation and the Regional Transportation District's \$1.67 billion multi-modal Transportation Expansion (T-REX) Project. The T-REX improvements under construction by the Southeast Corridor Constructors (a joint-venture partnership between Kiewit Construction and the Parsons Transportation Group) within the I-225 corridor include adding additional lane width and an extension of Denver's light rail system to greatly improve commuter traffic carrying capacity. A solution was needed to satisfy multiple objectives to

minimize visual and noise impacts on an adjacent residential development, active municipal and State Park sites, and Cherry Creek High School.

Under the direction of Senior Project Manager, Tricia Solsrud, P.E., the Greenwood Village Public Works Department developed a concept for creating major sculpted earth berms to provide the necessary mitigation measures across the 28 acre site.

The site sloped generally downward to the north at an approximate 4% gradient prior to construction. Project plans envisioned creating a series of tall earthen berms to provide visual screening of the I-225 corridor, and to help deflect and

buffer traffic noise from the adjacent park, high school, and residential neighborhood.

A relationship was soon formed based on mutual needs. The T-REX project needed to find a location to dispose of approximately 350,000 cubic yards of excess soil generated by excavation to widen the I-225 corridor to accommodate additional highway lanes and the light rail tracks and stations. The open space park berm project provided a convenient location to waste the excess material and John Bush of T-REX agreed to the plan.

Soil from the near-by T-REX Project was hauled, placed, and rough graded into the designed berm landforms. Elevations



Staples were installed by the crew using a manual gun round-top pin system.

of the top of the berm were designed to be 20 to 24 feet higher than the ground elevations in the adjacent residential area to afford maximum screening and sound mitigation. Topsoil was then placed onto the rough graded landforms and finish graded in preparation for seeding.

American Civil Constructors (ACC) then took over the site to complete the

reclamation portion of the project. An Arkansas Valley Seed Company Colorado Native seed mix consisting of: 20% Western Wheatgrass, 20% Slender Wheatgrass, 15% Blue Grama, 15% Buffalograss, 15% Sodar Streambank Wheatgrass, 10% Sherman Big Bluegrass and 5% Canada Wildrye was applied at 15-25 lb/acre using the drill seed method.

Tetraploid Perennial Ryegrass (3-7 lb/acre) and Sweet Clover (12-18 lb/acre) were applied in addition to the Colorado Native seed mix.

Seeding proceeded in stages as grading activities progressed throughout the project site. There were no prescribed special seeding windows required. As luck would have it, in the face of an extended seven year drought cycle that had plagued the area, each seeding operation was closely followed by a natural rain event that helped immensely in assuring seed germination and plant establishment.

The addition of Sweet Clover to the seed mix proved to be a minor problem, as the aggressive clover out competed the native grass species. A clover management control program was required to

The use of a drought tolerant native grass seed mix called for an erosion control blanket (ECB) that would provide long-term protection for at least 36 months, therefore a 100% coconut fiber material was deemed suitable.



Slopes up to 2H:1V and the channel bottom were protected with a coconut fiber erosion control blanket.

allow the native species to germinate and become established. Sweet clover has been removed from the seed mix for future phases of the project.

Protection of a resident population of Black-Tailed Prairie Dogs (*Cynomys ludovicianus*), which are listed as a federally protected threatened and endangered species of concern, was an important consideration. Earthwork grading activities on the site were completed in stages to allow the prairie dogs to relocate within the site on their own as the construction approached the existing colony.

The use of a drought tolerant native grass seed mix called for an erosion control blanket (ECB) that would provide long-term protection for at least 36 months, therefore a 100% coconut fiber material was deemed suitable. ACC chose American Excelsior Company's AEC



View of I-225 from top of completed berm.

Premier Coconut™ FibreNet™ ECB, which consists of 100% coconut fibers located between biodegradable woven jute nettings on top and bottom. Environmentally friendly, biodegradable woven netting was selected to ensure prairie dog safety. The ECBs were supplied to ACC by the Buckley Powder Co., Englewood, CO, a major distributor of American Excelsior Company erosion and sediment control products.

Slopes up to 2H:1V and the channel bottom were protected with ECBs while

the flatter portions of the site received an installation of crimped straw.

ACC decided to utilize the RoadRunner version of the ECB after evaluating the physical characteristics of the site. These rolls are oversized rolls that are designed for mechanical installation. A special attachment provided by the blanket manufacturer, that fits the mounting points and hydraulic systems of most skid loaders, was utilized for efficient lifting, transport, and rapid installation of the oversized rolls. The 8.0

ft wide by 450.0 ft long (400 yd²) ECBs were unrolled in about two to three minutes using the device. Staples were installed by the crew using a manual gun round-top pin system manufactured by the JMD Company, Bethel Park, PA, which further increased installation efficiencies over the 14,520 yd² portion of the site that was protected with ECBs.

ACC Project Manager Ron Dean estimates that the RoadRunner system increased installation crew productivity by a factor of at least 2:1, if not greater, depending on the terrain and site logistics.

Future plans call for the development of approximately one mile of trail through the berm area, which will connect to an existing trail system to provide additional community recreational opportunities.

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For more information on this project contact American Excelsior Company, 850 Avenue H East, P.O. Box 5067, Arlington, TX 76005-5067, 1-800-777-SOIL, email: info-curlex@curlex.com or Buckley Powder Company, 42 Inverness Drive East, Englewood, CO 80112, 303-790-7008.