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Summer 2015

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Euclid Chemical Takes You Out to the Ballpark

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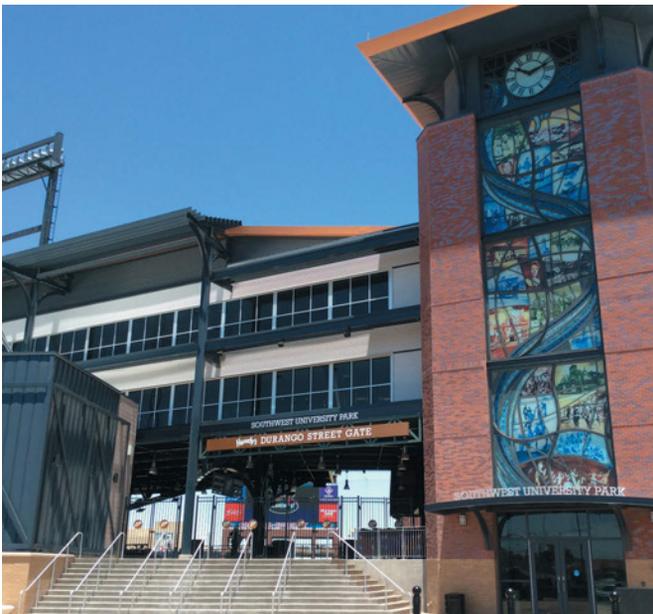
With baseball season now in full swing and the 2015 construction season well underway, a look back at a successful concrete project in the City of El Paso, Texas, proves that hard work and determination can result in more wins than losses. Home to the El Paso Chihuahuas of the Pacific Coast League, the Triple-A affiliate of the San Diego Padres of Major League Baseball, the City of El Paso recently completed a new 7,200-seat ballpark located on the former grounds of the El Paso City Hall. Southwest University Park opened on April 28, 2014, after breaking ground a year earlier and was completed at a total cost of \$72 million through a fast-track construction program. More than 2,500 cubic yards of fiber reinforced concrete was poured as a part of the total concrete contract under tight performance requirements, with the concrete contractor, C.F. Jordan Construction, taking the lead in scheduling, design assistance and value added engineering material procurement. Incorporating the design of the

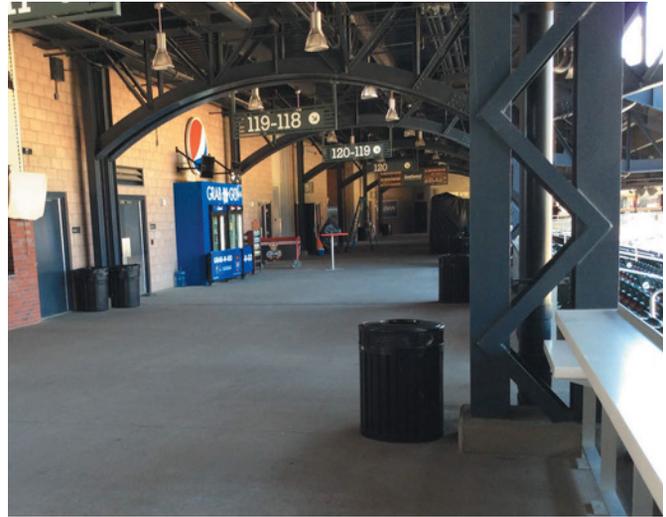
ballpark into the local community, surrounding neighborhood and historic downtown El Paso, Southwest University Park received the designation of “Best New Ballpark” in the 2014 annual awards from Ballpark Digest and is the first Minor League ballpark to be LEED Gold Certified by the United States Green Building Council.

As a part of the design process, engineering and design officials wanted to preserve historical elements of nearby buildings and art forms of the region. At the same time, local area material suppliers wanted to incorporate modern technology and value added concepts to speed up construction while providing a long-lasting and modern facility for future generations of baseball fans. During the discussion of materials and methods to be utilized on the new stadium construction, the concept of using fiber reinforced concrete was introduced as a cost-effective alternate to conventional reinforcing systems for slabs on ground, precast elements and composite steel deck construction. With a successful history of using macro-synthetic

fibers on other large-scale stadium projects such as Yankee Stadium in New York City and Met Life Stadium in East Rutherford, New Jersey, The Euclid Chemical Company approached the design team and recommended the use of its TUF-STRAND SF macro-synthetic fiber as an alternate to existing areas of steel reinforcement.

Euclid Chemical provided assistance to both C.F. Jordan and its ready mix concrete partner, Jobe Materials, to supply its TUF-STRAND SF macro-synthetic fibers to replace existing wire mesh for the composite steel deck reinforcing on the grandstand areas of the new ballpark. Euclid Chemical’s local technical representative, Charlie Bustillos, worked with Martin Alderette from Jobe Materials, to submit a concrete mix design that could be pumped and still provide the desired setting time and placement requirements to the contractor. Jeff Ferris, Euclid’s southwest regional fiber specialist, provided a presentation to the design engineering office of Walter P. Moore and to the general contractor of C.F. Jordan/





Hunt in El Paso to highlight the advantages of using macro-synthetic fibers in this project. These included project time and cost savings, increased safety on the job site due to reduced tripping hazards, a UL/ULC approval (D900 two-hour fire rating) for the use of fibers in composite steel deck systems and a reduction of greenhouse gas emissions (reduced carbon footprint) during construction.

The concrete mix design utilized a 4000 psi normal weight concrete incorporating Euclid's EUCON X-15 mid-range water reducing admixture designed to lower the overall water to cement ratio while increasing the desired concrete strength. This also in turn would lead to reduced potential for cracking and improved workability of concrete. The engineered dosage rate of TUF-STRAND SF fibers to supply an equivalent reinforcing ratio to steel was calculated to be 5 lbs/yd³. EUCON SP, a high-range superplasticizer, was added to the mixture to increase the workability further with a final concrete slump

of approximately 6" at the end of the pump placement. Prior to placement on the job site, Jobe Materials conducted 9.5 yd³ trials using ready-mix trucks to ensure that loading of fiber and transit of the fiber reinforced concrete mixtures would be delivered within the specifications requirements. Various finishing techniques were applied to the final concrete surface with some fibers visible after final finish.

TUF-STRAND SF is a patented, macro-synthetic fiber specifically engineered for use as a replacement to conventional reinforcing such as wire mesh and steel rebar for slabs on ground, precast concrete, composite steel decks and shotcrete applications. Successfully used on projects throughout North America over the past 15 years, engineered dosage rates are based on strength-to-strength calculations and supported by standardized test methods and industry practices. This non-corroding, three dimensional reinforcement will also provide abrasion, fatigue and

impact resistance while increasing service life through improved toughness and durability. The IBC 2015 provides guidance to use "macro synthetic fibers" at a minimum dosage rate of 4 lb/yd³ (2.4 kg/m³) to replace wire mesh as a means of crack control in concrete filling of composite steel decks. Higher dosage rates may become necessary depending on the load levels and seismic considerations. Euclid Chemical provides on-staff professional engineers to assist the design community and work directly with the ready mix concrete industry to successfully use fiber reinforced concrete as a value-add center for profitability. ■

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