

# Sustainable Infrastructure Design and Construction Around the Country

## Oregon Bridge Delivery Program: Sustainability 360° - Funding, Cost-risk Analysis, Design, Construction Oregon Department of Transportation (ODOT) | Oregon



**Challenge:** Hundreds of Oregon's aging and corroding bridges needed repairs or replacement; and Oregon needed to secure funding to get the projects completed quickly.

**Sustainable Solution:** Oregon Bridge Delivery Partners (OBDP), a joint venture of HDR and Fluor, managed the \$1.3 billion state bridge replacement program. This fast-track bridge repair and replacement program used Oregon Department of Transportation's (ODOT) Context Sensitive and Sustainable Solutions (CS3). Unlike the traditional "worst first" approach, the bridge program was staged in strategic sequences, staggering construction phases and detour routes to maximize traffic movement and minimize impacts on motorists. Upon completion of the 10-year program, about 365 bridges were replaced or repaired.

**Funding:** The team helped ODOT secured \$5 million in funding through 15 sustainability and innovation design grants.

**Cost-risk analysis** on bridge bundle contracts provided more certainty in budget management. In its first year, the model achieved 95% accuracy.

**Design:** Two bridge replacements used record breaking 184-foot-long precast prestress beams to clear the waterway. The innovation eliminated waterway impact and reduced total beams needed; saving time and minimizing impacts on mobility.

**Construction:** One bridge replacement utilized a rapid replacement technique that required only a 3-day closure, eliminating 6 months of construction phasing or a 40 mile detour. ODOT received a \$1 million grant from the FHWA for this innovation.

## Historic Fourth Ward Park: Sustainability 360° - Stormwater Hidden in a Park Atlanta BeltLine, Inc. | Atlanta, Georgia



**Challenge:** Located in a lowland area, the urban watershed of the Clear Creek Basin that sits at the heart of Atlanta's Historic Fourth Ward was subject to intermittent flooding and sewer overflows during storm events.

**Sustainable Solution:** HDR's design transformed a blighted industrial lowland into urban greenspace with stormwater control features designed as a beautiful public park. Phase I includes a stormwater detention pond large enough to capture a 500-year storm event, surrounded by aesthetic features. With four stormwater inlets disguised as artistic water features strategically positioned around the five acres of the park, this project showcases how engineering and design can come together to solve both challenging combined sewer overflow (CSO) issues and the need for more public greenspace.

Saved the client an estimated \$50 million over alternative solutions.

10' waterfall  
Aerates and recycles pond water and a stone water cascade in dramatic contrast to traditional discharge pipes.

More than \$400 million in new private development within a block of the park.

EPA National Award for Smart Growth Achievement for Overall Excellence award, 2013.

ENVISION™  
Gold Project Award

## Colton Crossing Flyover: Sustainability 360° - An Innovative Solution to the Oldest U.S. Bottleneck Union Pacific Railroad | Colton, California



**Challenge:** The century-old rail alignment caused major rail bottleneck at one of the country's busiest at-grade rail-to-rail intersections in the United States, with an average of 125 trains crossing daily.

**Sustainable Solution:** Navigating a web of project complexities, the team addressed the concerns of more than 20 project stakeholder groups and helped to alleviate significant delays, congestion and freight stoppage by using a 8,150-foot flyover structure to lift Union Pacific Railroad's east/west tracks 35 feet above BNSF Railway's north/south tracks. The project has improved efficiency for the two largest U.S. freight railroads, making an immediate economic impact and adding benefits of enhanced air quality and reduced noise for the local community.

Improves efficiency of freight movement for more than \$287 billion in goods that annually flow through California ports.

Expected to reduce greenhouse gas emissions 34,000 tons per year, by reducing idling time for locomotives and vehicles.

Established "quiet zones," to eliminate the need for trains to sound their horns. This diminished concerns over noise impacts, leading to widespread support from city officials and local residents.

The creative solution of using cellular concrete helped overcome site constraints and saved \$30 million.

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Other Envision® Sustainable Infrastructure Projects @ a Glance



**William Jack Hernandez Sport Fish Hatchery, Anchorage, AK**

*First-ever Envision® Project (Gold) – July 2013*



**Holland Energy Park, Holland, MI**

*Envision® Platinum – July 2016*



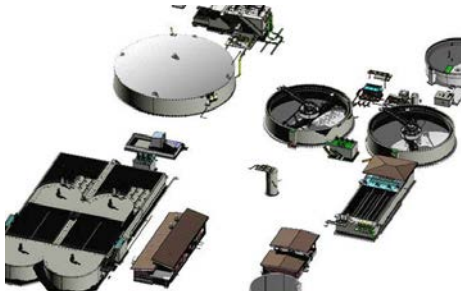
**Kansas City Streetcar, Kansas City, MO**

*Currently going through Envision® verification*



**I-4 Ultimate Project, Central Florida**

*Currently going through Envision® verification*



**Hardeeville Water Reclamation Facility, Hardeeville, SC**

*Currently going through Envision® verification*



**City of Phoenix, Compost Facility Envision Verification, Phoenix, AZ**

*Currently submitting for Envision® verification*

For more information on these and our other sustainability work, visit [hdrinc.com](http://hdrinc.com).