



## CIVIL ENGINEERING

### WHY ATWELL?

- Local expertise, national reach
- Industry knowledge
- Dedicated experts and teams
- Full-service resources
- Aggressive, passionate professionals
- Nimble, flexible structure

### CAPABILITIES

- Due Diligence & Site Research
- Site Layout & Preliminary Engineering Design
- Annexation & Zoning Strategies
- Easement Acquisition
- Cost Estimating
- Site Construction Plans
- Drainage & Stormwater Management System, Design & Permitting
- Roadway & Pavement Design
- Wastewater Collection System Design
- Water Distribution Systems Design & Permitting
- Floodplain Analysis, Permitting & Mitigation
- FEMA Map Amendments
- Subdivision & Site Condominium Documents
- Hydrology Design
- Utility Design
- Earthwork Analysis
- Value Engineering
- Permitting Strategy

### FROM PLANNING TO PERMITS

Atwell's civil engineering services are the technical foundation of successful construction projects. In addition to the traditional engineering activities, today's projects demand professionals who can successfully navigate critical regulatory constraints, functional demands and environmental concerns. Our specialized teams strive to balance these forces through sound design, aggressive project management and continual stakeholder engagement.

### SOLUTIONS THAT SURPASS

#### Southwest Stormwater Engineering

Atwell contributed to the design, entitlement and permitting activities related to the construction of a new parking and storage area for 76 Isotainer trailers for a large-scale chemical manufacturing facility in the southwestern United States.

As part of the project, the team designed a large-scale, innovative stormwater collection and drainage system to accommodate heavy impacts to the mostly undeveloped area during rain events. The system incorporated a turf reinforcement mat, instead of concrete or rip-rap, which allows the growth of plants and trees for a natural, attractive look. The growth also protects against erosion due to water flow velocities of up to 11.3 feet/second.

Atwell also handled construction administration to provide request for information (RFI) answers, material review, and certification of the constructed retention basin volumes for conformance with the approved improvement plans.

#### Residential Development Low-Impact Design

For this residential community, Atwell provided full-service land development consulting including all civil engineering, ecological consulting, landscape design and land surveying. Nestled around a 12-acre lake, the development includes 280 acres of open space and utilized technical design solutions to minimize environmental impact and restore the site's natural features, including a river, lake and wetlands.

Atwell engineers and ecologists collaborated to design a low-impact stormwater management system using the lake for storage in conjunction with a newly designed dam outlet. As a solution to the site's utility limitations, Atwell designed wastewater treatment and storage facilities to service the community.