

Location: Orangevale, Sacramento County

Owner: Sacramento Metropolitan Fire District

"KASL demonstrates a rare ability to identify site engineering strategies that resolve problems and are cost-effective. This creativity often equates to project savings for the client"

*Tyler Babcock and Dan Dameron, Principals
MFDB Architects, Sacramento, CA*

Utilizing Modeling Technology to More Efficiently Create and Change Site Designs

KASL Consulting Engineers utilized computer modeling technology to prepare, analyze, visualize, and rapidly revise the site/civil design for the Sacramento Metropolitan Fire District Fire Station No. 29 Project in Orangevale, California.

Design profiles were automatically generated from the utilities database and conflicts resolved utilizing the automation tools within the software. This tool allows for rapid changes to utility design, both plan and profile, including annotation, geometry, and 3D visualization.

3D-pdfs and Google earth tools were used within Microstation. This included structural sections of pavement and underground utilities, and a Sketchup building model referenced in from the Architect. Digital terrain models were created to determine earthwork quantities and create contouring. Civil storm software was used to dynamically design and analyze the detention pond, outlet structure, and size of storm drain utilities.

Site sustainability design features included grassy swales for bio-filters, mechanical filters for stormwater run-off from pavement and a storm water detention pond to reduce off-site peak flows to below pre-development conditions to prevent downstream flooding.

Completed in 2008, Metro Fire Station No. 29 is a 12,800 SF single story main fire station building with circulation for three drive-through bays and one back-in bay for the battalion chief. Also included in the project was a stand-by generator and truck wash building, parking and landscaping.

Another site sustainability feature included the routing of truck wash run-off water to the sanitary sewer system for collection and treatment to prevent the off-site migration of heavy metals, oils and other contaminants into the stormwater drainage system. An all weather cover over the truck wash area prevents rainwater from entering the sanitary sewer system.

