BULLETIN

News from SubTerra, Inc.®

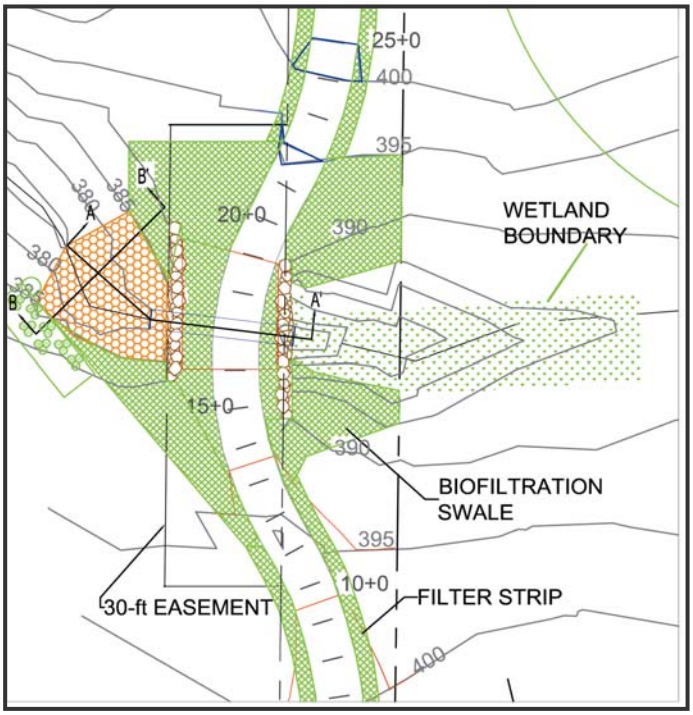
Design Visualization for Sensitive Area Stream Crossing Redmond, Washington

An environmentally sensitive area, which included a type 2S stream and associated wetland, was situated between a parcel of private property and the nearest road. In order to establish access to the property, a crossing was needed that would have minimal environmental impact, and would ensure protection of salmonid fish species in the stream.

Photograph of stream area prior to start of project

SubTerra, Inc. was asked by the property owner to design, facilitate permitting, and manage construction of a suitable crossing over the sensitive area.

The design developed for this project involved a "fish-friendly" 60-inch diameter, shallow grade culvert that would pass through a geogrid-reinforced embankment. The embankment would be faced with rockery walls. Upstream and downstream improvements to the bank and streambed were also proposed to enhance both fish and wetland habitat.



Using their in-house graphics capabilities, ***SubTerra, Inc.*** transferred their engineering design concepts into design drawings appropriate for the permitting and construction phases of the project.

Because of the sensitive area designation of the site, permitting was a major concern. ***SubTerra***, used the power of "Design Visualization" to help gain project approval.

(see page 2)

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Working with current topographic survey information, photos of the existing conditions, and different software packages, a photo-realistic picture of the completed stream crossing was created in advance of any actual construction work.

The resulting rendering was highly accurate, and helped those involved in the review process to literally "visualize" the project in a way no design drawing or architectural sketch could allow. This process was instrumental in facilitating the permitting phase of the project.

Construction of the designed crossing proceeded quickly after the necessary permits were obtained.

SubTerra's involvement through all phases of the project - engineering design, permitting and construction - resulted in successful and timely completion of the project.

Actual photo of completed crossing.

Photo-realistic rendering of future crossing, used to facilitate project permitting process. Note attention to detail, and realistic features such as shadows, matured plantings, and ground textures.

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