

WALKING ON WATER

Green Roof Construction Over Tigard's Newest Reservoir Creates an Eye-Catching Park for the Bull Mountain Community

OVERCOMING A MAZE OF CHALLENGES

The project team faced a number of challenges, including project siting, shallow subsurface rock, difficult pipe routing conditions and limited area for stormwater systems. Through the creative use of **low impact development approaches** (LIDA), these challenges were turned into opportunities as essential water facilities were integrated with other park development goals.

SUSTAINABLE SOLUTIONS

Designing the reservoir with a **green roof** effectively limited stormwater runoff to predevelopment conditions. The facility also reduces energy and pumping costs and the site accommodates a future **aquifer storage and recovery** (ASR) well, which will extend the City's limited water supplies.

INNOVATIVE DESIGN

By modifying the reservoir's height-to-diameter ratio, costly rock excavation and deep pipe construction were avoided. The reservoir structure was designed using prestressed concrete technology and state-of-the-art seismic protection measures. A unique internal mixing system optimizes water circulation for improved water quality. Specialized piping connections reduce the risk of earthquake damage. Reservoir roof vents are disguised as multi-purpose, educational, interpretive displays. The artistic **bull's eye** in the center of the mythological **Minotaur Maze** symbolizes the legendary lost bull from which Bull Mountain gets its name and serves as a unique focal point for the simple but spectacular park.

The City of Tigard's new Bull Mountain reservoir provides an additional three million gallons of drinking water storage and fire protection while adding a valuable park to the growing community. Incorporating **green roof technology** into the reservoir design minimizes stormwater runoff and triples usable space for the City's new 2.5-acre Elizabeth Price Park. Tigard officials and residents consider the project a great success: the City's water system is significantly improved and Bull Mountain residents have a beautiful new park for all to enjoy.



PROJECT: 3.0-Million Gallon 550-foot Service Zone Reservoir No. 2; Tigard, Oregon

CLIENT/OWNER: City of Tigard, Oregon

DESIGN FIRM: Murray, Smith & Associates, Inc.; Portland, Oregon



Special Seismic Design Features



State-of-the-art Wire Wrap Concrete Prestressing



Ribbon Cutting: Elizabeth Price and Mayor Dirksen



Interpretive Plaques Incorporated Into Vents