

CASE STUDY

Country Walk Development Amphibian Tunnel Walden Woods – Windsor, Connecticut

Model: Contactor® EZ-24

Number of Units: 3

Installed: December 2010

Project Engineer: Fuss & O'Neill
Manchester, CT



Tucked away on the west bank of the Connecticut River, Windsor, Conn., harbors the quiet, picturesque community of Walden Woods. When engineers at Fuss & O'Neill came on board to expand Walden Woods with the addition of a 176-unit Country Walk at Windsor development, they met with the challenge of integrating a vernal pool into the residential community design. Vernal pools are an integral part of Connecticut's ecosystem and provide a habitat critical to the survival of amphibians and reptiles, such as spotted, Jefferson's and marbled salamanders, wood frogs and fairy shrimp. Because vernal pools are often small, isolated and dry much of the year, they are more sensitive to disturbance than other types of wetlands. The protection of vernal pools falls on municipal inland wetlands agencies as part of the state's Inland Wetlands and Watercourses Law.

The Country Walk development included an access road to a new lot of homes. The road went alongside the vernal pool's upland area of about 100 feet, which serves as a buffer zone to protect animals' habitat and maintain water quality. As the road restricted amphibians' access to their spawning grounds, Windsor's Inland Wetlands and Watercourses Commission required the engineers to provide an upland passage for the amphibians to cross the road.

To satisfy this requirement, engineers decided on building an amphibian tunnel within the road base. A trench drain was installed within the road portion of the tunnel to provide sunlight, moisture and air through the air slots, creating an acceptable environment for the amphibians to enter.

However, the engineers still needed an enclosed structure to be installed under the sidewalk and lawn areas. Drawing on their experience of designing residential stormwater and septic systems with CULTEC's underground chambers, Fuss & O'Neill experts arrived at the creative solution of using chambers at the entrance and exit of the amphibian tunnel.

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Country Walk Development Amphibian Tunnel

Walden Woods – Windsor, Connecticut *(continued)*

“We worked with CULTEC chambers in the past and know that they do a great job of managing stormwater runoff and recharging the ground,” said Joseph Lenahan, PE, LEED-AP, Project Manager with Fuss & O’Neill, Inc. “In the midst of our discussion about the best solution for the tunnel, we realized that the dome-shaped chambers would work perfectly to allow the amphibians get in and out of the tunnel.”

The engineers used three CULTEC Contactor® EZ-24 chambers that are typically used for septic and stormwater systems in applications with high water tables or other depth restraints. Each unit is 8.5 feet long, 16 inches wide and 12 inches high and is able to bend around obstacles with a deflection capability of 25 feet per 100 feet.

One CULTEC chamber was used at the entrance of the tunnel and two at the exit. The installation of the chambers began with wrapping the perforated units in a non-woven filter fabric. That would reduce any potential erosion from surface runoff through the tunnel and keep fine particles from washing into the tunnel through chamber perforations. Then, the chambers were installed on a six-inch compacted gravel base. The concrete base of the trench drain was extended by one foot on each side for the Contactor EZ-24 units to sit on, and the filter fabric overlapped at the trench drain joint. Finally, the chambers were clamped to the trench drain’s concrete base.

On the side of the vernal pool, CULTEC’s chambers come out to grade through a segmental retaining wall, while they simply emerge to grade on the upland side. Next spring, Winterberry, Northern Bayberry, American Cranberry and other berry bushes will be planted at the tunnel openings to entice the vernal pool inhabitants to enter into CULTEC’s chambers and cross the road to migrate freely to their breeding and mating grounds.



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