

Pembroke Woods Retrofit

Frederick County, Maryland (~2005)

Background:

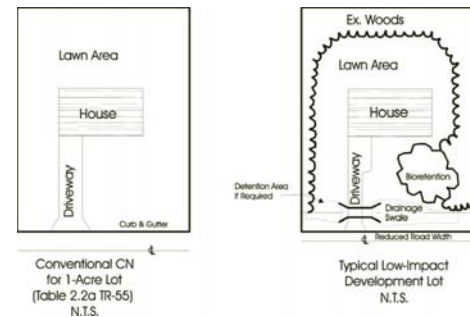
The Pembroke Woods Subdivision (see figure on right) is a ½ acre residential development located in northern Frederick County, Maryland, near the state line with Adams County, PA, and is not only the first Low Impact Development (LID) subdivision permitted in Frederick County, but also the first subdivision designed and under construction using the LID Design Manual developed by Prince George's County, Maryland.



Pembroke Woods was originally designed in the early 1990's as a ¼-acre lot conventional subdivision with 97 lots, 2 SWM ponds and closed section streets. The original design also required a sewage pump station and most of the wooded site would have been required to be cleared. When redesigned as an LID subdivision, it exhibited and benefited from the win/win attributes of the LID process.

The design objectives of the Pembroke site were to demonstrate the win/win potential of LID technology that included the following elements:

- Maintain pre-development hydrology
- Minimize and reduce development impacts
- Mitigation for runoff impacts
- Reduce land development costs



Monitoring:

While no long term monitoring has been conducted, the initial design and cost saving from this project are note worthy. In order to satisfy County criteria for adequate downstream conveyance a downstream hydrologic impact analysis was conducted. Analysis showed that managing the runoff from a 2-year storm (3.0 inches of rainfall) was required to minimally protect downstream receiving waters and ecosystems from the complete range of flood events (10, 25, 50 and 100-year storms). Based upon the implementation of this design criteria, LIDs were installed that resulted in a cost savings of a little over \$500,000.00.

Conclusions:

The property owners received education and outreach on properly maintaining the LIDs installed on their property. While many of the LID design techniques are contrary to established subdivision and drainage practices, this project provided the permitting authority and developer with clear insight and understanding of the sound benefits to be gained by employing LIDs at development sites and the flexibility of existing regulations necessary to construct them. Because post-construction monitoring data was never collected, no definitive conclusions can be made about the effectiveness of this retrofit.