

HENDRICK HONDA

Case Study



Rethinking Water Management Systems

Introduction

Hendrick Honda Hickory is a car dealership located in Hickory, North Carolina. They needed to increase inventory, expand operations and increase sales. Additional parking spaces were needed to accomplish these goals. The existing facility used a traditional stormwater basin to manage stormwater runoff. Hendrick Honda Hickory was looking for a cost-effective way to increase their parking without purchasing additional land. They contacted HydroVault Systems (HVS), a stormwater company based in Asheville, North Carolina, about an underground water storage system called the **PIPE-R™ Reservoir System**. **PIPE-R™** is an underground retention system that replaces traditional above ground retention systems. **PIPE-R™** is a modular system that has 96% void space allowing it to fit into areas where other systems will not. The patented system requires approximately 60% less stone than other systems. The stone savings results in lower costs and faster installation. The **PIPE-R™ Reservoir System** may be installed under anything non-structural such as parking lots, drive throughs, landscaped areas, and playing fields.

Project Description

To maximize land use and increase inventory, the existing retention basin was filled in and two **PIPE-R™ Reservoir Systems** were installed under the newly added parking lots. The systems provide a combined storage volume of approximately 35,000 cubic feet. Campbell Engineering worked with the engineers from **Environmental Conservation Solutions, LLC (ECS)** to design a comprehensive system which allowed for the use of existing stormwater infrastructure on the property. ECS is the patent holder of the **PIPE-R™ Reservoir System** and their engineers support engineers during the design process. Suntime Technologies' Nutrient Separating Baffle Box (NSBB) was used as pre-treatment to the **PIPE-R™** system to remove sediments, trash, organic debris, and floatables from the stormwater entering the **PIPE-R™** system.



Figure 1 NSBB Observation Cover

Hendrick Honda Hickory in Hickory, NC – Using a PIPE-R™ Reservoir System to Increase Usable Land and Manage Stormwater Runoff





Construction

Construction started in the summer of 2017. The first **PIPE-R™** system installed was on the lower section of the property. The storage volume of the system was 17,872 cubic feet. After excavation was complete, the system took 6 days to install. Installation included six-inches of base stone under the entire system, installation of an underdrain, placing the **PIPE-R™** cubes in the excavated area, wrapping the **PIPE-R™** cubes with a non-woven geotextile fabric, and covering the system in preparation for pavement. The second system was installed on the upper section of the property. The storage volume of the system was 14,993 cubic feet. After excavation was complete, the installation took five days and contained the same components as the lower system. The installing contractor used five laborers, a backhoe, a bulldozer, a wheel loader, and compaction equipment.

Protecting North Carolina's Waters

Hendrick Honda Hickory wanted to go above and beyond the required stormwater pollutant removal standards in North Carolina. To meet this goal, they installed an up-flow filter in each NSBB. The up-flow filters contain **Bold & Gold® Filtration Media** which removes the nitrogen, phosphorus and fine clay particles found in stormwater runoff throughout North Carolina. These pollutants contaminate water bodies such as creeks, streams, rivers and lakes. Preventing them from leaving the Hendrick Honda Hickory property ensures the recreational use and ecological health of North Carolina's waters can be enjoyed for years to come. The NSBB's on site will undergo a one-year monitoring program established by the North

Carolina Department of Environmental Protection (NCDEQ) called the NEST program. NC STATE University will perform the water quality monitoring. Visit the site and you will see a special observation cover over one of the NSBB's. An observation cover was installed on one of the systems so visitors to the property can see the NSBB doing its work. The NSBB with **Bold & Gold®** up-flow filter is expected to remove 95% total suspended solids (TSS), 70% total nitrogen (TN) and 95% total phosphorus (TP).

Project Challenges

This project almost didn't happen due to an existing utility easement running through the middle of the property. The utility easement was in the space where the engineer planned to put the underground stormwater system. Building a stormwater system is not allowed within a utility easement. The **PIPE-R™** system, with its 96% void space, barely fit into the existing area, allowing construction to continue as planned. Competitive systems could not fit. In addition to the easement, the design engineer planned to use the existing stormwater conveyance infrastructure on the property. The **PIPE-R™ Reservoir System's** flexible height, width and length options allowed the design engineer to use the existing stormwater infrastructure saving Hendrick Honda Hickory a tremendous amount of time and money during construction.

Project Results

Hendrick Honda Hickory increased their inventory by thirty percent by adding fifty-nine parking spaces to their existing facility without purchasing any new land. The new parking lot installed over the **PIPE-R™ Reservoir System** is on the frontage of the highway which increased the visibility of available inventory. Hendrick Honda Hickory enhanced the car buying experience for their customers by providing a larger selection of quality vehicles to purchase or lease. The NSBB's are being monitored for nutrient removal efficiencies and results will be made available when sampling is complete.



PROJECT FAST FACTS



WHY

Hendrick Honda needed to increase the number of available parking spaces for inventory.



WHEN

Construction was completed in December 2017



WHAT

Two PIPE-R™ Reservoir Systems with a combined storage volume of 35,000 cubic feet



WHERE

Hickory, North Carolina

