



Project Description

Relocation and new construction of a 176,000 SF car sales and service facility.

- 3-story state-of-the-art, non-separated mixed-use building.
- 2- levels of parking above showroom. Second level is a rooftop parking.

Design Features:

- Barrier cable system design in accordance with IBC and PTI.
- Analysis of Barrier cable runs to determine cable loads and reactions at supports.
- End posts design for vehicular impact at cables, and intermediate posts design and base plates for vehicular impact load.
- Post anchorage to concrete curb design.
- Barrier System ½" DIA, seven wire galvanized strand conforming to ASTM A416 with minimum ultimate breaking strength of 36,000 LB.



Fort Washington, PA

CAPABILITIES

- **Post-tensioning**
- **Barrier Cable System**

Developer:

Holman Automotive

Architect:

Penney Design Group, LLC

General Contractor:

North Star Construction Management

Project completion:

2019

Industry

Other - Automotive

Project type:

NEW CONSTRUCTION

Full Project Description

Holman Automotive, one of the largest privately-owned dealership groups in the United States, transitioned its Willow Grove Audi dealership to the Audi Fort Washington facility in Pennsylvania. This new state-of-the-art, 145,000 square-foot dealership with four levels of new and pre-owned vehicles features a sophisticated contemporary showroom design that delivers a lifestyle-focused experience to consumers throughout the region.

Audi Fort Washington features showrooms on the first level with several parking garage levels above.

The relocation of this sales and service facility overcame some challenges like being constructed on a land that was positioned on a floodplain, restricting building opportunities. Therefore, the showroom is located at grade, by the road, and the parking levels above it.

Kline Engineering was retained to provide a structural design for the vehicular and pedestrian barrier cable system of the upper garage levels. The proximity of the cables to the sleek architectural features and skin walls created a unique challenge which our team readily took on. Normal barrier cable systems are designed to deflect no more than 18" during a vehicle impact, but our team achieved a maximum deflection of just 6". This was attained by Kline's optimization of the end post and intermediate post layout, along with maintaining the sophisticated architectural look of the building by placing the posts in locations hidden from the outside view. The 6" deflection limit ensures that barrier cable system absorbs the impact of a vehicle while protecting the architectural features from damage.

*Photography and Renderings: ©Audi Fort Washington
© Penny Design Group*