

Charles City Solar Facility

CHALLENGE

A 340MW solar energy project is being built in Charles City, Virginia, to provide renewable energy to the region. Critical to its completion is the deployment of two side-by-side pathways for fiber optic cables to link the solar field substation to a transmission substation. Unfortunately, the only existing pathways are 2-inch PVC pipes entirely encased in concrete. And to make matters worse, they are 4,500-ft. in length. Finding a solution that did not require any digging and reconstruction – and still allowed for future expansion – was imperative.

SOLUTION

Dura-Line's MicroDuct 16/12 mm was chosen for the first route and Dura-Line's FuturePath® 3-way 16/13 mm bundle was chosen for the second route. Not only did this allow for future expansion, but both products are lined with SILICORE® ULF, offering the best chance to achieve the 4,500-ft. run in one shot, thereby eliminating the need for digging and installing new handholes.

RESULTS

By using Dura-Line's MicroDuct and FuturePath products lined with SILICORE ULF, crews were not only able to install four total pathways and two fiber optic cables to successfully link their solar field substation to the transmission substation, but they were also able to pull the innerduct and jet the fiber optic cables for the entire distance of the 2-inch PVC runs. This saved thousands of dollars and hundreds of man-hours on this project.

CHALLENGE

Primary contractor, Booth & Associates, sought the installation of a physically redundant fiber optic system between the solar field substation and the transmission substation at the Charles City Solar Facility in Virginia. Already connecting the solar field substation to the transmission substation were two 4,500-ft. runs of 2-inch PVC fully encased in concrete. With access only in the form of small handholes at the beginning and end of these runs, there would be no opportunity to break the placement of innerduct or fiber optic cable into smaller, more manageable sections without significant rework of the existing 2-inch PVC duct system.

The core objectives were twofold: place a MicroDuct pathway within each of the existing 2-inch PVC runs for the entire length of the run, and then follow with jetting-in a 24-count, 7.6mm OD, fiber optic micro cable into each MicroDuct to achieve physical redundancy.

An additional aim was to successfully place a Dura-Line FuturePath product within one of the PVC runs. Dura-Line's FuturePath product contains more than one MicroDuct bundled under a sheath to provide additional pathways for future expansion.

SOLUTION

To meet requirements and provide redundant fiber optic pathways, Dura-Line proposed placing two different products. Dura-Line's MicroDuct 16/12 mm was selected for first route and a FuturePath 3-way 16/13 mm bundle

for the second route. Both products are lined with the new Dura-Line SILICORE ULF lining, which decreases friction between the cable jacket and MicroDuct wall, increases jetting distance by up to 25%, and now comes standard on all Dura-Line OSP products.

A Dura-Line team arrived onsite and conducted the





placement of the MicroDuct 16/12 mm with a Condux Gulfstream, and successfully jettied the MicroDuct into the existing 2-inch PVC in a similar method to what would occur in a MicroDuct override. Placement of a 24-count, 7.6mm OD micro fiber optic cable followed with a Plumettaz MiniJet.

“Failure in placing the MicroDuct or fiber optic micro cables would have been a significant setback.”

With the successful placement of the MicroDuct 16/12 mm for the entire 4,500-ft. length of the first 2-inch PVC route, it was decided to attempt the placement of a FuturePath 3-way 16/13 mm into the second 2-inch PVC route. Although the current need only required one of these pathways to be occupied with a 24-count fiber optic cable, the additional two pathways in the FuturePath bundle will provide an option for the Charles City Solar Facility to add additional fiber optic cables in the future if desired.

Placement of the FuturePath 3-way 16/13 mm was conducted by blowing in a Dura-Line Bull-Line® pull tape within the existing 2-inch PVC and then pulling in the duct utilizing a breakaway swivel, appropriately sized pulling grip, lubrication, and capstan. Dura-Line placed the second 24-count, 7.6mm OD micro fiber optic cable

with a Plumettaz MiniJet into the first MicroDuct. With the SILICORE ULF, the cable held speeds of over 500 ft/min continuously for the entire 4,500 ft. of the the run.

RESULTS

With Dura-Line’s MicroDuct 16/12 mm, FuturePath 3-way 16/13 mm, and completed fiber optic cable installation, renewable energy is one step closer to being provided to customers across the region. Success was found in placing the innerduct and fiber optic cables for the entire distance of the 2-inch PVC runs. This was a challenging route with several unknown variables. It was critical to the project’s success to be able to place the MicroDucts along the full route, without having to dig up the preburied PVC route. Failure in placing the MicroDuct or fiber optic micro cables would have been a significant setback with the need to create an access point in the middle of the concrete encased 2-inch PVC.



CHARLES CITY SOLAR COMPONENTS USED



MICRODUCT

16/12 mm

FUTUREPATH 3-WAY

16/13 mm