C7® OVERHEAD CONDUCTOR
RIVER CROSSING PROFILE

THE CHALLENGE

A utility in the mid-western United States was planning to reconductor an existing 138 kV transmission line in a residential area to address encroaching erosion at a nearby river. To prevent issues related to riverbank soil erosion near a lattice structure, the utility planned to move the structure further inland, which increased the river crossing span length from 1,290 feet to 1,840 feet. The utility then faced the challenge of maintaining existing clearances to the river even with the 550-foot span increase.

LINE REQUIREMENTS

- Continuous Rating: 730 amps
- Sag at MOT, 1,840-ft span: 40 feet
- Maximum Horizontal Tension: 12,480 lb
- Length: approx. 1.65 miles
- Loading: NESC Heavy, 250C, and 250D
- Tension Limits: NESC 250C and 250D loadings were not to exceed 70% RBS.
- Existing Conductor: 795.0 kcmil 26/7 ACSR "Drake"

CONDUCTOR COMPARISON

Code Word	Size	Stranding/ Type No.	Outside Diameter	Weight	RBS	Evaluation Results				
						Max Tension	Loaded Weight	Cond. Temp.	Current	Final Sag
	kcmil		in	lb/ft	lb	lb	lb/ft	°C	A	ft
Drake* (Existing)	795.0	26/7	1.108	1.093	31,500	12,500	2.963	75.0	730	98.0
Capitol Reef/ACCS/TW/C7-TS	477.0	23	0.814	0.508	28,400	11,800	2.120	180.0	1050	33.5

*Sag-tension results assume movement of the structure and use of existing Drake

SOUTHWIRE'S CONDUCTOR SOLUTION
477.0 KCMIL TYPE 23 CAPITOL REEF/ACCS/TW/C7-TS

180°C / 200°C
Continuous / Emergency ratings

1,050 A
Continuous amps

Advanced Materials
Stranded Carbon Fiber thermoset core surrounded by fully annealed 1350 aluminum (1350-O Temper) TW strands

477.0 kcmil
Smaller Conductor Size

2/3 Reduction in Thermal Sag
Under reduced structural loading

BENEFITS OF UTILIZING A C7-TS CORE

5x *LIGHTER* than steel

20% *STRONGER* than UHS steel

***OVER* 10x** less thermal elongation compared to steel

A GREAT FIT for this reconductoring challenge

C7® OVERHEAD CONDUCTOR REVIEW

Thanks to the unrivaled performance of C7® Overhead Conductor, a full line rebuild was avoided in this project. Utilities turn to Southwire not only for reconductoring needs but also to build new high capacity, low sag lines with C7® Overhead Conductor while reducing the costs on structures, foundations, and labor! With its unique stranded carbon fiber core construction, Southwire's C7® Overhead Conductor is the most durable, rugged, and reliable composite core conductor on the market. C7® Overhead Conductor is the only composite core conductor developed by a conductor manufacturer with full knowledge of utility needs and practices.

To learn more about C7® Overhead Conductor visit: **www.southwire.com**