ceEntek

PROJECT NAME: ARTHUR KILL OVER SIRT

Photo: Setting-up the Mixers for Winter Casting on the Arthur Kill Avenue Bridge over Staten Island Rapid Transit

Location: Arthur Kill Ave, Staten Island, NY
Client: New York City Dept of Transportation
Product: ceEntek ce200SF-G™

Product Volume: 6.5 m^3 (8.5 cy)
Panel Dimension: 24 cm & 76 cm x 17.5 cm
Completion Date: February 2021

PROJECT SITE

Photo: Close-up of Closure Pour (Arthur Kill Ave over SIRT)

The existing Arthur Kill Avenue Bridge over Staten Island Rapid Transit (SIRT) in Staten Island, NY was a cast-in-place concrete deck on steel plate girders. The bridge is a single-span, 4-lane structure which carries traffic over the Staten Island Rapid Transit line linking the residential area with downtown Manhattan. The bridge is a critical part of the Staten Island transportation network and maintaining traffic flow in both directions was necessary. The accelerated timeline to reduce user inconvenience necessitated a winter casting of the UHPC Closure pours. The project included removal of the existing deck, relocating the utilities, and casting of a new deck and barriers.

PROJECT PROFILE

POJECT DESCRIPTION

The Arthur Kill Avenue bridge over the Staten Island Rapid Transit (SIRT) is a critical access for Staten Island residents and to the SIRT station. When considering a rehabilitation of the bridge, maintaining traffic flow in both directions at all times and minimizing user inconvenience was a significant factor.

The existing deck was replaced with a new cast-in-place concrete deck with UHPC longitudinal closure pours of ceEntek's ce200SF-G™. This urgent replacement required casting of the UHPC closure pour during winter construction. ceEntek's Cold Weather Practice's Guide was followed for the project casting and the ce200SF-G™ was modified to provide early strength during winter construction.

Photos: ceEntek's UHPC Mixers in pairs (L); Preparing to cast the closure pour between CIP Decks (R).

PROJECT EXECUTION

The ce200SF-G™ was batched on site with ceEntek's Variable speed specially designed Model 30 Mixers (0.65 cy [0.5 m^3] capacity) and supplied in bulk-bags of 1,075 kg (2,370 lb), with 0.008" x 0.5" (0.2 mm x 13 mm) steel fibres and ceEntek's CNF enhanced paste and accelerator. The project required winter construction methods to achieve a strength of 12,000 psi (80 MPa) in 2-days using electric heating blankets and the Maturity Method to monitor and control the time-temperature-strength development.

Photos: Electric Heating blankets over the longtidina closure pour (L); Top forms over Closure Pour (R).