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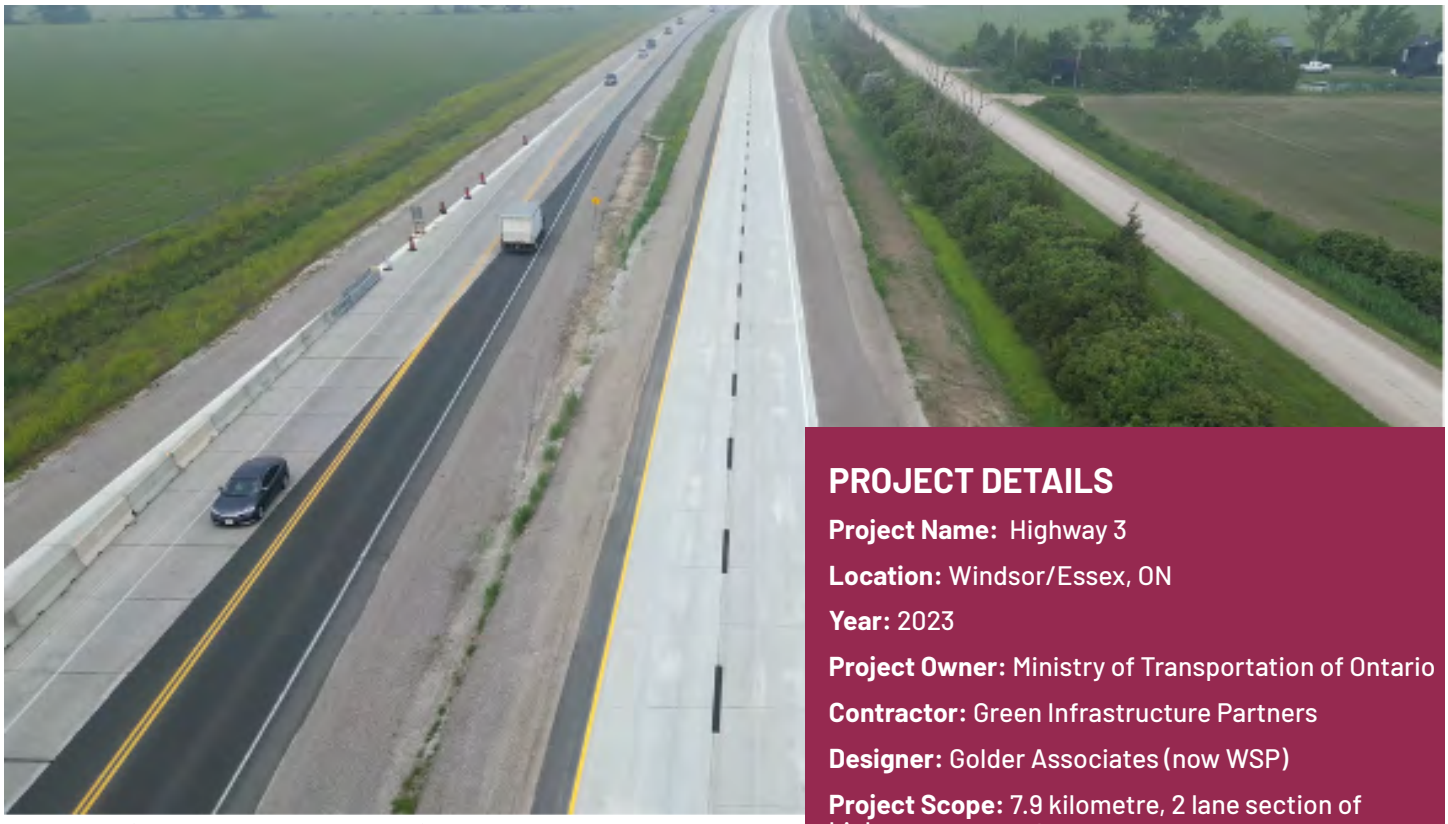
LOWER CARBON CONCRETE CASE STUDY: HIGHWAY 3



A 7.9 kilometre 2-lane section of concrete pavement constructed in 2023 on Highway 3 in the Windsor Essex area of Ontario used GUL for their project. The project was a Ministry of Transportation of Ontario (MTO) Design Build project. The contractor constructing the concrete pavement was Green Infrastructure Partners (GIP).

PROJECT DETAILS

Project Name: Highway 3

Location: Windsor/Essex, ON

Year: 2023

Project Owner: Ministry of Transportation of Ontario

Contractor: Green Infrastructure Partners

Designer: Golder Associates (now WSP)

Project Scope: 7.9 kilometre, 2 lane section of highway pavement

Type of cement used: GUL

SCMs: 25% slag

Exposure Class: C-2

Concrete Design Strength: 32MPa at 28 days

Amount Used: 15,242 m^3

The mix used for the Highway 3 concrete pavement used GUL cement and 25% slag, leading to a 24% reduction in CO2 compared to the baseline mix for a 35 MPa concrete.

Listed below are some additional project details obtained from MTO:

- Pavement Width: 3.75 m / lane
- Pavement Type: Jointed plain concrete pavement with dowels
- Shoulders: Asphalt pavement
- Pavement Structure:
- 240 mm Thick concrete pavement with 32 mm dowels
- 100 mm OGDL (asphalt based)
- 300 mm Granular A Base
- Extended concrete pavement 0.5 m into outside shoulders to eliminate edge load conditions on main travelling lane.
- Traffic Level: approximately 2,500 AADTT
- Soil Type: Layers of fill, silty sand and silty clay to clayey silt

Source: Highway 3 – Next Generation Concrete Pavement

Photo: Concrete Ontario