

Sir Ambrose Shea Lift Bridge – Newfoundland and Labrador, Canada

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Abstract

The new Sir Ambrose Shea Vertical Lift Bridge is located in the Province of Newfoundland and Labrador on the east coast of Canada, and was built as a replacement to an existing structure constructed in 1961 that had reached the end of its useful life. It is a three-span structure, with a movable centre span (vertical lift span) flanked by two simple fixed composite plate girder spans. The towers for this lift bridge consist of a three dimensional steel truss, shaped representative of sails. Each tower component is connected by a three dimensional exoskeleton truss which houses the machinery to operate the lift span. The new bridge was designed to be durable, efficient, and reliable as well as being an aesthetically pleasing structure with architecture to reflect the local culture and tourism potential of the region. The new bridge was constructed adjacent to the existing bridge in order to minimize disruption to the local fishing boats and road traffic.

Keywords: movable bridge; durability; tubular sections; vertical lift bridge; aesthetics; constructability.

1 Introduction

The Sir Ambrose Shea vertical lift bridge is located on the Avalon Peninsula, in the town of Placentia, approximately 100 km west by southwest of the capital city St. John's. Originally constructed in 1961, it remains the only movable bridge in the Province. Earlier, in the 1940s, a pontoon bridge had been built to cross the Placentia "Gut", a narrow waterway channel connecting the Atlantic Ocean to the inner harbor. Later, a ferry capable of carrying several vehicles and passengers was utilized in the 1950s. Both undertakings encountered rough tides and sea ice in the area, making the crossing untenable.

The bridge provides a vital link between the amalgamated communities of Placentia, Jerseyside, Dunville, and Freshwater and is part of Route 100, an important regional highway. The

bridge is raised for commercial fishing boats approximately 2400 times annually, allowing them to enter and leave the Placentia Gut. Although the bridge remains in operation year round, the frequency of vessel passage is seasonal, driven by fishing activities.

The project's objective was to create a bridge that satisfied the functional requirements of the existing bridge including accommodating both vehicular and boat traffic, and minimize restrictions to navigation, which can negatively affect local commercial fishery activities. Furthermore, due to the bridge's high visibility in the historic community of Placentia and the importance of tourism to the local economy, the design required the incorporation of architectural features, to enhance the appearance of the bridge, consistent with the town's heritage, culture and local environment.