

A "Floating Truck Stop" Could Alleviate Ontario's Highway Congestion



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The increasing volume of east – west road traffic through North America's busiest corridor at Toronto, Canada requires the development of new and alternative solutions for the future. One of the possibilities involves the operation of mega-scale roll-on, roll-off shipping to carry trucks along the northern region of Lake Ontario.

Introduction

A steadily increasing volume of road traffic travels along the highway that extends east from Chicago through Detroit, then across into Canada to Toronto and on to Montreal. Major east – west roads across Toronto have been widened and additional east – west roads having been built, but road traffic volumes have steadily increased along with congestion, with delays raising the cost of commercial transportation.

One possible option involves the construction of a tunnel under the main east – west highway through Toronto. A partial solution from CN Rail involves the construction of a new railway – truck container transfer terminal within a few miles northeast from the Port of Hamilton. In addition to the CN Rail container transfer terminal at Montreal, a private developer plans to build a railway – truck container transfer terminal along the main CN Rail line, southeast of Ottawa and with potential to transfer semi-trailers.

The maritime sector offers a solution in the form of a "floating truck stop" that would sail between the Port of Hamilton to a port located east of Toronto.

The Maritime Option

This option would borrow from several well-proven precedents, including the barge tows that sail along the southern Mississippi River. Barges measuring 35-feet width by 200-feet in length are lashed together 10-lengthwise and 7-side-by-side, yielding a floating assembly measuring 2,000-feet in length by 245-feet in width. Future research would need to explore the possible operation of coupled assemblies of Seaway-max size of barges, each measuring 75-feet width by 600-feet in length, each designed for roll-on, roll-off operation. Such barges could sail through waves in the western region of Lake Ontario that rarely exceed three feet in height.

Government regulation restricts the daily work duration for truck drivers who - after having completed their daily limit - are required to make a compulsory rest stop for up to 10-hours. Dispatchers might schedule drivers to arrive at a roll – on, roll – off terminal as their workday ends, to park their vehicles aboard a floating truck stop. An array of barges assembled into a tow or floating train would measure 225-feet width by between 1,800-feet and 2,400-feet in length, to be navigated by tugs coupled at the bow and stern ends and sailing at speeds of up to 12-knots.

Mega-size Barge Trains

Each barge would be designed to transit through Seaway size navigation lakes, with final assembly into a coupled train at either Port of Hamilton or along the Upper St. Lawrence River near the Port of Johnstown. Barge design would need to include the rapid loading and off-loading of several levels of trucks, with Port of Hamilton becoming the western terminal. There would be a need to develop a terminal for mega-size vessels east of the Port of Oshawa.

At that terminal and at Port of Hamilton, trucks with drivers would transfer between water transportation and the main highway. Barge assemblies that carry trucks and drivers would sail at 10 to 12-knots for a duration of up to 10-hours. An alternative option would involve drivers dropping off semi-trailers at a port for transfer on to a barge, then coupling to semi-trailers that had already been off-loaded. Barges that carry low-priority semi-trailers without drivers would measure 150-feet in width and sail between Ports of Hamilton and Johnstown.

Weather Factors

The Upper St. Lawrence River and Lake Ontario are located south of the Lower St. Lawrence River, which is open year-round to navigation between Montreal and the Atlantic Ocean. Ferry services do operate around Lake Ontario during the coldest winter months between mid-January to mid-March. During winter, ice booms are placed across the Upper St. Lawrence River, to the east of the Port of Johnstown and to assure smooth water flow to the hydroelectric power dam. Despite the winter closure of the St. Lawrence Seaway, barges could sail on Lake Ontario, including between the Ports of Hamilton and Johnstown.

The greatest demand for transportation along the main highway between Chicago and Montreal occurs between mid-March and mid-January, when weather conditions would allow for easier navigation. Severe winds blow across the Great Lakes between late October and mid-December, causing severe waves of 20-feet and 30-feet to occur in the eastern region of Lake Ontario. When the worst wave conditions occur, during early winter, barge assemblies would still be able to sail between ports located along the northern region of Lake Ontario.

Future Research

The logistics research institute at McMaster University at Hamilton has the capability to undertake comprehensive research into evaluating methods of moving increased future traffic volumes across and around Toronto. A railway – truck intermodal terminal located northeast of Hamilton and a companion terminal in Eastern Ontario offers potential to divert some truck traffic from the roads to

the railway. In addition, a coupled assembly of barges would be able to carry the equivalent number of trucks as a fleet of intermodal trains, while serving as an overnight mobile truck stop that can divert trucks around Toronto traffic congestion.

The opinions expressed herein are the author's and not necessarily those of The Maritime Executive.