

Navigable waters have been improved greatly by dredging in channels and harbours, by the removal of obstructions, and by the building of remedial works to maintain or control water levels. Incidental to these developments of navigable waters are works to guard shorelines and prevent erosion, and for the control of roads and bridges that cross navigable channels. Ice-breaking operations are carried on at the beginning and at the end of winter to prolong the season of navigation in important waters that freeze over—particularly in connection with sea-going shipping from Montreal—and to prevent flood conditions during the spring ice break-up.

River St. Lawrence Ship Channel.—This channel extends from about 40 miles below Quebec city to the foot of Lachine Canal at Montreal, a distance of 200 miles of which about 113 miles is dredged channel.

The first minor development began in 1844, on Lake St. Peter, where the limiting depth was $10\frac{1}{2}$ feet at low water. Since 1851, progress in deepening and widening the original natural channel has been more or less continuous through a series of improvement projects in keeping with the increasing demands of trade and the safety of larger and faster vessels.

The present ship channel above Quebec has a limiting depth of 35 feet (opened in 1952) at extreme low water and a minimum width of 550 feet, with additional width up to 1,500 feet at all curves and difficult points. This section comprises about 100 miles of dredged channel. Below Quebec the limiting depth of dredged channel, about 13 miles in length, is 30 feet at low tide, with a width of 1,000 feet. An average tidal range of 15 feet in this area provides ample depth for any vessel using the St. Lawrence route.

The latest improvement project (1952) comprises the further widening of critical sections and the provision of additional anchorage and turning areas. Annual maintenance requirements due to siltation in this dredged channel are relatively minor above Quebec. Below Quebec siltation is more pronounced owing to tidal action.

The ship channel is well defined by buoys, and the centre by range lights permitting uninterrupted day and night navigation throughout the open season from about mid-April to early December.

The movements of all shipping, weather and ice conditions and obstructions to traffic throughout the entire St. Lawrence waterway from Cape Race and Belle Isle to Fort William (over 2,000 miles) are recorded and made available to all concerned through a series of reporting stations known as the Government Signal Service.

A fleet of ice-breaking vessels is maintained to facilitate the movement of shipping between Montreal and the sea during the opening and closing of navigation, as well as to alleviate flood conditions in low-lying areas.