was required. Again at 75 feet the shifts were changed to eight of three hours each. When the caisson reached its full depth of over 90 feet below average high water two onehour shifts per day were required, this being the greatest length of time that the men could stand the very heavy pressure.

Outside the caisson the contractor has made provision for the care of the men in many ways. In addition to a bunk-house and dining-room, there is a dressing and cof-

The compressor plant consists of five Ingersoll-Sargeant direct compressors, four with a capacity of 1,250 cubic feet, and one with a capacity of 2,500 cubic feet per minute. This plant was used on the north shore last season. To this has been added, this season, two compound two-phase air compressors bringing the total capacity up to 13,100 cubic feet per minute. These two latter compressors were used only when the pressure got above 30 lbs. per The air is first compressed in the lowsquare inch. pressure cylinder

fee house where "sand hogs" coming out of the caisson may change their clothes immediately and be supplied with hot coffee. Next door is an hospital with cots and a qualified doctor in constant attendance. Adjoining the hospital is a steel hospital tank connected with the compressed air pipes where men who have come out of the pressure too quickly and are attacked by the "bends" can be placed immediately under pressure again before any serious

e

e

e

.

T

,,

5

h

I

'n

r9



(The large shafts are for material, while the smaller are ladder shafts for the men). June 15th, 1912.

or injurious effects can develop. The caisson is surrounded on three sides by a heavy platform supported on bents. On this platform is a double line of track leading to the concrete mixers and stone yards. The skips with the loaded concrete buckets run from the mixers to the caisson by gravity, the empty skips being hauled back by horses. Three 15-ton stiff-legged derricks are placed on each side of the caisson and are used to deposit concrete, stone, or hoist the indicates on an adjustable scale what the pressure should be at any stage of the tide. By this means the operator can, by watching the finger, so adjust his compressors so that a pressure is intelligently maintained conforming to the height of the tide. The air is led from the compressor house into two receiving tanks, which tends to absorb the sound and shock from the compressors; thence into two 12inch mains which are laid in a trough of cold, running water.



Ceneral Elevation and Cross Section of New Quebec Bridge. (St. Lawrence Bridge Co. Ltd., contractor for superstructure).

loaded buckets through the material locks. On this platform is also the pump which supplies the water to the boiler plant and for various other uses as required.

The boiler and air compressor plant is situated near the foot of the cliff. A portion of this plant was brought over from the north shore last fall after the sinking of the north caisson was finished, but this has been increased nearly 100 per cent. in order to afford a greater reserve supply in case of break-down and also to furnish air for the increased number of blow pipes necessitated by the greater quantity of fine material encountered in the sinking.

The air, therefore, enters the caisson comparatively cool, the temperature of the working chamber rarely exceeding 80 degrees Fahr.

The boiler plant consists of one 75, six 100 and three 125 horsepower horizontal boilers, and three 250 horsepower Heine water tube boilers with a total capacity of 1,800 horsepower. A number of 50, 75 and 100 horsepower boilers are also used throughout the work, crushers, mixers, derricks and pumps.

The whole plant, as well as the working chamber of the caisson, is lighted by electricity supplied by the city.

665

up to 30 lbs.

per square inch, then it is passed

through a cool-

ing chamber into the high-

pressure cylinder

where the com-

pression is in-

creased as desir-

ed. There is in

addition a small-

er high speed compressor for

compressor house

there is an auto-

matic register indicating on a dia-

gram the pres-

sure at all stages of the tide dur-

ing the whole 24

hours. Another

gauge, by means

of a finger oper-

ated by the tide,

supplying tools, etc. In the

air