

Smokebox, diameter..	65 1-2 in.	65 1-2 in.
Smokebox, length from tube sheet to end....	5 ft. 10 in.	5 ft. 10 in.
OTHER PARTS.		
Exhaust nozzle.....	*Fixed, single.	
" " " " " " " "	5 in., 5 1/4 in. and 5 1-2 in.	5 in., 5 1/4 in. and 5 1-2 in.
Exhaust nozzle, distance of tip above cen. of boiler.....	6 1-2 in.	6 1-2 in.
Netting " " " "	*Wire.	
" size of mesh..	3 1-2 x 3 1-2	3 1-2 x 3 1-2
Smokestack (straight), diam.....	15 1/4 in.	15 1/4 in.
Smoke stack, height above smokebox....	37 in.	37 in.
TENDER.		
Type.....	8-wheel	8-wheel.
Tank, capacity for water.....	4,500	4,500
Coal capacity.....	10 tons.	10 tons.
Kind of material in tank	*Steel.	
Thickness of tank sheets.....	1/4 in. & 5-16 in.	1/4 in. & 5-16 in.
Type of frame.....	10 in channel steel.	10 in channel steel.
" " " " " "	*Arch bar.	
Truck.....	*Rigid center.	
Type of truck spring..	*Elliptic.	
Diam. of truck wheels.	43 in.	33 in.
Diam. & length of journals.....	5 in. x 9 in.	5 in. x 9 in.
Distance between centers of journals.....	76 in.	76 in.
Diam. of wheel fit on axle.....	6 3/4 in.	6 3/4 in.
Diam. of center of axle	5 3/8 in.	5 3/8 in.
Type of trunk bolster.	*Wood plated with iron.	
" " " " " "	*Channel iron laid flat.	
Length of tender frame over bumpers.....	23 ft.	
Length of tank.....	21 ft. 9 in.	21 ft. 9 in.
Width of tank.....	9 ft.	9 ft.
Height of tank not including collar.....	4 ft. 5 in.	4 ft. 5 in.
Height of tank over collar.....	5 ft. 11 in.	5 ft. 11 in.
Type of drawhead....	*M.C.B. coupler.	

* These items are the same for both classes of engines.

Acetylene Gas for Trains.

A. Holland, Ottawa, Ont., writes: The Pontiac Pacific Junction Ry. express train has been successfully lighted with acetylene gas. The train consists of the ordinary postal, express & baggage, 2nd & 1st class cars. The gas is generated by a 30-light acetylene gas machine placed in the baggage car. Each car is regularly piped & supplied with six 50-candle power burners. The pipes are connected with rubber hose between cars, with hose cocks. It is a through express, requiring no shunting of cars. The train has been running a month with the new light, & the management is so satisfied with the experiment that it proposes to light all its trains & stations with it. The new illuminant has had a severe test. The vibration of the car does not affect the steadiness of the light. Only once were the lights extinguished, & that was by the impact of a train against a huge snow-drift almost as solid as a sand-bar. They were relighted at once & caused no inconvenience beyond the temporary darkness, & for a few moments the smell of escaping gas. Frost 20° below zero had

no effect on the gas passing through the rubber connections between cars. Am I right in claiming for the Pontiac Pacific Junction the honor of being the first train in America to be lighted with acetylene gas?

P. W. Resseman, General Superintendent Pontiac Pacific Junction Ry., writes: Some months ago, in conversation with the local agents, Holland Bros., of Ottawa, I suggested that acetylene gas would be a splendid lighting element for railway cars if it could be utilized without danger. Andrew Holland asserted positively that he could light the cars safely & brilliantly with one of the generators used for house lighting. The problems to be met were:

The effect of intense frost on the gas machine & on the gas when piped between cars with rubber hose, & when the train was running 30 or 40 miles an hour with the mercury away below zero.

The effect of vibration of cars on rough track on the steadiness of light.

The danger of gas escaping from the generator by the agitation of the water in the gas tank.

The slopping over of water from the gas tank on the floor of the car, & in consequence smell of escaping gas.

Shortly after this conversation I placed a train at Holland Bros.' disposal for equipment. A 20-light generator was installed in the baggage car. The cars were temporarily piped for gas fixtures, & the first trial decided that 3 of the expected difficulties amounted to nothing in actual work—the tank & the gas were not affected by the frost; the lights were not affected by the vibration of the cars, & the illumination was more brilliant than on any train I have ever seen. I believe it to be the most brilliant light used to-day on any train in Canada or the U.S.

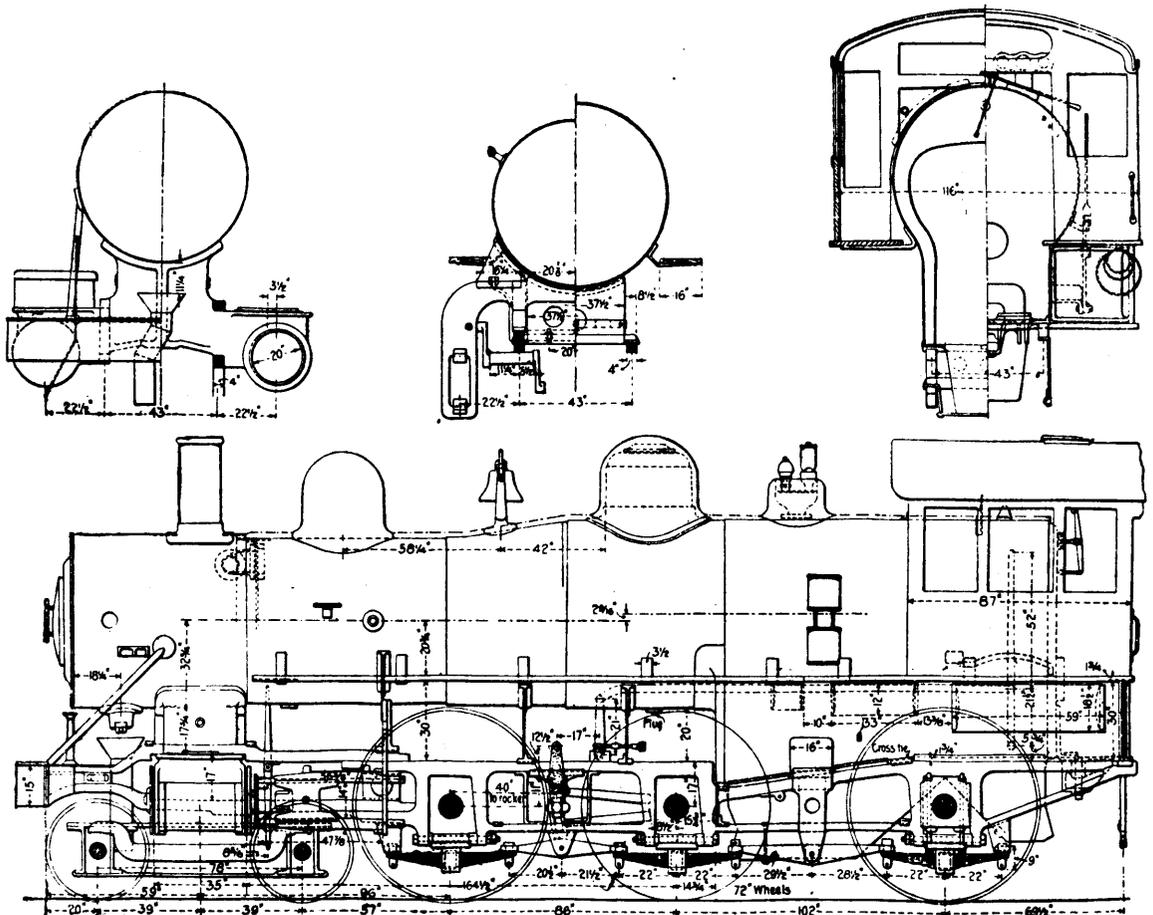
On through mixed express, as we run on

this line, with all the drawbacks of shunting, etc., causing slopping over from the water tank, etc., during our first experiments, the light is so far ahead of anything that we have yet seen in economy & convenience that we will never revert to the old system of lighting again. But where a train has to be broken occasionally & cars shunted, it can readily be seen that such a system could not be worked. Here, again, Holland Bros. came to our assistance, & have installed a plant in our coaches that requires less carbide & avoids slopping & smell from gas, & is positively safe, because the gas is only generated in such small quantities, & under such low pressure, that the explosion of the amount generated at any one time (if such a thing could be) would not break a pane of glass. If the cars were to turn over the lights would go out, & the gas would simply pass away harmlessly into the air, as no fire could possibly result from it.

The plant is installed in the toilet compartment. It occupies a floor space of about 14 x 26 in. These generators have a capacity for 6 lights of 50 candle power each. The charging & attendance are so simple that an ordinary chore boy attends to ours without difficulty or danger. We propose to equip all our cars with the acetylene gas plant, as being the cheapest, safest & most brilliant illuminant for railroads yet discovered.

The carbide we use costs \$60 a ton f.o.b. at the factory, & the lighting of one of our coaches with this light enables the passengers to read their evening papers from any seat in the car, & costs but 25c. for a 6 hours' run.

Holland Bros. state that on Mar. 15 a test of a locomotive headlight, lighted with acetylene gas, was made on the Canada Atlantic Ry., & was highly satisfactory, the light being steady & very brilliant. The apparatus for generating the gas is placed in the cab of the engine so as to be under the immediate sup-



GRAND TRUNK RAILWAY TEN-WHEEL PASSENGER LOCOMOTIVE.