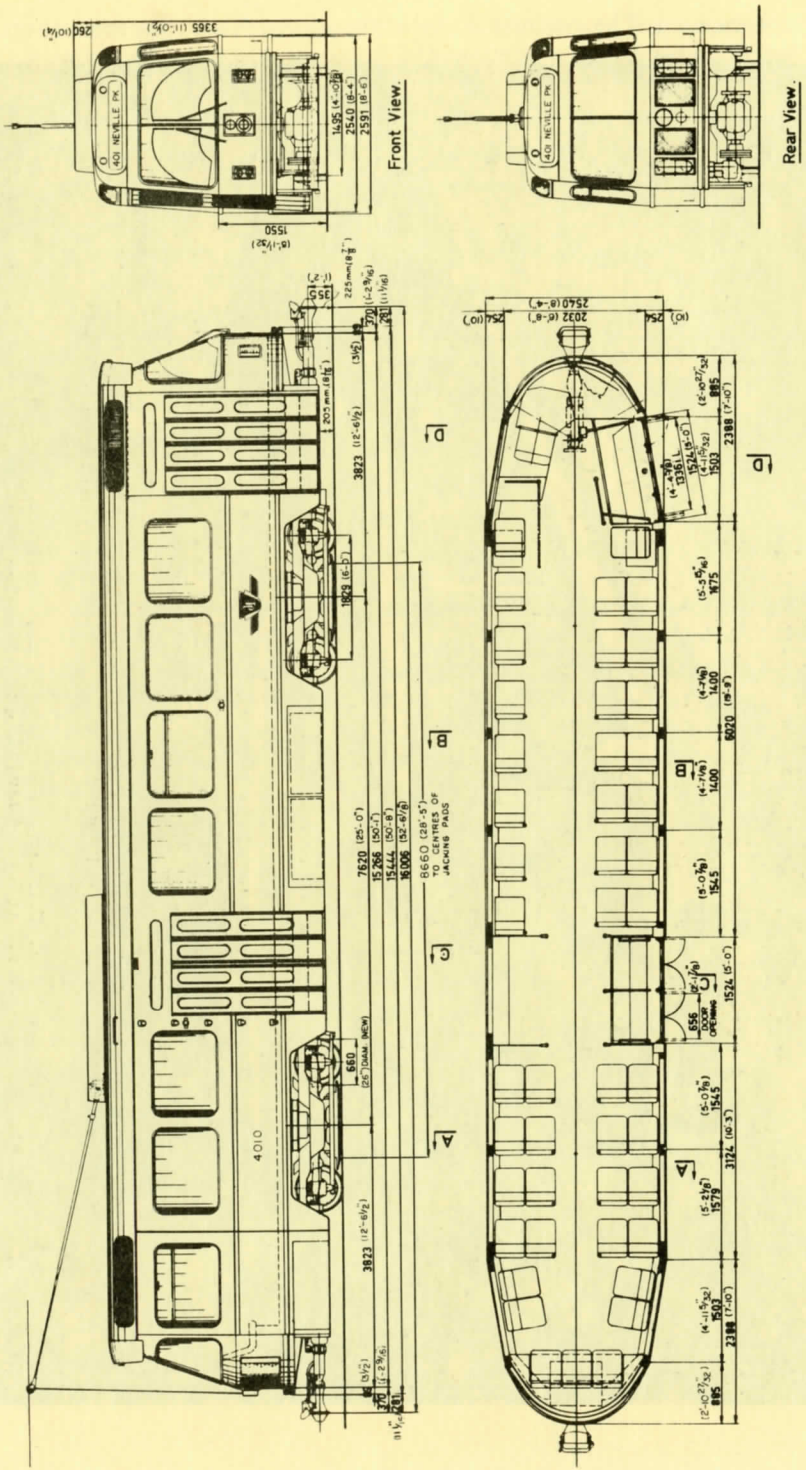


CLRV SPECIFICATIONS

CLRV

CANADIAN LIGHT RAIL VEHICLE

AUGUST 1982 (RFC)

- VAPOR forced air ventilation and heating, thermostatically controlled to respond to both ambient and interior temperatures, with both fresh air makeup, and heat. Continuous circulation. Standby storage preheat feature.
- Backlit fluorescent lighting, battery powered.
- Five safety windows.
- 10" bottom step height.
- VAPOR pneumatically operated doors.
- Door interlocks for both power and brakes.
- CANREP (Scharfenberg) coupler, with folding head.
- OTACO "Innovator" seats.

Principal Specifications:

Fleet numbers: Class L-1:	TTC 4000-4005 (SIG built; serials 001-006 resp.)
Class L-2:	TTC 4010-4199 (Hawker-Siddeley built; serials 1181-1370)
Seating	46
Length over anti-climber	15,444 mm (50'8")
Width over rub rails	2,591 mm (8'6")
Height — to top of roof	3,365 mm (11'0½")
— to top of base	3,685 mm (12'1⅛")
Truck centres	7,620 mm (25'0")
Truck wheelbase	1,829 mm (6'0")
Wheel diameter	660 mm (26")
Track Gauge	1,495 mm (4'10⅞")
Minimum horizontal curve radius, coupled	10,973 mm (36'0")
Minimum vertical curve radii — convex	122 m (400') radius
— concave	244 m (800') radius
Weight — Tare (WI)	23,135 kg (51,000 lbs)
— Normal service (W4) (101 passgrs)	30,075 kg (66,300 lbs)
— Crush (W5) (131 passgrs)	32,120 kg (70,800 lbs)

Single end control.

Motor rating: Two monomotors, 185 HP continuous each (at 400 CFM); peak of 245 HP in accln., 370 HP in braking (HP mode).

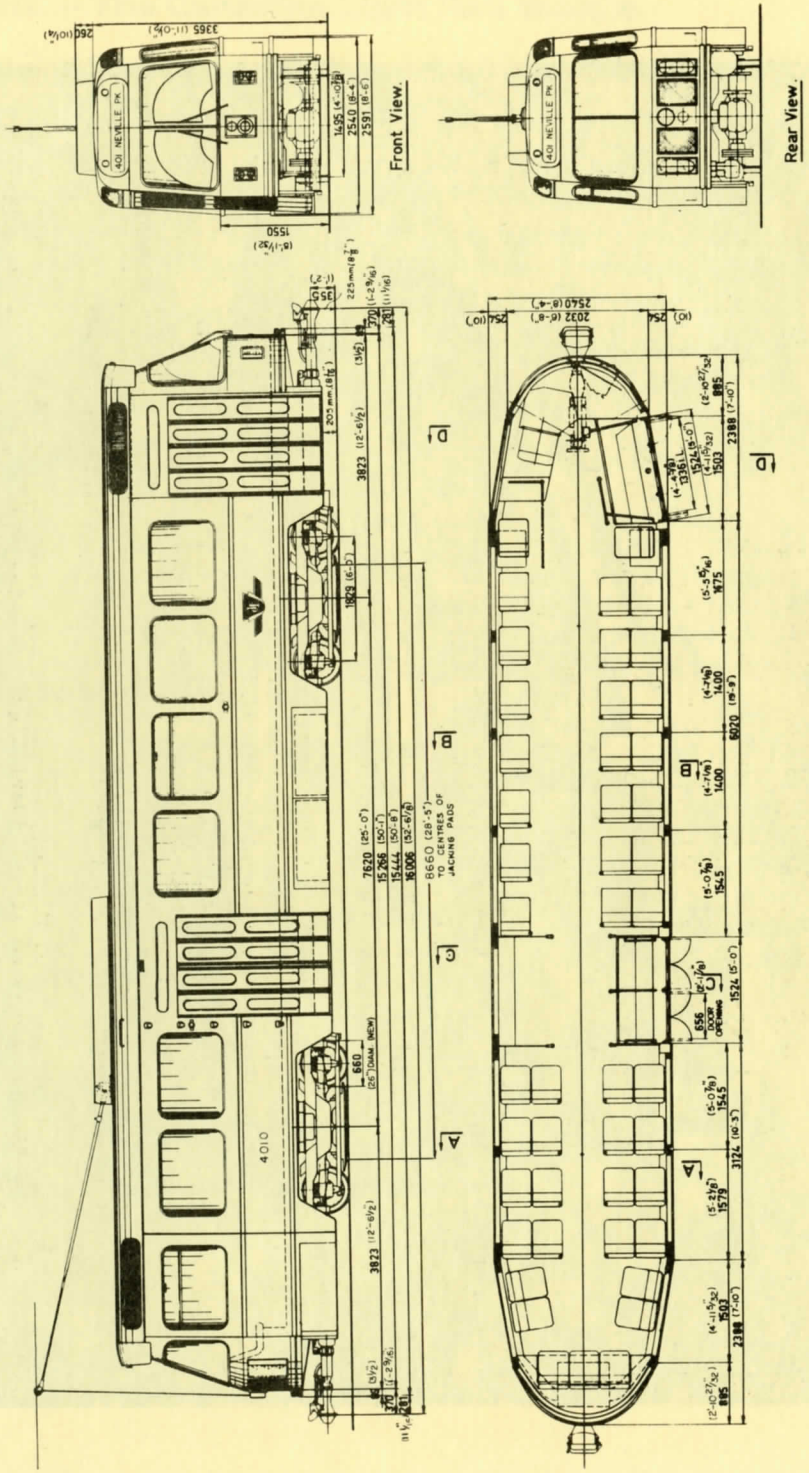
Initial acceleration rate: 1.47 m/s (3.3 MPHPS)

Time to maximum speed: 50 MPH in 30 secs. (HP) or 53 secs (LP)

Braking rate: 1.56 m/s (3.5 MPHPS) in service.

2.34 to 3.46 m/s (5.25 to 7.75 MPHPS) in emergency.

Jerk rate: 1.12 to 1.78 m/s^3 (2.5 to 4 MPHPS^2), depending on mode.



CLRV SPECIFICATIONS

CLRV — The Canadian Light Rail Vehicle

The Canadian Light Rail Vehicle (CLRV) is the Commission's latest rail vehicle acquisition, and will be the replacement for an equivalent number of the PCC car fleet, whose average age is approximately 30 years.

When the Commission confirmed their intention to retain surface rail vehicle ("streetcar") operation in 1971, two parallel activities commenced:

1. "Heavy rebuild (overhaul)" of 173 PCC cars in 1972-1975.
2. Investigation of the acquisition of 200 new cars to replace the balance of the fleet.

The Urban Transportation Development Corp. (UTDC) was formed by the Government of the Province of Ontario in 1973, and (among their activities) it was mutually agreed that the Commission:

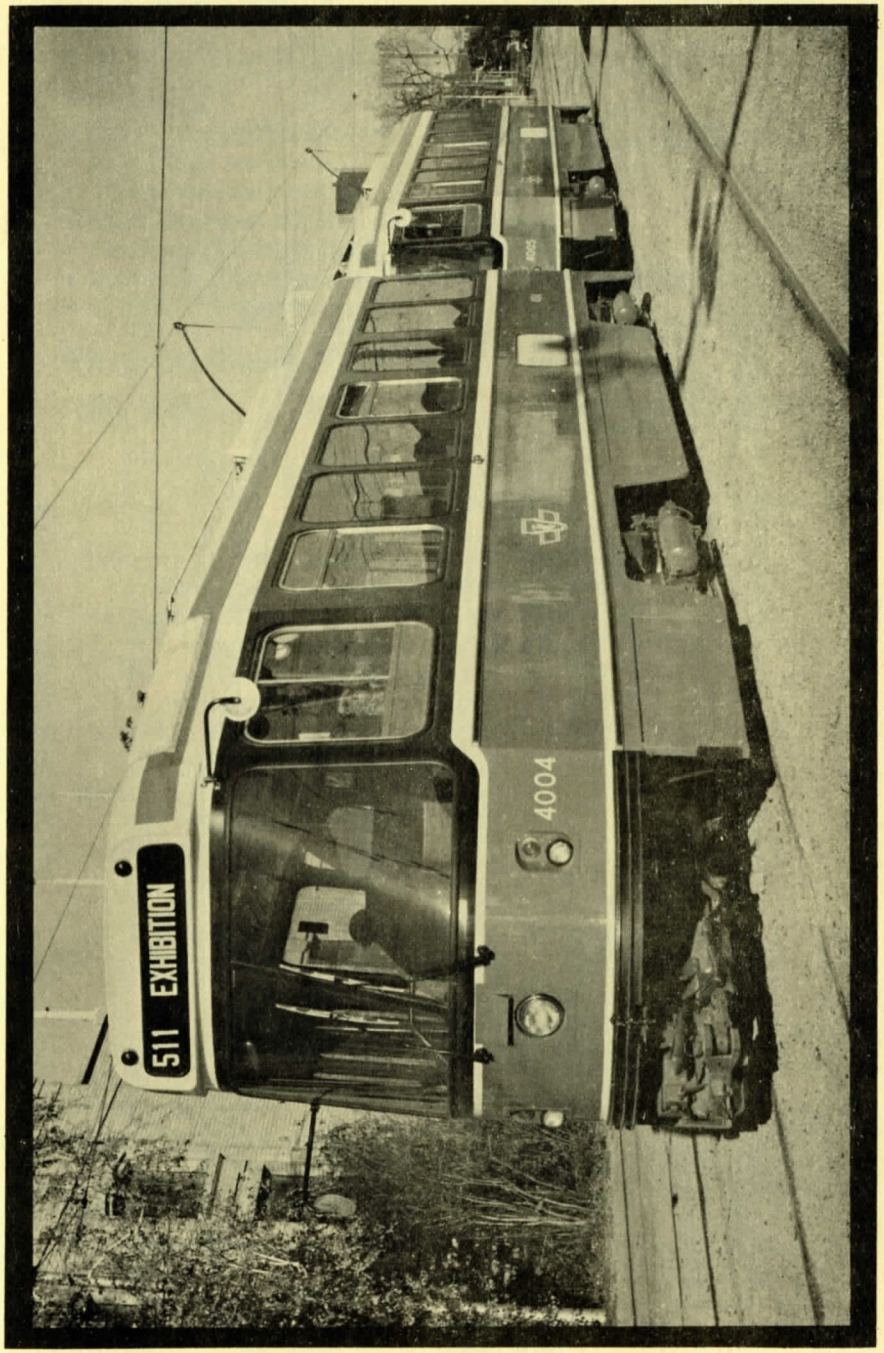
(a) would procure the new vehicles through the Corporation.
(b) assist the Corporation in setting up the program.

This activity, underway in 1974, resulted in a world-wide examination of technology and designs available; their relation to the requirements (which were defined), not only of TTC, but of a number of other interested properties; contractual conditions for creation of a design (which would be the Corporation's to have manufactured and to market); and the provision of prototypes.

In August, 1975 the Commission, after review of the financing with the Governments of the Province, and of Metropolitan Toronto, accepted the Corporation's offer to provide 200 CLRV's. UTDC contracted all major sub-systems directly with the vendors; the design contract (and manufacture of 10 prototypes) was awarded to the Swiss Industrial Company (SIG). (The prototypes were subsequently reduced from 10 to 6 to assist UTDC to subsequently produce two articulated CLRV demonstrators). Production of the balance of 190 cars was awarded by UTDC to Hawker Siddeley Canada Limited in November 1977.

Tests in Europe were conducted at the OBB/UIC climate chamber in Vienna with car 001, with car 002 performing operational tests on the private Orbe-Chavornay Railway (near Lausanne), later joined by car 001 for MU testing. For this purpose both cars were equipped with standard gauge trucks.

The first CLRV arrived on the Commission's property on December 29, 1977, with the last of the SIG cars arriving July 13, 1978. Deliveries of cars from HSCL to UTDC at Toronto commenced April 24, 1979, and the last car of the order for 190 was received on November 19, 1981. Cars were accepted by the Commission as follows: 6 (SIG) in September and December 1978; 11 in September and October, 1979; 72 in 1980; 99 in 1981; and 8 in 1982, with the final car (4199) accepted February 22, 1982.



By agreement with the Province of Ontario's Ministry of Transportation and Communication (MTC), the original financing was shared such that the Commission purchased 125 cars outright and leased 71 from the MTC for a period of up to 5 years.

Revenue service commenced September 30, 1979, (after ceremonies on September 29) on Route 507 "Long Branch" followed by:

Feb. 29, 1980	—	Route 511 "Bathurst"
Apr. 16, 1980	—	Route 512 "St. Clair" (incl. "Earlscourt")
June 9, 1980	—	Route 503 "Kingston Road"
Aug. 7, 1980	—	Route 502 "Downtowner"
Jan. 4, 1981	—	Route 501 "Queen"
July 20, 1981	—	Route 504 "King"
Oct. 23, 1981	—	Route 505 "Dundas" and Route 506 "Carlton"

The CLRV provides a design that

- is produceable in, and marketable from, Canada.
- uses "state of the art" technology.
- provides new levels of comfort and convenience for passenger and vehicle operator.
- is based on conforming to quantitative standards of reliability and maintainability.

The car is equipped to operate in either low performance (LP) for street or city service, or high performance (HP) on private right-of-way. Twenty-two of the cars, equipped with a pantograph, were to have been used on the Light Rapid Transit (SLRT) line, approved in 1977 and scheduled to open in late 1982. In June, 1981 the Commission changed this program to adopt the UTDC Intermediate Capacity Transit System (ICTS), to become operational in late 1984.

Principal Features

- GARRETT chopper control.
- KNORR pneumatic disc brake (spring applied).
- Service braking: Blended, with continuous preference to regenerative over rheostatic, with disc brake blended as required.
- Track braking: In 3 steps, supplemental to service brake.
- Load weighing: Rate maintenance to 71,000 lbs. (W-5 load) in acceleration and braking.
- Spin/Slide control.
- Speed governor control: at 50 MPH, with overspeed penalty brake application at 55 MPH.
- Rubber and steel primary suspension, airbag secondary suspension.
- Elevated driver's position, with foot operated main controls, pushbutton auxiliary controls, systems status indicators, and convenient circuit isolation and protection panel.
- Electrically heated windshield.
- Turn and 4-way hazard signals.
- Rear view mirrors, both sides.