



## Key System

Oakland, Calif.

TOTAL NUMBER OF RAPID-TRANSIT CARS OPERATED: 144 (January, 1939)

*The following information covers*

### TWENTY-THREE TWO-SECTION ARTICULATED RAPID-TRANSIT CARS

Built by Bethlehem Steel

Equipped by General Electric

Placed in operation across San Francisco-Oakland Bay Bridge: January 15, 1939

Seating capacity: 140 (66 in section A; 74 in section B)  
 Maximum passenger capacity: 298 (140 seated, 158 standing)  
 Total weight of car equipped (without load): 137,625 lb  
 Weight of body with equipment: 60,800 lb  
 Weight of trucks with equipment: 76,825 lb  
 Length of two-section car over buffers: 110 ft, 5½ in.  
 Length of each section: A—52 ft, 8¾ in.; B—57 ft, 8¾ in.  
 Width over side plates: 8 ft, 10 in.  
 Width of aisle: 25½ in.  
 Width of seat: 32 in.  
 Truck centers, each section: A—42 ft, 5 in.; B—44 ft, 11 in.  
 Wheel base of truck: 6 ft, 8 in.  
 Track gauge: 4 ft, 8½ in.



(over)



Type of truck: 4-wheel, cast-steel frame; built by General Steel Castings Corp.  
 Wheel diameter: 34 in.  
 Number and type of motors: Type GE-240 (4 on each car)  
 Hourly horsepower rating per motor: 105  
 Gear ratio and type of gearing: 57 to 18, G-E Grade M  
 Control: General Electric Type M, nonautomatic  
 Balancing speed (550 volts, seated load): 41.5 mph  
 Maximum accelerating rate: 1.75 mphps  
 Compressor: General Electric Type CP-28 (2 on each car)  
 Brakes: clasp-type air brakes  
 Maximum braking rate: 2.5 mphps  
 Motor-generator set: GMG-131

In addition to the 23 new cars covered by the above data, the Key System also operates in bridge service 65 two-section articulated cars which were built locally, using trucks and frames of existing single cars. Forty-six of these cars have G-E motors. All 88 cars have G-E Type M control, G-E motor-generator sets for battery charging, and equipment for automatic transfer from pantograph to third rail.

#### *Service Conditions*

Population served by Key System: 400,000  
 Service provided: connects cities and towns in the East Bay area with San Francisco  
 Electric power: purchased  
 Trolley voltage: 600-volt, third rail on bridge; pantograph in East Bay area  
 Maximum number of cars per train: 7 two-section cars  
 Grades: 5-mile bridge has some 3% grade from either approach to center

On January 15, 1939, Key System's fleet of articulated cars began service across the San Francisco-Oakland Bay Bridge. During the rush hour, seven-car trains leave the new San Francisco terminal, cross the bridge, and then uncouple automatically and deploy to the residential communities in the East Bay area. In the bridge zone, Southern Pacific trains of ten single cars operate on the same track with the Key System's trains.

Before this direct bridge service began, Key System's rapid-transit lines, carrying commuters from the East Bay cities, terminated at ferries, which completed the trip to San Francisco.

All train movements are regulated from a central control board and, if necessary, 56 trains an hour can cross the bridge in either direction even in the thickest fogs. The motorman sets his speed according to control lights in the cab, and if he disobeys any signal the brakes are applied instantly.

*Interior view and seating arrangement of two-section articulated car built for the Key System by the Bethlehem Steel Company.*

