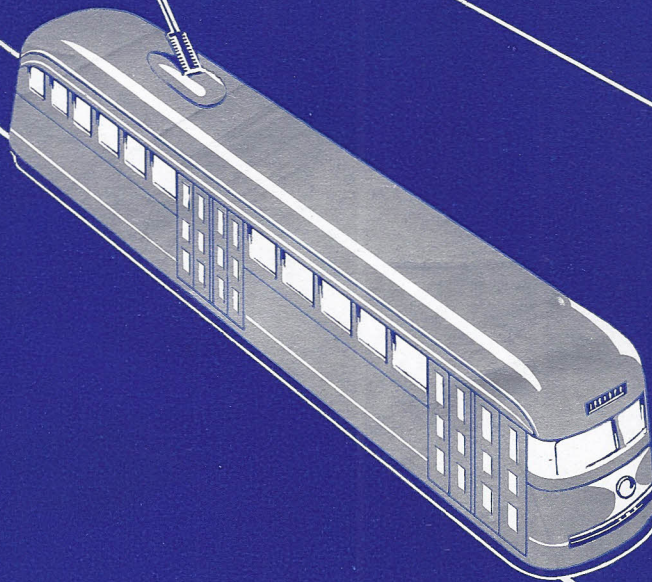


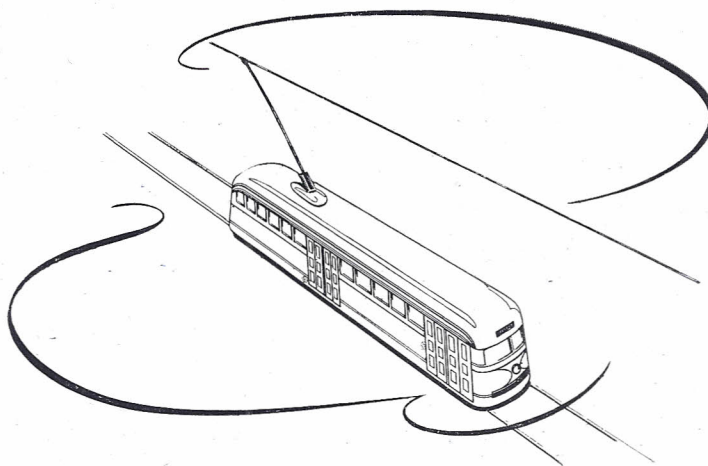
# P.C.C. CARS



THE NEWEST FORCE

IN BUILDING TRANSIT PATRONAGE





Copyright 1938  
by  
Westinghouse Electric & Manufacturing Company

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.  
EAST PITTSBURGH, PA.



# THE ELECTRIC RAILWAY

## PRESIDENTS' CONFERENCE COMMITTEE CAR

*Designed and engineered by Transit Research Corporation  
to answer the public's demand for modern streetcars  
. . . . Powered by Westinghouse Electric*

"Naturally, the true measure of the new P.C.C. car rests in the effect upon revenues and the effect upon costs. We have seen enough of the car to lead us to feel that the costs will not be higher than with the conventional car and, if anything, the new car will produce an economy in track maintenance, power costs, and in costs peculiar to the car itself.

"So far, the public response to the vehicle has been splendid. We have received many communications from patrons, who have been pleased with the improved service; and from civic and municipal groups, congratulating the Company on the new vehicle. We are constantly receiving inquiries as to when the new cars will be installed on other routes in the system, which is another evidence of their popularity. The noise reduction qualities of the new car have accentuated complaints of noise from older cars. I have for a number of years held the opinion that much of the lack of prestige of streetcars was traceable to the noise attending their operation. The items of superiority of the new cars over the older cars most frequently mentioned are its quiet operation and its smooth performance."

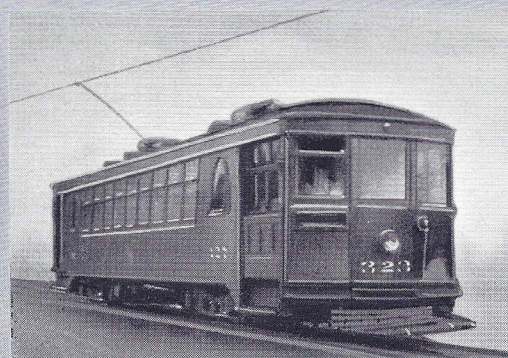
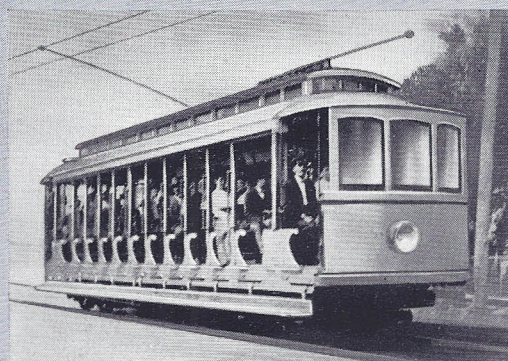
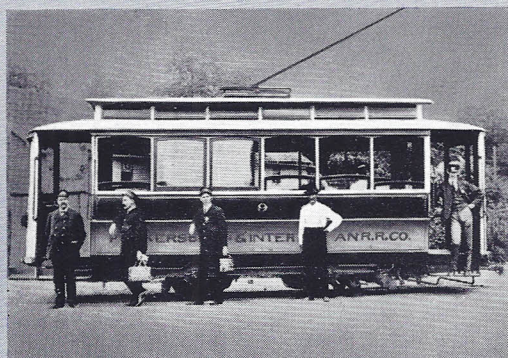
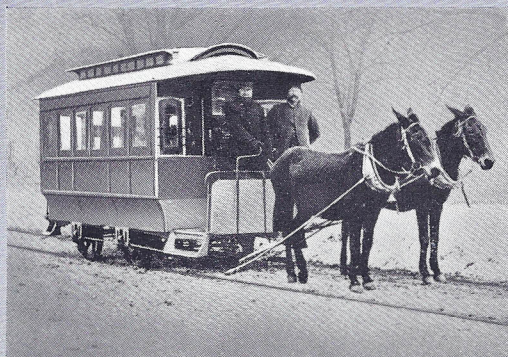
MR. T. FITZGERALD

Vice President and General Manager  
Pittsburgh Railways Company  
Pittsburgh, Pennsylvania



# PROGRESS BRINGS

## *P.C.C. Car is Modern Answer*

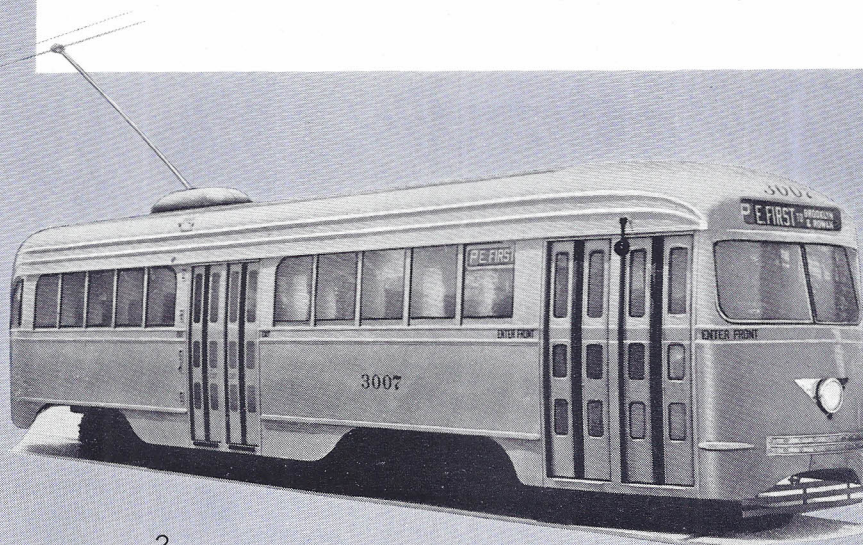


Since its inception the street transit industry has been a vital factor in the growth and development of our cities. Upon it the general public depends for safe, swift, and reliable transportation . . . and for low-cost riding and frequent schedules between homes, places of employment, shopping centers, schools and amusement places. It transports 13 billion passengers annually . . . with gross receipts totaling nearly 800 million dollars each year—a volume larger than that of the United States Postal Service or the sale of electricity to domestic customers.

Just as the horse-drawn vehicles succumbed to electrically motorized transportation, so has progress made obsolete the familiar heavy, slow and cumbersome streetcar of yesterday.

Because of the tremendous expansion within our cities and the ever-widening circle of their concentrated activities, the streetcar has been called upon to do things required of no other transportation agency. Each year these public demands become more and more insistent . . . and more and more inclusive. On the one hand, the operators were faced with more positive demands for improved service. On the other, they realized that private automobiles and buses were diverting their profits—taking an increasing share of their business . . . a business which they alone had created.

Every operator knew the condition of his equipment . . . had felt the pinch of competition. Furthermore, he





# NEW PROBLEMS

## *to Today's Changed Conditions*

realized that it was practically impossible for the transit industry to keep pace with the development of other transportation vehicles because of the time and money required to build up a complete transportation system to fit the individual requirements of each city.

What was to be done?

In 1929 a small group of operators met to plan a course of action. These men were entirely aware of the operator's problems . . . fully recognized the increasingly insistent demands of the public . . . and appreciated the fact that every condition relating to transportation had markedly changed. They delegated their authority to a smaller group—The Electric Railway Presidents' Conference Committee.

This group selected Dr. C. F. Hirshfeld, director of research for the Detroit Edison Company, as chief engineer and authorized him to assemble a technical research staff and to proceed with development work. On his staff were the representatives of the operators, contributing manufacturers, laboratory experts and the general public. More than a million dollars were subscribed by operators and manufacturers. The work required nearly five years of exhaustive tests, research and experiment . . . culminating in an overwhelming success—the P.C.C. car—which brought new prosperity to the transit systems of our cities by meeting the public's demands for faster, safer, more comfortable streetcars.





# PUBLIC DEMANDS FASTER, SAFER TRANSPORTATION

## *P.C.C. Car Meets Both Major Requirements*

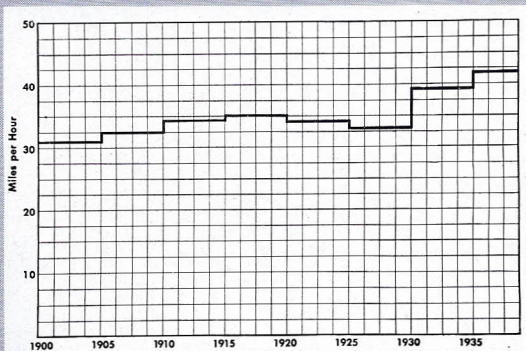
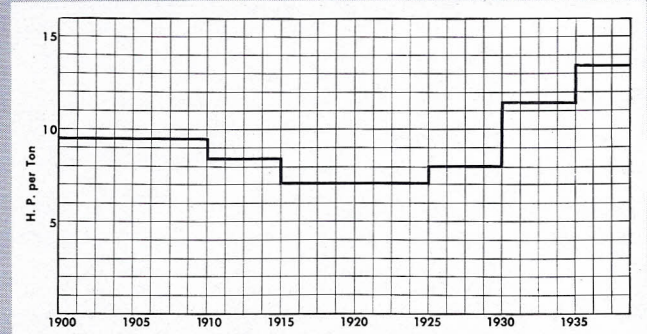
Foremost in the public's demand for satisfactory transit was an entirely new capacity to cope with the swift tempo of modern traffic. Its streetcars must be quick-acting . . . accelerate swiftly at the flick of the light . . . and brake just as

quickly and surely, without the usual jerk or jar.

Just as insistent was the P.C.C. research group that the P.C.C. car provide that kind of service. How satisfactorily this is accomplished may be seen from the following facts:

### AMPLE POWER

Powered with four 55 h.p., high speed, 300 volt, series railway motors, the P.C.C. car has more horsepower per ton of weight than any type of streetcar built during the past 35 years. This fact, together with the special design and co-ordination of the car equipment, accounts in large measure for the extremely high agility of the P.C.C. car in traffic.

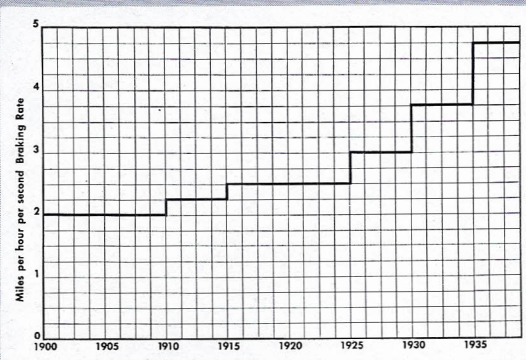
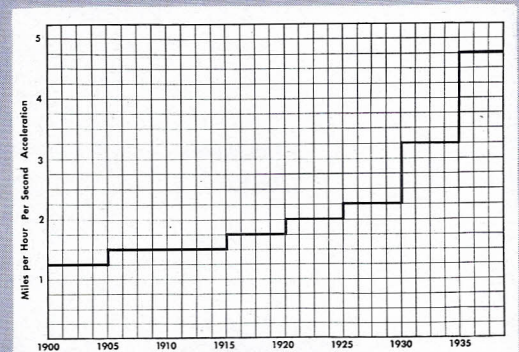


### GREATER SPEED

The P.C.C. car has a free running speed of 42 m.p.h. on 550 volt power and straight, level track, and a maximum safe speed of 50 m.p.h.—the highest streetcar speed ever available. (See chart). This greater speed means faster schedules, including stops and slowdowns, and directly meets the public's request for improved service.

### FASTER ACCELERATION

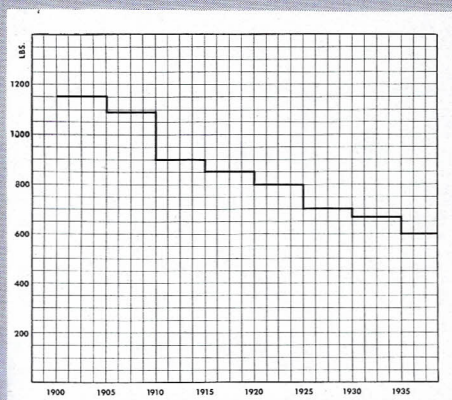
The P.C.C. car, equipped with multi-notch accelerator control, has the highest acceleration rate ever applied to a streetcar . . . at variable rates from 1.5 up to a maximum of 4.75 m.p.h.s.—without discomfort to passengers. This means quicker starts and an ability to keep abreast of other fast-moving traffic.



### IMPROVED BRAKING

Sure-footed braking complements the speed and getaway of the new P.C.C. car. Service deceleration rates, up to a maximum of 4.75 m.p.h.s., are made possible by multi-notch dynamic braking control, which uses the main motors for braking action, supplemented by a magnetic track brake and an air brake. The graph shows the P.C.C.'s superiority in braking as compared with conventional streetcars. In emergency, a braking rate of 8 or 9 m.p.h.s. may be attained.





## WEIGHT EFFICIENCY

The standard P.C.C. car weighs only 33,000 pounds with 55 passenger seats. This is a distinct engineering achievement in the design, for the P.C.C. car seats more passengers with no increase in total weight. Care in design has resulted in adequate strength of each part without excess weight. Many individual parts are so arranged that they perform various functions and thus the number of parts is reduced. The accompanying chart shows the trend in weight of car per seated passenger.

## QUICK-ACTING DOORS

Speeding up the loading and unloading of passengers, the new P.C.C. cars employ quick-acting doors that virtually pop open with almost human intelligence. "Sensitive Edges" may be incorporated in these doors to eliminate mishaps, an automatic feature which causes the doors to reverse direction

whenever the edges come in contact with any solid object. These new doors not only provide greater safety but help maintain faster schedules.

## SAFETY-TYPE STEPS

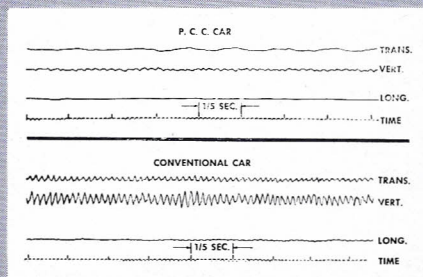
Low steps insure easy boarding and alighting for both grownups and children, and constitute a safety feature that speeds up load handling.

# COMFORT FEATURES DEMANDED BY PATRONS

## *P.C.C. Car Sets New Standards In Riding Ease, Lighting, Ventilation*

What the fare-paying public thinks of the comfort and advantages of electric transit determines the profit loads for the operator. Voted by riders from coast to coast as the most comfortable and satisfactory transit vehicle they had

ever ridden upon, the new P.C.C. car has demonstrated its ability to attract extra payload . . . accounting for the re-orders that have followed the introduction of the original equipment in principal American cities.

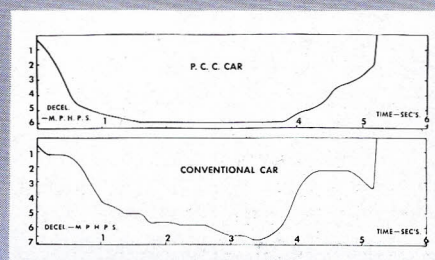


## RIDING QUALITY

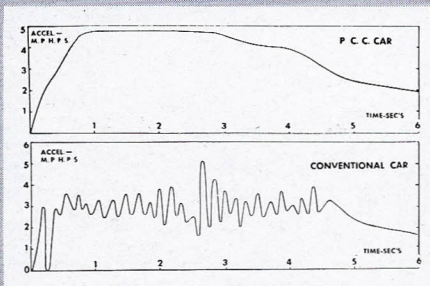
Extensive experiments and tests by the research staff greatly improved riding quality of the P.C.C. car as regards transverse, vertical and longitudinal floor vibrations. The accompanying graph shows the comparative comfort features of the P.C.C. car and a conventional streetcar in this regard.

## GREATER BRAKING EFFICIENCY

Vastly important to passenger comfort is the smooth braking action of the P.C.C. cars—smoother and without the jerky stopping that characterizes other transit vehicles. The accompanying chart discloses the smoothness of this new car's triple braking system.







## STARTING PERFORMANCE, SMOOTHNESS

Equally important to riding comfort is the extreme smoothness—the quick, fast start of this new car, (indicated by the chart at left), which is made possible by new multi-notch control mechanism.

## IMPROVED LIGHTING

Illumination in the P.C.C. car brings home-reading comfort to the rider. A high level of illumination intensity and rows of specially designed lights and fixtures, provide glareless, shadowless illumination over every seat.



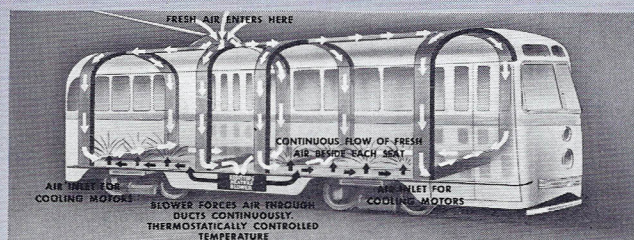
## SEATING COMFORT

Streamlined seats with relaxed-position backs and deep cushions provide extra riding comfort in the P.C.C. cars. Wide aisles and shaped hand-stanchions are convenience and comfort features, and there is ample foot room in every seat.



## VENTILATION

P.C.C. cars are well ventilated . . . winter-heated with clean electric heat, thermostatically controlled to maintain comfortable car temperature. An electrically driven blower, propelling 1200 cubic feet of air each minute, frequently changes the atmosphere within the car. No odor or poisonous gases result from the clean electric power to mar the restful comfort of the attractive interiors.



## PUBLIC INTEREST REQUIRES STREET EFFICIENCY

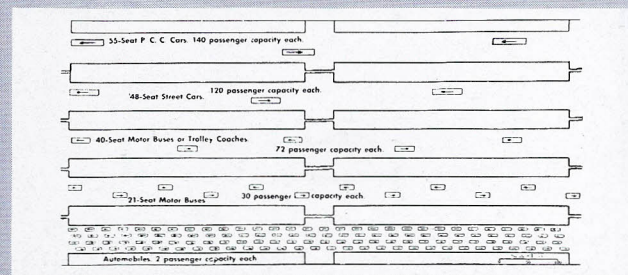
### *P.C.C. Car Sets New Standards in Traffic Freedom and Quietness*

The tremendous increase in automobile traffic has created intolerable street congestion. This congestion is directly affected by the number of vehicles required to transport a given volume of traffic. Large capacity units, capable of high speeds and quick starting and stopping, are the most effective means of utilizing existing street space. The accompanying chart illustrates this statement.

## STREET TRAFFIC EFFICIENCY

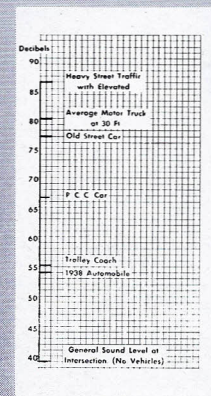
Here two 400-foot city blocks of 2-way, 50-foot streets with 50-foot cross streets have been plotted to show the number of 55-seat P.C.C. cars, 48-seat streetcars, 40-seat trolley or motor coaches, 21-seat coaches and two-passenger automobiles that can be accommodated. Traffic studies show that the average private automobile carries less than two passengers.

An accurate survey indicates that three P.C.C. cars will transport a greater number of passengers than either three old streetcars, five 40-passenger coaches, twelve 21-passenger motor coaches, or 120 private automobiles. From the above illustration, it is obvious that the P.C.C. car has by far the greatest street traffic efficiency in moving passengers with a minimum of street congestion.



## UNUSUALLY QUIET

Traffic noise not only is disturbing and a menace to personal health, but it is detrimental to real estate values. The new P.C.C. car construction makes ample use of live rubber to deaden and dampen out noise. Over 400 pounds of rubber used in its trucks not only prevents noise from reaching the car body to the annoyance of passengers, but eliminates most of the former objections of residents living along car lines.





# THIS "Public-be-Pleased" ATTITUDE CREATES EXTRA PAYLOADS...



Wherever P.C.C. cars have run, these fleet, modern streamliners have been hailed with universal enthusiasm. Municipal authorities, public safety officials, civic leaders and property owners have voiced unanimous approval to farsighted operators. More important is the fact that these new units have brought *added patronage* to every line on which they've been operated . . . have created riders out of walkers and motorcar users. It's the jingle of this *plus revenue* in the fare box that is most important to the operating company . . . and the only complaint heard is—"Why don't you put more of these new cars into service?"

Quiet, fast-moving, easy riding and positively controlled, P.C.C. cars are returning thousands of riders who deserted the streetcars for private automobiles and buses. Because these new units

their commercial and industrial fields . . . widen their industrial areas . . . and attract new industries.

Quiet operation—one of the distinct advantages of these new and faster units—will eliminate the complaints of many property owners. This objectionable feature in the older streetcars has been eliminated in the new P.C.C. cars.



please and answer the public's demands . . . they are bringing back that extra traffic that means added revenue to operators . . . enabling cities to broaden

## Read what these Riders say...

... "If we could have cars like this, a lot of people would do without automobiles."

"This car just glides. It makes riding a pleasure, not a nuisance. The car is a credit to any neighborhood."

"The most outstanding feature is the pickup at the start and the brakes at the stop. It's just like riding in an airplane."

"The seats are very comfortable. More speed, no jerking or bumping. I would rather ride in this new car than in an automobile."

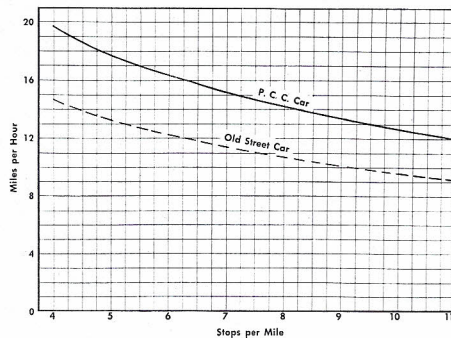
"I don't have to worry with the traffic when work is over. Just catch a new Madison car and read my paper and ride in comfort and ease. Let's get more."



# Complete Satisfaction

## TO OPERATING COMPANIES...

With operating companies constantly seeking new ways to create added revenue, the P.C.C. car brings welcome relief in the shape of faster schedules made possible by its greater speed and minimized loading time. One operating company actually carried 22 per cent more passengers per car mile in the first four months than in the corresponding period of the previous year.



### IMPROVED SCHEDULE SPEED

All passengers are primarily interested in getting to their destination with minimum loss of time from other activities. Urban transportation may be speeded up substantially on a line completely equipped with P.C.C. cars. The curves in the accompanying chart indicate the possibilities on services having from 4 to 11 stops per mile. At 6 stops per mile the increase in schedule speed may be as much as 33 percent, depending upon local operating conditions.



### SATISFIED EMPLOYEES

Because it is far easier to operate and to control, employees hail the P.C.C. car with complete satisfaction. Their job is made easier by more automatic features—and they appreciate the attention given to crew comfort. In addition, the more efficient service and equipment, which is so warmly received by the public, is reflected in the attitude of company employees.



### SAFETY APPEALS TO OPERATORS

Operating companies, faced with the constant hazard of accidents, are highly appreciative of the P.C.C. unit's greater safety. Improved, triple-acting braking, lower steps, quick-acting safety-type doors, wider aisles and convenient hand-grips and stanchions add to passenger safety. Equally important are the twin rear stop lights as a means of preventing rear-end collisions.



# MANY OPERATING ADVANTAGES GAINED WITH WESTINGHOUSE EQUIPMENT

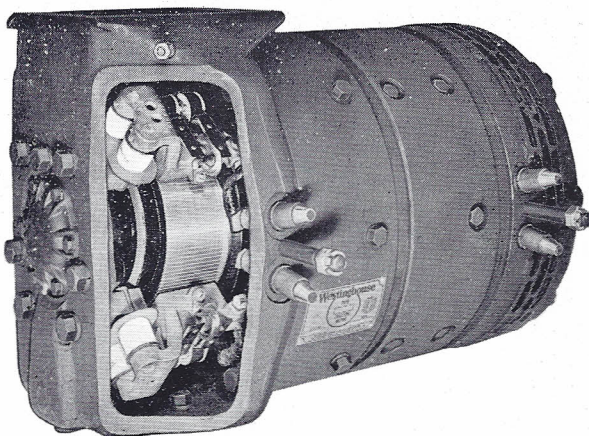
Westinghouse Electric was among the larger manufacturers enlisted in the P.C.C. development work by Dr. Hirshfeld. Because of its long experience as a partner of the transit industry, its extensive manufacturing and engineering facilities and its famous research laboratories, Westinghouse was able both

to assist materially in the committee's preliminary experimental work and to build electrical equipment to the exacting specifications established for the P.C.C. car. Here are the details of the units and materials developed by Westinghouse as its contribution to this faster, more efficient, more profitable unit.

## BILL OF MATERIAL

	Wt. in Lbs.
4—55 Hp. Motors .....	2,780
1—Master Controller and Reverser .....	62
1—Line Switch .....	82
1—Accelerator .....	370
1—Contactor Assembly .....	177
1—Braking Resistor .....	48
1—Control Resistor .....	8
1—Field Shunt Assembly .....	186
1—Lightning Arrester .....	8
1—Main Knife Switch .....	24
1—Drum Type Cutout Switch .....	22
1—Set Main and Control Cable .....	185
1—Current Collector .....	83
1—Set Track Switch Throwing Equipment .....	21
1—Heater Contactor .....	5
1—Set Auxiliary Fuse Blocks and Fuses .....	5
1—Auxiliary Control Switch Panel .....	9
1—Back-up Equipment .....	12
1—Motor Generator Set with Regulator Panel .....	489

## MOTOR



Rating—One Hour, 55 Hp., 300 V., 156 Amperes, 1670 RPM.

Motor Terminals.

Rolled Steel Frame.

Strap Wound Field Coils. Grease Lubrication.

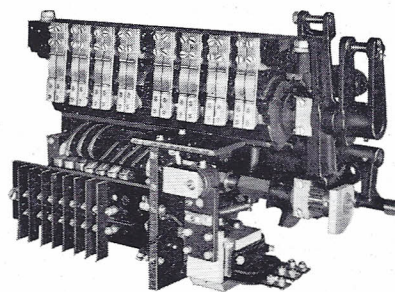
Ribbon Wound Armature Coils.

Class B Insulation.

Roller Armature Bearings.

Grease Lubrication.

## MASTER CONTROLLER



Master Controller and Reverser on Common Frame.

Limit Relay built integral with Controller.

Remote mechanically operated. Limit Relay controls accelerating and braking rates.

## LINE SWITCH

Magnetically operated.

Spring and Gravity opened.

High Speed operation on overloads.

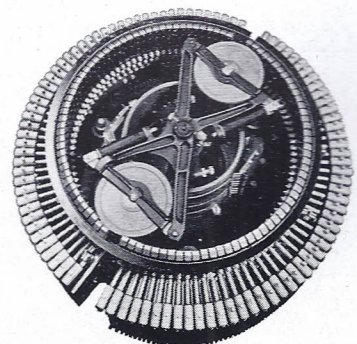
## ACCELERATOR

Consists of 99 spring fingers, which provide 61 steps of acceleration and 99 steps of dynamic braking, and are actuated by the rollers.

Rollers operated by 32 volt pilot motor through totally enclosed gear unit operating in bath of oil.

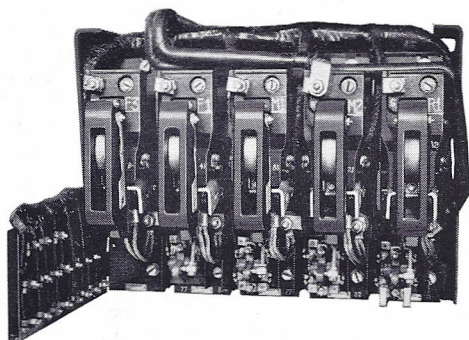
Resistance mounted on periphery of barrel.

Speed and direction of rotation of pilot motor controlled by limit relay.



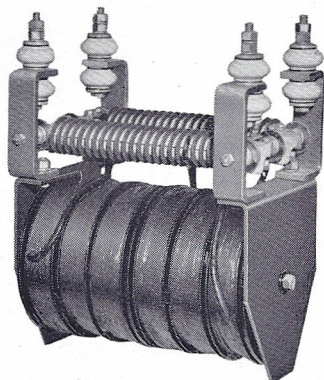


## CONTACTOR ASSEMBLY



Includes 10 magnetic contactors mounted back to back and 2 terminal boards.  
All corresponding contactor wearing parts are interchangeable.  
Provides main circuit connections for motoring, braking and field shunting.

## FIELD SHUNT ASSEMBLY



Includes six wire wound coils on iron core.

Two type M resistor tubes mounted above coils.

Provides shunting of Motor Fields.

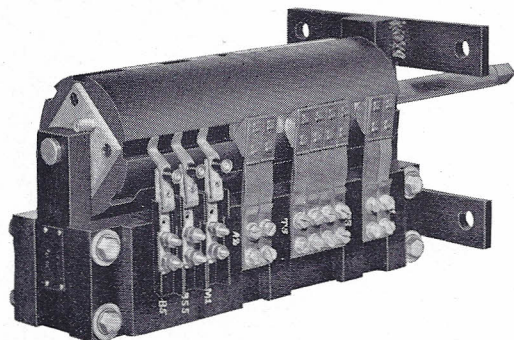
## LIGHTNING ARRESTER

Inerteen filled capacitor housed in tubular brass case. Insulated leads brought out through solder sealed porcelain bushings.

## MAIN KNIFE SWITCH

Knife blade type Main Switch.  
Designed to open switch when cover is opened.  
Disconnects main trolley circuits when opened.

## DRUM TYPE CUTOUT SWITCH



Cylindrical wood drum mounted on steel frame. Heavy copper contacts for carrying main motor current.

## CURRENT COLLECTORS

Base —Two spring streamline design. Type U. S. 28A.

Positive lock down by latch member in compression.

Anti-friction bearings throughout.

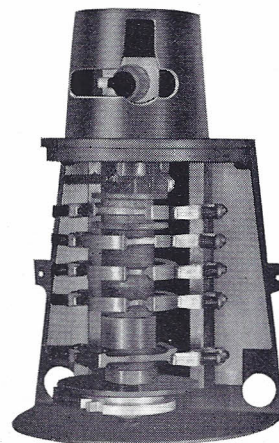
Ten inch mounting hole spacing.

Pole —13 feet long, Type A, Shelby Seamless.

Harp —No. 25.

Wheel—No. 31.

## BACK-UP CONTROLLER

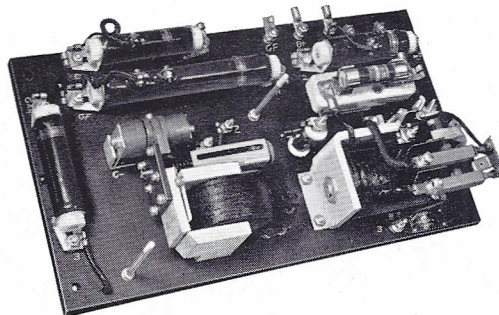


Drum type Controller.  
Five operating positions.

Spring return to "Off" position.

Operated by reverser handle.

## REGULATOR PANEL



Includes:

Voltage Regulator.  
Reverse Current Contactor.  
Resistors and Fuse.

## BRAKING RESISTOR

Two six-tube frames of type M Resistors.

## CONTROL RESISTOR

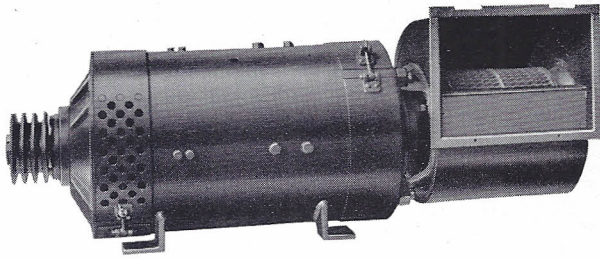
One single type M Resistor tube mounted in steel strap frame.

## TRACK SWITCH THROWING EQUIPMENT

Includes one contactor and type M Resistor for remotely operating track switches.



## MOTOR-GENERATOR SET



Motor Rating—550 Volts, 1750 RPM.

Generator Rating—1200 Watts at 37.5 Volts.

Complete set includes motor, generator, fan and pulley.

Two Ball Bearings.  
Grease Lubrication.  
Class A Insulation.

## HEATER CONTACTOR

Includes one contactor for auxiliary heater circuit under control of thermostat.

## AUXILIARY CONTROL SWITCH PANEL

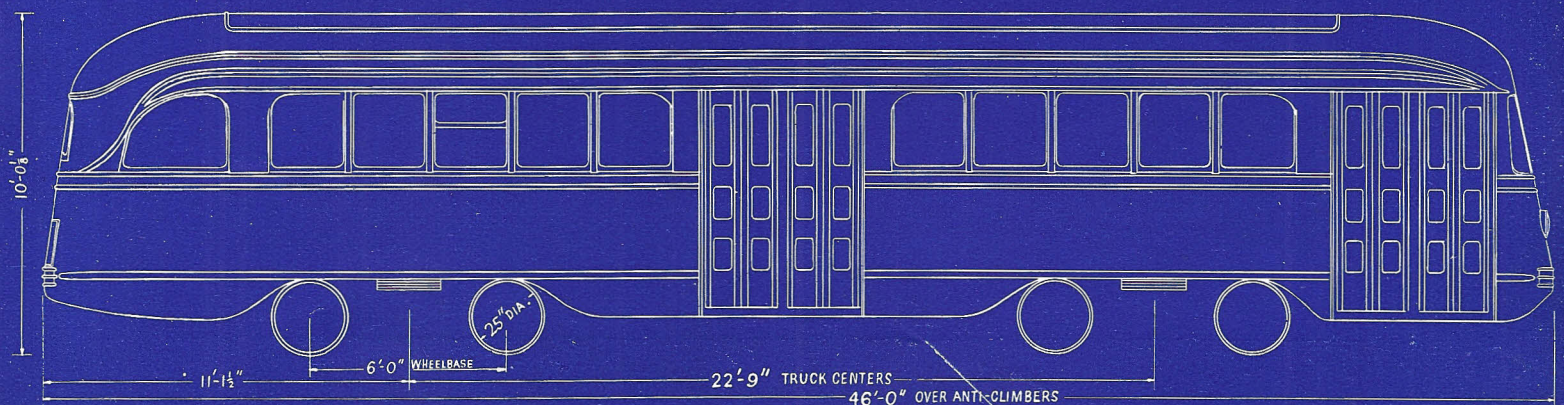
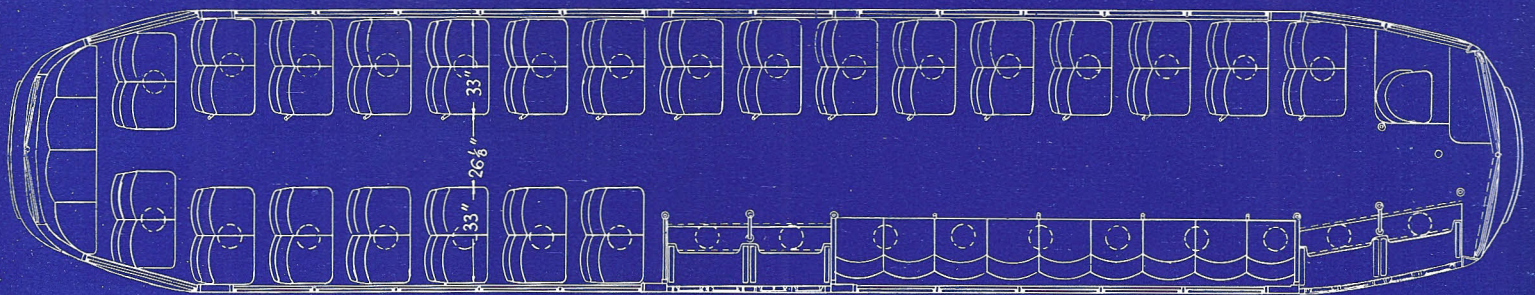
A multiple switch panel, mounted at operator's position for control of auxiliary circuits such as doors, gong, sander, lights, etc.

# *P.C.C. Car Operation*

Although the P.C.C. car is designed and tooled for the assembly line type of manufacture, its specifications, (plan and profile of a standard P.C.C. car are shown below) are sufficiently flexible to permit application to various gauges of track, lengths of body, seating arrangement and local entrance-and-exit requirements.

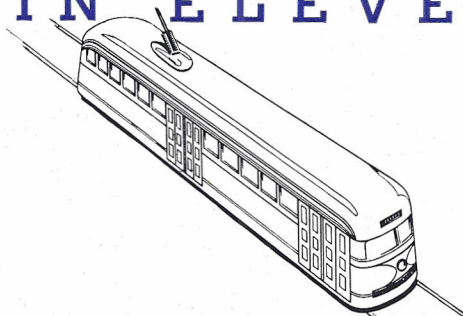
On the following pages will be found illustrations and data on typical installations of such Westing-

house-equipped cars in eight representative cities. It will be noted that these cars are operating on five different gauges, and that Chicago has a car somewhat longer than standard while those in Washington, D.C. have underground current collection. Operation of P.C.C. cars has been uniformly successful, as evidenced by five of these cities either having ordered or being interested actively in the purchase of additional cars.





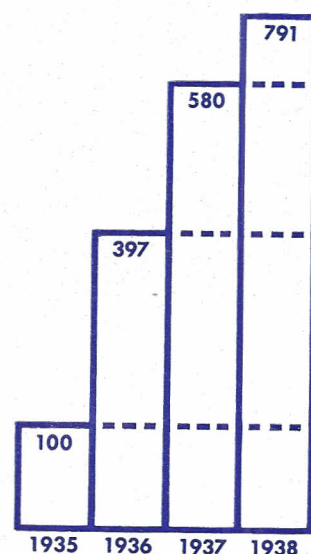
# Proved IN ELEVEN CITIES



## *P.C.C. Cars Please Public and Transit Operators Alike*

Answering the public's demands and pleasing car operators in eleven major cities from coast to coast, P.C.C. cars have proved every point established for them. These cities include Baltimore, Boston, Brooklyn, Chicago, Los Angeles, Philadelphia, Pittsburgh, San Diego, Washington, D. C., Toronto and Vancouver.

The reorders for P.C.C. cars are concrete evidence that operating companies at last have found in this new equipment the answer to their most perplexing problems . . . because this car so explicitly and completely answers the demands of everyone connected with electric transit. The accompanying chart shows the total number of P.C.C. cars in operation or on order each year since Brooklyn ordered the initial 100 cars. The table below shows the population in each city and the number of new units in use.



City	Population	Number of P.C.C. Cars
*Baltimore, Md.	801,741	27
Boston, Mass.	783,451	1
Brooklyn, N. Y.	6,959,195	100
*Chicago, Ill.	3,375,235	83
*Los Angeles, Calif.	1,231,730	95
*Philadelphia, Pa.	1,961,458	20
*Pittsburgh, Pa.	669,631	201
*San Diego, Calif.	147,897	28
*Washington, D. C.	485,716	95
*Toronto, Canada	648,309	140
*Vancouver, Canada	246,593	1
		<hr/> 791

\*Denotes cities where Westinghouse-equipped P.C.C. cars are in service.



# BALTIMORE FANS CHEER P.C.C. CARS



The city of Baltimore, with its usual foresight and progressiveness in the application of modern equipment, was among the first cities to take advantage of this new-day form of transportation. When this new equipment appeared on the streets, Baltimoreans enthusiastically voiced their approval of these safer, faster, more comfortable units.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars.....	5
Class of Service.....	City
Seating Capacity.....	54
Exit Arrangement.....	Center
Entrance Arrangement.....	Front
Car Builder.....	St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse..	Type 4-1432
Volts per Motor.....	300
Total Horsepower per Car.....	220
Horsepower per Ton.....	12.6
Drive Reduction.....	7.17
Trucks—Clark Equipment Co.	
Wheel Diameter—Inches.....	25
Control Westinghouse... Accelerator	
Air Brakes.....	W.A.B. Co.

### WEIGHTS

Car Body.....	17,100
Trucks, per Pair.....	12,600
Motor & Control Equip.....	4,050
Air Brake Equipment.....	1,100
Total without Load.....	34,850
Weight per Seat.....	647

### DIMENSIONS

Length over Bumpers.....	46' 0"
Truck Center Distance.....	22' 9"
Truck Wheelbase.....	6' 0"
Rail to Step.....	1' 2"
Steps to Platform.....	0' 9"
Width of Seat.....	2' 11"
Width of Aisle.....	2' 1"

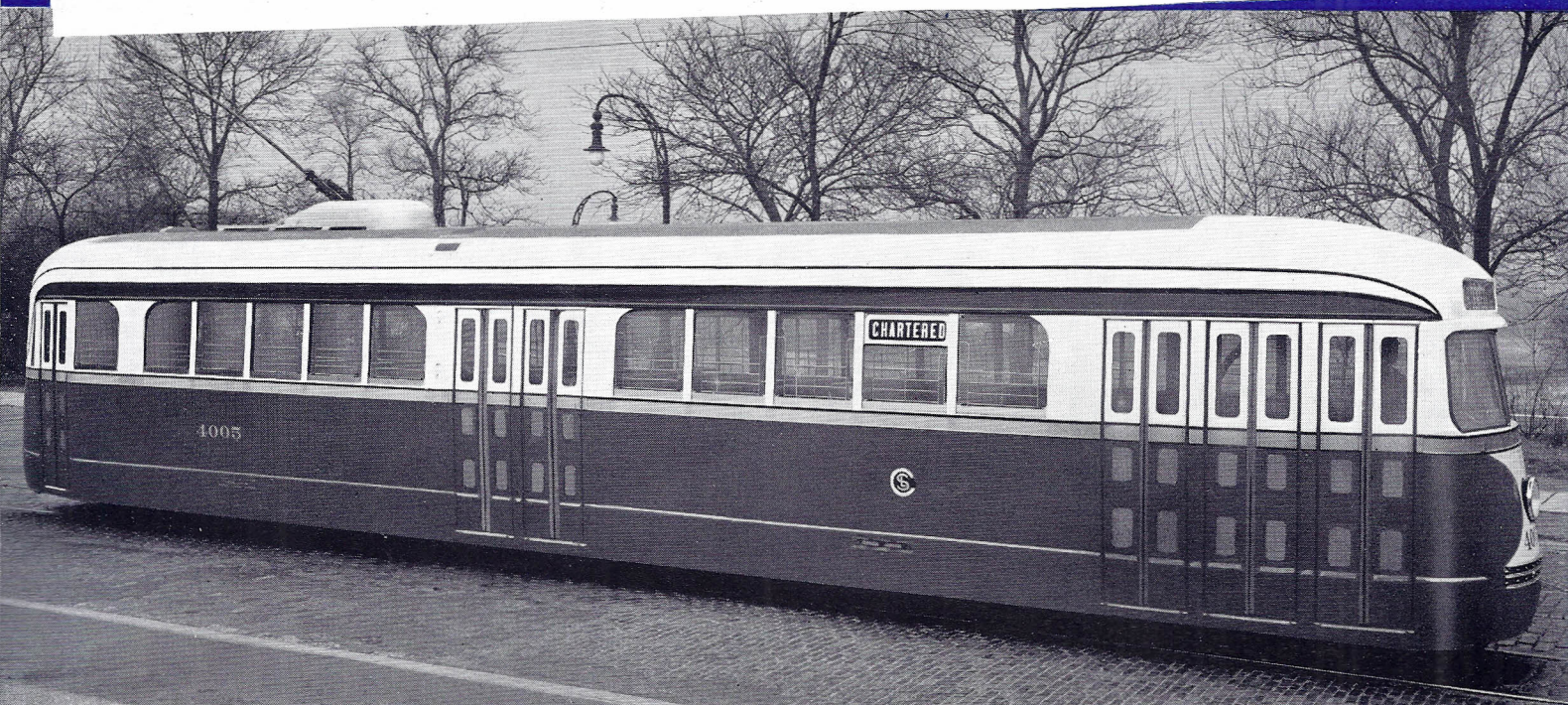
Over-all Width.....	8' 4"
Track Gauge.....	5' 4½"

### SERVICE PERFORMANCE

Date in Service.....	Jan. 1937
Av. No. Stops per Mile.....	8
Av. Duration of Stops, Sec.....	6
Av. Voltage.....	540
Actual Av. Schedule Speed,	
Mph.....	12.22
Balancing Speed, 550 V., Level	
Tangent Roadway, Mph.....	42
Av. Accelerating Rate	
m.p.h.p.s.....	4.0
Max. Accelerating Rate	
m.p.h.p.s.....	4.75
Service Braking Rate	
m.p.h.p.s.....	4.75



# CHICAGO REVENUE UP WITH P.C.C. CARS



In holiday mood, great throngs of Chicagoans participated in a huge parade on Madison Street to acquaint Windy City riders with the first of 83 P.C.C. Streamliners. Newspapers printed special sections, and for days Loop crowds inspected these new vehicles. As the result of rider response Madison Street revenue jumped 20 percent.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars.....	50
Class of Service.....	City
Seating Capacity.....	58
Exit Arrangement.....	Center & Rear-Treadle
Entrance Arrangement.....	Front Triple
Car Builder.....	St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse..	Type 4-1432
Volts per Motor.....	300
Total Horsepower per Car.....	220
Horsepower per Ton.....	12.2
Drive Reduction.....	7.17
Trucks.....	Clark Equipment Co.
Wheel Diameter—_inches.....	25
Control Westinghouse...	Accelerator

Air Brakes.....	W.A.B. Co.
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### WEIGHTS

Car Body.....	18,650
Trucks, per Pair.....	12,600
Motor and Control Equip- ment.....	4,050
Air Brake Equipment.....	1,100
Total without Load.....	36,400
Weight per Seat.....	626

### DIMENSIONS

Length over Bumpers.....	50' 5"
Truck Center Distance.....	22' 9"
Truck Wheelbase.....	6' 0"
Rail to Step.....	1' 2"
Steps to Platform.....	0' 8½"
Width of Seat.....	2' 9"

Width of Aisle.....	2' 4"
Over-all Width.....	8' 9"
Gauge Track.....	4' 8½"

### SERVICE PERFORMANCE

Date in Service.....	1936-7
Av. No. Stops per Mile.....	6.8
Av. Duration of Stops, Sec.....	9.6
Av. Voltage.....	560
Actual Av. Schedule Speed, Mph.....	12.56
Balancing Speed, 550 V., Level Tangent Roadway MPH.....	42
Av. Accelerating Rate m.p.h.p.s.....	4.0
Max. Accelerating Rate m.p.h.p.s.....	4.75
Service Braking Rate m.p.h.p.s.....	4.75



# LOS ANGELES RIDERS HAIL NEW EQUIPMENT



Because of the immediate and enthusiastic public reception accorded the new P.C.C. cars and as the direct result of the operation of the original sixty cars on the Pico and the West Sixth Street lines, thirty-five additional cars are now being built for service on Los Angeles thoroughfares where traffic improvement is needed.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars	20
Class of Service	City
Seating Capacity	61
Exit Arrangement	Center & Front
Entrance Arrangement	Front
Car Builder	St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse	Type 4-1432
Volts per Motor	300
Total Horsepower per Car	220
Horsepower per Ton	12.9
Drive Reduction	7.17
Trucks	Clark Equipment Co.
Wheel Diameter—inches	25
Control Westinghouse	Accelerator

Air Brakes	W.A.B. Co.
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### WEIGHTS

Car Body	16,250
Trucks, per Pair	12,600
Motor and Control Equipment	4,050
Air Brake Equipment	1,100
Total without Load	34,000
Weight per Seat	558

### DIMENSIONS

Length over Bumpers	46' 0"
Truck Center Distance	22' 9"
Truck Wheelbase	6' 0"
Rail to Step	1' 2"
Steps to Platform	0' 9"
Width of Seat	2' 11"

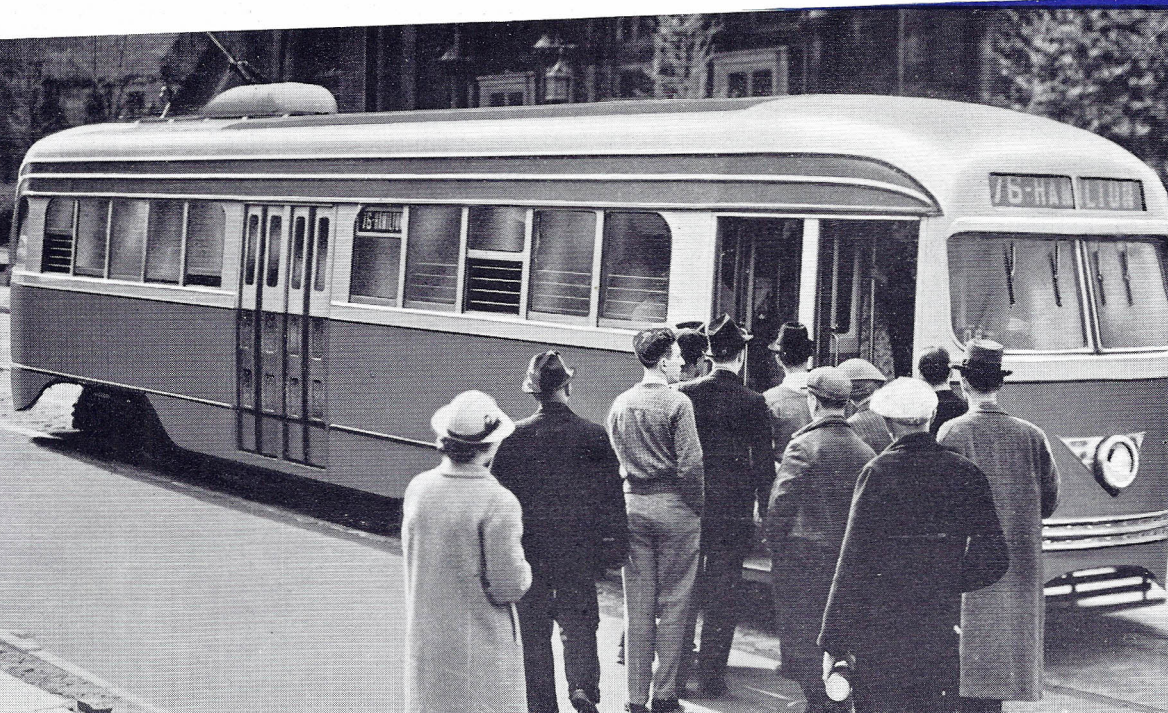
Width of Aisle	2' 1"
Over-all Width	8' 4"
Gauge Track	3' 6"

### SERVICE PERFORMANCE

Date in Service	8/23/37
Av. No. Stops per Mile	7.5
Av. Duration of Stops, Sec.	8
Av. Voltage	525
Actual Av. Schedule Speed, Mph.	10.92
Balancing Speed, 550 V., Level Tangent Roadway, Mph.	42
Av. Accelerating Rate m.p.h.p.s.	4.0
Max. Accelerating Rate m.p.h.p.s.	4.75
Service Braking Rate m.p.h.p.s.	4.75



# 201 P.C.C. CARS PLEASE PITTSBURGH



Greeted by immediately favorable public response, the first 101 P.C.C. cars in Pittsburgh brought official commendation because of their possible economy, reduced track maintenance and power costs, and the preferred reception by the public. Because of this splendid reception, one hundred additional cars were ordered and placed in service.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars.....151  
Class of Service.....City  
Seating Capacity.....56  
Exit Arrangement..Center & Front  
Entrance Arrangement Front & Center  
Car Builder.....St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse..Type 4-1432  
Volts per Motor.....300  
Total Horsepower per Car.....220  
Horsepower per Ton.....12.9  
Drive Reduction.....7.17  
Trucks.....Clark Equipment Co.  
Wheel Diameter—Inches.....25  
Control Westinghouse..Accelerator

Air Brakes.....W.A.B. Co.

### WEIGHTS

Car Body.....16,550  
Trucks, per Pair.....12,600  
Motors & Control Equipment..4,050  
Air Brake Equipment.....1,100  
Total without Load.....34,300  
Weight per Seat.....610

### DIMENSIONS

Length over Bumpers.....46' 0"  
Truck Center Distance.....22' 9"  
Truck Wheelbase.....6' 0"  
Rail to Step.....1' 2"  
Steps to Platform.....0' 9"  
Width of Seat.....2' 11"

Width of Aisle.....2' 1"  
Over-all Width.....8' 4"  
Gauge Track.....5' 2½"

### SERVICE PERFORMANCE

Date in Service.....July, 1936  
Av. No. Stops per Mile.....8  
Av. Duration of Stops, Sec.....8  
Av. Voltage.....550  
Actual Av. Schedule  
Speed Mph.....11.2  
Balancing Speed, 550 V., Level  
Tangent Roadway Mph.....42  
Av. Accelerating Rate  
m.p.h.p.s.....4.0  
Max. Accelerating  
Rate m.p.h.p.s.....4.75  
Service Braking Rate m.p.h.p.s.....4.75



# SAN DIEGO RIDES ON P.C.C. CARS



San Diego approved the new P.C.C. cars by spoken and written word and by increased patronage. One executive declared "We like the P.C.C. cars very much and are convinced they are the answer to our problem and the backbone of our business." Twenty-five cars were first put in service, with others added to meet requirements.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars .....	28
Class of Service .....	City
Seating Capacity .....	62
Exit Arrangement .....	Center & Front
Entrance Arrangement .....	Front & Center
Car Builder .....	St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse ..	Type 4-1432
Volts per Motor .....	300
Total Horsepower per Car .....	220
Horsepower per Ton .....	12.9
Drive Reduction .....	7.17
Trucks .....	Clark Equipment Co.
Wheel diameter—	inches.....25

Control Westinghouse ..	Accelerator
Air Brakes .....	W.A.B. Co.

### WEIGHTS

Car Body .....	16,250
Trucks, per Pair .....	12,600
Motor and Control Equipment ..	4,050
Air Brake Equipment .....	1,100
Total without Load .....	34,000
Weight per Seat .....	550

### DIMENSIONS

Length over Bumpers .....	46'0"
Truck Center Distance .....	22'9"
Truck Wheelbase .....	6'0"
Rail to Step .....	1'2"
Steps to Platform .....	0'9"

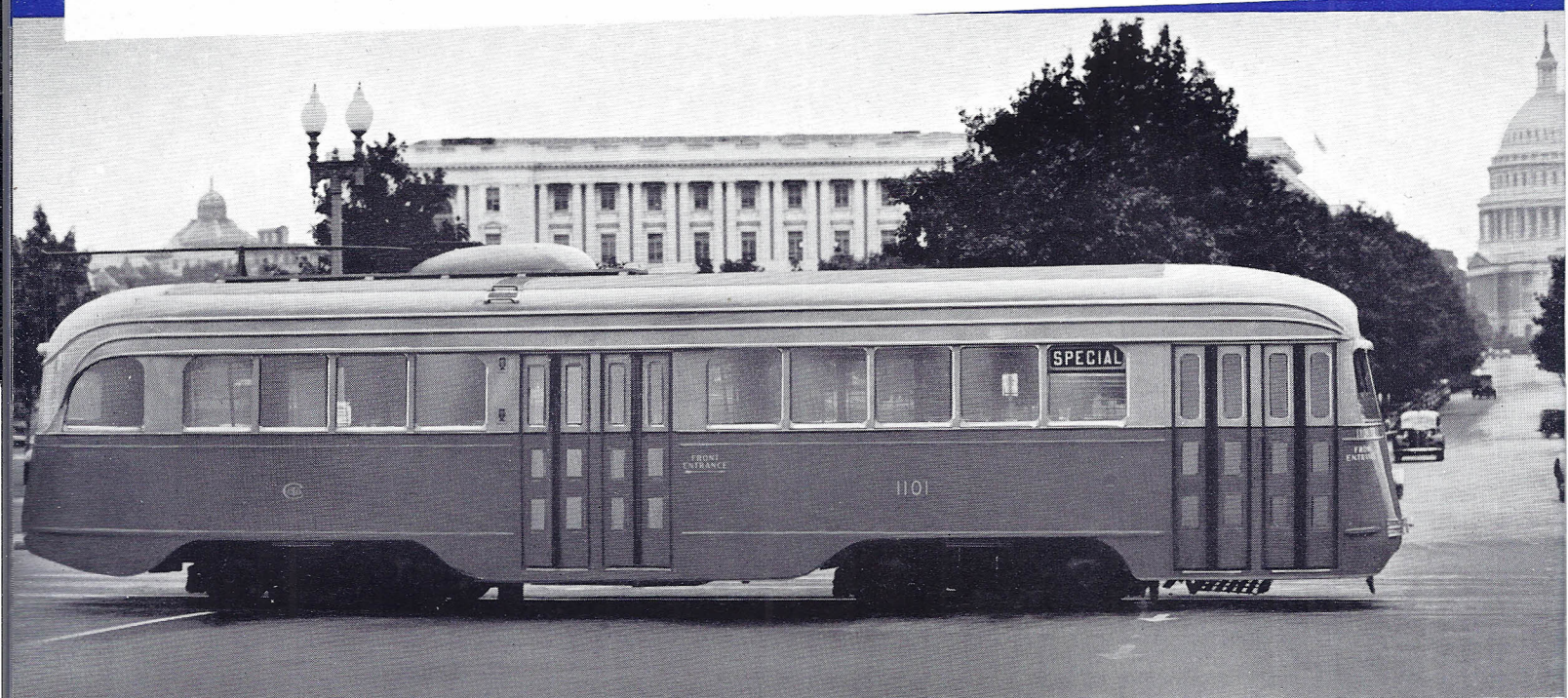
Width of Seat .....	2'11"
Width of Aisle .....	2'1"
Over-all Width .....	8'4"
Gauge Track .....	4'8½"

### SERVICE PERFORMANCE

Date in Service .....	May, 1936
Av. No. Stops per Mile .....	8
Av. Duration of Stops, Sec. ....	9
Av. Voltage .....	518
Actual Av. Schedule Speed, Mph. ....	11.5
Balancing Speed, 550 V., Level Tangent Roadway Mph. ....	42
Av. Accelerating rate m.p.h.p.s. ....	4.0
Max. Accelerating rate m.p.h.p.s. ....	4.75
Service Braking Rate m.p.h.p.s. ....	4.75



# CAPITAL'S RIDERS REQUIRE ADDITIONAL P.C.C. CARS



Visitors from all parts of the country and from abroad who throng the national capital every day carry home with them an entirely new conception of riding comfort, safety and performance obtained from the new P.C.C. cars which are now in service on both the Fourteenth Street and the Mt. Pleasant lines in Washington D. C.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars .....	22
Class of Service .....	City
Seating Capacity .....	50
Exit Arrangement .....	Center & Front
Entrance Arrangement .....	Front & Center
Car Builder ..	St. Louis Car Company

### EQUIPMENT

Motors—Westinghouse..	Type 4-1432
Volts per Motor .....	300
Total Horsepower per Car .....	220
Horsepower per Ton .....	13.0
Drive Reduction .....	7.17
Trucks .....	Clark Equipment Co.
Wheel Diameter—	inches.....25

Control Westinghouse...	Accelerator
Air Brakes .....	W. A. B. Co.

### WEIGHTS

Car Body .....	15,800
Trucks, per Pair .....	12,600
Motor and Control Equipment ..	4,300
Air Brake Equipment .....	1,100
Total without Load .....	33,800
Weight per Seat .....	676

### DIMENSIONS

Length over Bumpers .....	44'0"
Truck Center Distance .....	20'8"
Truck Wheelbase .....	6'0"
Rail to Step .....	1'2"

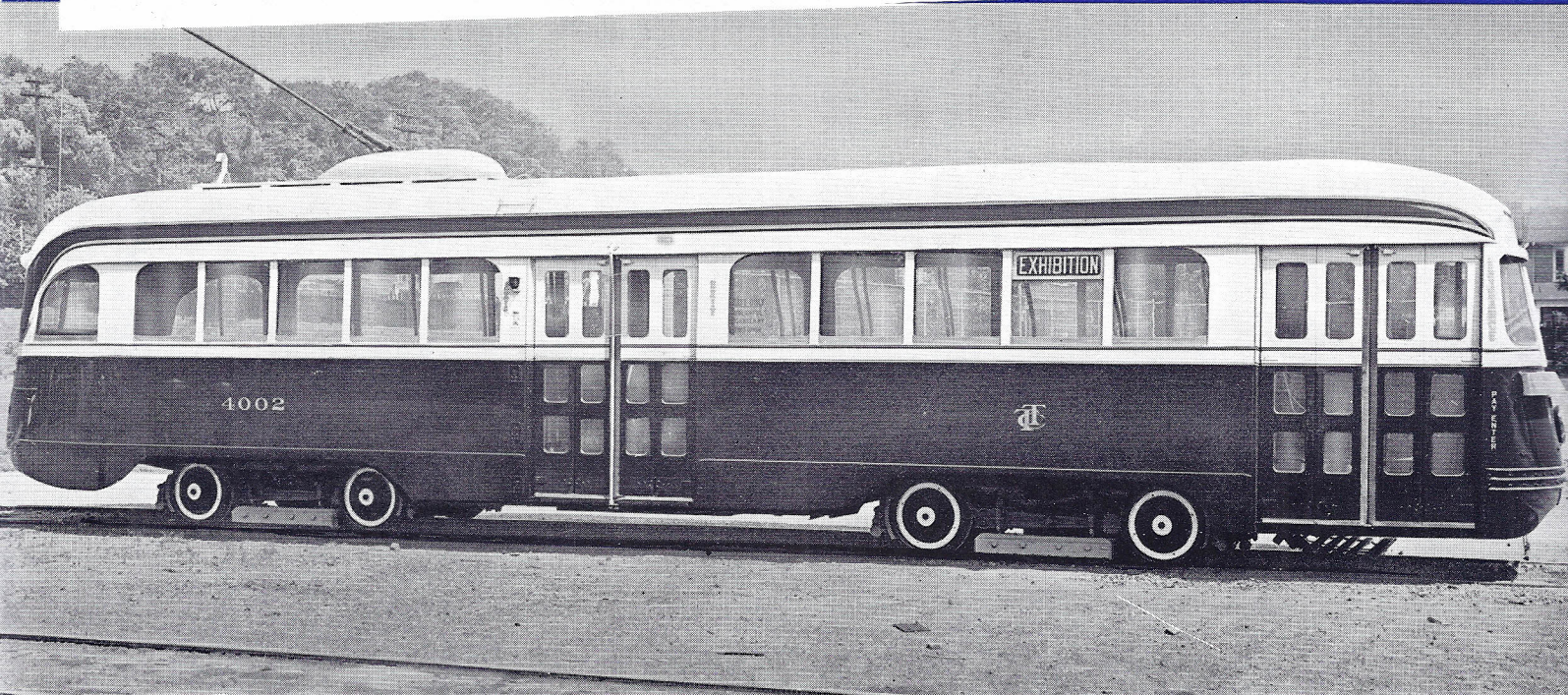
Steps to Platform .....	0'9"
Width of Seat .....	2'11"
Width of Aisle .....	2'1"
Over-all Width .....	8'4"
Gauge Track .....	4'8½"

### SERVICE PERFORMANCE

Date in Service .....	Sept., 1937
Av. No. Stops per Mile .....	8
Av. Duration of Stops, Sec. ....	10
Av. Voltage .....	550
Actual Av. Schedule Speed, Mph. 12	
Balancing Speed, 550 V.,	
Level Tangent Roadway, Mph. ...	42
Av. Accelerating Rate m.p.h.p.s. ....	4.0
Max. Accelerating	
Rate m.p.h.p.s. ....	4.75
Service Braking Rate m.p.h.p.s. ....	4.75



# TORONTO PLACES IN SERVICE LARGEST SINGLE P.C.C. CAR ORDER



Enjoying the distinction of having placed in service the largest single order of P.C.C. cars in North America, executives of the Toronto Transportation Commission believe the new units constitute the most important step in the city's transportation system since the first electric cars replaced the horse-drawn vehicles of the early 1890's.

## SPECIFICATIONS AND DATA ON WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars .....	140
Class of Service .....	City
Seating Capacity .....	54
Exit Arrangement .....	Center Treadle
Entrance Arrangement .....	Front
Car Builder .....	St. Louis Car Co. Canadian Car & Foundry Co.

### EQUIPMENT

Motors—Westinghouse ..	Type 4-1432
Volts per motor .....	300
Total horsepower per car .....	220
Horsepower per ton .....	12.75
Drive reduction .....	7.17
Trucks .....	Clark Equipment Co.
Wheel diameter—_inches .....	25
Control Westinghouse ..	Accelerator

### Air Brakes

..... Canadian Westinghouse Co.

### WEIGHTS

Car body .....	17,150
Trucks, per pair .....	12,600
Motor and control equipment ..	4,050
Air brake equipment .....	1,100
Total without load .....	34,900
Weight per seat, lbs. ....	639

### DIMENSIONS

Length over bumpers .....	46'0"
Truck center distance .....	22'9"
Truck wheelbase .....	6'0"
Rail to step .....	1'3 1/4"
Steps to platform .....	8 1/2"
Width of seat .....	33"
Width of aisle .....	24 1/8"

Over-all width .....	8' 3 3/8"
Gauge Track .....	4'10 7/8"

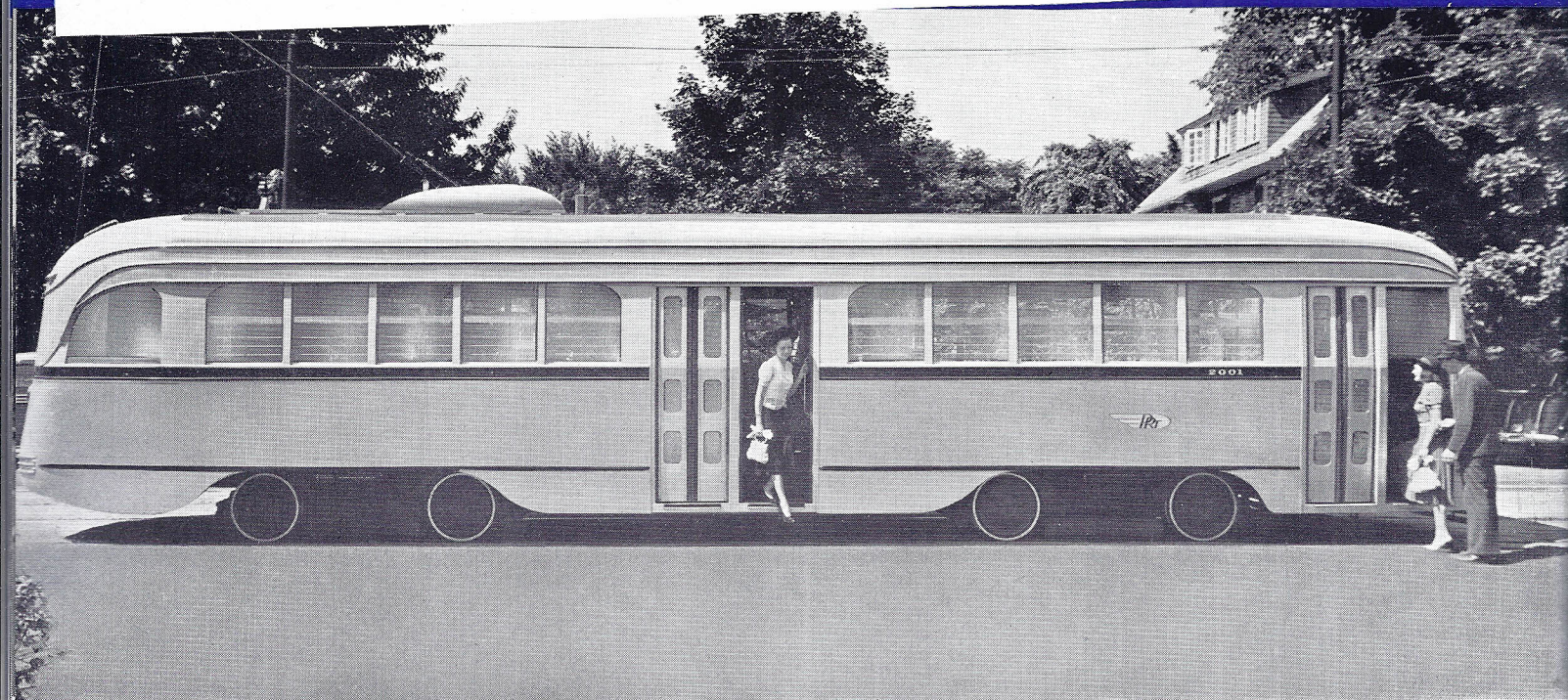
### SERVICE PERFORMANCE

Date in service .....	Sept. 15th, 1938
Av. No. stops per mile .....	5.75*
Av. duration of stops, seconds ..	10.0*
Av. voltage .....	550
Actual Av. schedule speed,	
m.p.h. ....	10.0*
Balancing speed, 600 V., level	
Tangent roadway, m.p.h. ....	42
Av. accelerating rate,	
m.p.h.p.s. ....	4.0
Max. accelerating rate,	
m.p.h.p.s. ....	4.75
Service braking rate,	
m.p.h.p.s. ....	4.75

\*Preliminary Information



# QUAKER CITY STREAMLINERS AROUSE FAVORABLE COMMENT



Twenty recently purchased P.C.C. cars were placed in service on Wayne Avenue in the Quaker City because Route 53 affords the best opportunity of demonstrating the speed, comfort and schedule-making ability of the new units. The Philadelphia Rapid Transit Management hopes the streamliners will be the forerunners of many new cars for Philadelphia.

## SPECIFICATIONS AND DATA OF WESTINGHOUSE-EQUIPPED CARS

### GENERAL

Number of Cars.....	15
Class of service.....	City
Seating Capacity.....	53
Exit arrangement.....	Center Treadle
Entrance arrangement.....	Front
Car builder .....	St. Louis Car Co.

### EQUIPMENT

Motors—Westinghouse..	Type 4-1432
Volts per motor.....	300
Total horsepower per car.....	220
Horsepower per ton.....	12.75
Drive reduction.....	7.17
Trucks .....	Clark Equipment Co.
Wheel diameter—	inches..... 25
Control Westinghouse..	Accelerator
Air brakes.....	W. A. B. Co.

### WEIGHTS

Car body.....	16,900
Trucks, per pair.....	12,600
Motor and control equipment..	4,050
Air brake equipment.....	1,100
Total without load.....	34,650
Weight per set, lbs.....	654

### DIMENSIONS

Length over bumpers.....	46'0"
Truck center distance.....	22'9"
Truck wheelbase.....	6'0"
Rail to step.....	1'3 $\frac{1}{4}$ "
Steps to platform.....	8 $\frac{1}{2}$ "
Width of seat.....	33"
Width of aisle.....	24 $\frac{1}{8}$ "
Over-all width.....	8'3 $\frac{3}{8}$ "
Gauge Track.....	5'2 $\frac{1}{2}$ "

### SERVICE PERFORMANCE

Date in service.....	Aug. 14, 1938
Route miles.....	4.45
Av. No. stops per mile.....	5.8
Av. duration of stops, seconds.....	7.0
Av. voltage.....	600
Actual Av. schedule speed, m.p.h.....	12.55
Balancing speed, 600 V., level tangent roadway, m.p.h.....	42
Av. accelerating rate, m.p.h.p.s.....	4.0
Max. accelerating rate, m.p.h.p.s.....	4.75
Service braking rate, m.p.h.p.s.....	4.75



# P.C.C. CARS

PLEASE  
EVERY FACTOR

Riders • General Public • Operators  
Financial Interests • City Officials

## NOW IS THE TIME TO INVESTIGATE

Outmoded streetcar equipment is fighting a losing battle with this faster, lighter, more comfortable and more convenient means of street transportation.

Transit executives, civic bodies, financial interests and municipal authorities can answer—once and for all—these insistent public demands in their own cities . . . Can create a new satisfaction for its riders . . . And extend their city's reputation for progressiveness with Westinghouse-equipped P.C.C. cars.

Westinghouse will gladly assist transit operators in studying the application of P.C.C. cars to their particular communities . . . in the interests of everyone concerned with street transportation.

# Westinghouse

ELECTRICAL PARTNER OF THE *Transit* INDUSTRY





**WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY**  
**EAST PITTSBURGH** **PENNSYLVANIA**