National Transportation Week

May 15-21, 1960

PIONEERING IN PUBLIC TRANSPORTATION BY CHICAGO

Adequate public transportation is an imperative necessity for the continuing economic development of Chicago and the metropolitan area. In observance of National Transportation Week, May 15 to May 21, 1960, Chicago Transit Authority points with pride to four recent pioneering developments for improvements in service for its patrons.

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foreword

In scope and depth, the urban transportation crisis confronting the nation is stupendous.

Urban areas, particularly the larger centers, are steadily and relentlessly being strangled economically by traffic congestion.

It cannot be properly charged that this situation is due to neglect, or to an unwillingness to spend money to correct it. On the contrary, highway expenditures are on a grand scale and total more than $4 billion annually, including an increasing amount in urban areas.

Multi-million dollar, multi-lane highways are commonplace throughout the nation, spanning urban areas from end to end, stretching mile on mile through the countryside.

More of these costly highways are under construction, and more of them are being readied on the planning boards because each expressway is jammed beyond design capacity almost as soon as it is opened.

Generally speaking, the nation is obtaining an excellent system of highways, but still unsolved is the critical problem of moving masses of people by automobile during rush hours in the high density central business districts of metropolitan areas.

If the desirable advantages of central districts for commercial, business, financial and cultural activities are to be retained, their total transportation needs cannot be met by the private automobile.

It logically follows, then, that the way to win the battle against paralyzing traffic congestion, without completely decentralizing central districts, is to invest highway and transportation dollars to move large numbers of people rather than large numbers of automobiles.

This means, in effect, planning and financing the nation's total transportation needs by all agencies, federal, state and local governments, and transportation companies working together to obtain the most beneficial and the most effective results.

The first step in this solution of the urban transportation crisis would be to recognize and declare officially that public transportation—transit and the commuter services in urban areas—is performing, most economically and efficiently, the primary function of highways, that of moving masses of people.

The vital role of mass transportation in urban life, and the futility of placing virtually complete reliance upon the automobile for intra-city and commuter transportation, can be amply demonstrated by using Chicago as an illustration.

Approximately 1,000,000 people, for example, patronize Chicago Transit Authority services each weekday, most of them taking two or more rides. If CTA should cease operating overnight, and the private automobile had to take over, there would be 600,000 more automobiles on the city's streets than there are today.

Such a floodtide of automobiles would choke all of the city's traffic arteries. The result, of course, would be chaos.

In just the maximum hour on a typical weekday, 4:45 P.M. to 5:45 P.M., approximately 221,000 workers, late shoppers and others require transportation from Chicago's central business district. About 186,000 of these people depart by public transportation—buses, grade-separated rapid transit and commuter railroads.

If these 186,000 people now being carried from the Loop by public transportation in this one hour had to be shifted to automobiles, 166 more expressway lanes (83 outbound lanes, 83 inbound lanes) would be required. And parking space would have to be found in the area for 125,000 more automobiles.

The cost of these additional facilities would be staggering, if the necessary real estate were available, which it is not.

These examples of the indispensability of public transportation certainly can be duplicated in many other large urban centers of the nation.

If a program of planning and financing for the nation's total transportation needs is undertaken, public transportation and the private automobile will be working together as a team, each performing the part of the total transportation task for which it is best suited.

Billions of dollars will still be needed over the years to provide adequate transportation, particularly in the urban areas where the nation's population is now being rapidly concentrated. But the saving will be huge, compared to the alternative of building an endless number of multi-million dollar expressways. And victory over traffic congestion will be achieved.

This saving of transportation dollars must be accomplished if the nation is to meet the transportation demands of a population of 273,000,000 forecast for 1980, an increase of 122,000,000 from 1950, with most of this explosive increase occurring in the urban centers.

1980 is only two decades away. There is so little time in which so much must be done for the nation's total transportation needs.

A Foursome of Chicago Pioneering In Public Transit

1. Chicago's New West Side Subway—the first project ever conceived, planned and constructed to combine rail rapid transit and a multi-lane expressway in the same grade-separated right-of-way.

2. High-Speed, High-Performance Rapid Transit Cars—designed and built under a co-operative research program sponsored by CTA and a group of privately-owned companies.

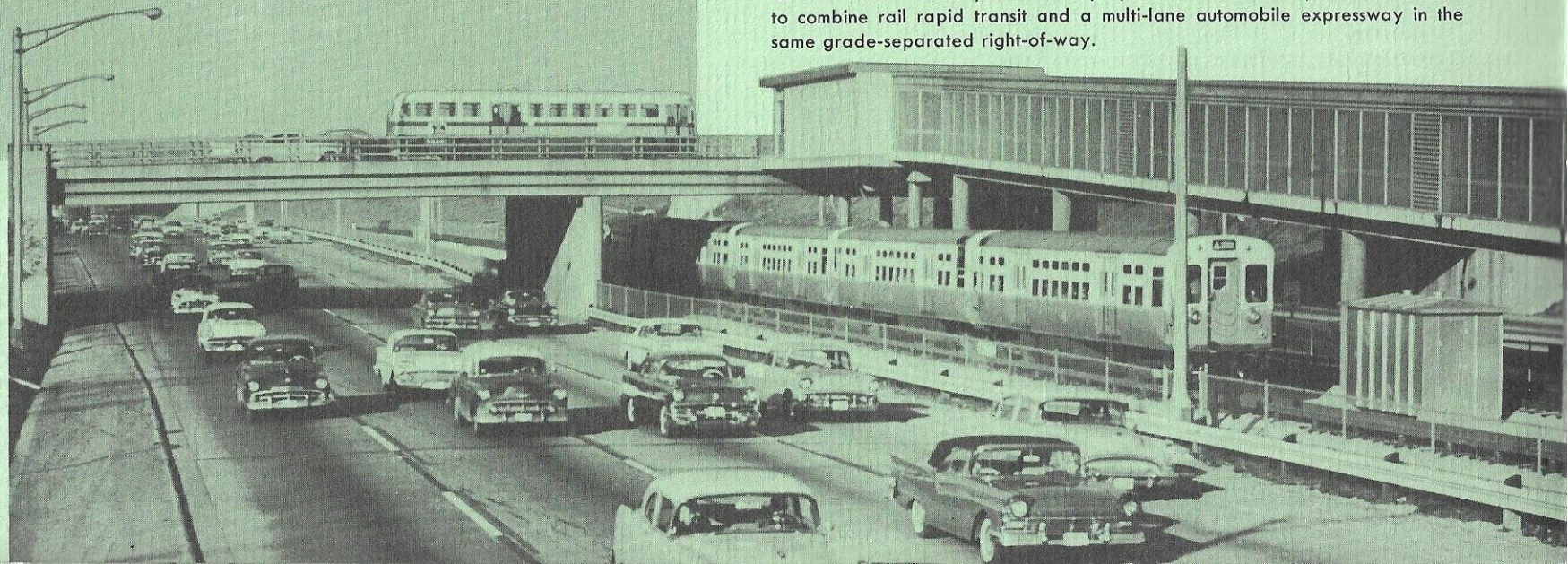
3. Train-Phone Communications System—developed to provide direct communication between motormen of in-service trains and operations control and train dispatching headquarters in CTA's central offices.

4. Electronic Bus Headway Recorder System—first experimental installation of a recently developed electronic method of providing operations control and central dispatching with a continuous flow of information needed to obtain optimum conformance with pre-determined schedules.

Mayor Daley Drives First Spike

The New

A CTA "Green Hornet" rapid transit train operates eastbound in the median strip of the Congress Expressway while vehicular traffic moves along at its side in the four-lane highway. A CTA bus is seen on the highway overpass. Chicago's new West Side Subway is the first project ever conceived, planned and built to combine rail rapid transit and a multi-lane automobile expressway in the same grade-separated right-of-way.



West Side Subway

Extending 9½ miles west from Chicago's famous downtown Loop, the new West Side Subway has attracted world-wide attention as the first grade-separated rail rapid transit route planned and constructed as an integral part of a multi-lane, grade-separated motor expressway. It replaces the old Garfield Park rapid transit route, which was partly on elevated structure and partly at street grade, in serving Chicago's west side and the suburbs immediately to the west.

Transit operators, transit and highway engineers, and public officials from many parts of the United States, Canada and other countries have come to Chicago to obtain firsthand knowledge of the project design, and to observe the operations of this unique rapid transit facility.

In another important respect, that of public agency co-operation with mass transportation, the West Side Subway project has set what is hoped will be a pattern for the future in public agency co-operation and aid in extending and improving mass transportation in metropolitan areas.

Federal Funds Used

The alignment established for the eight-lane Congress Expressway required removal of substantial sections of the old Garfield Park rapid transit route structures to make way for highway construction. It also required use of underlying right-of-way for expressway purposes, and the relocation of the entire rapid transit route between the Loop and the outer terminal in the Village of Forest Park.

Federal highway matching funds, made available to the State of Illinois and in turn to the City of Chicago and the County of Cook, have contributed importantly to financing the cost of the right-of-way and the increased length of local overpass bridges.

The City of Chicago, using both highway funds and its own bond funds, constructed the subway project and a portion of the expressway between the west bank of the Chicago river and Laramie Avenue (5200 West), and is also financing construction of new terminal requirements in Forest Park to replace the former yard facilities at Laramie Avenue.

The County of Cook and the State of Illinois, using highway funds, are constructing the project between Laramie Avenue and the Forest Park terminal because construction of the expressway in this section, which is their joint responsibility, compelled relocation of the Garfield Park route track and appurtenant facilities.

Advantages of Integrating Rail Transit with Multi-Lane Expressways

By constructing rail rapid transit in the grade-separated rights-of-way of multi-lane expressways, passenger carrying capacity is increased as much as three-fold or more.

Consequently, considerably greater passenger carrying capacity can be achieved for comparatively little additional cost. A cost ratio of one-fifth for transit facilities to four-fifths for expressway lanes is possible under favorable circumstances.

Therefore the maximum in passenger transportation is obtained for every dollar spent. The possibilities for conserving transportation project funds are tremendous, and money thus saved can be used to build more conventional highways in less highly developed areas.

Furthermore, considerably less high-value land in metropolitan areas will have to be removed from its present high income and tax-revenue producing status to become a part of tremendously costly, tax-free, multi-lane expressways.

City Has Spent $102,000,000 to Aid Transit

To improve Chicago's rapid transit service, the City of Chicago has spent a total of $102,000,000, part of it obtained from the no-longer-existing Federal Public Works Administration. This total includes $27,000,000 in City of Chicago bond funds used to finance construction of the West Side Subway from the Loop to Laramie Avenue.

The remaining $75,000,000 was spent for construction of Chicago's first two subways, the State Street subway and the Milwaukee Avenue-Dearborn Street subway. The City financed its share of the cost of the first two subways from the City Traction Fund, which had been built up over the years by franchise payments from privately-owned transit companies. The Public Works Administration's contribution to the building of the first two subways totaled $25,967,000.

Chicago Plans to Combine Rapid Transit with More Expressways

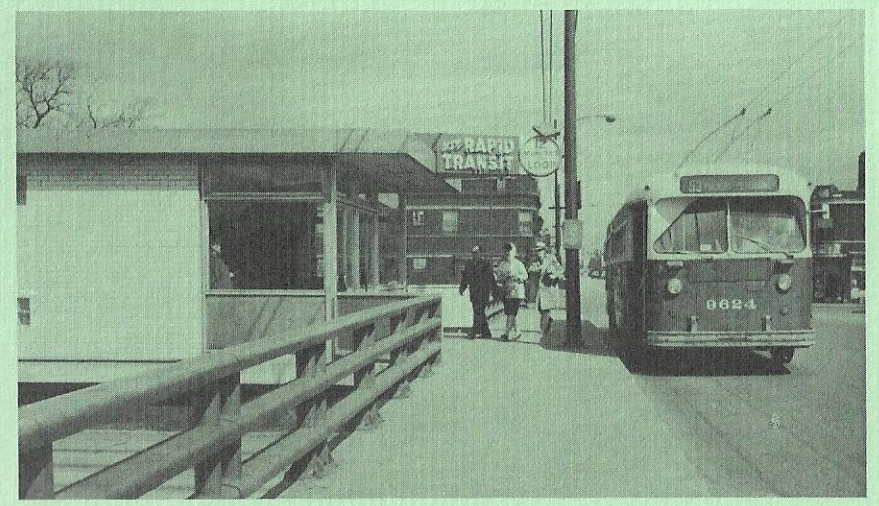
Chicago is committed to combining rail rapid transit with more grade-separated, multi-lane expressways which are now under construction or programmed for the immediate future—in the Northwest Expressway, which is now nearing completion; in the South Expressway, which is soon to go into construction; and in the Southwest Expressway.

Financing for the complete transit facilities has not been arranged, but the City is spending $10,000,000 in bond funds for engineering and planning, and for construction of certain primary transit items to accompany highway construction.

Operations Began June 22, 1958

Rapid transit service over the two tracks in the Congress Expressway right-of-way began June 22, 1958.

Along the route of the new subway there are fourteen stations spaced an average of seven-tenths of a mile apart. Ten of the stations are in Chicago, two are in Oak Park, and two are in Forest Park. Their location, and the running time to or from the Loop, follow:



Attractive, modern station at Keeler Avenue on the new West Side Subway is typical of the stations serving this rapid transit route which sets the pattern for modern transportation facilities in large urban centers. Easily seen signs at the entrance of each station show the time for travel into Chicago's Loop. Travel time from the farthest point, the terminal at Desplaines Avenue, Forest Park, is 22 minutes for 9½ miles distance, a reduction of approximately 43 per cent. Eight of the stations on the route have auxiliary entrance-exit facilities of this type. One of the stations has three buildings.

CHICAGO STATIONS

Clinton and Congress	One minute to Loop
***Halsted and Congress**	Three minutes to Loop
***Racine and Congress**	Four minutes to Loop
***Medical Center (Paulina-Ogden-Damen)**	Five minutes to Loop
Western and Congress	Seven minutes to Loop
California and Congress	Nine minutes to Loop
***Kedzie and Congress**	Ten minutes to Loop
***Pulaski and Congress**	Twelve minutes to Loop
***Cicero and Congress**	Fourteen minutes to Loop
Central and Congress	Sixteen minutes to Loop

SUBURBAN STATIONS

***Austin Boulevard, Oak Park**	Seventeen minutes to Loop
***Oak Park Avenue, Oak Park**	Nineteen minutes to Loop
***Harlem Avenue, Forest Park**	Twenty-one minutes to Loop
Desplaines Avenue, Forest Park	Twenty-two minutes to Loop

*Denotes auxiliary entrance-exit available or under construction.

The attractive interior ot this station building is typical of the stations on the Congress branch of CTA's West-Northwest rapid transit route. The fare collection booth is located to the right. The doors in the background open to an enclosed ramp that leads to train loading and unloading platform.

This scene at Kedzie station on the Congress branch of CTA's West-Northwest Rapid Transit route shows typical passenger traffic unloading from an eastbound train. The island platforms are similar at stations along this route.

Travel Time Cut Ten Minutes

Running time between the Loop and Forest Park has been reduced about seventeen minutes compared with the all-stop service being operated in September, 1953, and by about eight minutes compared with the service being provided immediately prior to June 22, 1958, when trains began operating in the Congress Expressway right-of-way. A further cut in the schedule will occur when installation of the block signal and automatic train control system is completed. This system is now operating as far west as Laramie Avenue, and contracts have been awarded for its installation into the terminal at Forest Park.

Twenty-seven Hazardous Grade Crossings Being Eliminated

Twenty-six of 27 hazardous crossings at street grade have already been eliminated, and the last crossing at street grade will be eliminated when Desplaines Avenue at the entrance-exit to the rapid transit terminal in Forest Park is depressed to go under the rapid transit tracks.

Seventeen of these grade crossings were in Oak Park, six were in Chicago, and four (including the one at Desplaines Avenue) were in Forest Park.

In addition, an existing railroad crossing, which has been the cause of many delays in the rapid transit service, has been eliminated.

New Subway Carries More People Than Expressway

Although the new subway is operating at only 30 per cent of its potential capacity, it is carrying more people in the prevailing direction of travel at the peak of the rush period than the expressway. The expressway is now jammed to design capacity during this period. And the overcrowding on the highway is certain to become worse when the three and a half mile gap between Central Avenue, Chicago, and First Avenue, Maywood, is completed and opened to motorists.

In the heaviest hour of the afternoon westbound rush, the rapid transit trains carry 12,040 passengers compared with 6,526 in automobiles on the expressway. During the heaviest hour of the eastbound morning rush, 11,276 persons ride the subway trains, and 7,047 persons are carried in automobiles. Passenger traffic on the new subway is steadily increasing. Originating revenue rides have advanced 42.4 per cent from 75,662 for the week ended July 11, 1958, to 107,731 for the week ended March 25, 1960.

New Subway Combines Tube and Open Cut Construction

For the easternmost three-quarters of a mile of its length, the new subway is in underground twin tubes. From Halsted Street (800 West) to just west of Laramie Avenue, a distance of approximately six miles, it is in the median strip of the depressed right-of-way of the Congress Expressway.

Just west of Laramie Avenue, between Lockwood Avenue and Lotus Avenue, the two tracks are in curved twin tubes that cross under the eastbound roadway of the expressway to a right-of-way location paralleling the expressway, and between it and the permanent right-of-way for the Baltimore and Ohio Chicago Terminal railroad.

Initially, trains operated over permanent right-of-way only as far west as Lotus Avenue. From that point to the terminal in Forest Park, service was maintained on temporary tracks and right-of-way. On Sunday, March 20, 1960, the final stretch of permanent right-of-way became available, excepting at the entrance-exit area of the Forest Park terminal where temporary tracks and right-of-

way must be used a few weeks longer while Desplaines Avenue is being depressed below street grade and under the rapid transit tracks.

Rail-Bus Passenger Interchange and "Kiss-and-Ride" Facilities

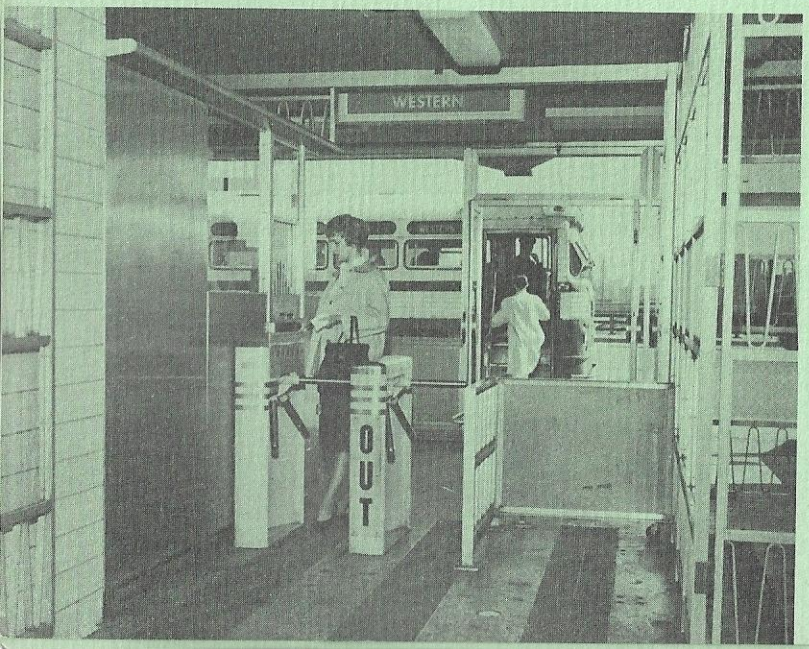
The four westernmost permanent stations, and the terminal station and shop structures in Forest Park, are still under construction. Within six months the four stations will be completed. The terminal station, with provisions for under-shelter bus-rail passenger interchange, and for "kiss-and-ride" patrons whose wives drive them to the terminal, is scheduled for completion in nine months. Terminal shop facilities are to be finished within 15 months.

Multi-Story Garage and Shopping Center Planned

Presently there is sufficient space in the terminal area for 300 CTA patrons to park their automobiles. However, the terminal structures are designed so that a multi-story "Park-'N'-Ride" garage may be built over the expressway when the necessary financing is assured. Motorists desiring to complete their trips by rapid transit would enter and leave the garage by ramps connecting directly with the expressway lanes. There would be direct, under-shelter connections between the garage and the train platform. Retail shops would be located at the first floor level of the garage plaza.

Right-of-Way Available for Future Expansion

The present two-track facility may be expanded when passenger traffic warrants. There is sufficient right-of-way area available. Between Halsted Street and Kostner Avenue (about four and a half miles) two more tracks may be added, and between Kostner Avenue and the Forest Park terminal (about four miles) a third track may be installed. Between Morgan Street and Racine Avenue (a quarter of a mile) there is now a third track for switching operations.



Convenient transfer between "L"-Subway and surface facilities at Western station on the Congress Rapid Transit branch is illustrated here. Most of the stations along this line have similar convenient interchange from one type of service to the other.

Operating Plan of the New Subway

Three long-established, separate routes, the Logan Square "L"-Subway, the Congress subway (formerly Garfield Park) and Douglas "L" routes, have been consolidated into the single new West-Northwest "L"-subway route serving the West and Northwest sections of the city and the Central Business District.

For the first time since 1892, when off-street rapid transit was introduced in Chicago, there is through service between the suburbs of Forest Park, Oak Park, Cicero, the West side of Chicago, and the Northwest section of the city.

The Logan Square-Desplaines Avenue, Forest Park, leg of the route, identified as the Congress-Milwaukee section, is 15.4 miles long; the Douglas-Milwaukee Avenue leg is 13.9 miles long. Douglas-Milwaukee Avenue trains enter and leave the new subway over ramps at Loomis boulevard (1400 West). Congress-Milwaukee trains operate throughout the length of the new subway.

DEVELOPMENT OF HIGH-SPEED, HIGH-PERFORMANCE CARS

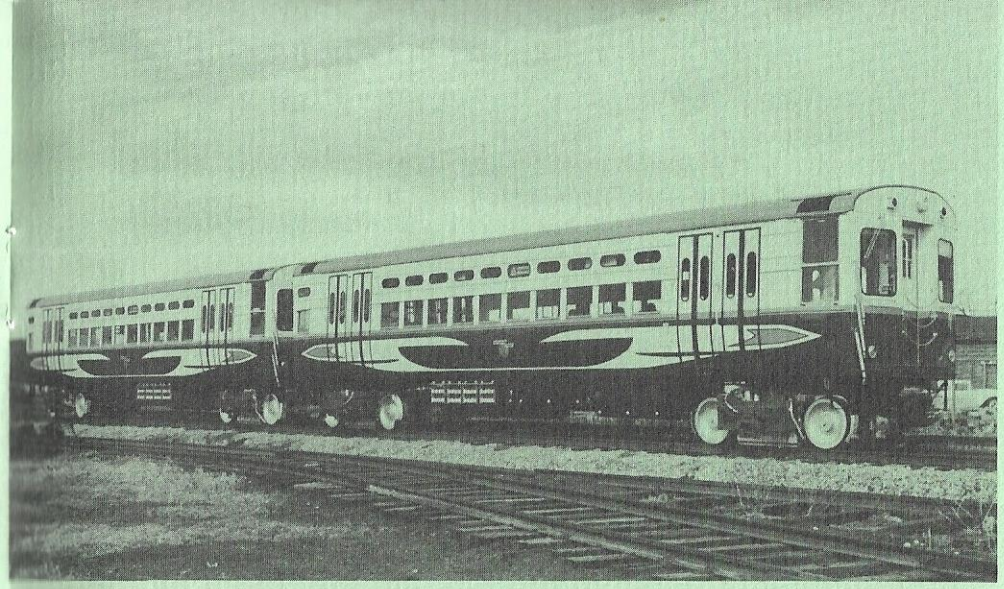
Chicago Transit Authority and co-operating companies are now testing three high-speed, high-performance rapid transit cars that are capable of a speed in excess of 70 miles per hour. A fourth car will join the test group shortly.

These are the first high-speed, high-performance cars specially designed and produced for the transit industry to meet the drastic changes in the character of mass transportation that are occurring in this atomic age.

In addition to their high-speed potential, these cars rate high in performance, accelerating from a standing stop to 30 miles per hour in 10 seconds. Braking, using only service brakes, is at the same fast rate. By using emergency braking, an even faster rate of deceleration is achieved.

Convinced that speed of travel is imperative if the nation's explosively growing metropolitan centers are to be served adequately and attractively by mass transit, Chicago Transit Authority entered into a co-operative program in 1954 to develop a high-speed, high-performance rapid transit car.

This research program was based upon the conclusively-established premise that street traffic conditions, resulting from rapidly expanding ownership and use of private automobiles, are causing



The first of four high-speed, light-weight, experimental rapid transit cars was delivered to Chicago Transit Authority February 23, 1960. The new cars, manufactured by St. Louis Car Company, have specially-designed motors, controls, trucks, gear drives, axles, bearing installations and auxiliary braking. Equipped with 100-horsepower motors and controls designed to operate at higher speeds than equipment presently available to the mass transit industry, the cars will maintain a three miles per hour per second acceleration rate up to 30 miles per hour. At this point the cars continue to accelerate at lower rates on the motor curves until a maximum speed of about 75 miles per hour is reached.

expanding ownership and use of private automobiles, are causing swift and progressive deterioration of mass transit at street grade in automobile-jammed thoroughfares.

It was evident then (and even more so today), that the emphasis in mass transportation in metropolitan centers must shift from major reliance upon surface bus transportation to fast grade-separated rail transit with buses serving primarily as feeders.

Participating with Chicago Transit Authority in this initial high-speed, high-performance rapid transit car research and development program were the General Electric Company, the Westinghouse Electric Corporation, American Steel Foundries, the St. Louis Car Company, and the Transit Research Corporation. The latter, owned by the larger transit companies of the nation, including Chicago Transit Authority, had developed the high-performance streetcar.

By 1955 four high-speed, high-performance cars were produced. This was accomplished by making the necessary changes in four of Chicago Transit Authority's latest type rapid transit cars which are an adaptation of the high-performance streetcar developed by the Transit Research Corporation.

Exhaustive tests proved the feasibility of manufacturing a high-speed, high-performance rapid transit car for the transit industry, but the tests also proved conclusively that specially designed motors, controls, trucks, gear drives, axles, bearing installations and auxiliary braking would have to be developed for successful in-service operation.

Accordingly, Chicago Transit Authority took the lead in arranging a second research and development program to design, produce and install in test cars provided by CTA the components necessary for a speed and performance break-through in the rapid transit car industry.

Co-operating with Chicago Transit Authority in this second and gratifyingly successful research and development program are the American Steel Foundries, the Budd Company, Dana Corporation, General Electric Company, General Steel Castings Corporation, Hyatt Bearing Company, LFM Manufacturing Company, S.K.F. Industries, St. Louis Car Company, Timken Roller Bearing Company, Transit Research Corporation, Westinghouse Air Brake Company, and Westinghouse Electric Corporation.

All of these organizations have made substantial financial contributions and have supplied engineering services of great value. Some components were provided on a reduced cost basis; others were supplied on a long-term use basis with an option to purchase, and some components were provided without cost to CTA.

For these latest high-speed, high-performance cars, specially designed motors, controls, trucks, gear drives, axles, bearing installations and auxiliary braking were produced. The cars themselves were manufactured by the St. Louis Car Company to CTA's order.

Each of the new cars is equipped with four specially designed 100-horsepower motors instead of the 55 horsepower motors in CTA's standard rapid transit car. Interior lighting is of the latest design. A light fixture of the controlled-beam type is installed over each seat and over each side entrance doorway. Maximum candle power is focused onto the reading plane of each seat.

An electric heating and forced air ventilating system is installed in each car. There are twelve heater cases on each side of a car with each case containing two double-end, enclosed strip heaters which can be set at three different thermostatically-controlled heating

ranges. The reversible forced air system can either force air into the car or, by reversing the fan in the summer, draw warm air from the car and exhaust it to the outside.

For quick identification by the public, the exteriors of the cars are painted with an attractive combination of colors. The roofs, belt rails, and side design backgrounds are red. From the roofs to the belt lines, the car sides are painted grey. The lower sides, from the belt rails to the bottom of the side sheets, are painted maroon with stripings of black.

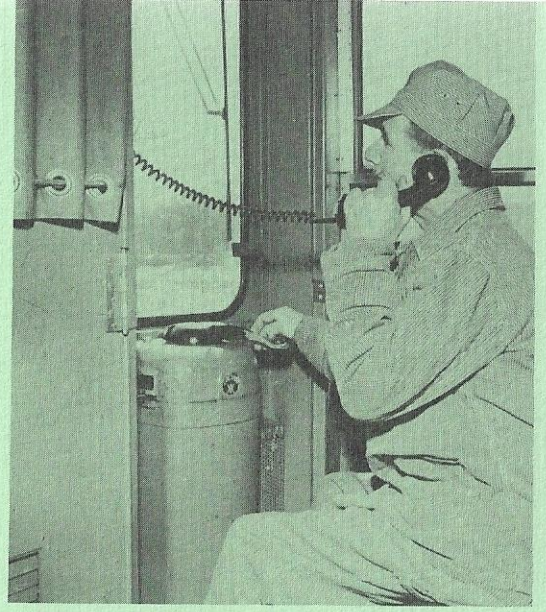
Light colors give the interiors of the cars a bright and cheerful appearance. The ceilings, down to the advertising card racks, are painted white. Grey is used from the bottom of the advertising racks to the wainscots, and also on side and end door panels. Another shade of grey is applied to the wainscots, which extend from the bottom of the windows to the floors. These colors are compatible with the color scheme of the seats and the mottled design of the floor covering.

TRAIN-PHONE COMMUNICATIONS SYSTEM

Installation of two-way portable train-phones, the first of this type ever used by a transit system, is being completed on Chicago Transit Authority's North-South rapid transit route, the most heavily patronized route of its rapid transit system.

Purpose of this pioneering installation is to provide operations control and central dispatching personnel in CTA's general offices at the Merchandise Mart with a new, supplemental tool to aid them in maintaining a high standard of service and a high degree of compliance with train schedules.

Taking down information given him by motorman of in-service Chicago Transit Authority rapid transit train is Line Supervisor James Luvisi who is stationed in the Merchandise Mart central dispatching office. By a simple flick of any of the three switches in the control box mounted before him, he can talk with motormen of trains moving over the North-South "L"-subway route or relay messages to passengers in case of emergencies.



CTA motorman uses train-phone communications system aboard North-South "L"-subway train. Since the motorman can speak directly with central control and dispatching personnel in the Merchandise Mart offices, he is able to report at once any instances, such as illness of a passenger, equipment failure, disturbance or other situations which cause delays and gaps in service.

The train-phone system is being used in conjunction with CTA's central supervisory control system for its rapid transit service which was introduced to the transit world in 1951, and is now installed on all five of CTA's rapid transit routes.

By means of the new train-phone communications system, operations control and central dispatching personnel talk directly to and with motormen of in-service trains. This enables operations control to take speedy and effective action to overcome delays in service, to issue instructions direct to motormen for corrective action to be taken, and to get assistance quickly to train crews in an emergency, such as the illness of a passenger.

When circumstances warrant, operations control may direct messages to passengers themselves, inasmuch as the modern rapid transit cars used on CTA's North-South route are equipped with public address systems.

At the beginning of his run, a motorman picks up his portable two-way train-phone and attaches it to brackets in the motorman's cab. When a motorman wishes to communicate with operations control, he lifts his hand-set, presses a button in the handle, and talks. Each set is a frequency-modulated power carrier, weighing about 15 pounds. It transmits and receives a speaker's voice over telephone wires in combination with the direct current power distribution system that furnishes the electrical energy to drive the train's motors.

In transmission, a motorman's voice, for example, is converted

to an FM radio signal and carried through the third rail power distribution system. At intervals of approximately one mile, the FM signal is "tapped off" and fed into a telephone cable connecting a series of wayside fixed transmitter-receiver stations where the FM signal is again converted to voice impulses and fed into CTA's own telephone lines leading to operations control headquarters in the Merchandise Mart. The reverse of this procedure occurs when operations control talks to a motorman.

When the superintendent of operations control, for example, wishes to talk to a particular motorman, he picks up the hand-set of his two-way telephone, presses a button in the handle and calls the motorman by his train run number.

This two-way phone system was adapted for rapid transit use by CTA and Femco, Inc., of Irwin, Pennsylvania, which manufactured the units now installed on CTA's North-South rapid transit route.

ELECTRONIC BUS HEADWAY RECORDER SYSTEM

First in-service test installation of a recently developed unique electronic bus identification system to assist Chicago Transit Authority's operations control at the Merchandise Mart in maintaining maximum conformance with established schedules is now being installed on the Michigan-State-Wacker shuttle bus route.

The Michigan-State-Wacker route was selected for this test because it is heavily patronized, and also because buses assigned to the route are frequently delayed by traffic tie-ups in the Loop.

Automatic, instantaneous identification of each bus run, together with the time and direction of travel, is accomplished electronically and relayed by existing telephone wires direct to CTA's operations control. When these reports disclose a serious gap in service, operations control dispatches a supervisor in a radio-equipped automobile to take whatever steps are necessary to restore the regularity and frequency of service.

The information relayed to operations control is gathered by an "interrogator" coil buried in the pavement from one side of State Street to the other at Van Buren Street. The interrogator unit itself is located on the mezzanine of CTA's State and Van Buren elevated station.

As a bus passes over the interrogator coil in the street, the magnetic field of the coil causes a coded signal to be given by a unit called a response block which is carried by each bus on the Michigan-State-Wacker route. The response blocks contain varying circuitry, which positively assures that a response block will identify only a specific bus run.

Day to day performance of this identification system will be evaluated after a sufficient period of test operation to determine the feasibility and desirability of installing it on other CTA bus routes.

In a broad scale application of this system, the identification signals would be fed into a data processing unit which "remembers" all of the bus schedules and compares these schedules with the operating results being achieved. Through a display console, operations control would have visual evidence of gaps in service and would be in a position to take effective corrective action immediately.

Called Tracer, the identification system was designed by the Link Division of General Precision, Inc., and the equipment now being tested was sold to CTA by Western Railroad Supply Co., a Chicago-based railroad supply house and distributor to the railroad and transit industries.

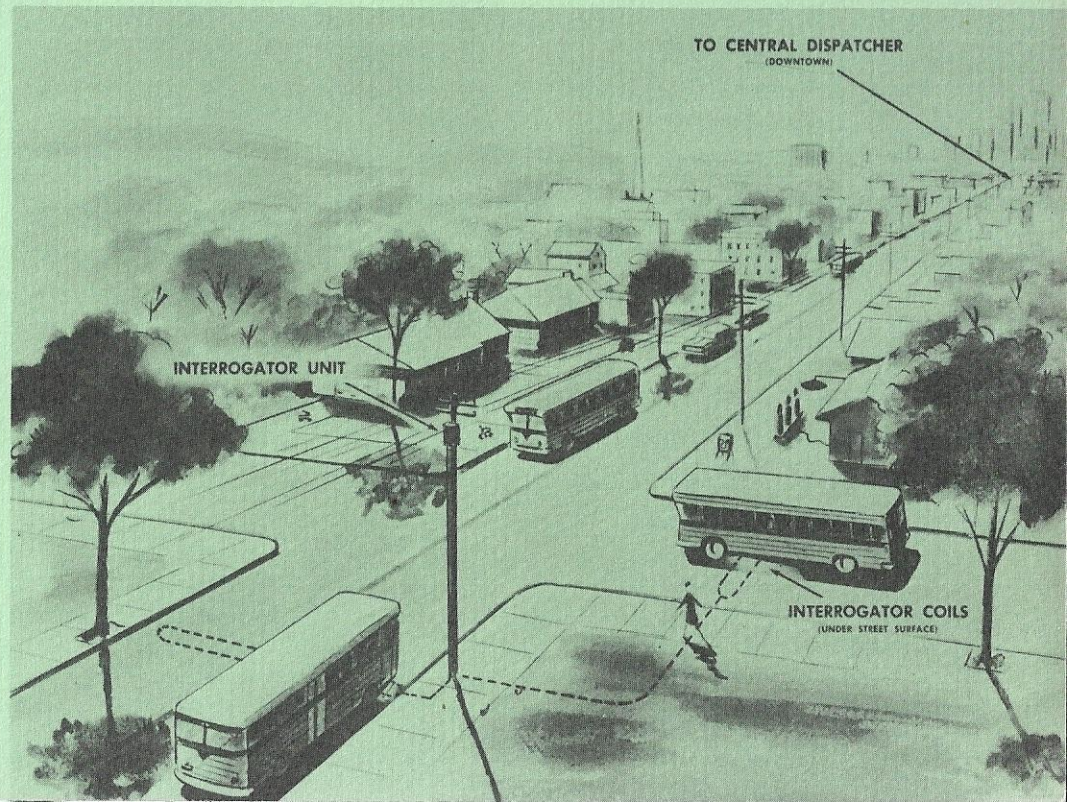


Diagram shows how CTA's test installation of Tracer, an electronic headway recorder system, will operate. The test is being made at State and Van Büren Streets and covers the operation of CTA's Michigan-State-Wacker shuttle buses.

Chicago Transit Authority Data Sheet

Chicago Transit Authority is a self-regulating, municipal corporation, separate and apart from all other governmental agencies. It was created by state legislation without taxing powers and is required by law to charge rates of fare so that its revenues (about 99% fares) are sufficient to pay operating expenses, debt service and costs of maintaining modern transit service.

Chicago Transit Board: Policy-making body of CTA consisting of seven members.

CTA Service Area: All of the county of Cook except six townships in the northwest section and one in the southwest section of the county.

Area Served: All of the city of Chicago and twenty-nine suburban communities.

Start of Operations: October 1, 1947, with properties of the former Chicago Surface Lines and the Rapid Transit Company, and on October 1, 1952, purchased former Chicago Motor Coach Company.

Revenue Bond Financing: Purchases of three companies and other properties were from part of proceeds from sale of $135,000,000 of revenue bonds. Bonds are being retired on schedule and some have been retired in advance of schedule.

Rates of Fare: CTA now operates exclusive transit service in the city of Chicago for one fare—basic adult rate 25¢; certain suburban areas are zoned and the inter-zone adult rate is 40¢.

Annual Gross Revenue: $130,000,000 (1959).

Modernization Program: Total investment or commitment — $140,000,000, including $103,000,000 for 4,386 modern cars and buses; also included are three new bus garages and new and modern shop and garage facilities.

Modernization Program Financing: Almost entirely from depreciation reserve funds accumulated from operating revenues.

CTA Statistics:

Annual revenue passengers—546,000,000 (1959).
Daily revenue passengers—1,800,000 (about 1,000,000 people).
Annual revenue car and bus miles—154,000,000 (1959).
Daily car and bus miles—488,000, equivalent to twenty trips around the world.

Passenger Equipment: 4,493 units: 2,716 motor buses, 561 trolley buses, 1,216 rapid transit cars.

Single-way Route Miles: Bus miles, 1,889; rapid transit miles, 210.

Rapid Transit Track: 160 single-track miles, including 18 miles in the Congress Expressway and 19 miles in subway tubes.

Coverage: 99% of Chicago's population is within three blocks of one or more CTA lines.

CTA's Proposed Transit Improvement Program: A $315,000,000, twenty-year program of rapid transit improvements and extensions to be financed from public funds. Also, for consideration, a system of Park-'N'-Ride garages at strategic spots adjacent to CTA's rapid transit and suburban railroads and a system of below-street passageways and tunnels for arcade shopping in the central business district, to be financed by public and/or private funds.

METROPOLITAN TRANSIT CTA