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Fort Worth's Privately Owned Subway System

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For the past 14 years a small subway system has been carrying passengers into and out of the central business district (CBD) of Fort Worth, Texas. It has two unique features: It is privately owned, and passengers ride it for free. In the early 1960s, two merchants in Fort Worth hit on the idea of providing subway service to their downtown department store from a large parking lot on the banks of the nearby Trinity River. They bought second-hand electric trolley cars from Capitol Transit Company of Washington, D.C., modified them extensively, dug a tunnel from the edge of the parking lot to the lower level of their store, and began operating the subway in February 1963. Tandy Corporation bought the department store in 1967 and continued to operate the subway, which carried nearly 15 000 passengers/d. Tandy is now rebuilding the subway cars to give them a squared-off configuration and many refinements. Introduction of these refurbished cars will coincide with the opening of Tandy Center—an eight-block complex of office buildings and shopping malls in downtown Fort Worth that the subway system will serve. There has been some preliminary exploration of the feasibility of extending the subway system several blocks south through the CBD. This short-haul do-it-yourself subway system has proved that shoppers and downtown workers can be induced to leave their automobiles in a fringe parking lot and ride into the heart of the city by light-rail transit.

For the past 14 years a small subway system has been quietly and steadily carrying passengers into and out of the central business district (CBD) in Fort Worth, Texas. The subway is owned by Tandy Corporation, which was founded in Fort Worth and is headquartered there. Charles Tandy, chairman of the board and chief executive officer of the corporation, says, "We may have the only subway system in town, but we try not to act like it." As proof of this, he points out that passengers ride the subway system free. They also park their automobiles free on a riverbank lot before boarding the subway for the 3-min ride into downtown Fort Worth on the 100-passenger electric cars.

Many of the passengers are unaware that they are riding on what is probably the only privately owned subway system in the world. Most of them are aware that the 1.6-km (1-mile) subway line and all of its equipment and stations are currently undergoing extensive updating and renovation. Later this year, when full service is restored, the subway system will boast a fleet of 10 modernized cars, all air-conditioned, colorfully painted, newly upholstered and carpeted, and equipped with stereo music. The introduction of these completely refurbished cars will coincide with the formal opening of Tandy Center—an eight-block development in downtown Fort Worth that the subway system is primarily intended to serve.

The first phase of Tandy Center, which is now nearing completion, consists of a 19-story office tower, which will house Tandy Corporation's international headquarters; a three-level shopping galleria surrounding an ice-skating rink; and a three-level parking garage. The second phase of construction, now well under way, includes a 20-story office tower and a new Dillard Department Store—the first new department store to be built in the CBD in 40 years. The third phase of Tandy Center, which is still on the drawing boards, calls for a 500-room hotel or a 45-story office tower or, perhaps, both. The subway cars that will begin carrying passengers into the new Tandy Center will bear little resemblance to the old trolley cars purchased from Capitol Transit Company of Washington, D.C., in 1962.

BACKGROUND

The subway is now and always has been a small-scale operation. What makes it interesting to transportation engineers and planners is that it represents a low-cost, do-it-yourself approach to public transit. The Fort Worth subway system contrasts markedly with transit operations in many urban areas throughout the world, some of which are characterized by high costs, high deficits, and high subsidies. Fort Worth's trolley subway system was constructed by a department store and for most of its life has been operated by department store personnel without financial assistance from any level of government—local, state, or federal.

In the early 1960s, Marvin and Obie Leonard, pioneer merchants in Fort Worth, hit on the idea of providing subway service to their downtown store from a large parking lot on the banks of the nearby Trinity River. They figured that free subway service and free parking for automobiles would keep customers coming into their store rather than making their purchases in the suburban shopping malls that were being built around Fort Worth and throughout the nation.

The Leonard brothers bought five electric trolley cars from Capitol Transit Company of Washington, D.C., where the public transit system had just switched over to buses. Since the demand for second-hand trolley cars was limited, the Leonards acquired their small fleet for a total of only $10 000. These were Presidents' Conference Committee (PCC) streetcars, manufactured by the St. Louis Car Company. They were extremely mod-

ern in design and are among the finest transit vehicles ever manufactured; many of them are still in operation in several of our nation's cities. The cars are 2.5 m (8.2 ft) wide, 13.4 m (44 ft) long, and 3.4 m (11.2 ft) high. Each car weighs about 21 Mg (24 tons). All doors are installed on one side; there are double doors in the middle for exit and single doors at the front and the back for rapid entry. Seats for 60 passengers face the center along the length of the cars; the maximum capacity is about 100 passengers (40 standing). Operating speed is about 48 km/h (30 mph).

Employees of Leonards Department Store modernized and customized the five cars, installed several thousand fittings and other items made by hand, refitted the doors so that they would open onto the high-level station platforms, reshaped the cars to make them more modern looking and attractive, and painted them in a combination of blue, white, and silver. Several additional cars were bought later and kept in storage for some years.

The Leonards had previously leased a 3000-space parking lot on the bank of the Trinity River about 1.6 km (1 mile) from their downtown store. In fact, before pursuing the subway idea, they had been using a fleet of buses to haul customers (and others) from the 9.3 hm^2 (23-acre) lot to their store. They had also hired a contractor to dig, by the cut-and-fill method, a tunnel 430 m (1400 ft) from the parking lot to the lower level of Leonards downtown store. Part of the tunnel had to be blasted through solid rock to a depth of 13 m (42 ft). Workers laid a double standard-gauge railroad track through the 6.4-m (21-ft) wide tunnel so that cars could pass each other coming and going. The overall length of the double track was approximately 1220 m (4000 ft)—430 m inside the tunnel and 790 m (2600 ft) outside, on the parking lot.

When construction of the tunnel was completed on February 15, 1963, the M and O Subway—named after Marvin and Obie Leonard—went into operation. Instead of a ribbon-cutting ceremony to mark the occasion, the first subway car arriving at the downtown terminal crashed through a simulated brick wall constructed across the tunnel. By this time the Leonards had an investment of about $1 million in their subway system. About half had gone into constructing the tunnel and buying and laying the track; the other half had been used to buy and modify the trolley cars, build the stations, pave the parking area, and supply such things as fencing and landscaping.

The parking area along the riverbank was offered free to everyone, customer or noncustomer, together with a free subway ride into downtown Fort Worth; there was service every few minutes between three stations on the parking lot and a station in the basement of Leonards Department Store. The service was used not only by the store's customers but also by its employees, other workers in the CBD, shoppers in general, visitors to the CBD, and tourists. As a matter of fact, the subway began operating on rush-hour frequencies at 7:30 a.m. in order to carry commuters from their free parking spaces to their downtown jobs, even though Leonards Department Store did not open its doors for business until 10:00 a.m.

Ridership on the subway has always been fairly high, averaging 10 000 to 15 000 passengers/d. At peak periods, the five cars were delivering 500 passengers to the store and parking lot every 8 min. A survey taken in a week in December in the early 1970s indicated that approximately 12 000 people rode to the store on a Tuesday, 24 000 on a Thursday, and 50 000 on a Saturday.

Leonards bore the entire cost of operation as well as the cost of buying and modifying the trolley cars, constructing the tunnel and the four stations, and leasing and maintaining the parking lot; the M and O Subway was considered public-service advertising. Operating costs during peak years were about $118 000/yr. This figure included salaries of drivers and maintenance people, costs of replacement parts for the cars, track repairs, ground maintenance, overhead trolley wire, the generator system, and electrical service.

In 1967 Leonards Department Store was sold to Tandy Corporation. The subway system came with the store. Tandy Corporation retained the Leonards name, continued to operate the store and the subway system on practically the same basis, and expanded Leonards into three suburban shopping malls.

In 1974 Tandy Corporation sold Leonards Department Stores—downtown and suburban—to Dillard Department Stores, which is headquartered in Little Rock, Arkansas. By contractual agreement with Dillard, Tandy continued to operate the subway system into downtown Fort Worth. Tandy was willing to do this because, by this time, it was proceeding with its plan to develop an eight-block area in downtown Fort Worth to be known as Tandy Center. Tandy had already bought outright or had obtained long-term leases on eight contiguous blocks including and surrounding the department store. The subway system, which features free parking and free rides, is likely to be a major factor in the success of this downtown revitalization, which, like the subway operation, is being carried out without any financial support from federal, state, or local governments.

PRESENT OPERATION

The subway system is now in a period of transformation. The current fleet of 10 trolley cars is once again undergoing a metamorphosis, this one even more complete than when the cars were purchased 15 years ago. Some of the caterpillars have already turned into butterflies. The finished products no longer look much like trolley cars. Gone is their bullet shape, with curving windshields on each end and small windows topped by transom panes along the sides. The sleek new cars, modeled along the lines of the cars used in San Francisco's rapid transit system, have a squared-off configuration that features broad expanses of tinted window glass. The exteriors of the cars are being completely covered with 14-gauge welded steel.

Tandy has continued the do-it-yourself approach of this transit operation. Redesign of the cars was handled in house. A subway crew of 18 drivers, maintenance men, and mechanics is doing all of the work on the cars, tearing them down to their frames and rebuilding them to the new design. Each member of the crew has worked at times as painter, welder, upholsterer, and electrician (and even paperhanger) and has still handled his regular shift as driver or maintenance man for the old cars still in daily operation.

The interior and exterior color schemes of the rebuilt cars will vary. Each car will be carpeted with artificial turf, will have walls and ceiling covered with textured vinyl, and will be fitted with new seats upholstered in either textured vinyl or velvet. Tandy Corporation's Radio Shack Division is installing stereo equipment in the air-conditioned cars. Other refinements include special fluorescent lighting, climate-controlled cooling and heating, and operating controls at each end of the cars to permit change in direction at each end of the track. The cost of converting the prototype car to the new configuration was about $60 000. The cost of converting the next three or four cars was slightly less; the cost is expected to drop very little for later cars because no two cars will be exactly alike.

Workers are also busy renovating the track and road-

bed for the subway, creating a base for a smoother ride. The tunnel is being widened as it approaches Tandy Center so that three loading platforms can be built there; new floodlights have been installed on the parking lot; and the entire parking area is being resurfaced. While all of this is going on, 40-passenger buses are being used to carry passengers from the parking lot to Dillard's downtown store and bring them back. Rides on these temporary buses, of course, are free. These buses now run from 7:15 a.m. to 9:30 p.m. on Monday, Friday, and Saturday, and until 6:30 p.m. on Tuesday, Wednesday, and Thursday.

FUTURE OPERATIONS

The goal is to have most of the cars modernized and the work on the parking lot and loading stations completed by the time the first phase of Tandy Center formally opens in late 1977. At that time, load factors on the subway system are expected to rise somewhat because there will be additional shoppers and workers going into and out of the downtown area. The three-level shopping mall in Tandy Center will lure shoppers; the ice-skating rink around which the galleria is built will attract both skaters and spectators; and the 19-story office tower will attract hundreds of employees who will daily park their cars on the riverbank lot and ride the subway to work. The subway system will probably extend its hours of operation to accommodate the extra traffic.

Business on the short-haul subway will get another boost when the second phase of Tandy Center is completed in 1978. This phase entails a 20-story office tower and a new Dillard Department Store. An estimated 3000 persons will ultimately work in the center's first two office buildings and there will be more workers and more shoppers interested in free parking and free subway rides. Approximately 12 000 other people work within two blocks of Tandy Center.

The third phase, which is still in the planning stage, will include a 500-room hotel. In between the second and third phases of Tandy Center will come the completion of a new public library building on a two-block site adjacent to Tandy Center, in fact connected to it by means of an underground passageway. Like Tandy Center, the library will have much of its activity below ground level, and shoppers and library patrons can move freely from one activity to the other. It will be only a short walk from the library to the subway platform on the same level, which means that the subway system is likely to be carrying many more library patrons than is now the case. The subway traffic will probably also include the employees of a large insurance firm, which is building its home office near the public library building and Tandy Center.

At this rate, the 3000-space parking lot on the riverbank may have more business than it can handle. This is not considered a problem. A second deck will be erected on the lot that will double the lot's capacity. Some preliminary planning has already been done.

There has been some discussion and some preliminary planning about the possibility of extending the subway system several blocks farther south through the CBD to a parking lot on the south side of downtown Fort Worth; the city government and the federal government would foot the construction bill on some kind of matching basis. A preliminary engineering plan and report on the Fort Worth CBD subway, conducted under technical study grants from the Urban Mass Transportation Administration, was completed in 1974. This report concluded that construction of a 1.7-km (5600-ft) extension of the existing subway through the CBD is, from an engineering standpoint, practical and feasible. The report estimated the cost of such a new line at approximately $54 million and the time required to design and construct it at approximately 5 years.

It is evident that this interesting adventure in small-scale rail transit deep in the heart of Texas is turning out quite well. Its future is even brighter than its 14-year past.

OBSERVATIONS ON THE SUBWAY SYSTEM

This short-haul subway system, with its free rides and its free parking, is a happy blend of a private interest and the public interest. The department-store owners who installed the subway system felt that it would be good for their business and good for their city. Tandy Corporation, the present owner and operator of the subway system, feels the same way. The subway system—because it puts private automobiles on a riverbank parking lot rather than into the CBD—cuts down on street congestion, particularly during peak periods. It also reduces, at least modestly, the need for downtown parking facilities.

Tandy Center, which will eventually cover eight blocks and be served by the free subway system, is certain to be a strong rejuvenating influence on downtown Fort Worth. Like other large and medium-sized cities across the country, Fort Worth has seen its CBD lose ground in recent years to suburban shopping malls. But it has moved forward more than most cities in the past decade or so. A new convention center was built in 1968, and a municipal building was opened in 1971. There are also a 37-story bank building opened in 1974 and the public library building, insurance building, and eight-block Tandy Center described above.

In addition, the whole Dallas-Fort Worth area (part of the so-called sun belt) is steadily growing in population and attractiveness to industry. Among the major factors in the future growth of the area is the new Dallas-Fort Worth airport, the second largest airport in the world. This airport, midway between Dallas and Fort Worth, is likely to be more of a boon to Fort Worth than to Dallas because, until the airport opened 3 years ago, Fort Worth passengers had to land and take off at Love Field in Dallas. The Dallas-Fort Worth airport also includes a small automated fixed-route transit system that interconnects all parts of the gigantic airport, but that is another story.

It is difficult, if not impossible, to pin down the value capture involved in Tandy Corporation's subway system in Fort Worth. We bought a department store, and the subway came with it. The price paid for the department store was unquestionably somewhat higher because of the subway. Later, we bought or leased eight contiguous blocks in downtown Fort Worth surrounding the downtown terminal of the subway system in order to build Tandy Center. By this time, however, the subway system had already been operating for a decade, and any appreciation in land values of the eight blocks was captured by somebody else—those who sold the land to Tandy. This appreciation, however, was probably modest, because there was only one downtown subway station, and it was in the department store.

In summary, the subway situation in Fort Worth is short on theory and long on practice. What we have done is perhaps not entirely in keeping with some of the theories held by transit authorities and transportation experts. It has involved no expensive computer-controlled equipment. It has required no federal, state, or municipal funds. What Tandy Corporation has done in Fort Worth, using its own funds and its own personnel and tried-and-true equipment, is to build, operate, and

continually update a short-distance, low-cost subway system and parking lot, offering both of them free to all comers.

In return—and it may be a bigger return than you think—all passengers must leave the subway at Tandy Center and board it there for the return trip to the parking lot. Very few downtown shopping malls and office towers can offer as inducements to prospective tenants a free subway system and parking lot for the customers and the employees of tenants. This privately owned and operated subway system has successfully proved during its 14-year history that it can induce shoppers and downtown workers to leave their beloved automobiles in a fringe parking lot and ride into the heart of the city by light-rail transit.