

APPENDIX
OUTLINE OF
SELECTED NEW TRANSPORT SYSTEMS

LIST OF THE SYSTEMS

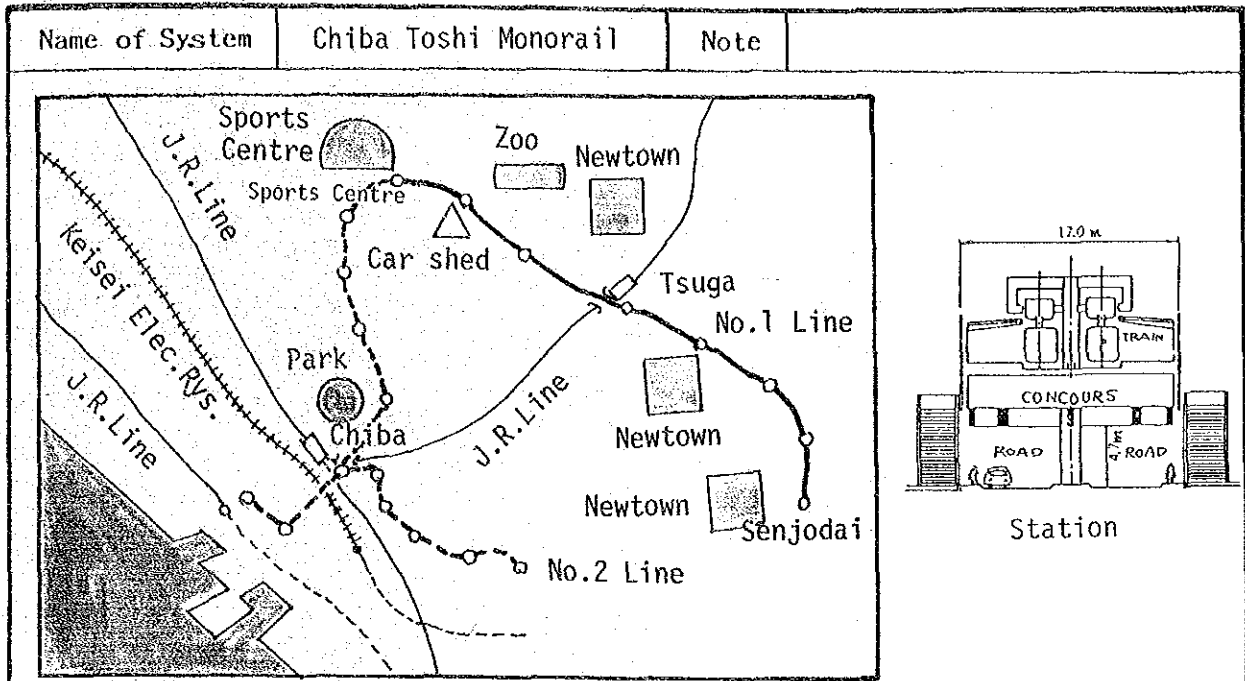
System/Project Name Name	System Category	Location	Year Operation Started	Remarks
1. Chiba Toshi Monorail	Monorail	Japan	in 1988	
2. Shonán Monorail Co.	-ditto-	Japan	in 1974	
3. Tokyo Monorail Co.	-ditto-	Japan	in 1964	
4. Kita-Kyushu Monorail	-ditto-	Japan	in 1985	
5. Sydney	Mini- Monorail	Australia	in 1987	
6. Sentosa Monorail	-ditto	Singapore	in 1982	
7. Kobe Port Liner	ICT	Japan	in 1981	
8. Osaka-Nanko Port Town Line	-ditto-	Japan	in 1981	
9. Seibu Yamaguchi Line	-ditto-	Japan	in 1985	
10. Saitama Ina Line	-ditto-	Japan	in 1983	
11. Yamaman Yakarigaoka Line	-ditto-	Japan	in 1983	
12. Atlanta Air Port AGT	-ditto-	USA	in 1980	
13. Miami Metromover	-ditto-	USA	in 1986	
14. VAL & Lille AGT	-ditto-	France	in 1983	
15. Airtrans, Dallas-Fortworth	-ditto-	USA	in 1973	
16. Morgantown AGT	-ditto-	USA	in 1974	
17. Pittsburgh PAAC	-ditto-	USA	in 1978	
18. H-Bahn	Monorail	W.Germany	in 1983	
19. Cabinen Taxi	PRT	W.Germany	in 1972	Rotary Motor
20. Monocab	-ditto-	USA	in 1972	
21. M-Bahn	ICT	W.Germany	in 1983	Magnete- Levitated
22. Birmingham Air Port AGT	-ditto-	UK	in 1987	Linear Motor
23. Dockland LRT	LRT	UK	in 1987	
24. Sky Train	-ditto-	Canada	in 1986	
25. Torino ATM	-ditto-	Italy	in 1982	
26. Hiroshima LRT	-ditto-	Japan	in 1982	

Source : Study Team

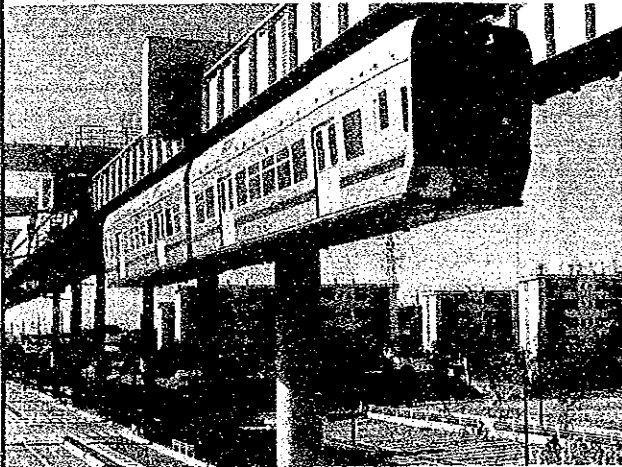
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (1)

General Information	Project Name : Chiba Toshi Monorail		Developer : Chiba Toshi Monorail Co., Ltd	
	Applied System : Suspended type monorail			
	Manufacturer/Developer : Mitsubishi Heavy Industry Co.			
	Status : Under Construction			
Current Operation	Location of the System : Chiba City (Sports centre Senjo-dai)			
	Route length(km) : 8.1 <u>1/</u>		Route Configuration : Double track	
	No. of station : 8		Station Spacing (m) : 1,200	
	No. of Pass Carried : <u>2/</u>			
	Total Train/Car kms per day : -			
	Operating Hours : 5:40 - 23:30			
	No. of cars owned : -		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : Yen 130,100 million (Yen 8,400 million/km)			
Structure /Track	Track Support System : Steel piers, i.e., T-shape, portal shape			
	Track Structure : Box section steel beam			
Vehicle Features /Performance	Body Material : Aluminium alloy		Propulsion : 65 KW DC motor x 4/car	
	Capacity : 42 seating and 37 standee per car		Speed(kph) max/practical : 60/28	
	L x W x H(m) : 14.8 x 2.58 x 3.085		Headway(min) min/practical : 7'30"/15'	
	Weight(ton) : 21.5 ton/can		Acc/Dec Speed(km/h/sec) : 3.5/3.5-4.5E	
	Train Composition : 2 cars/train		Max Gradient (%) : 60	
	Car Support : Rubber tired		Min Curvature(m) : 50	
	Transport Capabilities :			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable rail			
	Total Traffic Control : Dispatcher System			
	Operation Control : One man			
	Telecommunication : Radio telephone			
Power System : 1,500 V DC				
Remarks	<u>1/</u> : The other section of 7.4 km long is in planning <u>2/</u> : 140,000 passengers (first year 1987)			

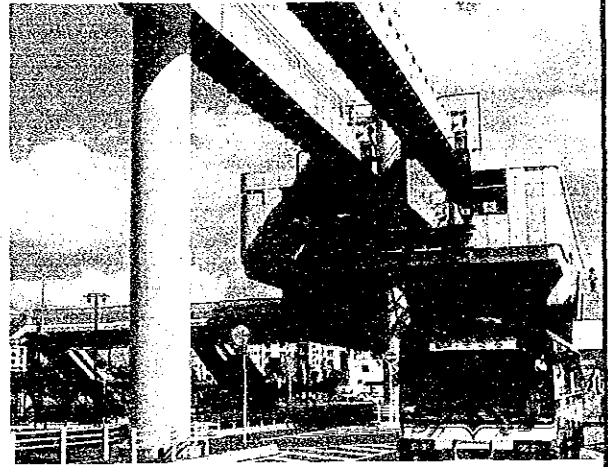
(continued)



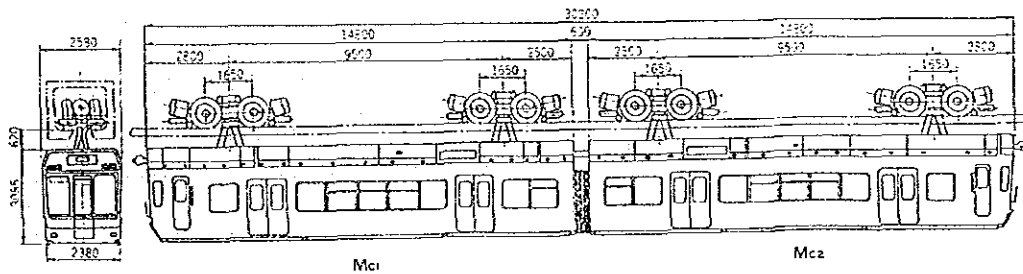
Route map



Suspension type monorail car



Station



Size of car

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (2)

General Information	Project Name : Shonan Monorail	Developer : Shonan Monorail Co.
	Applied System : Suspended type monorail	
	Manufacturer/Developer : Mitsubishi Heavy Industry Co. (MHI/MELCO)	
	Status : In operation since March 1970	
Current Operation	Location of the System : Kamakura City (Ofuna - Shonan Enoshima)	
	Route length(km) : 6.6	Route Configuration : Single track
	No. of station : 8	Station Spacing (m) : 943
	No. of Pass Carried : 8,076,000 passengers/year (1985)	
	Total Train/Car kms per day : 1,236/2,847	
	Operating Hours : 5:45 - 24:03	
	No. of cars owned : 17 cars	No. of Employee : 85
	Estimated Revenue/Expenses : Yen 1,195 million/year/Yen 1,023 million	
	Construction Cost : 5,300 million (800 million/km)	
Structure /Track	Track Support System : steel piers, ie T-shape, inverted L-shape, portal shape	
	Track Structure : Box section steel beam	
Vehicle Features /Performance	Body Material : Aluminium alloy	Propulsion : 55 KW DC Motor x 4/car
	Capacity : 81 passengers/car <u>1/</u>	Speed(kph) max/practical : 60/30.5
	L x W x H(m) : 13.0 x 2.65 x 3.136	Headway(min) min/practical : 7'30"/15'00"
	Weight(ton) : 17.0 t/car	Acc/Dec Speed (km/h/sec): 3.5/3.5 <u>2/</u>
	Train Composition : 2 cars/train	Max Gradient (%) : 60
	Car Support : Rubber tired	Min Curvature(m) : 120
	Transport Capabilities : 3,000 passengers/hour/direction	
Operation System	Guidance : Lateral guide wheels	The other characteristics :
	Switching : Movable rail	
	Total Traffic Control : Dispatcher system	
	Operation Control : 2 mini	
	Telecommunication : Radio telephone	
Power System : 1,500 V DC		
Remarks	<u>1/</u> Capacity: 68 passenger/car (based on 0.35sqm/passenger) <u>2/</u> 4.5 for evergency	

(continued)

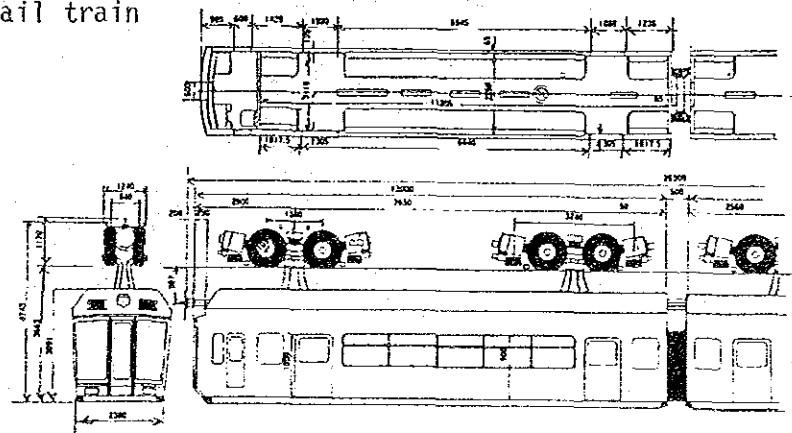
Name of System	Shonan Monorail	Note	
----------------	-----------------	------	--



Route map



Suspension type monorail train



Car size

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (3)

General Information	Project Name : Tokyo Monorail		Developer : Tokyo Monorail Co; Ltd	
	Applied System : Straddle Type Monorail			
	Manufacturer/Developer : Hitachi Seisakusho			
	Status : In operation since September 1964			
Current Operation	Location of the System : Tokyo City (Hamamotsu-cho-Haneda A.P.)			
	Route length(km) : 13.0		Route Configuration : Double Track	
	No. of station : 6		Station Spacing (m) : 2,600	
	No. of Pass Carried : 31,984,000 passengers/year (1985)			
	Total Train/Car kms per day :			
	Operating Hours : 5:50 - 23:10			
	No. of cars owned : 59 cars		No. of Employee : 315 (64 in head office)	
	Estimated Revenue/Expenses : Yen 6,516 million/Yen 5,649 million per year			
	Construction Cost : Yen 21,100 million (1600 million/km)			
Structure /Track	Track Support System : Reinforced concrete piers			
	Track Structure : P.C. concrete beam			
Vehicle Features /Performance	Body Material : steel		Propulsion : 65 kw DC Motor x 4/car	
	Capacity : 95 passenger/car		Speed(kph) max/practical : 90/48	
	L x W x H(m) : 30.4 x 3.02 x 4.35 <u>1/</u>		Headway(min) min/practical : 5/15	
	Weight(ton) : -		Acc/Dec Speed(km/h/sec) : 2.7/4.5	
	Train Composition : 6 cars/train		Max Gradient (%) : 60	
	Car Support : Rubber tired		Min Curvature(m) : 120	
	Transport Capabilities : 10,000 passenger/hour/direction			
Operation System	Guidance : Lateral guide wheel		The other characteristics :	
	Switching : Movable track beam			
	Total Traffic Control : Dispatcher System			
	Operation Control : 2 men <u>2/</u>			
	Telecommunication : Radio telephone			
Power System : 750 V DC				
Remarks	<u>1/</u> : Length of 2 cars <u>2/</u> : A motor-man and a conductor			

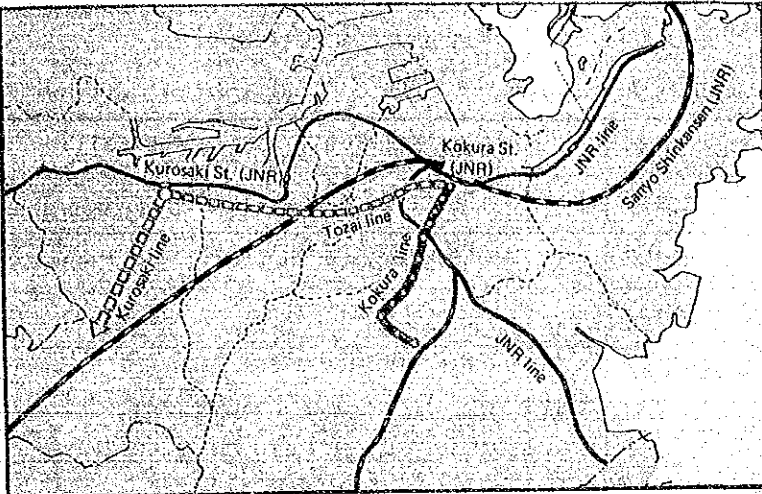
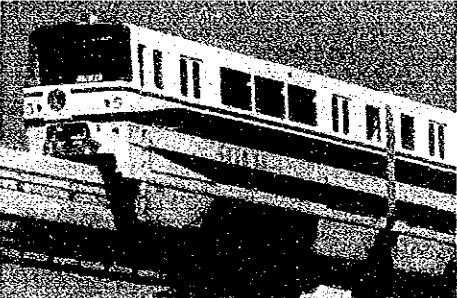
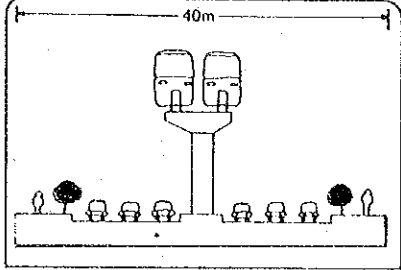
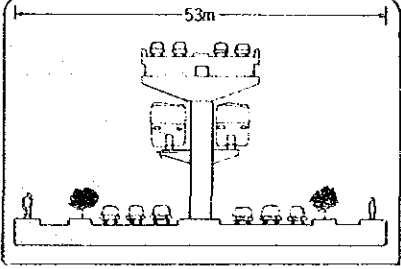
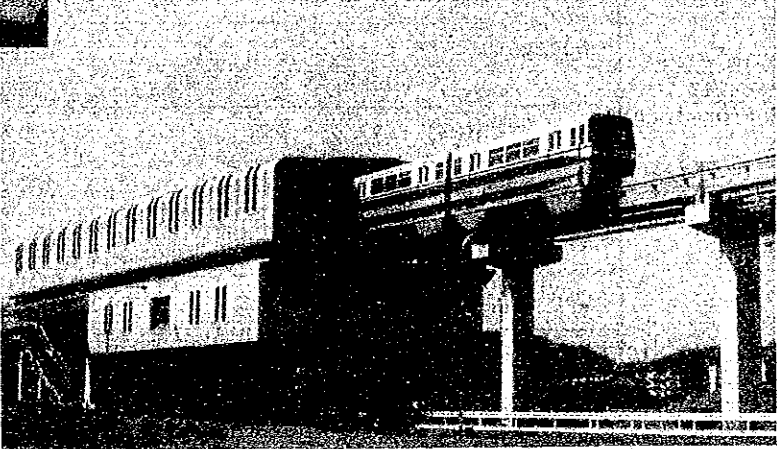
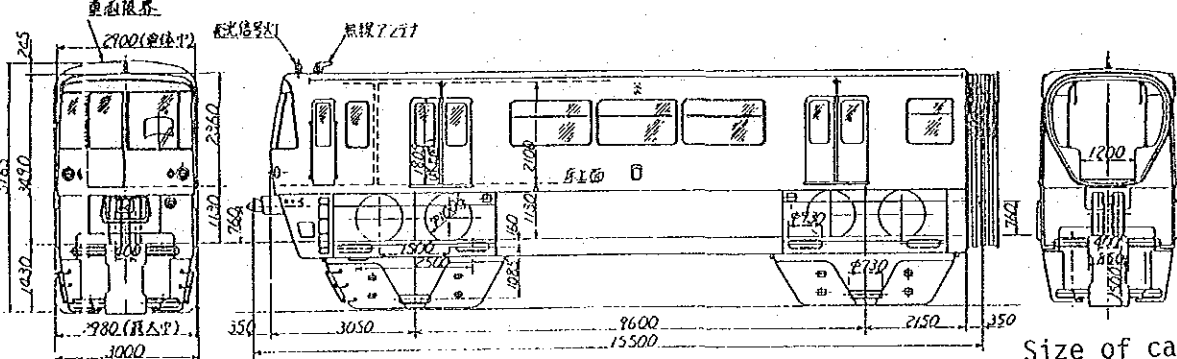
(continued)

Name of System	Tokyo Monorail	Note
<p>For Tokyo Shibuya Hamamatsu-cho Yamanote Line Shinagawa Tokaido Line Keihin Tohoku Line Kawasaki Tokyo Bay Haneda Monorail Haneda Airport</p>		<p>Size of track beam</p>
<p>Route map</p>		<p>Car body Running wheel (Rubber tired) Guide wheel (Rubber tired) Track beam</p>
		<p>Monorail car</p>

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (4)

General Information	Project Name : Kita-Kyushu Monorail		Developer : Kita-Kyushu Kosoku Rys.Co.	
	Applied System : Straddle Type Monorail			
	Manufacturer/Developer : Hitachi Seisakusho			
	Status : In operation since January 1985			
Current Operation	Location of the System : Kokura Line, Kita-Kyushu City, Japan			
	Route length(km) : 8.4		Route Configuration : Double Track	
	No. of station : 12		Station Spacing (m) : 763	
	No. of Pass Carried : 2,700 passengers/day (1985)			
	Total Train/Car kms per day : $\frac{649,000 \text{ train-km/year, } 25,496,000 \text{ car-km/year}}{(1,778.1 \text{ train-km/day, } 69,852 \text{ car-km/day})}$			
	Operating Hours : 5:45 - 23:43			
	No. of cars owned : 36 cars		No. of Employee : 141 (47 in head office)	
	Estimated Revenue/Expenses : Yen 1,497 million / N.A.			
	Construction Cost : Yen 34,900 million (41,500 million/km)			
Structure /Track	Track Support System : Steel pylons and reinforced concrete pylons			
	Track Structure : P.C. concrete beam			
Vehicle Features /Performance	Body Material : Aluminium Alloy		Propulsion : 75 kw DC Motor x 4/car	
	Capacity : Total 114 - 125 passenger/car		Speed(kph) max/practical : 80/27	
	L x W x H(m) : 15.5 x 2.98 x 3.49		Headway(min) min/practical : 10/20	
	Weight(ton) : 25.4 - 27.6 t/car		Acc/Dec Speed(km/h/sec) : 3.5/4.0 ^{2/}	
	Train Composition : 4 cars/train		Max Gradient (%) : 60%	
	Car Support : Rubber tired		Min Curvature(m) : 80 (50 in car shed)	
	Transport Capabilities : 21,300 passenger/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics : Car body : Flat floor type	
	Switching : Movable track beam			
	Total Traffic Control : Dispatcher System			
	Operation Control : One man			
	Telecommunication : Radio telephone			
Power System : 1,500 V DC				
Remarks	<u>1/</u> Capacity: 94 - 104 passenger/car (based on 0.35sqm/passenger) <u>2/</u> 4.5 for emergency			

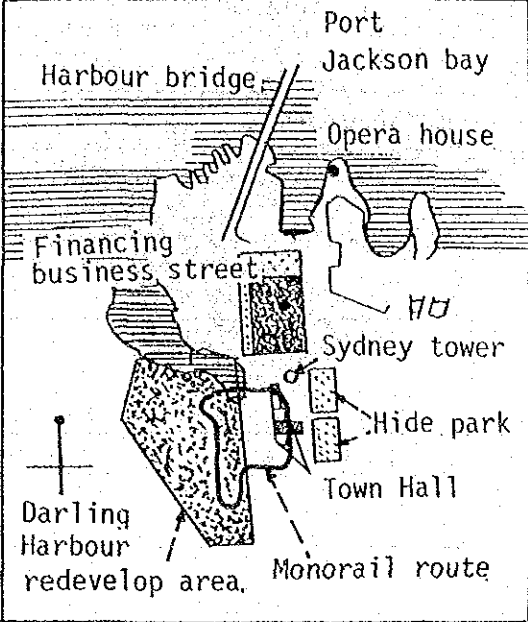
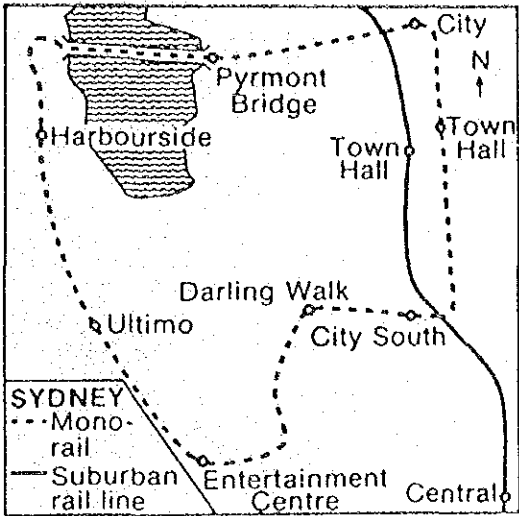
(continued)

Name of System	Kita-Kyushu Monorail	Note
		
<p>Route map</p>		
		
<p>Monorail train</p>		
<p>Dual Utilization of Road Space</p> 		
<p>Section from Kokura to Katano</p> 		
		
<p>Monorail station</p>		
 <p style="text-align: right;">Size of car</p>		

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (5)

General Information	Project Name : Sydney Monorail		Developer : Thomas Nationwide Transport	
	Applied System : Straddle Type Monorail			
	Manufacturer/Developer : Von Rool - Habegger (Switzerland)			
	Status : In operation since September 1988			
Current Operation	Location of the System : (TNT - Harbourside) Sydney City, Australia			
	Route length(km) : 3.8		Route Configuration : Single track(loop)	
	No. of station : 8 <u>1/</u>		Station Spacing (m) : 450	
	No. of Pass Carried : 10			
	Total Train/Car kms per day : -			
	Operating Hours : -			
	No. of cars owned : 7 trains		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : 40 million \$A (11.1 million \$A/km)			
Structure /Track	Track Support System : Steel columns			
	Track Structure : Steel box girder			
Vehicle Features /Performance	Body Material : Aluminium Alloy		Propulsion : 37kw DC Motor x 6/train	
	Capacity : 56 seating and 114 standee at crush load		Speed(kph) max/practical : 33/18	
	L x W x H(m) : 32 x 2.05		Headway(min) min/practical :	
	Weight(ton) : 22 t/train		Acc/Dec Speed(km/h/sec) : 2.52/2.52	
	Train Composition : 7 cars/train		Max Gradient (%) : Up:44, down 60	
	Car Support : Rubber tired		Min Curvature(m) :	
	Transport Capabilities : 5,000 passengers/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : -			
	Total Traffic Fully automated Control : CPU controlled			
	Operation Control : Train : one man Station: two man			
	Telecommunication : Radio telephone between train and control centre			
	Power System : 500 V three phase AC <u>2/</u>			
Remarks	<u>1/</u> Only 3 stations open for the public in the initial stage <u>2/</u> Solid state thyristor to convert AC to DC voltage. <u>3/</u> An emergency deceleration of 7.2 km/h/sec.			

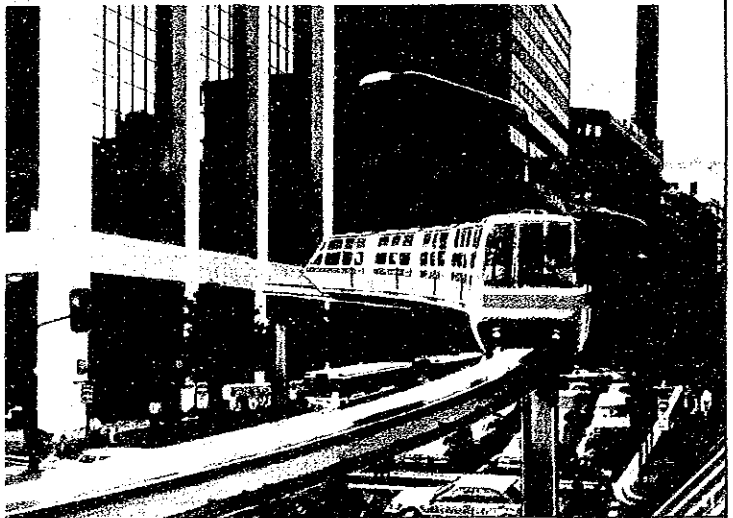
(continued)

Name of System	Sydney Monorail	Note
 <p data-bbox="422 1010 475 1043">Map</p>	 <p data-bbox="826 891 1343 947">SYDNEY'S monorail will connect the city centre with Darling</p> <p data-bbox="1002 1010 1150 1043">Route map</p>	

Figure, Drawing, Photograph, etc.



Monorail Train

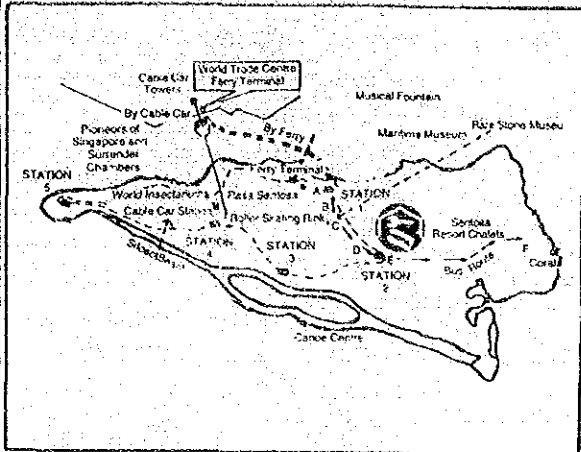


SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (6)

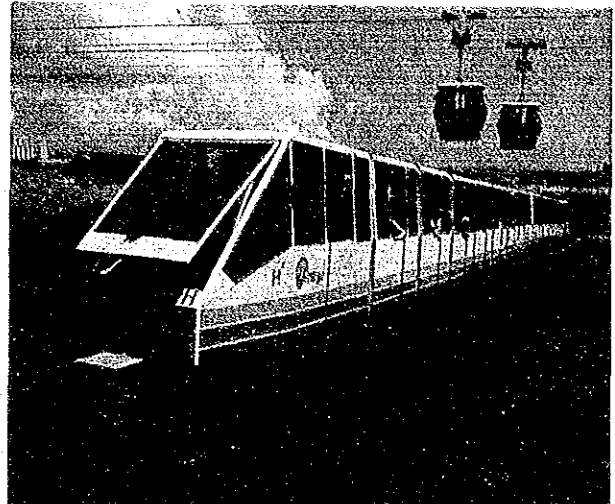
General Information	Project Name : Sentosa Monorail	Developer : Sentosa Development Corporation (SDC)
	Applied System : Straddle type monorail system for four of Sentosa	
	Manufacturer/Developer : Von Roll-Habegger (Switzerland)	
	Status : In operation since December 1982	
Current Operation	Location of the System : Sentosa Island, Singapore	
	Route length(km) : 6.2 (Loop Line)	Route Configuration : Single track
	No. of station : 6	Station Spacing (m) : 1,000
	No. of Pass Carried : -	
	Total Train/Car kms per day : -	
	Operating Hours : 09:00 - 22:00	
	No. of cars owned : 13 trains	No. of Employee :
	Estimated Revenue/Expenses : -	
	Construction Cost : S\$16 million (S\$2.6 million/km)	
Structure /Track	Track Support System : Box section steel piers	
	Track Structure : Box section steel girder	
Vehicle Features /Performance	Body Material : Alluminium Alloy	Propulsion : 3.3 kw DC motor x 14/train
	Capacity : 90 seat/train (Non Standee)	Speed(kph) max/practical : 25 (assumed)
	L x W x H(m) : 32.245 x 1.5 x 1.7	Headway(min) min/practical : 1/2
	Weight(ton) : -	Acc/Dec Speed(km/h/sec) : 3.5/3.5 ^{1/}
	Train Composition : 16 cars/train	Max Gradient (%) : -
	Car Support : Rubber tired	Min Curvature(m) : -
	Transport Capabilities : 2,700 - 5,400 passengers/hour/direction	
Operation System	Guidance : Lateral guide wheels	The other characteristics :
	Switching : Revolver type	
	Total Traffic Control : Dispatcher System	
	Operation Control : One man	
	Telecommunication : Wireless telephone	
	Power System : 400 V AC, 3 phase	
Remarks	1/ 5.0 for emergency	

(continued)

Name of System	Sentosa Monorail	Note	
----------------	------------------	------	--

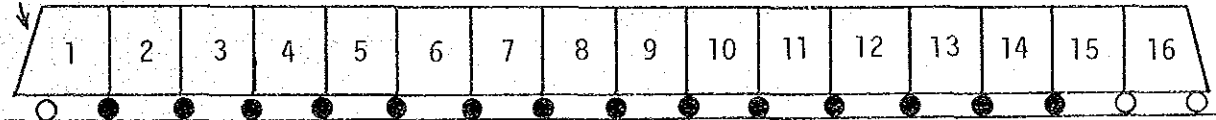


Map of route



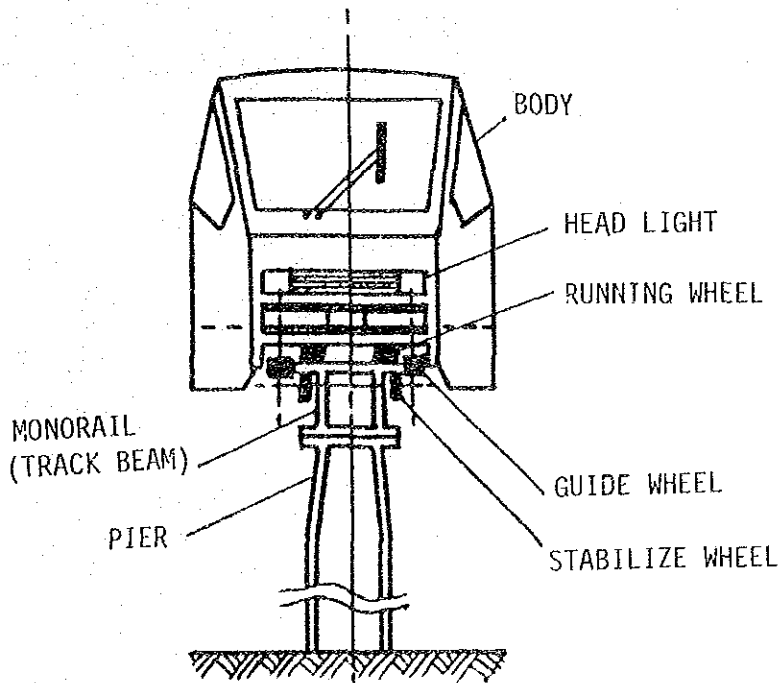
Monorail and cable car

LEADING CAR



- DRIVING WHEEL
- TRAIL WHEEL

Train composition

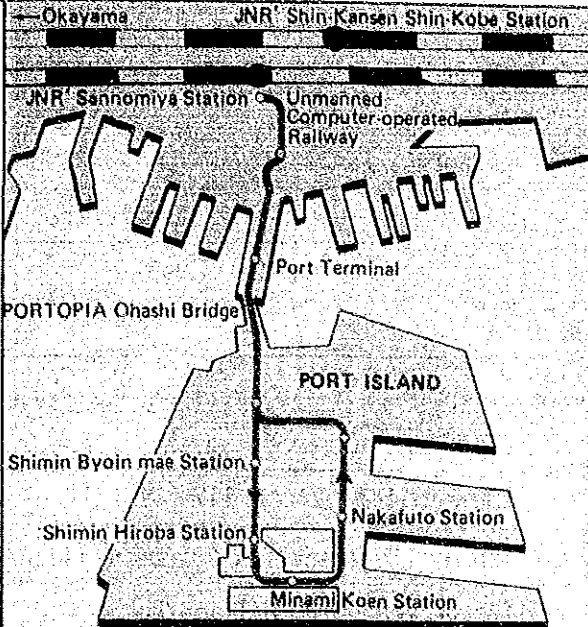
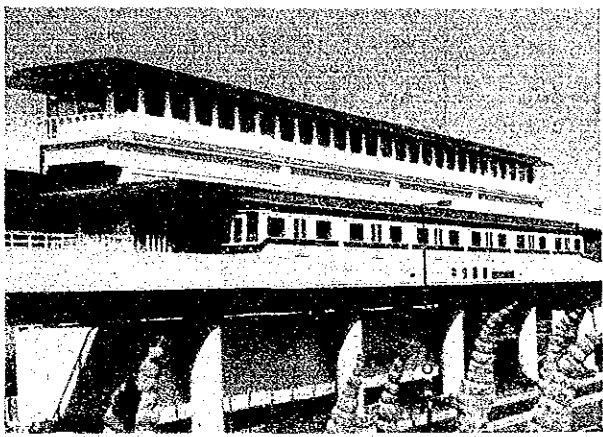
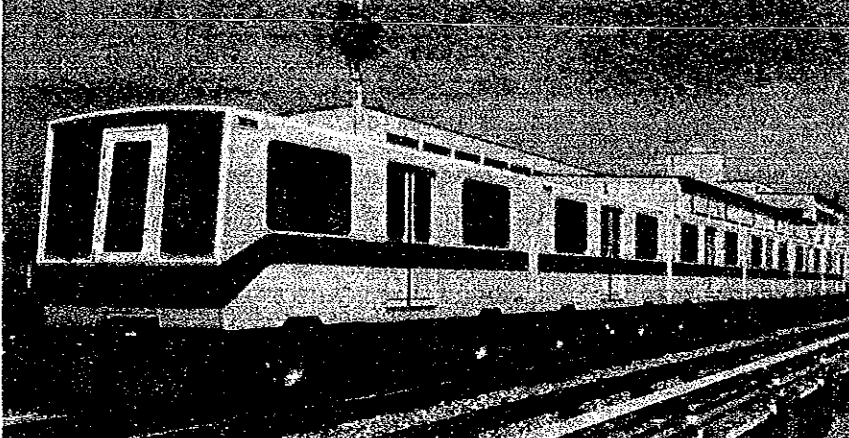

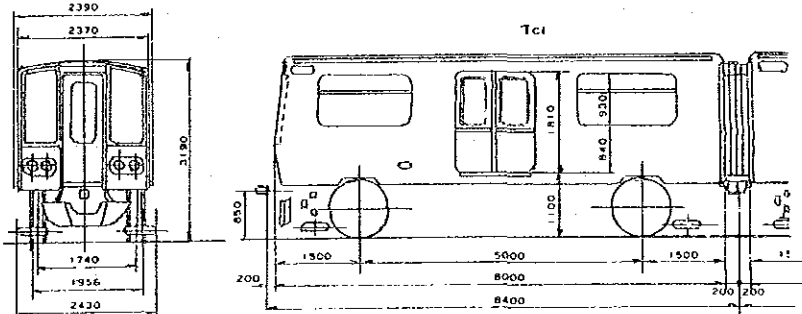


Schematic diagram of monorail construction

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (7)

General Information	Project Name : Kobe Portliner	Developer : Kobe-Shinkotsu Co., Ltd
	Applied System : Intermediate Capacity Transit System	
	Manufacturer/Developer : Kawasaki Heavy Industry Co., Ltd	
	Status : In operation since February 1981	
Current Operation	Location of the System : Kobe port island, Kobe City, Japan	
	Route length(km) : 6.4	Route Configuration : Double track and Single loop track
	No. of station : 9	Station Spacing (m) : 711
	No. of Pass Carried : 42,000 passenger/day (1985)	
	Total Train/Car kms per day : 461,000 train-km/year/2,771,000 car-km/year (1,263.0 train-km/day/7,591.8 car-km/day)	
	Operating Hours : 5:44 - 23:58	
	No. of cars owned : 72 cars	No. of Employee : 124 (44 in head office)
	Estimated Revenue/Expenses : Yen 2,470 million/year/2,518 million/year	
	Construction Cost : Yen 21,100 million (Yen 6,800 million/km)	
Structure /Track	Track Support System : Steel column, etc	
	Track Structure : Steel beam, etc.	
Vehicle Features /Performance	Body Material : Aluminium Alloy	Propulsion : 90 kw DC motor x 8/train
	Capacity : 8-20 seat and 55 standee	Speed(kph) max/practical : 60/21
	L x W x H(m) : 8.4 x 2.39 x 3.19	Headway(min) min/practical : 2.5/4-15
	Weight(ton) : 10.5/car	Acc/Dec Speed(km/h/sec) : 3.5/3.5 ^{1/}
	Train Composition : 6 cars/train	Max Gradient (%) : 50
	Car Support : Rubber tired	Min Curvature(m) : 30
	Transport Capabilities : 10,000 passenger/hour/direction	
Operation System	Guidance : Lateral guide wheels	The other characteristics : Platform doors installed
	Switching : Vertical diverting of guide rail	
	Total Traffic Control : Fully automated	
	Operation Control : Unman	
	Telecommunication : Inductive radio telephone	
Power System : 600 V AC, 3 phase 60 HZ		
Remarks	<u>1/</u> 4.5 for emergency	

(continued)

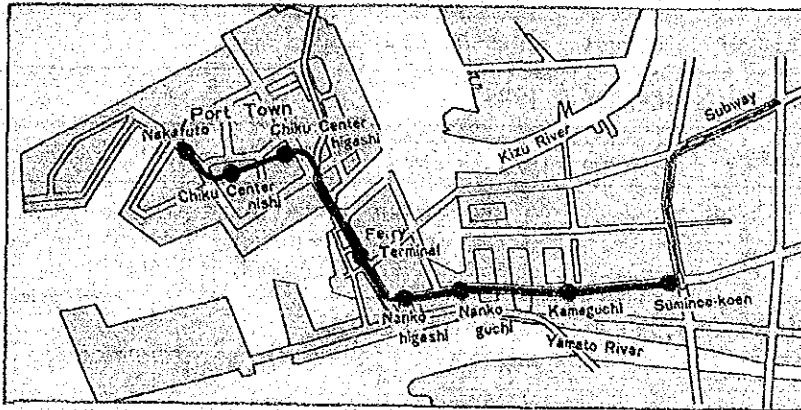
Name of System	Kobe Port Liner	Note	Kobe Shin-Kotsu Co.,Ltd.
	<p data-bbox="813 380 957 414">Route map</p>  <p data-bbox="1149 996 1428 1030">Naka-koen station</p>		
	<p data-bbox="1085 1377 1228 1411">IMCT cars</p>		
	<p data-bbox="574 1556 861 1590">Inside view of car</p>  <p data-bbox="957 2004 1133 2038">Size of car</p>		

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (8)

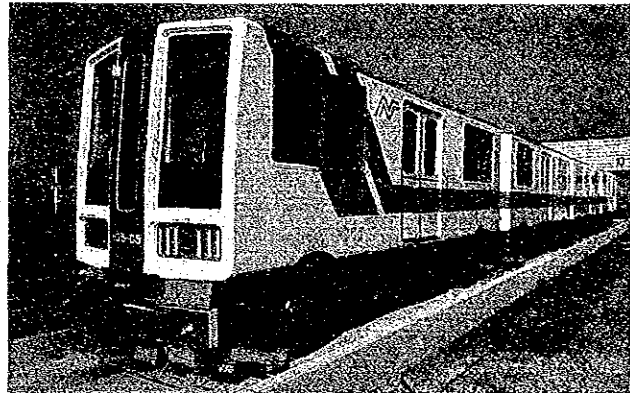
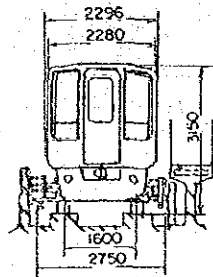
General Information	Project Name : Osaka Nanko-Port Town Line	Developer : Osaka Municipal Government
	Applied System : Intermediate Capacity Transit System	
	Manufacturer/Developer : Nigata Tekkosho Co., Ltd	
	Status : In operation since March 1981	
Current Operation	Location of the System : South Harbour Area, Osaka City	
	Route length(km) : 6.6	Route Configuration : double tracked
	No. of station : 8	Station Spacing (m) : 943
	No. of Pass Carried : 43,000/day in 1987	
	Total Train/Car kms per day : 854,000 train-km/year/3,419,000 car-km/year (2,339.7 train-km/day/9,367.1/car-km/day)	
	Operating Hours : 5:17 - 0:03	
	No. of cars owned : 52	No. of Employee : 117
	Estimated Revenue/Expenses : Yen 114,480 million/year/Yen 93,684 million/year	
	Construction Cost : Yen 42,000 million or Yen 6,100 million/km	
Structure /Track	Track Support System : Elevated, RC pier	
	Track Structure : RC	
Vehicle Features /Performance	Body Material : Steel	Propulsion : A 90 kw DC Motor/Car
	Capacity : 22-24 seating and 72-75 standee <u>3/</u>	Speed(kph) max/practical : 60 x 27
	L x W x H(m) : 8.0 x 2.29 x 3.15	Headway(min) min/practical : 2 1/4 /7
	Weight(ton) : 10.5/car	Acc/Dec Speed(km/h/sec) : 3.5/4.0
	Train Composition : 4 cars/train	Max Gradient (%) : 70
	Car Support : Rubber tired	Min Curvature(m) : 30
	Transport Capabilities : 12,600 passenger/hour/direction	
Operation System	Guidance : Lateral guide wheels	The other characteristics : 1) Platform doors installed
	Switching : Movable guide plate	
	Total Traffic Control : Fully automated	
	Operation Control : Unman <u>1/</u>	
	Telecommunication : Inductive radio telephone	
Power System : 600 V AC, 3 phase, 60 HZ		
Remarks	<u>1/</u> An escort/train is currently assigned <u>2/</u> <u>3/</u> Capacity : 38 passenger/car (based on 0.35m ² /passenger)	

(continued)

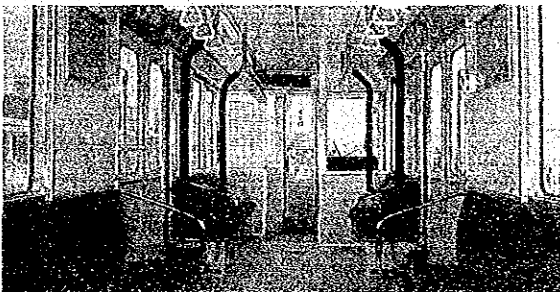
Name of System	Osaka Nanko-Port Town Line	Note
----------------	----------------------------	------



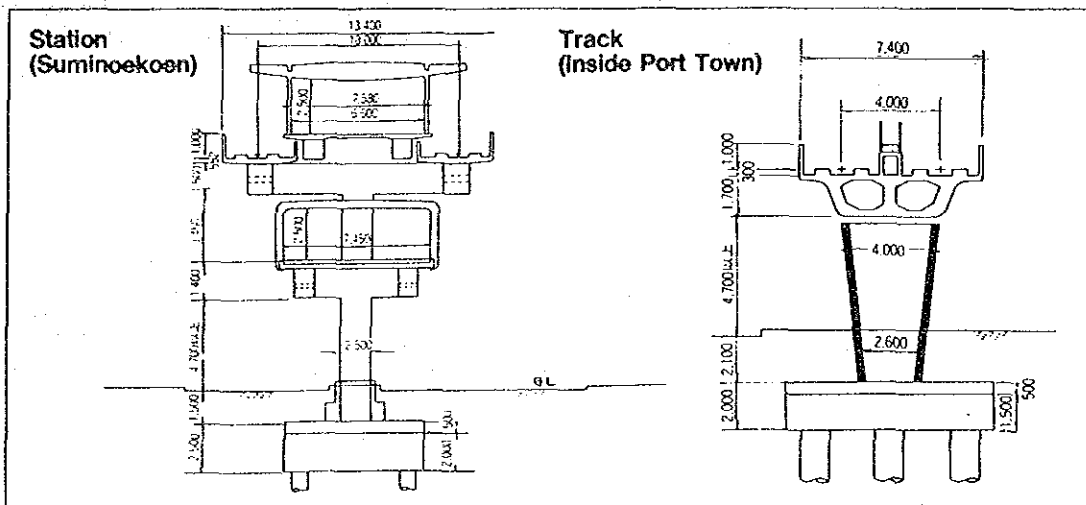
Route map



IMCT cars



Inside view of car

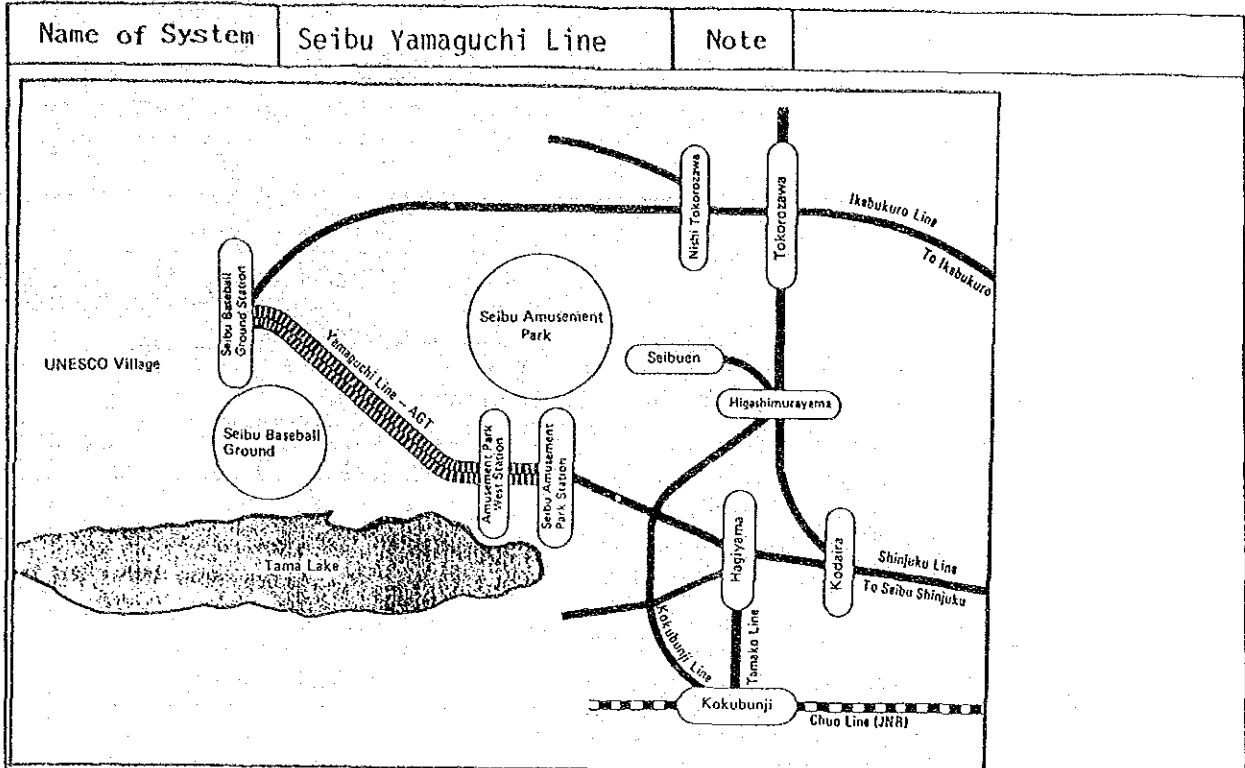


Station and Track construction

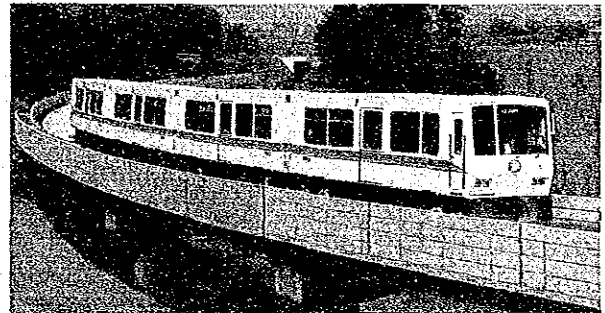
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (9)

General Information	Project Name : Seibu Yamaguchi Line		Developer : Seibu Railway Co., Ltd	
	Applied System : Intermediate Capacity Transit System			
	Manufacturer/Developer : Niigata Tekkosho Co., Ltd			
	Status : In operation since April 1985			
Current Operation	Location of the System : Sayama City, Soitoma prefecture, Japan			
	Route length(km) : 2.8		Route Configuration : Single track	
	No. of station : 3		Station Spacing (m) : 1,400	
	No. of Pass Carried : 3,000 passenger/day (1985)			
	Total Train/Car kms per day : -			
	Operating Hours : 6:55 - 22:30			
	No. of cars owned : 12		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : Yen 3,800 million (Yen 1,400 million/km)			
Structure /Track	Track Support System : Concrete bed			
	Track Structure : Reinforced concrete			
Vehicle Features /Performance	Body Material : Steel		Propulsion : VVVF controlled 95 kw 3 phase AC motorx4/train	
	Capacity : 28-32 seat and ^{1/} 43 standee per car		Speed(kph) max/practical : 50/25	
	L x W x H(m) : 8.5 x 2.38 x 3.29		Headway(min) min/practical : 20/40	
	Weight(ton) : 10.5 - 11/car		Acc/Dec Speed(km/h/sec) : 3.5/3.5 ^{2/}	
	Train Composition : 4 cars/train		Max Gradient (%) : 50	
	Car Support : Rubber tired		Min Curvature(m) : 60 (siding 30)	
	Transport Capabilities :			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable guide plates			
	Total Traffic Control : Dispatcher System			
	Operation Control : One man			
	Telecommunication : Wireless telephone			
Power System : 750 V DC				
Remarks	^{1/} Capacity: 43 passenger/car (based on 0.35sqm/passenger) ^{2/} 5.0 for emergency			

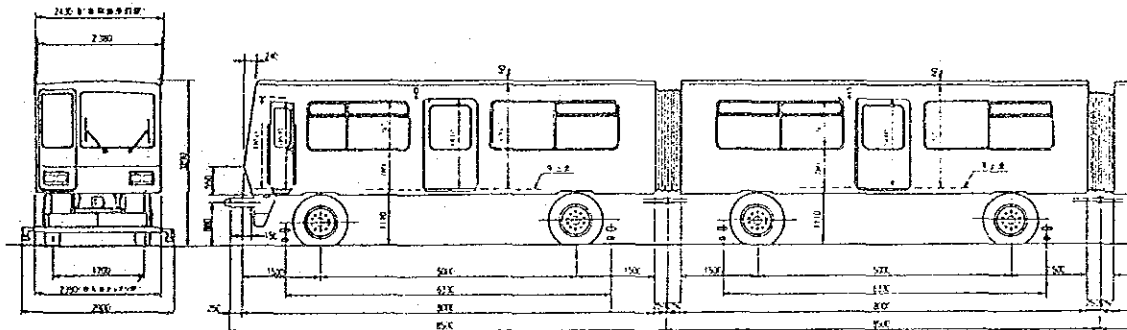
(continued)



Route map



Train and structure



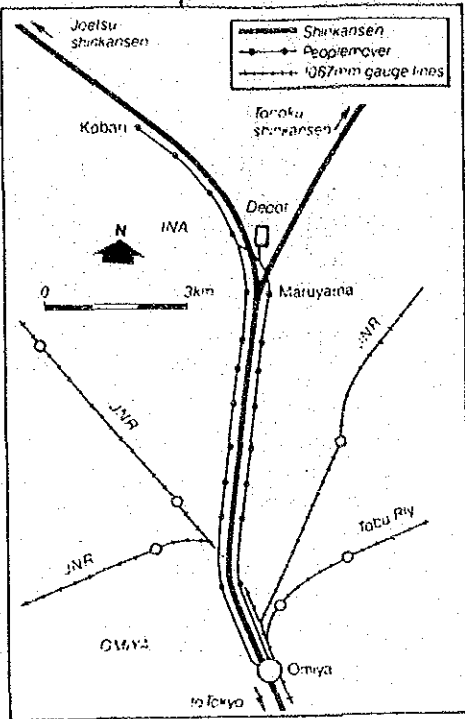
Car size

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (10)

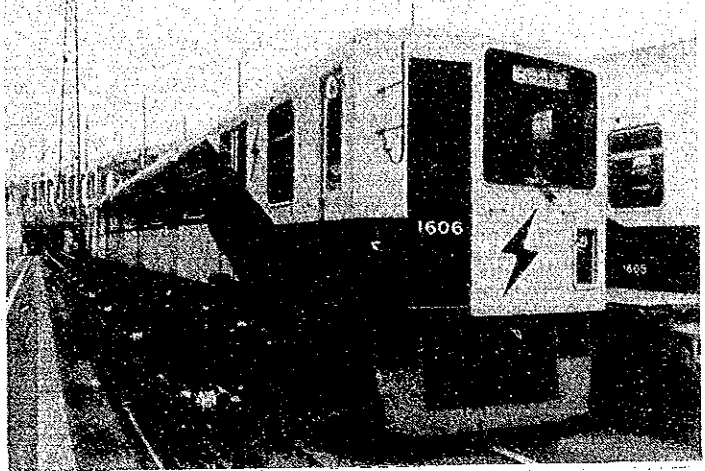
General Information	Project Name : Saitama Ina Line		Developer : Saitama Shin-Toshi Kotsu Co. Ltd	
	Applied System : Intermediate Capacity Transit System			
	Manufacturer/Developer : Kawasaki Heavy Industry Co., Nisata Tekkosho Co.			
	Status : In operation since December, 1982			
Current Operation	Location of the System : Saitama prefecture, (Oniya - Hamuki)			
	Route length(km) : 11.6		Route Configuration : Double Track and Simple Track(4.5km)	
	No. of station : 12		Station Spacing (m) : 1,055m	
	No. of Pass Carried : 15,000 passengers/day			
	Total Train/Car kms per day : 434,000 train-km/year/1,839,000 car-km/year (1,189 train-km/day/5,038.4 car-km/day)			
	Operating Hours : 6:12 - 22:52			
	No. of cars owned : 40 cars		No. of Employee : 114 (28 in head office)	
	Estimated Revenue/Expenses : Yen 884,000/year/1,47			
	Construction Cost : Yen 29,200 million (Yen 2,500 million/km)			
Structure /Track	Track Support System : Common use of the structures of Shinkansen			
	Track Structure : Reinforced concrete			
Vehicle Features /Performance	Body Material : Steel		Propulsion : A 100 kw DC motor/car	
	Capacity : 19-24 seat and 1/36-40 standee		Speed(kph) max/practical : 60/31	
	L x W x H(m) : 8.0 x 2.5 x 3.19		Headway(min) min/practical : 3/6-40	
	Weight(ton) : 10.5 - 10.8 t/cars		Acc/Dec Speed(km/h/sec) :	
	Train Composition : 4 and 6 cars/train		Max Gradient (%) : Up 55%, Down 60%	
	Car Support : Rubber tired		Min Curvature(m) : 25	
	Transport Capabilities : 9,880 passenger/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable guide plate			
	Total Traffic Control : Dispatcher System			
	Operation Control : One man			
	Telecommunication : Wireless Telephone			
Power System : 600 V AC, 3 phase				
Remarks	1/ Capacity: 42 passenger/car (based on 0.35sqm/passenger)			

(continued)

Name of System	Ina Line	Note	Saitama Shin-kotsu Co., Ltd.
----------------	----------	------	------------------------------



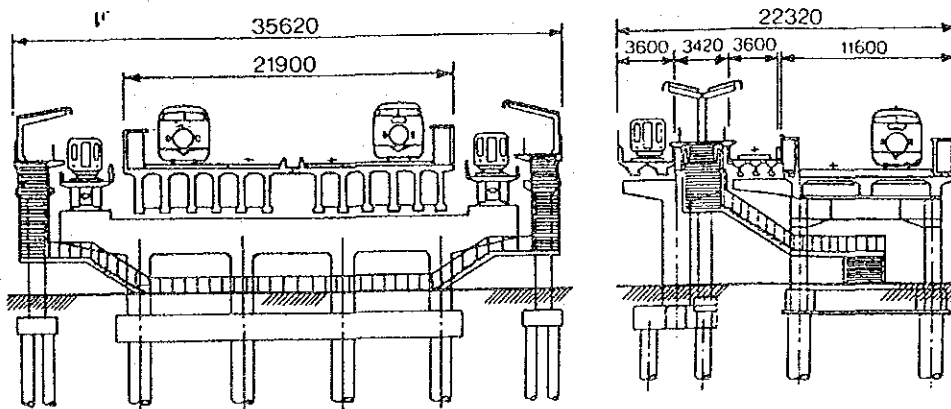
Route map



Cars in carshed



Shinkansen train and IMCT train



Between Omiya and Maruyama the people-mover guideway located on both side of the Shinkansen viaduct with side platform.

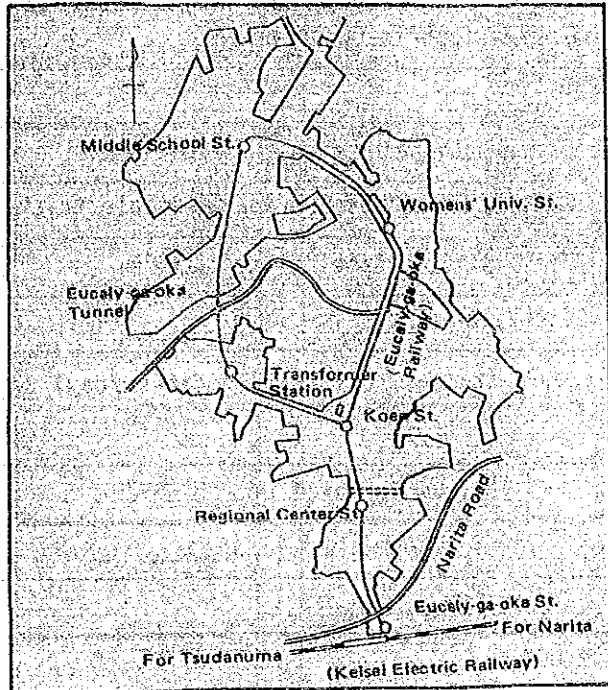
Railway Gazette International March 1982

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (11)

General Information	Project Name : Yukarigaoka Line		Developer : Yamaman Co., Ltd	
	Applied System : VONA-ONE (Intermediate Capacity Transit System)			
	Manufacturer/Developer : Nihon Shatyo Seizo Co., Ltd			
	Status : In operation since November 1982			
Current Operation	Location of the System : Yukarigaoka New Town, Sakura City, Japan			
	Route length(km) : 4.14		Route Configuration : Single loop track	
	No. of station : 6		Station Spacing (m) : 683	
	No. of Pass Carried : 1,000/day in 1985			
	Total Train/Car kms per day : 254.8/764.4			
	Operating Hours : 0606 - 2328 hours			
	No. of cars owned : 9		No. of Employee :	
	Estimated Revenue/Expenses : Yen 65.8 million/Yen 267.2 million per year ^{1/}			
	Construction Cost : Yen 2,100 million or Yen 500 million/km			
	Structure /Track	Track Support System : Elevated, concrete column		
Track Structure : Box girder (steel made) and PC beam				
Vehicle Features /Performance	Body Material : Aluminium alloy		Propulsion : 150 KW DC Motor x 2	
	Capacity : 76 seating and 129 standee per train (139) ^{2/}		Speed(kph) max/practical : 50/25	
	L x W x H(m) : 27.3x2.44x3.28 (/train)		Headway(min) min/practical : 7/15	
	Weight(ton) : 30/trains		Acc/Dec Speed(km/h/sec) : 3.5/3.5 ^{3/}	
	Train Composition : 3 cars/train		Max Gradient (%) : 45	
	Car Support : Rubber tired		Min Curvature(m) : 40	
	Transport Capabilities : 1,600 passenger/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable I beam guideway			
	Total Traffic Control : Dispatcher System			
	Operation Control : One man			
	Telecommunication : Wireless telephone			
Power System : 750 V DC				
Remarks	^{1/} : When real estate sector is included, there was Yen 616.8 million of profit for year ^{2/} : Based on 0.35 sqm/person ^{3/} : 4.5 for emergency			

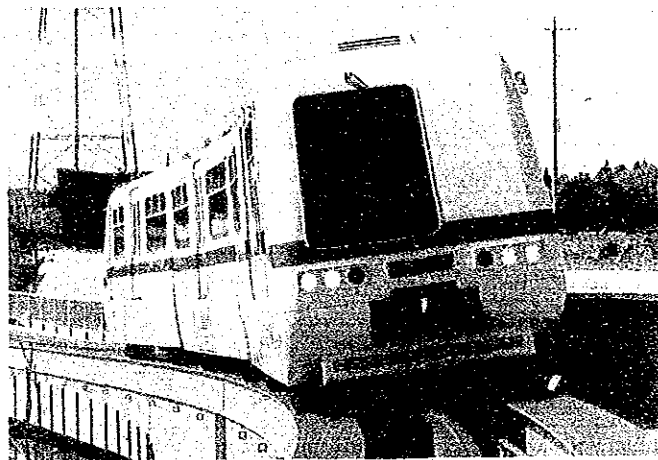
(continued)

Name of System	Yukarigaoka Line	Note	
----------------	------------------	------	--

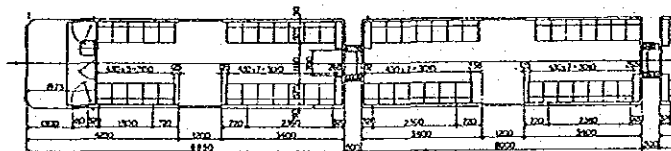


Route map

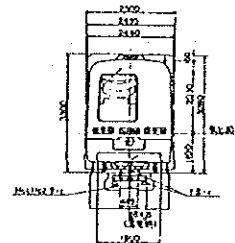
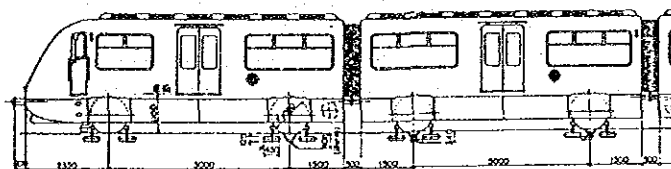
Station entrance
Automatic gate and
booking machine



IMCT train and structure



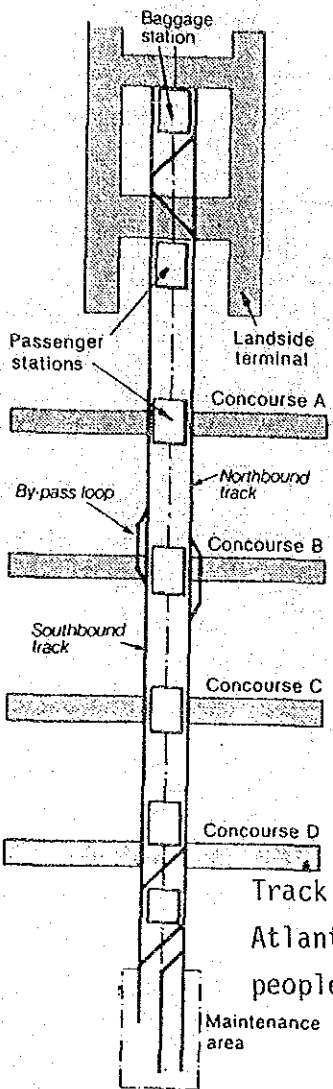

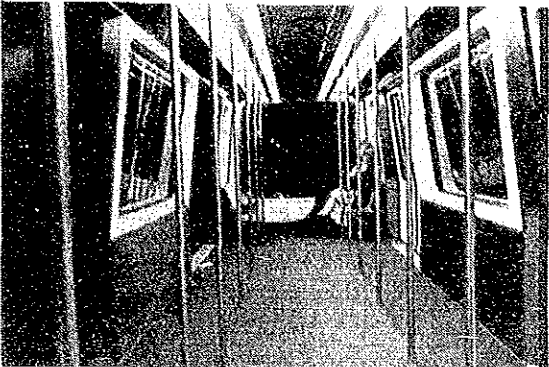
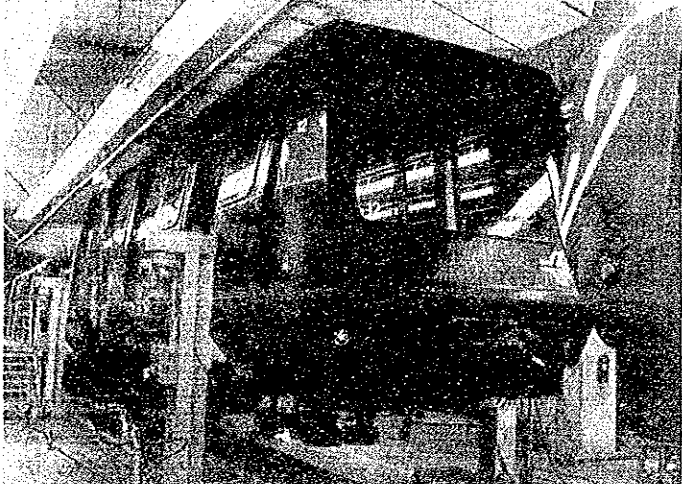
Size of cars



SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (12)

General Information	Project Name : Atlanta Airport AGT	Developer : Atlanta Airport Authority
	Applied System : Intermediate Capacity Transit System	
	Manufacturer/Developer : Westinghouse Electric Corporation	
	Status : In operation since 1980	
Current Operation	Location of the System : Atlanta international airport, U.S.A.	
	Route length(km) : 1.9	Route Configuration : double track
	No. of station : ^{6(Concourse D} 2 platform)	Station Spacing (m) : 380
	No. of Pass Carried : 27-30 million/year	
	Total Train/Car kms per day : (2,592 train-km/day / 7,776 car-km/day) <u>2/</u>	
	Operating Hours : 24 hours	
	No. of cars owned : 17 cars	No. of Employee : -
	Estimated Revenue/Expenses : -	
	Construction Cost : -	
Structure /Track	Track Support System : Concrete bad	
	Track Structure : Reinforced concrete	
Vehicle Features /Performance	Body Material : Aluminium Alloy	Propulsion : 75 kw DC motor x 2/car
	Capacity : 8 elder seat and <u>1/</u> 95 standee per car	Speed(kph) max/practical : 96/32
	L x W x H(m) : 11.9 x 2.85 x 3.55	Headway(min) min/practical : 2/2
	Weight(ton) : 14.5/car	Acc/Dec Speed(km/h/sec) : 3.2/2.4
	Train Composition : 3 cars/train	Max Gradient (%) : 100
	Car Support : Rubber tired	Min Curvature(m) : 24
	Transport Capabilities : 9,000 - 10,000 passenger/hour/direction	
Operation System	Guidance : Lateral girde wheels	The other characteristics : Platform doors, installed
	Switching : Movable I beam guide way	
	Total Traffic Control : Fully automated	
	Operation Control : Un man	
	Telecommunication : Wireless telephone	
Power System : 600V AC 3 phase		
Remarks	<u>1/</u> Capacity: 69 passenger/car (based on 0.35sqm/passenger) <u>2/</u> Estimated	

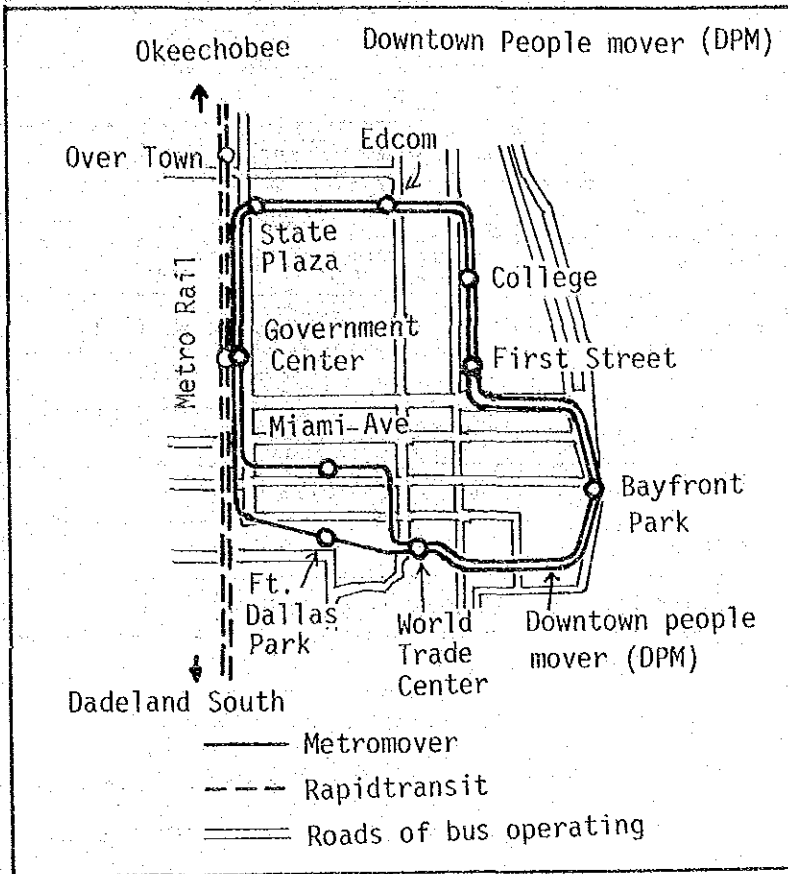
(continued)

Name of System	Atlanta Airport AGT	Note
		 <p data-bbox="667 636 1350 680">Underground concours and peplemover station</p>  <p data-bbox="880 1075 1286 1115">Inside view of peplemover</p> <p data-bbox="880 1173 1407 1352">The remote concours are linked by underground passege along with passing can walk, a moving walk-way, or use the peplemover.</p>
		<p data-bbox="628 1921 1171 1957">Car inspection yard RGI April, 1983</p>

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (13)

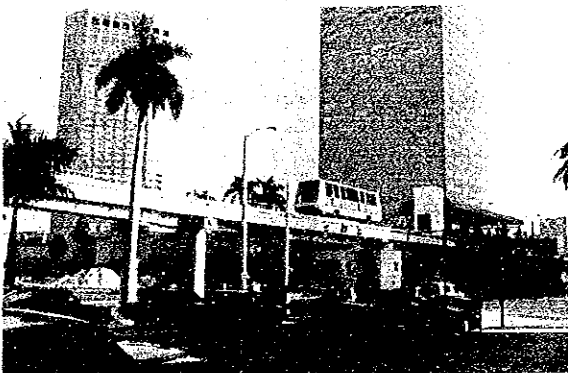
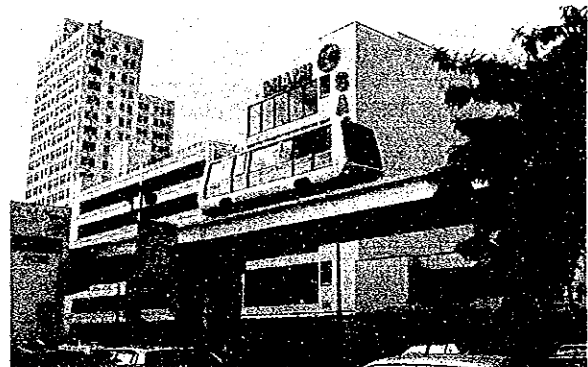
General Information	Project Name : Miami Metromover		Developer/ Dade County Transportation Operator : Administration	
	Applied System :			
	Manufacturer/Developer : Westinghouse Electric Corporation			
	Status : In operation since May, 1986			
Current Operation	Location of the System : CBD, Miami			
	Route length(km) : 3 1/2		Route Configuration : Double Track	
	No. of stations : 9		Station Spacing (m) : 375	
	No. of Pass Carried : -			
	Total Train/Car kms per day : -			
	Operating Hours : About 6-22			
	No. of cars owned : 12		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost :			
Structure /Track	Track Support System : Reinforced concrete Piers			
	Track Structure : PC concrete beam, Box Section steel beam			
Vehicle Features /Performance	Body Material : Alluminium Alloy		Propulsion : 75 KW DC Motor x 2/car	
	Capacity : 8 seated and 92 standee per car		Speed(kph) max/practical: 48/	
	L x W x H(m) : 11.9 x 2.85 x 3.55		Headway(min) min/practical : 2/2-3.5	
	Weight(ton) : 14.5/car		Acc/Dec Speed(km/h/sec) : 3.2/2.4	
	Train Composition : Single car/train		Max Gradient (%) : 100	
	Car Support : Rubber tired		Min Curvature(m) : 24	
	Transport Capabilities : 9,000 - 10,000 passenger/hour/direction 2/			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable I beam guide			
	Total Traffic Control : Fully automated			
	Operation Control : Unman			
	Telecommunication : Wireless telephone			
Power System : 600 V AC. 3 phase				
Remarks	1/Government has line extension plan. 2/Inner loop 1,700 pass/hr, Outer loop 3,500 pass/hr.			

Name of System	Metromover	Note	Dade County Transportation Administration
----------------	------------	------	---



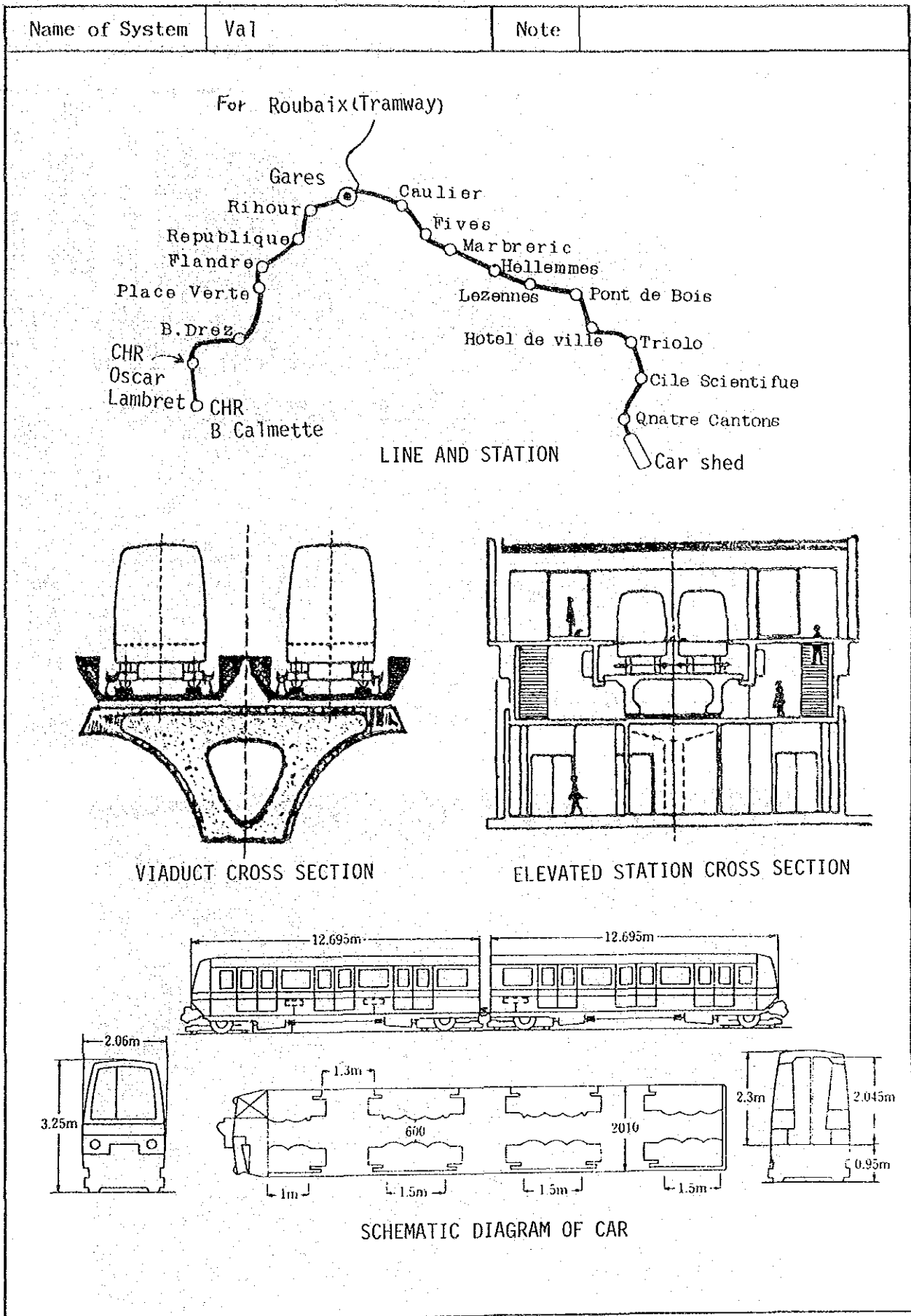
Map of route

Downtown people mover (DPM)

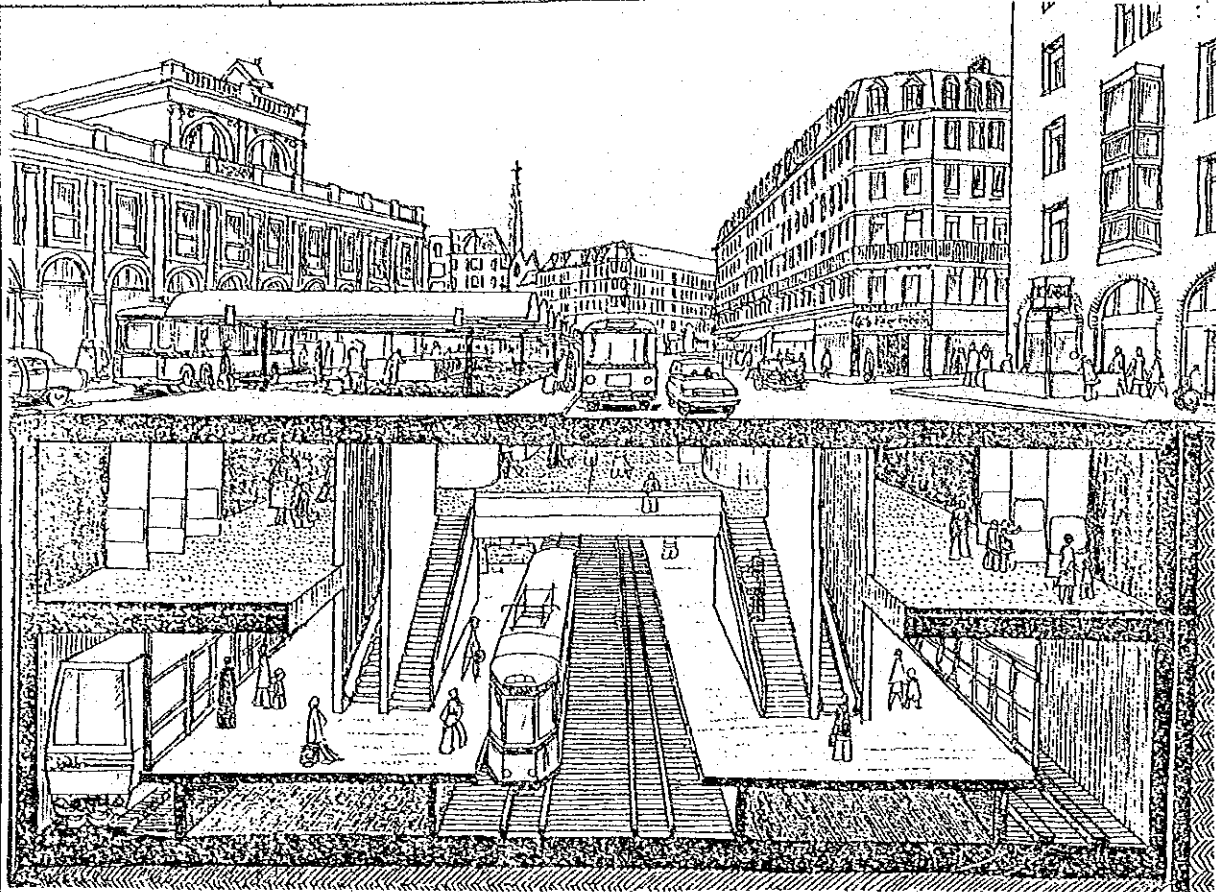


SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (14)

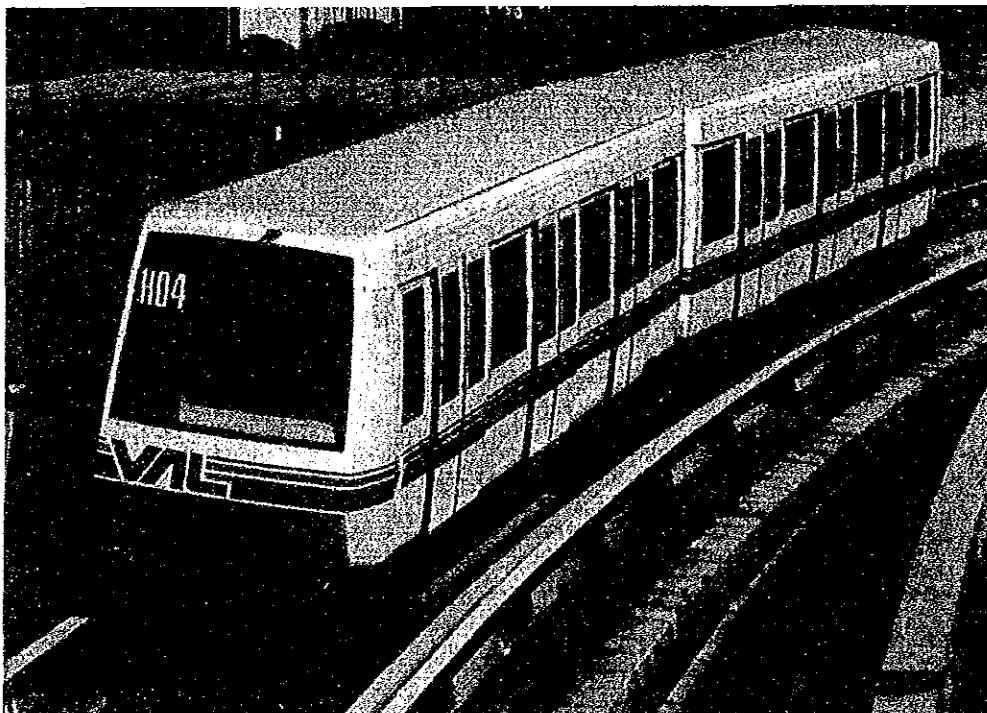
General Information	Project Name : Val	Developer : CRESTA, METROPORT, LILLE
	Applied System : Intermediate Capacity Transit System	
	Manufacturer/Developer : MATRA	
	Status : In operation since May, 1983	
Current Operation	Location of the System : Lille City (Calmette - Quantre Cantons)	
	Route length(km) : 13.6	Route Configuration :
	No. of station : 18	Station Spacing (m) : 800
	No. of Pass Carried : 21.2 million/yeu (87,000 passenger/day) (1984)	
	Total Train/Car kms per day : 2.75 million/year (1984)	
	Operating Hours : 05:12 - 24:25	
	No. of cars owned : 38 trains	No. of Employee : 172
	Estimated Revenue/Expenses : -	
	Construction Cost : 328 million US\$ (24.1 million US\$/km)	
Structure /Track	Track Support System : Concrete track bed	
	Track Structure : Prefabricated precast reinforced concrete	
Vehicle Features /Performance	Body Material : Alluminium Alloy	Propulsion : 120 kw DC Motor x 4/unit
	Capacity : 68 seat and 56 standee per unit <u>1/</u>	Speed(kph) max/practical : 80/34
	L x W x H(m) : 26.14 x 2.06 x 3.25	Headway(min) min/practical : 1/
	Weight(ton) : 27.76/unit	Acc/Dec Speed(km/h/sec) : 4.68/4.68 ^{3/}
	Train Composition : 1-2 unit/train	Max Gradient (%) : 70
	Car Support : Rubber tired	Min Curvature(m) : 40
	Transport Capabilities : 6,000 - 12,000 passengers/hour/direction <u>2/</u>	
Operation System	Guidance : Outer guiderail (4th rail)	The other characteristics : Platform door : Installed
	Switching : Guidance rail and flexible switch tongue	
	Total Traffic Control : Fully automated	
	Operation Control : Unman	
	Telecommunication :	
Power System : 750 V DC		
Remarks	<u>1/</u> Capacity : 38 passenger/car (converted in 0.35sqm/passenger) <u>2/</u> 7440 passengers/hour/direction (2 unit (4 cars) train x 60/hour/direction) <u>3/</u> 8.64 for emergency	



Name of System	Val	Note
----------------	-----	------



URBAN TRANSPORTATION NETWORK

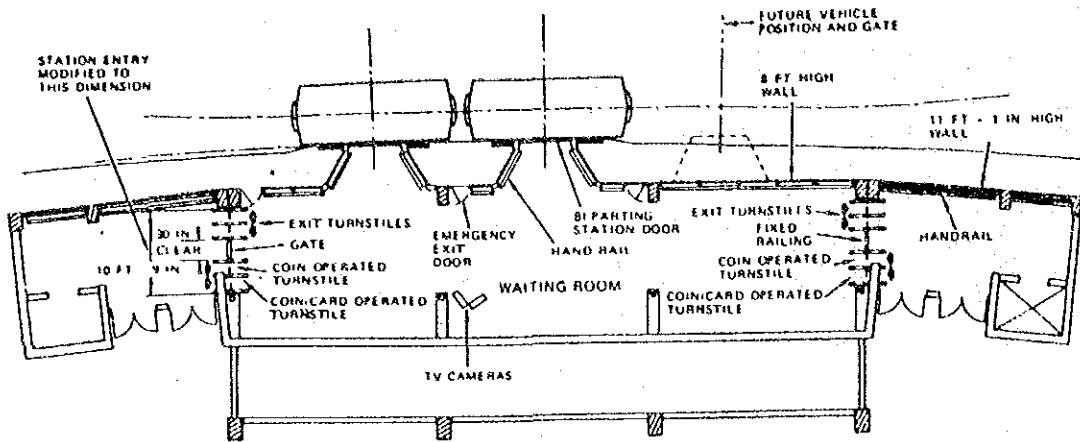


TRAIN

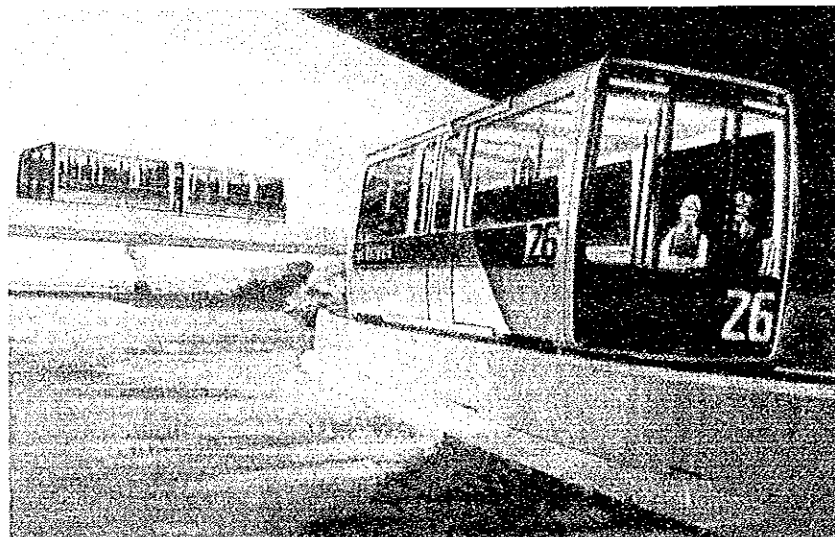
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (15)

General Information	Project Name : AIRTRANS		Developer/ Operator : Dallas-Fort Worth Airport	
	Applied System : Intermediate capacity Transit System			
	Manufacturer/Developer : LTV, Vought Corporation			
	Status : In operation at Darass- Fort Worth Airport since October, 1973			
Current Operation	Location of the System : Darass-Fort Worth Airport			
	Route length(km) : 20.8		Route Configuration :	
	No. of stations : ^{14 for passengers, 25 for freight} _{14 for crews, 1 for maintenance}		Station Spacing (m) : 544	
	No. of Pass Carried : -			
	Total Train/Car kms per day : -			
	Operating Hours : -			
	No. of cars owned : 68		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : 31,000,000 US\$ 14 hundred million US\$/km) ^{2/}			
Structure /Track	Track Support System : Reinforced concrete piers			
	Track Structure : Reinforced concrete L section guide way			
Vehicle Features /Performance	Body Material : Acrylic/Fibreglass		Propulsion : 75 HP DC, motor	
	Capacity : 16 seated and ^{1/} 24 standee		Speed(kph) max/practical: 27.2/	
	L x W x H(m) : 6.5 X 2.2 X 3.1		Headway(min) min/practical : 1/3 /-	
	Weight(ton) : 5.8		Acc/Dec Speed(km/h/sec) : 4.1/4.1 ^{3/}	
	Train Composition : 3 yrs in maximum		Max Gradient (%) : 78	
	Car Support : Rubber tired		Min Curvature(m) : 46	
	Transport Capabilities : 9000 Passengers, 6000 luggages and 32t of persels/ hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics : o Platform door installed	
	Switching : Turnout, switch blade			
	Total Traffic Control : Fully automated			
	Operation Control : Unman			
	Telecommunication : Wireless Telephone			
Power System : 480 V 3 phase AC, 60 HZ				
Remarks	^{1/} Capacity: 37 passenger/car (based on 0.35sqm/passenger) ^{2/} Excluding lanu aquisition ^{3/} 7.7 for emergency			

Name of System	AIRTRANS	Note
----------------	----------	------

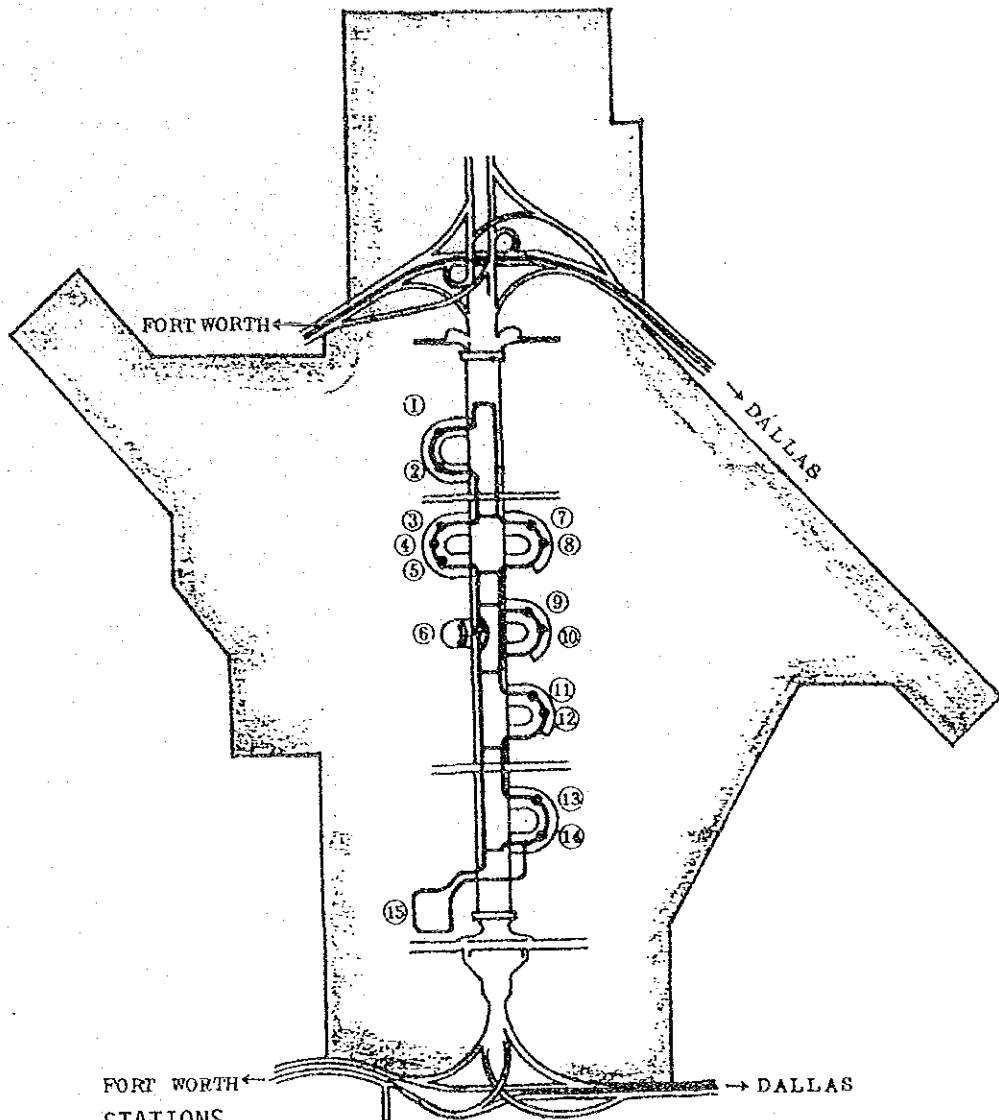


Synchronized platform door



AIRTRANS VEHICLE

Name of System	AIRTRANS	Note	DALLAS FORT WORTH AIR PORT
----------------	----------	------	----------------------------



STATIONS

- ① North Parking B, Auto Rental
- ② North Parking A
- ③ Braniff C, Mexicana
- ④ Braniff B
- ⑤ Braniff A
- ⑥ Hotel
- ⑦ Frontier, Ozark
- ⑧ Texas International
- ⑨ American A
- ⑩ American B, Eastern
- ⑪ Continental
- ⑫ Delta
- ⑬ South Parking A
- ⑭ South Parking B, Auto Rental
- ⑮ Transportation Centre

AIRTRANS ROUTE AT DALLAS-FORT WORTH AIR PORT

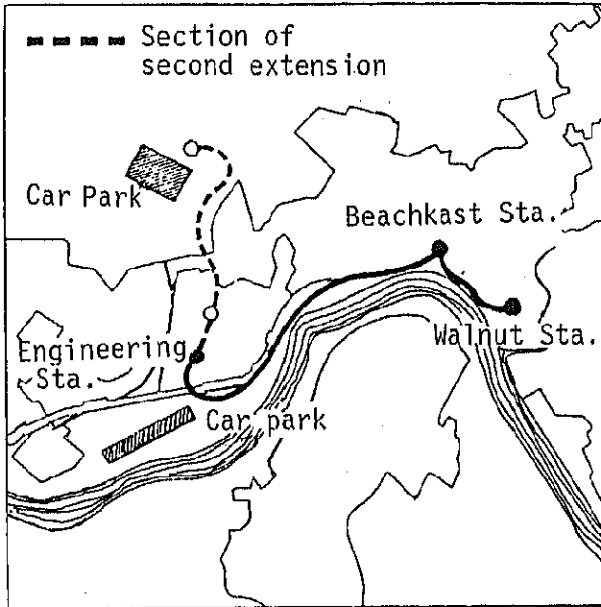
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (16)

General Information	Project Name : Morgantown PRT		Developer/ Operator : West Virginia University	
	Applied System : Intermediate Capacity Transit System			
	Manufacturer/Developer : Alden/Boeing			
	Status : In operation since 1974			
Current Operation	Location of the System : Morgantown, West Virginia			
	Route length(km) : 4km section 1974 2.5km extension 1978		Route Configuration :	
	No. of stations : 3 stations 1974 add 2 stations 1978		Station Spacing (m) :	
	No. of Pass Carried : -			
	Total Train/Car kms per day : -			
	Operating Hours : -			
	No. of cars owned : 45(1974/100)		No. of Employee :	
	Estimated Revenue/Expenses : -			
	Construction Cost : Yen 200 hundred million			
Structure /Track	Track Support System : Reinforced concrete piers			
	Track Structure : PC concrete [] section track beam			
Vehicle Features /Performance	Body Material : Fiberglass/Al alloy		Propulsion : 45kw DC, motor/car	
	Capacity : 8 seat and 13 standee 1/		Speed(kph) max/practical: 48/36	
	L x W x H(m) : 4.724 X 2.03 X 2.667		Headway(min) min/practical : 1/1.0	
	Weight(ton) : 3.9		Acc/Dec Speed(km/h/sec) : 2.2/4.37 ^{2/}	
	Train Composition : 1 - 6 car/train		Max Gradient (%) : 100%.	
	Car Support : Rubber tire		Min Curvature(m) : 9.144	
	Transport Capabilities : 3300 Passenger/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics : Renewal of the system: Vehicle and facilities were exchanged to new ones on 1978.	
	Switching : 4 wheel power steering			
	Total Traffic Control : Fully automated			
	Operation Control : Unman			
	Telecommunication : Radio Telephone			
Power System : 575 V AC, 3 phase				
Remarks	1/ Capacity: 24 passenger/car (based on 0.35sqm/passenger) 2/ 10 for emergency			

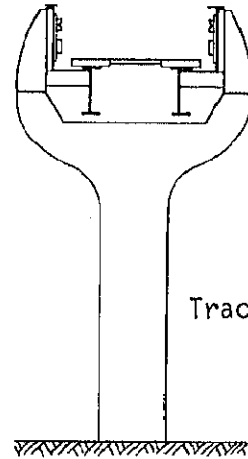
Name of System

Morgantown PRT

Note

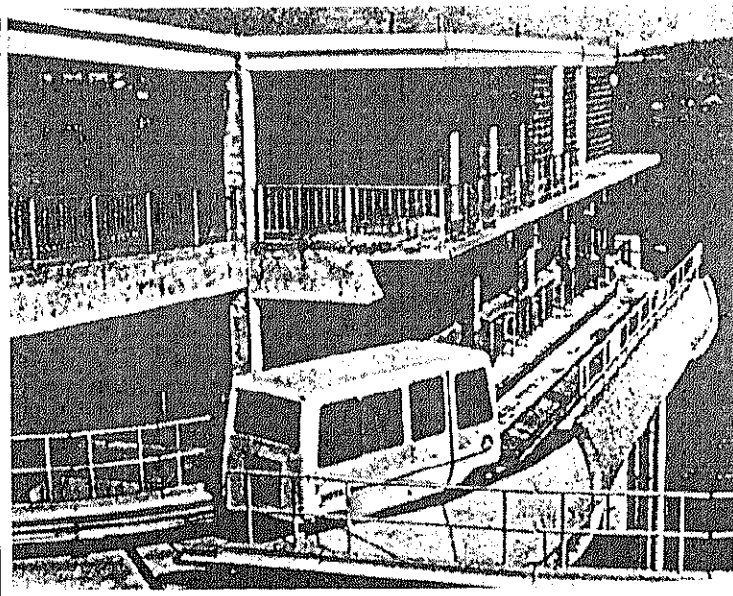
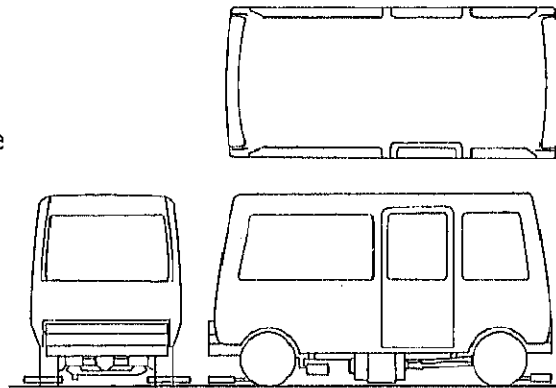


Map of route



Track and pier

Vehicle



Guideway and Station

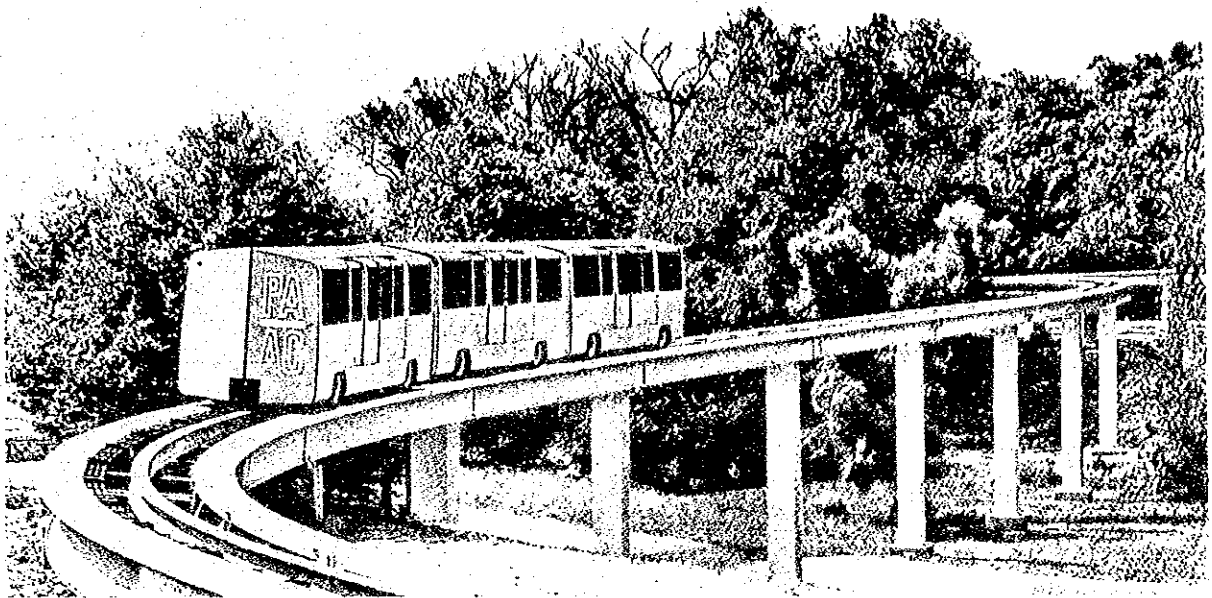
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (17)

General Information	Project Name : TRANSIT EXPRESSWAY (PAAC)		Developer/Operator : Tampa Air Port, etc.
	Applied System : Intermediate Capacity Transportation		
	Manufacturer/Developer : Westinghouse Electric Corporation		
	Status : In operation since 1971		
Current Operation	Location of the System : South-Park, Pittsburgh		
	Route length(km) : 2.8	Route Configuration : Single and double tracks	
	No. of stations : -	Station Spacing (m) : -	
	No. of Pass Carried : -		
	Total Train/Car kms per day : -		
	Operating Hours : -		
	No. of cars owned :	No. of Employee : -	
	Estimated Revenue/Expenses : -		
	Construction Cost :		
Structure /Track	Track Support System : Reinforced concrete pier, etc.		
	Track Structure : I section steel beam		
Vehicle Features /Performance	Body Material :	Propulsion : 60 hp DC, motor X 2/car	
	Capacity : 28 seat and 26 standee	Speed(kph) max/practical: 80/-	
	L x W x H(m) : 9.3 X 2.6 X 3.6	Headway(min) min/practical : 2/-	
	Weight(ton) : 8.85	Acc/Dec Speed(km/h/sec) : 3.9/3.9	
	Train Composition : 1 - 3	Max Gradient (%) : 100	
	Car Support : Rubber tired wheel	Min Curvature(m) : 46	
	Transport Capabilities : 6340 Passenger/hour/direction		
Operation System	Guidance : Lateral guide wheels	The other characteristics : PAAC systems operate at Tampa, Seattle - Tacoma, Miami, Atlanta, Orlando, London Gatwick, Las Vegas Airports.	
	Switching : Turnout, travergen type		
	Total Traffic Control : Fully automated		
	Operation Control : Unman		
	Telecommunication : Wireless telephone		
Power System : 565 V 3phase AC.			
Remarks			

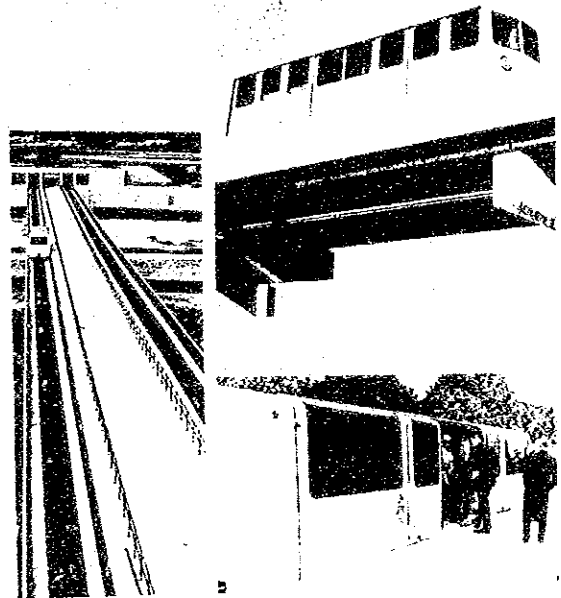
Name of System

PAAC

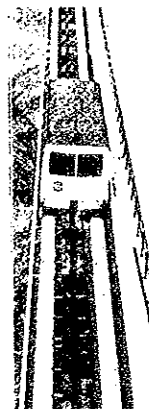
Note



Test track at South Park, Pittsburgh.



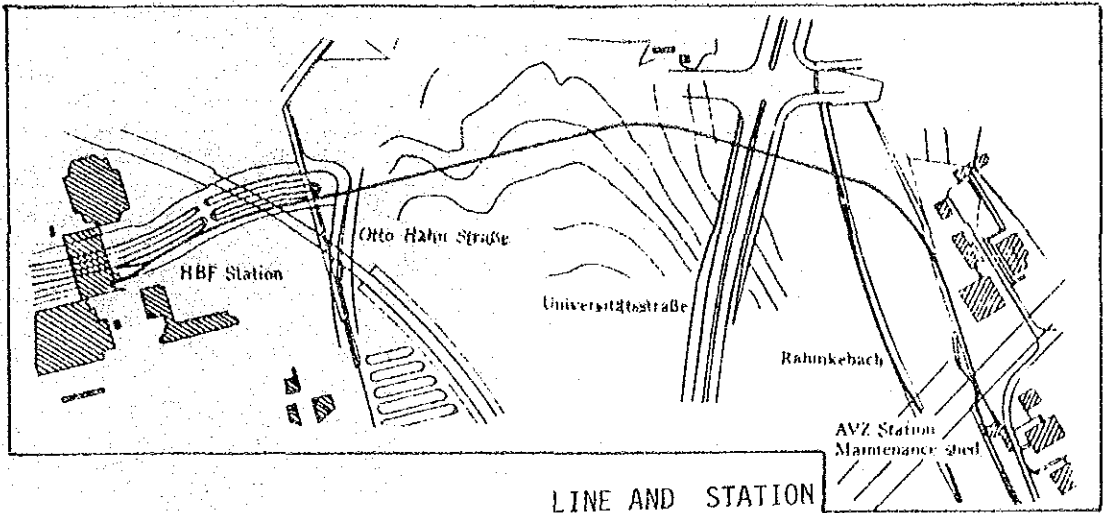
Shuttle service at Tampa Air Port



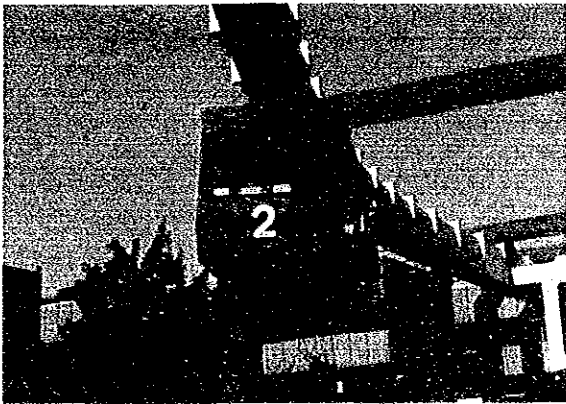
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (18)

General Information	Project Name : H-Bahn		Developer/Operator : Gesellschaft Dortmund mbh	
	Applied System : Suspended type monorail, IMCT.			
	Manufacturer/Developer : Siemens, Duewag			
	Status : In operation since 1983			
Current Operation	Location of the System : Dortmund			
	Route length(km) : 1.05		Route Configuration : Single track	
	No. of stations : 2		Station Spacing (m) : 1050	
	No. of Pass Carried : -			
	Total Train/Car kms per day : -			
	Operating Hours : -			
	No. of cars owned : 2		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : DM. 22 million			
Structure /Track	Track Support System : Box section steel pier			
	Track Structure : Box section steel beam			
Vehicle Features /Performance	Body Material : Alumimium alloy		Propulsion : 23kw DC, motor, x4/car	
	Capacity : 20 seated and 22 standee per car		Speed(kph) max/practical: 50/35.5	
	L x W x H(m) : 8.15 X 2.08 X 2.41		Headway(min) min/practical : 40 sec/ 110 sec	
	Weight(ton) : 4(Running gear 1.66x2/c)		Acc/Dec Speed(km/h/sec) : 3.6/7.2	
	Train Composition : Single car/train		Max Gradient (%) : 450	
	Car Support : Rubber tire(solid, hard rubber)		Min Curvature(m) : 30	
	Transport Capabilities : 1000 Passenger/hour/direction			
Operation System	Guidance : Lateral guide wheels		The other characteristics :	
	Switching : Movable point blade			
	Total Traffic Control : Fully automated			
	Operation Control : Unman			
	Telecommunication : Radio telephone me?			
Power System : 380 V 3 phase - AC				
Remarks				

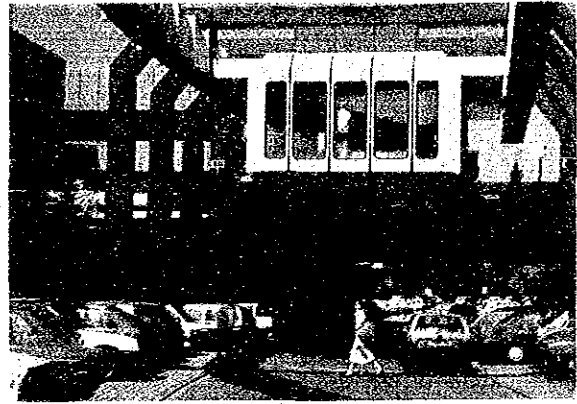
Name of System	H-BAHN	Note	Dortmund, W. Germany
----------------	--------	------	----------------------



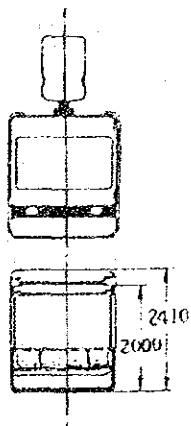
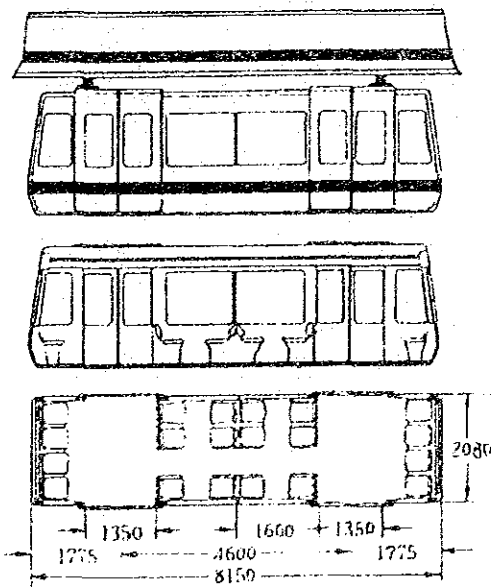
LINE AND STATION



H-BAHN IN DORTMUND



HBF STATION



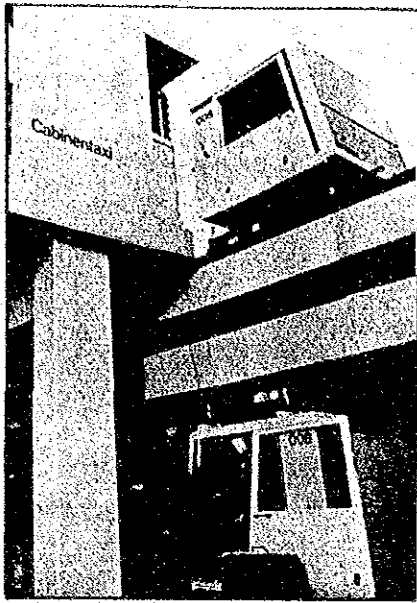
Seated 20
Standing 22

SCHEMATIC DIAGRAM OF CABIN

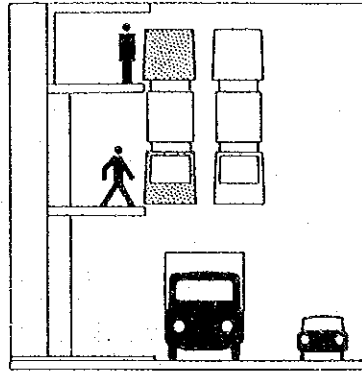
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (19)

General Information	Project Name : CABINEN TAXI (CAT)	Developer/ Operator :
	Applied System : PRT System	
	Manufacturer/Developer : Demag, MBB	
	Status : In operation since 19	
Current Operation	Location of the System : Ziegenhaim Hospital, West Germany	
	Route length(km) : 0.64	Route Configuration : Single track
	No. of stations : 2	Station Spacing (m) : 640
	No. of Pass Carried : -	
	Total Train/Car kms per day :	
	Operating Hours : -	
	No. of cars owned : 1	No. of Employee :
	Estimated Revenue/Expenses : -	
	Construction Cost : Yen 3.4 hundred million	
Structure /Track	Track Support System : Box section steel pier	
	Track Structure : Box section steel beam	
Vehicle Features /Performance	Body Material : Aluminium alloy	Propulsion : LIM
	Capacity : 2 Seated per car	Speed(kph) max/practical: 20/
	L x W x H(m) : 2.0 X 1.5 X 1.6	Headway(min) min/practical : -
	Weight(ton) : -	Acc/Dec Speed(km/h/sec) : 1.26/1.26
	Train Composition : Single car/Train	Max Gradient (%) : 34
	Car Support : Wheels (rubber or plastic)	Min Curvature(m) : 29.9
	Transport Capabilities : 7200 passenger/hour/direction	
Operation System	Guidance : -	The other characteristics :
	Switching : Route selecting on the car	
	Total Traffic Control : Fully automated	
	Operation Control : Unman	
	Telecommunication : -	
Remarks	Power System : -	
	Testing track; Hagen city, West Germany : 1973 Testing Vehicle; L x W x H = 3.8 X 2.0 X 2.35 (2.2 t), Propoled with LIM	

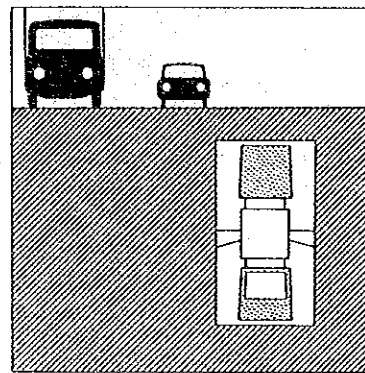
Name of System	Cabinen Taxi (CAT)	Note	Ziegenhain Hospital, W. Germany
----------------	--------------------	------	---------------------------------



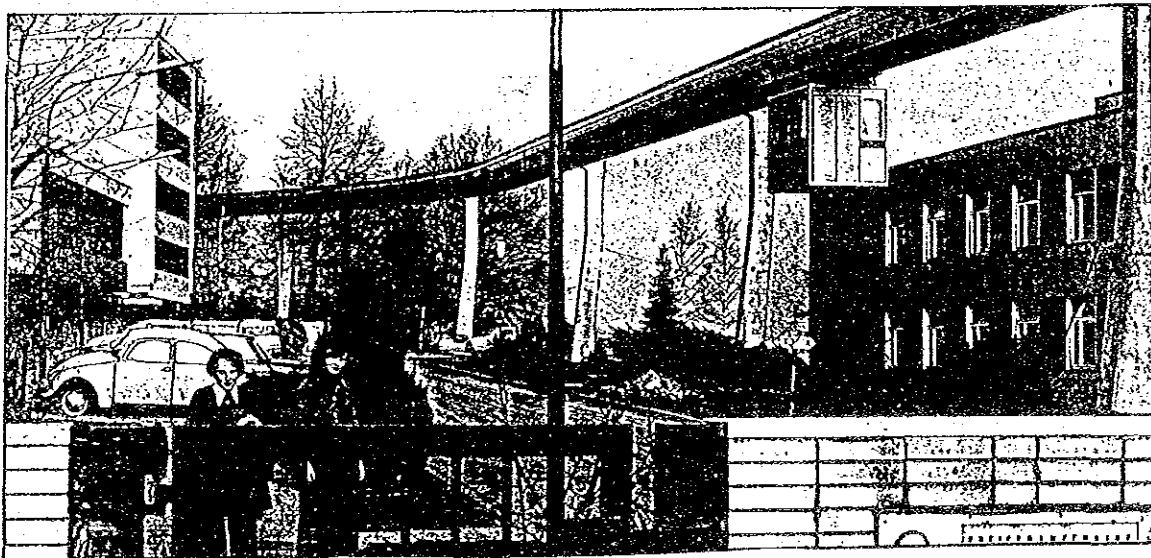
Construction of Cabinen Taxi



Surface construction



Underground construction

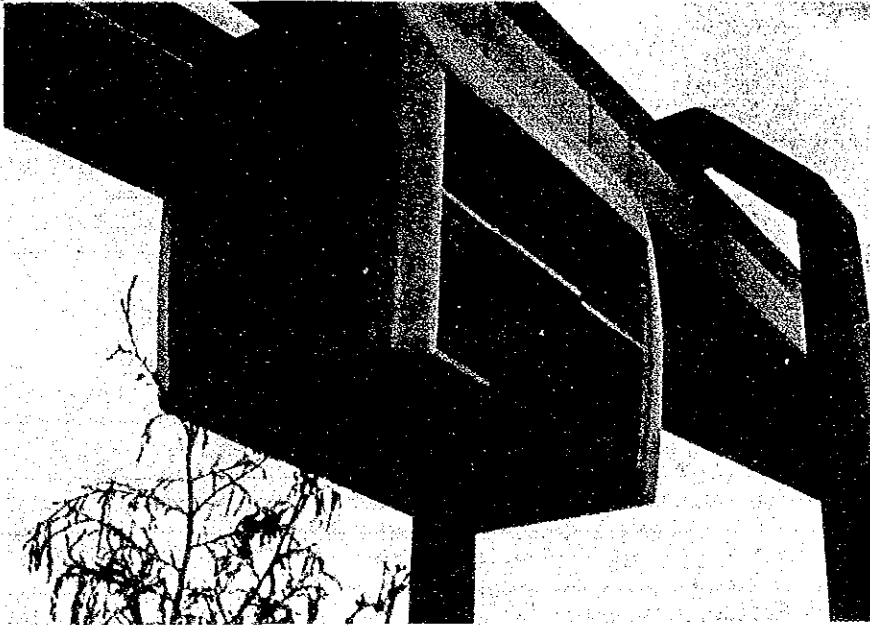


Ziegenhain Hospital and Cabinen Taxi

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (20)

General Information	Project Name : Monocab		Developer/ Operator :
	Applied System : Suspended type monorail (PRT)		
	Manufacturer/Developer : Monocab Incorporation, Rohr Industries Incorporation		
	Status : Exhibited at Transpo '72		
Current Operation	Location of the System : Transpo '72		
	Route length(km) : 0.5	Route Configuration : Single and double truck	
	No. of stations : 2	Station Spacing (m) : 500	
	No. of Pass Carried : -		
	Total Train/Car kms per day : -		
	Operating Hours : -		
	No. of cars owned : 2	No. of Employee : -	
	Estimated Revenue/Expenses : -		
	Construction Cost : Yen 4.5 hundred million/km (1972)		
Structure /Track	Track Support System : Steel piers		
	Track Structure : Box section steel beam		
Vehicle Features /Performance	Body Material : -	Propulsion : 40 HP motor	
	Capacity : 6 seated	Speed(kph) max/practical: 80/48	
	L x W x H(m) : 2.9 X 1.7 X 2.0	Headway(min) min/practical : 10 sec.	
	Weight(ton) : 1.8	Acc/Dec Speed(km/h/sec) : 5.6/5.6 ^{1/}	
	Train Composition : Single car/train	Max Gradient (%) : 100	
	Car Support : Rubber tired	Min Curvature(m) : 12	
	Transport Capabilities : 2160 passenger/hr/direction		
Operation System	Guidance : Lateral guide wheels	The other characteristics : Installed platform door	
	Switching : Track side switching		
	Total Traffic Control : Fully automated		
	Operation Control : Unman		
	Telecommunication : -		
	Power System : 380 V 3 Phase AC.		
Remarks	<u>1/</u> 10 for emergency		

Name of System	MONOCAB	Note	Transpo '72
----------------	---------	------	-------------



Suspended type monorail
(6 seated type)

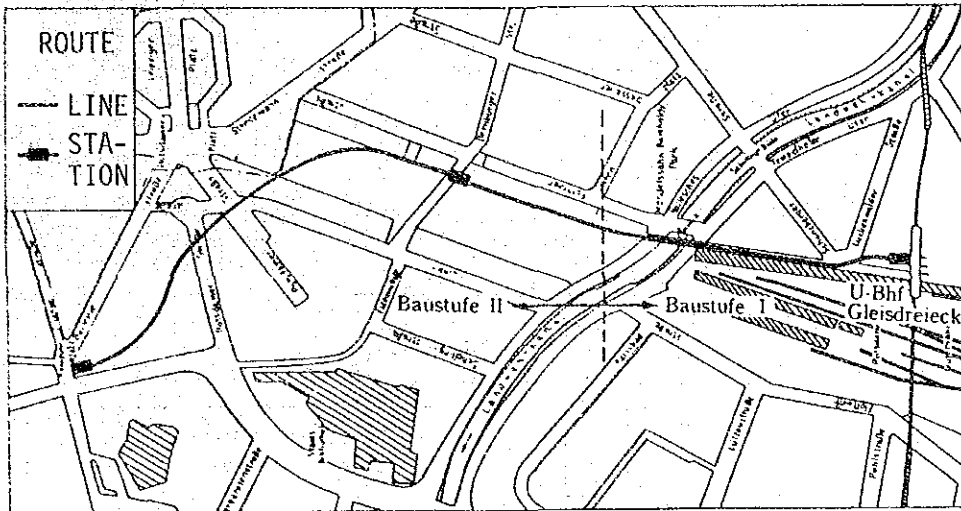


Large type Monocab (Plan)

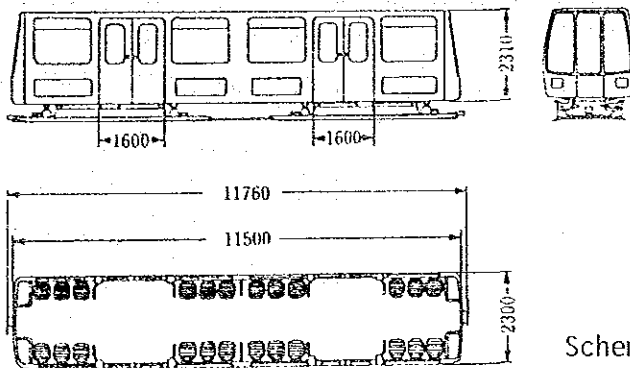
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (21)

General Information	Project Name : M-Bahn	Developer/ Operator : Magnetbahn GmbH	
	Applied System : IMCT, Magnetic levitation system		
	Manufacturer/Developer : West Berlin (U-Bhf Gleisdreieck - Kemper platz)		
	Status : In testing (Will open the service for the public in year 1988)		
Current Operation	Location of the System : AEG - Telefunken		
	Route length(km) : 0.6(1.6 in plan)	Route Configuration : Single track	
	No. of stations : 2 (3 in plan)	Station Spacing (m) :600(800 in future)	
	No. of Pass Carried : -		
	Total Train/Car kms per day : -		
	Operating Hours : -		
	No. of cars owned : 1 (2 in plan)	No. of Employee : -	
	Estimated Revenue/Expenses : -		
	Construction Cost : 25 - 35 million Mark/Kim		
Structure /Track	Track Support System : Structure of closed railway and steel piers		
	Track Structure : Steel girder		
Vehicle Features /Performance	Body Material : Alumimium alloy	Propulsion : Wayside long stator (LIM)	
	Capacity : 24 seat and 47 standee per car	Speed(kph) max/practical:-	
	L x W x H(m) :11.76 X 2.3 X 2.31	Headway(min) min/practical :-	
	Weight(ton) : 3.6	Acc/Dec Speed(km/h/sec) : 4.68 - 10.8/ 3.6 - 4.32	
	Train Composition : Single car	Max Gradient (%) :	
	Car Support : Magnetic levitation & wheels(Glass Fibre) ^{2/}	Min Curvature(m) :	
	Transport Capabilities :		
Operation System	Guidance : Lateral guide wheels	The other characteristics :	
	Switching : Movable guide rail		
	Total Traffic Control : Fully automated		
	Operation Control : Unman		
	Telecommunication : Inductive radio		
	Power System : Way side long stator		
Remarks	<p><u>1/</u> Capacity: 72 passenger/car (based on 0.35m²/passenger)</p> <p><u>2/</u> Support: 10% of car weight.</p>		

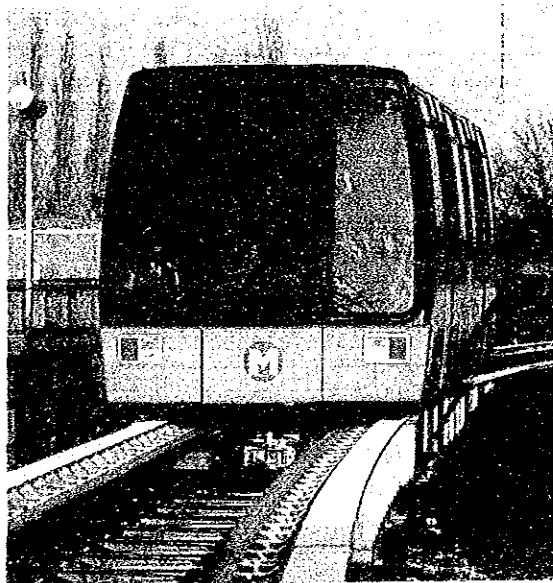
Name of System	M-Bahn	Note	W.Berlin, W.Germany
----------------	--------	------	---------------------



Route Map of M-Bahn in W.Berlin. (Plan)



Schematic diagram of M-Bahn car



M-Bahn car at station

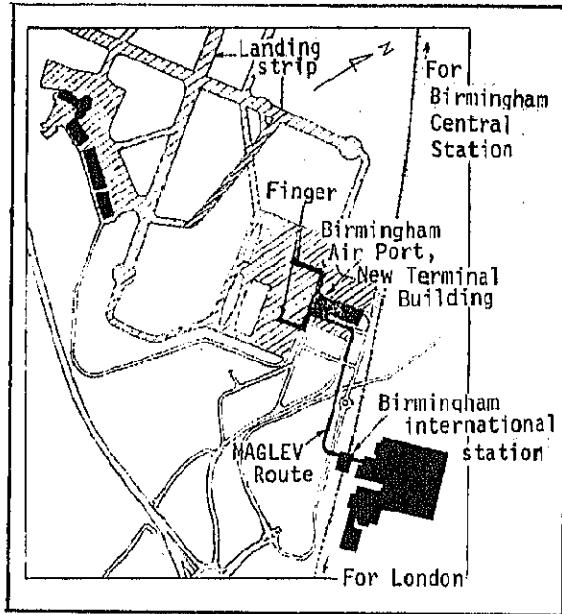
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (22)

General Information	Project Name : Birmingham Airport AGT		Developer/Operator : West Midlands County Congress	
	Applied System : IMCT, Magmetic levitation			
	Manufacturer/Developer : British Rail Research			
	Status : In operation since August, 1987			
Current Operation	Location of the System : Birmingham			
	Route length(km) : 0.62		Route Configuration : Single track in parallel	
	No. of stations : 2		Station Spacing (m) : 620	
	No. of Pass Carried : -			
	Total Train/Car kms per day : -			
	Operating Hours : 7.30 - 18.30			
	No. of cars owned : 3		No. of Employee : -	
	Estimated Revenue/Expenses : -			
	Construction Cost : -			
Structure /Track	Track Support System : Reinforced concrete			
	Track Structure : Reinforced concrete track			
Vehicle Features /Performance	Body Material : Alumimium alloy, GRP		Propulsion : LIM, 3P-AC,0-45HZ,450V MAX	
	Capacity : 6 seated and 1/34 standee per car		Speed(kph) max/practical: -/24.8	
	L x W x H(m) : 6.0 X 2.25 X 3.00		Headway(min) min/practical : 65 sec/130 sec	
	Weight(ton) : 4.8		Acc/Dec Speed(km/h/sec) :	
	Train Composition : 1 - 2		Max Gradient (%) : 50	
	Car Support : Magnetic Levitation		Min Curvature(m) : 80	
	Transport Capabilities : 1100 passenger/hour/direction (2200 passenger/hour/direction, 2 cars train)			
Operation System	Guidance : Magnetic		The other characteristics : LIM: Installed on the car	
	Switching : Movable track beam			
	Total Traffic Control : Fully automated			
	Operation Control : Unman			
	Telecommunication : Wireless telephone			
Power System : 600 V DC.				
Remarks	1/ Capacity: 36 passenger/car (based on 0.35m ² /passenger)			

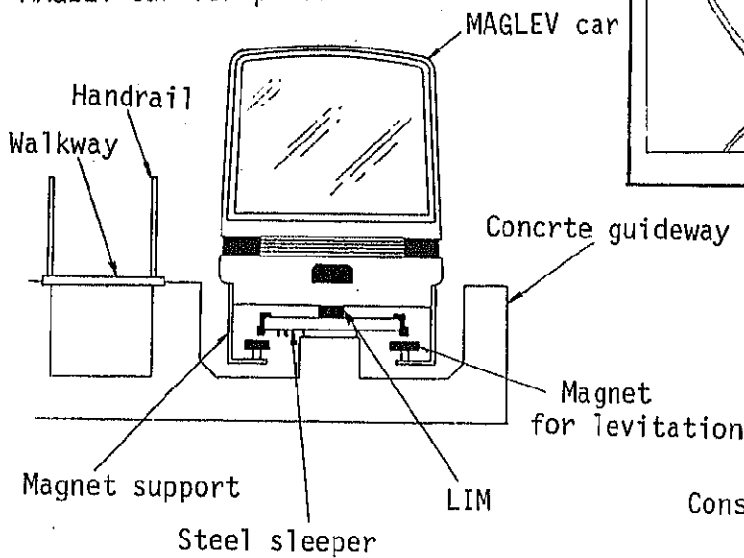
Name of System	MAGLEV	Note	Birmingham, England
----------------	--------	------	---------------------



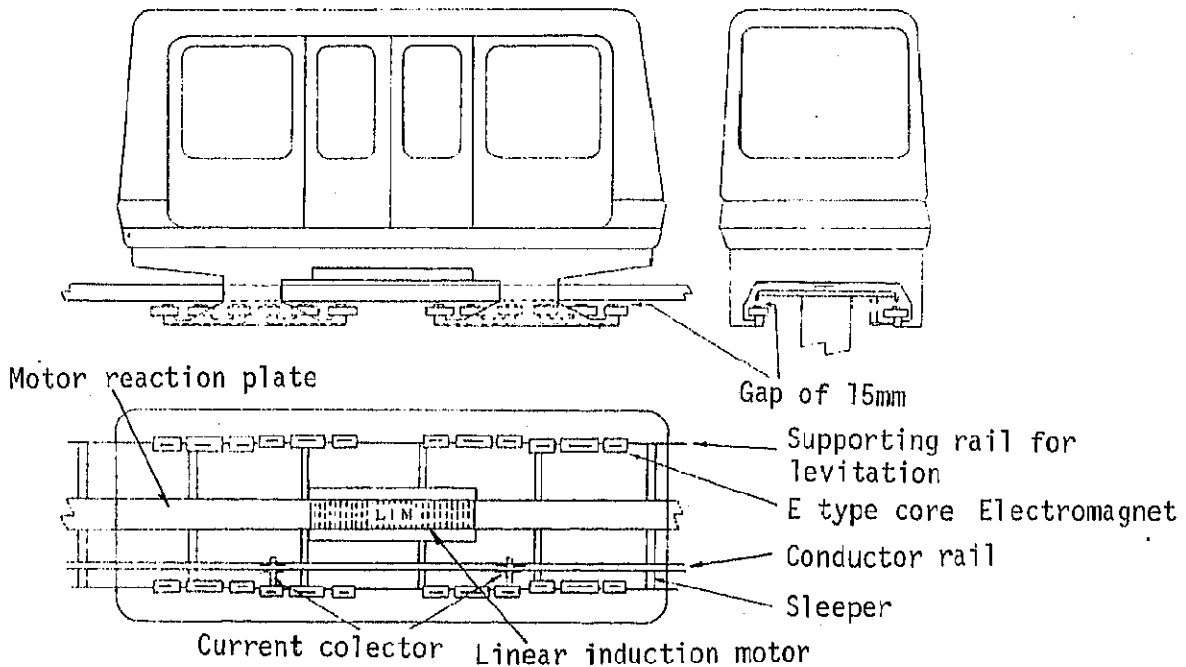
MAGLEV car for public use



Map of route



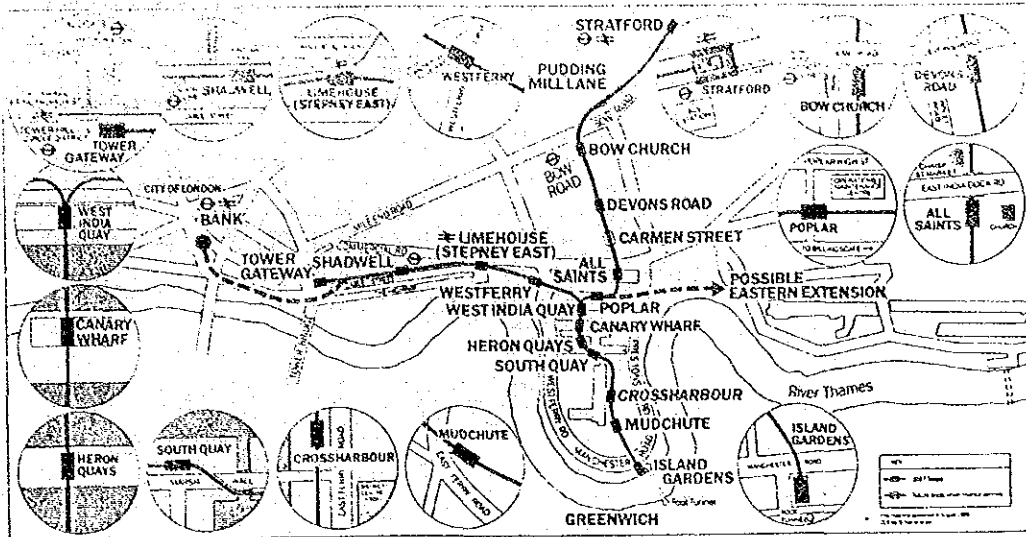
Construction of MAGLEV system



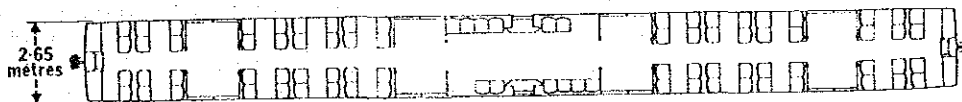
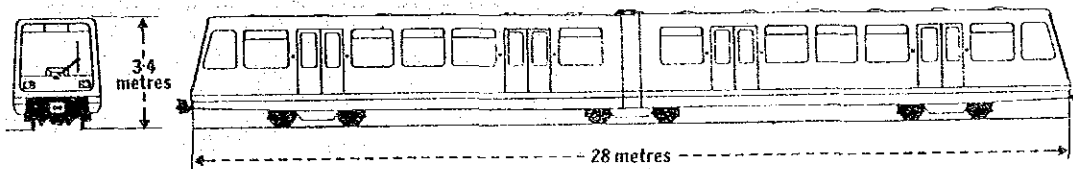
SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (23)

General Information	Project Name : Dockland DLRT	Developer/Operator : Dockland Light Railway Co.	
	Applied System : Light Rail Transit		
	Manufacturer/Developer : Linke - Hofman - Busch, GEC		
	Status : In operation since July, 1987		
Current Operation	Location of the System : London City, Tower Gateway - Island Gardens Stratford		
	Route length(km) : 12.1	Route Configuration : Double and single track	
	No. of stations : 16	Station Spacing (m) : 800	
	No. of Pass Carried : -		
	Total Train/Car kms per day : -		
	Operating Hours : 07:00 - 19:00		
	No. of cars owned : 2 cars/unit X 11	No. of Employee : 120	
	Estimated Revenue/Expenses : -		
	Construction Cost : £ 77 million (£ 6.36 million/km)		
Structure /Track	Track Support System : Concrete pier		
	Track Structure : Concrete track bed		
Vehicle Features /Performance	Body Material : Steel	Propulsion : GTO thyristor chopper controller, control 160kw DC, motor X 2/unit	
	Capacity : 86 seating & 130 standee		
		Speed(kph) max/practical: 80/	
	L x W x H(m) :28.0 X 2.65 X 3.4	Headway(min) min/practical :3 $\frac{1}{2}$ /7.5 $\frac{1}{2}$	
	Weight(ton) : 39	Acc/Dec Speed(km/h/sec) : 3.6/2.9	
	Train Composition : 2 cars/train	Max Gradient (%) : 60	
	Car Support : Steel wheel (740/660mm in diameter)	Min Curvature(m) :	
	Transport Capabilities : 1500 Passenger/hour/direction		
Operation System	Guidance : Ordinary franged wheel	The other characteristics : Track gauge: 1,435mm	
	Switching : Audimax switch		
	Total Traffic Control : Fully automated		
	Operation Control : Unman (Captain escorting)		
	Telecommunication : Wireless Telephone		
	Power System : 750 V DC, 3rd rail		
Remarks	1/ 4.32 for emergency		

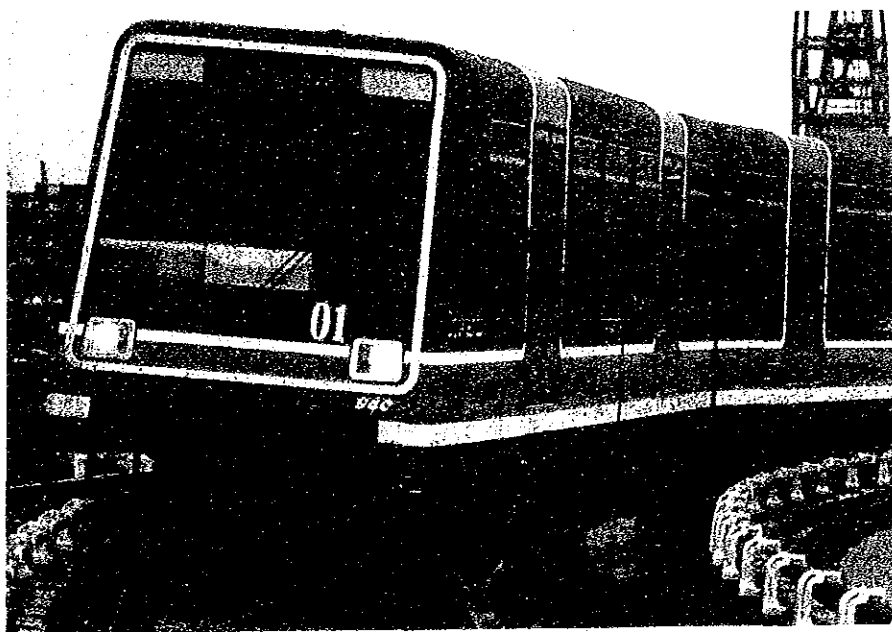
Name of System	LRT(DLRT)	Note	London, England
----------------	-----------	------	-----------------



Route of DLRT



Schematic diagram of DLRT car

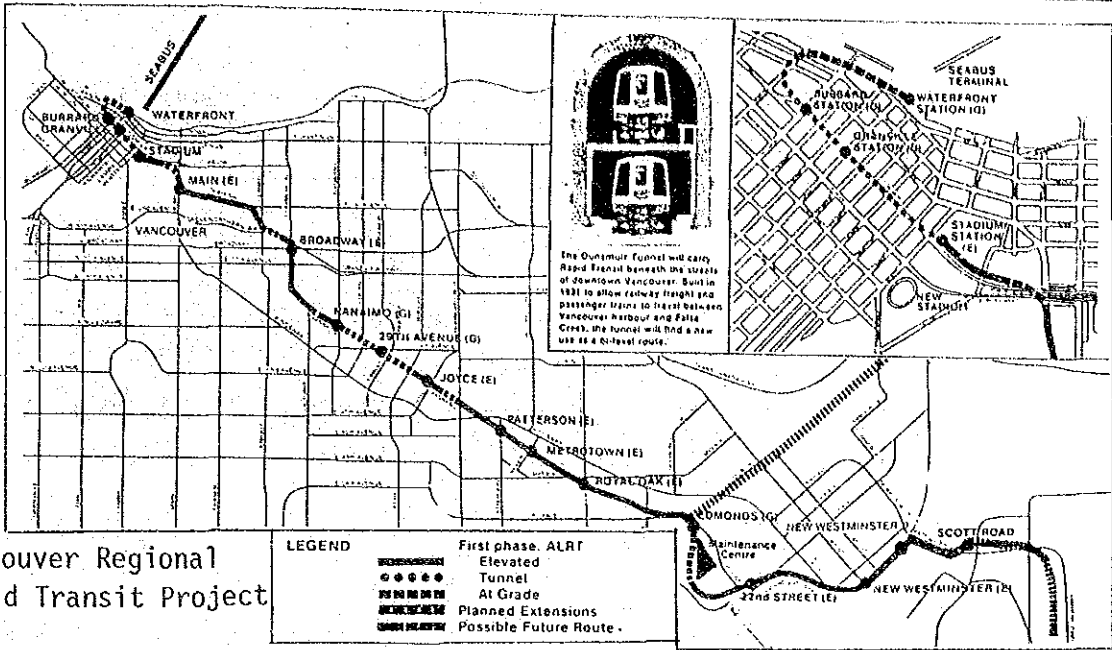


Dockland Light Railway car

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS(24)

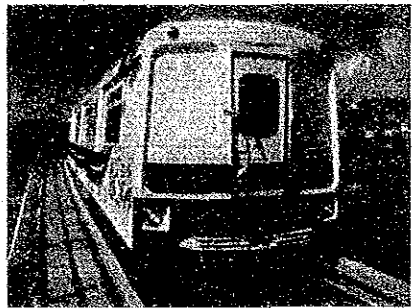
General Information	Project Name : Sky Train		Developer/ Operator : British Columbia Rapid Transit Company Ltd	
	Applied System : Linear motor driven ALRT			
	Manufacturer/Developer : Urban Transportation Development Corporation Ltd (UTDC) Metro Canada			
	Status : In operation since January, 1986			
Current Operation	Location of the System : Vancouver City			
	Route length(km) : 21.4		Route Configuration : Double track	
	No. of stations :		Station Spacing (m) : 1528.6	
	No. of Pass Carried : 60,000 passengers/day			
	Total Train/Car kms per day : -			
	Operating Hours : 05:00 am - 02:00 am			
	No. of cars owned : 114 cars		No. of Employee :	
	Estimated Revenue/Expenses : -			
	Construction Cost : \$C39.9 hundred million/km			
Structure /Track	Track Support System : Concrete piers			
	Track Structure : P.C. Reinforced concrete			
Vehicle Features /Performance	Body Material : Aluminium alloy		Propulsion : LIM	
	Capacity : 40 seat and 35 standee per car		Speed(kph) max/practical: 90/	
	L x W x H(m) :12.7 X 2.4 X 3.125/car		Headway(min) min/practical : 2/4	
	Weight(ton) : 13.9		Acc/Dec Speed(km/h/sec) :	
	Train Composition : 4.6 cars/train		Max Gradient (%) : 60	
	Car Support : Steel Wheels		Min Curvature(m) : 70	
	Transport Capabilities : 3000 passengers/hour/direction			
Operation System	Guidance : Ordinary steel wheels		The other characteristics : 200,000 passenger carried on Expo '86 final day.	
	Switching : Ordinary switches			
	Total Traffic Control : Full automated			
	Operation Control : Unman			
	Telecommunication : Wireless telephone			
Power System : 600 V DC.				
Remarks				

Name of System	ALRT, Skytrain	Note	BC Transit
----------------	----------------	------	------------

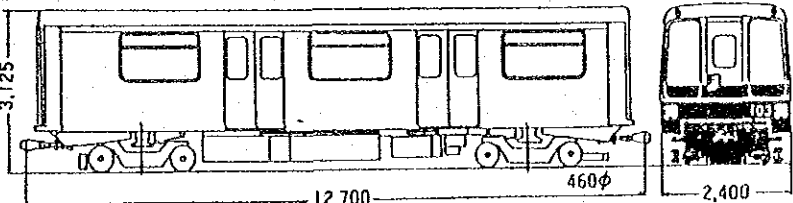


Vancouver Regional Rapid Transit Project

Map of route



Linear motor car (?)



Car size (2)



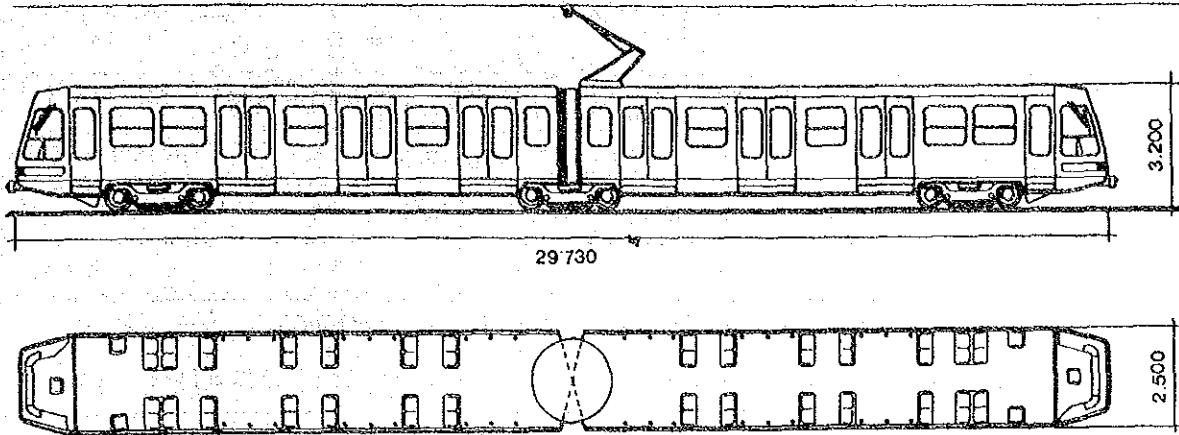
Running rail and reaction plate (1)

- ①. Reaction plate
- ②. Running rails
- ③. Current rails

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (25)

General Information	Project Name : TURIN ATM	Developer :Transporti Torimeisi - ATM
	Applied System : LRV	
	Manufacturer/Developer : Fiat, AEG-Telefuncker, EP and Amsalado	
	Status : In operation since	
Current Operation	Location of the System : Torino, Italy	
	Route length(km) : 106	Route Configuration : Double track
	No. of station : 177 (assumedly)	Station Spacing (m) : 400
	No. of Pass Carried : 207 million/year (1984)	
	Total Train/Car kms per day : 10 million car-km/year (1984) (27,397 car-km/day)	
	Operating Hours : 04:30 - 01:00	
	No. of cars owned : 292 ^{1/}	No. of Employee : 700
	Estimated Revenue/Expenses : Fares 16%, other commercial souces 1%, government subsidy 87%	
	Construction Cost : Lira 80 billion for 100 cars	
Structure /Track	Track Support System : ballast etc.	
	Track Structure : ballast and stone pavement	
Vehicle Features /Performance	Body Material : steel	Propulsion :Chopper and inverter controlled 105 kw 3phase AC motor x 4/ unit
	Capacity : 40 seating and 133 standee per unit	Speed(kph) max/practical : 60/28
	L x W x H(m) : 22.28 x 23.0 x 32.0	Headway(min) min/practical : 3/9
	Weight(ton) : 28/unit	Acc/Dec Speed(km/h/sec) : 3.6/4.5 ^{2/}
	Train Composition : 3 body articurated	Max Gradient (%) : 58
	Car Support : Independant Wheels	Min Curvature(m) : 15
	Transport Capabilities : 5,000 - 10,000 passengers/hour/direction	
Operation System	Guidance : Franged Wheel	The other characteristics : Gauge : 1445 mm
	Switching : Ordinary Switch	
	Total Traffic Control : Dispatcher System	
	Operation Control : One man	
	Telecommunication : Non	
Power System : 600 ^{+20%} _{-33%} V DC		
Remarks	^{1/} : Including 132 articurated cars ^{2/} : 8.6 for emergency	

Name of System	LRT	Note	Torino
----------------	-----	------	--------



Schematic diagram of Torino LRT car.



Outward appearance of Torino LRT car.

SUMMARIZED INFORMATION OF NEW TRANSPORT SYSTEMS (26)

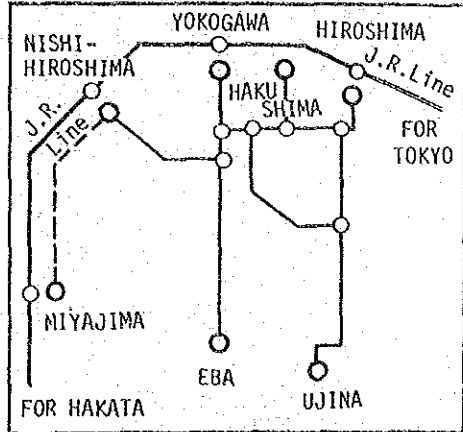
General Information	Project Name : Inner city and Miyajima Lines		Developer : Hiroshima Electric Rys Co	
	Applied System : Light Rail Vehicle			
	Manufacturer/Developer : Alma, Sumitomo, Toyo-denki, Nihon-air bracke Co.			
	Status : In operation since 1912 (Hiroshima Elec. Rys. Co)			
Current Operation	Location of the System : Hiroshima City, Japan			
	Route length(km) : 21.5 ^{1/}		Route Configuration : Double track	
	No. of station : 56		Station Spacing (m) : 300	
	No. of Pass Carried : 48,246,000 passengers/year (132,180.8 passengers/day)			
	Total Train/Car kms per day : 15,027/22,312			
	Operating Hours : 5:50 - 23:45 hours			
	No. of cars owned : 125 cars		No. of Employee :	
	Estimated Revenue/Expenses : Yen 5,352 million/Yen 4,930 million per year			
	Construction Cost : Yen 500-1,000 million/km			
Structure /Track	Track Support System : Concrete bad or ballast			
	Track Structure : Concrete block or stone pavement			
Vehicle Features /Performance	Body Material : Steel		Propulsion :VVVF inverter controlled 60kw 3 phase AC motor x 4/unit	
	Capacity : 70 seating and 70 standee per unit		Speed(kph) max/practical : 60/19.5	
	L x W x H(m) :26.86 x 2.45 x 3.82		Headway(min) min/practical : 1/3	
	Weight(ton) : 38.4/unit		Acc/Dec Speed(km/h/sec) :3.8/4.2 ^{2/}	
	Train Composition : 3 bogy articulated		Max Gradient (%) : 40	
	Car Support : steel wheel		Min Curvature(m) : 20	
	Transport Capabilities : 6,000 - 10,000 passengers/hour/direction			
Operation System	Guidance : franged wheel		The other characteristics : Track gauge : 1,435mm	
	Switching : Ordinary switches			
	Total Traffic Control : Dispatcher System			
	Operation Control : 2 men or one man			
	Telecommunication : Non			
	Power System : 600 V DC			
Remarks	<p>^{1/} total length is 34.2 km</p> <p>^{2/} 5.1 for emergency</p>			

Name of System

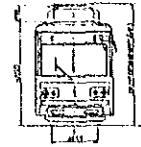
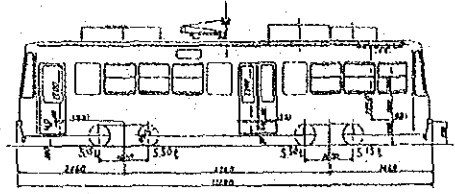
LRT

Note

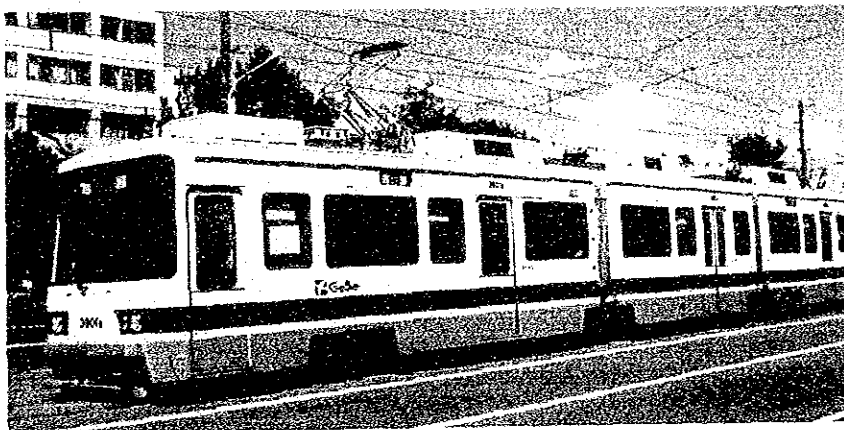
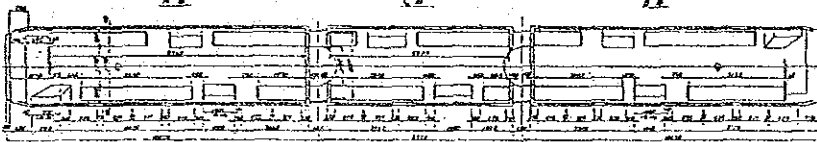
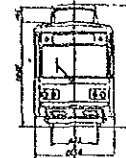
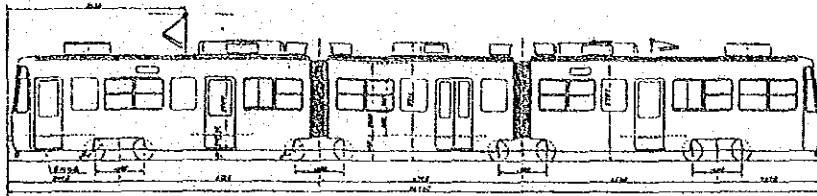
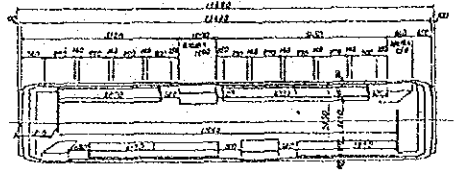
Hiroshima Elec.Rys.Co.



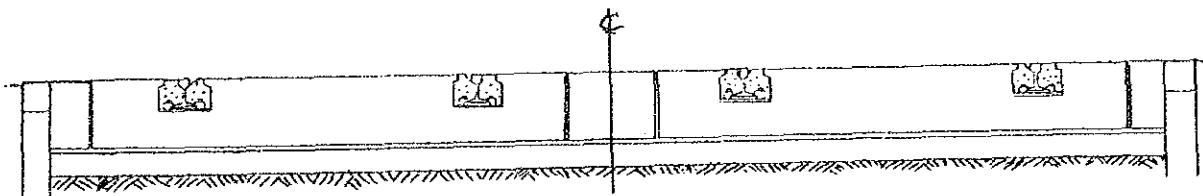
Map of route



Type 800 Electric Car



Type 3800 Articulated electric car



One example of track construction

JICA