



// METRO DE SEVILLA

Design and success of the Line 1 operational model.



Madrid, April - 2013



Sevilla's first underground line

Basic Information

Client

Agencia Obra Pública de la Junta de Andalucía

Shareholders

Sacyr Conc. (32,77%), Iridium (34,01%), Others (33,22%)

Date of concession

June 2003

Phase

Partial operation since 2nd April 2009, and completed operation since 23rd November 2009

Location

Line 1 of Metro de Sevilla connects 4 municipalities: Mairena del Aljarafe, San Juan de Aznalfarache, Sevilla y Dos Hermanas

Duration of concession

37 years

Investment

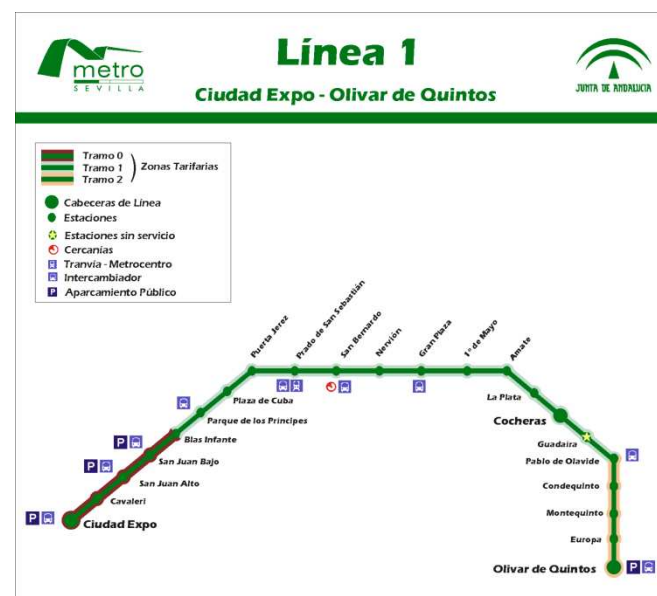
€ 634,093,302

Stations

22 stations: 4 on surface, 6 semi- subterranean and 12 subterranean

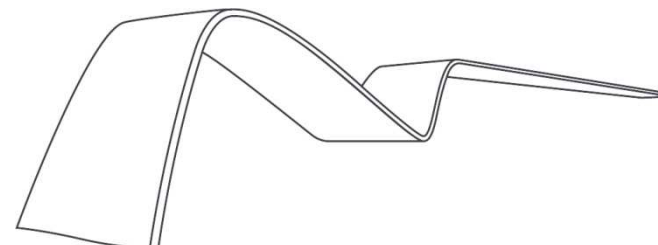
Estimated users

14,4 million / year 2011



SHAREHOLDERS SHARE CAPITAL %

AOPJA	14.931.200	11,77%
IRIDIUM (Grupo ACS/Dragados)	43.128.300	34,01%
SACYR Concesiones	41.555.300	32,77%
GEA 21	14.135.600	11,15%
ICF/CAF	13.069.600	10,31%
TOTAL	126.820.000	100%



// LINE 1 CHARACTERISTICS



// LINE 1 CHARACTERISTICS:

MUNICIPALITIES	POPULATION	LENGTH(m)	NUM. OF STATIONS
• 4	• 876.000	• 18.100	• 22

NUM. TRAINS	PASSENGERS/TRAIN (4 pass/m2)	MAX. SPEED (km/h)	COMMERCIAL SPEED (km/h)
• 17 + 4 (2012)	• 200	• 70	• 29-30

TRAVEL TIME (min.)	RUSH HOUR FREQUENCY	1st YEAR RIDERSHIP (Mill. Passengers)	SERVED POPULATION (500 m)
• 36	• 4'50"	• 14,1	• 227.974

INVESTMENT (Mill. Euros) 634,09	CONCESSION PERIOD (years)
• Civil works: 458,27 • Installations: 126,19 • Rolling Stock: 49,64	• 37



// Rolling Stock

Technical Specifications:

Vehicle type: Light Rail bidirectional train de piso bajo

Low floor %: 100 %

Voltage: 750 V

Supply: Pantograph

Power: 488 KW

Traction motors: 8 asynchronuos.

Bogies: 2 motoriced y 1 trayler bogie

Max. speed: 70 km/h

gauge: 1,435 metros

Length: 31,26 metros

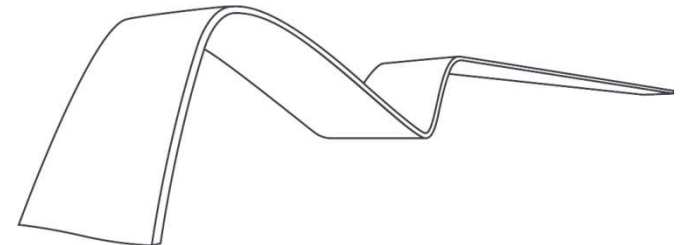
Width: 2,65 metros

Height: 3,385 metros

Weight: 43,26 Tn

Capacity (4 pass. /m²): 202

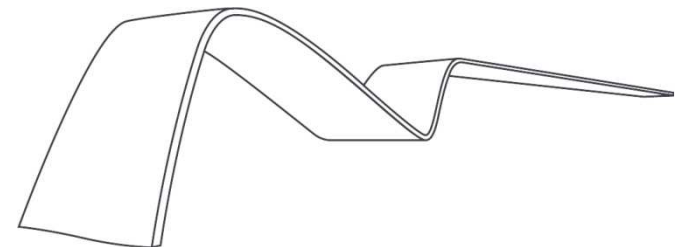
Number of trains: 17 + 4 (2012)





// MAIN CRITERIA FOR OPERATIONAL DESIGN & ORGANIZATION OF THE OPERATIONS DEPARMENT.

METRO SEVILLA – LINE 1

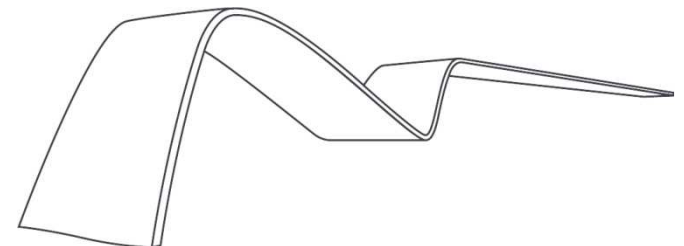
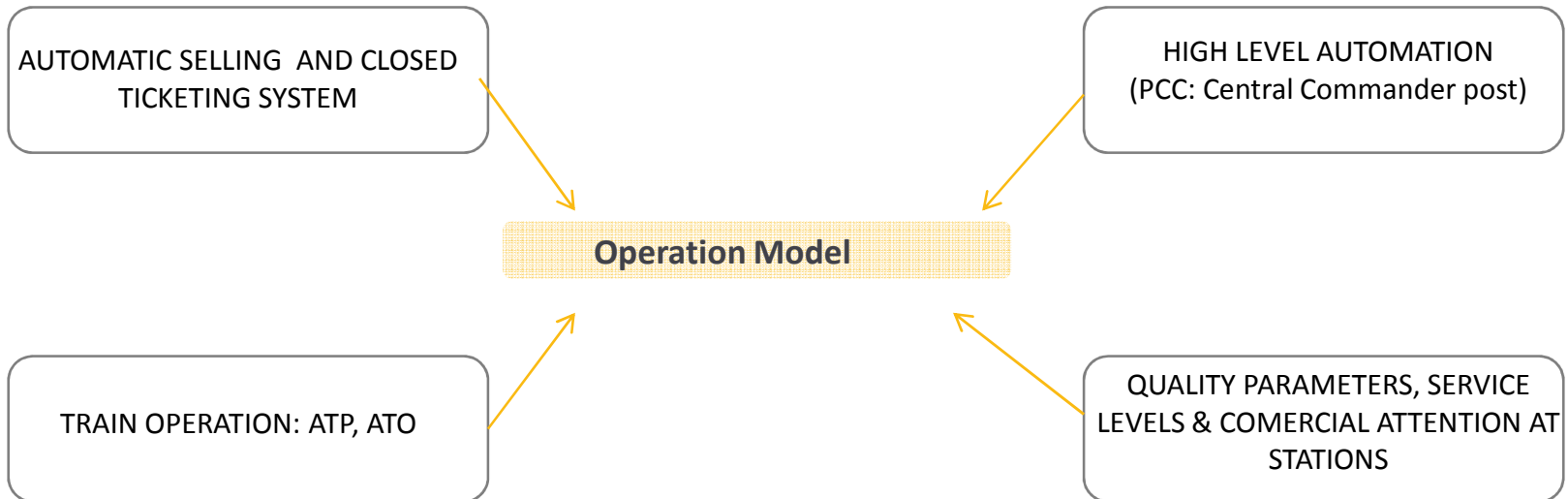




// MAIN CRITERIA FOR OPERATIONAL DESIGN & ORGANIZATION.
METRO SEVILLA – LINE 1

// Operation design

OPERATION MODEL



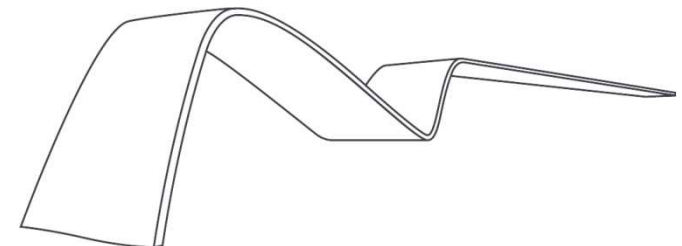


// MAIN CRITERIA FOR OPERATIONAL DESIGN & ORGANIZATION.
METRO SEVILLA – LINE 1

// Operation design

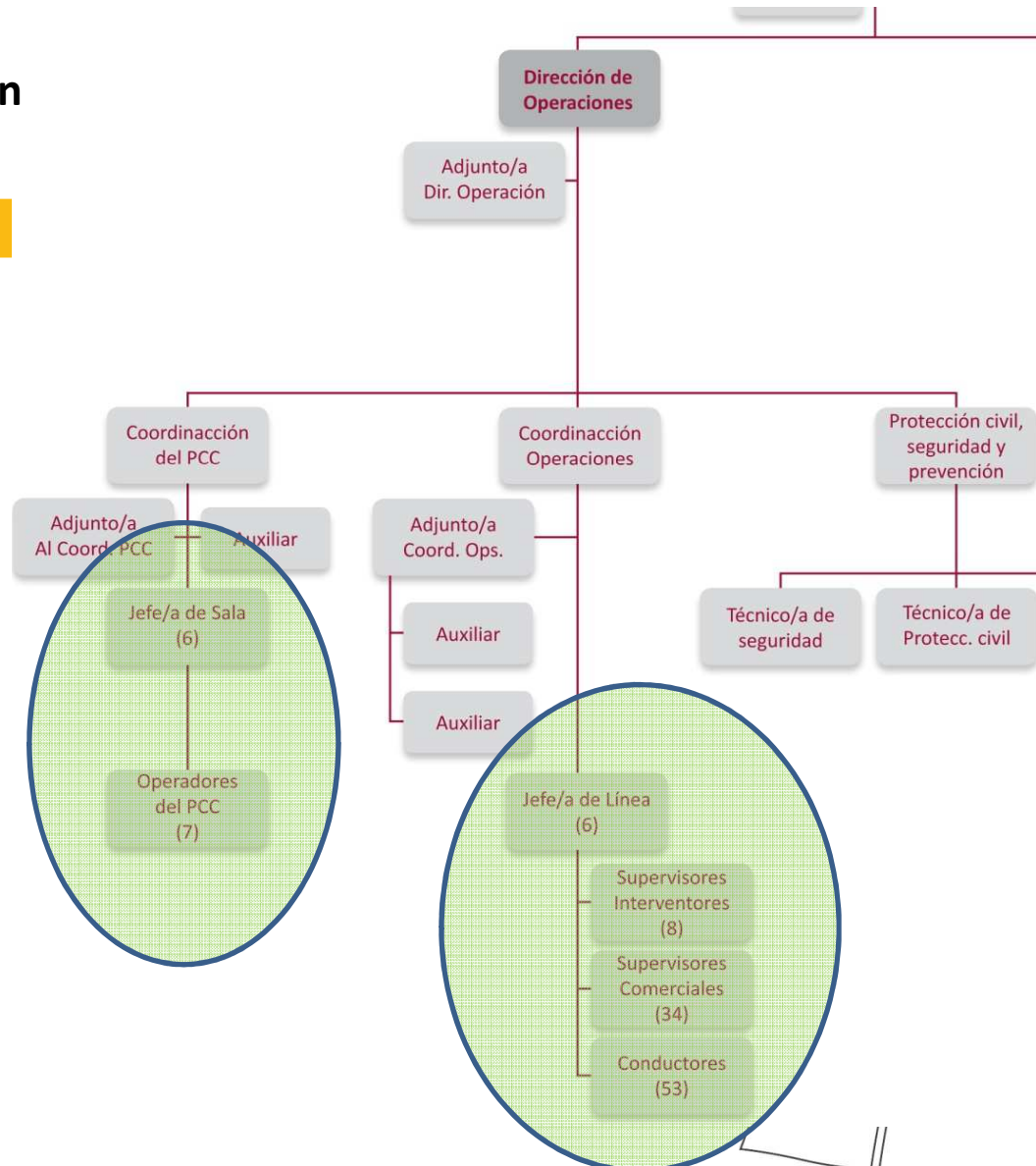
QUALITY PARAMETERS

Tipología	Parámetros a medir	Concepto
Disponibilidad del sistema	Disponibilidad del servicio	Tiempo efectivo de servicio / tiempo de servicio programado
	Disponibilidad de la flota de material móvil	veh. X km reales / veh. Km programados
Fiabilidad del sistema	Fiabilidad de la flota de material móvil	MKBF real / MKBF teórico (av. Con perturbación en línea)
	Fiabilidad de las Instalaciones Fijas	MTBF real / MTBF teórico. (Comunicaciones, señalización, máq. de control de acceso, máq. de venta automática de títulos, EEMM, ascensores).
Regularidad del servicio	Regularidad de intervalos	Intervalos medios y desviaciones típicas.
Imagen Comercial	Limpieza de trenes y estaciones	Nivel en inspecciones (sobre una escala de 0-3)
	Iluminación de trenes y estaciones	Niveles lumínicos reales / niveles lumínicos exigibles
	Funcionalidad de equipos de billeteo	Disponibilidad de equipos de billeteo y acceso.



// Operation design

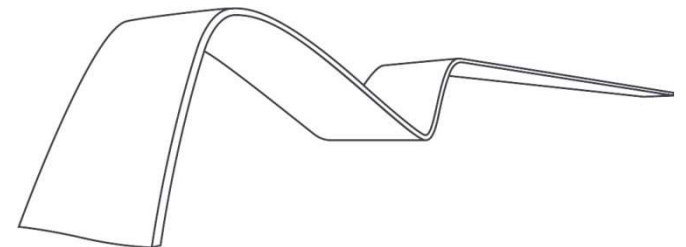
ORGANIZATION



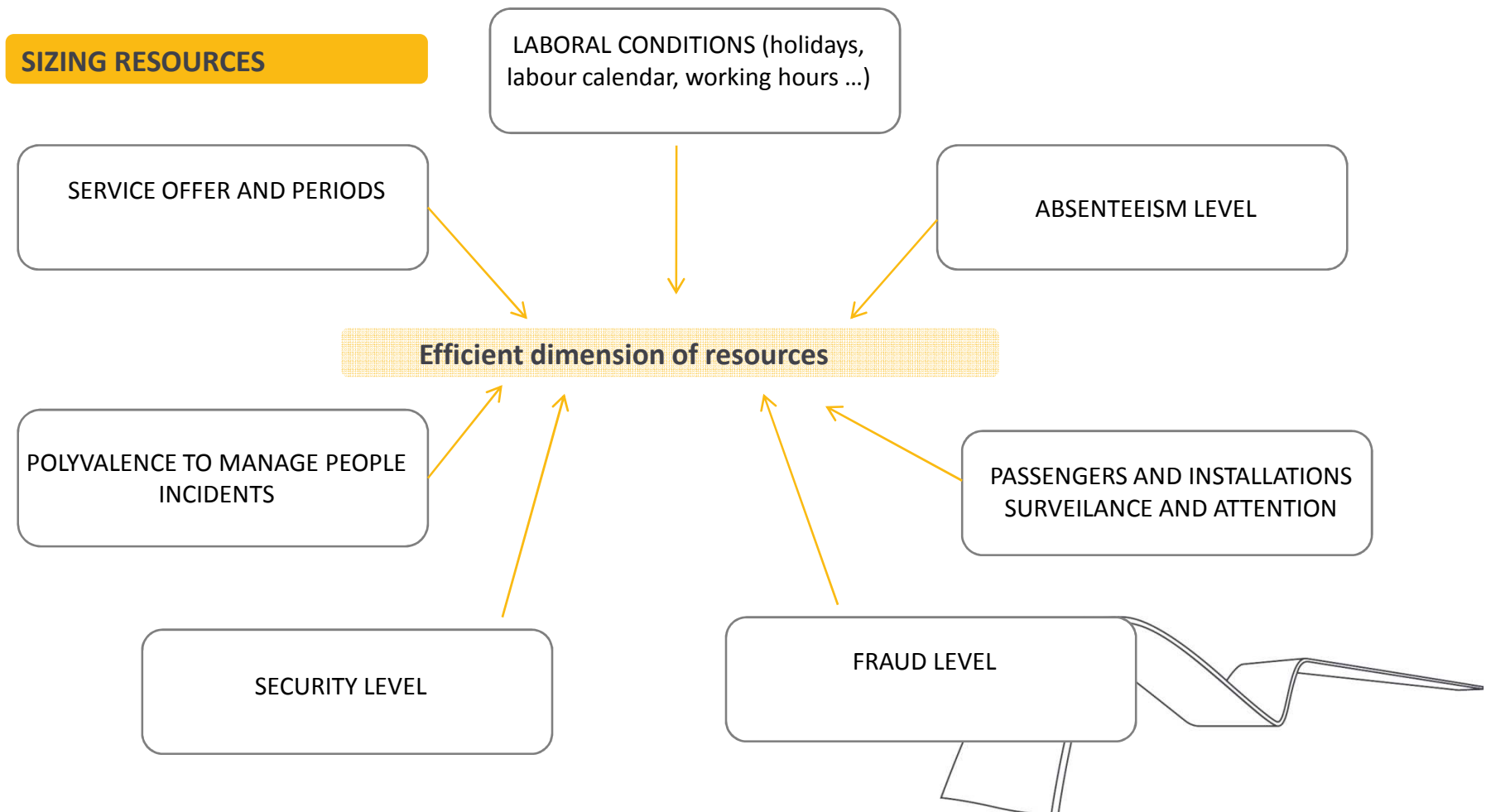


// VARIABLES FOR ORGANIZATION DIMENSION AND COVERAGE CRITERIA

METRO SEVILLA – LINE 1



// Variables for Organization Dimension.





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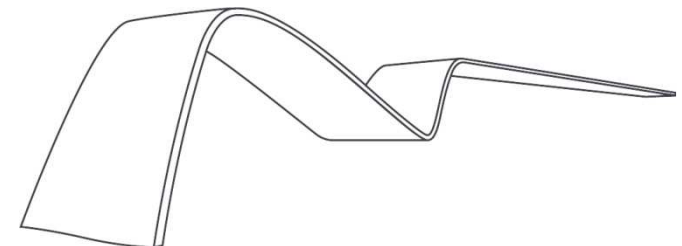
// Variables for Organization Dimension.

SIZING RESOURCES

67% of direct staff belong to Operation Department. It's essential to optimize the dimension in order to control direct costs.

Evolución Empleo Directo	Totales
Dirección	5
Personal de Oficina	34
Personal de PCC y Línea	120
Personal de Mantenimiento (GIR)	20
Totales	179

The number of employees inside each position is low, so the management of incidents and absences is complicated. Polivelence, flexibility and a “labour exchange” of employees are essential.





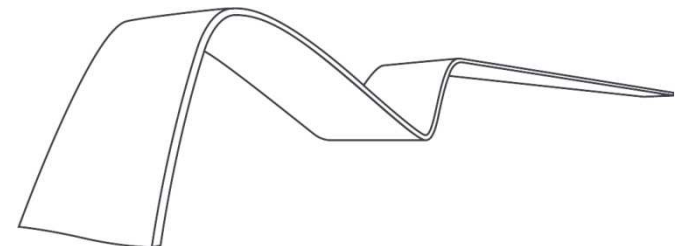
// VARIABLES FOR ORGANIZATION DIMENSION AND COVERAGE CRITERIA.
METRO SEVILLA – LINE 1

// Variables for Organization Dimension.

SIZING RESOURCES

Staff management must content:

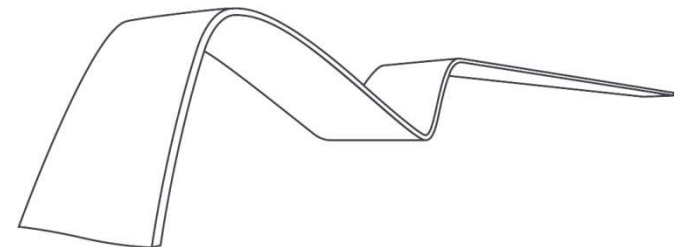
- Trains: adaptation to service offer, including normal days and special periods (Semana Santa, Feria, Navidad) and singular days (football match, city events, etc.).
- Stations: coverage at open and closing service, complementarity between station staff and Security people, fraud prevention.
- PCC: 24h. Service
- General: Flexibility for weekends schedule changes and special periods.





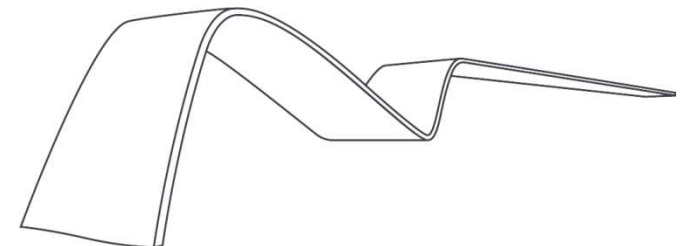
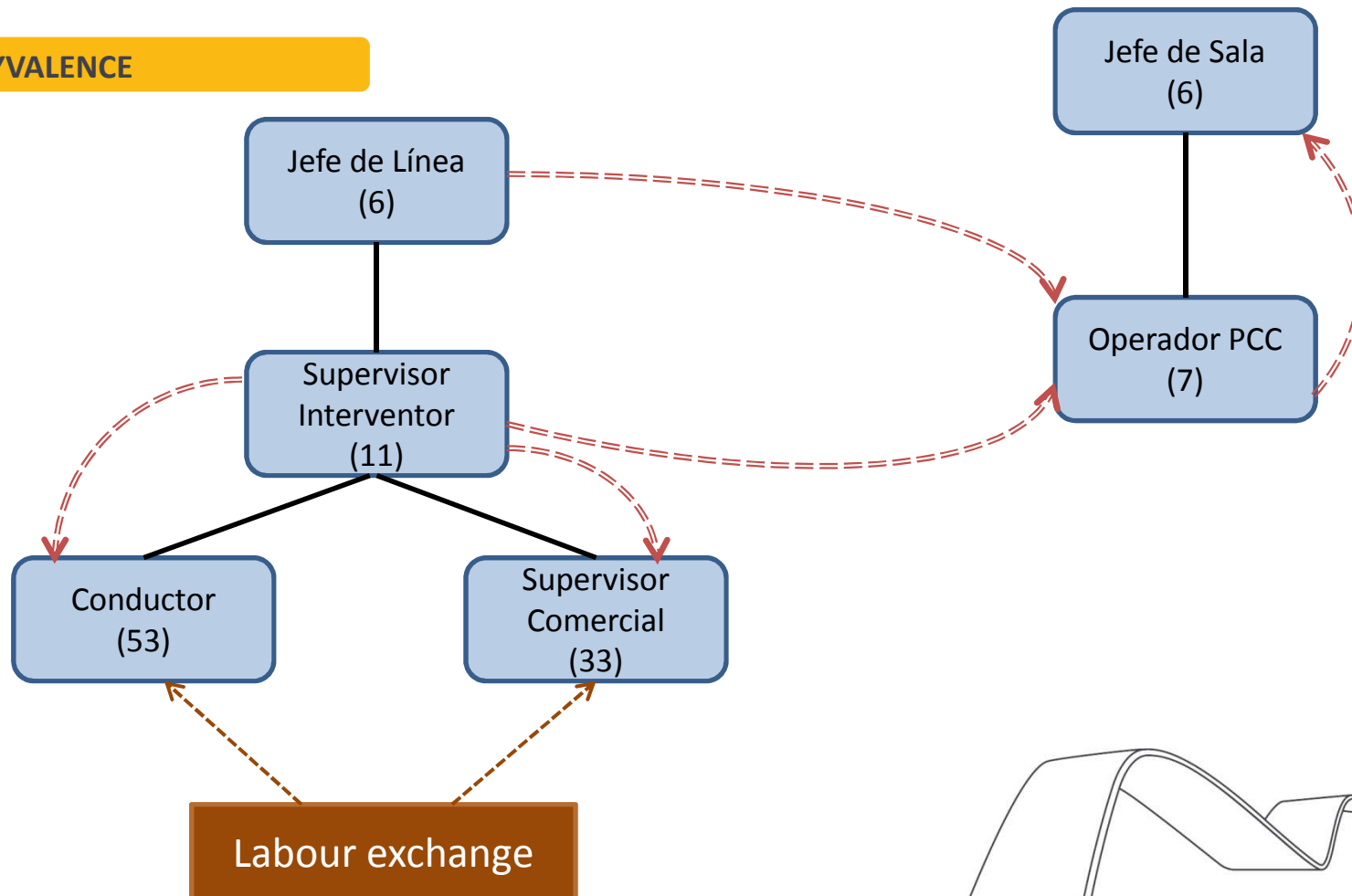
// POLYVALENCE & FLEXIBILITY

METRO SEVILLA – LINE 1



// Polyvalence & Flexibility.

POLYVALENCE



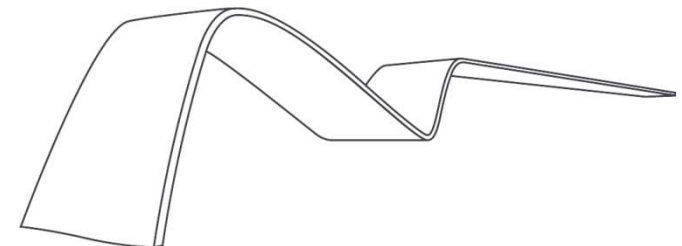


// POLYVALENCE & FLEXIBILITY.
METRO SEVILLA – LINE 1

// Polyvalence & Flexibility.

FLEXIBILITY

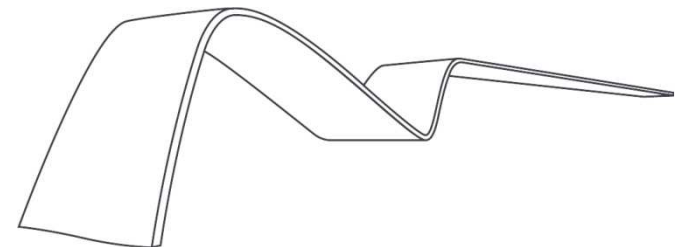
- Working day flexible between 6 – 9 hours.
- Coverage of special events (Semana Santa, Feria, Navidad, fútbol) with overtime and adaptation of resting periods. Also bonuses.
- Adaptation of holidays quotas.
- Possibility of annual service changes depending on service offer modifications.





// THE REALITY OF LINE 1

METRO SEVILLA – LINE 1

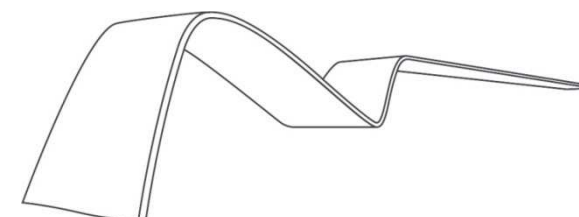


// SERVICE LEVELS

Service levels in 2012

NIVELES SEGÚN PPTP														
2012	ene-12	feb-12	mar-12	abr-12	may-12	jun-12	jul-12	ago-12	sep-12	oct-12	nov-12	dic-12	PROMEDIO	NIVEL S/ PPTP
DISPONIBILIDAD DEL SERVICIO	99,97%	99,96%	99,91%	99,78%	99,89%	99,69%	99,89%	99,82%	99,83%	99,78%	99,83%	99,87%	99,85%	95%
DISPONIBILIDAD DEL MATERIAL MOVIL	106,75%	104,77%	102,02%	111,67%	105,00%	103,73%	106,03%	106,83%	103,71%	104,72%	104,80%	108,41%	105,70%	98%
FIABILIDAD DEL MATERIAL MOVIL	187,00%	177,00%	279,00%	214,00%	189,00%	107,00%	1041,00%	205,00%	118,00%	163,00%	214,52%	226,00%	260,04%	98%
FIABILIDAD DE INSTALACIONES FIJAS	553,37%	310,86%	195,35%	324,29%	283,13%	323,84%	219,00%	223,48%	184,82%	299,28%	179,04%	220,89%	276,45%	98%
REGULARIDAD	90,03%	88,43%	88,14%	85,06%	90,52%	90,41%	92,21%	94,06%	90,64%	88,96%	87,14%	87,09%	89,39%	75%
LIMPIEZA	3,000	2,998	2,989	2,973	2,995	2,992	2,989	2,975	2,977	2,973	2,971	2,956	2,982	2,500
ILUMINACIÓN	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	90%
TIEMPOS DE FUNCIONAMIENTO DE LOS EQUIPOS DE BILLETEAJE	99,93%	99,82%	99,97%	99,82%	99,79%	99,86%	99,82%	99,79%	99,76%	99,73%	99,77%	99,75%	99,82%	98%

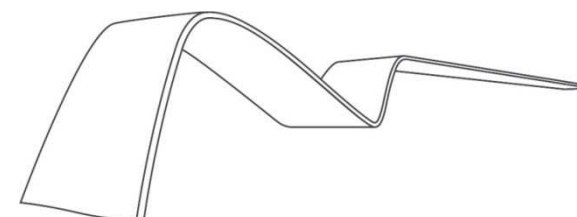
(*) Cálculo teniendo en cuenta los subsistemas con valor ∞. (Estos valores se han aproximado al 100% para el cálculo)



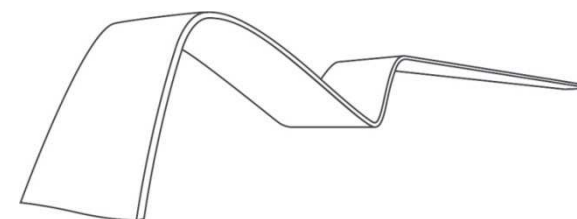
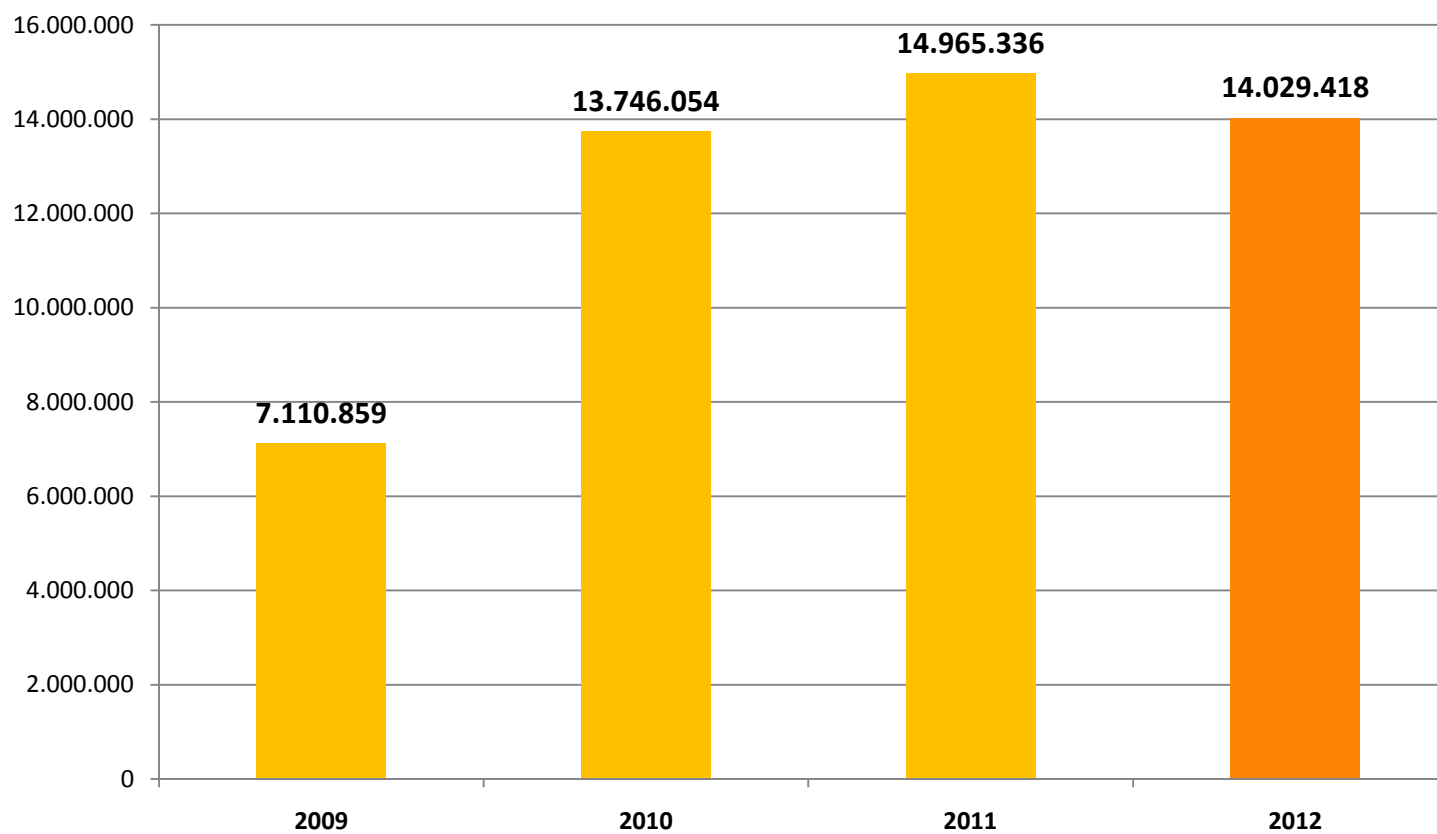
// RIDERSHIP EVOLUTION

	2009 (*)	2010	2011	2012
Passengers	7.110.859	13.746.054	14.965.336	14.029.418
Global	49.851.667			
% Growth over previous year	0	48,27%	8,87%	-6,25%

(*)Operation beginning 02/04/2009

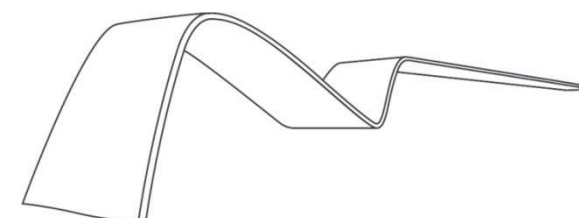
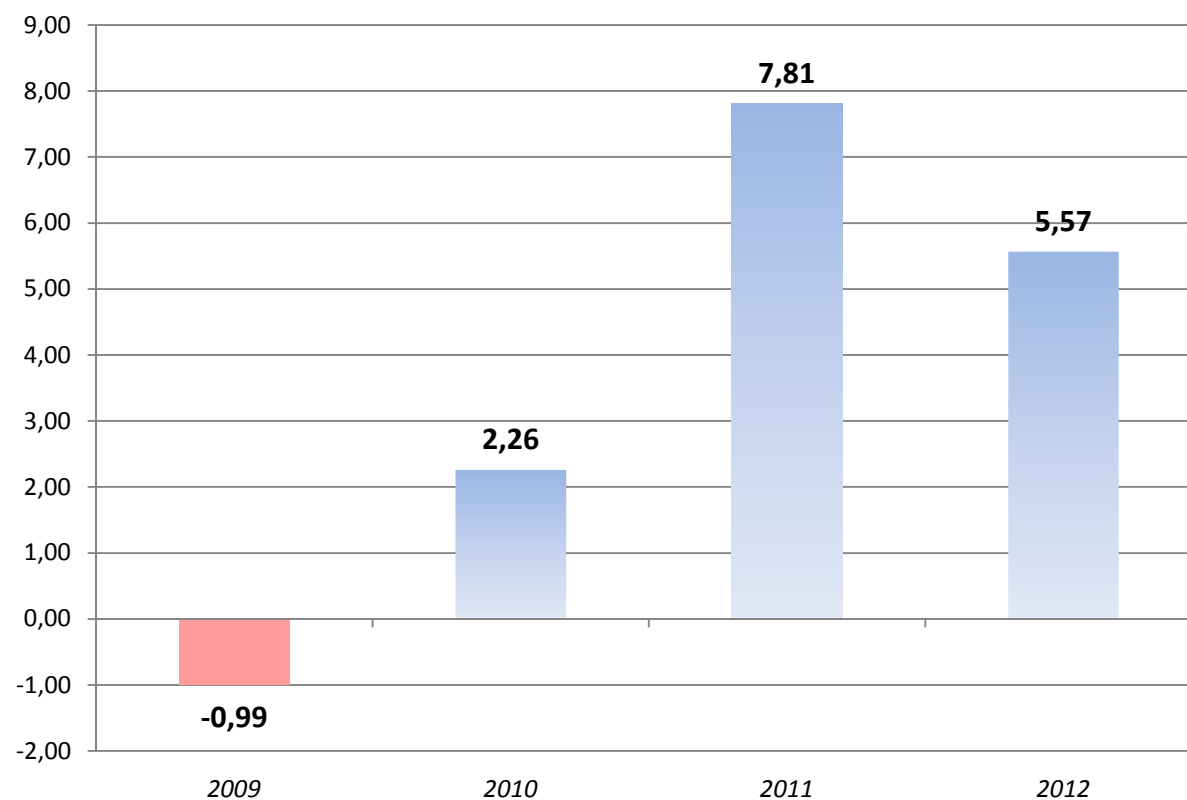


// RIDERSHIP EVOLUTION



// PROFITS EVOLUTION

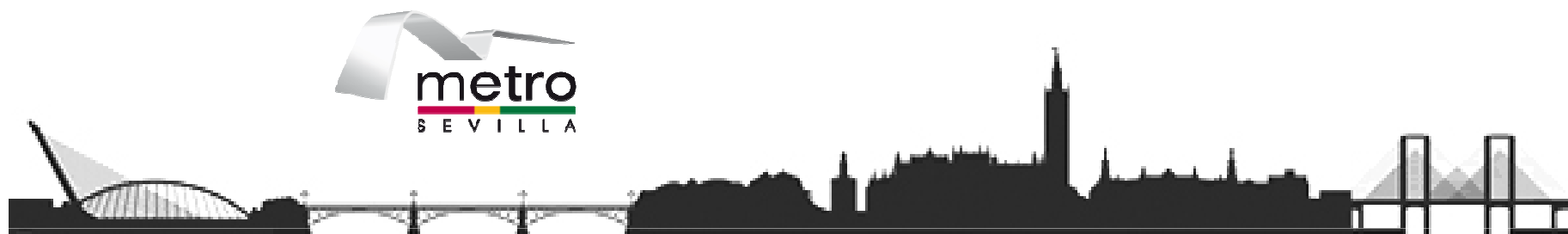
2009	2010	2011	2012
-0,99	2,26	7,81	5,57





// THE REALITY OF LINE 1.
METRO SEVILLA – LINE 1

// BENEFITS FOR SEVILLA

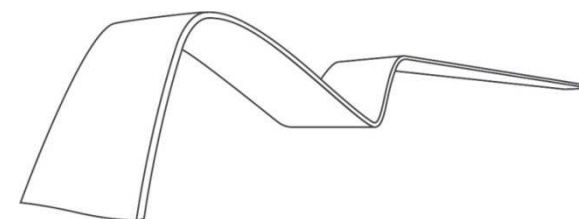


Innovation, safety and
confort with a reliable
transport.

Efficient mobility: Fares
integration, parkings,
transport modes
conection

Mobility
improvement &
urban integration

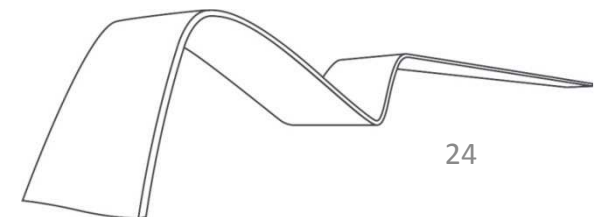
Cultural & social
activities



// TECHNOLOGY INNOVATION, SAFETY, CONFORT & RELIABILITY



// EFFICIENT MOBILITY: FARES INTEGRATION, PARKINGS, TRANSPORT CONECTIONS



// URBAN INTEGRATION & MOBILITY IMPROVEMENT

TRAVELS IN WORKING DAYS, OCTOBER 2011

1

- 58.578 viajeros liquidables



2

- 55.632 viajeros liquidables



3

- 55.406 viajeros liquidables



On Saturdays, travels overcome 50% of a working day.



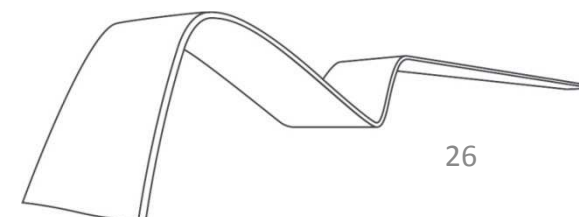
// URBAN INTEGRATION & MOBILITY IMPROVEMENT

	2009	2010	2011	2012
Semana Santa	358.450	549.281	435.464	447.287
		95.713 usuarios el 28/03/2011	96.836 usuarios el 17/04/2011	94.652 usuarios el 04/04/2012

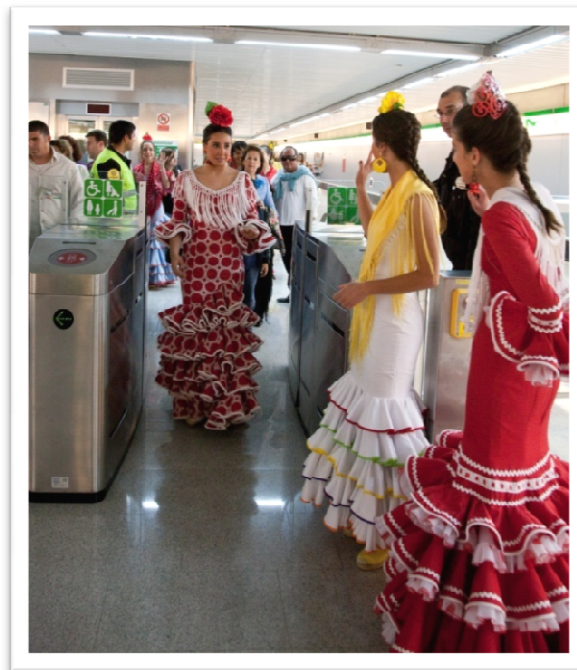
	2009	2010	2011	2012
Feria de Abril	577.881	795.439	790.598	692.095
		147.040 usuarios el 20/03/2010	145.754 usuarios el 04/05/2011	131.462 usuarios el 25/04/2012

 Máxima afluencia diaria registrada

 Segunda cifra de máxima afluencia diaria registrada



// URBAN INTEGRATION & MOBILITY IMPROVEMENT



// CULTURAL & SOCIAL ACTIVITIES

"Aula Metro" program for schools

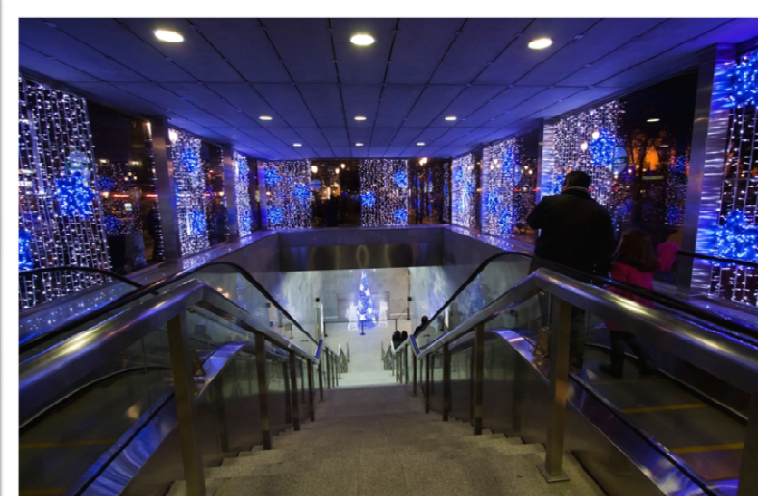
Visits program

Christmas activities

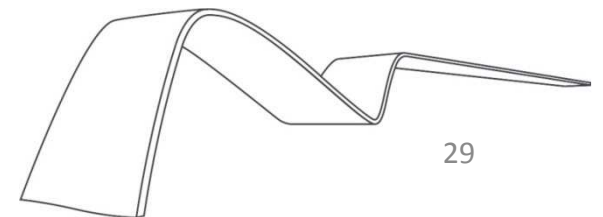
Solidary activities (blood donations, sponsorship)

Cultural programs: concerts

// THE REALITY OF LINE 1.
METRO SEVILLA – LINE 1



// Thank you for your attention

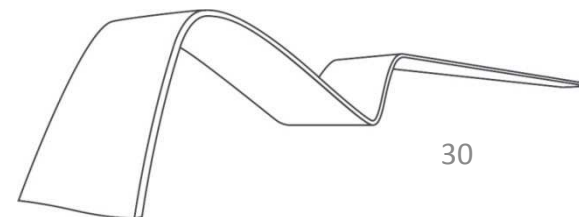




Atención al cliente: 902 364 985/ 954 540785

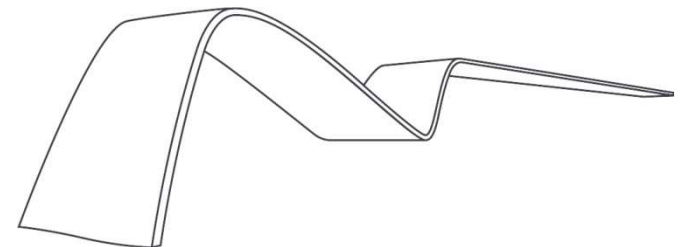
Sede corporativa: 954 032 100

www.metro-sevilla.es
comunicación@metrodesevilla.es





// LINE 1 - IMAGES



// La Línea 1: Imágenes de la infraestructura



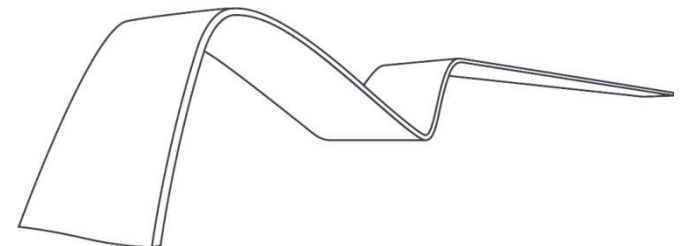
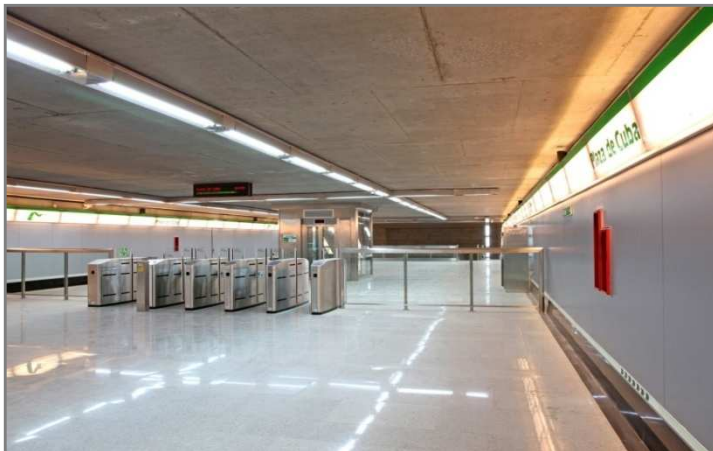
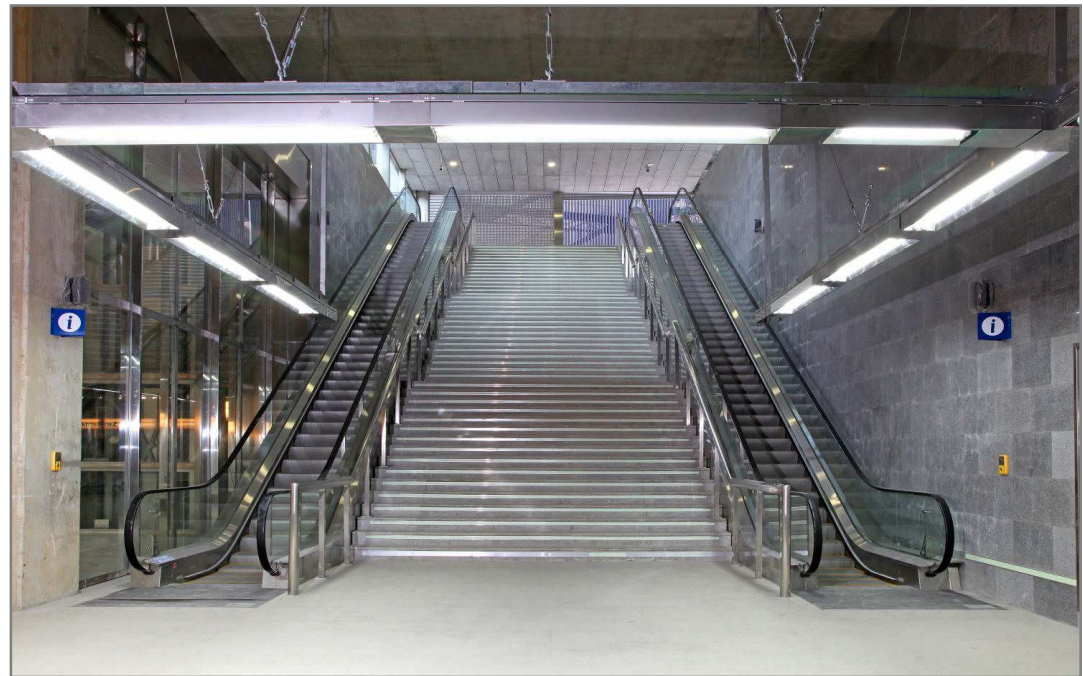
// La Línea 1: Imágenes de la infraestructura





// METRO DE SEVILLA – LÍNEA 1

// La Línea 1: Imágenes de la infraestructura



// La Línea 1: Imágenes de la infraestructura

