

Using light rail
infrastructure as a
catalyst to re-
think placemaking
in the urban
environment for
Bologna

SYSTRA



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SYSTRA Italia

- 1. LR/Tramways projects in Italy**
- 2. Bologna LR/Tramway: a clear decision**
- 3. Bologna LR/Tramway: the Red Line (& Green line extension)**
- 4. Bologna Red Line placemaking**

Light Rail/Tramways in Italy

Light rail in Europe → focus on Italy



- “Historical networks” from the early 20th century in Milan, Turin, Rome, Trieste and Naples;
- Out of 21 average-size cities, with a population ranging between 150,000 e 500,000 inhabitants, only 8 have at least one LRT line:

Messina, Venice/Mestre (rubber tyre), Padova (rubber tyre), Cagliari, Sassari, Bergamo, Palermo and Florence.

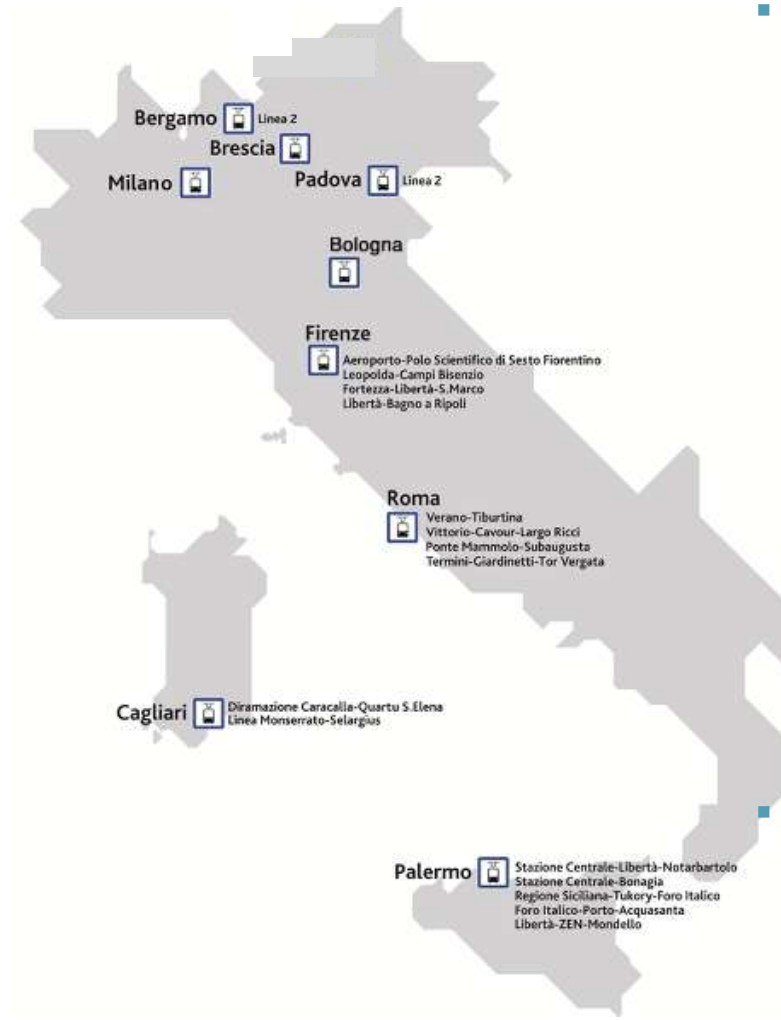
By comparison, in France of the 15 cities of approximately the same size, 13 boast a tramway networks for a total of 37 lines.

Light Rail/Tramways in Italy



- Currently, 12 cities operate LR/tramway networks for total length of 350 km: Milan, Turin, Rome, Naples, Messina, Venice/Mestre, Padova, Cagliari, Sassari, Bergamo, Palermo and Florence.

- Italy is lagging behind main European countries: at least a 25 km/year construction plan would be needed in the next 10 years in order to catch up with the European average;



- Projects under construction or in advanced design stage:

Bologna Red&Green, Brescia T2.

Bergamo T2, Padova n.2&3, Florence T3 &T4, Palermo ph.1&2, Rome "Togliatti", "TTV" and "TVA", Cagliari extension, Milan extensions

for a total amount of **186 km**

- Feasibility or early design stage:

Bologna Blue, Rome L1-L5, Messina, Reggio Emilia & Pisa

LR Networks in Operation

New/Ongoing LR projects

Bologna Light Rail: a clear decision

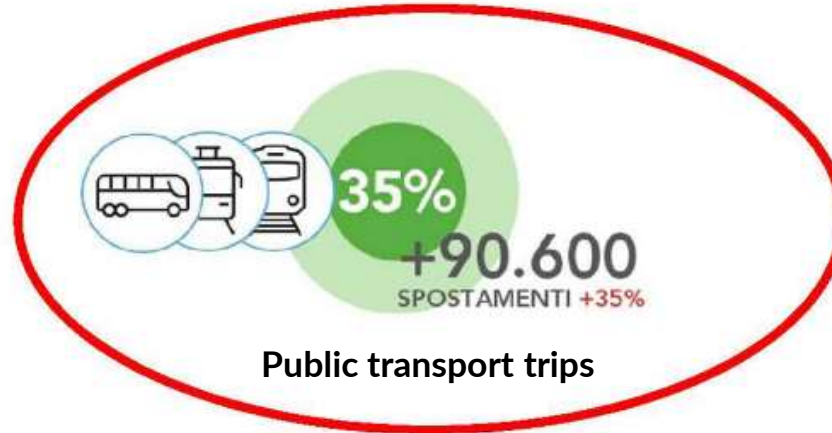
Transport Analysis and Mobility Goals for 2030

-255.700 CAR TRIPS

-37% Compared to current levels



+785.000 km
IN BICI



+1.285.000 km
IN BUS TRENO E TRAM

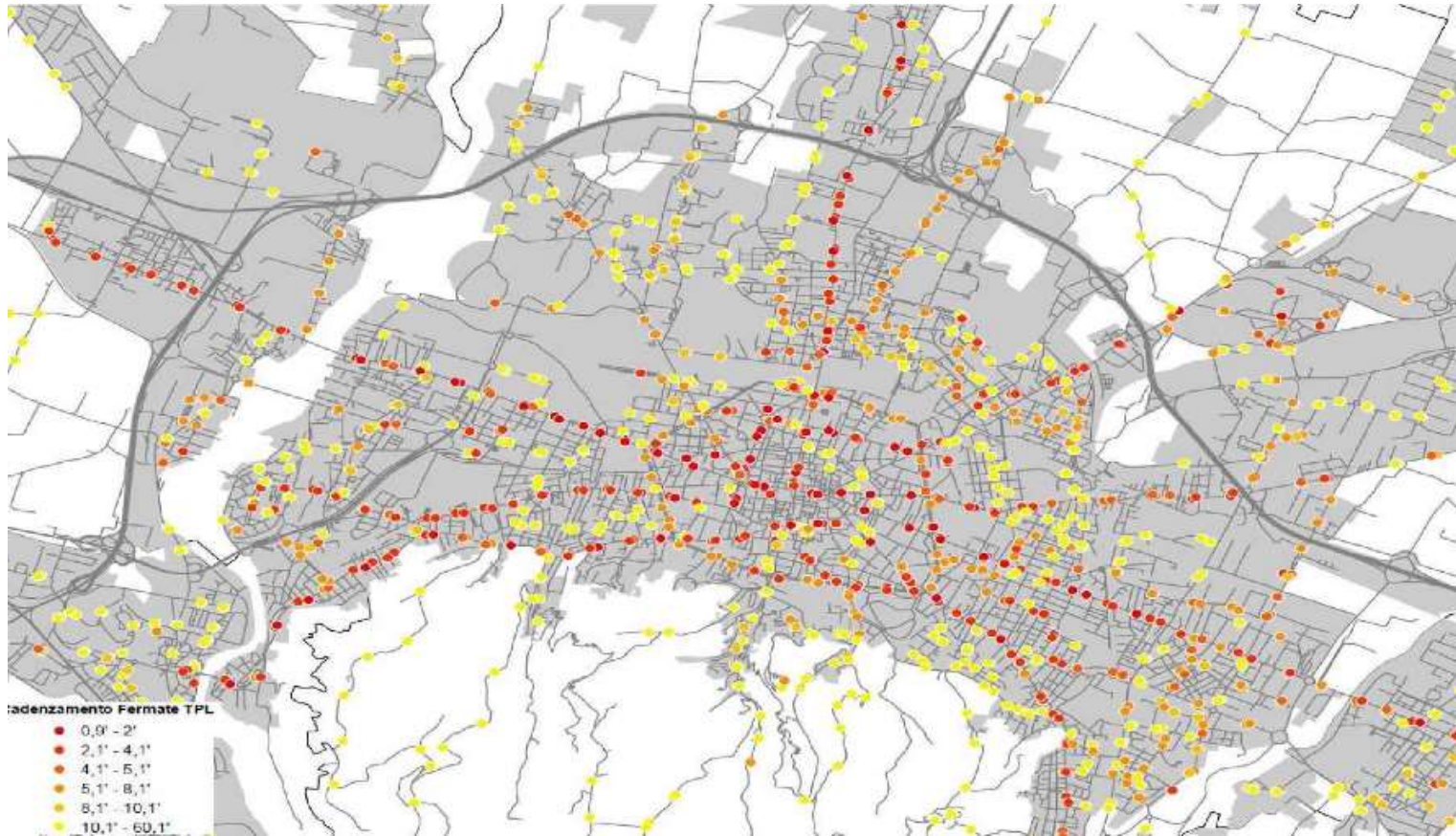


+11.000 km
A PIEDI



Bologna Light Rail: a clear decision

Transport Analysis: Current Situation



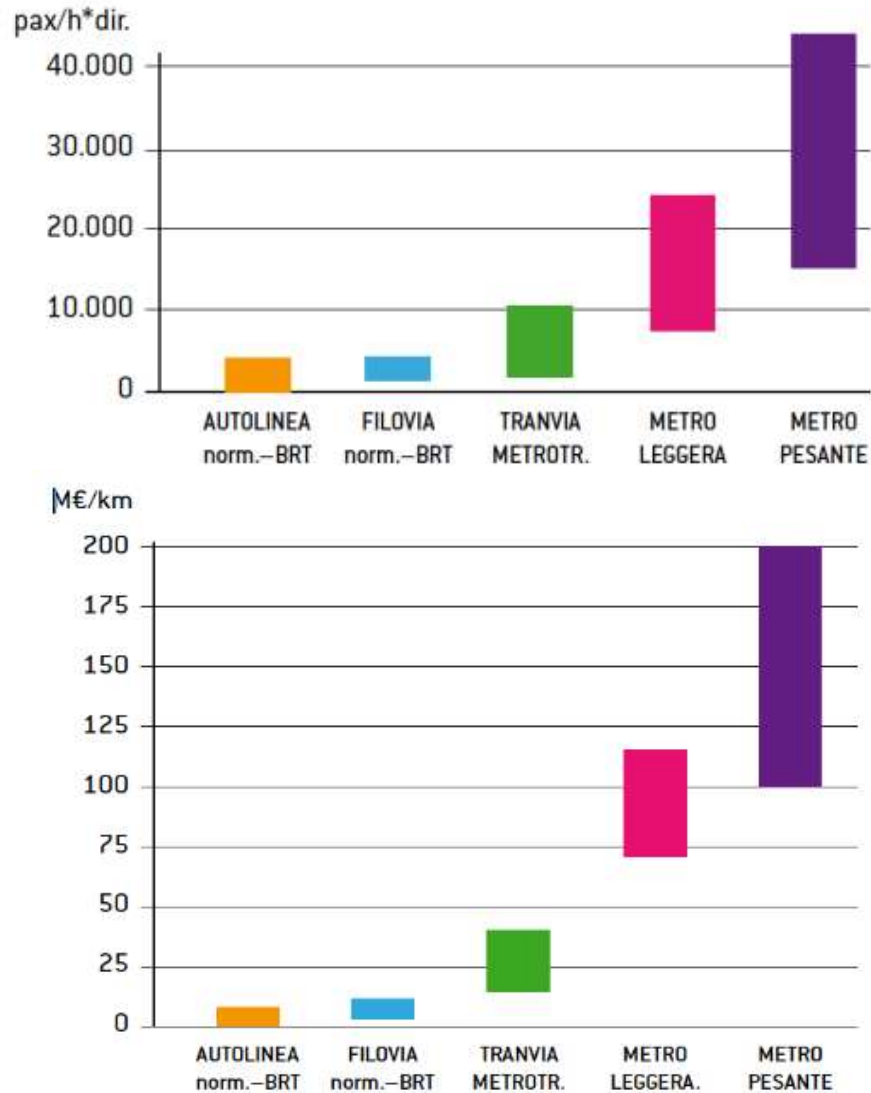
Current Bus Transport Network headway
is saturated



Need for a new infrastructure !!

Bologna Light Rail: a clear decision

Transport Analysis: Modal choice



- All major radial axis in Bologna are estimated to have a pphpd that fall properly in the LR/Tramway range: 2.000- 6.000 pphpd.
- At grade infrastructure, low access time to stops whose average distance is 400m



Best compromise between an *effective urban permeation* and *attractivity* vs. *commercial speed.*

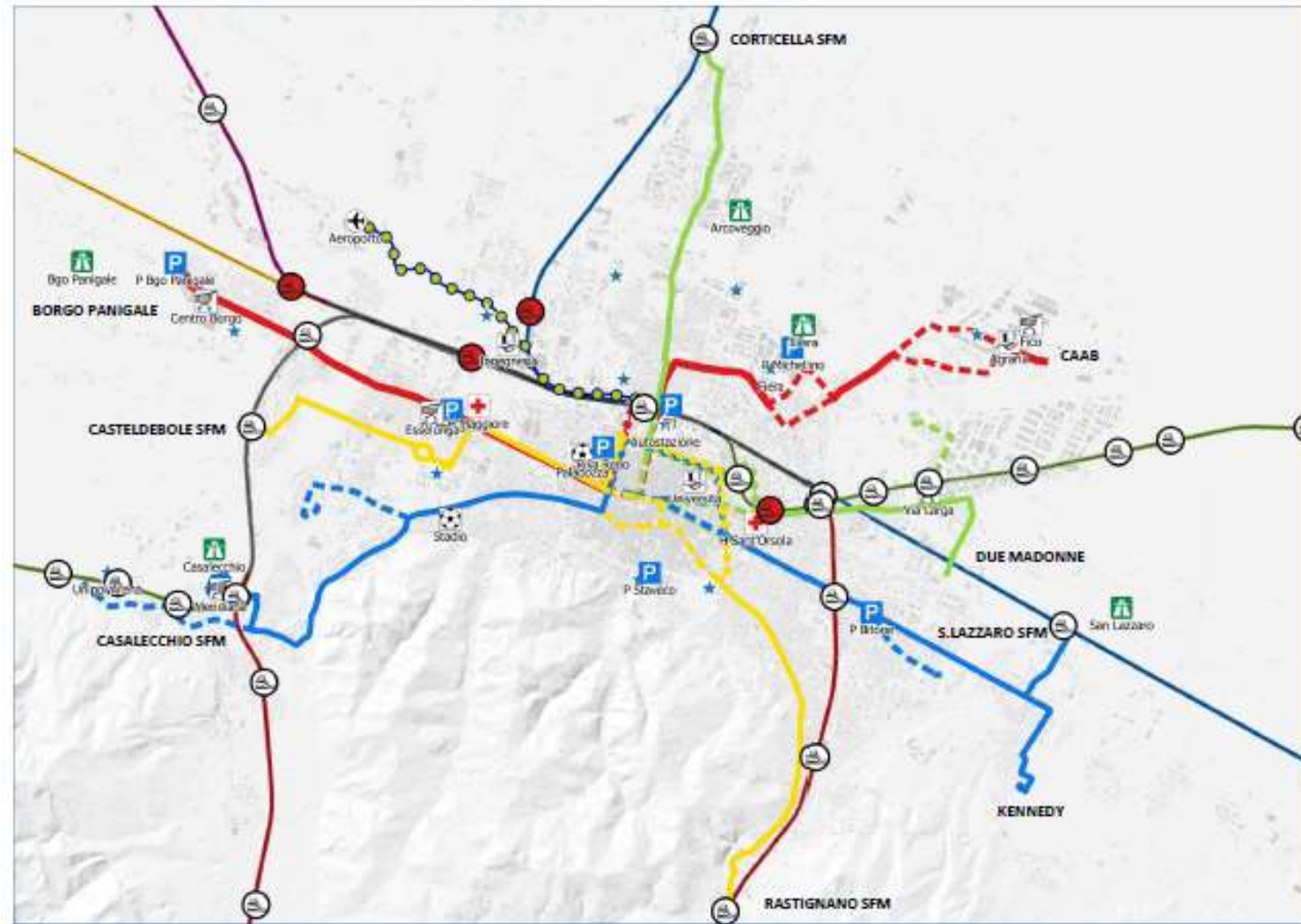
- OPEX and energy consumption are lower per passenger *km than other modes (trolley buses);

Bologna Light Rail: a clear decision

The long-term Network

- **Red line:** Borgo Panigale – Facoltà di Agraria/CAAB;
- **Green line:** Due Madonne – Corticella;
- **Blue line:** Casalecchio – San Lazzaro
- **Yellow Line:** Casteldebole – Rastignano

Line	Daily passengers
Red	105.000
Green	69.000
Blue	103.000
Yellow	46.000



Bologna Light Rail: Red line

Timeline

- **A) Decision-making, feasibility and funding**
 - Decision on LRT and funding of the design: December 2017
 - Feasibility/preliminary design kick off: September 2018
 - Submission of funding request to the Ministry of Transport & Infrastructures: December 2018
 - Ministerial Decree granting the fund of 510 M€: December 2019

- **B) Design & Project Approval**
 - Approval of Preliminary design (PFTE): December 2019
 - Final design Kick off: June 2020
 - Final design Approval: April 2021

- **C) Tendering, Construction , Testing & Commissioning**
 - Tender procedure: August 2021 - May 2022
 - Detailed Design phase : June 2022 – April 2023
 - Start of works: April 2023
 - Start of Operation: December 2026

Bologna Light Rail: the Green Line extension

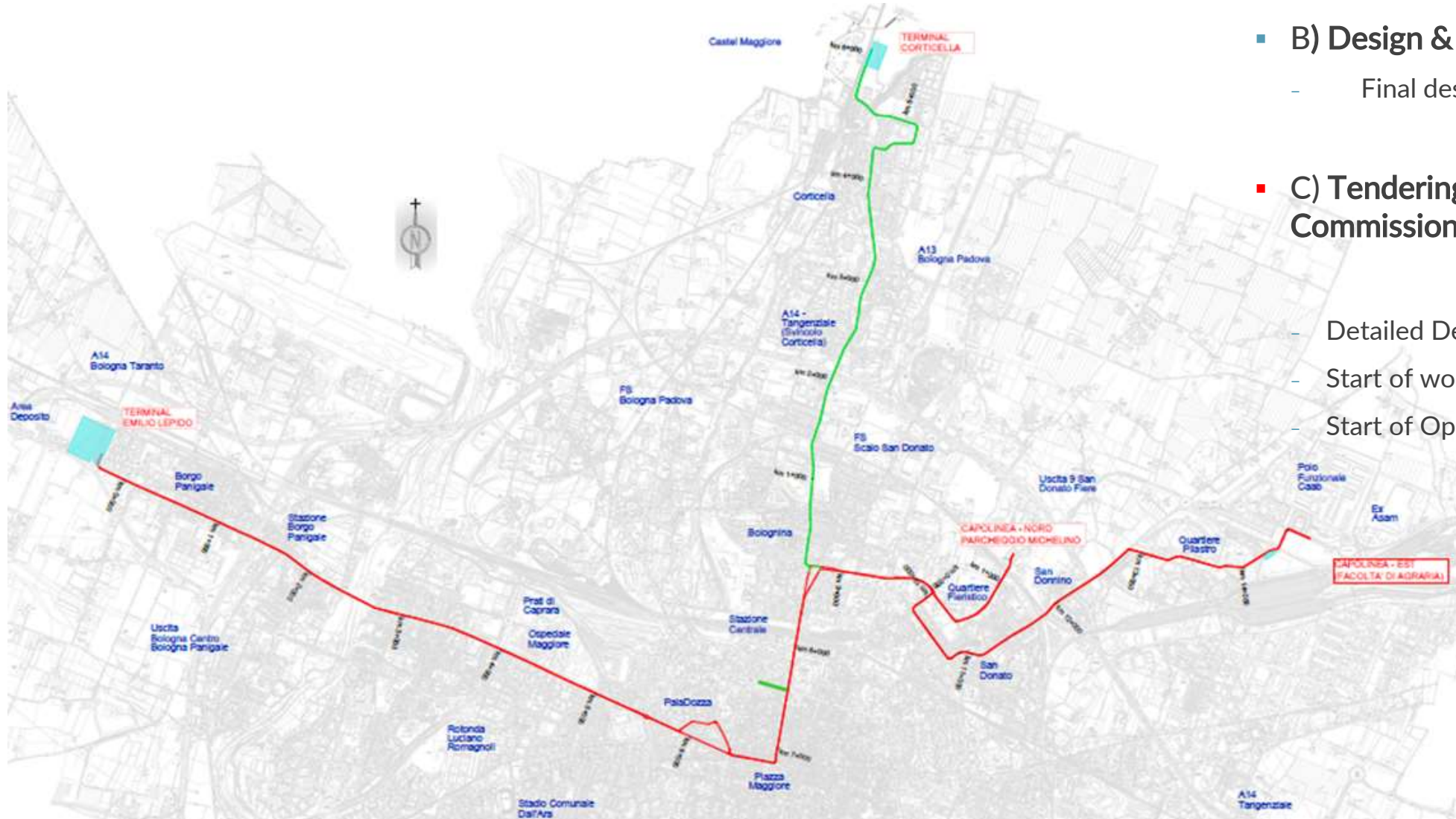
- A) Decision-making, feasibility and funding

- B) Design & Project Approval

- Final design Approval: October 2023

- C) Tendering, Construction , Testing & Commissioning

- Detailed Design phase : January 2024
- Start of works: April 2024
- Start of Operation:



Bologna Light Rail: How to go about placemaking?

Red Line Design guidelines & Criteria

1. Profound knowledge of the “urban fabric” of the LR corridor and related functions;
2. Light rail corridor is completely separated from road traffic «*marcia-tram*»  commercial speed > 18km/h
3. Regulations aimed at making the Tramway Bologna’s **primary transport backbone** ;
 - I. Private traffic  restricted areas, new roads design
 - Main goal by 2026: 54.600 daily trips transferred to Public Transport = 70.000 car trips/day to be eliminated.
 - II. Public Transport Intermodal and integrated Vision
 - Strong reduction (about 30%) of bus service along the Red line corridor e.g. roughly 650 bus/day (city + regional lines) run on Via Saffi, equivalent to 50 buses/hour to be reduce to 35 buses/day.
 - III. Park’n’ride
 - 7 new parking spaces
4. Outcomes of Public Debate and Environmental procedure

Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere in Europe: Amsterdam, Manchester, Florence....



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Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere in Europe: France



Marseille

Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere in Europe: and France!



Bordeaux

Placemaking “façade à façade”, across the full cross section , rethinking and remaking:

- sidewalks,
- utilities,
- cycling paths,
- urban landscape



Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere in Europe: and France!



Besançon



Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere in Europe: and France!



Tours: “catenary-free”

Bologna Red Line: How to go about placemaking?

Lessons learnt elsewhere Israel

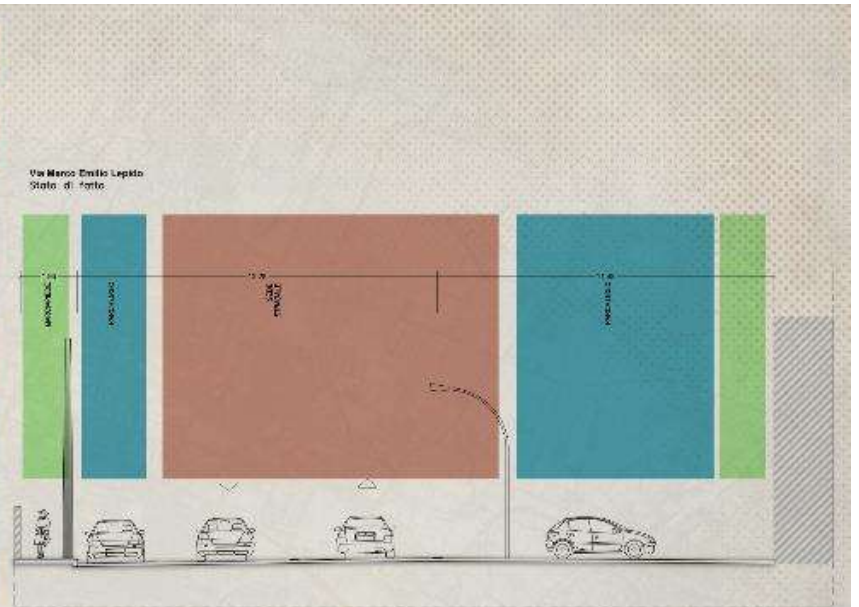
Jerusalem Blue line:
Jaffa street



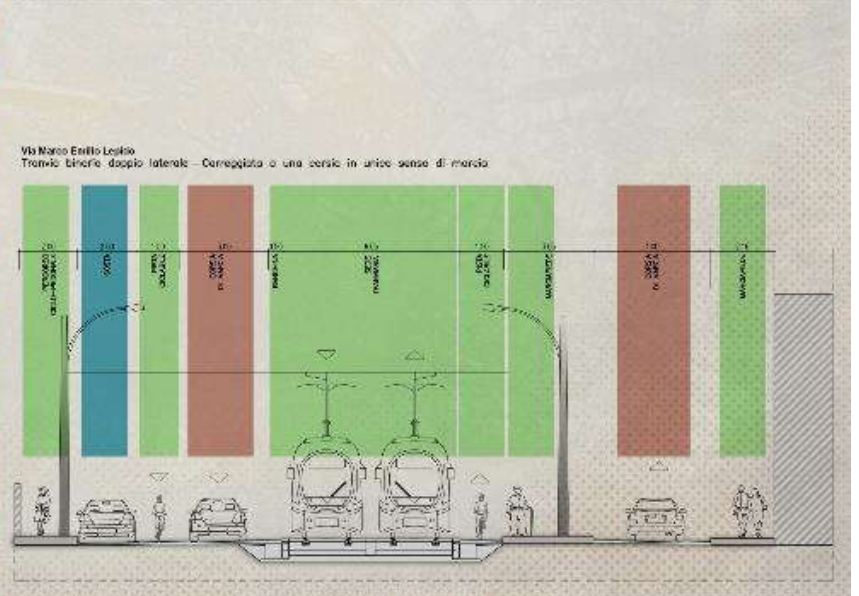
Bologna Red Line Placemaking

Streetscaping on Via Lepido, the eastern section...

current

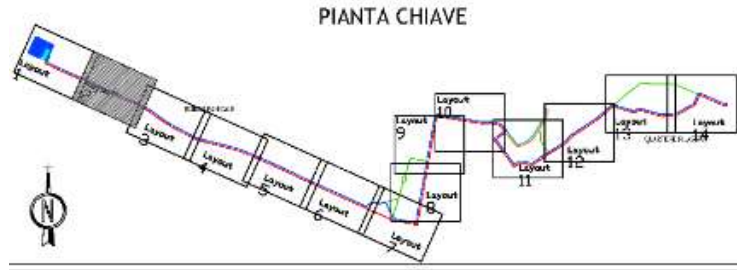


design



Bologna Red Line Placemaking

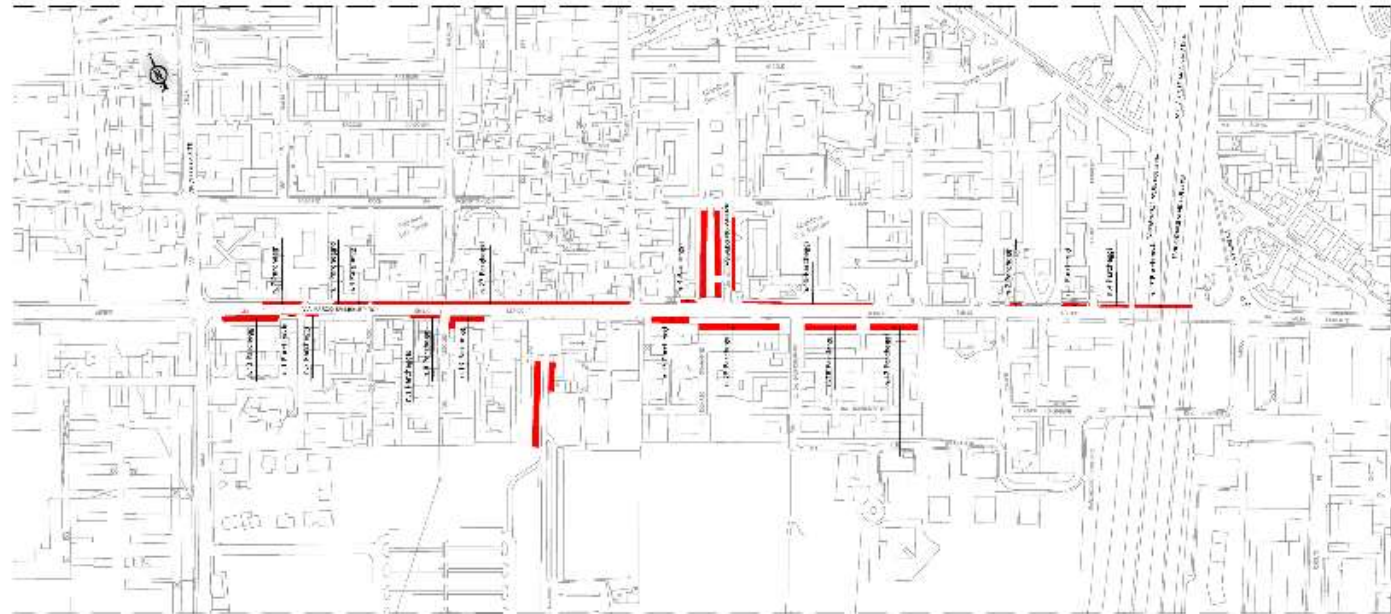
Streetscaping on Via Emilia Ponente, the eastern section...



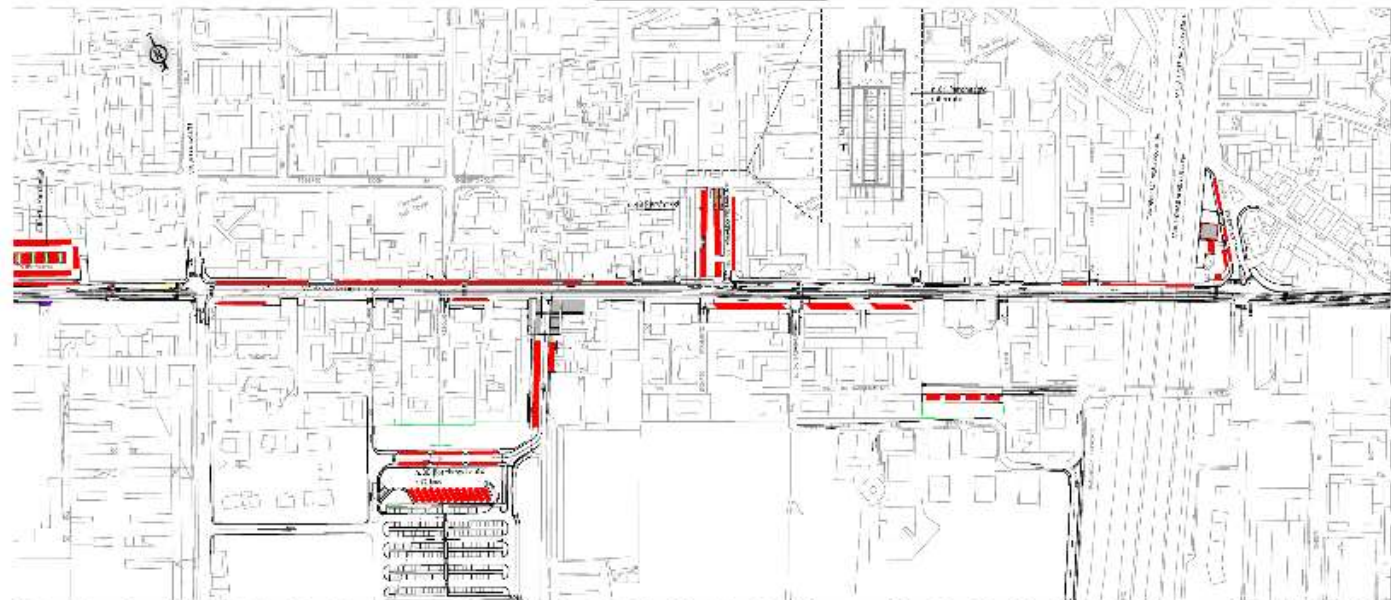
Parking places balance

TRAMVIA DI BOLOGNA - LINEA ROSSA				
PARCHeggi - Contorno stato attuale e di progetto				
		Stato attuale	Progetto	Differ
QUARTIERE BORGO PANCALE-RENO				
1	Area Deposito - Capolinea Borgo Pancale	0	383	383
2	Percorso su Via Marco Emilio Lepido da Rosabio a Via G. Salsani da Via Della Salute a Via Panigale	34	99	65
3	Percorso su Via Emilia Ponente da Via Panigale a Via Transilvania (Cimitero Cozzani - Fagnoli)	56	66	10
	da Via A. Pini (Giardino Amos Facchini) a Via Prati Caporali	332	382	50
				707
QUARTIERE PORTO GARAGOZZA				
	da Via Pini Caporali a Via Battacchi (L. G. Marzari)	27	90	63
4	da Via Dezzio (L. G. Nigrosoli) a Via Podgora	321	145	-176
5	Percorso su Via Aurelio Saffi da Via Immacolata Milanesi a Piazza di Porta S. Felice	30	7	-23
6	Percorso su Via San Felice da Via S. Felice a Via della Lame	95	49	-46
7	da Via Riva di Reno a Via G. Marzari	96	53	-43
8	Percorso su Via Riva di Reno da Via San Felice a Via della Lame	238	74	-164
9	Percorso su Via della Lame da Via Riva di Reno a Via G. Marzari	16	12	-4
10	Percorso su Via Dell'Indipendenza da Via Ugo Bassi a Viale A. Moro	45	51	6
			101	-424
QUARTIERE NAVILE				
11	Percorso su Via Giacomo Matteotti da Viale A. Moro a Via Jacopo Della Ciecchi	5	13	8
12	Percorso su Via G. Marzari da Via G. Marzari a Via Forlivese	20	0	-20
13	Percorso su Via Forlivese da Via A. Alberti a Via G. Moro da Via S. Salsani a Via Franceschini	0	30	30
14	Percorso su Via della Liberazione da Via Franceschini a Via Saffi	26	0	-26
		153	175	22
				101
				123
QUARTIERE SAN DONATO - SAN VITALE				
15	Percorso su Via Aldo Moro da Via Saffi a Piazza Don Giovanni Bosco	43	0	-43
16	Percorso su Viale della Fiera da Rotonda Lancia Parodi a Via Michelino	129	125	-4
17	Percorso su Via Serena da Piazza Don Giovanni Bosco a Viale della Repubblica	11	0	-11
18	Percorso su Viale della Repubblica da Via Serena a Via San Donato	264	228	-36
19	Percorso su Via San Donato da Viale della Repubblica a Zona Devesovale	94	78	-16
20	Percorso su Via Tommaso Casati da Via Piombino a Via Ludovico Frati	122	88	-34
21	Percorso su Via Ludovico Frati da Via F. Casati a Via A. Frati	76	7	-69
22	Percorso su Via Lino Sighinolfi da Via Alberto Paroni a Via Lega Matteotti	21	0	-21
			101	-244
TOTALE		2.614	2.454	-160

STATO ATTUALE



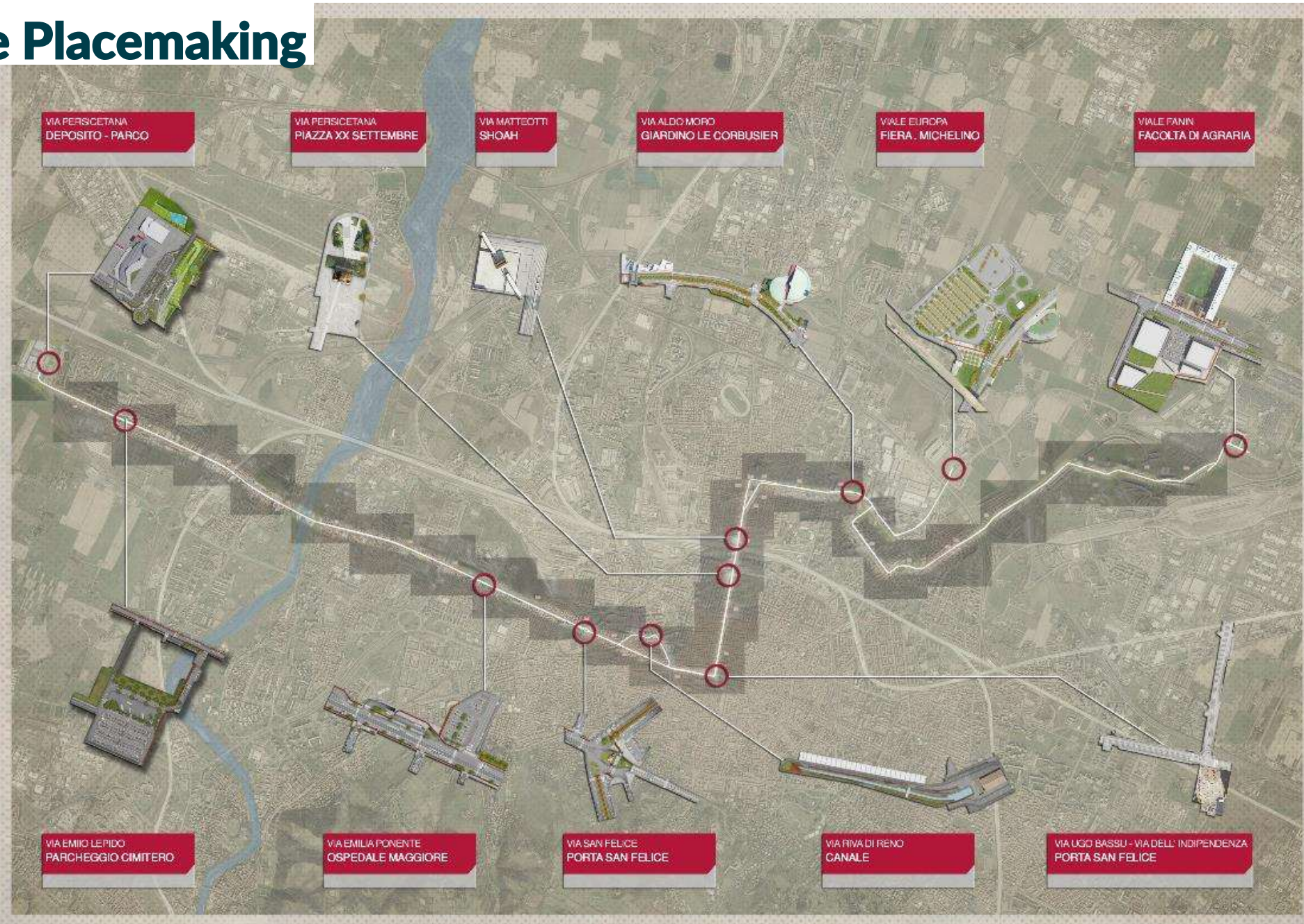
STATO DI PROGETTO



Bologna Red Line Placemaking

Main Urban renovation and redevelopment areas

- Parking lots
- Intermodal hubs
- Parks and green areas
- New pedestrian areas in the city centre
- Uncovering of an old "canal"
- New cycling paths



Bologna Red Line

Main Urban renovation and redevelopment areas

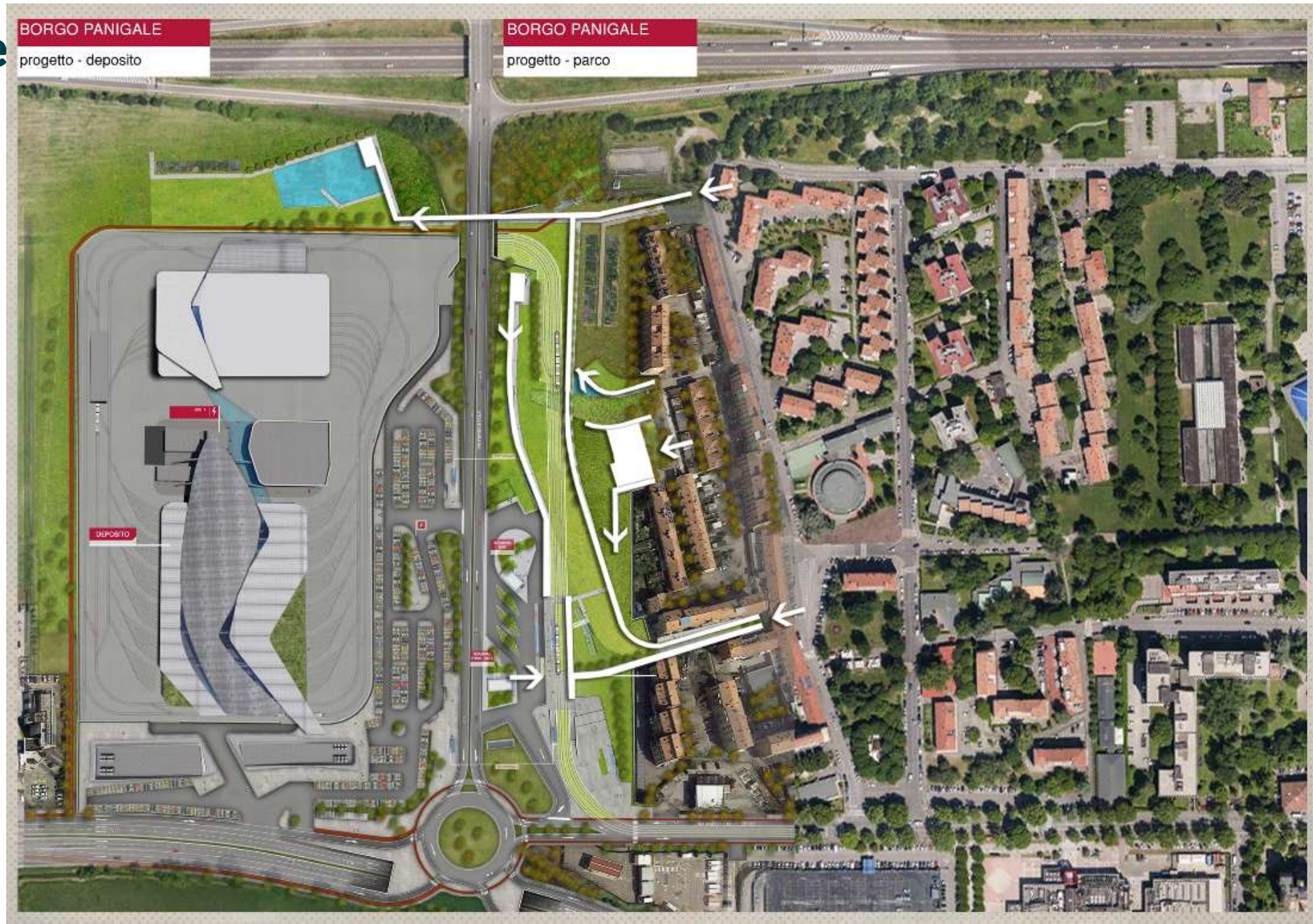
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- New road design, including underpass and roundabout
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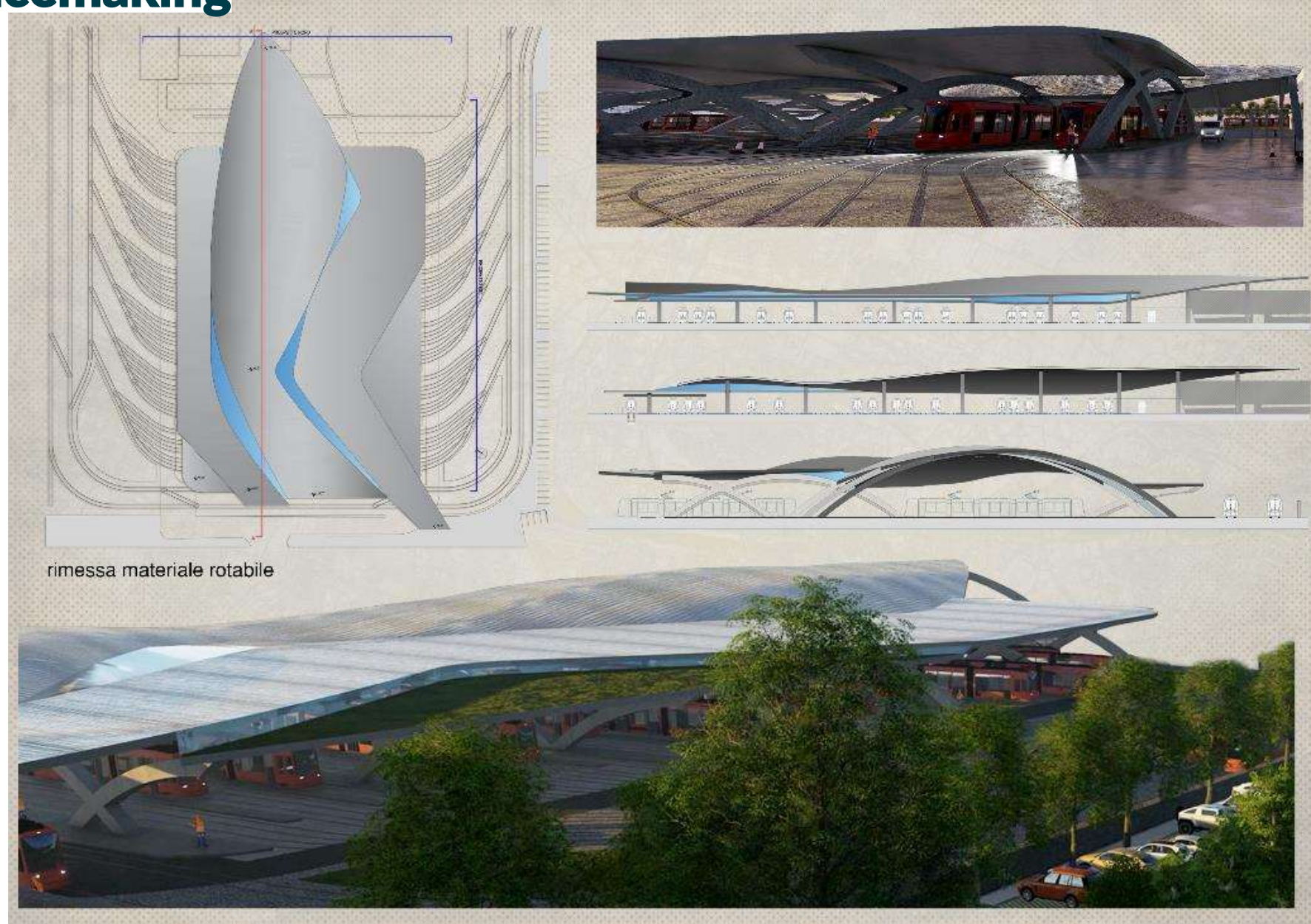
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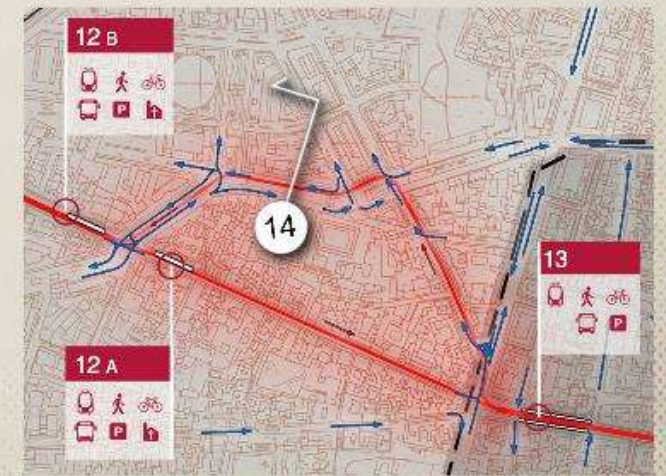
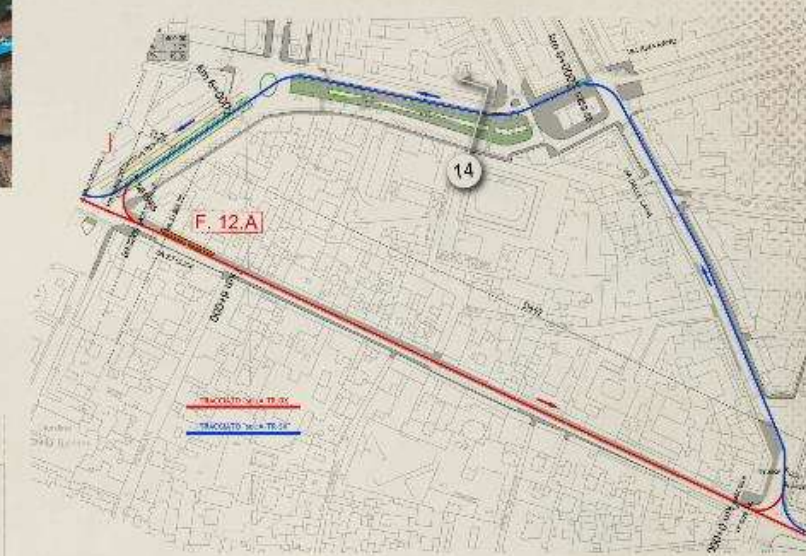
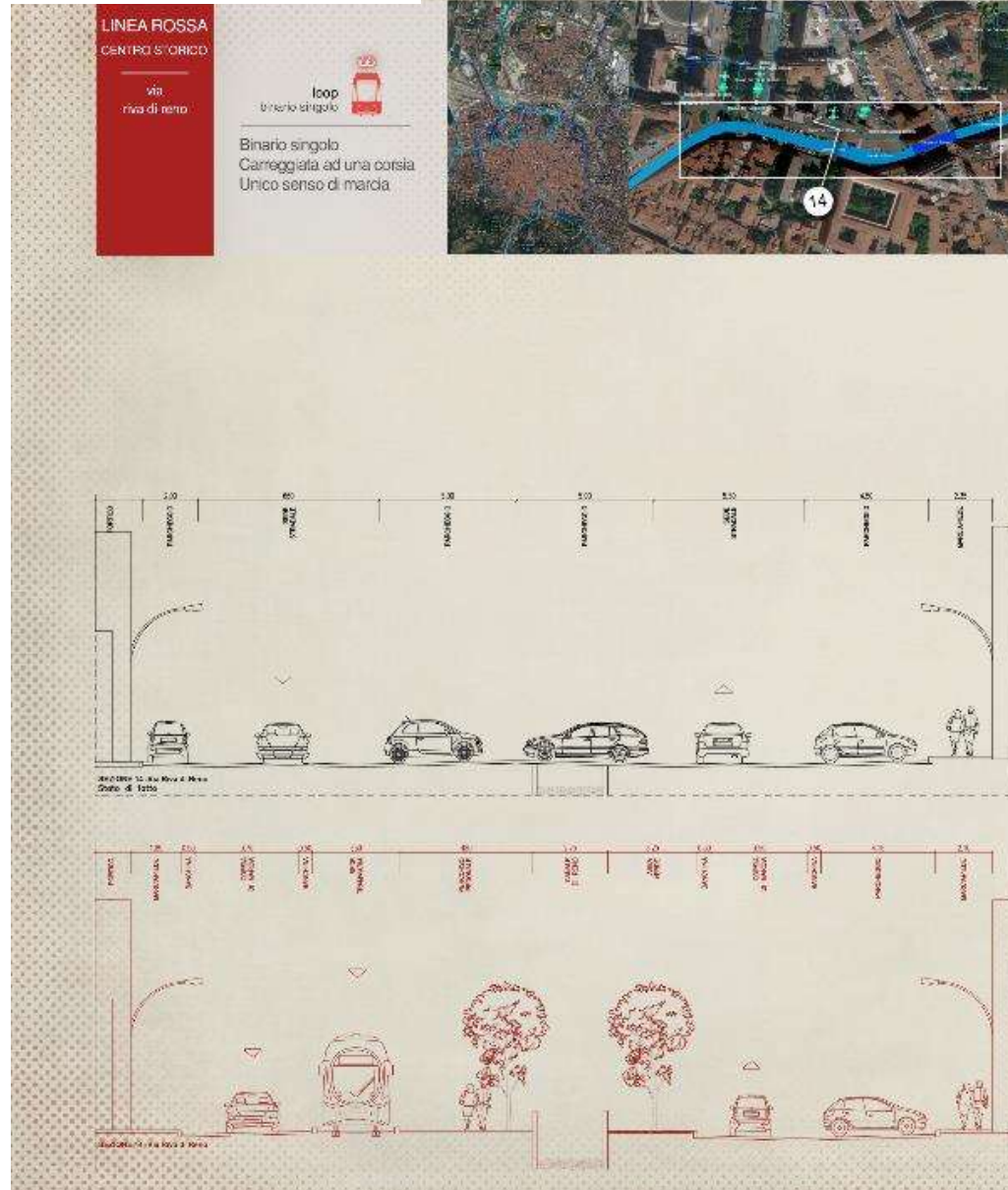
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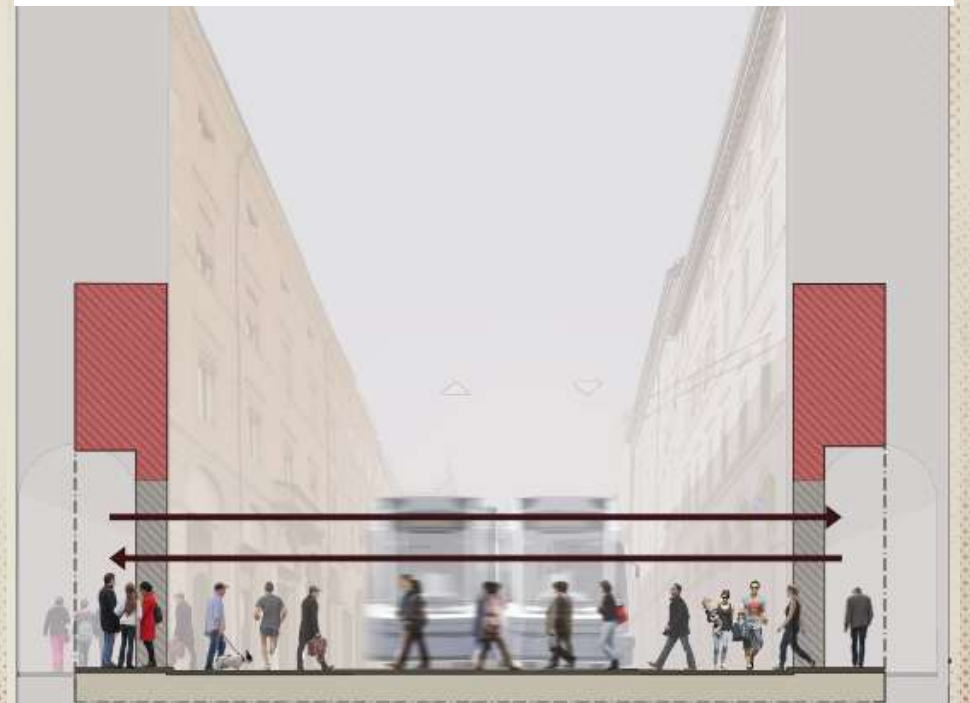
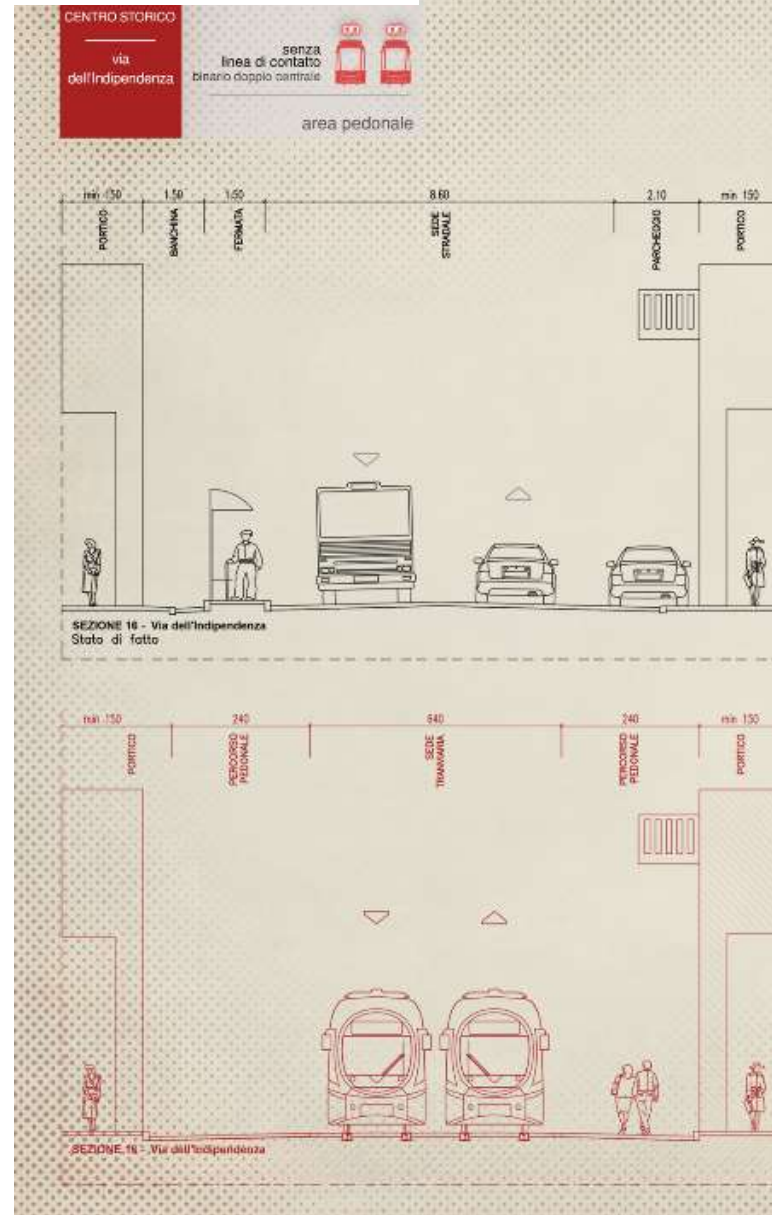
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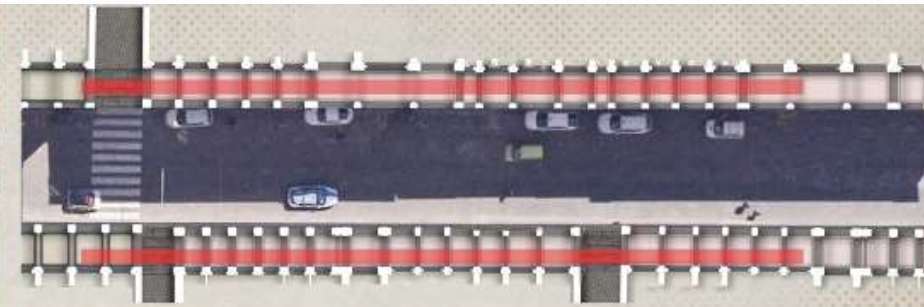
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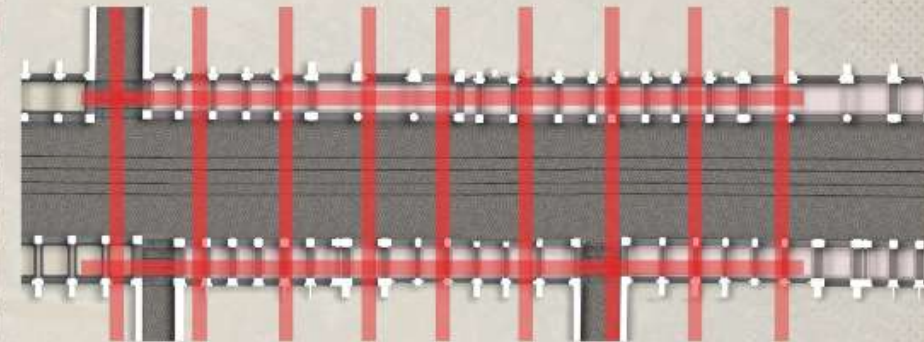
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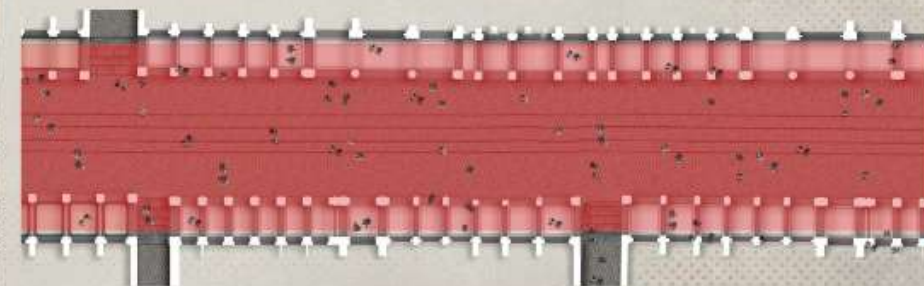
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percorrenza longitudinale stato attuale



percorrenza trasversale configurazione di progetto



nuova dimensione spaziale

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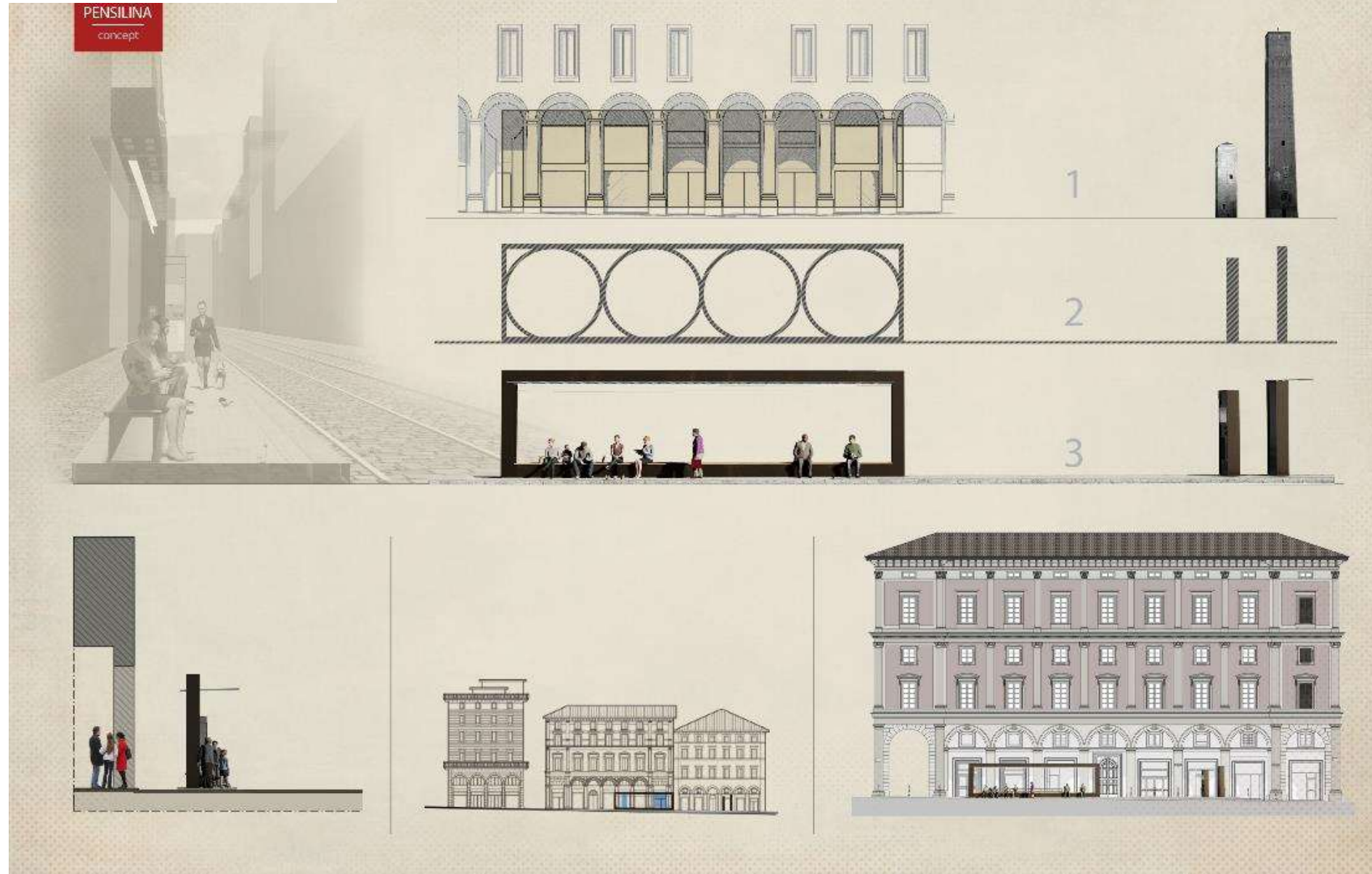
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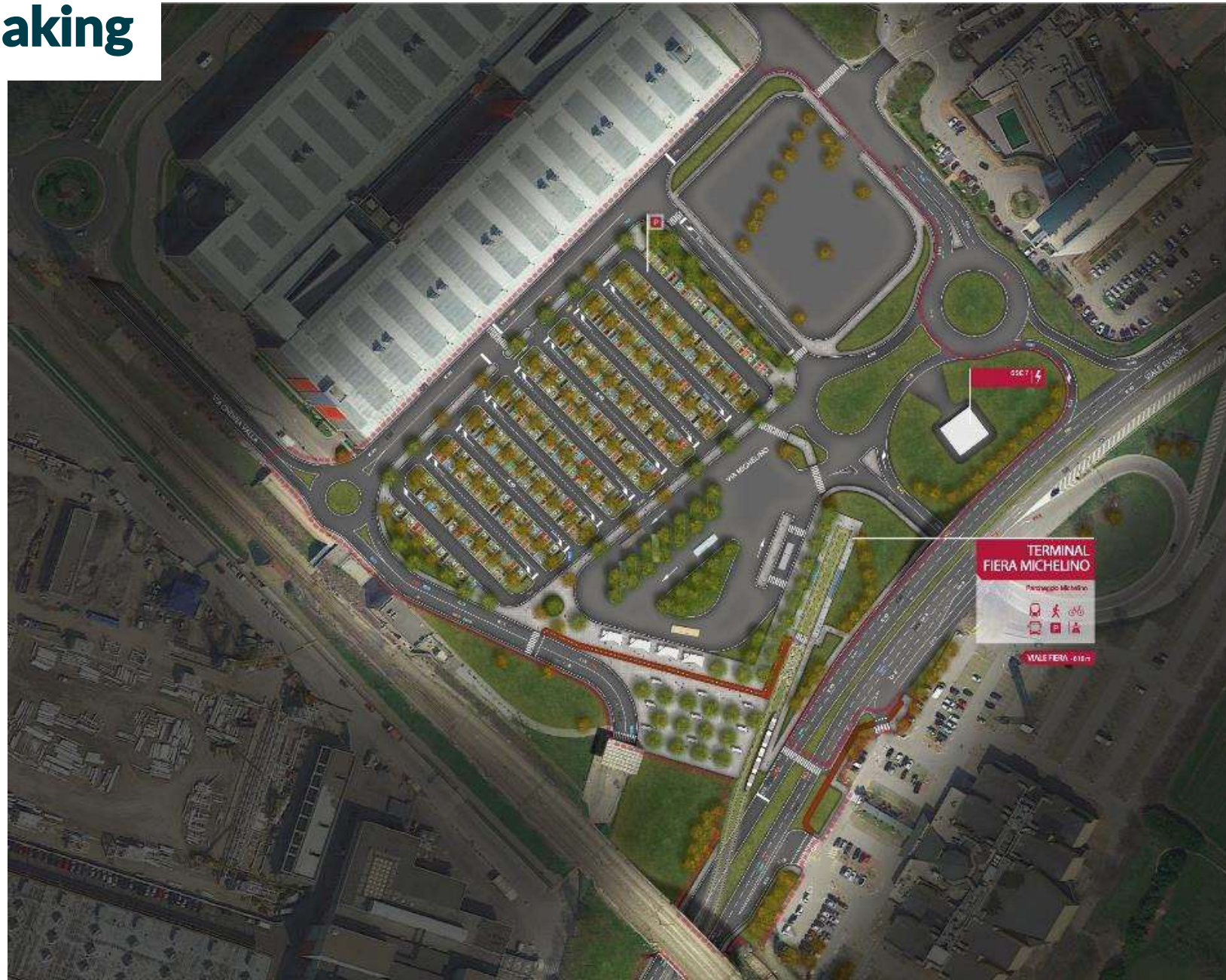
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THANK YOU FOR YOUR ATTENTION

SYSTRA



CONFIDENCE MOVES THE WORLD

