1. Case Study Area and Character Sections

Case Study Area

Calle Aragó is an important streets in the centre of Barcelona. The street belongs to the Eixample district.

The origins of Barcelona city date from the 1st century AC, when the Romans established a small colony around the Taber mount. In this way Barcino (Roman name for Barcelona) was founded. Later, at the end of the 19th century, Barcelona city expanded outside the roman walls with a new zone called the “Eixample”. The urban plan for this new district was made by Ildefons Cerdà.

The part of the Arago Street analysed in the ARTISTS project has a length of 815 metres, running between the streets Passeig de Gracia and Passeig Sant Joan. Before the construction of the 2nd ring road in Barcelona (opened in 1992), the Arago street had an important number of through-going traffic. Once the ring road was opened the traffic on the Arago street decreased from about 95000 to 83000 vehicles/day. The main part of the street was reconstructed in the period 1997-2000 reducing the number of driving lanes from 8 to 6 and enlarging the pavements in both sides.

Arago Street in the bus line map
Arago Street located in the tube map.

**Character Sections**
The conceptually Study Area is divided into two Character Sections. Section 1 is from Passeig de Gracia to Bruc Street (435 m) and section 2 running from Bruc Street to Passeig de Sant Joan (380 metres).
## 2. Street indicators

**Theme 1.** Built Form

**Theme 1.** Buildings

<table>
<thead>
<tr>
<th>Primary Descriptors</th>
<th>Measurement and or Comment</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1 Building Height</td>
<td>Average height of roofline within Character Section in section1 is 23.5 m and in section2 is 23.5 m.</td>
<td>Before reconstruction Arago Street had the same building height.</td>
</tr>
<tr>
<td>1.1.2 Spacing of Buildings</td>
<td>Ratio of frontage to space between frontages in character section are</td>
<td>The same before reconstruction.</td>
</tr>
</tbody>
</table>
46.65 in section 1 and 9.95 in section 2. Section 2 has no space between frontages on West side, so ratio is 0.

1.1.3 Inactive Frontages

Arago Street has no inactive frontage. Ratio of length of inactive frontage to active frontage in character section is 2. Section 1 and section 2 has same ratio of inactive frontages.

1.1.4 Doorways

Number of doorways per 100 m opening onto the public realm is 8 in section 1 and 13 in section 2. Before reconstruction, this street had same number of doorways.

1.1.5 Historically important buildings or significant structures

Barcelona city has two historically important buildings in this street: Concepcion Market in section 2 and Purisima Concepción Church in section 1.

Purisima Concepcion’s Church is a gothic built church constructed in around 1871. In fact, Is was a reconstruction of another Church: Santa Maria of Jonqueres, so the Concepcion Church was built stone by stone from the old church.
1.1.6 Quality of Built Fabric

Arago Street shows a good appearance. Buildings are in a good state of repair. There are modern buildings made with different materials with a combination of the different colours.

### Theme 1.2 Space Between Buildings

<table>
<thead>
<tr>
<th>Primary Descriptors</th>
<th>Measurement and or Comment</th>
<th>Trend (Increasing/decreasing etc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1 Street Width</td>
<td>Distance between opposing building lines is same in both character sections: 30 metres.</td>
<td>The same before reconstruction.</td>
</tr>
<tr>
<td>1.2.2 Side Space Width</td>
<td>Width of side space in each side is 5.8 m.</td>
<td>Before reconstruction width of side space in each side was 4 m.</td>
</tr>
</tbody>
</table>
1.2.3 Median Strip
Arago Street has no median street now
Around 1970 this street had median strip.

1.2.4 Width Between Side Space
Width 18.4m
It was 22 metres.

1.2.5 Trees and Other Greenery
☐ Green shapes the street space and is an important formative element, unmistakable of the street
☐ Green has an influence on the street space / Green outweighs over technical installations.
☐ Green does not shape the street space / Green and other installations cancel each other
☒ Green has no influence on the street space / Green sporadic exist
☐ There is no Green

1.2.6 Street surfaces, furniture and other design elements
What materials are used – ☒ asphalt ☒ paving stone ☐ concrete ☐ cobblestone pavement
Arago Street has homogeneous paving stone in side spaces and asphalt in carriage. Regarding maintainement state, it is good.
Before reconstruction, street surfaces was asphalt in carriage space and paving stone in side spaces.

Green sporadic. Section 1

Street surfaces: paving stone, kerb and asphalt. Section 2

Pavement stone. Section 1
### 1.2.7 Guard Railing

Arago Street has no guard railing. This street never had guard railing.

### 1.2.8 “People Spaces”

In section 1 there is a people space. Before reconstruction, Arago Street had same number of people spaces.

Are they green?

- [ ] yes
- [x] no

### 1.2.9 Lighting

Describe the lighting e.g. Before reconstruction, the footpaths were poor lit.

- [ ] the places are very well light, illumination is part of design of the place
- [ ] places are light
- [ ] no light (the places are places of fear)
- [x] the footpaths are well lit
- [ ] the footpaths are poorly lit
- [ ] only one side lit
- [ ] the lighting is at the median
- [ ] no lighting of the footpaths
Secondary Descriptors

1A Definition (Two Dimensional Scale)
- Ratio street width to building height is 1.28.
- The same before reconstruction.

1B Definition (Enclosure)
- Average width between side spaces is 18.4 m.
- It was 22 metres.

1C Transparency
- Regarding level of transparency between public and private realm at the meeting of the vertical and horizontal planes; both sections have 2% percentage of inactive frontage, and similar number of doorways per 100 metre building line (8, 13 and 11 in each section). Illuminated line is similar in all sections with 52-53 m.
- Transparency parameters was similars before reconstruction.
<table>
<thead>
<tr>
<th>Theme 2. Function, Management and Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Descriptors</strong></td>
</tr>
<tr>
<td>2.3.1 One-Way or Two-Way Working</td>
</tr>
<tr>
<td>2.3.2 Speed limit</td>
</tr>
<tr>
<td>2.3.3 Traffic Calming Measures</td>
</tr>
<tr>
<td>yes</td>
</tr>
<tr>
<td>no</td>
</tr>
<tr>
<td>2.3.4 Number of Marked Traffic Lanes</td>
</tr>
<tr>
<td>2.3.5 Lane Width</td>
</tr>
<tr>
<td>2.3.6 Visual Width</td>
</tr>
<tr>
<td>There is no visual reduction of carriage width.</td>
</tr>
<tr>
<td>2.3.7 Division/Allocation of Carriageway Space</td>
</tr>
<tr>
<td><strong>bus / tram</strong></td>
</tr>
<tr>
<td>in mix</td>
</tr>
<tr>
<td>2.3.8 <strong>bicycles</strong></td>
</tr>
<tr>
<td>in mix</td>
</tr>
</tbody>
</table>
pedestrians
☐ separate
☐ in mix
width: ______________

HOV / taxis etc
☐ separate
☒ in mix
width: ______________

Arago street has no bus, tram neither HOV.

2.3.8 Division/Allocation of Side Space

Describe division of side space:
☒ pedestrians: 4.8 m
☐ bicycles: _____m
☒ green: ___1_m
☐ parking: _____m
☐ bus/tram: _____m
☐ waiting places: _____m

Before reconstruction division of side space was:
Pedestrians: 3 m
Green: 1 m.

Side space is divided in green space (1 metre for trees) and the rest for pedestrians movements.

On side space there are several tube and local train exit points such as the photo shows.

2.3.9 Pedestrian Crossings

Describe pedestrian crossing points -
☒ everywhere possible to cross
☐ to cross the street only at some points possible

Number of crossings per 500 m: 13
☐ no possibility to cross
☒ Number/location of signal lights at pedestrian crossings: 10 in section 1 and 10 in section 2.

Adapted kerb in pedestrian crossing for people with disabilities, and a change in paving stone for people with reduced vision.

Section 2
Number of marked pedestrian crossings (e.g. zebra crossing)

- Number of built pedestrian crossings: 0
- Number of over-/underpasses
- “Staggered” or straight across crossing
  All pedestrians crossings are signal light type.

### 2.3.10 Signal Junctions

<table>
<thead>
<tr>
<th>Pedestrian phase provided?</th>
<th>no</th>
<th>yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“all green” pedestrian phase provided?</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>diagonal crossing provided?</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>cyclists catered for?</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

*priority/timing for pedestrians relative to vehicles........no........*

### 2.3.11 Roundabout Junctions

Arago Street has no roundabout junctions.

Arago Street never had roundabout junctions.

### 2.3.12 Other Junctions

Arago street has 2 junctions with pedestrians streets, there is one in section 1 and one in section 2.

The same before reconstruction.
2.3.13 On-Street Parking

Barcelona Street has 94 on-street legal parked private car places. In section 1 there are 18 on-street parking places at the corners reserved for delivery vans. Section 2 has 76 on-street parking places for delivery vans at the corners.

Limited time parking or "blue zone" in section 2

On-street parking in section 2 and charged parking.

2.3.14 Cycle “Lanes”

For each side of street describe the type of cycle provision e.g. –

- none
- path/lane for both directions
- on road bicycle lane
- bicycle path on the sidewalk
- bicycle path in the side space
- with support at crossings

2.3.15 Cycle Parking

What is the number of formal cycle parking places? 11 in section 1 and 39 in section 2.

Before reconstruction the street had no cycle parking on street.
### Theme 3

#### Patterns of Use

#### Theme 3.1  
**Traffic**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>3.1.5 Bus/Tram Reliability</td>
<td>Arago Street has no bus neither tram.</td>
<td></td>
</tr>
</tbody>
</table>

#### Theme 3.2  
**Activities**

<table>
<thead>
<tr>
<th>Primary Descriptors</th>
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</tr>
</thead>
<tbody>
<tr>
<td>3.2.2 Pedestrians Along the Street</td>
<td>See next page</td>
<td></td>
</tr>
</tbody>
</table>
3.2.6 Off-Street Parking

In section 1 there are 68 off-street parking places and 156 in section 2. Regarding type of off-street parking, in section 1 and 2 most are for residents and offices. In section 2 there is a public parking open from 8 from 22 hour.

Arago had a similar number of off-street parking before reconstruction.

Feedback/Recent statements

No important statements concerning the reconstruction have been found. In generally this means that the users are satisfied with the results.
Case Summary

The reconstruction of the Aragó street formed part of the co-lateral projects when the 2nd ring road was planned and constructed. Before the second ring road was constructed in Barcelona, Arago street was the main traffic corridor in Barcelona in direction North-South. The ring road reduced the traffic volume in Arago street from about 95,000 to 83,000 vehicle per day. It was promised that the traffic capacity of the street (reduction of traffic lanes) also would be reduced.

The number of traffic lanes was reduced from 8 to 6, and sidewalks were enlarged. The width of the streets, no median strip and too short green time for pedestrians meant that elderly people could not cross the street. The enlargement of sidewalks and adjustment of green time in the traffic light signals means that the barrier effect of Aragó street has lowered.

Public transport facilities are almost non-existing in this street, and neither has the street been included in the basic cycle lane network.

The light signals are coordinated in green waves just as before reconstruction.

The only regular assessment being done in Barcelona is the counting of vehicles. The number of pedestrians, etc. from the before situation is not known. Neither is speed being measured.