3 Unchanged Malmoe – Nobelvägen - Demonstration

For map of Malmoe and the location of Nobelvägen see Appendix 1.

3.1 Case Context and Existing situation

Södra Innerstaden, the Southerm Innerparts of Malmoe, is the name of the area where three of the four cases in Malmoe are located.

This part is characterised by a mix of housing, working places, service, shops and cultural events. In this area there is a big public transport terminal with regional significance. It is also the location of the main hospital in Malmoe. There are many pubs and restaurants as well as music and theatre. The mix of functions is both a source of quality and a source to conflicts for the people living in the area. The residential environment is not as calm and quiet as in pure residential areas. There is primarily one bigger area with greenery and that is an old amusement park with many high trees and bushes.

This area is the most densely populated area in Malmoe. Many people live on small areas and there is a very frequent move into and out of flats which causes great exposure to wear. Most flats are small and proportion of big flats very small. Only 10% of the households in this area have children. The range of shops is big in the area both for the everyday shopping and for more specialised shopping. There are many working possibilities in this inner area of the city mostly within service and retail. The hospital employs 5000 persons. There are two big bakeries. Here is also an area for medical research that employs some 350 people.

Car traffic constitutes both a traffic safety and environmental problem in this area (as for other areas in the centre of Malmoe). Many of Malmoe’s most important arterial streets pass through this area of Malmoe. Many road accidents occur. Due to the width of these streets they also act as substantial barriers.

3.1.1 Case Study Area and Character sections

Nobelvägen runs in a southwest / northeast direction. See Appendix 2 for the division of character sections.

Earlier in the beginning of the 70’s Nobelvägen was a part of E6 connected to the motorway system to the north and southeast. Through traffic was removed in 1976 when the Inner Ring motorway (by-pass motorway) was built. Only minor changes in the design like some new pedestrian crossings and slightly wider median strip have been made since then. Character section 2 is the central part of this case.

Nobelvägen has been divided into 5 main character sections starting from the southwest

Character section 1
Start: The section starts with the intersection with Sorgenfrivägen.
Type: Housing area with separate several storage lamella buildings with gardens between. The gables of the buildings are facing the street. Few shops.
Greenery: Sporadic
End: The section ends at Spånehusvägen.
Character section 2  
**Start:** The section starts at Spånehusvägen  
**Type:** Housing area with dense block character. There are shops, restaurants and some public service in the ground floor.  
**Greenery:** none  
**End:** The section ends at Amiralsgatan

Character section 3  
**Start:** The section starts at Amiralsgatan  
**Type:** Housing area with dense block character. There are shops mainly on the north side. There is a rather big square in the intersection with Amiralsgatan. The square has plenty of greenery and forms a façade towards the street. The square is however not a place to congregate due to the lack of transparency.  
**Greenery:** Sporadic  
**End:** The section ends at Simrishamnsgatan

Character section 4  
**Start:** The section starts at Simrishamnsgatan  
**Type:** Housing area with dense block character on the southeast side. On the other side of the street a small park forms the borderline towards the street. The park has high trees and has substantial greenery during the warmer period of the year.  
**Greenery:** The part of the street with the park it has definite influence on the shape.  
**End:** The section ends Bokgatan

Character section 5  
**Start:** The section starts at Bokgatan  
**Type:** Housing area on the southeast side. The buildings are low and have mainly the character of terrace house. Towards the street there is a wall and parking space separating the housing from the street. Along the northwest side there is a water tower, which forms a landmark and a church.  
**Greenery:** There is some greenery that influence the shape on the west side  
**End:** The section ends Lönngatan

3.1.2 Location  
See *Appendix 1 and 2* for the location of Nobelvägen.

3.1.3 Built Form  
The buildings are from around 1930-1940. The terrace house area in section 5 are however somewhat newer. No inactive frontages.

**Building**  
Character section 1-4; the building height is 18m.  
Character section 5; big differences within the section 9-18m. The water tower and the church are much higher than that.

Profiles for the sections are found in *Appendix 4* Nobelvägen
Horizontal spacing

<table>
<thead>
<tr>
<th>Characters section</th>
<th>Street width (m)</th>
<th>Side space width (m)</th>
<th>Width between side space (m)</th>
<th>Median strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30</td>
<td>8</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>8</td>
<td>22</td>
<td>1.6</td>
</tr>
<tr>
<td>3</td>
<td>31</td>
<td>9</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>31</td>
<td>9</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>34</td>
<td>12</td>
<td>22</td>
<td>2</td>
</tr>
</tbody>
</table>

Ratio of frontage to space

<table>
<thead>
<tr>
<th>Character section</th>
<th>northwest</th>
<th>southeast</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>2</td>
<td>large (no space)</td>
<td>6.3</td>
</tr>
<tr>
<td>3</td>
<td>large (no space)</td>
<td>3.1</td>
</tr>
<tr>
<td>4</td>
<td>0 (park)</td>
<td>5.6</td>
</tr>
<tr>
<td>5</td>
<td>0.1</td>
<td>16.7</td>
</tr>
</tbody>
</table>

People in the street. People spaces

**Section1:**
There are few people in the street and hardly no spaces to congregate. There are not many moving along the street on the contrary here people mostly cross the street.

**Section2:**
Most people congregate on the footpath at the square, at the bus stops and outside the shops. Most people move around in the afternoon. It is a combination of when people come home from work and people do their major the shopping.

**Section3:**
Most people congregate at the bus stops and outside the shops. Most people move around in the afternoon. It is a combination of when people come home from work and people do their major the shopping.

**Section4:**
There are few people in the street and hardly no spaces to congregate. There are not many moving along the street on the contrary here people mostly cross the street. There is a park but it is not used for recreation.

**Section5:**
There are few people in the street and hardly no spaces to congregate. There are not many moving along the street on the contrary here people mostly cross the street.

3.1.4 Traffic regulation

The speed limit is the same; 50 km/h all along the case. There is traffic in both directions also all along the case. Two through-going lanes in each direction with separate left-lanes at the signalised intersections.
There is parking on both sides all along the case. See Appendix 2 for Traffic regulations

3.1.5 Pattern of use

Traffic
ADT = Annual Average Daily Traffic
ADNP = Annual Average Daily Number of People

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Sec 1 ADT</th>
<th>Sec 2 ADT</th>
<th>Sec 3 ADT</th>
<th>Sec 4 ADT</th>
<th>Sec 5 ADT</th>
<th>Average Vehicle Occupancy rate</th>
<th>ADNP for the most hectic section</th>
<th>Estimate of peak hour flow of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>cars &amp; van &lt; 3.5 ton</td>
<td>16 300</td>
<td>21 800</td>
<td>20 800</td>
<td>-</td>
<td>15 300</td>
<td>1.2</td>
<td>26 160</td>
<td>2616</td>
</tr>
<tr>
<td>van &amp; truck &gt; 3.5 ton</td>
<td>1 700</td>
<td>2 300</td>
<td>2 200</td>
<td>-</td>
<td>1 600</td>
<td>1</td>
<td>2 300</td>
<td>230</td>
</tr>
<tr>
<td>bus</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>220</td>
<td>16</td>
<td>3 520</td>
<td>550*</td>
</tr>
<tr>
<td>cycle</td>
<td>-</td>
<td>1 100</td>
<td>-</td>
<td>-</td>
<td>1 100</td>
<td>1</td>
<td>1 100</td>
<td>110</td>
</tr>
<tr>
<td>mc / moped</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pedestrian during peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>155</td>
</tr>
<tr>
<td>ALL</td>
<td>18 220</td>
<td>25 420</td>
<td>23 220</td>
<td>2 2120</td>
<td></td>
<td></td>
<td>31 980</td>
<td>3 661</td>
</tr>
</tbody>
</table>

* peak occupancy rate for buses is estimated to 25 persons

Activities along Nobelvägen
Most people congregate on the footpath at the square, at the bus stops and outside the shops. Most people move around in the afternoon. It is a combination of when people come home from work and people do their major the shopping. For some sections the major pedestrian activity is to cross the street
Pedestrians’ choice of route around Nobeltorget. Nobelvägen in SW/NE direction.

The bus stops are marked in the middle of the street to make it readable. Around 100 pedestrians were followed and their route choice marked as they entered the selected area around Nobertorget. When coming or leaving in the north-east direction of Nobelvägen the south-east side of the street is chosen. This is also the location of the shops on Nobelvägen. There are two distinct destinations in this area the video shop in
the north-west corner and the grocery store in the north-east corner of the intersection. Then of course there are the bus-stops.

Pedestrian movement along and across during the busiest 5 minutes

<table>
<thead>
<tr>
<th>Section</th>
<th>Across</th>
<th>Along</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

**Time to pass Nobelvägen**

Just north-east of the Nobelvägen- Amiralsgatan intersection pedestrian crossing behaviour was studied. The location is a frequently used marked pedestrian crossing located mid-blocks in section 2 of Nobelvägen. The distance between the side-spaces is 22 m i.e. the pedestrians have to spend 22 m in the carriageway. Altogether 56 passages were noted. The following was registered:

- waiting time in seconds before starting the passage across
- the actual crossing time
- the total time spent i.e. waiting + crossing

**Waiting time**
The waiting time for the 56 crossing pedestrians varied between 0 and 33 seconds. The average waiting time was 3.8 seconds. 85 percent of the crossing pedestrians waited for 7 seconds or less. About half of the pedestrians didn’t have to wait at all before crossing. For those that waited the average waiting time was 8.3 seconds.

**Crossing time**
The crossing time varied between 10 and 40 seconds. The average crossing time was 15.3 seconds. 85 percent of the pedestrians crossed on 19.5 seconds or less.

**Total time**
The total time, waiting plus crossing, varied between 10 and 49 seconds. The average total time was 19.2 seconds. 85 percent of the crossing pedestrians had a total time of 23.8 seconds or less.

3.1.6 Performance Indicators

**Arterial Performance**
People movement – a very rough figure for number of people passing by during peak hour is estimated to 3 660 people per hour. The annual average daily traffic for vehicles is calculated to 25 400. Many cyclists are using the street as a link between the south and north-east part of the city.

**Locale Performance**
1) **Vitality number of people in the street.** There are never periods when Nobelvägen is crowded. The street is most vital in the afternoon / evening hour when people come home from work and do their major the shopping.
2) **Number of activities in the street.** Types of activities depend on period of the year. People do not stand talking for very long in the winter while this activity is much more common in the summer season. People congregate on the footpath at the square, at the bus stops and outside the shops to talk. There are some window shopping. Most activities in section 2 and 3.

3) **Residential population and working population**

<table>
<thead>
<tr>
<th></th>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
<th>Section 4</th>
<th>Section 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>residential population</td>
<td>884</td>
<td>1452</td>
<td>1452</td>
<td>1199</td>
<td>1326</td>
</tr>
<tr>
<td>number of unemployed residents</td>
<td>61</td>
<td>101</td>
<td>101</td>
<td>83</td>
<td>92</td>
</tr>
<tr>
<td>number of working residents</td>
<td>295</td>
<td>485</td>
<td>485</td>
<td>400</td>
<td>442</td>
</tr>
<tr>
<td>average income per resident and year</td>
<td>9073</td>
<td>9073</td>
<td>9073</td>
<td>9073</td>
<td>9073</td>
</tr>
<tr>
<td>number of jobs</td>
<td>157</td>
<td>259</td>
<td>259</td>
<td>214</td>
<td>236</td>
</tr>
<tr>
<td>out of which are in business</td>
<td>156</td>
<td>256</td>
<td>256</td>
<td>211</td>
<td>234</td>
</tr>
</tbody>
</table>

**Safety**

In the accident statistics no road users were killed on Nobelvägen for the observed 3 year period. Below there is a summary for the accidents that occurred. Please observe that the data derives from both police reported accidents and hospital registrations (of this the fairly high number of slight injuries).

<table>
<thead>
<tr>
<th></th>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
<th>Section 4</th>
<th>Section 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian seriously injured</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pedestrian slightly injured</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Cyclist seriously injured</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cyclist slightly injured</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Motorised seriously injured</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Motorised slightly injured</td>
<td>8</td>
<td>11</td>
<td>24</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Summary serious</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Summary slight</td>
<td>10</td>
<td>20</td>
<td>33</td>
<td>26</td>
<td>34</td>
</tr>
<tr>
<td>Summary injuries</td>
<td>10</td>
<td>22</td>
<td>37</td>
<td>27</td>
<td>36</td>
</tr>
</tbody>
</table>

Average speed and the 85th percentile at the different sections. The speed is measured as a spot speed with a radar gun.
### 3.1.7 Street Classification and Management
The street is a main road. The definition of a main road in the Swedish hierarchical system is a street which main function is to transport between different parts of the city.

<table>
<thead>
<tr>
<th></th>
<th>Average speed (km/h)</th>
<th>85th percentile (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>52</td>
<td>59</td>
</tr>
<tr>
<td>Section 2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Section 3</td>
<td>49</td>
<td>56</td>
</tr>
<tr>
<td>Section 4</td>
<td>48</td>
<td>54</td>
</tr>
<tr>
<td>Section 5</td>
<td>48</td>
<td>55</td>
</tr>
</tbody>
</table>

### 3.2 LONG TERM CHANGE

#### 3.2.1 Built form
Nothing has changed concerning the buildings along the street. None of the streets Amiralsgatan, Bergsgatan and Nobelvägen has been affected of city renewal processes, which was common during the 60’s and 70’s.

#### 3.2.2 Traffic regulation.
More generous parking regulations and parking spaces along the street in the 70’s due to a new function in the classification system.

#### 3.2.3 Pattern of use;
ADT for 1970 ca 42 000 vehicles, local and through traffic (E6)
ADT for 2001 ca 24 000 vehicles, local and access traffic.

#### 3.2.4 Performance indicators;
The degree of reporting has increased considerably since 1970. The police and the public are more conscious about traffic safety today and have therefore a higher tendency to report. Just as an indication, where the degree of reporting has no influence, is the number of killed road users. Three road users were killed in the 1970’s 3 year statistics compared to none today.

Population; the total number is about the same as well as the age-distribution compared to 1970.

### 3.3 Reference Area
This is the same reference area as for all four Malmoe cases.

#### 3.3.1 Area and data description
For most of the indicators the whole city of Malmoe is reference area. For some specific arterial street indicators Amiralsgatan is used as reference as this street is regarded as the most common arterial street for this area.

As the table below illustrates there was a period in the history of Malmoe when it was not so very attractive to live in the city. People wanted to live in the smaller cities outside Malmoe and therefore left the city. Then the trend turned – people started to move back to Malmoe and today the residential population has increased to about the same figures as 30 years ago.

The crises regarding the industry in the 90’s is also clearly shown in the table. Malmoe is, however, climbing back up again with new job possibilities and visions through for instance the establishment of an own University and the new bridge, Öresundsbron, connecting Malmoe with Copenhagen, the capital of Denmark.

The traffic safety situation on the roads in Malmoe has improved over the years. This is, however, not totally clear according to the figures in the table below. The data from 1970 is based on accidents reported to the police (with the errors connected to this type of data; accidents with vulnerable road users are heavily underreported; etc) while the newest data is based on both police and hospital registrations (the less seriously injured are included; and accidents with vulnerable road users included to a much higher extent than before). The statement about Malmoe being safer today is therefore only based on the fatal injuries; a category of which probably all are included in the statistics both for 1970 and today.

### 3.3.2 Performance Indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of residents</td>
<td>257 574</td>
<td>230 838</td>
<td>??</td>
<td>257 090</td>
</tr>
<tr>
<td>Number of jobs</td>
<td>124 866</td>
<td>140 234</td>
<td>??</td>
<td>117 765</td>
</tr>
<tr>
<td>Number of working residents</td>
<td>94 724</td>
<td>106 632</td>
<td>??</td>
<td>116 247</td>
</tr>
<tr>
<td>Number of unemployed residents</td>
<td>11 741</td>
<td>5 016</td>
<td>??</td>
<td>583</td>
</tr>
<tr>
<td>Total number of road deaths</td>
<td>25*</td>
<td>??</td>
<td>??</td>
<td>44</td>
</tr>
<tr>
<td>Total number of serious road injuries</td>
<td>652*</td>
<td>??</td>
<td>??</td>
<td>641</td>
</tr>
<tr>
<td>Total number of slight road injuries</td>
<td>5146*</td>
<td>??</td>
<td>??</td>
<td>1707</td>
</tr>
</tbody>
</table>

* in the figures both data from police reported accidents and injuries reported to the hospitals are included.
3.4 Recent statements /
Statement: An arterial street, which still have a status as a through route in peoples minds. Today, the through traffic is a rather small proportion of the traffic on Nobelvägen. The municipality is facing difficulties finding good traffic calming measures that reduce the number of accidents while the street presumably must carry rather large traffic volumes also in the future.

3.5 Case Summary

- The street has a function of a local inner ring road, which divides the incoming traffic from and between entrance roads.
- The layout is totally adapted for motor traffic with wide carriageways and small middle islands.
- The street is a barrier for people in the neighbourhood.
- The future function and reconstruction is subject for discussion. Suitable guidelines are however needed for the reconstruction of this type of street. This is very important for constructive discussions around proper design at the local authority.
- We need a discussion about speed limits between 30 and 50 km/h and its eventual future function as a local inner ring road
4 Unchanged Malmoe - Amiralsgatan

For map of Malmoe and the location of Amiralsgatan see Appendix 1.

4.1 Case Context and Existing situation

For a description of the area see chapter 4.1 for Nobelvagen as Bergsgatan, Amiralsgatan and Nobelvagen are located in the same area in Malmoe.

4.1.1 Case Study Area and Character sections

Description of the area where Amiralsgatan is situated has been mentioned in connection to Nobelvagen. The case study area of Amiralsgatan is between Föreningsgatan och Nobeltorget. All the streets are located in the southeast area of the city centre. See Appendix 2 for the division of character sections.

Amiralsgatan has always been used as an access road to connect the southeast parts with the city centre. The function became even more important when the suburbs were built in the 60’s and 70’s. The design and function of the street has not changed during the last 40 years, even though the traffic volume has increased.

Character section 1
Start: The section starts with the intersection with Föreningsgatan.
Type: Housing area with dense block character. There are shops on the ground floor and some public institutions along the section.
Greenery: sporadic
End: The section ends at Henrik Smithsgatan.

Character section 2
Start: The section starts at Henrik Smithsgatan
Type: Housing area with spare block character. There is a public amusement park on the southwest side of the street. The park is founded by the labour organisation in Sweden.
Greenery: sporadic
End: The section ends at Falsterbogatan

Character section 3
Start: The section starts at Falsterbogatan
Type: Housing area with dense block character. There are some shops and restaurants on the ground floor. The is a small square/place on each side of the street at Karlskronaplan. There is also a rather big square in the intersection with Nobelvägen. The square has plenty of greenery and forms a façade towards the street. The square is however not a place to congregate due to the lack of transparency.
Greenery: none
End: The section ends at Lantmannagatan

4.1.2 Location
See Appendix 1 and 2 for the location of Amiralsgatan.
4.1.3 Built Form

Building
The buildings along Amiralsgatan in section 1 are from 1910-1920. In section 2 and 3 the buildings are older, from 1920-1940. There are inactive frontages in section 2 on the west side at the amusement park, which is behind a 4 m high wall.

The height of the buildings:
Character section 1; 23 m
Character section 2; 15 m (east side), 10 m (west side)
Character section 3; 18.5

Horizontal spacing

<table>
<thead>
<tr>
<th>Characters section</th>
<th>Street width (m)</th>
<th>Side space width (m)</th>
<th>Width between side space (m)</th>
<th>Median strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24</td>
<td>7.5</td>
<td>16.6</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>9.1</td>
<td>17.0</td>
<td>0.7</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
<td>6.0</td>
<td>17.8</td>
<td>0</td>
</tr>
</tbody>
</table>

Profiles for the sections are found in Appendix 4 Amiralsgatan

Ratio of frontage to space

<table>
<thead>
<tr>
<th>Character section</th>
<th>northeast</th>
<th>southwest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.3</td>
<td>0.4</td>
</tr>
<tr>
<td>2</td>
<td>1.7</td>
<td>3.7</td>
</tr>
<tr>
<td>3</td>
<td>8.7</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Greenery
There is sporadic greenery along this case in section 1 and 3. In section 2 the greenery can be described as more than sporadic during the warmer periods of the year.

People in the street and people spaces

Section 1:
There are some people in the street but no real spaces to congregate. There are people moving along and across the street, mainly for transportation.

Section 2:
Most people congregate on the place near the amusement park and the grocery store (COOP/Konsum). Most people move around in the afternoon and on weekend when there are activities in the park.
Section 3:
Most people congregate at the bus stops at the small place Karlskronaplan. A few people are moving along the street, mainly for transportation.

4.1.4 Traffic regulation
The speed limit is the same; 50 km/h all along the case. There is traffic in both directions also all along the case. Two through-going lanes in each direction with separate left-lanes at the signalised intersections. There is parking on both sides along section 1 in the case.

See Appendix 2 for Traffic regulations

4.1.5 Pattern of use
Traffic
ADT = Annual Average Daily Traffic
ADNP = Annual Average Daily Number of People

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Sec 1 ADT</th>
<th>Sec 2 ADT</th>
<th>Sec 3 ADT</th>
<th>Average Vehicle Occupancy rate</th>
<th>ADNP for the most hectic section</th>
<th>Estimate of peak hour flow of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>cars &amp; van &lt; 3.5 ton</td>
<td>18 450</td>
<td>-</td>
<td>18 450</td>
<td>1.2</td>
<td>22 140</td>
<td>2 214</td>
</tr>
<tr>
<td>van &amp; truck &gt; 3.5 ton</td>
<td>1 600</td>
<td>-</td>
<td>1 600</td>
<td>1</td>
<td>1 600</td>
<td>160</td>
</tr>
<tr>
<td>bus</td>
<td>446</td>
<td>446</td>
<td>446</td>
<td>28</td>
<td>12 488</td>
<td>1800*</td>
</tr>
<tr>
<td>cycle</td>
<td>-</td>
<td>1 100</td>
<td>-</td>
<td>1</td>
<td>1 100</td>
<td>110</td>
</tr>
<tr>
<td>motorcycle / moped</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pedestrian during peak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>155</td>
</tr>
<tr>
<td>ALL</td>
<td>20 496</td>
<td>-</td>
<td>20 496</td>
<td>37 328</td>
<td>4439</td>
<td></td>
</tr>
</tbody>
</table>

* peak occupancy rate for buses is estimated to 40 persons

Table of Speed

<table>
<thead>
<tr>
<th>Section</th>
<th>Average speed (km/h)</th>
<th>85th percentile (km/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>49</td>
<td>54</td>
</tr>
<tr>
<td>Section 2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Section 3</td>
<td>49</td>
<td>55</td>
</tr>
</tbody>
</table>

Activities
Most people congregate on the place near the amusement park and the grocery store (COOP/Konsum) and at the bus stops. Most people move around in the afternoon. It is a combination of when people come home from work and people do their major the shopping. For some sections the major pedestrian activity is to cross the street.

**Pedestrian movement along and across during the busiest 5 minutes**

<table>
<thead>
<tr>
<th></th>
<th>Across</th>
<th>Along</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Section 2</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Section 3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Land use, upper floor use, lower floor use**
The main land use is for housing. There are some shops on the lower floor at some parts of the street, mainly in section 1 and 3. In section to there are no shops except I big grocery store.

**4.1.6 Performance Indicators**

**Arterial Performance**
The number of people passing by at the busiest time has not been calculated for all traffic modes. The annual average daily number of people being transported along the street is calculated to 37 328. Thus, the arterial performance is high for motorised vehicles. The cycling is rather important though there is a parallel cycle link.

**Locale Performance**
1) There are never periods when Amiralsgatan is crowded. The street is most vital in the afternoon / evening hour when people come home from work and do their major the shopping.
2) Types of activities depend on period of the year. People do not stand talking for very long in the winter while this activity is much more common in the summer season. People congregate on the place near the amusement park, at the bus stops and outside the shops to talk. Most activities in section 2.
3) Residential population and working population

<table>
<thead>
<tr>
<th></th>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>residential population</td>
<td>2 619</td>
<td>1 185</td>
<td>4 428</td>
</tr>
<tr>
<td>number of unemployed residents</td>
<td>179</td>
<td>81</td>
<td>162</td>
</tr>
<tr>
<td>number of working residents</td>
<td>932</td>
<td>421</td>
<td>843</td>
</tr>
<tr>
<td>average income per resident and year</td>
<td>9325</td>
<td>9325</td>
<td>9325</td>
</tr>
<tr>
<td>number of jobs</td>
<td>517</td>
<td>234</td>
<td>467</td>
</tr>
<tr>
<td>out of which are in business</td>
<td>223</td>
<td>101</td>
<td>201</td>
</tr>
</tbody>
</table>
4.1.7 Street Classification and Management
The street is a main road. The definition of a main road in the Swedish hierarchical system is a street which main function is to transport between different parts of the city.

4.2 LONG TERM CHANGE
Amiralsgatan has always been used as an access road to connect the southeast parts with the city centre. The function became even more important when the suburbs were built in the 60’s and 70’s.

4.2.1 Built form
Nothing has changed concerning the buildings along the street. None of the streets Amiralsgatan, Bergsgatan and Nobelvägen has been affected of city renewal processes, which was common during the 60’s and 70’s.

4.2.2 Traffic regulation
There has been a change in parking regulations and bus lanes.

4.3 Reference Area
The reference area to Amiralsgatan is the same as for all four cases in Malmoe. See description in chapter 3.3 Nobelvägen.
4.4 Recent statements
Amiralsgatan must be studied more carefully to see if there is possibilities to narrow the street and build new bus lanes and safer crossings.

4.5 Case Summary
- The street has a function of a entrance road
- The layout is adapted for motor traffic with wide carriageways and small middle islands.
- The street is a barrier for people in the neighbourhood.
- There are possibilities to make a some reconstruction to get a better local bus service.
- There are discussion around the street into a 30/50 street i.e. 50km/h on the links and 30km/h at the intersections. There are also discussions around a possible future function as a local inner ring road.
5 Reconstructed Malmoe - Bergsgatan

For map of Malmoe and the location of Bergsgatan see Appendix 1.

5.1 Case Context and Existing situation

For a description of the area see chapter 3.1 for Nobelvägen as Bergsgatan, Amiralsgatan and Nobelvägen are located in the same area in Malmoe.

5.1.1 Case Study Area and Character sections

Bergsgatan has been divided into 3 characters sections. See Appendix 2 for the division of character sections.

**Character section 1; Amiralsgatan – Friisgatan**
- **Start:** The section starts at Amrialsgatan
- **Type:** Housing area with dense block character. There are shops, restaurants and some public service in the ground floor.
- **Greenery:** sporadic
- **End:** The section ends at Friisgatan

**Character section 2; Friisgatan – Möllevångsgatan**
- **Start:** The section starts at Friisgatan
- **Type:** former industrial – now office – area with dense block character. There are some shops in the ground floor.
- **Greenery:** none
- **End:** The section ends at Möllevångsgatan

**Character section 3; Möllevångsgatan – Slöjdgatan**
- **Start:** The section starts at Möllevångsgatan
- **Type:** Housing area with dense block character. There are shops, and many restaurants in the ground floor, especially around Möllevångstorget.
- **Greenery:** sporadic
- **End:** The section ends at Slöjdgatan

Möllevången is a densely built area. It is the centre of this area and of course the centre of Bergsgatan. During daytime there are marketing activities and for the evening activities there are many restaurants, pubs and other types of entertainment.

5.1.2 Location

See Appendix 1 and 2 for the location of Bergsgatan.
5.1.3 Built Form

Building
All three sections are very similar regarding building height which is around 18.5 m. The buildings are from 1910-1930. There are, however, two blocks of buildings from 1960-1980. Section 2 has a substantial part of inactive frontages facing Bergsgatan. These are the old factory buildings with hardly no doorways. Section 1 and 3 have mostly active frontages with a substantial number of doorways.

Spacing
Along section 2 there is no spacing between the buildings what so ever. No parks and no market areas. Along section 1 there are some smaller parks and market areas so this section has an average frontage to space ratio of 0.1. Section 3 contains the major market area Mollevangen as well as other widening open spaces to the average frontage to space ratio is 0.4.

Profiles for the sections are found in Appendix 4.

Horizontal spacing
The average horizontal spacing is constant all along all three sections. Again especially section 3 differ from the rest by containing the big market square Möllevången.

<table>
<thead>
<tr>
<th>Characters section</th>
<th>Street width (m)</th>
<th>Side space width (m)</th>
<th>Width between side space (m)</th>
<th>Median strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3</td>
<td>30</td>
<td>7.8</td>
<td>22.2</td>
<td>4</td>
</tr>
</tbody>
</table>

Greenery
There is really no greenery along this case especially not in section 2. The greenery can be described as sporadic during the warmer periods of the year.

People in the street. People spaces
In Malmoe the only occasions when there are many people in the streets is during the carnival in August and when MIF (the football and ice-hockey teams) is playing. In section 3 there are two major places for people to congregate and there are many people in the street especially Saturday mornings when the fruit and vegetable stands are filled and people start their shopping. For the other two sections there are no special places for people to congregate and not much people movement.

Street surface
All along Bergsgatan the surface of the carriageway is asphalt. The median strip has cobblestone pavement and the side spaces have paving stone.

Railing etc.
Railing is not very common in Swedish cities. Neither of the sections in Bergsgatan has any railing nor bollards.
5.1.4 Traffic regulation

The speed limit all along Bersgatan is 50 km/h. Traffic is allowed in both directions and there are two through-going traffic lanes in each direction. Each lane width is 3.5 m. There are no separate lanes for any vehicle category along the case i.e. no cycle facilities either. There are foot paths on both sides of the street with a total width of 7.8m. There are parking lanes in both directions with a total width of 4m.

See Appendix 2 for Traffic regulations

5.1.5 Pattern of use

Traffic

Annual Average Daily Traffic for the different sections

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Section 1 Annual Average Daily Traffic</th>
<th>Section 2 Annual Average Daily Traffic</th>
<th>Section 3 Annual Average Daily Traffic</th>
<th>Average Vehicle Occupancy rate</th>
<th>SECTION 3 Annual average daily number of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca / van &lt; 3.5 ton</td>
<td>-</td>
<td>13350</td>
<td>13350</td>
<td>1.2</td>
<td>16 020</td>
</tr>
<tr>
<td>Van / truck &gt; 3.5 t</td>
<td>-</td>
<td>650</td>
<td>650</td>
<td>1</td>
<td>650</td>
</tr>
<tr>
<td>Bus</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>16</td>
<td>16 000</td>
</tr>
<tr>
<td>Cycle</td>
<td>500</td>
<td>1000</td>
<td>2400</td>
<td>1</td>
<td>2400</td>
</tr>
<tr>
<td>Mc / moped</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

During the busiest period of the day the number pedestrians were counted at one location in section 3. During 5 minutes 9 pedestrians walked along the street and 20 pedestrians crossed the street.

Activities
- Shopping in the market area.
- Open-air restaurants in the market and at a few other locations along the street.

Speed
In Section 3 the speeds were measured during a week in October 2002, day and night, with loops in the street. The average vehicle speed was 42 km/h and the 85th percentile speed 50.5 km/h.

Land use, upper floor use, lower floor use
The main land use is for housing. There are some shops on the lower floor at some parts of the street. There are a higher proportion of shops on the lower floors around the square.
5.1.6 Performance Indicators

**Arterial Performance**
The number of people passing by at the busiest time has not been calculated for all traffic modes. The annual average daily number of people being transported along the street is calculated to 35 000. Thus, the arterial performance is high for motorised vehicles. There is a parallel cycle link to Bergsgatan with major cycle traffic around 4000 cycles per day. On Bergsgatan the cycle traffic is therefore not so significant.

**Locale Performance**
1) Vitality number of people in the street. During market hours and especially Saturday mornings there are many people in the street in connection to the market in section 3.
2) Number of activities in the street. Shopping in the market square, talking and sitting mainly during the warmer period of the year. There are also a few other open-air restaurants along the street.
3) Residential population and working population

<table>
<thead>
<tr>
<th></th>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>residential population</td>
<td>2 703</td>
<td>901</td>
<td>1 802</td>
</tr>
<tr>
<td>number of unemployed residents</td>
<td>184</td>
<td>73</td>
<td>123</td>
</tr>
<tr>
<td>number of working residents</td>
<td>927</td>
<td>315</td>
<td>612</td>
</tr>
<tr>
<td>average income per resident and year</td>
<td>9 281</td>
<td>9 281</td>
<td>9 281</td>
</tr>
<tr>
<td>number of jobs</td>
<td>901</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>out of which are in business</td>
<td>895</td>
<td>261</td>
<td>597</td>
</tr>
</tbody>
</table>
Safety
In the accident statistics no road user was killed on Bergsgatan for the observed 3 year period. Below there is a summary for the accidents that occurred. Please observe that the data derives from both police reported accidents and hospital registrations (of this the fairly high number of slight injuries).

<table>
<thead>
<tr>
<th></th>
<th>Section 1</th>
<th>Section 2</th>
<th>Section 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian seriously injured</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pedestrian slightly injured</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Cyclist seriously injured</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cyclist slightly injured</td>
<td>10</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Motorised seriously injured</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Motorised slightly injured</td>
<td>1</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Summary serious</td>
<td>5</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Summary slight</td>
<td>11</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Summary injuries</td>
<td>16</td>
<td>9</td>
<td>33</td>
</tr>
</tbody>
</table>

5.1.7 Street Classification and Management
The street is a main street before as after the reconstruction. The definition of a main road in the Swedish hierarchical system is a street which main function is to transport between different parts of the city.

5.2 RECONSTRUCTION AND SHORT TERM CHANGE

5.2.1 Reconstruction –
- The purpose of the reconstruction was to divide the space into more clear functions, especially for pedestrians and cyclists.
- The reconstruction of Bergsgatan was done at the whole section, from Amiralsgatan to Södra Förstadsgatan.
- The reconstruction consisted of widening of footways with footway extensions at every intersection and in some places between intersections. All footway extension were the equipped with zebra crossings. There was also built a new wider middle island (4 m) along the whole section. Before there were only smaller island (width 1 m) I some of the intersections. Trees were planted in the island.
- Bergsgatan was reconstructed in 1986-87
- The reconstruction resulted in a better situation for the pedestrians. Another effect was that the vehicle speeds increased, probably due the more clear division of functions.
5.2.2 Built form; what has changed compared to the existing situation?
- The plan for reconstruction was presented in 1986. The reconstruction then took place and was finalised in 1987.
- No changes in buildings.
- Distances between buildings have remained the same.
- The spatial distribution of the street has changed to a wider central island with plantations and footway extensions i.e. the carriageway spaces have decreased. Cars now have separate marked parking spaces.
- The entries to some of the smaller streets have been rebuilt with through going pavements with lateral shift in the carriageway.

5.2.3 Traffic regulation;
Some years after 1987 the regulation of two crossings were changed from yield to signalisation.

5.2.4 Pattern of use;
Some of the industrial buildings have changed into public service and business. The change took place in the middle of the 90’s. In the 80’s there were mainly industrial buildings. Two major industrial working places; the newspaper “Arbetet” and the chocolate factory were then closed. Retail has increased during the 90’s with more restaurants and small shops. Some of the more suspicious shops are not common anymore.

The change of number of motorised vehicles over the years is presented in the following table;

<table>
<thead>
<tr>
<th></th>
<th>1972</th>
<th>1986</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Annual</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily Traffic</td>
<td>-</td>
<td>17000</td>
<td>15000</td>
</tr>
</tbody>
</table>

**People in the street and their activities.**
There has been a radical change towards continental behaviour with open-air restaurants and pubs during the last 15 years. There has been a concentration of restaurants and pubs to the market “Möllevången”. For people living in this area the nightlife activities can be a source of conflict as there is a tendency for extension into the late late evenings (mornings). The shopping activities have become livelier along Bergsgatan and especially around Möllevången as there now are shop activities also in the street (outside the main shop as in many continental countries). The grocery market at the square is quit large and open daily. This is a nice contribution to the city life and at the same time a problem concerning waste and recycling management.

5.2.5 Performance indicators;
The social life on Bergsgatan has changed over the years. In the 70’s and beginning of the 80’s there were some drug handling and prostitution in the area. The social life has improved since then. Along Bergsgatan there is a mixed population with a rather high
proportion of immigrants and younger people; households with children are, however, rare.

Regarding traffic safety it has only been possible to compare on a very aggregated level i.e. total number of slightly and seriously injured and number of killed irrespective of type of road user. The figures in the table below are number per year.

<table>
<thead>
<tr>
<th></th>
<th>1970</th>
<th>1986</th>
<th>2001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>slightly injured</td>
<td>9</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>seriously injured</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>killed</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

* the data from 2001 is based on both police reported accidents and injuries reported to the hospitals i.e. this explains the rather high figures of slightly injured while seriously injured and killed have remained rather constant over the years.

5.2.6 No changes in Street Classification and Management.
The street is a main street before as after the reconstruction. The definition of a main road in the Swedish hierarchical system is a street with the main function to transport between different parts of the city.

5.3 Reference Area

5.3.1 Area and data description
The reference area to Bergsgatan is the same as for all four cases in Malmoe. See description in chapter 3.3 Nobelvagen.

5.4 Decision making and Design Process

Project identification phase:

Problem
Parking along Bergsgatan was a problem and there was not enough traffic lanes at the intersections. Pedestrians had problems crossing the street. The function of the street was not clear enough. The situation for cyclists and pedestrians was especially unclear. The square Mollevangen was already a project, therefore it was natural to continue along Bergsgatan.

Who
The traffic planning unit at the municipality brought up the need to solve the problem. As part of the “ROT work” in the mid 80’s there was a tendency to clear up the neighbourhood. This had already started at the big market square Mollevangen and now there was a desire to continue along Bergsgatan. As part of this work also other aspects of the street was in focus.

The leader of this project organisation was Per Nettelblad in charge of street design at the department of public works. The before analysis consisted mostly of speed measurements. At this stage the public was not involved to any greater extent.
Decision to design:
The Technical Board at the municipality took the decision to design. The process and
the organisation was very typical for the tradition at this time. It was the local authority
that was in charge with rather small influence from outside. The project organisation
consisted mostly of people from within the dep. of public works. There was a
connection to the Mollevangs project but the contact with the public was very limited.

Project definition phase:
Project organisation
As normal a group consisting of people from the two units at the municipality the Urban
planning unit and the Traffic unit. If needed experts from outside are contacted.
However not in this case. The project leader, Per Nettelblad, produced the alternatives
which then were discussed within the group. There was some contact with the residents
in the area through the Mollevangs project.

Implementation:
The costs for the project is estimated to have reached 0.25 miljEURO (2.25 miljSEK).

5.5 Feed-back statements
Statement: An arterial street with good conditions for pedestrians. A clear division of
the carriageways with crossing facilities for pedestrians. More people use the street
partly as place to stay around the square.

There were desires from some user groups about traffic lights at some crossings. (These
were later introduced.)

Good remarks: more retail and restaurants and the trees are good contributions to the
overall appearance

Bad remarks: The conditions would be ideal if the street had a lower average speed for
vehicles. The street has in fact to many regional bus services, which cause problems at
the bus stop and crossing during peak hours.

5.6 Case summary
- Before the reconstruction Bergsgatan was a main street and has remained a main
street also after the reconstruction.
- Parking was introduced on both sides of the street. The foot path was extended at
the pedestrians crossings to improve the crossing possibilities. Cycle lanes were
introduced on each side of the street as a 1m marked lane between the carriageway
and the parking.
- (Some time after the reconstruction, the intersections were rebuilt to signals due to
the increase cross traffic. The reason for the increase in cross traffic was that other
streets on either sides of Bergsgatan were rebuilt and therefore less accessible.)
- Due to the more clear allocation of space to different road user groups speeds
increased.
- The general development of Bergsgatan from the 70’s where the reconstruction in
the mid 80’s is a part is the following:
The ROT program was introduced to improve living conditions along the street. The housing was improved. The fences separating the yards on the back of the buildings were torn down to improve the conditions, et. Since the 70’s the commerce at the market has increased considerably. At the time when industry was a predominant feature along Bergsgatan people didn’t walk along the street. Today the strolling conditions have improved. There are trees along the street and there are even some open-air restaurants.

- The very frequent bus services on the street is a problem
6 Reconstructed Malmoe - Regementsgatan

For map of Malmoe and the location of Regementsgatan see Appendix 1.

6.1 Case Context and Existing situation

6.1.1 Case Study Area and Character sections

Regementsgatan is located in the western parts of Malmoe
Regementsgatan runs in the west / east direction. The street has always been the major
access road from the west to the city. Regementsgatan consists of only one character
section. See Appendix 3 for the definition of the character sections.

The character section 1
Start: The section starts with the intersection with Tessinsvag / Fridhemstorget
Type: This is a housing area with dense block character on the south side and separate
lamella buildings with gardens on the north side. There are mainly shops on the south
and east part of the section. There is a small market place near the east end of the street.
Greenery: The greenery influences the street on the north side and there are new
planted trees on the south side.
End: the section ends at the intersection with Mariedalsvagen

6.1.2 Location
See Appendix 1 and 3 for a map of the location

6.1.3 Built Form

Building height
The buildings on the south side are from 1910-1930 and on the north side from 1930-
40. The building height is on average 19.5 m on both sides. The fronts have a normal
open transparency with doorways and windows towards the street.

Profiles for the sections are found in Appendix 4 Regementsgatan.

Horizontal spacing

<table>
<thead>
<tr>
<th>Section 1 at different years</th>
<th>Street width (m)</th>
<th>Side space width (m)</th>
<th>Width between side space (m)</th>
<th>Median strip width (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003 (after = existing)</td>
<td>30</td>
<td>22 (including parking between foot way extensions)</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>1999 (before)</td>
<td>30</td>
<td>14</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>1970 (old)</td>
<td>30</td>
<td>14</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>
Ratio of frontage to space
Valid for all time periods;
north side ratio = 1.6 (greenery between lamella houses)
south side ratio = 9.6

Greenery
Tree have and have had an influence on the shape of the street due to the old trees on
the north side. The new planted trees will have an influence later on.

People in the street. People spaces
There are two minor places for people to congregate; on the square and outside the
liquor store. There are relatively few people moving around in the street. Like many
other arterial streets in Malmoe most people move around in the afternoon when they
return home from work and do their shopping in the local stores.

Median strip
At the zebra crossings the median strip is kerbed and the width is 1.8 m.

6.1.4 Traffic regulation
The speed limit is the same: 50 km/h all along the case.
There is traffic in both directions also all along the case. One through-going lane in each
direction with separate left-lanes at the signalised intersections.
There is parking on both sides all along the case.
Instead of recommended 30 km/h there are warning signs for road humps.

See Appendix 3 for Traffic Regulations

6.1.5 Pattern of use

Traffic

ADT= Annual Average Daily Traffic

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>2002 Existing = After</th>
<th>1999 Before</th>
<th>1970 old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca / van &lt; 3.5 ton</td>
<td>8 100</td>
<td>10 800</td>
<td>13 100</td>
</tr>
<tr>
<td>Van / truck &gt; 3.5 t</td>
<td>700</td>
<td>1 000</td>
<td>1 300</td>
</tr>
<tr>
<td>Bus</td>
<td>224</td>
<td>224</td>
<td>-</td>
</tr>
<tr>
<td>Cycle</td>
<td>-</td>
<td>600</td>
<td>-</td>
</tr>
<tr>
<td>Mc / moped</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Speed
The 85 percentile speed is 27 km/h after the reconstruction (existing) compared to 55
km/h before
Activities
The main activity for pedestrians along the street is to transport themselves. Some people stand talking outside the shops and in the small market. Especially there are a lot of people strolling. During the morning and afternoon hours there are many children crossing the street to and from school.

Land use, upper floor use, lower floor use
The main land use is for housing. There are some shops on the lower floor.

6.1.6 Performance Indicators

Arterial Performance
For vehicles the street has a main arterial function as a access road to the city. For pedestrians the arterial function is less accentuated. Pedestrians move around in the neighbourhood.

Locale Performance
1) Vitality number of people in the street. The locale character is more striking for pedestrians than vehicles. People live along the street, meet neighbours, shop, etc.
2) Number of activities in the street. Mainly shopping.
3) Residential population and working population

<table>
<thead>
<tr>
<th>Regementsgatan</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>residential population</td>
<td>4 885</td>
</tr>
<tr>
<td>number of unemployed residents</td>
<td>178</td>
</tr>
<tr>
<td>number of working residents</td>
<td>2 192</td>
</tr>
<tr>
<td>average income per resident and year (EURO)</td>
<td>12 588</td>
</tr>
<tr>
<td>number of jobs</td>
<td>560</td>
</tr>
<tr>
<td>out of which are in business and retail</td>
<td>212</td>
</tr>
</tbody>
</table>
Safety
The reconstruction was finalised 1.5 years ago so there is no 3 year accident data available so far. The effect of the reconstruction has been analysed from conflict studies and speed measurements before and after the reconstruction. There were some pedestrians killed earlier which put focus on the safety problem and the need of a reconstruction.

6.1.7 Street Classification and Management
The street is a main street before as after the reconstruction. The definition of a main road in the Swedish hierarchical system is a street which main function is to transport between different parts of the city.

6.2 RECONSTRUCTION AND SHORT TERM CHANGE

6.2.1 Reconstruction –

All five intersections between Major Nilssonsgatan and Mariedalsvägen were provided with speed cushions to ensure a maximal speed of 30 km/h (85-percentil). The speed cushions were combined with lateral shifts in the carriageway. The width of the total street was narrowed down to one traffic lane in each direction instead of one and a half like prior the reconstruction.

The reconstruction was implemented by two stages starting in September 2000. Because of delays, the Department of public works had to interrupt the reconstruction of the street in November 2000. The reconstruction was re-established in March 2001 and the street was completed in May 2001.

The actual costs for the project is 0.5 milj EURO (6milj SEK). Half of the cost were financed by the Municipality and the other half by subsidiary from the state.

The evaluation of the project was part of a doctoral thesis and several reports are describing the process and the assessment. The reconstruction resulted in an increase of the proportion of car drivers giving way to pedestrians at crossings from 5 to 85%. There was also a considerable reduction of driving speeds at the same places. The 85 percentile speed decreased from 55 to 27km/h. The total number of serious conflicts based on the Swedish Traffic Conflicts Technique decreased from 37 to 29 conflicts for all 5 intersections during 6 hours study. The time spent on driving the reconstructed link (720m) increased by 27 seconds and emissions increased by 15%. On the other hand did the delays for the crossing pedestrians, cyclists and car drivers from the side roads decrease by 2-3%.

6.2.2 Built form
The allocation of space between building lines has changed. Now there is more side space mostly due to parking spaces along the street. In the 70’s there was a tramline in the middle of the street, which partly had a separate lane. The tramline was closed down in 1973.

Exact measures can be found in the Existing situation.
6.2.3 Traffic regulation;
Before the reconstruction there was 1.5 lane in each direction. By this means that there
was one wide lane with no lane markings. At the signalised intersections two lanes were
marked in each direction. More comments can be found in the Existing situation.

6.2.4 Pattern of use
There is a table in the Existing situation showing that the car traffic has decreased some
since the reconstruction. This flow has now moved to parallel roads, which, to some
degree was expected.

6.2.5 Performance indicators;
The number of residents has decreased from 6416 in 1970 to 4885 in 2001. The age
distribution of the residents on Regementsgatan is about the same. Due to the short time
span since the reconstruction was finalised there are no tendencies so far between before
and after.
Regarding the traffic safety there are no figures from 1970. The reconstruction has
however increased safety since the before situation. This is based on speed
measurements, yield behaviour and conflict studies.

6.2.6 Street Classification and Management;
The street is still a main road. The definition of a main road in the Swedish hierarchical
system is a street which main function is to transport between different parts of the city.

Description of reconstruction scheme,
During several years, a lot of people required a safer traffic environment on
Regementsgatan. Many accidents took place on the street and residents and visitors
experienced the traffic as very disturbing. The street was very wide which led to long
crossings for pedestrians. The width of the street encouraged high vehicle speeds and
the long crossings resulted in a feeling of insecurity for the vulnerable road users.
Schoolchildren at Ribersborgsskolan, in the surroundings of Regementsgatan, crossed
the street everyday on their way to school.

In the autumn of 1997 Lund Institute of Technology was searching suitable
objects for a project about speed cushions as a speed measure. The project was a
part of a doctoral thesis by Mohsen Towliat, “The safety of vulnerable road
users...” Regementsgatan was selected as an object. The aim with the project was
to increase the pedestrians’ and bicyclists’ safety, accessibility and comfort at
crossings by reduction of the speed. An in-depth study of children’s safety and
behaviour at pedestrian crossings by Ola Wilhelmsson and Charlotta Johansson at
Lulea University of Technology was also performed before the reconstruction of
the street.

The design of the street was adapted to the requirements for good safety and security for
above all children and elderly. All five intersections between Major Nilssongsatan and
Mariedalsvägen were provided with speed cushions to ensure a maximal speed of 30
km/h (85-percentil). The speed cushions were combined with lateral shifts in the
carriageway. The width of the total street was narrowed down to one traffic lane in each
direction instead of one and a half like prior the reconstruction.
The expected effect of the reconstruction of the street was a halving of the number of accidents.

The reconstruction was implemented by two stages starting in September 2000. Because of delays, Gatukontoret had to interrupt the reconstruction of the street in November 2000. The reconstruction was re-established in March 2001 and the street was completed in May 2001.

The reconstruction has resulted in an increase of the number of car drivers that give way to pedestrians at crossings and a considerable reduction of speed at the same places.

6.3 Reference Area
The same reference area as for Bergsgatan.

6.4 Decision making and Design Process

Project identification phase:

Problem
Regementsgatan has been regarded as problematic during several years, actually ever since the tramline was taken out of traffic in the 70’s. After the tramline the street became far too wide with high speeds and poor crossing facilities for pedestrians. The wide street and the fairly long passages resulted in a feeling of insecurity for the vulnerable road user, especially for children and elderly people. Many accidents occurred, elderly pedestrians were highly represented, and residents and visitors experienced the traffic and very annoying. Schoolchildren at Ribersborgsskolan, in the surroundings of Regementsgatan, crossed the street everyday on their way to school. During several years, a lot of people required a safer traffic environment on Regementsgatan. There were several ideas over the years for different solutions but the tools for a reconstruction didn’t appear until the “Zero-vision” (a vision of no killed or seriously injured in traffic) and the work with “the calm street” [9] in the mid 90’s.

Who and when
There were complaints from the public which supported the view of the traffic engineers at the Department of Public works at the municipality that the street should be rebuilt. The real discussions at the municipality started in 1996/97. Discussions were based on speed measurements and accident data. At this time there was however still no project organisation. This was organised later in connection to the project definition phase. The public was neither involved to any greater extent at this stage.

Decision to design:
The proposal for reconstruction was presented for the politicians in the technical board. The technical board agreed to the need and assigned the dep. of public works to bring forward different design solutions. The budget for the project was decided. The technical board took the decision to design.
Project definition phase:

**Organisation**
The project organisation consisted of some 20 persons for inside the municipality and one consult from outside. The organisation consisted of a manager group, and steering group and a reference group. In the reference group there were representatives from media, from the residents, youngsters and shopkeepers in the area, traffic safety researchers.
In connection to the project, however outside the project organisation, there was a special information project; seeing to that information regarding the project was spread.
The project organisation was established completely according to the “hand book”.
There were plans for communication, construction meetings, contact with media, contact with shopkeepers, etc.

**Alternatives**
The main features of the reconstruction was decided upon early in this phase. Then there were minor details discussed back and forth and the best ways to solve these. The main features were; reduction of the four-lane street to a two-lane street; maximum vehicle speed of 30km/h at locations with interactions with vulnerable road users; cycle lane; no killed or seriously injured road users.
In the reference group there were representatives from media that provided the public with sketches of possible solutions in the newspapers. The politicians were heavily involved during the whole project.

Inspiration was sought in the ”Zero-vision” and the work with the ”Calm street” [9].

**Decision to reconstruct:**
In the decision to reconstruct all vital details were included like; description of the target, time plan, budget, the project structure was described, project risk analyses and a scheme for assessment. The technical Board took the decision in 1999.

**Implementation:**
The reconstruction was implemented in two stages starting in September 2000. Due to delays, the Department of public works had to interrupt the reconstruction of the street in November 2000. The reason that it was not realistic have the reconstruction finished in time for the Christmas shopping. As this was a major concern from the local shopkeepers all arrangements around the reconstruction (sheds, vehicles, etc) were removed in time for Christmas shopping. The reconstruction was re-established in March 2001 and the street was completed in May 2001.
The planned budget was 5 milj SEK (0.5 milj EURO) but the actual cost went up to 6 milj SEK. Half of the costs were finansed by the municipality and half from subsidy by the state.
There was competitive tendering for the actual construction. The costs from the competitors were on a very comparable levels. The one that was chosen had the best environmental factor and was an organisation that the municipality had good experience from.
The evaluation of the project was part of a doctoral thesis and several reports are describing the process and the assessment. The assessment studies consisted of before and after studies of i) studies of drivers give way behaviour to crossing pedestrians ii)
speed measurements iii) conflict studies iv) time consumption for different road user
groups v) emissions. In the before situation children’s safety and behaviour at pedestrian crossings were studied in-depth.

6.5 Feed-back statements

Statement: Today an arterial street with good conditions for pedestrians. A clear division of the carriageways with safe crossing facilities for pedestrians. More people use the street partly as place to stay around the square.

There were opinions from some user groups about the narrow carriageways and the cushions. In many peoples minds this is a through fare, which could not be traffic calmed be using vertical shifts.

Good remarks: much better conditions for cyclists and pedestrians, especially for elderly people and children. The greenery and the paving with a overall good performance has made the street more attractive.

Bad remarks: worse conditions for servicing, parking and buses with no extra space for these road users

6.6 Case summary

- The street is still classified as a main road even if the speeds are reduced.
- Before there were four lanes for the motorised traffic, today there are two lanes.

Today there is parking on both sides of the street. Today there are traffic calming measures all along the street (cushions that do not affect the capacity of bus traffic). Today there is a cycle lane with traffic in both directions along the south side of the street. The layout is very clear and due to the drastic speed reductions there is no need for special control at the intersections.

- The width of the street (carriageways) has been reduced from 16m to 8m.
- Speeds are reduced and the speed distribution has decreased. The number of serious conflicts are reduced. The number of accidents are reduced. Emissions have increased to some degree. Traffic flow has decreased- moved to parallel streets. Cycling has increased. The turnover for the shop keepers has increased. More pedestrians dare to cross the street. Better yielding behaviour towards crossing pedestrians. Improved crossing possibilities for traffic from side roads. More pedestrian activities along the street. People congregate more. Improved aesthetic due to the trees. More open-air restaurants.

- Comment from an old woman “ Nowadays I dare to visit my friend on the other side of the street”
- Motor-organisations are not so happy with the reconstructions.
- Bus traffic has some problems – that will be taken care of.
- Spontaneous loading and unloading is more difficult due to less space – this will also be compensated to some extent.
- There was a great agony for the politicians to take decision about the reconstruction, but they showed courage in this matter.