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Internoise 2016 Satellite in Berlin

Excursion to real life examples of Berlin's noise action plan

1. Stop: Brandenburgische Straße (between Hohenzollerndamm and Berliner Straße)

In course of the compilation of the noise action plan in 2008 the situation of the public street space in Brandenburgische Straße was examined. The dimensions of this public street were generous; nevertheless a rearrangement of the spaces due to the high traffic volume and the maintaining of the central dividing strip was necessary. This is a typical problem for the district Wilmersdorf.

In 2008 there was following situation found: The Street was a superordinate road link with a 74 dB (A) at daytime and 68 dB (A) at nighttime. The Brandenburgische Straße had an average daily traffic of 22.000 with 2 lanes and parking options on the right side. Most property types were housing and some shared use with business/trading/services at the ground floors. Already since 1999 the speed limit had been 30 km/h because of noise protection reasons.

The major problems of Brandenburgische Straße were that the street had a very high noise pollution and noise disturbance, because of the high frequency of motor vehicles. At the same time the conditions for cyclists were inadequate. Additionally there was a direct noise impact because of the short distance from the houses to the road.

These problems were analyzed and changed. The street was reduced to one overwide lane and a lane for cyclists. New road markings and crossing aids were installed. In 2014 the average daily traffic had declined to round about 20.000. The changes had the effect, that the traffic flow was better regulated. The new overwide lane allowed a broad distance between the noise source and the facades. In addition the non-motorized vehicles are advantaged. In a pilot program with such a rearrangement at the expense of the motorized traffic, a noise reduction of 1,5 dB (A) was calculated.

Source: LK Argus

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2. Stop: Maaßenstraße (meeting zone)

The new concept of the meeting zone in Maaßenstraße caused heated discussions in the media. The concept of such meeting zones sourced in the Netherlands. It`s called “Shared Space”. Shared spaces were primary applied in small Dutch towns. The idea of this concept is a common used space, in which traffic rules are replaced by social rules. This causes an elimination of traffic signs, traffic lights, sidewalks, traffic islands and road markings.

Model experiments showed that the space has a better used design, the safety grows and the accessibility for people with a restricted mobility increase. The concept causes some problems too: e.g. missing guidance for visually impaired people, missing possibility to assess the traffic situation for seniors and children and the outsourcing of parking areas. In Berlin is a comparable area at Alexanderplatz.

Switzerland developed a similar concept. This Swiss concept is more suitable for big cities like Berlin.

Pedestrians have the possibility to use the whole of the living and business areas. And they also have a primary right before the motor vehicles, which have a restricted speed limit of 20 km/h. Parking at special areas is allowed. The sidewalks are still in use to guaranty more safety for seniors and children.

A German example is the Maaßenstraße. Here, the relevant public was included via working groups, flyers, post cards and the possibility of an online participation. As a result some conclusions were made in 2013. The character of the neighborhood had to be protected. The traffic needed to be slowed down. More non-commercial common room for pedestrians with seating areas was requested. Defined crossings for people with a restricted mobility and for those who are visually impaired were needed. A cycling lane on the road was required. No parking areas at the southern part of the street but loading and delivering had to remain possible.

Sources:

http://www.stadtentwicklung.berlin.de/verkehr/politik_planung/fussgaenger/strategie/de/begegnungszone_maassenstrasse.shtml

Gerlach et al: Sinn und Unsinn von Shared Space, 2007

3. Stop: Katzbachstraße

Berlin had undertaken an examination to test the suitability of speed limit of 30 km/h for the main traffic network. The main traffic network includes 3.167 km with the categories I-IV of the urban development plan for traffic.
In 2015, 536 km of the directional main traffic network were speed restricted to 30 km/h. This means round about 17%. 5% of the main traffic network has a 30 km/h speed limit during night hours.

The effects of the reduction from 50 to 30 km/h were analyzed in 2013. It was found that: If no support activities (like police controls) were undertaken, the limitation caused a real speed reduction up to 16 km/h. If speed limits were enforced, the limitation caused a real speed reduction up to 18 km/h. In 15 out of 19 cases of investigation a significant speed reduction was measured.

The Katzbachstraße is a busy road. Since 1990 the speed limit on Katzbachstraße had been already reduced to 30 km/h at night because of various complaints that had been made. After further complaints of local residents in 2009, the traffic management of Berlin (VLB) reduced the speed limit to 30 km/h full-time in order to reduce the noise pollution. Other reasons for the reduction were the high costs resulting from the traffic accidents between Monumentenstraße and Dudenstraße. The traffic accidents that happened here were comparably expensive, because of the high material and human damages resulting from them.

Source:

Heinrichs, Horn & Krey: Tempo 30 an Hauptverkehrsstraßen in Straßenverkehrstechnik, 2.2015

4. Stop: Großbeerenstraße (in between Yorckstr. and Hagelbergerstr)

Tyre noise consists of airborne and structure borne noise emissions. These emissions arise due to the tire treads and the unevenness of the street. The stochastic excitation from the street produces a noisy spectrum, while the periodical structure of the tire treads generates tonal sounds.
From the construction side of view, the surface structure and the evenness of the road can have a crucial influence on following factors. The surface structure at first can be influenced by the composition of the used asphalt. At second: The granule size and the choice of the biggest particle for the asphalt covering layer are of importance. At third: The length/thickness ratio of one single particle in the covering layer of the asphalt can influence the surface structure.
The evenness can also be influenced by two factors: The quality of the binder between the base layer and the asphalt covering layer affects the profiling and the elasticity of the road. Furthermore, not only the choice of the asphalt covering layer, but also the installations such as manhole covers, seams and joints are able to influence the evenness.

Until this moment Berlin has laid round about 21 km directional noise reduced asphalt. Round about 200m with rubber modified DSH-V asphalt was laid out in Großbeerenstraße.
The DSH-V is a thin asphalt layer, which is laid out when it is still hot. It has a high density with an optimal bond of layers and can be used for different speeds. A binder with a rubber modification increases the flexibility and the durability. Between 45 to 65 km/h a noise reduction of minimum 3 dB (A) can be reached with this kind of asphalt. Because of the porous surface structure the air-pumping noise and the tire noise will be reduced. (Air-pumping noise: This noise results from air displacement and air intake effects, when tire and road come together.)
For noise reducing measures a composition in which the biggest particle has a size of 5mm were proved to be particularly favorable.

To guarantee a long flexibility together with a long durability and a constant noise reduction, some requirements during the installation of the DSH-V asphalt have to be met. The base layer mustn´t have any load-bearing capacity problems. It has to be stable, even and clean. The mixture of the binder should have the right mixing ratio. Before the installation process begins, potential mixture problems should be eliminated by testing it on a trial field. Stable weather conditions facilitate the installation; at the Großbeerenstraße are cracks in the surface because the ground temperature was too low due to the cold night before when the asphalt was laid. In the case of rain a surface heating is also helpful.

Source:

Asphalta: Gutachterliche Stellungnahme Nr. 1108081, 2012

5. Riehmers Hofgarten


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Because of the population increase as a result of the industrial revolution, James Hobrecht an employee of the police headquarters developed a development plan for the urban expansion in 1858. In this plan he envisioned a wide street grid with big main thoroughfares and numerous public places. This urban concept characterized Berlin for many years. One block had a length of about 400m and a depth about 200m. The Yards had a minimum size of 60qm. Big estates had several closely packed backyards.
Riehmers Hofgarten is an exception. Master mason Riehmer used his t-shaped estate to break out of the typical scheme and built a private street in the backyard. Round about 20 houses were grouped around the courtyard garden. The biggest flats faced the road and the mall flats faced the yard. The facade constructions have expensive neo-baroque and renaissance elements. Of particular note are the splendor facades Großbeerenstraße and the two atlases, which carry the balcony above the courtyard entrance Yorckstraße. The estate was renovated in the 70s and 80s. All flats were modernized. Nowadays, Riehmers Hofgarten is a popular place to live with offices, medical practices, restaurants and cinemas.
Riehmers Hofgarten is a very good example of an effective noise reduction measure which builders using today to shield of the noise from the rooms at the back via a closed building alignment to the street. This means that the residents have a loud side and a quiet side, which can be used as a bedroom.

Source:

www.berlin.de/sehenswuerdigkeiten/3560832-3558930-riehmers-fofgarten.html