

Station Spotlight

Station construction, expansion and development – September 2014



Bern railway station: railway stations are traffic hubs, reception halls, meeting places and living spaces

Expansion of a railway station means urban rebuilding

The railway station is the transport hub in the heart of the city. The connections between the station and all urban modes of transport have to work here – particularly at peak times, when thousands move in the same direction at the same time. In many places, the projected growth in traffic volume by 2030 will require not only renovation of the railway station, but also significant reshaping of its urban surroundings.

Stations are characterised by a constant to-and-fro: commuters race to platforms or

rush to catch trams and buses, taxis arrive one after another, cyclists weave in and out of streams of people. How does one ensure that travellers can move from one form of transport to another with the least possible friction? For this overall system to function, three mutually dependent requirements must be met: sufficient space for each mode of transport, seamless connection of the urban transport network with the station, and appropriate control and distribution of the crowds between the station and the city. What sounds simple is in reality often highly complex, as these requirements

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Editorial

An attractive railway station is an important location factor for a city and its region. Yet the term 'station' means much more than just buildings, passages, platforms and tracks. The development of a highly functional railway station has to think in terms of a larger project perimeter. Stations, after all, are not islands, but are connected to their environment in a variety of ways. They are central transport hubs where all modes of transport cross and must be connected to each other. The railway station is the reception hall of the city and shapes the transition to the city centre. And, not least, stations are centres of urban development (and densification). In many places, freed-up areas behind stations transform into new neighbourhoods with residential space and new workplaces. The impetus for change in the areas around railway stations can therefore come from various sources: from the rail operators, cities, urban transport authorities and real estate developers. And because everything is interconnected, a good solution always requires the cooperation of all parties. In this issue, we take a look at some real-life examples to illustrate the symbiosis at the heart of the 'station-city' relationship and show how they can continue to grow together.

Ralph Bächli
Leading expert station construction
Basler & Hofmann



Tight conditions on the platform in Lausanne: in future, the pedestrian underpasses will ensure that passengers are distributed along the platforms and that bottlenecks do not form.

Direct and attract

Observing the overall transport system from the station's perspective, it quickly becomes clear that the key lies in capturing major streams of people at the right places, directing them efficiently to their destinations and distributing them evenly along the platforms. The example of Lausanne shows that sometimes it's necessary to nudge the system a bit.

Platform bottleneck

Seating capacity on trains between Lausanne and Geneva is expected to double by 2025. This means that Lausanne station

will have to handle double the number of travellers. The biggest bottlenecks are the platforms. Due to the historic roof structure and the neighbouring building, they can be widened only slightly and therefore will barely be able to handle the projected future passenger volumes. Under no circumstances can the platforms be allowed to become so densely crowded that passengers cross the safety line. To make optimal use of the platform area, the waiting passengers must be spread out along its entire length. Arriving passengers, by contrast, should leave the platform as quickly as possible via the nearest exit and not circulate on the platform. To achieve this, planners in Lausanne opted for an extended underground network of walkways beneath the tracks consisting of three underground passages and two longitudinal connections. These can be used by travellers to access the city's higher level road network. At the same time, the three passages, 'ouest', 'central' and 'est', will ensure that commuters are evenly distributed along the platforms, provided that balanced use of the three passages can be achieved. This will require measures to steer, or draw, the passengers into a particular underpass. The stops of the public transport system are an important factor.

From the metro to the platform

One of the most important forms of transport by which travellers reach the station is Lausanne's metro. Currently, an additional

metro line is in planning, which will also stop at Lausanne railway station. The existing metro station will be directly connected with the eastern pedestrian underpass, and the new metro station will be shifted as far as possible to the west; it will also have a ramp leading to the west passage. Studies have shown that without the ramp, most metro passengers would opt for the already heavily used central passage, leading to crowding in the central platform area. In contrast, the ramp to passage 'ouest' will steer the majority of passengers to the west. Service areas can also be used to lure travellers in the desired direction. Thus, popular retail stores will be deliberately positioned in the area of the western passage. These measures are intended to ensure a roughly even distribution of passengers through the passages and a safe environment on the platforms.

Current transport planning projects for railway stations

- Design and operational concept for Bubenbergplatz in Bern
- Test planning for lateral expansion of Bern railway station
- Design and operational concept for Altstetten
- Test planning of new station square in Olten
- Urban development and traffic study for Thun railway station, Seefeldstrasse area
- Preliminary study of Genève-Cornavin underground station
- Preliminary project and construction project for the expansion of Lausanne railway station

Contact

Fabiana Kappeler
 Project Manager
 T 044 387 12 58
fabiana.kappeler@baslerhofmann.ch

Which station square is right for Olten?

Olten railway station is an important transport hub, both for national rail and regional bus services. Emphasising the importance of the railway station and creating an attractive and functional gateway to the town – that was the mission in test planning.

Large railway station – small town

Every rail passenger in Switzerland knows Olten, even if they've never visited the town. Olten is a central connecting station in the Swiss rail network and with 80,000 travellers, it is one of the 20 largest railway stations in Switzerland. The station is the central hub for regional bus services and the traffic volume of public and private transport around the station is accordingly high. In the town of 18,000, the current station square can no longer cope with the rush of travellers. The town of Olten, the Canton of Solothurn and SBB commissioned four teams to draw up a new masterplan for the station square in a test planning exercise. What should the large station in the small town look like in the future?

A worthy station square

The advisory committee ultimately recommended the project developed by the team of van de Wetering (urban development), Basler & Hofmann (transport) and Hager Partner (landscape) for further action. The aim of the project is primarily to give Olten a new, worthy station square that reflects the scale of the town. It will include a wel-

coming 'foyer' to receive and bid farewell to Olten visitors. The station square will be designed as an open urban space that turns towards the town. It will convey the image of an attractive town with a railway station, rather than a station with a town attached. The central element is a striking building that steers passengers directly into the main underpass, which will be widened in 2025. The building divides the space between the station square and bus station, which is well positioned to 'feed' a future pedestrian underpass or overpass on the north side. The main underpass leads directly to the Aare, emphasising the special feature of a 'station on the water'.

Transformation is an opportunity for the town

The area round Olten's station is in transition: new residential and office buildings are in planning, a new bypass road has been opened and the station itself is set for expansion from 2025. The 'rail town' is using the opportunity to update its calling card, the station square, in a functional and aesthetically appealing way.

Contact

Ulrike Huwer
Director Traffic and Mobility
T 044 387 12 27
ulrike.huwer@baslerhofmann.ch

Olten railway station today: in a test planning exercise, a new design for the 'gateway' to the town was developed.



«The railway station is a living space»

Railway stations shape the centres of cities and towns. Changes in and around the station are also always an opportunity to further develop the urban space. We talk to Anne-Lene Mage, urban and regional planner at Basler & Hofmann.



What are the urban planning challenges posed by development around railway stations?

In the development of stations, the needs of the transport system and the urban space have to be given equal weight in an increasingly confined space. Stations are more than just transport – they're a living space.

What factors trigger the need for station development?

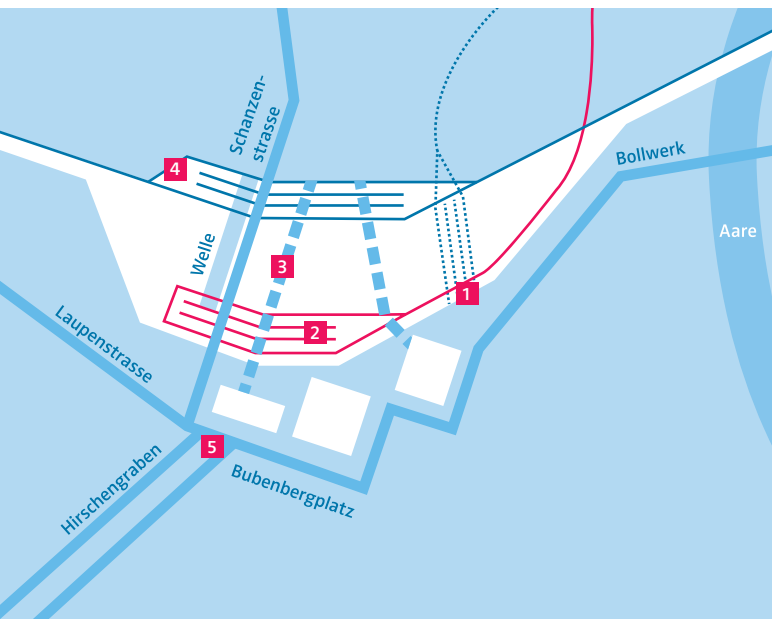
Capacity problems, noise issues, social problems in the public space around the station can be reasons to reconfigure railway stations and their surroundings, and sometimes a city planning review uncovers development potential. The new spatial planning law and the move towards increased density have drawn railway stations into focus. They are often centrally located and have brownfield spaces suitable for expansion.

What should towns bear in mind?

A station development is an opportunity, because it offers use potential and the impact can reach into the adjacent residential areas. Businesses, residential areas, public institutions and restaurants all profit from a good railway station. Stations are also meeting places. A highly appealing space enlivens the district in which it is located.

What is the best way to proceed?

It's important to have an unbiased procedure: ideas competitions or feasibility studies, for example, ensure a transparent process. The ideas developed can then be retained through binding structural and land use plans.



Renovation of Bern railway station

- 1 Entrance to current RBS station
- 2 New RBS station (by 2025)
- 3 New west passage (by 2025)
- 4 Side expansion SBB (by 2035)
- 5 Redesign of Bubenbergplatz with a new station entrance in the Bubenbergzentrum

fication of the traffic hub. The more turn lanes there are, the more traffic signal cycles have to be completed and the longer people must wait at the intersection. In future, therefore, traffic will be able to drive only straight ahead. This will increase the pedestrian capacity in three ways: the wait time at the traffic signal will be reduced to a maximum of 25 seconds; removal of traffic lanes will enable the provision of ample waiting space on the pavements; the distance across the road, and thus the time required to cross it, will be reduced. This modification to the transport system will also allow a tighter bus schedule and the inclusion of another tram line. The increasing number of commuters not only requires more space in the road area, but also greater capacity in the urban transport network.

The railway station has priority

If five times more pedestrians have to be managed than before, some compromises must be made. The city of Bern's solution, which was presented to the public in December 2013, requires a reduction in car traffic at Bubenbergplatz by a third. Some of that traffic will shift to other areas, for which measures still have to be devised. The city is prioritising public transport in the area of the station to ensure fast and reliable travel times. A well functioning railway station is of great importance to the city and the capital region as a whole.

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must be met in a dense and heavily used urban environment.

Growth puts pressure on cities

The primary catalyst for taking a fresh look at the railway station-based transport system is the unchecked growth of rail traffic. In many stations, capacity bottlenecks are already emerging – such as in the federal capital. Projections there indicate a 45 % increase in passenger volumes to 375,000 people per day by 2030. With the large-scale 'Zukunft Bahnhof Bern ZBB' project, the station will be expanded significantly. A new underground station for Bern–Solothurn regional traffic and a new 'west passage' pedestrian underpass of up to 80 metres wide will be built beneath the existing tracks by 2025. Rising passenger volumes have a massive impact on the urban environment, which has to absorb travellers and transport them onwards to their destinations in the city.

Urban renovation required

Today, Bern's station platforms are accessible via two access points: the main passage at one end of the platform and the 'wave' pedestrian overpass at the other

end. The planned new west passage is in the middle of the platform and will direct travellers to the new Bubenberg station entrance. In the future, some 40 % of all travellers will use the west passage and the Bubenberg access will thus become the second main entrance to the station: 75,000 people will flow in and out of here every day – roughly the population of St. Gallen. In its present form, Bubenbergplatz could not possibly handle such huge flows of people. With the opening of the west passage, the square will have to be redesigned and the traffic system modified. Four different variants were studied, but only one of them is able to meet the full range of requirements.

The decisive 10-minute peak

The critical variable in the redesign of the urban surroundings is the 10-minute peak – in other words, the number of people that pass through a space during the busiest 10-minute period of the day. At the new station entrance at Bubenbergplatz, this peak could reach up to 7,200 people by 2030. To increase the pedestrian capacity, the wait times at the crosswalk signals must be shortened, which, in turn, requires a simpli-

Contact

Ulrike Huwer
 Director Traffic and Mobility
 T 044 387 12 27
 ulrike.huwer@baslerhofmann.ch

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Please send address changes to:
 loredana.curcillo@baslerhofmann.ch

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