

A close-up, low-angle shot of a person in a wheelchair. The person's hand is on the wheelchair's handle, and their legs in blue jeans are visible. The wheelchair is on a dark, textured surface, likely a tram platform. In the background, a blurred tram with red and white stripes is visible. The overall scene is brightly lit, suggesting an outdoor or well-lit indoor environment.

# SEAL ABLE

pioneers in profiles

## **SEALABLE BARRIER-FREE TRAM STOP**

with Tram Stop Edge & Door Entry Strip



# SEALABLE

pioneers in profiles

**As the importance of accessibility has generally grown, ensuring barrierfree entry and exit in trams is becoming more and more important in the planning and implementation of future infrastructure projects.**

## TRAM STOP EDGE & DOOR ENTRY STRIP EASY ENTRY WITH PROFILE

Every day, people use public transportation (ÖPNV) to get to work, go shopping, meet friends or acquaintances, attend medical appointments, and go to school. Public transportation is an essential part of mobility, ensuring access to essential services.

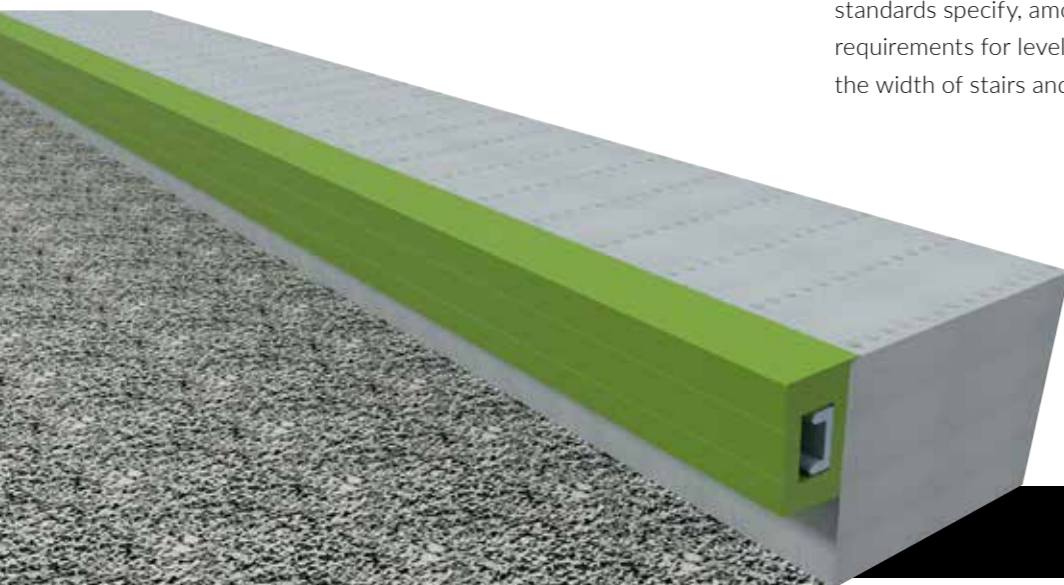
Accessible and easy-to-use transportation is necessary for everyone. Barrier-free stops benefit not only people with disabilities but also seniors with walkers, parents with strollers, and travelers with luggage.

Unfortunately, in practice, the lack of accessibility often makes it difficult or even impossible for some to use public transportation.

Our SEALABLE platform edge profiles made of EPDM makes it easier to get on and off trams and buses. The profile minimizes the gap between the platform and the vehicle and compensates for height differences, making it easy for wheelchair users as well as families with children to board. No wheel gets stuck, and no foot can slip into the gap between the train and the platform edge.

Additionally, in 2020, we developed a door entry strip for trams in collaboration with Erfurter Verkehrsbetriebe (EVAG). The entry profile on the vehicle includes a metal rail encased in high-quality elastomer and is directly bolted to the car body.

**Legislation:** In the EU, the requirements for barrier-free stops are defined in DIN 18040-3 and TRBS 1201. These standards specify, among other things, the minimum requirements for level access, the height of platform edges, the width of stairs and ramps, and lighting.



3D representation of a SEALABLE straight platform edge profile.

At the initiative of Erfurter Verkehrsbetriebe AG (EVAG), a „template for the tram stop edge“ was developed in 2018, which is already in use at several tram stops.



### WE ARE INNOVATION.

Together with you, we develop ideas up to product maturity and support you throughout the entire product life cycle.



### WE ARE EXPERTS.

You benefit from established resources, structures, and know-how through a trusting customer relationship.



### WE ARE REGIONAL-GLOBAL.

Regional roots combined with a worldwide network of long-term partners offer you reliable service on-site.



## WHY OUR TRAM STOP EDGE?

A smooth and narrow gap between the platform edge and the vehicle is crucial for enhancing accessibility at tram stops and facilitating the mobility of people with disabilities. This can be achieved through the use of our SEALABLE platform edge.

A functional platform edge ultimately increases the attractiveness of public transportation, thereby encouraging more people to use buses and trams. It is also essential that legal requirements for a reduced gap between the platform and the vehicle are met to ensure equal access for all passengers.

The SEALABLE platform edge effectively compensates the height difference and gap between the platform and the vehicle. Additionally, it enhances safety by reducing the risk of falls or getting stuck while boarding and alighting. Eliminating the gap between the platform and the vehicle also improves comfort, as it allows all passengers to board and alight more

quickly and easily. This, in turn, shortens waiting times at stops and potentially enables a higher frequency of trams. The risk of injury for passengers is significantly reduced.

The platform edge is resistant to all weather conditions due to its special material properties, whether it's ice, high temperatures, or rain and dust.

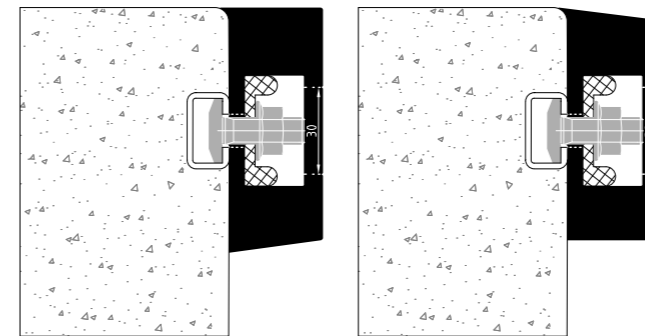
## CONFIGURATIONS

It is typically a 30-45 mm thick rubber profile with a longitudinal and rectangular hollow space inside. A flat steel insert is precisely fitted within this hollow space, not only to stabilize the rubber part but also to serve as the foundation for the on-site connection to the platform. The rubber part is attached to the „platform cover stone.“ An integrated stainless steel anchor-rail allows the rubber element to be secured using cap screws in combination with flat nuts.

Using the steel-rail not only reduces the number of required fastening, but also ensures high level of positional stability.

Retrofitting existing stops (without an existing anchor rail) is also possible with the SEALABLE tram stop edges. Special screws and flexible positioning on cast-in-place concrete provide the system with its stability.

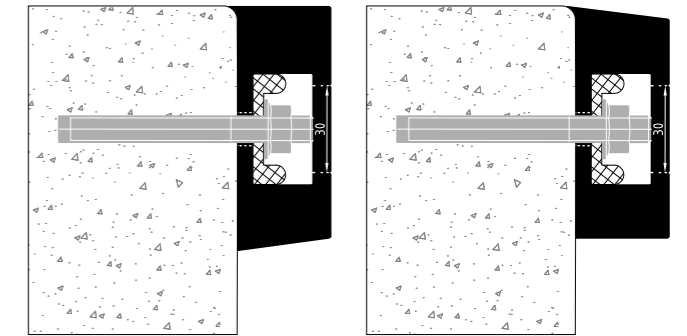
### TRAM STOP EDGE WITH ANCHOR RAIL IN THE STRAIGHT PLATFORM EDGE



#### ADVANTAGES

The tram stop edge compensates for height differences between the platform and the vehicle and additionally reduces the gap.

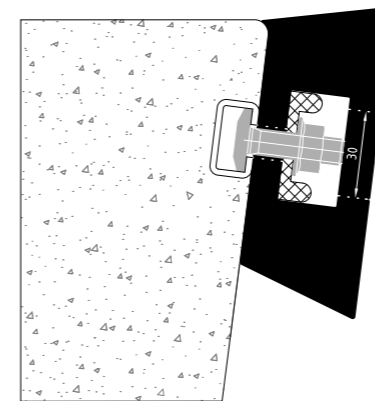
### TRAM STOP EDGE WITH LOAD ANCHOR FOR STRAIGHT PLATFORM EDGE



#### ADVANTAGES

Easy retrofitting of existing cast-in-place concrete platforms to reduce the gap between the stop and the vehicle.

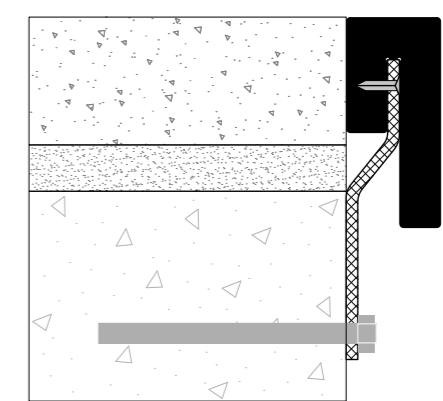
### TRAM STOP EDGE WITH ANCHOR RAIL FOR ANGLED PLATFORM EDGE



#### ADVANTAGES

The tram stop edge compensates height differences between the platform and the vehicle and additionally reduces the gap.

### TRAM STOP EDGE WITH EXTERNAL ANCHOR RAIL FOR STRAIGHT PLATFORM EDGE



#### ADVANTAGES

This version can be installed at existing tram stops where bolting to the upper edge is not possible.

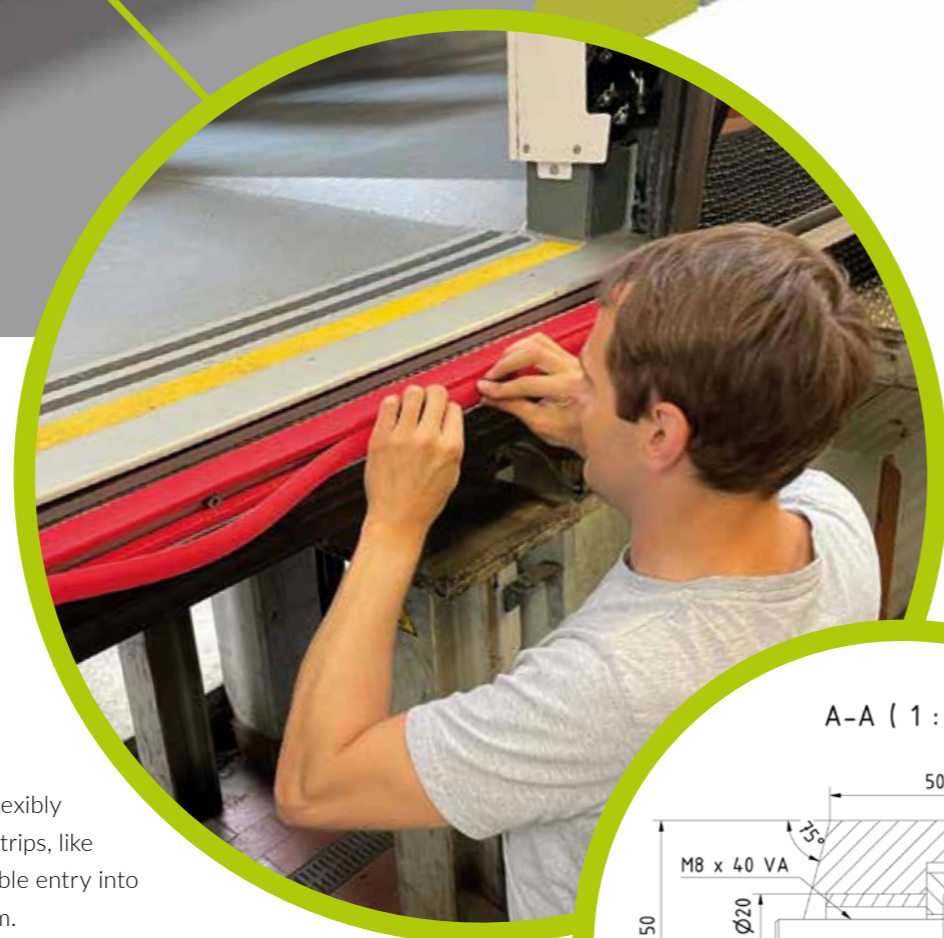




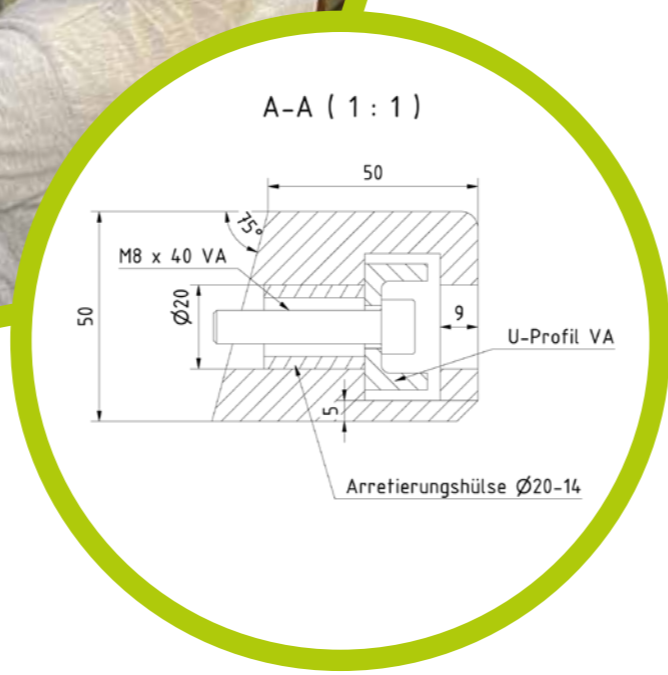
## DOOR ENTRY STRIP FROM SEALABLE

The SEALABLE door entry strips were developed in 2020 at the request of the customer, in collaboration with Erfurter Verkehrsbetriebe AG (EVAG). A sophisticated mounting system was created, which can be flexibly adapted to various vehicle types. The profile strips, like the platform edge, allows a safe and comfortable entry into the vehicle by reducing the gap to the platform.

A rubber encased metal-rail is attached to the track body. There is a removable closure above the screws for easy handling during maintenance work. This allows maintenance work to be carried out quickly and easily at any time. Additionally, it ensures that no metallic objects protrude into the track area.



Easy installation of the door entry strip on Erfurt trams



## ADVANTAGES AT A GLANCE

### FIRE PROTECTION

The black tram stop edge and door entry strip meet all criteria according to the fire protection standard EN45545-2.

The colored version is considered normally flammable and is classified as category B2 in terms of fire behavior according to DIN 4102-1:1998-05.

### CUSTOMIZATION

The rubber profile doesn't have to be classic black; it can be produced in any color. Whether it's signal red or a color that matches the cityscape, identical to the trams or buses.

### BARRIER-FREE

By installing our platform edge and/or door entry strip, the gap between the platform and the vehicle is reduced. They meet the requirements for barrier-free stops according to DIN 18040-3 and TRBS 1201. According to the Passenger Transportation Act (§ 8 Paragraph 3 PBefG), public transportation (ÖPNV) has been required to ensure barrier-free transport since January 1, 2022.

### MAINTENANCE & SERVICING

Effortless retrofitting of vehicles and stations is possible. Maintenance work or replacement can be carried out at any time.

### TESTS AND CERTIFICATIONS

Tested for UV resistance according to DIN 53 509 and wear according to DIN 53 504 & DIN ISO 4649.

Certified according to DIN EN ISO 9001, as well as DIN EN ISO 14001, DIN EN ISO 50001, and DIN EN ISO 45001.



## EXPERTISE

### TESTS

Ten extrusion lines, continuous and discontinuous vulcanization, frame production, and a variety of finishing options are part of our standard repertoire in the production and processing of elastomers.

To deliver optimal solutions that meet our customers' requirements, we offer not only a wide range of materials and a large fleet of machinery but also the corresponding testing procedures to ensure high-quality products. With more than 50 years of experience in the production of sealing solutions, we are experts in finding and thoroughly testing the right compound for your project. Our physical testing procedures include, among others, SHORE hardness testing and determination of compression set (DVR).

### QUALITY

The elastomer quality used complies with the standards or regulations of DIN 7865.

Whether natural rubber or synthetic rubber, each compound has its own specific properties. The material is particularly characterized by high abrasion resistance and weather resistance. Depending on customer requirements, the compound can be adjusted accordingly. Its suitability for use is confirmed through physical testing procedures.



Feeding the compound into the extruder

### ON-SITE-SERVICE

To provide our customers with the best service, we have established a powerful „Application Engineering“ department that supports our customers promptly and worldwide with the highest quality. Our application engineers are the first point of contact when it comes to practical assistance with your project. Key areas of focus include instructing workers on-site in processing our profiles, taking measurements for our production, and assisting in solving all kinds of assembly issues.

Our customers particularly appreciate not only the comprehensive expertise and strong problem-solving skills but also the quick response times of our specialists. To find optimal solutions together with our customers, we are more than happy to conduct discussions on-site.

## REFERENCE PROJECT ERFURT

With approximately 90% of its public transportation system being barrier-free, Erfurt is one of the leading cities in Germany in this regard. At more than 400 stops within the EVAG network, barrier-free entry and exit for buses and trams are possible. All city trams and almost all EVAG buses are low-floor accessible. The low-floor buses, which can be lowered, enable an almost level entry and exit at all stops equipped with an 18-centimeter-high curb—without requiring any external assistance.

With the completion of construction at the Angerkreuz, almost all tram stops in Erfurt—182 out of 186—are now barrier-free. This means that they accommodate the needs of people with mobility or sensory impairments, as required by the Passenger Transportation Act. To achieve this positive status, we developed the SEALABLE platform edges and door entry strips in collaboration with EVAG for barrier-free travel in public transportation.

In 2018, approximately 65 platforms were equipped with a total of 4,068 meters of platform edges. To ensure a harmonious cityscape, these were produced in a bold red, matching the trams. The positive side effect: the signal color immediately indicates to pedestrians that this is a barrier-free access point.

In 2021, 12 trams were retrofitted with door entry strips. The original strips wore out too quickly, increasing the risk of passengers slipping and getting injured.

The challenge with the new strips was to ensure adequate attachment to maintain the required stability under load over time. Additionally, no metal parts should protrude into the track area. The bead serves as a cover for the screws that securely connect the rubber-coated metal rail to the track body. The major advantage of rubber is its weather resistance. UV and ozone rays do not impair the material's function. Additionally, it is resistant to road salt and cold in winter.





## REFERENCE PROJECT JENA

The city of Jena is upgrading its public transportation system with new trams to ensure barrier-free access. The new vehicles are wider to accommodate more passengers. However, since the entire tram fleet cannot be replaced, an interim solution was necessary to ensure that the older, narrower trams could also be accessed barrier-free. Platform edges were used on these routes to close the gap at the platform for the narrower trams.

SEALABLE handled the correspondence with the precast manufacturer for the procurement of new platform edge stones, including the mounting rail. The platform edge can be variably attached to the rail to avoid loose joints.

Once all stops have been converted to be barrier-free, the old trams will be retrofitted with door entry strips so that they can also be used on the new, wider routes.

*More than fifty years of market experience provide the foundation for our range of high quality sealing solutions to meet every challenge in your project.*



## WE ARE EXPERTS IN THE FIELD OF PROFILES AND SEALING.

It all began more than 200 years ago with the production of fire hoses. Combined with product diversification, our expertise in elastomer profiles and know-how in processing various types of rubber have grown over the past 50 years.

Through various stations and ownership relationships starting with PHOENIX AG, ContiTech AG, later PHOENIX Dichtungstechnik GmbH and finally DÄTWYLER Sealing Technologies Deutschland GmbH, our organization developed into an internationally operating company. In 2018 we received the Thuringian Innovation Award in the

“Tradition & Future” category for our product “Bicycle safe track”, we also have 43 patents.

With the management buy-out in May 2020, SEALABLE Solutions GmbH now operates as a Thuringian company with a global network.

Our premise is not only global sales; above all, trusting and close contact with our customers and partners is our top priority. This means that our partnerships are sustainable and often include an entire product life cycle.

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