Through the Heart of Berlin
Along the S25 from Hennigsdorf to Teltow

Handbook "Through the Heart of Berlin"

1. table of contents

2. authors

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Textures from Texturen.com, cgskies.com, sounds from asoundeffect.com and models from Turbosquid.com were used in the track. The **use of assets in freeware add-ons cannot be permitted due to the regulations of these manufacturers**. Individual assets can be inquired about to allow the use in individual cases.

We would like to thank the gentlemen (in alphabetical order) Gordon Charles, Sirko Fietzner, Robin Gottschlag, Mathias Hiller and Walied Schön of the *Verein Historische S-Bahn Berlin e.V.* and Mr. Frank Thürmer of *cft-Video Berlin* for their extensive support in creating the add-on.

3. system requirements

The following requirements must be met for the add-on.

PC with Windows 64-bit, on which Train Simulator 2020 works,
installed Train Simulator 2020,
installed add-on "Through the Heart of Berlin".

The computer should have at least 8 GB main memory.

The track and the scenarios can work with 32-bit. However, the add-on was programmed and tested in 64-bit throughout. The recommendation is therefore: use the Train Simulator in 64-bit mode.

4. foreword from the *Historische S-Bahn e.V.*

Since 1991, the Historical S-Bahn Association of Berlin has made it its task to preserve the eventful history of the Berlin S-Bahn. If you get into one of our numerous historical vehicles, the past comes alive. When you take a trial ride, the unmistakable driving and braking noises can give you goose bumps.

With the S-Bahn crisis in 2009, traffic with museum vehicles and the Panorama S-Bahn also collapsed.

It has now become the task of the association to get a first

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train going again in honorable official work. This is laborious and very expensive. With the purchase of this simulation you support our efforts to reactivate the class 167 train. Of course we are also happy to receive donations. More information is available on the Internet at www.hisb.de.

With this simulation, we want to take a new path to make the past come alive. Nevertheless, it remains the most important mission of our association to carry out special trips in the real world.

About the route: When you travel on Berlin's S-Bahn, the first thing that comes to mind is the city railway line *Stadtbahn*, which cuts through the city from west to east on its striking viaduct. No less important is the north-south S-Bahn line, opened at the end of the 1930s, which, like the *Stadtbahn*, bundles various suburban lines.

Today's S25 begins and ends in Brandenburg. In its course, the player can explore Berlin along the *Kremmener Bahn*, the *Nordbahn*, the *Stettiner Bahn*, the *Nordsüd-S-Bahntunnel* and the *Anhalter Bahn*. In addition to modern Berlin, discover historical relics of rail traffic from the past.

About the vehicle: If the *Verein Historische S-Bahn* has a simulator developed, then a historical vehicle should not be missing. Even though the track shows the condition of 2006 (historical vehicles were no longer active in regular service), this was important to us. Our choice fell on a special series, which could still be found there regularly until its retirement in summer 2000: BR 476/876.
At first sight the round head shape of the train reminds of the class 477, but in its heart the "76" is a real light rail vehicle! In the GDR there was no possibility to build new vehicles for

a long time, so the light rail vehicles from the 1920s were extensively modernised. The striking angular front was rounded off, the passenger compartment was modernised with Sprelacart and upholstered benches. The car body and drive technology remained the same. So if you drive our 476s through Berlin, you will hear the typical progression relay and have to struggle with the peculiarities of the single-acting air brake.

By the way, none of the vehicles shown in the simulation survived. In the stock of the club is the quarter train 476/876 002 and thus belongs to a subgenre which is equipped with a more modern brake system. Unfortunately this quarter train is incompatible with our light rail vehicles and will probably never be refurbished for special trips. This was another reason to commemorate the series with this simulator. In the form of the class 476, the light rail operators were on Berlin tracks for 72 years.

A trip through Berlin on a PC can by no means replace the original. Rather, it is intended to arouse curiosity to get up close and personal with our steel treasures during a visit to the Erkner depot. We look forward to your visit and to any support you may require.

5. route description

If you take the S-Bahn through Berlin, you will see a rapidly growing metropolis whose image changes daily. Everything, however, has grown historically, has an origin and there are still many contemporary witnesses of this history in more or less good condition in the city.

With the development of the railways in the 19th century, various railway lines emerged, which left Berlin in a star shape. The railways were named according to their cardinal points or destination. If we look at the course of the S25 shown in our simulation, it starts in Hennigsdorf at the *Kremmener Bahn*, which opened in 1893. The line runs up to Karl Bonhoeffer-Nervenklinik and then to Schönholz next to the tracks of the Kremmener Bahn. In Schönholz the *Kremmener Bahn* branches off the *Nordbahn*. The north railway from Berlin-Stettin station (from 1950 Nordbahnhof) to Stralsund went into operation between 1877 and 1878. Our add-on follows the route northwards to Waidmannslust. As relics you will find track remains, empty bridge connections and above all old stations and signal boxes.

Especially on the *Kremmener Bahn* section of our add-on is the station Tegel. From here, military trains regularly ran from the Gare Française Berlin-Tegel to France from 1946 to 1994 to bring soldiers to and from the French barracks in the north of Berlin. The barrack-like building south-west of the S-Bahn station and the large open area with lamps, signal box and track remains are a reminder of this time.

To the south we drive along the northern railway to Bornholmer Straße, where we meet the Stettin railway. This shortest connection between Berlin and the seaport of Stettin (today Szczecin), built in 1842-1843, also began at the Stettiner Bahnof railway station. At the bridge Bösebrücke at the Bornholmer Straße S-Bahn station the Berlin Wall, built on 13.8.1961, fell on 9.11.1989. So here we are driving through very current historical terrain. This station is part of today's Nordkreuz, which together with the Gesundbrunnen station forms an important traffic junction for suburban and long-distance trains in the north of Berlin. We follow the S-Bahn to Nordbahnhof. In our add-on, the old signal box Nordturm on Grenzstraße and the bridges Liesenbrücken on Liesenstraße bear witness to the old Nordbahnhof. The attentive driver driving south will also find a rung of the Berlin Wall here.

Today's Nordbahnhof is part of the north-south tunnel, which was commissioned in two stages in 1936 and 1939. Before the construction of this tunnel, Berlin had a ring railway and an east-west connection (*Stadtbahn*). A direct connection from north to south was urgently needed and was designed as a tunnel due to the dense development of Berlin's inner city.

The tunnel crosses the Spree south of Oranienburger Strasse, crosses the city railway at Friedrichstrasse and, via Unter den Linden (from 2009 Brandenburg Gate) and Potsdamer

Platz stations, reaches Berlin's most important railway station until the end of the war in 1945, Anhalter Bahnhof. It goes up and down through narrow curves (smallest radius 150m). Between Oranienburger Straße and Friedrichstraße we cross under the river that led to the construction of the city of Berlin in 1237: the Spree, at Friedrichstraße station the tunnel of the underground line U6, between Anhalter Bahnhof and Yorckstraße the Landwehrkanal.

We leave the tunnel north of the Yorck road. From here the route to Lichterfelde Süd runs along the *Anhalter Bahn*, which was built in 1840/41 and started at Anhalter Bahnhof. In the simulation you can discover as relics of the Anhalter Bahn the roundhouse and the water tower at the Anhalter Bahnhof as well as the facilities at the southern area near the S-Bahn station Priesterweg. In 2006, the modern Südkreuz station, like Nordkreuz, an important traffic junction for long-distance and suburban trains, went into operation on the site of the old Papestraße station.

At the station Lichterfelde Süd we leave the *Anhalter Bahn* and take the 2.83 km new line to Teltow Stadt, which was opened on 24.2.2005.

6. driving rules and terms

The job of a train driver requires a lot of knowledge about the vehicle (see manual 476) as well as about the operation of the train. We cannot depict everything that is common practice for the Berlin S-Bahn in certain operational situations, but we have implemented certain basic rules that exist in the simulation. These rules cannot be pointed out separately in every scenario.

This means that the doors do not close and do not open when the clock tells them to. Outside on the platform there is a guard. This also happens when travelling into or out of parking facilities! This signals to the driver when he is allowed to close the doors and drive off. Please also note the instructions in section 7 - Scenarios.

If an S-Bahn passes a platform without stopping, you should pay attention to the speed: Passages at platforms are only permitted at a maximum speed of 50 km/h, even if the permitted line speed is higher. This is not indicated by any signal. You just have to know. In the career scenarios, ignorance costs points!

Once the signals are disturbed, speeds must also be maintained here:
- good visibility: 40 km/h,
- Poor visibility: 20 km/h
- Night: walking speed 7 km/h

The trains of the Berlin S-Bahn are divided into specific vehicle groups. The smallest operational unit is the quarter train, consisting of two cars. In the case of the class 476 used

in the add-on, this unit is not mobile, as it could only run in one direction. The next larger unit is the half train (also called short train), consisting of two quarter trains with driver's cabs on each side. This is followed by the ¾ train, also known as the 24-axle train, which is the largest unit that can be used on the S25, as the platform in Hennigsdorf for the standard unit full train - consisting of 8 cars or four quarter trains - does not fit on the platform.

It is necessary to know how long the train is. There are scenarios in which a train is driven. To make sure that it goes to the platform, special care must be taken when braking. If you come to a stop in front of the Ne5, the rest of the train protrudes behind the platform. The platforms are usually so long that there is exactly one full train. But also for the other train types you have to be careful, because almost all platforms have 3 Ne5 panels: first for the short train, then for 24x (axles) and then for the full train.

All lines of the Berlin S-Bahn are divided into train groups. When analogue radio was still the most important means of communication, the train groups had radio call signs. For us are important:

Line	Train group	Callsign
S25	V	Vampire, Viktor
S1	P	Pastor, Paula
S2	W	Wulf,Wasp
S41	A	Anton
S42	R	Richard

If you hear your callsign followed by your destination in the loudspeaker, this means you.

The radio response is different for shunting movements. Here you address the train with its location: "Train Waidmannslust track 2 - close doors".

7. scenarios

How does this relate to the fact that the simulation is due to play in 2006? Well, decisions in life are made today and tomorrow. Let's assume that things had turned out differently, that something - for example, bad brakes - had delayed the further delivery of the 481/482 series for years, then the old trains could have earned their bread of mercy on the Berlin tracks longer.

Our real intention is to let the sound of the old years resound in a modern Berlin. Thus, the supervisors, who disappeared in 2004 in large parts of the Berlin S-Bahn network, will be present at all stations and since ZAT (train dispatching by train drivers) is cumbersome with the 476 without side doors, the supervisors - called "Rotkäppchen" (Little Red Riding Hood) because of their red headgear - will dispatch our trains by radio or Zp9/Zp10.

The 11 scenarios supplied are intended to illustrate operational features of the Berlin S-Bahn. In the order of 1-11, the scenarios go from simple to difficult. They reflect "one" day in the operation of the Berlin S-Bahn, it goes from early morning to night. Even though the days, seasons and weather are different.

The simulator displays stop times at the stations as soon as the T key is pressed after the train has stopped. **However, the departure of the train is not determined by the time elapsed but by the departure order issued, either by radio or by light signals Zp9/Zp10.** When checking in by radio, check whether the check-in order is also valid for you. The callsign and the destination are decisive: "Train Viktor to Teltow". It may happen that Viktor is checked in the opposite direction on the neighbouring track, so be careful what comes out of the loudspeaker! All sequences in the scenarios are coordinated with this.

01 Dawn

An easy ride with the class 476 through the early morning (04:28) from Hennigsdorf to Teltow Stadt to get track knowledge. The train is ready for departure in Hennigsdorf. Callsign of the train: *Viktor.*

02 Summer morning

The journey goes back from Teltow town to Hennigsdorf. 07:43, the town has awakened, rush hour traffic has started. The train has been upgraded in Teltow town. Again, the goal of this scenario is to gain route knowledge. Callsign of the train: *Viktor.*

03 Rush hour traffic

The trip starts in Waidmannslust 08:15 am. You take the S1 to Potsdamer Platz, callsign *Pastor.* There you have to change the signposting and continue as S25 to Teltow Stadt, callsign *Viktor.* The aim of the trip is to learn the route and to practise using the Kruger device under time pressure.

04 In the morning

At 09:45 a.m. we return from Teltow City as *Viktor* to Potsdamer Platz. There you will change to S1 to Waidmannslust with callsign *Pastor*, as the line between Schönholz and Hennigsdorf is closed due to track construction works. The rush-hour traffic is through, it will be a bit quieter on the route. Destination of the journey as before.

05 Construction site in tunnel

Construction work on the track system of the north-south tunnel begins today, as long announced. The journey starts at 11:38 in Berlin - Tegel and continues to Gesundbrunnen. Callsign *Viktor*. In Gesundbrunnen there will be a shunting trip to the sidings to pick up a half-train. It continues as an empty park to Nordbahnhof.

06 Shuttle service

The construction site in the tunnel is set up. There is shuttle service between Nordbahnhof and Friedrichstraße. Buses leave from Friedrichstraße. The bus leaves at 14:20, two return trips.

07 Cable theft

Actually it should be a normal trip from Hennigsdorf to Teltow. But there bad guys stole a long section of signal cable in broad daylight. You have to go through it. We leave at 14:45.

08 Bad day

Who hasn't heard that, alarm clock not heard, got up with the left leg, slipped in the bathroom, spilled salt in the kitchen and the coffee machine is not working. You arrive late for work and are assigned a stupid job. In this case a rush hour train, which has to join the running traffic at Nordbahnhof, let's see what else happens. Departure is 16:50 in the parking area north of Nordbahnhof.

09 Police mission

It starts as in scenario 7. The train from Teltow to Hennigsdorf should leave at 18:45. But it turns out differently, there is a police operation at Wollankstraße station, the track is closed. So we drive to Pankow and bring the train from there to Nordbahnhof in the storage.

10 broken train

This also happens: an S-Bahn train breaks down and gets in the way of our route from Oranienburg (Waidmannslust) to Wannsee. You will be given the task of helping the person who is lying down and taking him to the hayloft at Potsdamer Platz. It is not an easy task to manoeuvre the train through the ups and downs of the north-south tunnel without a view of the track and at a permitted 20 km/h. Afterwards the journey goes back into the Berlin evening to Waidmannslust.

11 ragpickers

The penultimate train of the day from Hennigsdorf to Teltow, 0:28 it goes from Hennigsdorf through the night. It has become quiet on the Berlin tracks, a few trains are heading for their parking facilities. Rag collectors are called the last trains of the day, because they bring the "rags" from bars and pubs home. Sometimes one of them falls by the wayside, and so Friedrichstraße has an emergency doctor's appointment, which leads to operational peculiarities.

8. check-in procedures at the stations of the add-on

Hennigsdorf	Zp9/Zp10	Anhalter Bahnhof	Zp9/Zp10
Heiligensee	ZAT	Yorckstraße	Zp9/Zp10
Schulzendorf	ZAT	Südkreuz	ZAT
Tegel	Zp9/Zp10	Priesterweg	ZAT
Eichborndamm	ZAT	Südende	ZAT
Alt Reinickendorf	ZAT	Lankwitz	ZAT
Schönholz	ZAT	Lichterfelde Ost	Zp9/Zp10
Wollankstraße	ZAT	Osdorfer Straße	ZAT
Bornholmer Straße	ZAT	Lichterfelde Süd	ZAT
Gesundbrunnen	Zp9/Zp10	Pankow	ZAT
Humboldthain	ZAT	Wilhelmsruh	ZAT
Nordbahnhof	Zp9/Zp10	Wittenau (Wilhelmsruher Damm)	ZAT
Oranienburger Straße	Zp9/Zp10	Waidmannslust	ZAT
Friedrichstraße	Zp9/Zp10		
Unter den Linden	Zp9/Zp10		
Potsdamer Platz	Zp9/Zp10		

ZAT stands for train clearance by train drivers, Zp9/Zp10 for the corresponding light signal. In contrast to the table, the scenarios can be run with radio.

9. signal book
[1]

Abbreviation	Meaning	Picture
Bü4	**"Whistle."** Whistle once for about 3 seconds. Not whistling causes penalty points in the career scenario.	
El 1	**"Switch off"** the main switch of the traction unit. For the S-Bahn this means: Release the master switch.	

El 2   **"Switching on"** the main switch of the electric locomotive. In the case of the S-Bahn, this means that switching on the driving switch again is permitted from here on.

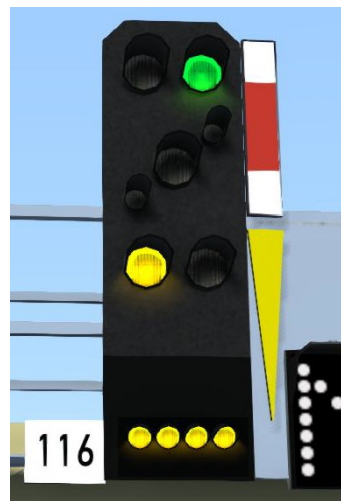
Hp 0   **"Stop."**

Hl 1   **"Travel at top speed."**

Hl 3a   **"Travel at 40 km/h, then top speed."**

Hl 3b   **"Travel at 60 km/h, then at top speed"**

Hl 7   **"Reduce top speed to 40 km/h."**

(yellow light flashes)

Hl 9a   **"Travel at 40 km/h, then at 40 or 60 km/h."**

(upper yellow light flashes)

Hl 9b   **"Travel at 60 km/h, then at 40 or 60 km/h."**

(upper yellow light flashes)

Hl 10   **"Expecting hold."**

Hl 12a **"Traveling at 40 kilometers an hour, expecting a stop."**

Hl 12b **"Travel at 60 km/h, expect stop"**

Hl 13/ Hp0 **"Train stop."**

Ks 1	**"Ride free."**	
Ks 1 + Zs 3	**"Drive freely with (display x 10) km/h.":** The indicated (digits x 10 in Km/h) speed must not be exceeded by the signal in the following switch area.	
Ks 1 flashing + Zs 3v	**"Drive freely, expect drive with (yellow display x 10) km/h."** (possibly in connection with Zs3!) Signal Zs3 is to be expected (with the displayed speed)	(green light flashing)
Ks 2	**"Expect stop"** (if necessary in connection with Zs3).	

Lf 1 | **"Slow speed disc":** A temporary slow speed section follows (at the standard braking distance), on which no faster than (number x 10) km/h may be driven.

Lf 2 | **"Initial screen"**: Start of the temporary slow speed section.

Lf 3 | **"End disc":** end of the temporary slow speed section.

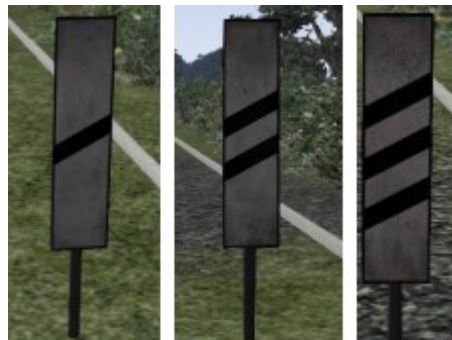| Lf 6	**"Speed announcement board":** A speed signal (Lf 7) is expected, brake to the number x 10 in km/h shown in the signal.	
Lf 7	**"Speed table":** The speed indicated on the signal (number x 10) must not be exceeded after this signal.	
Ne 2	**"Approach signal board":** marking of the location of an approach signal.	
Ne 3	**"Advance signal beacons":** An advance signal is to be expected.	

| Ne 5	**"Stopping sign":** marking of the stopping place of the head of the train for trains stopping according to schedule.	
Sh0	**"Stop, no driving."**	
Sh1	**"Driving ban lifted."**	
Sh2	"**Protect."**	

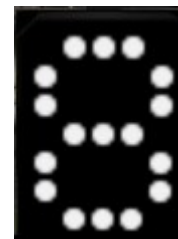| Zs1	**"Substitute signal":** passing the "stop" showing or disturbed signal without a written command. (a flashing white light)	

<div align="right">(white light flashes)</div>

Zs2	**"Direction indicator":** the road leads in the direction indicated	
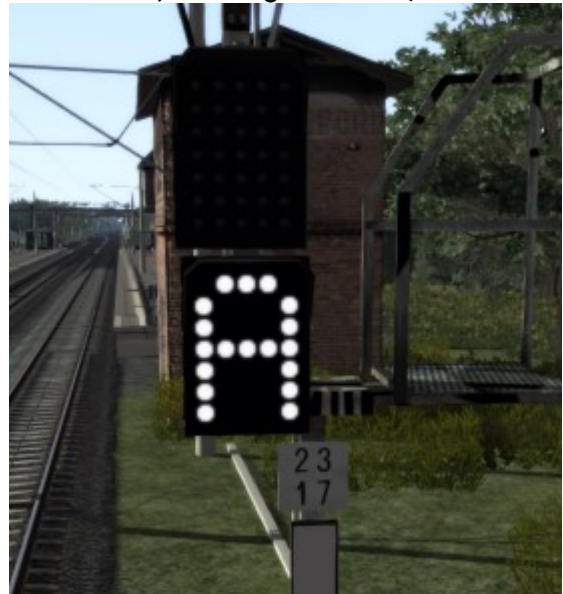
Zs3	**"Speed indicator":** The indicated (digits x 10 in Km/h) speed must not be exceeded by the signal in the following switch area.	

Zs3v	**"speed indicator":** signal Zs3 is to be expected (with the displayed speed)	
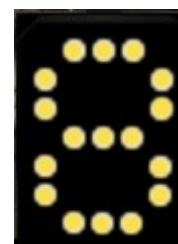
Zs6   **"Opposite track indicator":** the track leads to the adjacent continuous main track

Zs 7   **"Caution signal":** Pass the disturbed or Hp 0 showing main signal without written command. Continue on sight.

10. bibliography

1] The signals of Deutsche Bahn Signalbuch (SB) DS/DV301 valid from 10 December 2006.