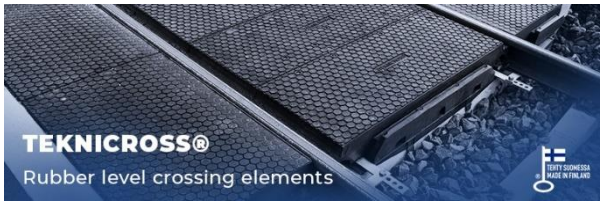
TEKNICROSS® Rubber level crossing elements



Teknikum Ltd manufactures high-quality TEKNICROSS® rubber level crossings for most common rail gauges, rail types, and fastening systems in Finland.

TEKNICROSS® level crossing consists of inner and outer elements, both equipped with a male/female tongue and groove, and fitting plates to be installed on top of the sleeper. There are two level crossing versions available, types A and B, which differ in the width of the outer elements.

Teknikum has delivered more than 300 level crossing projects in the Nordics countries, Russia and Central Europe – thus we have element molds available for various element sizes and assemblies.

ADVANTAGES

- Provides safe surface for crossing
- Designed for Nordic standards and harsh environment
- Suitable for pedestrian and vehicle traffic
- Quick and easy installation to the rail, as no special tools are required

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TECHNICAL PROPERTIES

Structure

Rubber compound

- Surface of the element is made of special wear resistant rubber.
- The flexible rubber surface, especially designed for Nordic conditions, ensures silent use and is easy to maintain.

- Teknicross elements includes two different rubber compounds
- S170099 is used as a core material (picture 1)
- 154040 is used as a surface material (picture 2)

- Electrical isolation for the rubber material used in Teknicross is >5 kΩ (EN 13146-5)
- Material has passed the Glow-wire flammability test method according to EN 60695-2-11

- Crossings top layer is design so that the water does not stand still on top of the element
- Crossing's surface is tested according to SRT test (EN 13036-4)
    - Tested value is SRT value is > 50



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TEKNIKUM

TEKNIKUM LTD RUBBER MATERIAL S170099
17.8.2021

General:
This black NR/SBR/BR material is used as core material in rubber railway level crossings.

Table: Properties for the material:

Property	Test Standard	Unit	Typical value
Hardness	ISO 48-4	Shore A	65-75
Elongation at break	ISO 37/1	%	min 200
Tear resistance	ISO 34/C	N/mm	min 30
Compression set 7d/RT	ISO 815	%	max 30

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Picture 1 S170099 Data Sheet

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TEKNIKUM

TEKNIKUM OY RUBBER MATERIAL (154040)
18.9.2020

General:
This black, antistatic, abrasion resistant NR-material is used in rubber railway level crossings, in hose pumps and as lining in EN 3861 hoses.

Table: Properties for the material:

Property	Test Standard	Unit	Requirement	Typical value
Hardness	ISO 48-4	Shore A		58
Tensile Strength	ISO 37/1	MPa	min 14	19
Elongation at break	ISO 37/1	%	min 400	500
Tear resistance	ISO 34/C	N/mm		70
Ageing in air 72h/70 ºC				
Change in Hardness		Shore A	-	3
Change in TensileStr.		%	max ±25	-5
Change in Elong. at break		Δ%	between +10 and -30	-10
Abrasion resistance	ISO 4649/A	mm^3	max 140	75
Low temperature brittleness	ISO 812	°C	-	-65
Rebound resilience	ISO 4662	%	-	64
Ozone resistance 50 pphm/40 ºC/96 h	ISO 1431/1	%	-	60
Electrical conductivity	ISO 14309	Ω cm	-	10^6

The rubber compound does not contain any RoHS 2 controlled substances or phthalates and is in compliance with REACH directive. The compound does not contain over 0,1 % by mass of any substances named on the SVHC (Substances of Very High Concern) candidate list XIV of REACH.

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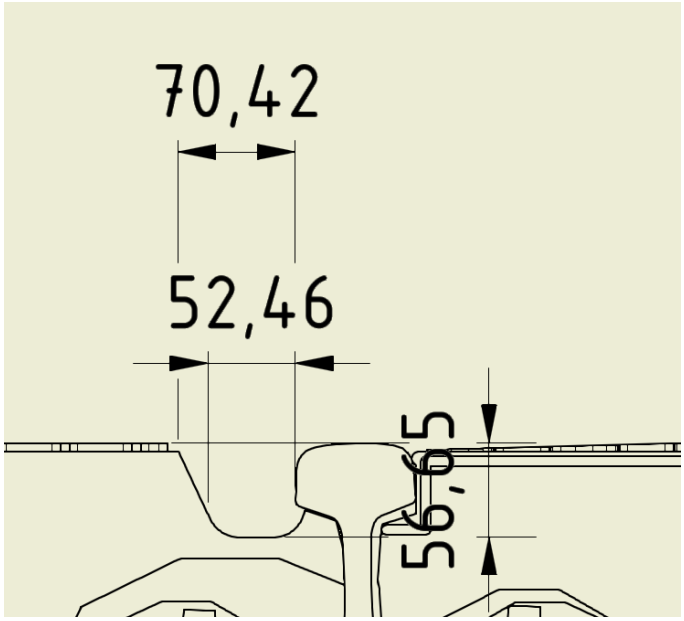
Picture 2 154040 Data Sheet

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Flange groove

The rubber element is supported on the rail and it has places for the fastening components. The flange groove meets local norms. Find attached example drawing in picture 3.

Optionally, the rubber level crossings can also be manufactured without flange grooves. These are particularly suited to railway yards and level crossings which feature pedestrian and cycle paths, where the absence of the flange groove ensures safer crossing by foot and bicycle.



Picture 3

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ENVIRONMENTAL RESISTANCE

- Weather-resistant
- Material used in Teknicross elements are recyclable according to local requirements

Temperature range

- 40°C... +70°C

RAIL TYPE COMPLIANCY

The level crossing is suitable for the following tracks, for example:

Rail types:

- 54E1
- 60E1
- SBBI
- SBBIV
- S49
- S54
- other types by special order

Sleeper type:

- Wooden sleepers
- Concrete sleepers
- Sleeper distance: 0,6m

Fastening

- Common fastening systems

Rail gauge

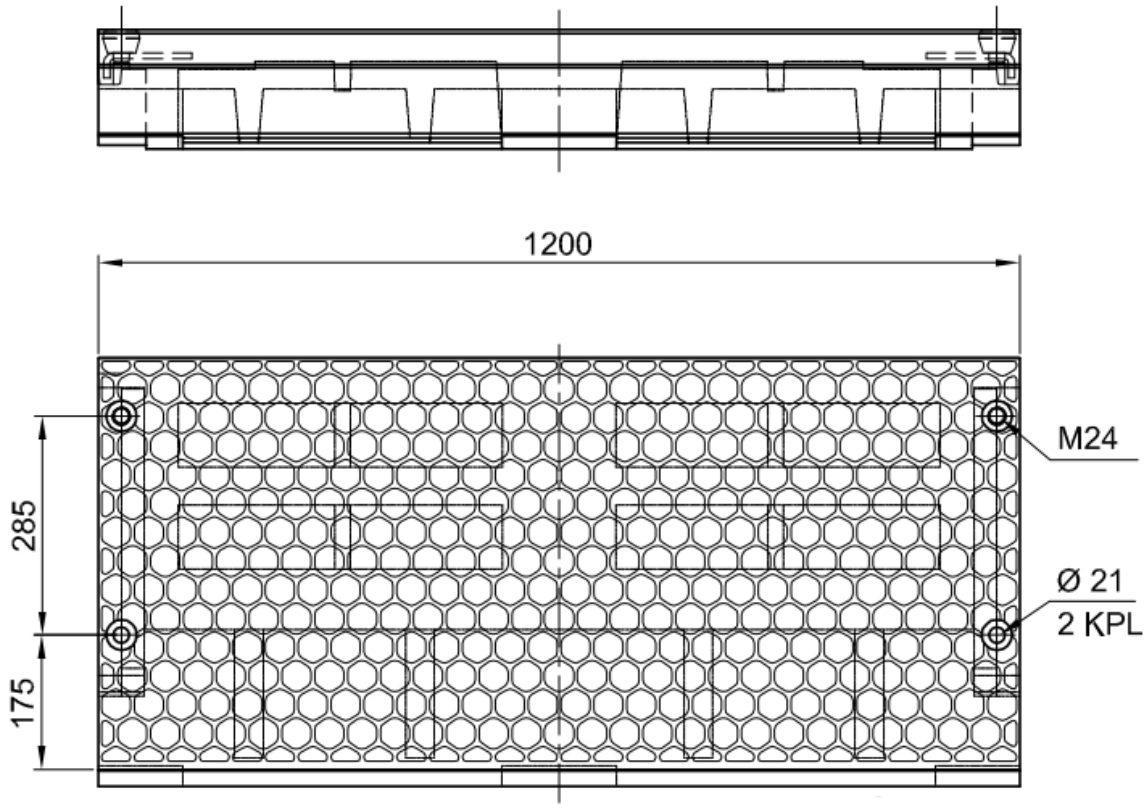
- 1000 mm
- 1435 mm
- 1524 mm

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DELIVERY CONTENT

HTR Model for light traffic

- Designed for light traffic and it can handle an Annual Average Daily Traffic of 0-1500 vehicles throughout its life



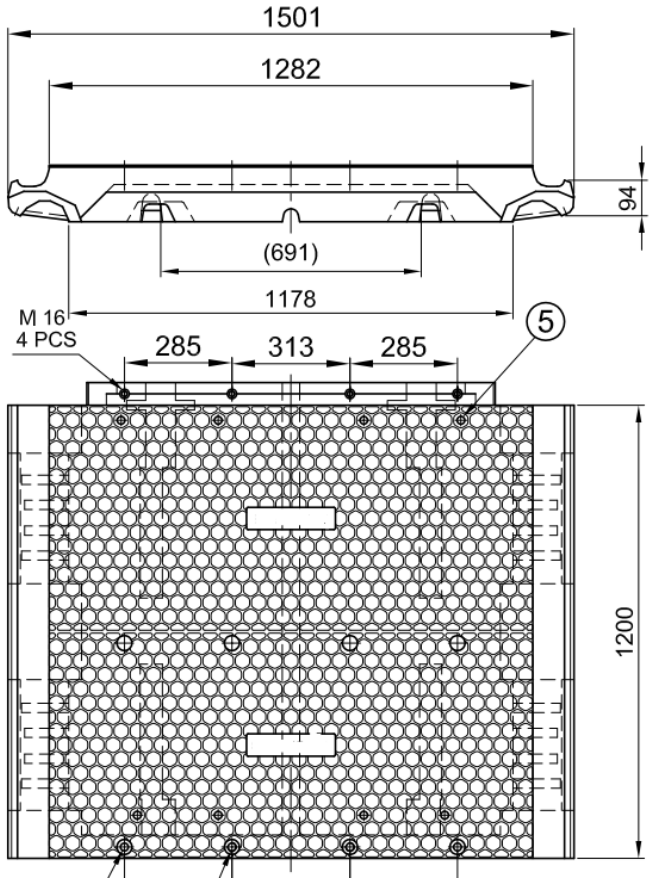
HTR Outer Element (Example picture)

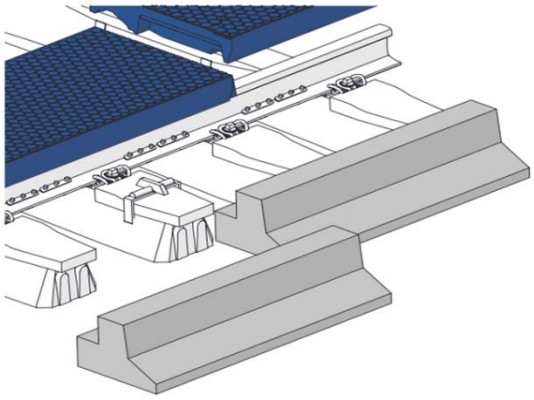
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Type A and B Model for medium and heavy traffic

- Type A is designed for medium traffic and it is able to handle an Annual Average Daily Traffic of 1500-8000 vehicles throughout its life

- Type B is designed for heavy traffic and it is able to handle an Annual Average Daily Traffic of 8000-16000 vehicles throughout its life
    - Type B is designed to use with transfer bar

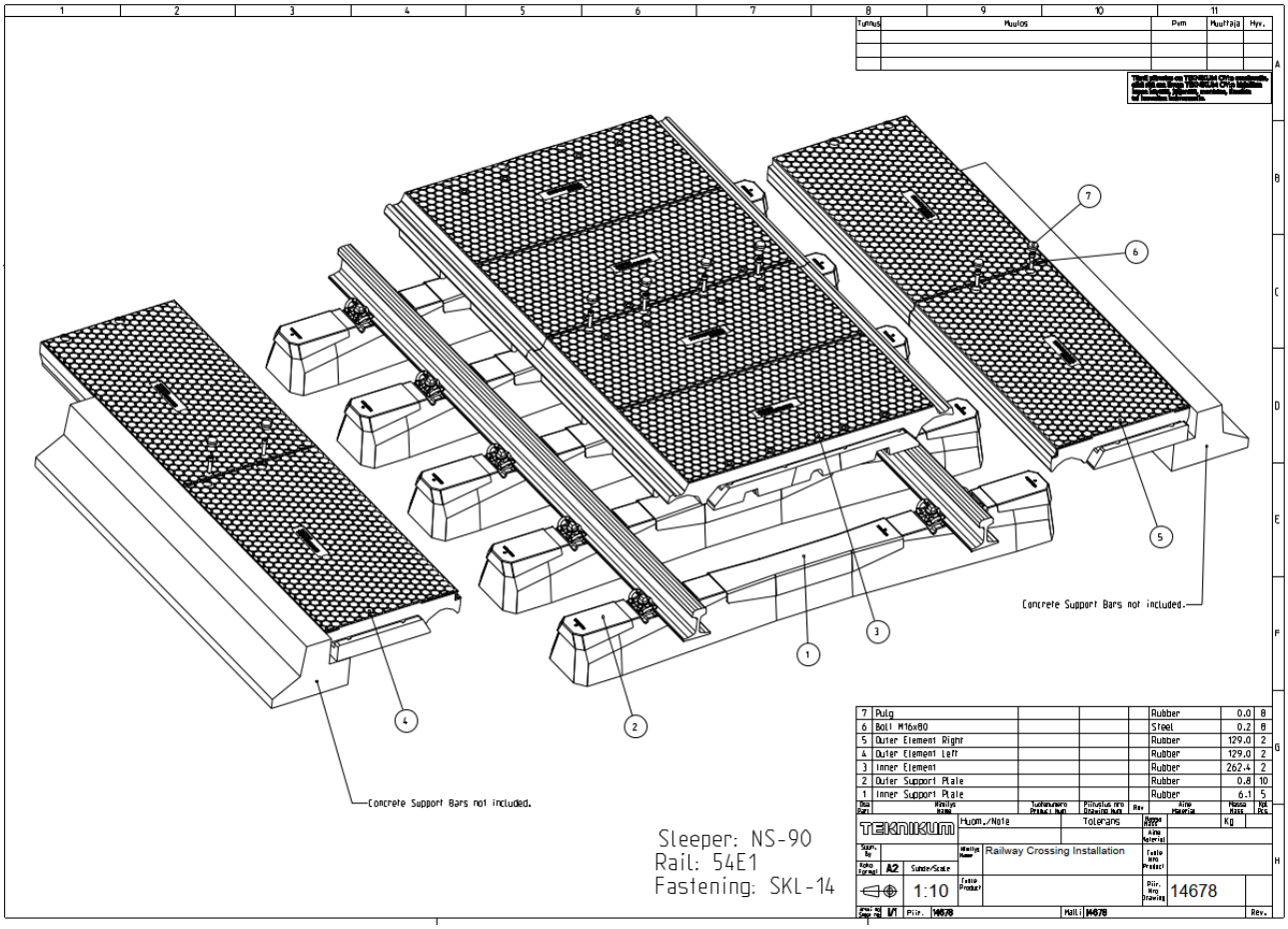




Example pictures for Type A and B Inner Element and transfer bars

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ASSEMBLY DRAWING



Assembly Drawing with bill of materials will be included as an attachment in the quotation.

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The road surface will be installed at the following speed limits and maximum axle loads of railway vehicles:

- 60 km / h and 30 tons,
- 120 km / h and 25 tons

Maximum Speed for HTR

- 80 km / h and 30 ton

All the delivered elements are marked as follows:

- Manufacturer logo
- Manufacturing (month/year)

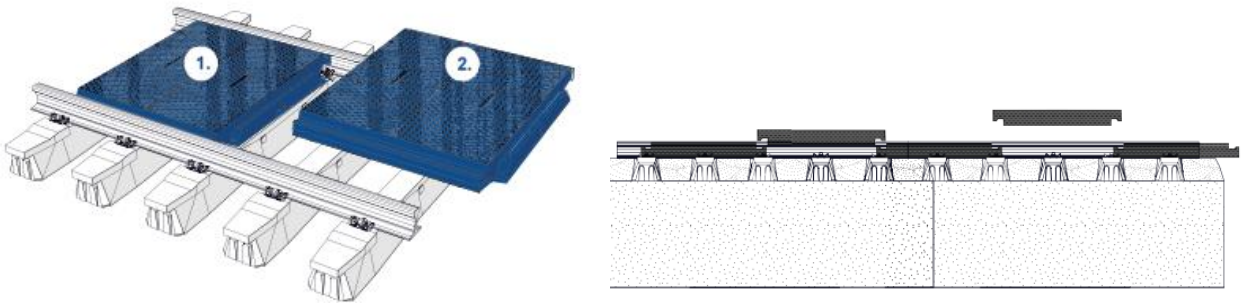
INSTALLATION

The specific installation instructions are provided with the delivery.

Installation guide is provided as a part of the quotation.

The ends of the level crossing elements are locked to the rail. Under the rail, a locking arch is threaded over the locking irons of the end elements and fastened to each other with locking pins. The lateral load and the curvature of the track affect the anchoring of the level crossing. The anchors are suitable for line sleepers. In the case of gearboxes, reliable anchoring is considered on a case-by-case basis.

More detailed description of the locking in installation instructions



Example Picture showing how the elements are mounted on top of the sleepers

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Fastening

The length and width of the different types of road surfaces are able to be adapted to the rail profile, grinder, fastening system and sleeper distance as follows:

- Pandrol FC (rail profile 60E1) sleeper distance 60 cm
- Pandrol FE (rail profile 60E1) sleeper distance 60 cm
- Pandrol e-clip (rail profile 60E1) sleeper distance 60 cm

- Fastenings are hot-dip galvanized according to SS-EN ISO 1461:2009

- Anchoring for the elements is designed for each project individually according to the required traffic load and the direction of the crossing



Example picture showing different angle between the road and rail crossing

- All metal parts in the level crossing system are protected against corrosion where salt from road traffic during winter conditions is considered.
-

Curve Radius

- Teknicross crossing straight elements can be used with curve radius >600m
- Curve radius between 100-600m can be modified

Lifetime

- Teknicross rubber level crossing expected lifetime is approx. 15 years*.

*expected lifetime can vary because of use type, the number of crossings, weight and frequency of rolling stock, climate.

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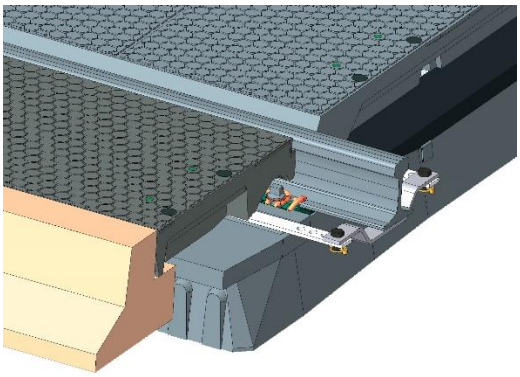


Above: **Type A** with narrow outer element directly towards asphalt.



Above: **Type B** with wider outer element. Concrete transfer bar between rubber and asphalt.

REFERENCE IMAGES





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