

Installation Manual for Vario-Guard® MÜF - H2 W5 B



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1. Description of the System

The Vario-Guard steel crash barrier, consisting of corrosion-protected components, can be used as a mobile as well as a fixed construction.

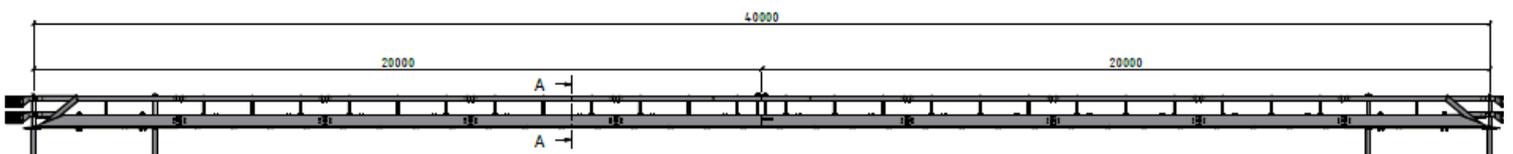
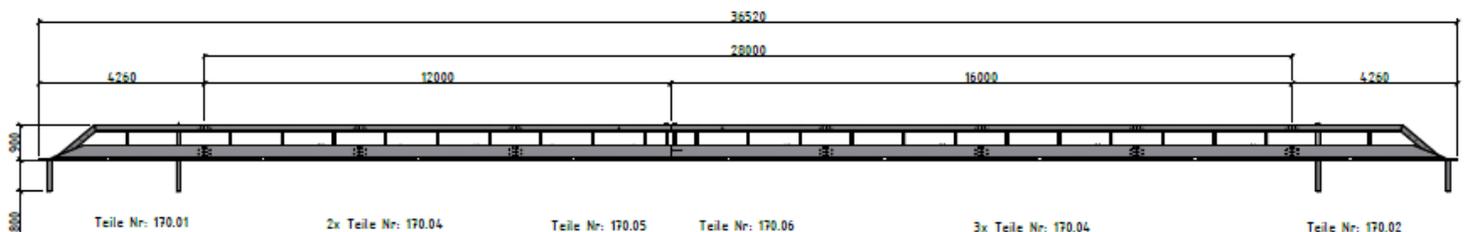
The system consists of 4 meter (or 8 m or 12 m) long pre-assembled elements. Screwed-on Sigma posts (post spacing 1.33 m) connect the body with a box section which forms the upper end of the steel crash barrier.

The standard element has a height of 900mm and a foot width of 700mm.

The Vario-Guard MÜF elements are arranged in the direction of travel with closed Sigma posts and are connected with screws in a force-locking manner. The system consists of two separable sections, which are connected in the middle with two plug-in posts.

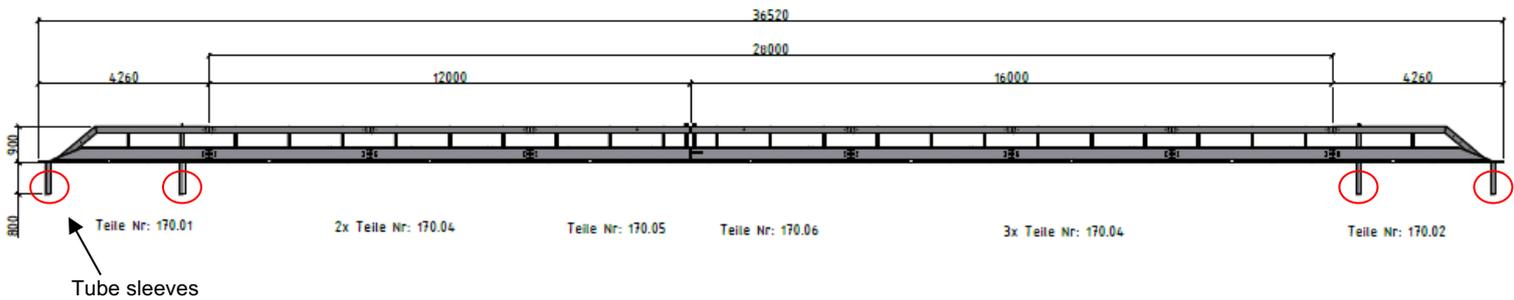
The initial and final structures are 4.26 meters long.

During assembly, care must be taken to ensure that the system has an optically perfect line. This usually requires alignment.



In addition to the tested body length of 36 m, the system may also be installed with a body length of 40 m.

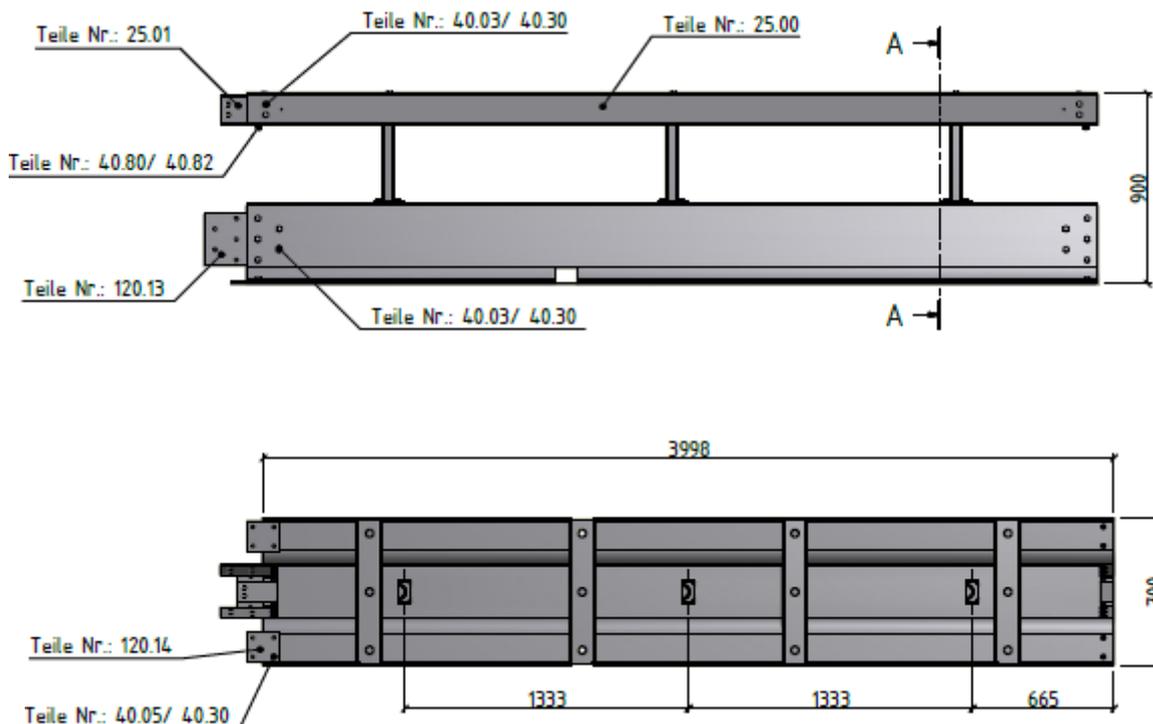
2. Installation



The position of the tube sleeves is marked and the corresponding core hole is drilled (core drill \varnothing 130 mm).

Once the sleeves are in place, the next section is installed with the following screws:

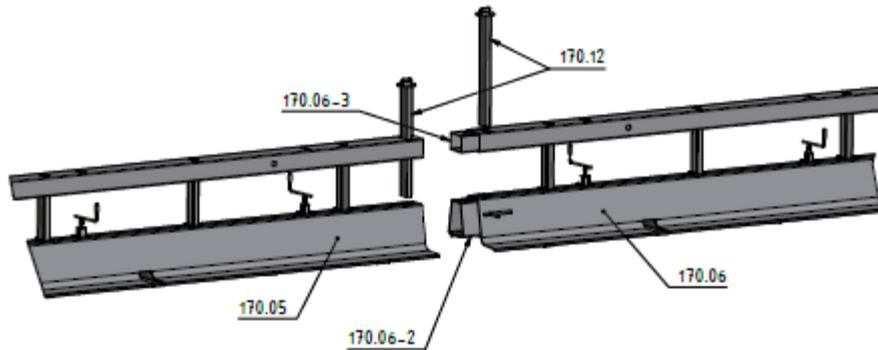
- 18 pcs. Truss head screw M16x30 8.8 with nut and washer (40.03/40.30) per joint
- 2 pcs. hexagon screw M14x30 4.6 with nut and washer (40.80/40.82) per joint
- 4 pcs. Truss head screw M16x20 8.8 with washer (40.05/40.30) per joint



Tightening torques

- Screw M14, M16: 70Nm, max. 140Nm

Once all screw connections are mounted, the Vario-Guard MÜF is connected in the middle with two plug-in posts.



To ensure that the Vario-Guard MÜF system functions properly, the screws must be fitted in accordance with the specifications. During transport, screw connections can become loose, which must be checked again after assembly and retightened if necessary.

The system should only be installed on a paved surface, which must be cleaned of sand and grit before installation.

3. General information

The building product was tested according to DIN EN 1317-2. The test results were achieved under the conditions described in the test report.

To ensure that the performance declared for the initial test (ITT) is achieved according to the test reports, the following requirements must also be met exactly during installation and assembly of the Vario-Guard. If these requirements are deviated from during installation without consultation with the manufacturer, the liability for defects in the construction product is transferred from the manufacturer to the installer.

When installing Vario-Guard, the assembly groups used must be constantly supervised by qualified personnel. Self-monitoring tests must be carried out. Records must be kept of the results of these self-monitoring tests.

During transport, assembly and disassembly, the respective national regulations (e.g. work safety, dangerous goods, securing of loads, securing of workplaces on roads, traffic regulations, etc.) must be observed.

As a matter of principle, the person performing the work must wear protective equipment such as warning clothing, safety shoes, safety helmet and gloves.

4. Foundation

The Vario-Guard vehicle restraint system is suitable for asphalt or concrete surfaces and is installed loose on asphalt and concrete road surfaces.

5. Transport, loading and unloading

The Vario-Guard MÜF elements may be packed max. in packages of 7. Only 2 packages can be stacked on top of each other. The load must be secured according to the specifications. During transport and handling, make sure that no damage is caused to the construction parts and assembly accessories.

When transporting the elements, it must be ensured that the elements are protected from damage by appropriate square timbers and/or edge protection elements.

Ideally, the elements should be delivered by a truck equipped with an appropriate crane. It is also possible that the loading and unloading process is carried out by another vehicle with crane.

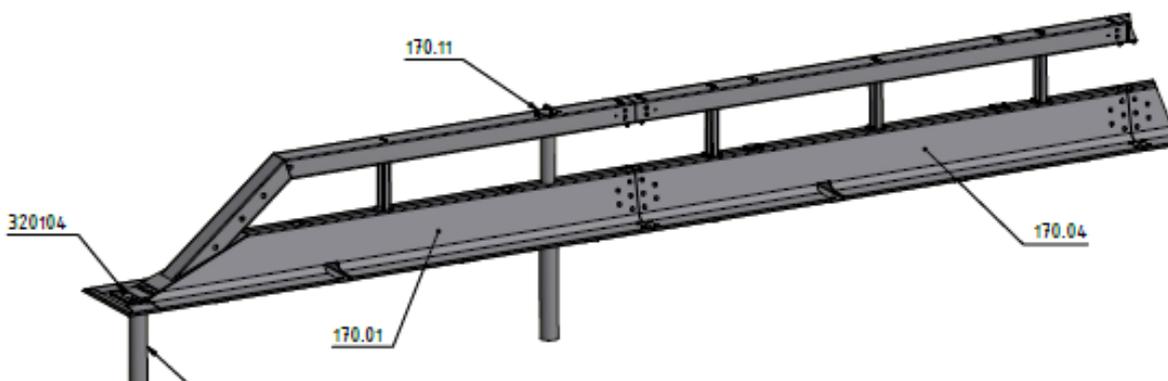
In order to optimize the assembly, the delivery is made in pre-assembled units with a length of 4, 8 or 12 m.

6. Installation in curves

In curved areas, it must be ensured that a maximum radius of 150 m is achieved with 4 m elements and a maximum radius of 450 m with 12 m elements. For smaller radii, special parts are required (e.g. 1.33m Vario-Guard).

7. Initial or final constructions

In principle, the system must be provided with the corresponding start and end elements at the beginning and end.



8. Additional Equipment

The manufacturer's approval is required for mounting additional equipment.
Auxiliary equipment may only be fitted if changes in system behaviour are excluded.

9. System check before traffic release

Before the assembled system is released for traffic, make sure that all elements are properly coupled.

10. Durability

Results of scientific research have shown that the corrosive load of zinc coatings by the atmosphere has decreased significantly in recent years. The consequence of this is a considerably longer protection period of such zinc coatings.

According to ISO 9223, the protective barrier parts are to be classified in corrosivity class C4. This means an average zinc removal of 2.0 to 4.0 $\mu\text{m}/\text{year}$. Hot-dip galvanizing guarantees over twenty years of corrosion protection for steel crash barriers.

Atmosphärentyp	Corrosion	Ø Zinc-Removal/Year
C1 Indoor; dry	Very low	< 0,1 $\mu\text{m}/\text{year}$
C2 Inside; occasional condensation Outside; country atmosphere	low	0,1 bis 1,0 $\mu\text{m}/\text{year}$
C3 Indoor; high humidity, medium air pollution Outdoor; industrial or city air, coastal climate with low salt content	medium	1,0 bis 2,0 $\mu\text{m}/\text{year}$
C4 indoor; swimming pools, chemical plants outdoor; industrial air, coastal climate with high salt content	high	2,0 bis 4,0 $\mu\text{m}/\text{year}$

Our products are galvanized according to DIN EN ISO 1461 in galvanizing plants approved and certified by us.

With regard to the regulation of the layer thicknesses, we, as a manufacturer in the Gütegemeinschaft Stahlschutzplanken e.V. (Quality Association for Steel Protective Planking), are guided by the current RAL-RG 620, according to which piece-galvanized RAL parts with a nominal thickness of 3 mm must still have an average zinc layer thickness of 70 μm , compared to the 55 μm required by DIN EN ISO 1461.

11. Reusability and repairs

The system components may be reused during conversions and/or alterations if the components show no visible deformation and/or damage.

Only new material must be used for repairing accidental damage.

Construction parts that are no longer usable must be rendered unusable, e.g. by separating parts or splitting them up, and must be recycled in the same way as removed screwing material.

Thermal processing such as welding or flame cutting is not permitted.

12. Inspection and maintenance

The installed Vario-Guard MÜF elements do not normally require any special maintenance.

Soiled parts can be easily cleaned with a high-pressure cleaner.

Excepted from this rule are dilatation joints, which should be checked annually for effectiveness and corrosion.

13. Information about toxic substances

The building product contains no toxic substances.

14. Modifications

- Use of roller sets

The system can be equipped with roller sets

- Installation of a second opening

The system can be executed with two plug post connections.

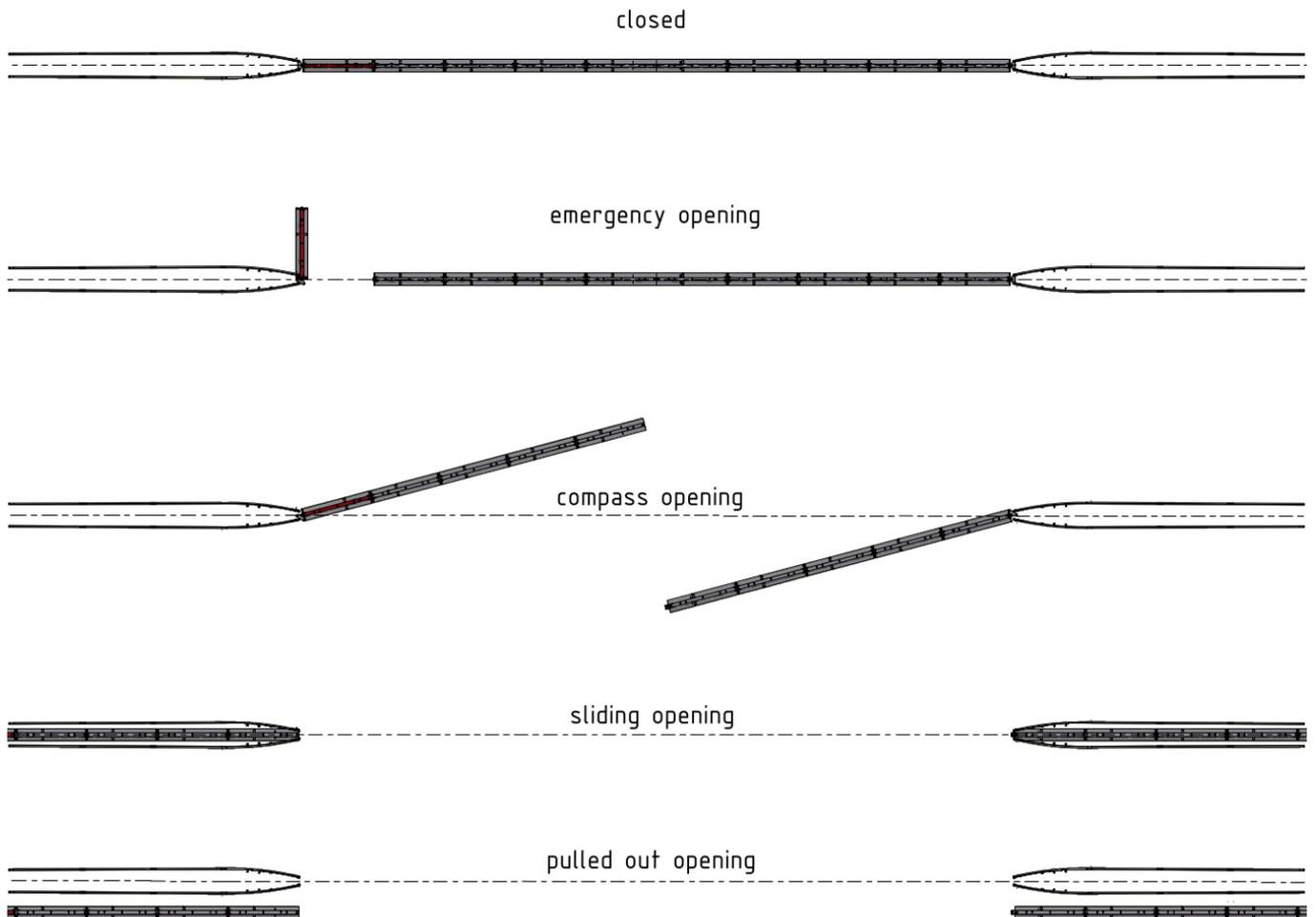
- Assembly without plug post connection

- 40 m body length in 2 versions

- Emergency opening

An emergency opening may be installed in the Vario-Guard MÜF 40 m system

15. Opening variations



16.Imprint

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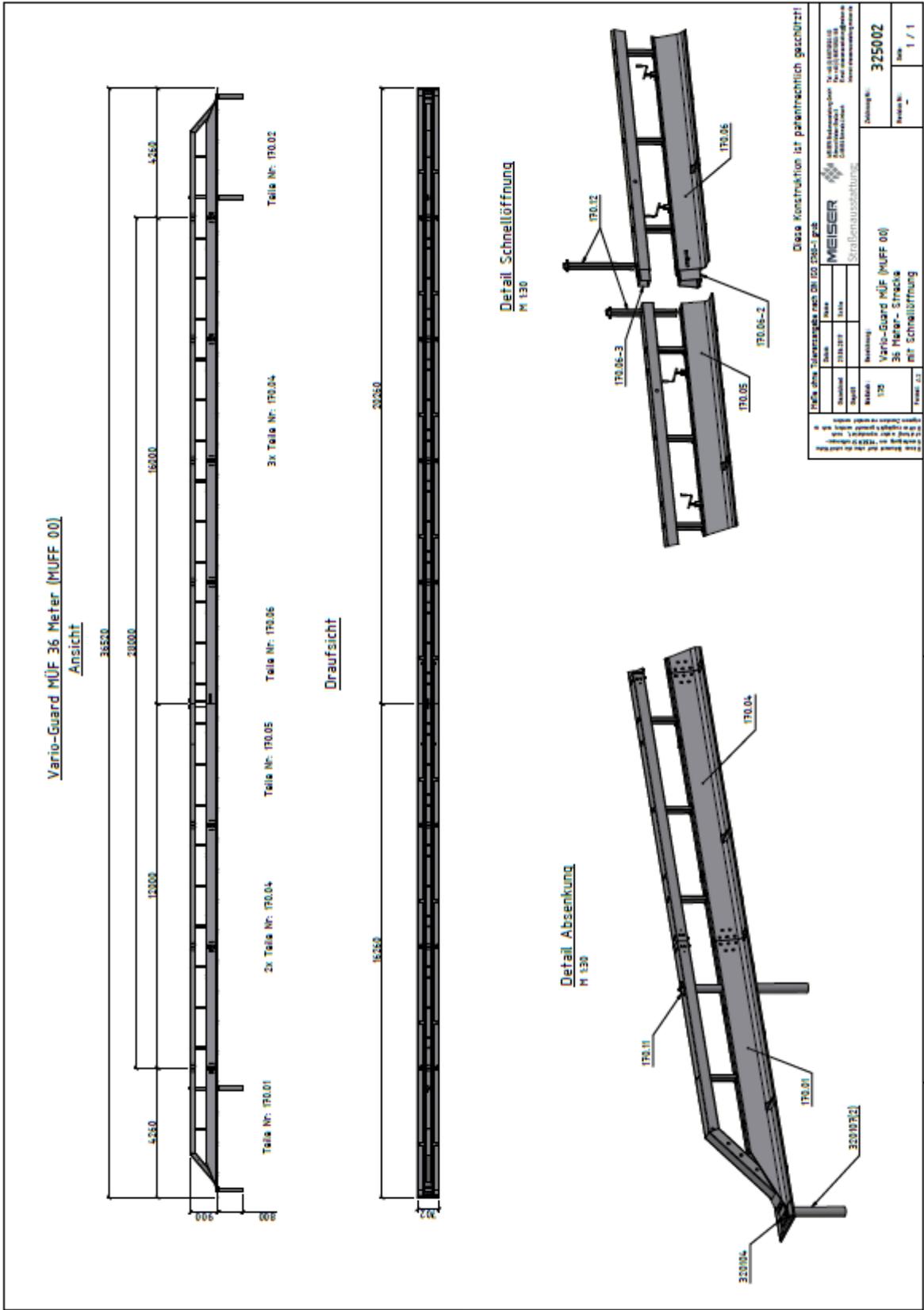
Ulrich Meiser

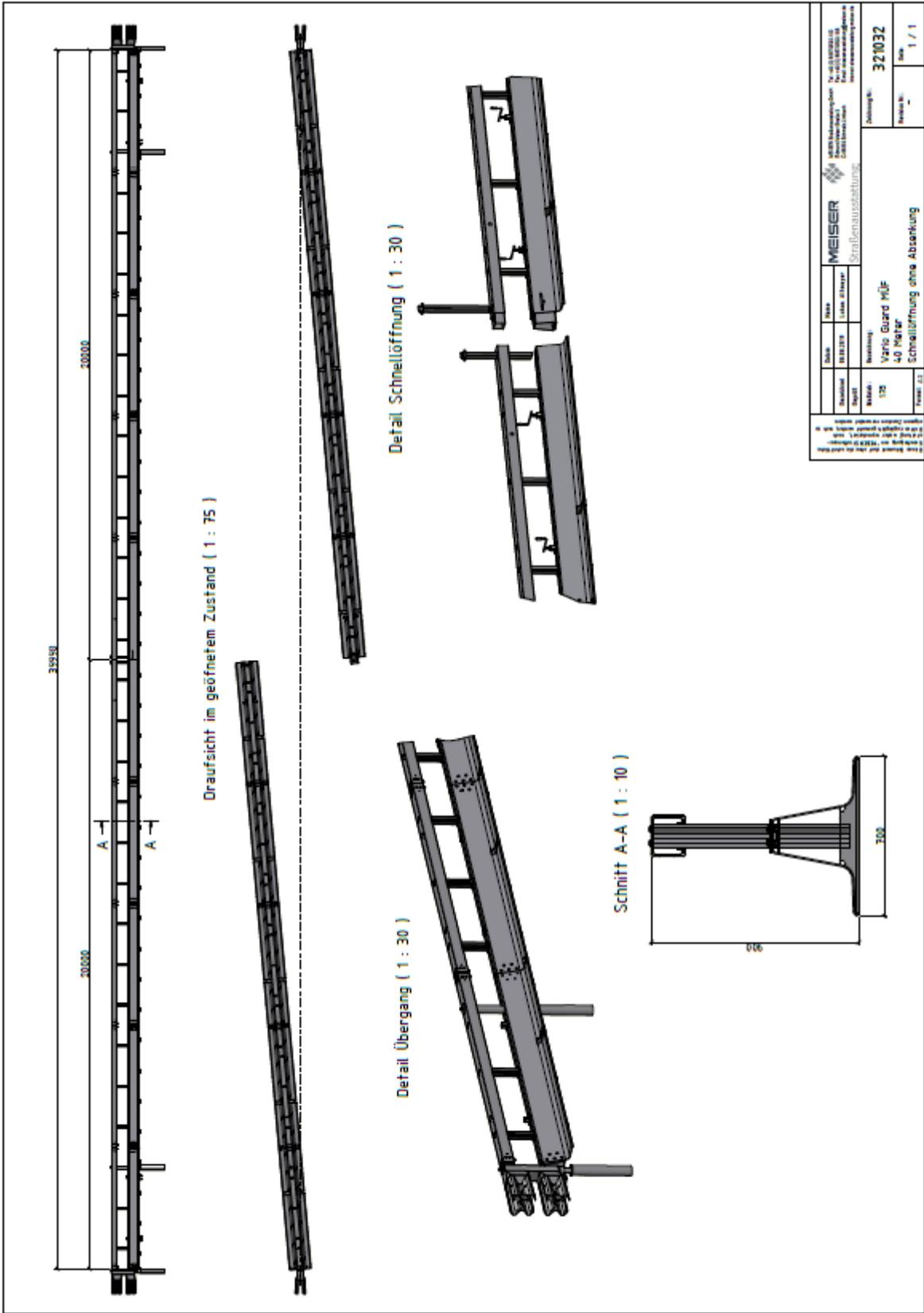
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