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Bay 27

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## General Building Authority Test Report

Allgemeines bauaufsichtliches Prüfzeugnis

<b>Test Report number:</b>	<b>P-2014-3041</b>
<b>Subject:</b>	Linearly supported railing balustrade Building Regulations List A Part 3 – Version 2014/2 Design based on serial no. 2.12
<b>Intended use:</b>	Accident proofing based on the Technical Regulations for the use of accident-proof glazing (German abbr. <i>TRAV</i> )
<b>Accident-proofing category:</b>	<b>B</b>
<b>Applicant:</b>	<b>Hilti Deutschland AG</b> Hiltistraße 2 D-86916 Kaufering
<b>Issued on:</b>	<b>17 Dec. 2014</b>
<b>Valid until:</b>	<b>16 Dec. 2019</b>

On the basis of this General Building Authority Test Report, the above-mentioned object can be used based on the Federal State Construction Regulations.

The General Building Authority Test Report comprises 9 pages and one annex.



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## I.      **General provisions**

1. The General Building Authority Test Report does not replace any statutory permits, approvals or certificates required for the execution of building projects.
  
2. The General Building Authority Test Report is issued without limiting any third-party rights, in particular private property rights.
  
3. The manufacturers of the design must provide the user of the design with copies of the General Building Authority Test Report , irrespective of any further regulations in the section "Special provisions“, and they must point out that the General Building Authority Test Report must be available at the application site. On demand, the responsible authorities must be provided with copies of the General Building Authority Test Report.
  
4. The General Building Authority Test Report may not be reproduced other than in full except with the permission of the Laboratory for Steel and Light Metal Construction. Texts and drawings of advertising brochures must not contradict the General Building Authority Test Report. Translations of the General Building Authority Test Report must contain the note "Translation of the German original not verified by the Laboratory for Steel and Light Metal Construction“.



## II.      **Special provisions**

### 1    **Object and field of application**

#### 1.1    **Object**

The object of the General Building Authority Test Report is the linearly supported glazed balustrade designed by the company Hilti Deutschland AG.

#### 1.2    **Field of application**

The above-mentioned object is used in accordance with the Technical Regulations for the use of accident-proof glazing (German abbr. *TRAV*) as per **category B**.

### 2    **Demands on the design**

#### 2.1    **Description of the structure**

##### 2.1.1 Support

##### Lower linear support

The glass panes are supported linearly at their lower edges in a bedding of HILTI HIT-HY 270. The structure details can be seen in the drawing of annex 1. The manufacturer's application information [i] must be observed when executing the HILTI HIT-HY 270 bedding. The clamping depth of the glass pane must amount to at least 100 mm. The load of its own weight is carried by a suitable glass block. The load-bearing capacity of the steel substructure under static loads must be proven by submitting the appropriate certificates. The top front face of the top bedding must be protected by a suitable sealing (see annex 1).

##### Load-bearing handrail

The upper edges of the panes must be connected with each other by a continuous handrail. In addition to the protection of the upper glass edge, the handrail must ensure that the planned capping load is carried safely at capping height even in case of a failure of one balustrade element.





### 2.1.2 Glazing

Tempered safety glass (TSG or TSG heat-soak test)	10.00 mm
Polyvinylbutyral interlayer (PVB interlayer)	1.52 mm
Tempered safety glass (TSG or TSG heat-soak test)	10.00 mm
<b>Total glass thickness approx.</b>	<b>21.5 mm</b>

Only glass products of the Building Regulations List A Part 1 may be used. The glass and interlayer thickness values stated above may be exceeded. The laminated glass may also consist of other interlayers according to TRLV[b] like SentryGlas® 5000. The glass quality must be confirmed by the manufacturer and/or supplier by means of works certificates and/or conformity declarations.

### 2.2 *Applicable test procedures*

The test of the accident-proof functionality of the glazing is to be carried out in accordance with section 6 of *TRAV*. The proof of the load-bearing capacity when subject to intermittent impact is provided in the form of pendulum impact tests carried out at the decisive dimensions of the described glazing.

### 2.3 *Use, maintenance and repair*

The structure must be built in such a way and suitable measures taken to ensure that the requirements of accident proofing are met at all times. When testing the safe anchoring of the glazing structures in the building, the applicable technical building regulations must be observed.

## 3 **Scope of applicability and design provisions**

### 3.1 *Scope of applicability*

The General Building Authority Test Report is valid for the design stated in section 2 above. The glazing has an accident-proof function based on category B. The maximum dimensions are shown in table 1 below.



**Table 1:** Maximum dimensions for support on all sides

Width [mm]		Height [mm]*	
min.	max.	min	max.
500	optional	900	1300

\*) Pane measurement above the clamping structure (see annex 1)

The pane structure must correspond to the pane structure stated in section 2.1.2.

The regulations for category B glazing must - on principle - be observed in addition to the structure characteristics stated in section 2.1.

### 3.2 Design

For each respective application, the load-bearing capacity under static load for the glazing and the mounting structures must be verified by means of calculation based on TRAV section 5.



## **4 Certificates of conformity**

### **4.1 General**

The design stated in this General Building Authority Test Report requires a proof of conformity in accordance with the Building Regulations List A Part 3 issued by the user (contractor). The contractor herewith declares to the client that the executed design is in conformity with this General Building Authority Test Report in full detail.

### **4.2 Production inspection**

A production inspection must be set up and carried out at each application site of the design. A production inspection is the constant monitoring of production which is performed by the contractor and which allows him to ensure that the design produced by him complies with the provisions of the General Building Authority Test Report.

The production inspection must include the description and inspection of the source materials and the component parts. The results of the production inspection must be registered and evaluated. The records must contain the following information as a minimum:

- Designation of the design with a description of the component parts
- Date of the production and the test of the design
- Results of the testing and comparison with the requirements
- Signature of the person responsible for the production inspection.

The records must be kept for at least five years and must be submitted to the responsible top-level building authority on request.



## 5 Co-applicable provisions

For the execution, the provisions of the Technical Regulations for the use of accident-proof glazing (German abbr. *TRAV*) - version January 2003 - must be observed. In addition, the following standards and instruction leaflets are referred to:

- [a] Building Regulations List A, B and list C; version 2014/2
- [b] Technical Regulations for the use of linearly supported glazing; (*TRLV*); version 2006-08
- [c] DIN EN 12600: Glass in the building industry - Pendulum impact test - Procedure for the impact test and classification of flat glass; version 2003-04
- [d] DIN EN 14449, Glass in building - Laminated glass and laminated safety glass; version 2005-07
- [e] DIN 572, Part 1-2; Glass in building - Basic soda lime silicate glass products; Version 2004-09
- [f] DIN 12150, Part 1; Glass in building - Thermally toughened soda lime safety glass ; Version 2000-11
- [g] DIN 18545, Part 1; Sealing of glazing with sealants; Version 1992-02
- [h] DIN 18545, Part 2; Sealing of glazing with sealants; Version 2001-02
- [i] Instructions for use HILTI HIT<sup>®</sup>-HY 270 (Package leaflet)





### III.      Legal foundation

This General Building Authority Test Report is issued on the basis of Art. 21 and Art. 23 of the *Bayerische Bauordnung* (BayBO) [Bavarian Building Regulations] in connection with the Building Regulations List A.

According to § 22 section 6 of the *MBO* [Model Building Code] and/or the corresponding provisions of the respective Federal State Construction Regulation, a General Building Authority Test Report is valid in all federal states of the Federal Republic of Germany.

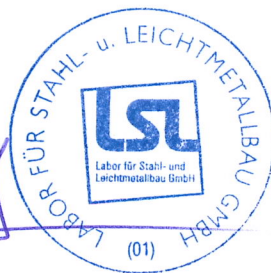
### IV.      Instruction on right to appeal

An appeal may be filed against this General Building Authority Test Report within one month upon receipt of the notification. The appeal must be filed in writing or verbally to be recorded with the *Labor für Stahl- und Leichtmetallbau* [Laboratory for Steel and Light Metal Construction] of the *Fachhochschule München* [Munich Technical College].

Munich, 17 December 2014

For the management

Prof. Ö. Bucak, D. Eng.



Responsible officer

A. Lorenz, B. Eng. (Tech. Coll.)

- (1) Handrail
- (2) Laminated safety glass
- (3) Sealing
- (4) Hilti HIT HY 270
- (5) Round cord
- (6) Steel profile
- (7) Self-weight carrier

