UIAA 171

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Via Ferrata Construction

Climbing and Mountaineering Equipment

International Climbing and Mountaineering Federation
UNION INTERNATIONALE DES ASSOCIATIONS D'ALPINISME

UIAA Safety Standard – 171 – Version 1.0

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Foreword

UIAA standards are the only ‘globally recognized’ standards for mountaineering equipment.

The UIAA Standards are reviewed at intervals to see whether they meet the latest technical requirements and revised if necessary.

The UIAA invites manufacturers of mountaineering and climbing equipment worldwide to become members of the UIAA Safety Commission as Safety Label Holders. Members can participate in discussions on standard requirements, test methods, and revisions thereof (see the “Regulations for existing and potential Safety Label Holders”).

A complete list of UIAA standards for mountaineering and climbing equipment can be found on the UIAA website www.theuiaa.org/safety-standards/.

NOTE – Owing to copyright restrictions, this UIAA Standard does not reproduce the full requirements of the referenced standards. To ensure full compliance, users must obtain official copies of these documents. They are available for purchase from the CEN and ISO websites.

This standard has been created and updated based on scientific research coordinated and funded by UIAA, as a service to all mountaineers.

Copyright and Version Management

The versioning is V*x.y*, where:

- *x* Major revision of the document. Each change in requirement implies a main evolution.
- *y* Minor revision of the document. Editorial or non-technical updates.

For example, **V5.0** denotes the fifth major revision of the document.

Note that test reports comprising only the main issue, e.g., V5, are also accepted (instead of, e.g., V5.2) since the requirements are identical.

Normative References

The following documents are referenced in such a way that their content, in whole or in part, constitutes requirements of this standard. For dated references, only the edition cited applies. For undated references, the latest edition (including any amendments) applies.

EN 16869:2017, *Via ferrata – Construction requirements and methods of inspection*

UIAA 105, *Harnesses*

UIAA 106, *Helmets* (recommended user information)

UIAA 121, *Connectors* (Type K where applicable)

UIAA 128, *Energy absorbing systems for Via Ferrata use*

NOTE – Additional normative references applicable via EN 16869:2017 (e.g., other EN/ISO documents) remain applicable through that incorporation by reference. Where EN 16869:2017 requires the use of other referenced standards (e.g., EN or ISO documents), those standards are applicable for conformity with this UIAA Standard.

Acronyms

The following acronyms are used in this document. Full forms are provided for reference.

CEN: European Committee for Standardization
EN: European Standard
EAS: Energy Absorbing System
ISO: International Organization for Standardization
UIAA: International Climbing and Mountaineering Federation

1 General Remarks on the UIAA Trademark and UIAA Safety Label

1.1 The UIAA Trademark (see section 8) is copyright protected internationally. The UIAA Safety Label is only granted to items of mountaineering and climbing equipment upon approval of the prospective label holder's application by the UIAA.

1.2 The procedure to be followed by a manufacturer, when applying for a UIAA Safety Label, is laid down in the "Regulations for existing and potential Safety Label Holders" available at the UIAA website.

2 Scope

This UIAA Standard specifies additional requirements and guidance for the design, construction, inspection, and maintenance of a Via Ferrata installation, including a cable line intended for use with an energy absorbing system (EAS).

It does not apply to rope courses, industrial rope access techniques (e.g., IRATA), or to trails equipped only with progression aids (e.g., ladders, handrails, chains, cables, ropes) that are not intended as a Via Ferrata safety system.

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in EN 16869:2017 apply, with contextual adaptations where necessary, while maintaining alignment with the original intent of the standard. Additional terms and definitions specific to this document are listed below.

3.1
Cable line for EAS
Fixed installation intended to provide fall protection when used with an energy-absorbing system (EAS).

NOTE – In particular, *cable line for EAS* is used in place of the EN 16869:2017 term *safety line*.

3.2
Progression aid on the cable line for EAS
Device installed on the cable line for EAS that allows the passing by of the connector in one direction only (upwards); see Figure 1.

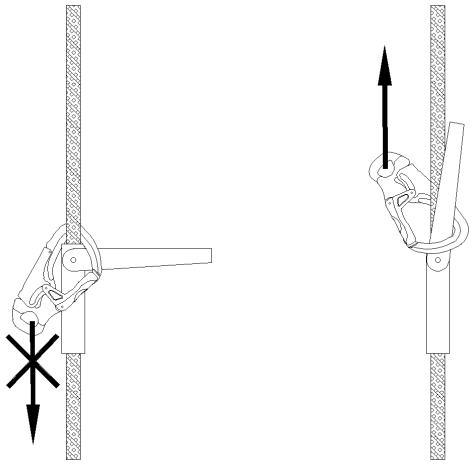

Figure 1: Example of Progression aid fixed on the cable line for EAS

3.3
Operator
Entity responsible for the ongoing structural integrity, inspection, maintenance, and user information for a Via Ferrata installation.

3.4
Verification
Documented confirmation that the Via Ferrata installation conforms to the requirements of this UIAA Standard.

3.5
Overground section
Section where the line, defined by two successive anchor points, is above the external surface of the structure; see Figure 2.

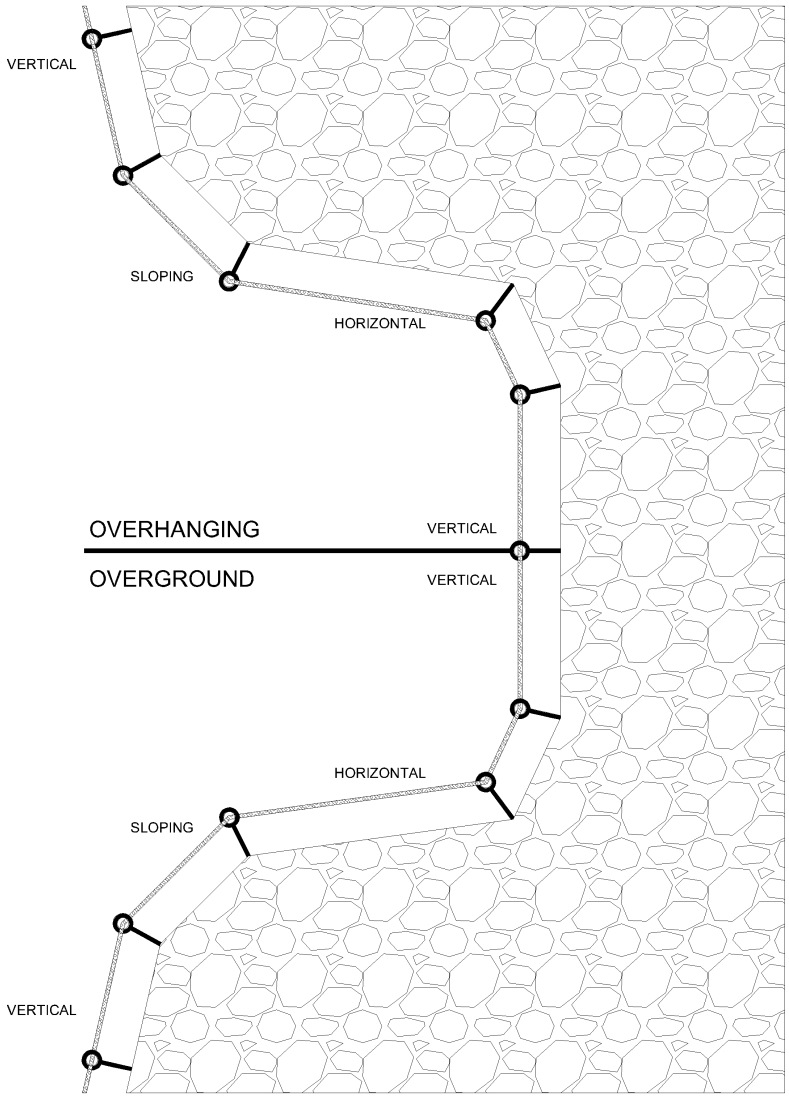

Figure 2: Example of section types application

3.6
Horizontal (low angle) overground section
Overground section where the line, defined by two successive anchor points, forms an angle less than 25° with the horizontal; see Figure 3.

3.7
Sloping (steep angle) overground section
Overground section where the line, defined by two successive anchor points, forms an angle equal or more than 25° but below 60° with the horizontal; see Figure 4.

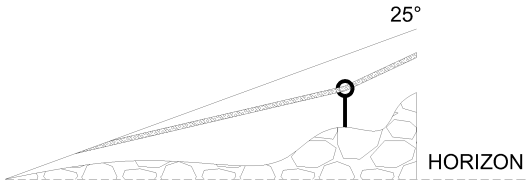

Figure 3: Horizontal (low angle) overground section (between 0° and 24°)

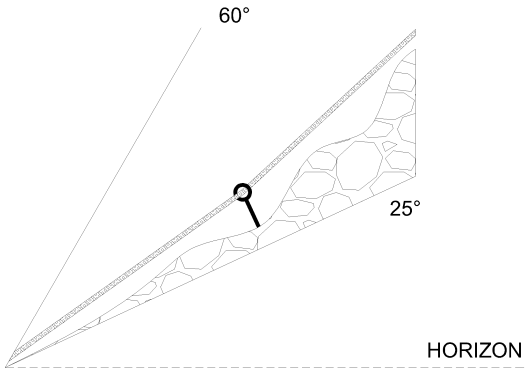

Figure 4: Sloping (steep angle) overground section (between 25° and 60°)

3.8
Vertical (high angle) overground section
Overground section where the line, defined by two successive anchor points, forms an angle equal or more than 60° with the horizontal; see Figure 5.

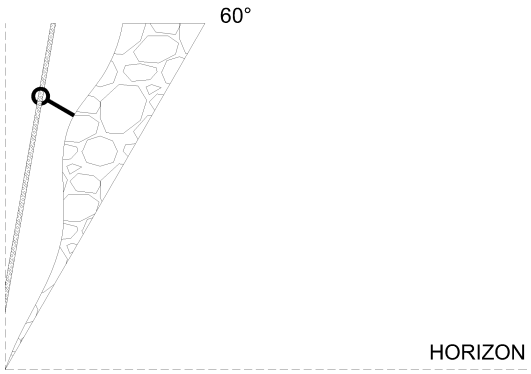

Figure 5: Vertical (high angle) overground section (between 60° and 90°)

3.9
Overhang section
Section where the line, defined by two successive anchor points, is below the external surface of the structure; see Figure 2.

3.10
Horizontal overhang section
Overhang section where the line, defined by two successive anchor points, forms an angle less than 25° with the horizontal; see Figure 6.

3.11
Sloping overhang section
Overhang section where the line, defined by two successive anchor points, forms an angle equal or more than 25° but below 40° with the horizontal; see Figure 7.

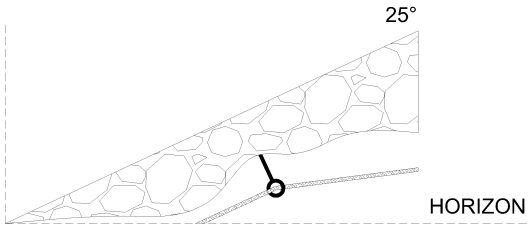

Figure 6: Horizontal overhang section (between 0° and 24°)

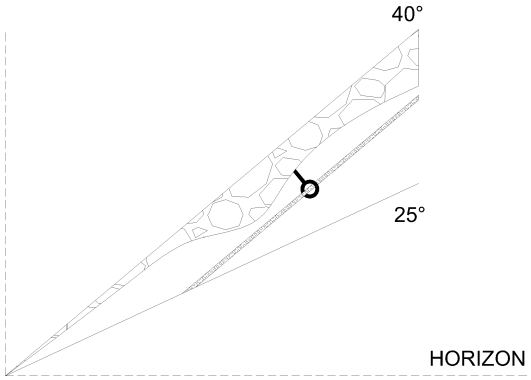

Figure 7: Sloping overhang section (between 25° and 39°)

3.12
Vertical overhang section
Overhang section where the line, defined by two successive anchor points, forms an angle equal or more than 40° with the horizontal; see Figure 8.

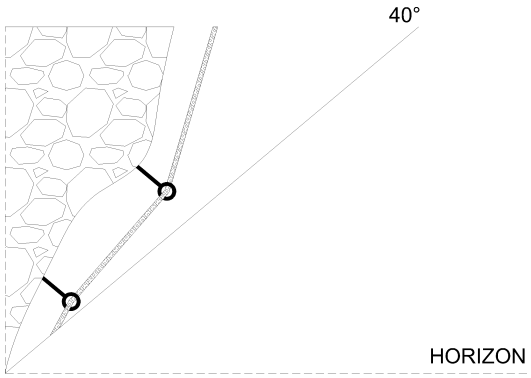

Figure 8: Vertical overhang section (between 40° and 90°)

4 Requirements

4.1 Baseline compliance with EN 16869:2017

A Via Ferrata installation claiming conformity with this UIAA Standard shall meet all applicable requirements of EN 16869:2017, with the following exception:

4.1.1 The selection and use of materials for the Via Ferrata installation shall be appropriate for the intended service conditions and shall be in accordance with applicable local regulations and relevant internationally recognized standards.

4.2 UIAA additional requirements

The following additional requirements shall be met for the grant of the UIAA Conformity Label:

4.2.1 The degree of protection against corrosion and mechanical integrity needed shall be defined by the responsible constructor, taking into account not only the environmental conditions (temperature, humidity, frequency of rainfall, fatigue analysis, altitude, proximity to the sea/acidic environment, foreseeable misuse and pollution) but also the frequency of inspections.

NOTE – Corrosion mechanisms relevant to Via Ferrata installations may include general corrosion, pitting and crevice corrosion and stress corrosion cracking (SCC).

4.2.2 Continuation of cable line for EAS should be extended into a lower risk of fall zone.

4.2.3 In addition to the requirement specified in EN 16869:2017, 4.1.2.2, for the placement of the anchor points in overground vertical sections and overhang vertical sections, the slippage of the connectors connecting the user to the cable line for EAS shall not exceed 2 m. In overground sloping sections and overhang sloping sections, the slippage of the connectors connecting the user on the cable line for EAS shall not exceed 3 m. This may be obtained either by an anchor point or a progression aid fixed on the cable line for EAS. In overground horizontal sections and overhang horizontal sections, the slippage of the connectors connecting the user to the cable line for EAS shall not exceed 6 m.

NOTE – The angles of sections (horizontal, sloping, and vertical) have been calculated taking into account a maximum vertical fall of 2 m.

4.2.4 Progression aids fixed on the cable line for EAS — When tested in accordance with 5, there shall be no visible permanent deformation when a load greater than 1,8 kN is applied, and the maximum permitted slippage shall be 300 mm. There shall be no breakage when a load of 12 kN is applied.

4.2.5 The calculation of a Via Ferrata shall be in accordance with applicable local regulations and relevant internationally recognized standards when more severe than those specified in EN 16869:2017 clauses 4.1.2.3, 4.1.2.4, 4.1.2.5, 4.1.2.6 and 4.1.2.7.

4.2.6 User self-rescue information for critical sections

As after a fall, with or without the deployment of the EAS, the user should be able to reach again the route on his own. In addition, the following condition shall be met:

(a) The Operator shall identify sections in which, in the event of a fall, it is very difficult or impossible for a user to regain the route without specific tools or techniques (e.g., progress capture, ascenders, improvised hauling).

(b) Such sections shall be clearly communicated to users by on-site marking at the start of the Via Ferrata and, where appropriate, at the beginning of the relevant section(s).

4.2.7 Minimum user information additions

In addition to the user information required by EN 16869:2017, the following information shall be provided at the beginning of the via ferrata in a clearly visible location:

(a) Advice that recommended personal protective equipment includes, as appropriate, a convenient helmet (e.g., conforming to UIAA 106) and gloves.

(b) The minimum user age in accordance with local legislation, or a clear statement that local legislation governs the minimum user age.

(c) A user mass-range advisory: the Operator shall communicate the intended user mass range for EAS use and shall warn that users outside the intended range should use rope-party techniques under competent supervision.

(d) A verification statement including: confirmation that the via ferrata has been verified against UIAA 171, the year of verification (`DD-MM-YYYY`), the verifier identity (`Verifier`), and the date of the most recent inspection (`DD-MM-YYYY`).

(e) Compatibility with UIAA equipment standards:

  (1) The safety system shall be compatible with a convenient EAS (e.g., conforming to UIAA 128).

  (2) User attachment shall be compatible with a convenient harness (e.g., conforming to UIAA 105).

(3) Where connectors are referenced for user's self-belay passing and/or clipping points, a convenient connector (e.g., conforming to UIAA 121) of Type K shall be used.

NOTE – The weight-range advisory is an information requirement; it does not alter UIAA 128 requirements for EAS devices.

4.2.8 Digital access to information

Where electronic access (e.g. QR code) is used as an alternative to printed information, the link shall be clearly indicated and shall provide access to the same information content required on-site, in Standard English and in the official language(s) of the country of installation.

4.2.9 Operator contact and damage reporting channel

At the beginning and end of the Via Ferrata, the Operator shall provide contact information enabling users to report damage or safety concerns.

4.2.10 Marking

Marking shall conform to EN 16869:2017. In addition, the user-information requirements specified in 4.2.6, 4.2.7, 4.2.8 and 4.2.9 shall be provided as specified therein.

5 Test Methods

This clause specifies the test methods for determining conformity with the requirements of this document.

5.1 Progression aid fixed on the cable line for EAS

Install the progression aid fixed on the cable line for EAS on a vertical fixed cable according to instruction of the manufacturer. Apply a vertical load 1,8 kN (0,2 / 0) at a rate of (35 ± 15) mm/min and hold it for (60 ± 10) s. Check that the progression aid shows no visible permanent deformations. Apply a load of 12 kN at a rate of (35 ± 15) mm/min and hold it for (60 ± 10) s. Check that the progression aid and the line show no breakage or rupture.

NOTE – For 12 kN test, a clamp may be applied onto the line under the device in order to avoid slippage.

6 Demonstrating that Requirements are Met

6.1 Components to be installed

Unless national legislation provides otherwise, conformity of critical components with applicable safety requirements shall be supported by either:

(a) A manufacturer operating a certified quality system (e.g., ISO 9001) covering design, production, inspection, and testing; or

(b) A test report from a UIAA-approved laboratory.

6.2 Design and construction of the Via Ferrata installation

Conformity of the design and construction of the installation shall be certified in accordance with applicable national/local legislation. In addition, verification against this UIAA Standard shall document:

(a) Evidence of conformity with EN 16869:2017; and

(b) Evidence of conformity with the UIAA additional requirements listed in 4.2.

7 Inspection and Maintenance Requirements

Inspection and maintenance shall conform to EN 16869:2017 and to the additional requirements specified in 4.2.

NOTE – The Operator should consider event-based inspections following incidents, severe weather, rockfall, or vandalism. Retaining inspection records supports the verification statement required by 4.2.7.

8 Attachment of the UIAA recognition label

8.1 Label Marking

For any Via Ferrata installation which has been granted the recognition label under a UIAA program, the Operator may use the UIAA Trademark (see Figure 9) or the four letters “UIAA” in accordance with the branding guidelines specified in the branding guidelines specified in the “Regulations for existing and potential Safety Label Holders”.

Figure 9: UIAA Trademark or the four letters “UIAA” word mark.

Revision History

V1 — May 2026

First issue.