

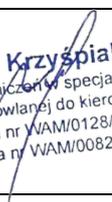
INSTALLATION GUIDELINES FOR ARTIFICIAL CLIMBING WALL

CONSTRUCTIONS

SUBJECT OF THE STUDY: Interactive artificial climbing wall with a height of 8.00 m according to product specifications

MANUFACTURER: **Reclimb Prosta Spółka Akcyjna**
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INSTALLATION GUIDELINES

| DEVELOPMENT TEAM: | |
|--|--|
| AUTHOR: | DATE |
| Jacek Krzyśpiak, Eng. <i>Professional license in structural and building design without limitations</i> No. WAM/0082/POOK/11 | <div style="text-align: center;">  <p>inż. Jacek Krzyśpiak</p> </div> SIGN upr. bud. bez ograniczeń w specjalności konstrukcyjno-budowlanej do kierowania robotami budowlanymi nr WAM/0128/OWOK/07 oraz do projektowania nr WAM/0082/POOK/11 |
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WARSAW, SEPTEMBER 2024



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1.0. Introduction

1.1. Subject of the study

The subject of this study is general installation guidelines for an artificial climbing wall with a height of 8.00 m in the product specification, intended for installation inside buildings in corrosion class C2, specifying the minimum strength requirements for the structures of the fixed elements to which the wall will be attached and the preliminary selection of anchoring elements.

2.0. General requirements

The wall structure must be attached to fixed horizontal and vertical structural elements. A floor with sufficient strength can serve as a horizontal element. Installation to this element is carried out at a minimum of four points (at the location of holes prepared in the horizontal base plates of the structure base) using fasteners such as chemical anchors glued to the floor. The vertical element may be a wall of the building or a substructure prepared individually for this purpose. Fastening to the vertical element must be performed at least at two levels. The first mounting level should be at the height of the third frame from the bottom (i.e., between 225 and 417 cm from the floor), and the second at the height of the fifth frame from the bottom (i.e., above 609 cm from the floor). At each mounting level, both rear posts of the structure should be fastened using mounting connectors. The fastening elements can be chemical anchors (in the case of mounting to a reinforced concrete element) or screws (for a steel substructure).

3.0. Description of structure installation

Assemble the structure in the following order:

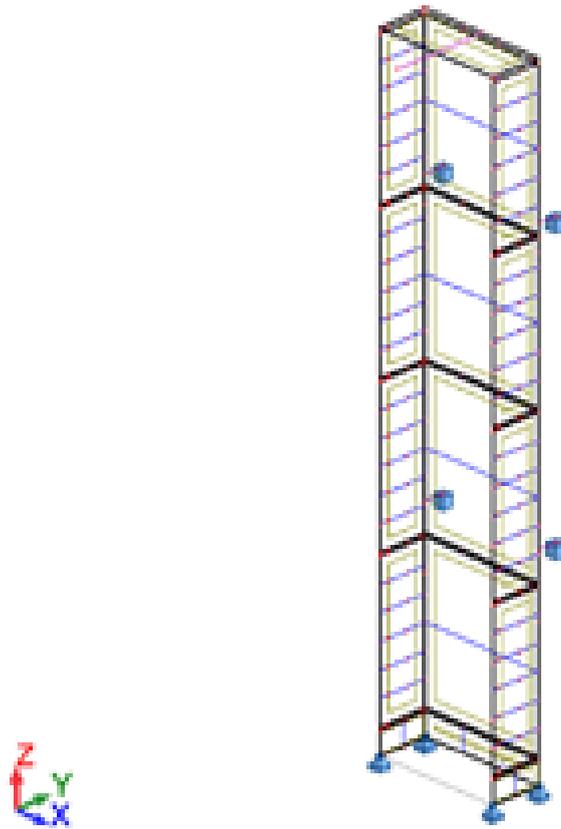
- The lower frame should be placed in its final position on a level surface with adequate load-bearing capacity (minimum surface requirements are specified later in this document).
- Anchor the frame to the ground using chemical anchors (minimum M12). Place the anchors in each hole in the base plates.
- Place subsequent frames on the bottom frame. After each frame is placed, screw it to the previous one with M16 class 8.8 bolts.
- After reaching the assembly height on the vertical element, the rear posts should be mounted to the vertical element first, before installing the next frame.
- Attach the frame with the support beam to the top of the structure and fasten it with screws.
- Attach the horizontal cladding panel to the top frame from above, fastening it all around.
- Proceed with the installation of the modules using a pulley attached to the support beam. Install the modules sequentially, starting with the lowest one.
- Perform finishing work consisting of installing cladding panels. The cladding panels can be installed simultaneously with the erection of the structure.

During installation, check the verticality of the structure. Make additional adjustments if necessary. Permissible deviations from the vertical are 15 mm over the entire height of the structure.

4.0. Values of forces transmitted by the wall to the structure

The values of all reactions presented in the following points are given in kN.

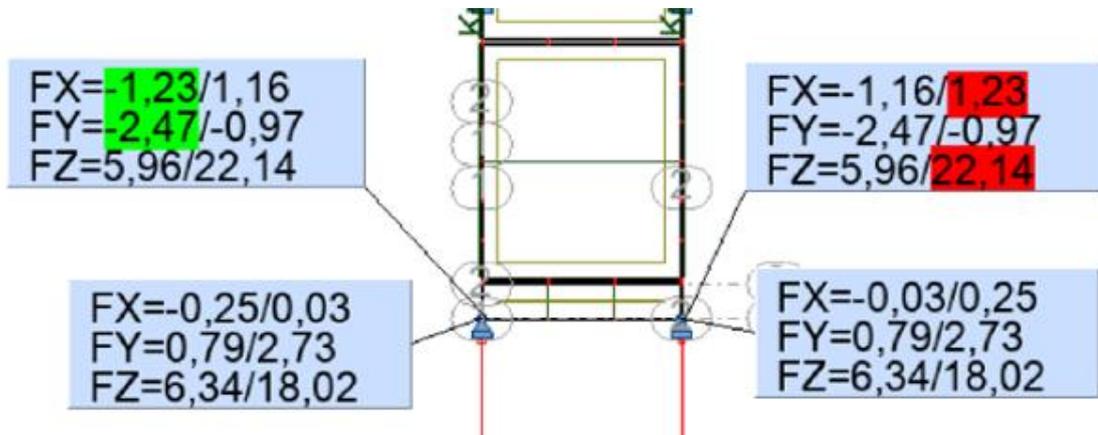
The structure with the global coordinate system is shown below.



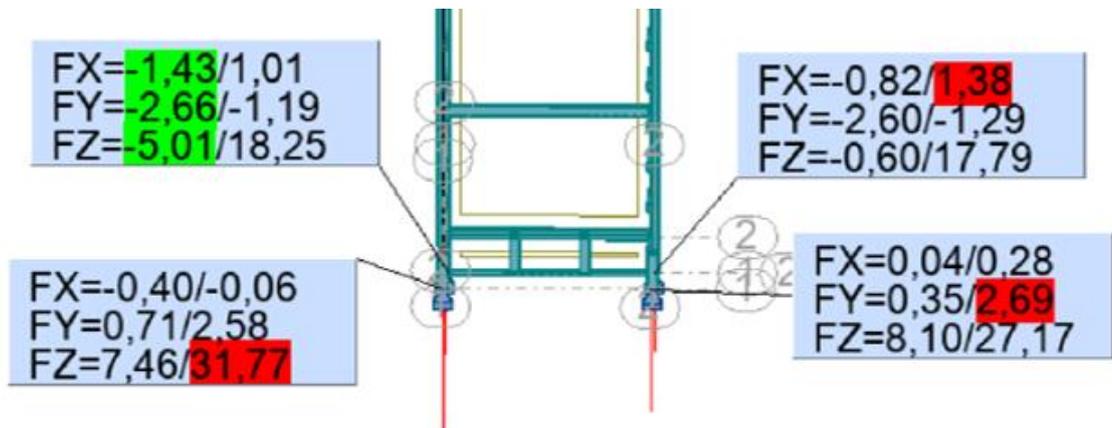
Positive values are consistent with the global coordinate system, while negative values are opposite to the axis of the global coordinate system.

4.1. Forces on the floor

For a rigid vertical substructure that prevents displacement (e.g., a massive wall)



For a vertical substructure that can move



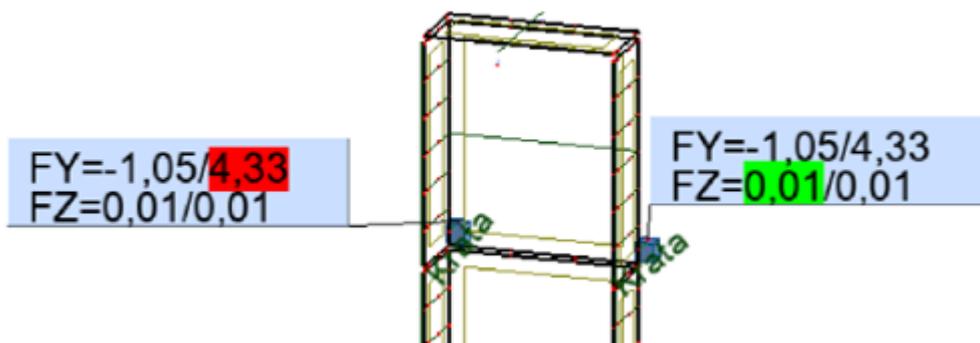
Positive forces Fz mean pressing against the ground.

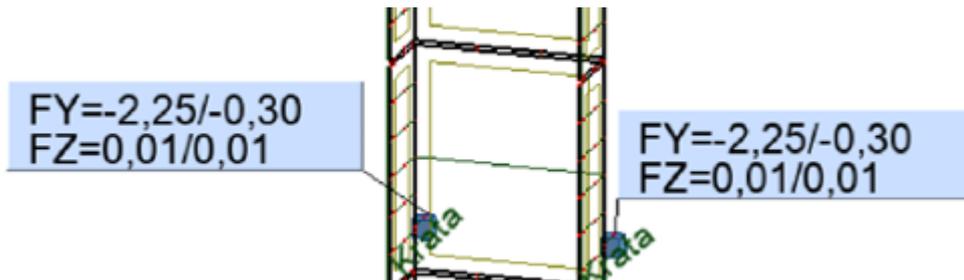
According to the above, the maximum concentrated design force on the floor is 31.77 kN. The force is transferred to the floor through a base plate with effective dimensions of 80 x 140 mm.

The stresses under the plate are: 0.50 kN/cm² (5 MPa)

4.2. Forces on the wall

The forces transmitted to the wall for the most unfavorable mounting option are presented below.





Positive forces F_y indicate pull-out.

The wall or structural element of the building must be able to transfer the set of forces as shown above.

5.0. Anchoring the structure

The wall installation method shown below is correct if all the requirements specified below are met. For other installation conditions, the customer shall provide an individual design for the structure installation method.

5.1. Bottom frame to the floor

For floors that meet the following requirements:

- concrete class min. C20/25
- minimum thickness of 20 cm
- floor leveling with a tolerance of up to 6 mm
- load-bearing capacity not less than that specified in point 4.1
- anchor distance from the edge of the concrete min. 50 mm

to anchor each foot of the structure, use a 12 mm diameter chemical anchor - R-KERII+R-STUDS-12160-88FL with an effective anchoring length of 120 mm. Detailed installation guidelines for the anchor are provided below.

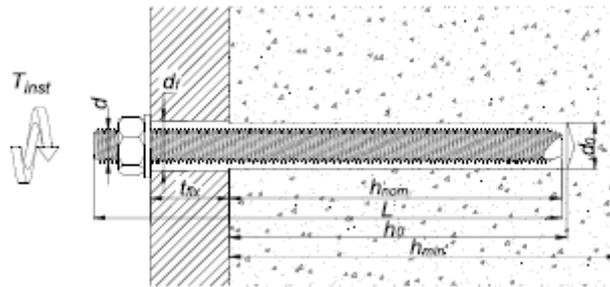
Load calculations

| | |
|-------------|-------|
| N | 6 kN |
| N_{sus} | 0 kN |
| M_x | 0 kNm |
| $M_{x,sus}$ | 0 kNm |
| M_y | 0 kNm |
| $M_{y,sus}$ | 0 kNm |
| V_x | 3 kN |
| V_y | 2 kN |
| M_z | 0 kNm |

sus – long-term loads

Installation data for R-KERII+R-STUDS-12160-88FL

| | | |
|---|------------|--------|
| Thread diameter | d | 12 mm |
| Substrate hole diameter | d_0 | 14 mm |
| Minimum substrate hole depth | h_0 | 125 mm |
| Nominal embedment depth | h_{nom} | 120 mm |
| Design minimum substrate thickness | h_{min} | 200 mm |
| Tightening torque | T_{inst} | 40 Nm |
| Anchor length | L | 160 mm |
| Fastened element thickness | t_{fix} | 8 mm |
| Fastened element hole diameter | d_f | 14 mm |
| Resin quantity per anchor (normal losses) | | 12 ml |



Installation can be performed using other system anchors with a load capacity not less than that specified above, which must be confirmed by calculation.

5.2. Upper frames to the wall

For walls meeting the following requirements:

- concrete class min. C20/25 (concrete element at the anchor location, e.g., beam or ring beam)
- min. thickness 20 cm
- load-bearing capacity not less than that specified in point 4.2
- distance between the anchor and the edge of the concrete: min. 100 mm
- minimum distance between anchors – 120 mm

to anchor the structure, use 4 chemical anchors with a diameter of 16 mm - R-KERII+R-STUDS-16160-88 with an effective anchoring length of 120 mm. Detailed installation guidelines for anchors are provided below.

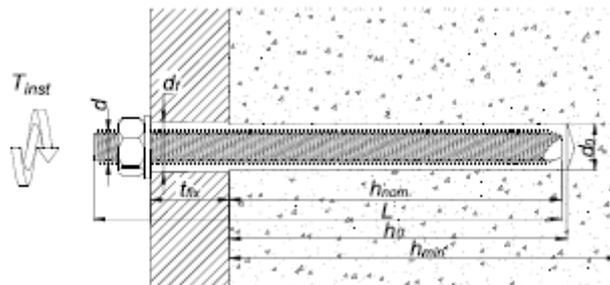
Load calculations

| | |
|-------------|---------|
| N | 4,33 kN |
| N_{sus} | 0 kN |
| M_x | 0 kNm |
| $M_{x,sus}$ | 0 kNm |
| M_y | 0 kNm |
| $M_{y,sus}$ | 0 kNm |
| V_x | 0 kN |
| V_y | 1 kN |
| M_z | 0 kNm |

sus – long-term loads

Installation data for R-KERII+R-STUDS-16160-88

| | | |
|---|------------|--------|
| Thread diameter | d | 16 mm |
| Substrate hole diameter | d_0 | 18 mm |
| Minimum substrate hole depth | h_0 | 125 mm |
| Nominal embedment depth | h_{nom} | 120 mm |
| Design minimum substrate thickness | h_{min} | 200 mm |
| Tightening torque | T_{inst} | 80 Nm |
| Anchor length | L | 160 mm |
| Fastened element thickness | t_{fix} | 10 mm |
| Fastened element hole diameter | d_f | 18 mm |
| Resin quantity per anchor (normal losses) | | 17 ml |



For installation on a steel structure, use M12 class 8.8 bolts instead of chemical anchors

For masonry walls, through-wall installation is recommended using 4 M12 class 8.8 bolts and a steel backing plate with dimensions of at least 30x30cm.

6.0. Customer responsibilities and guidelines

6.1. Installation of the structure

6.1.1. In the case of wall installation by Reclimb installers

- Submission of a statement signed by a person with unlimited building qualifications for the design of the construction and building industry, confirming that the floor in the facility and its structure to which the wall will be attached are capable of transferring the additional loads described in point 4.1 and in point 4.2. The statement shall also include the basic

technical parameters of the elements to which the wall is to be attached. A template for the statement is attached to the product documentation.

- Ensuring adequate installation space at the installation site.
- Enabling a site visit at the installation site before commencing installation work or providing an accurate and dimensioned plan of the facility. The plan must cover the entire route from the entrance of the building to the planned installation site.
- Enabling access to the installation site for the equipment necessary for the installation of the wall.
- Ensure that the floor is of sufficient strength along the access route and at the work site. Reclimb is not responsible for damage to the floor.
- Provide a room/covered area near the wall installation site for storing individual structural elements. The customer is responsible for all elements that have been delivered and stored in the location specified by them. For each delivery, the customer is required to sign a report containing a list of the delivered elements.
- Completing all necessary administrative procedures (e.g., notifying the relevant architectural and construction administration authority of the intention to build the wall, obtaining all necessary permits and opinions, if required).
- Other, in accordance with the contract

6.1.2. In the case of self-assembly by the customer

- Acceptance of wall elements delivered by Reclimb. Upon delivery, the Customer checks the completeness of the delivery in accordance with the delivery document and signs the acceptance report for the elements (a template of the report is attached to the product documentation).
- Proper storage and protection of stored elements. Wall assembly elements should be stored in a dry place (protected from weather conditions) at a positive temperature in the packaging in which they were delivered.
- Ensure the required load-bearing capacity of the structural elements of the building to which the wall will be attached.
- Completing all necessary administrative procedures (e.g., notifying the relevant architectural and construction administration authority of the intention to construct the wall, obtaining all necessary approvals and opinions, if required).
- Developing a design for anchoring the wall to the structure's elements by persons with the appropriate building qualifications, based on the guidelines contained in this document. If all the conditions specified in points 5.1 and 5.2 are met, the installation can be carried out in accordance with these points.
- Installation of the wall under the supervision of a person with the appropriate building qualifications.

- Follow the installation instructions and all guidelines contained in this document and other product documentation.
- Compliance with health and safety rules during installation.

Structure – designed by

Jacek Krzyśpiak, Eng.

building license no. WAM/0082/POOK/11

inż. Jacek Krzyśpiak
upr. bud. bez ograniczeń w specjalności
konstrukcyjno-budowlanej do kierowania
robotami budowlanymi nr WAM/0128/OWOK/07
oraz do projektowania nr WAM/0082/POOK/11

7.0. Designer's licenses and certificates

WARMIŃSKO-MAZURSKA
OKRĘGOWA IZBA INŻYNIERÓW BUDOWNICTWA
OKRĘGOWA KOMISJA KWALIFIKACYJNA
10-532 Olsztyn, Plac Konsulatu Polskiego 1



WAM/OKK/U/98/11

Olsztyn, dnia 12 grudnia 2011 r.

DECYZJA

Na podstawie art. 24 ust.1 pkt 2 ustawy z dnia 15 grudnia 2000 r. o samorządach zawodowych architektów, inżynierów budownictwa oraz urbanistów /Dz. U. z 2001 r. Nr 5 poz. 42, ze zm./, w związku z art. 5 ustawy z dnia 28 lipca 2005 r. o zmianie ustawy-Prawo budowlane oraz o zmianie niektórych innych ustaw /Dz. U. z 2005 r. Nr 163 poz. 1364/, art. 12 ust. 3, art. 13 ust. 1 pkt 1, art. 14 ust. 1 pkt 2 ustawy z dnia 07 lipca 1994 r. Prawo budowlane /t.j. Dz. U. z 2003 r. Nr 207, poz. 2016 ze zm./, § 3 ust. 1, § 12 pkt 1 i § 17 ust. 1 pkt 1 rozporządzenia Ministra Infrastruktury z dnia 18 maja 2005 r. w sprawie samodzielnych funkcji technicznych w budownictwie /Dz. U. z 2005 r. Nr 96 poz. 817/ oraz art. 104 Kodeksu postępowania administracyjnego /t.j. Dz.U. z 2000 r. Nr 98, poz.1071 ze zm./

Okręgowa Komisja Kwalifikacyjna
nadaje

Panu JACKOWI HUBERTOWI KRZYŚPIAKOWI

inżynierowi budownictwa
ur. dnia 21 stycznia 1980 r. w Ostrołęce

UPRAWNIENIA BUDOWLANE

Nr ewid. WAM/ 0082 /POOK/11

DO PROJEKTOWANIA
BEZ OGRANICZEŃ
W SPECJALNOŚCI KONSTRUKCYJNO-BUDOWLANEJ

UZASADNIENIE

W związku z uwzględnieniem w całości żądania strony, na podstawie art. 107 § 4 K.p.a. odstępuje się od uzasadnienia decyzji. Zakres nadanych uprawnień budowlanych wskazano na odwrocie decyzji.

Pouczenie :

1. Zgodnie z art. 12 ust. 7 w/w ustawy Prawo budowlane – podstawę do wykonywania samodzielnych funkcji technicznych w budownictwie stanowi wpis, w drodze decyzji, do centralnego rejestru Głównego Inspektora Nadzoru Budowlanego oraz wpis na listę członków właściwej izby samorządu zawodowego, potwierdzony zaświadczeniem wydanym przez tę izbę, z określonym w nim terminem ważności.
2. Od decyzji niniejszej służy odwołanie do Krajowej Komisji Kwalifikacyjnej Polskiej Izby Inżynierów Budownictwa w Warszawie, za pośrednictwem Okręgowej Komisji Kwalifikacyjnej Warmińsko-Mazurskiej Okręgowej Izby Inżynierów Budownictwa w Olsztynie, w terminie 14 dni od dnia jej doręczenia.

**Skład orzekający OKK:**

1. mgr inż. Zdzisław Binerowski
2. inż. Janusz Palmowski
3. mgr inż. Elżbieta Lasmanowicz



Zaświadczenie
o numerze weryfikacyjnym:
WAM-522-1L6-NXM *

Pan Jacek Hubert Krzyśpiak o numerze ewidencyjnym WAM/BO/0031/08
adres zamieszkania ul. Karola Darwina 9 A / 75, 03-484 Warszawa
jest członkiem Warmińsko-Mazurskiej Okręgowej Izby Inżynierów Budownictwa i posiada
wymagane ubezpieczenie od odpowiedzialności cywilnej.
Niniejsze zaświadczenie jest ważne od 2025-01-01 do 2025-12-31.

Zaświadczenie zostało wygenerowane elektronicznie i opatrzone bezpiecznym podpisem elektronicznym
weryfikowanym przy pomocy ważnego kwalifikowanego certyfikatu w dniu 2024-12-16 roku przez:

Jarosław Kukliński, Przewodniczący Rady Warmińsko-Mazurskiej Okręgowej Izby Inżynierów Budownictwa.

Zgodnie z art. 78¹ K.c.

§ 1. Do zachowania elektronicznej formy czynności prawnej wystarczy złożenie oświadczenia woli w postaci elektronicznej i opatrzenie go kwalifikowanym podpisem elektronicznym.

§ 2. Oświadczenie woli złożone w formie elektronicznej jest równoważne z oświadczeniem woli złożonym w formie pisemnej.

* Weryfikację poprawności danych w niniejszym zaświadczeniu można sprawdzić za pomocą numeru weryfikacyjnego zaświadczenia na stronie Polskiej Izby Inżynierów Budownictwa www.piib.org.pl lub kontaktując się z biurem właściwej Okręgowej Izby Inżynierów Budownictwa.

