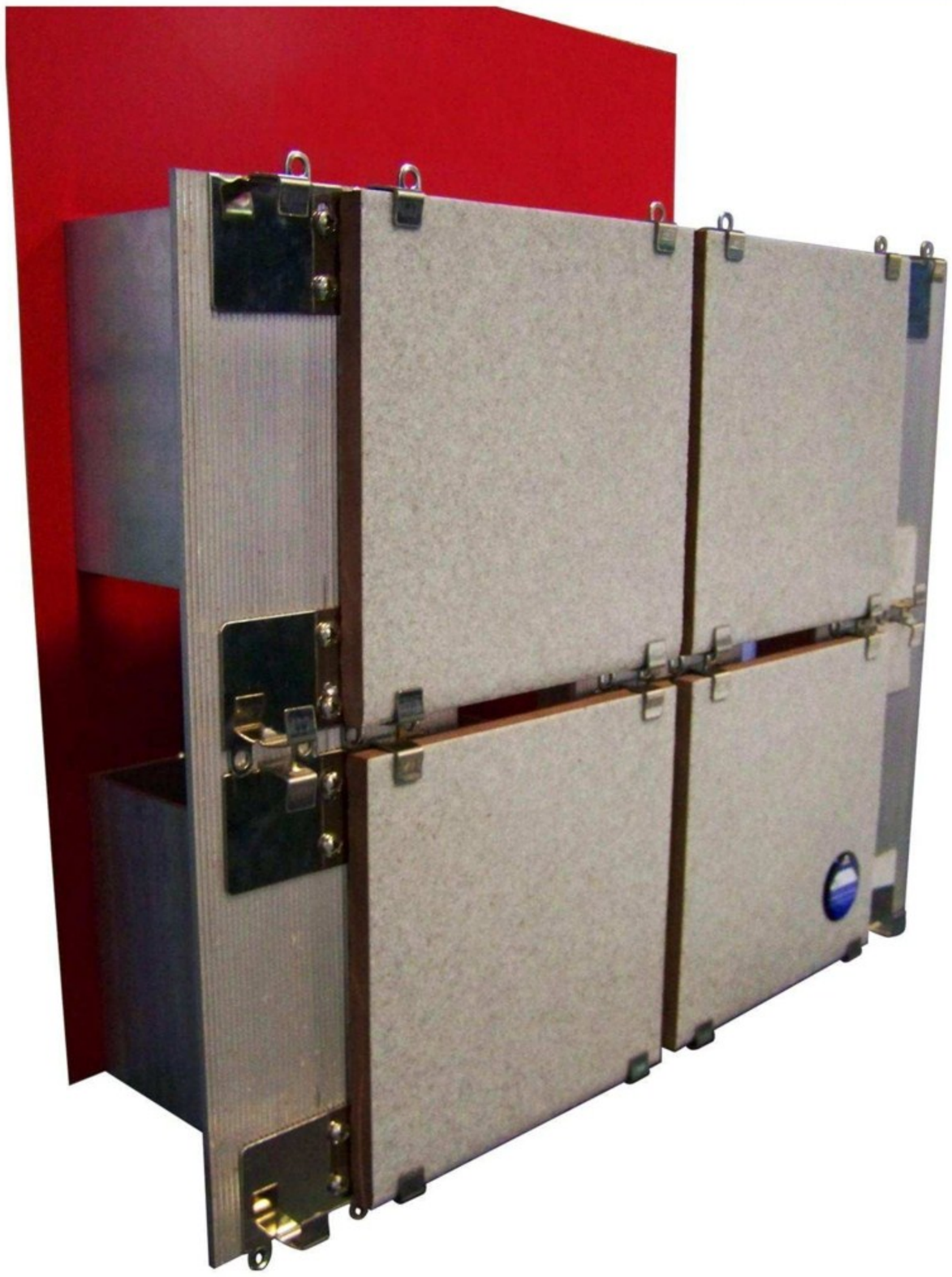
TEHNOMARKET TMGK 11

TEHNOMARKET

Sistem aluminijumskih profila
za podkonstrukciju ventilirane fasade
obložene granitnom keramikom

Aluminium profiles system
for subconstruction for ventilated facades
claded with granite ceramic



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Sistem TEHNOMARKET TMGK 11 je grupa specijalno konstruisanih profila za izradu podkonstrukcije za nošenje granitne keramike.
Profili iz sistema TEHNOMARKET TMGK 11 se dobijaju procesom ekstruzije aluminijuma. Kao sirovina koriste se legure AA6063 I AA6060 (DIN standard AlMgSi 0.5).

Sistem čine osnovni noseći vertikalni profili T 100x60x3 mm ili T 100x60x2 mm u zavisnosti od predpostavljenog statičkog opterećenja.

Vertikale su raspoređene modularno na rastojanju od 600 mm ili drugačije u zavisnosti od konkretnog projekta. Spoj vertikale sa konstrukcijom objekta ostvaren je preko aluminijumskog standardnog i podesivog ankera L40x120x3 mm podesivog u svim osama. Ankeri su konstruisani tako da se mogu koristiti pri rastojanjima između zida i spoljne ravni keramike od 60 do 170 mm.

Veza između vertikale i ankera kao i ostale veze na podkonstrukciji ostvaruju se samourezujućim vijcima ili pop zakivcima od inoksa.

Granitna keramika se kači na već ugrađenu podkonstrukciju pomoću prihvatnih ploča od inoksa sa vidljivim ili nevidljivim tačkastim spojnicama. Vidljivi deo ploča prema zahtevu naručioca procesom elektrostatske pulverzacije može se plastificirati u boji po RAL ton karti.

Radi stabilnosti ugrađenih ploča na podkonstrukciji kao i neutralisanja dejstva mikrovibracija, između keramike i prihvatne ploče tačkasto se nanosi neutralni silikon ili opciono obostrano samolepljiva traka tipa Norton, Scoch, Butyl ili slična.

Ispitivanje Sistema TEHNOMARKET TMGK 11 izvršeno je na Institutu za ispitivanje materijala Republike Srbije, a statički proračun na Institutu Građevinskog fakulteta u Beogradu.

TEHNOMARKET TMGK 11 is full set of aluminium profiles and accessories for substructure for Ceramic facades instalation. Extruded profiles are of AA6063 or AA6060 primary aluminium alloy. TEHNOMARKET TMGK 11 exposed fixing system is achived by ceramic plates to the load-bearing structure with stainless steel hooks.

TEHNOMARKET TMGK 11 consist of:

- Aluminijum T shaped profiles: T100x60x3 mm or T100x60x2 mm as a vertikal profiles
- Aluminium L shaped Anchors: L40x120x3 mm
- Different type of clamps (centre, side, side staring, centre staring)
- Stainless Steel Rivets or selfthreading Bolts
- Expansion Bolt

The complete system for substructure TEHNOMARKET TMGK 11 is certified by IMS Institute, Belgrade and Static's by Faculty of civil Engineering, Belgrade.

Izvod iz projektnog zadatka za statički proračun

TEHNIČKI OPIS UZ GLAVNI PROJEKAT PODKONSTRUKCIJE
za nošenje ventilirajuće fasade sa oblogom od veštačkog kamena

Projektnim zadatkom je zahtevano projektovanje aluminijumske podkonstrukcije za nošenje ploča od veštačkog kamena tipa „MARAZZI" uz primenu tipskih elemenata sistema „TEHNOMARKET TMGK 11" proizvodnje „Tehnomarket" Pančevo.

Kao poseban prilog zahtevan je predlog programa ispitivanja elemenata sistema u cilju formiranja atesta za isti. Analizom objekta, lokacije, i arhitektonskih podloga došlo se do tipske situacije na objektu za koju je izvršena statička analiza sa dokazom napona i deformacija. Zbog specifičnosti situacije u smislu tehničkih propisa, u dogovoru sa Investitorom, urađeno je sledeće:

· Osnovno opterećenje vetrom urađeno je po SNIP-u
· Lokalni koeficijenti oblika su uzeti prema JUS-u
· Dokazi napona i deformacija sprovedeni su prema Evrokodu 9

Predmetni sistem podkonstrukcije za nošenje fasada od veštačkog kamena se satoji od vertikalnih aluminiumskih nosača „T" preseka, fiksnog i pridržavajućeg anker nosača od raznokrakog aluminijumskog „L" profila, kao i posebnog sklopa - „kopče" - preko koje se ploče pričvršćuju za podkonstrukciju. Sistem je predviđen tako da se vertikalni nosači - „šine" - postavljaju u vertikalne fuge fasade u dužinama do 6,0 m. Na gornjem kraju ili pri vrhu se postavlja fiksni oslonac. O fiksni oslonac je okačena ukupna težina fasade koja leži na jednom nosaču. Nosač je po visini za podlogu (armiranobetonski zid) pridržan, za dejstva upravna na površinu fasade, u četvrtinama dužine odnosno na rastojanjima ne manjim od 1,5 m. Fiksni i pridržavajuči ankerni sklop se razlikuju po dimnzijama i broju ekspandirajućih ankera sa kojima su fiksirani za podlogu - fiksni ankerni sklop je veće visine i ima dva ekspandirajuća ankera dok je pridržavajući anker manje visine i pričvršćen je sa samo jednim ekspamdirajućim ankerom. Pri analizi je pridržavajući anker tretiran bez krutosti za vertikalno opterećenje ali u stvarnosti on ima izvesnu krutost - kako u spoju sa zidom tako i u spoju sa „šinom" ali je ona znatno manja od krutosti fiksnog oslonca pa se rešenje smatra prihvatljivim (mada se ovaj problem može lako dovesti do „idelanog" stanja formiranjem ovalnih rupa na svim pridržavajućim ankerima).

Zaključak

Za predmetni objekat visine oko 60,0 m koji se oblaže fasadnom oblogom od granitne keramike tipa „MARAZZI" u pločama rastera 600/600 mm:
podkonstrukcija sistema „TEHNOMARKET TMGK 11" proizvodnje „Tehnomarket" Pančevo zadovoljava sve projektne uslove pri razmaku fiksnih oslonaca od max 6,0 m i razmaku pridržavajučih oslonaca na max 1,5 m.

Beograd, april 2006.

Sastavio
Mr Boris Gligić, dipl.građ.inž.

TEHNOMARKET TMGK 11

Lista profila / Profile list

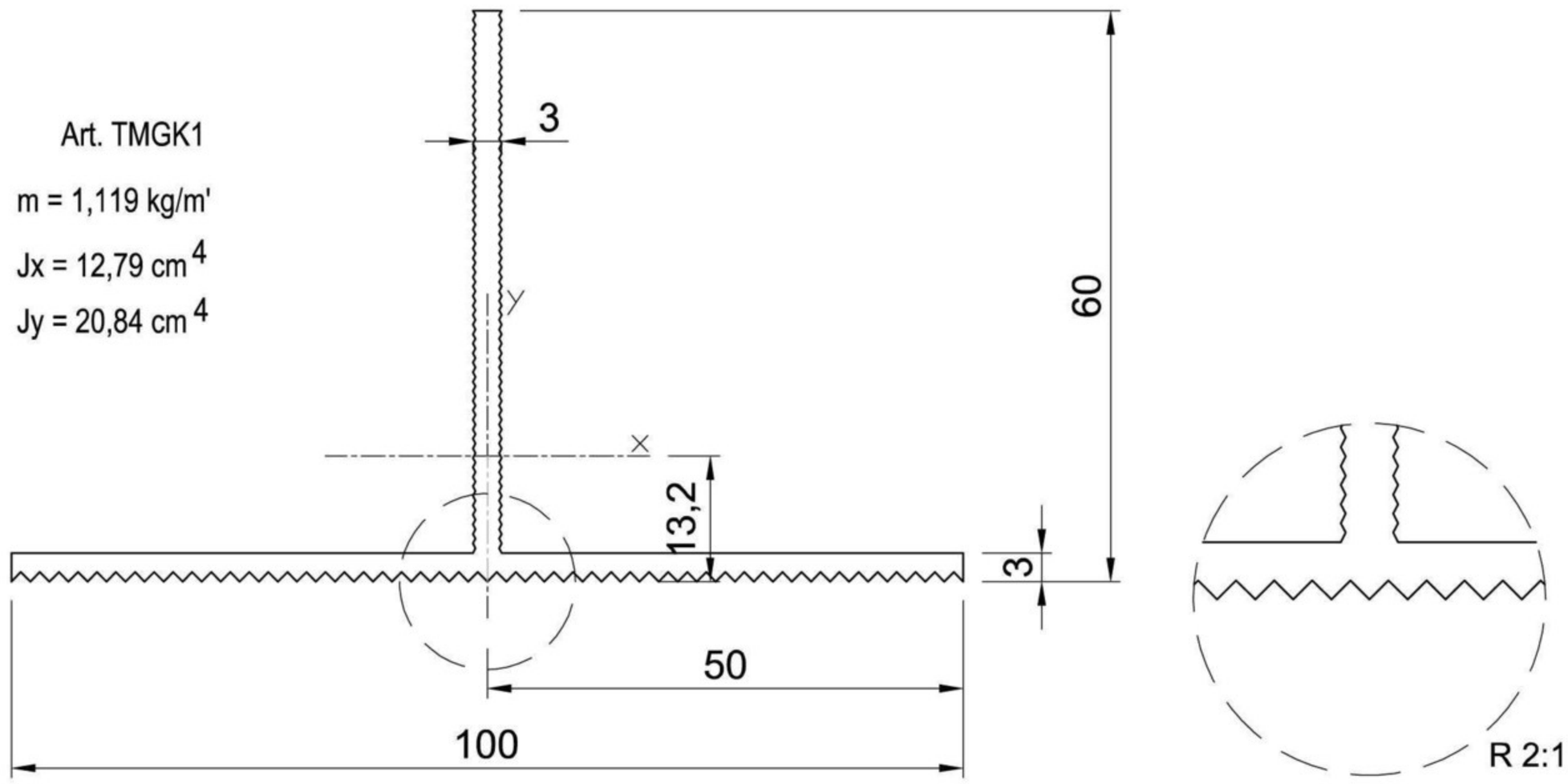
R 1:1

Art. TMGK1

m = 1,119 kg/m'

Jx = 12,79 cm^4

Jy = 20,84 cm^4

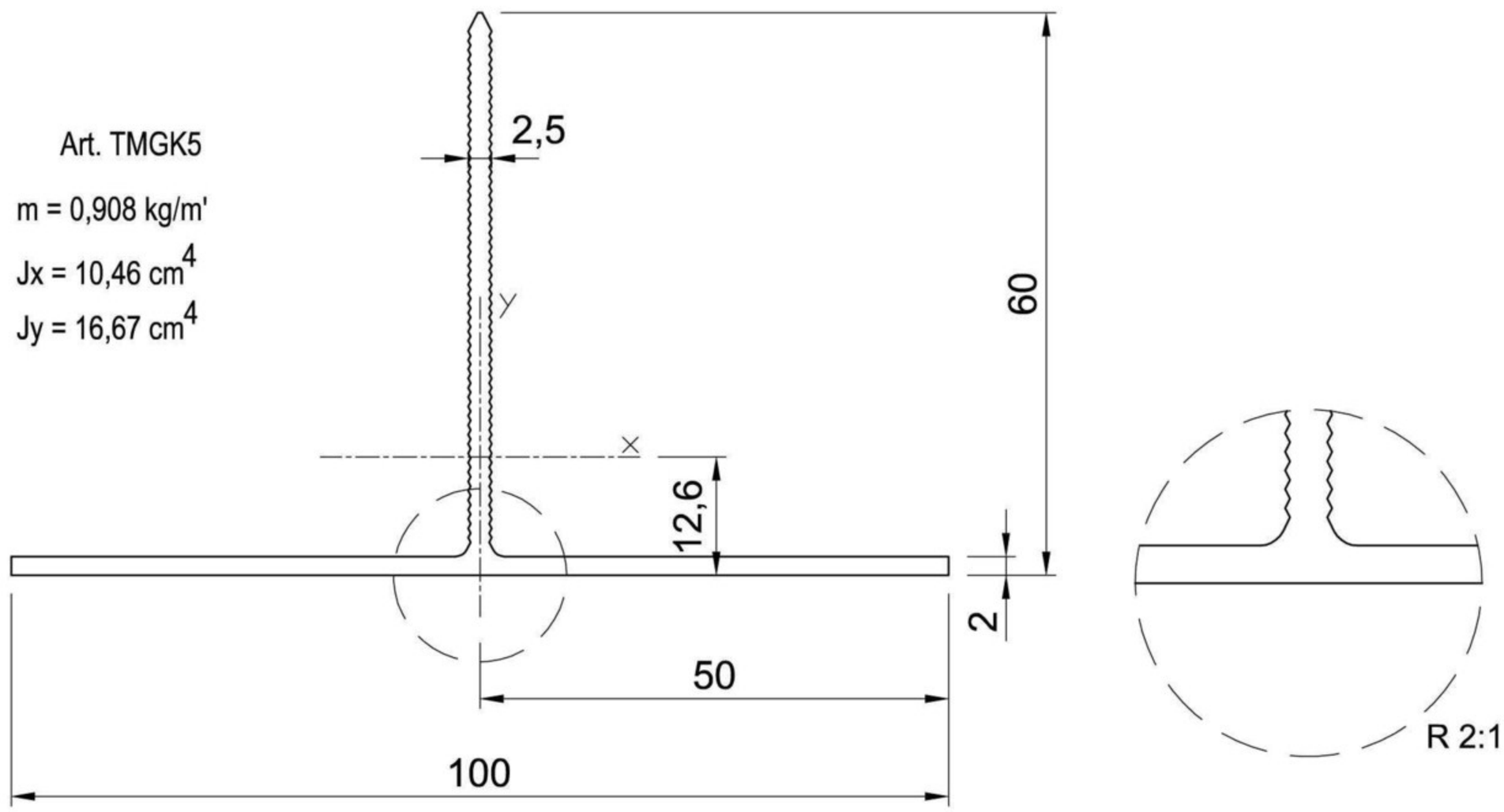


Art. TMGK5

m = 0,908 kg/m'

Jx = 10,46 cm^4

Jy = 16,67 cm^4

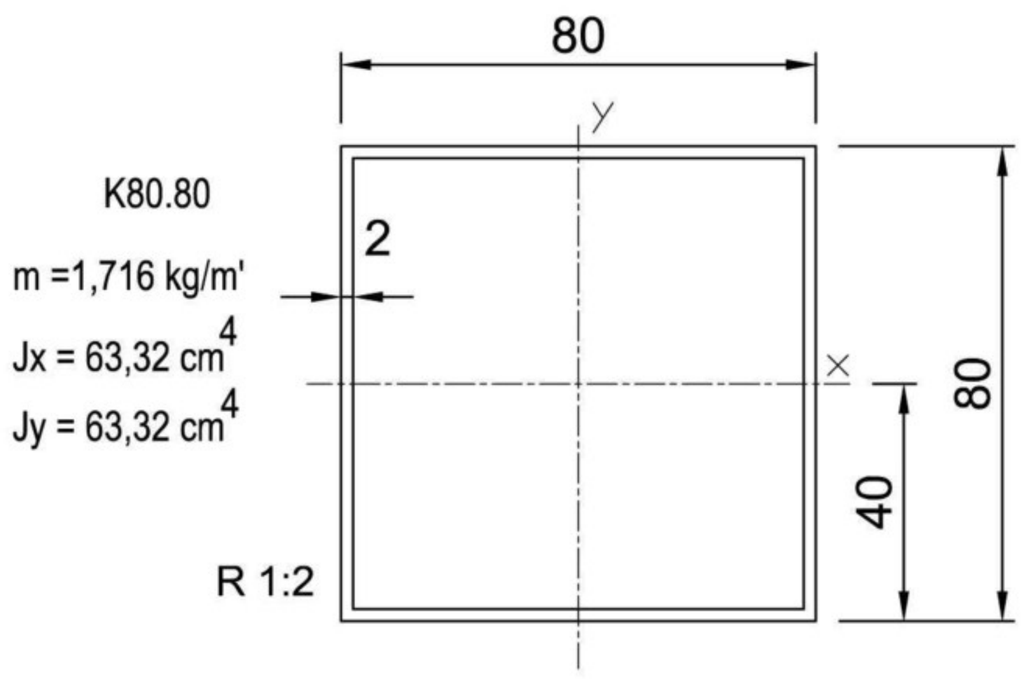


K80.80

m =1,716 kg/m'

Jx = 63,32 cm^4

Jy = 63,32 cm^4

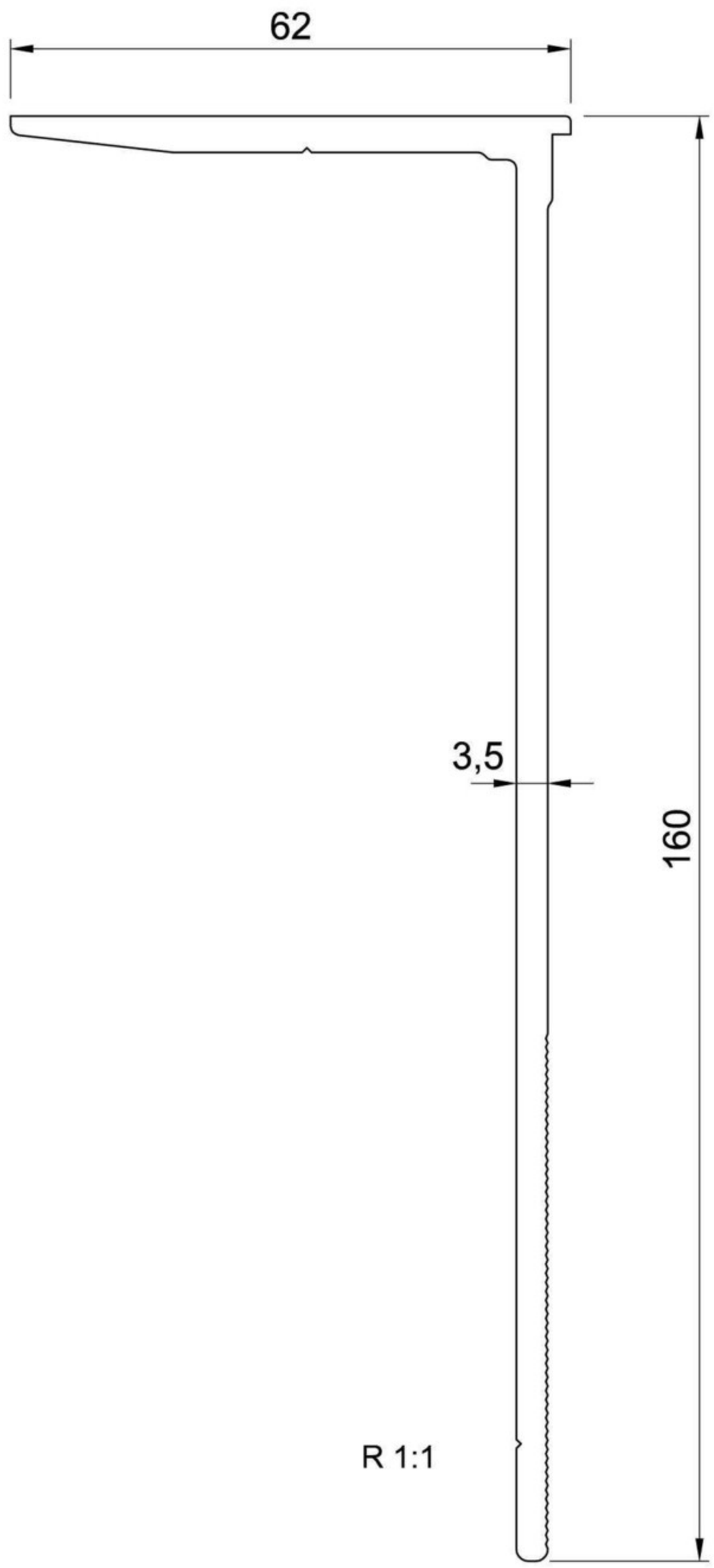


R 1:2

R 1:2

Za izradu ankera ekstrudirani profil : TMGK3

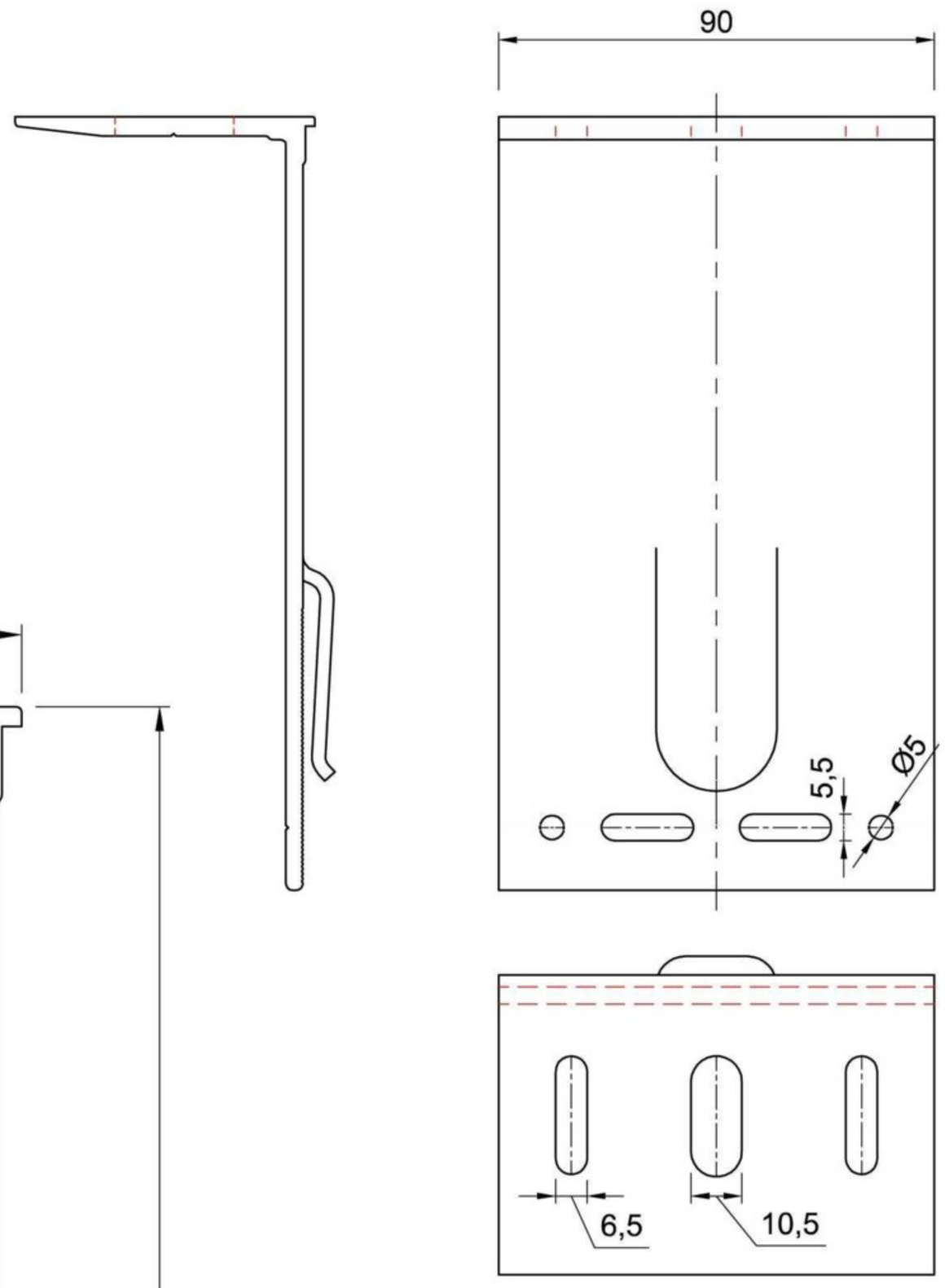
m=2,115 kg/m'



R 1:1

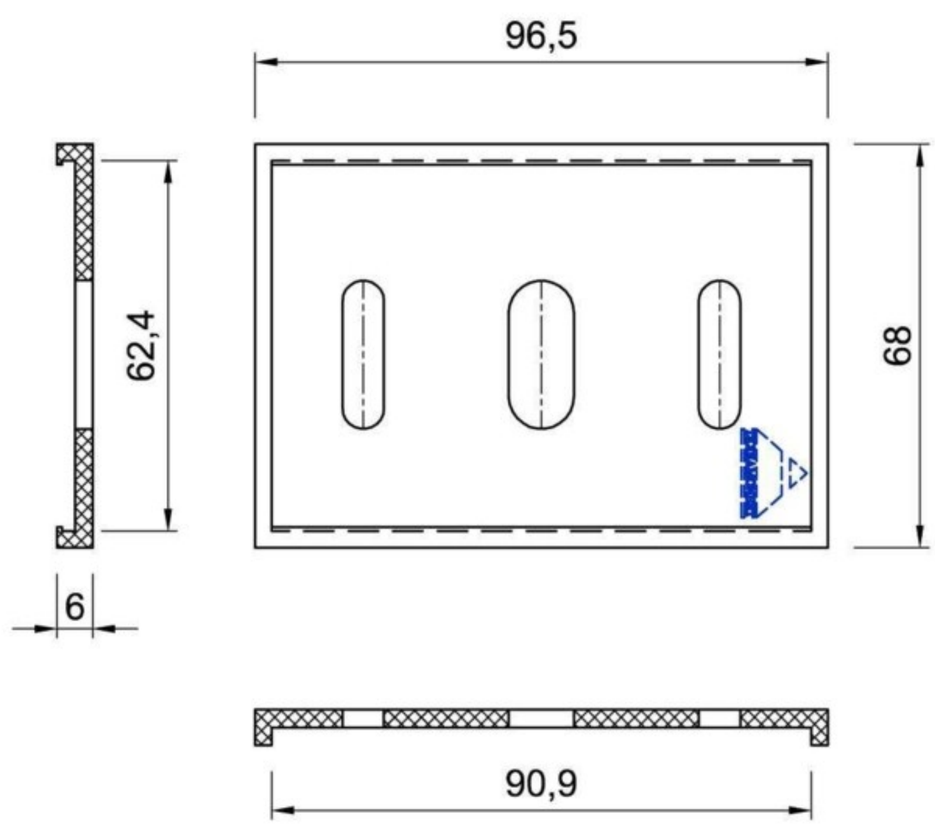
Al anker

art TMGKA6

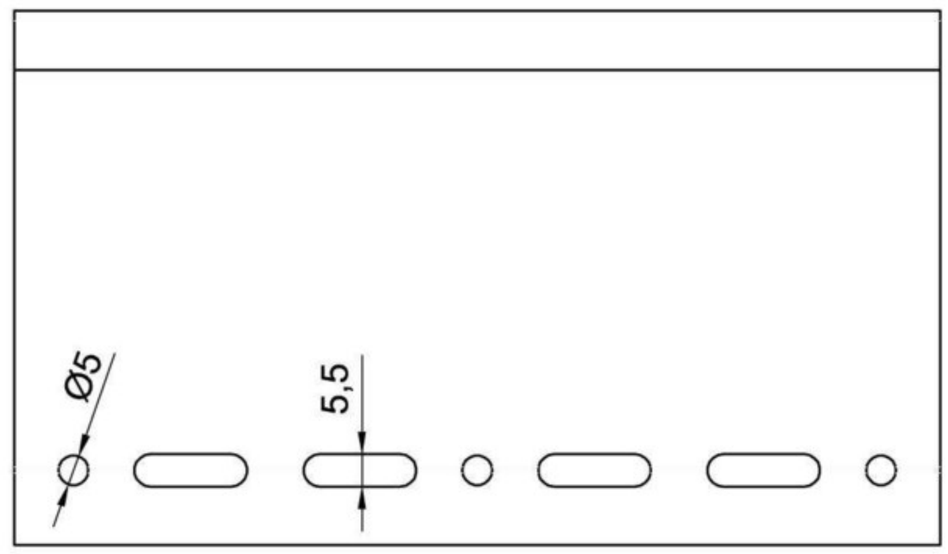


PA podloška

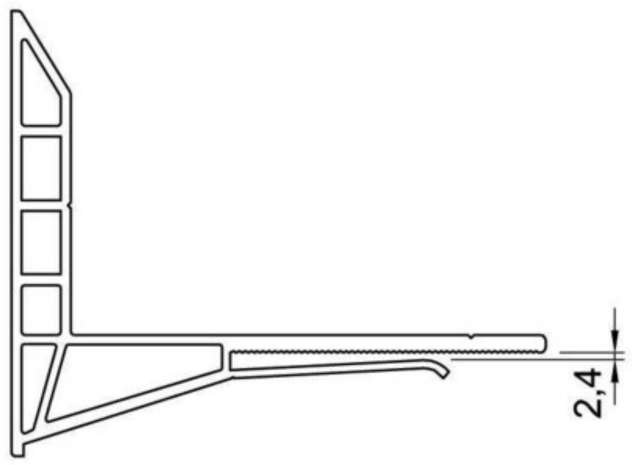
art TMGKP1

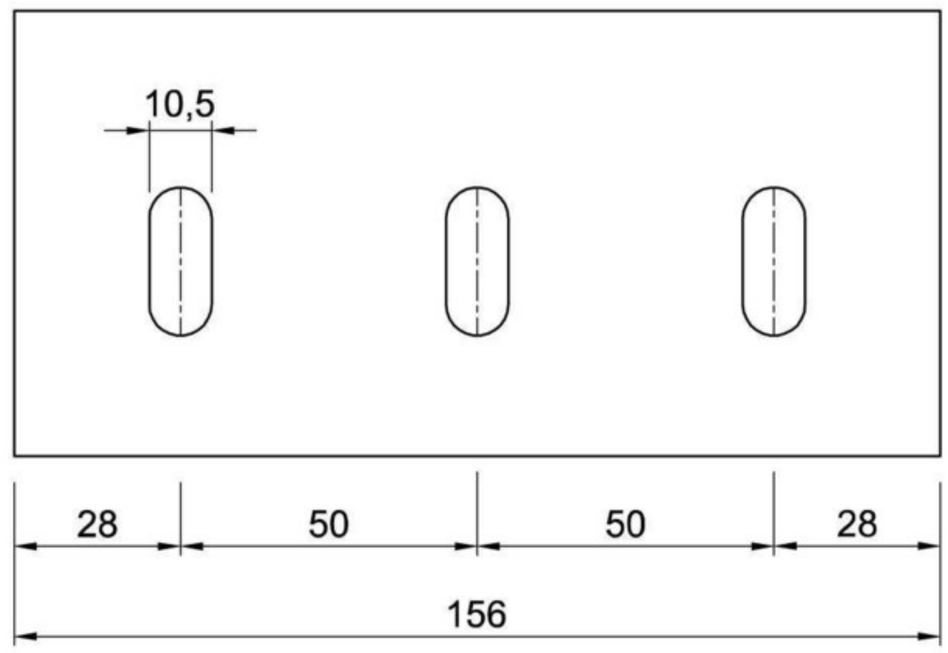


R 1:2

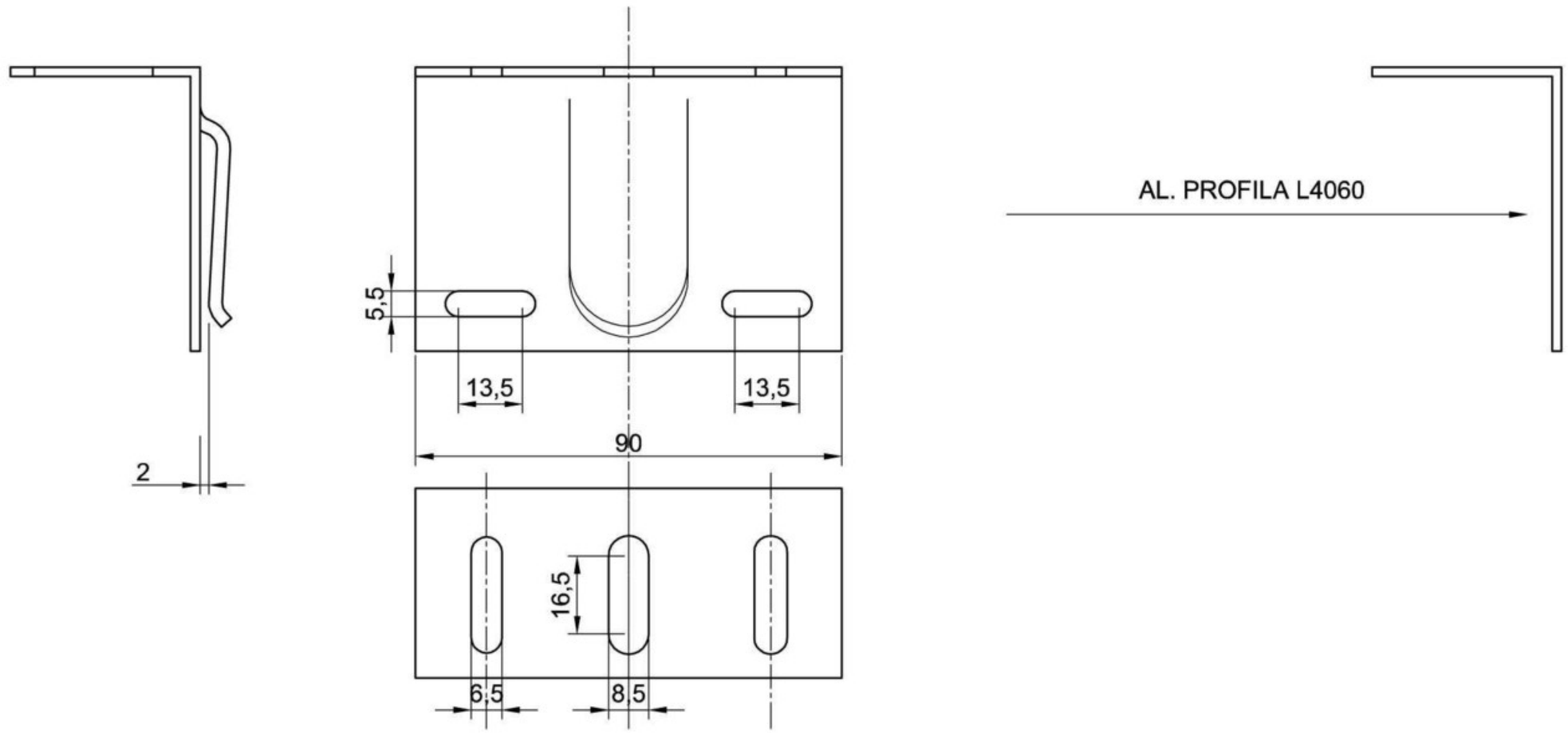


Al anker
art TMGKA7

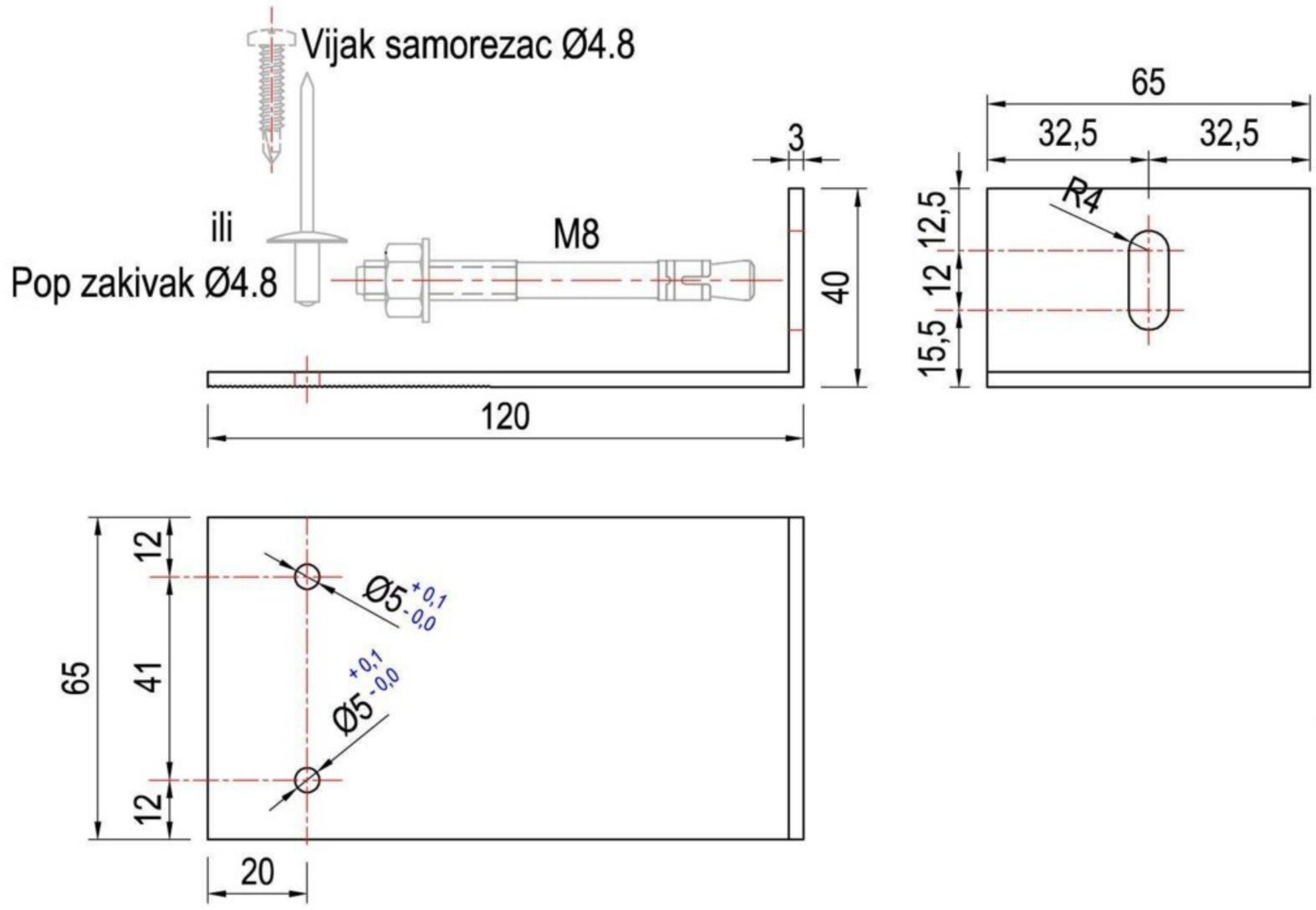




Al anker
art TMGKA8

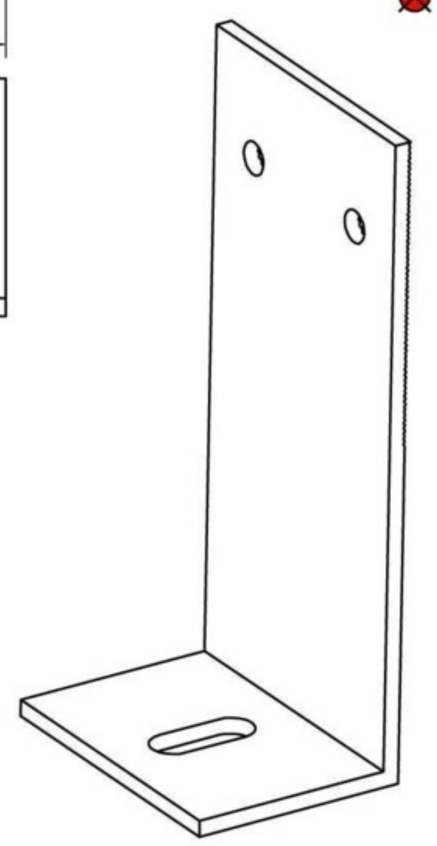


R 1:2

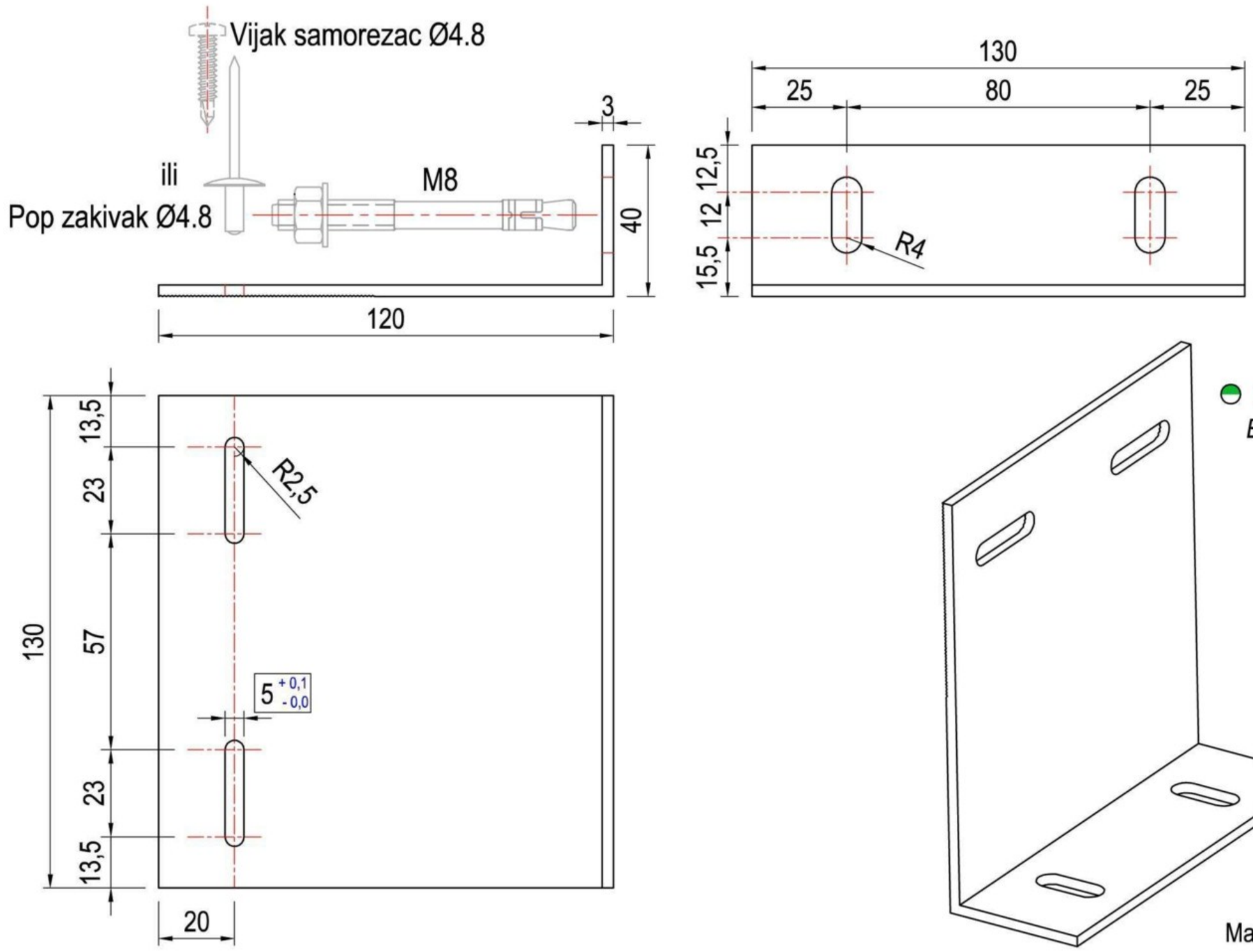


Art. TMGKA1

Fiksni anker
Fixed anchor

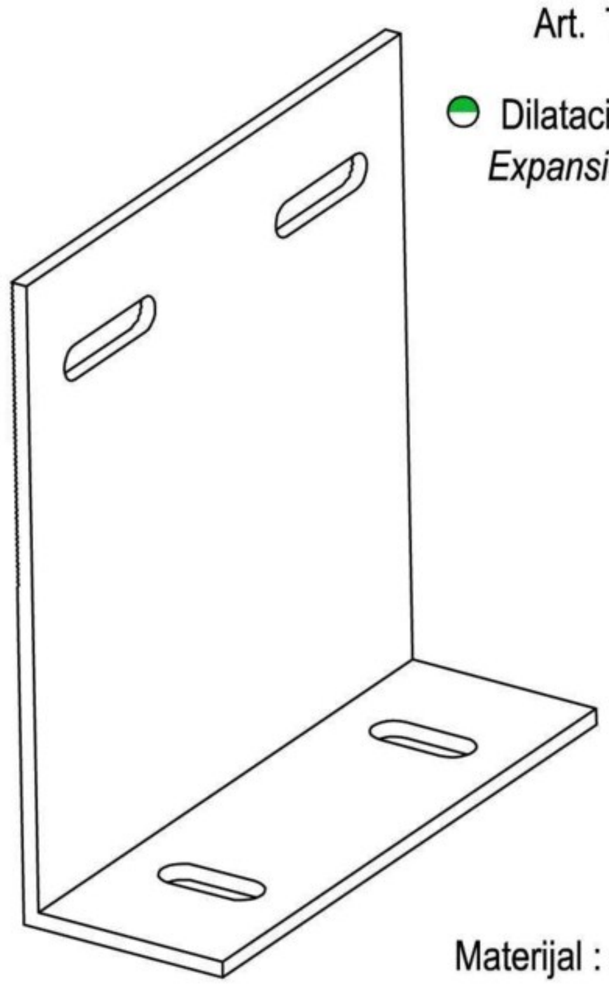


Materijal : Al



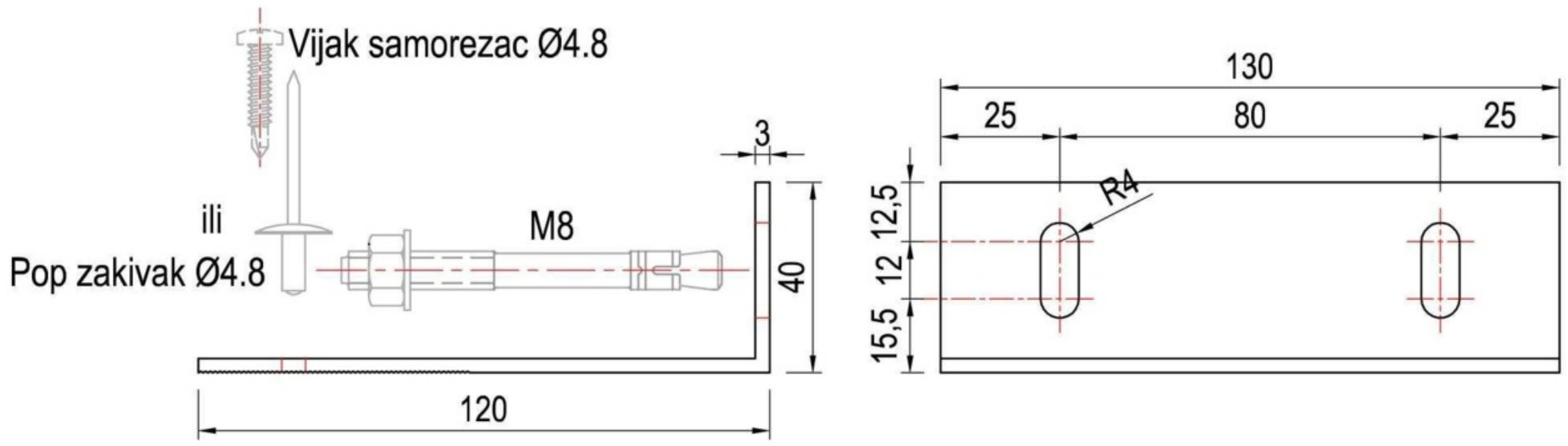
Art. TMGKA2

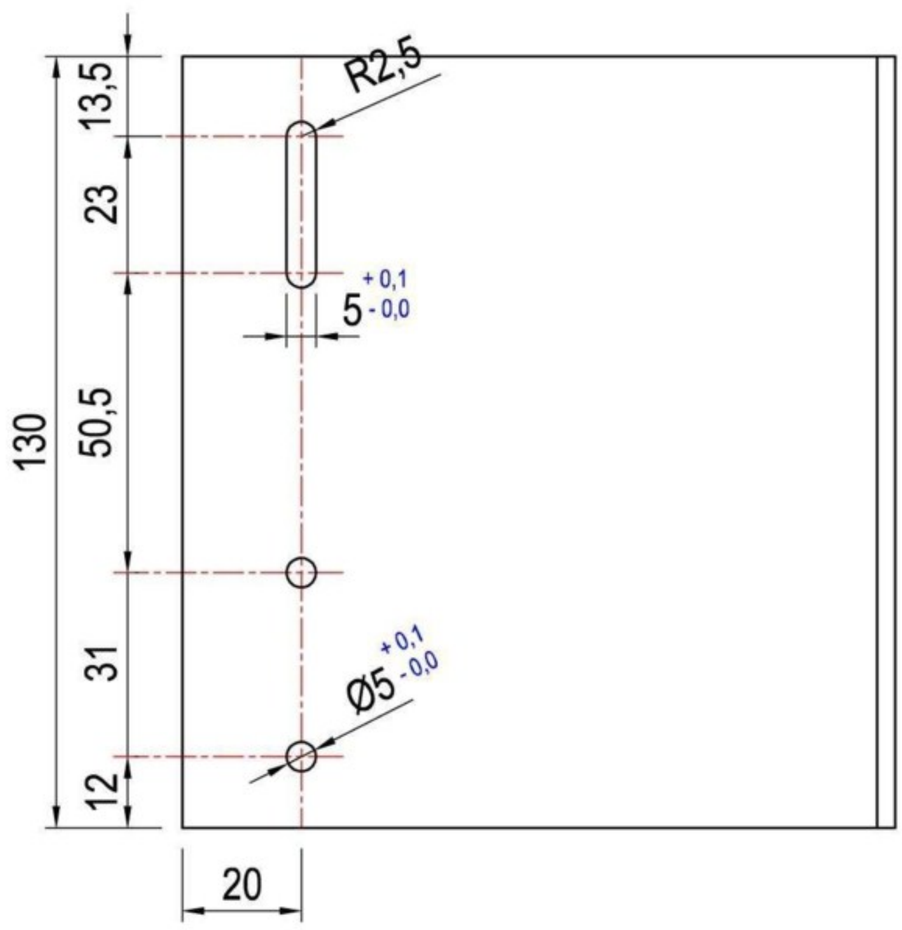
Dilatacioni anker
Expansion anchor

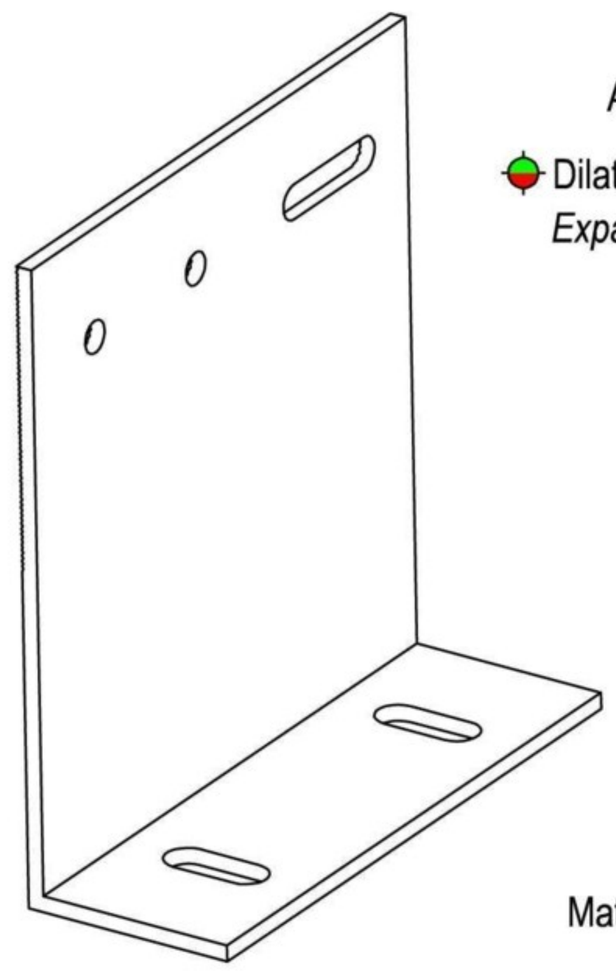


Materijal : Al

R 1:2



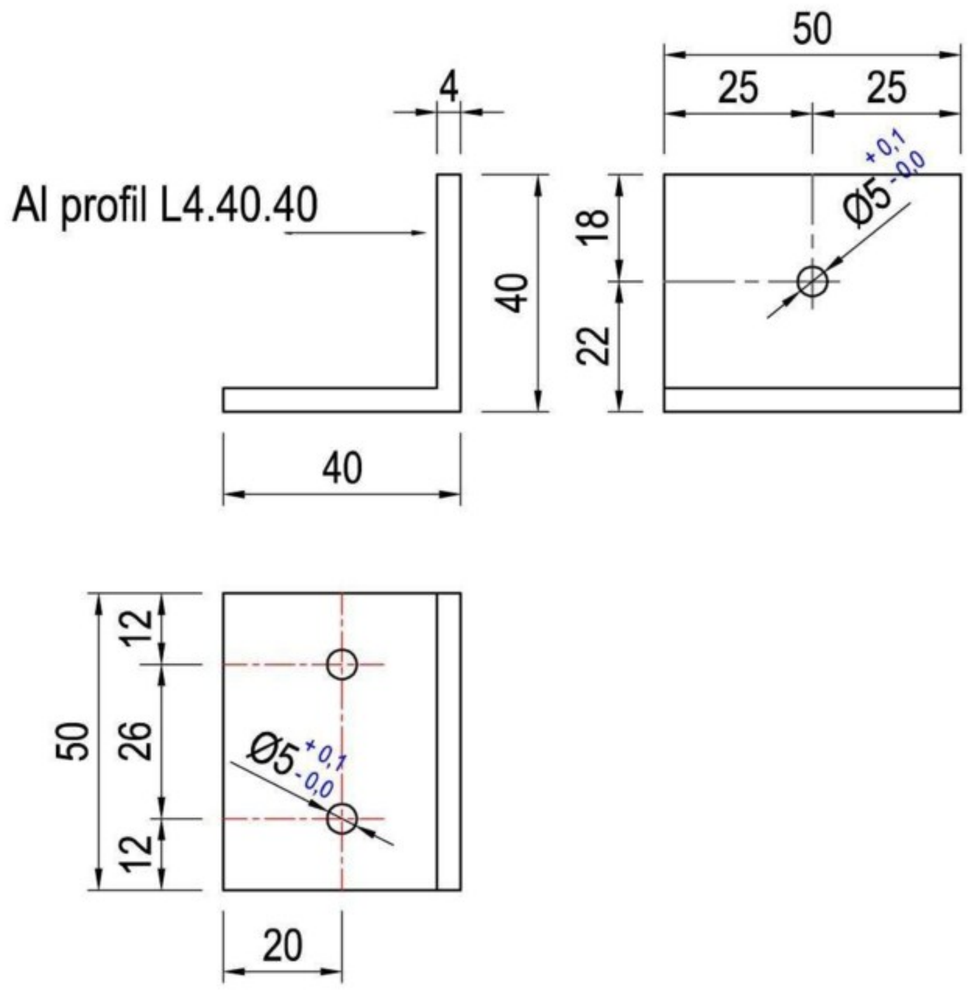


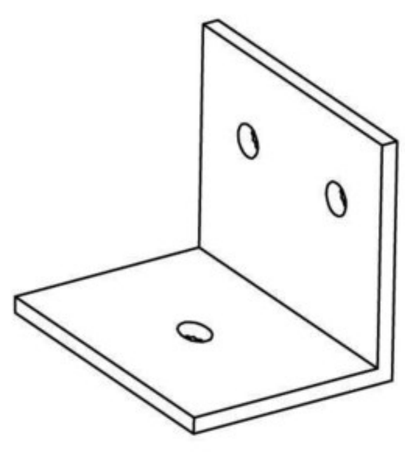


Art TMGKA3

Dilataciono - fiksni anker
Expansion-Fixed anchor

Materijal : Al



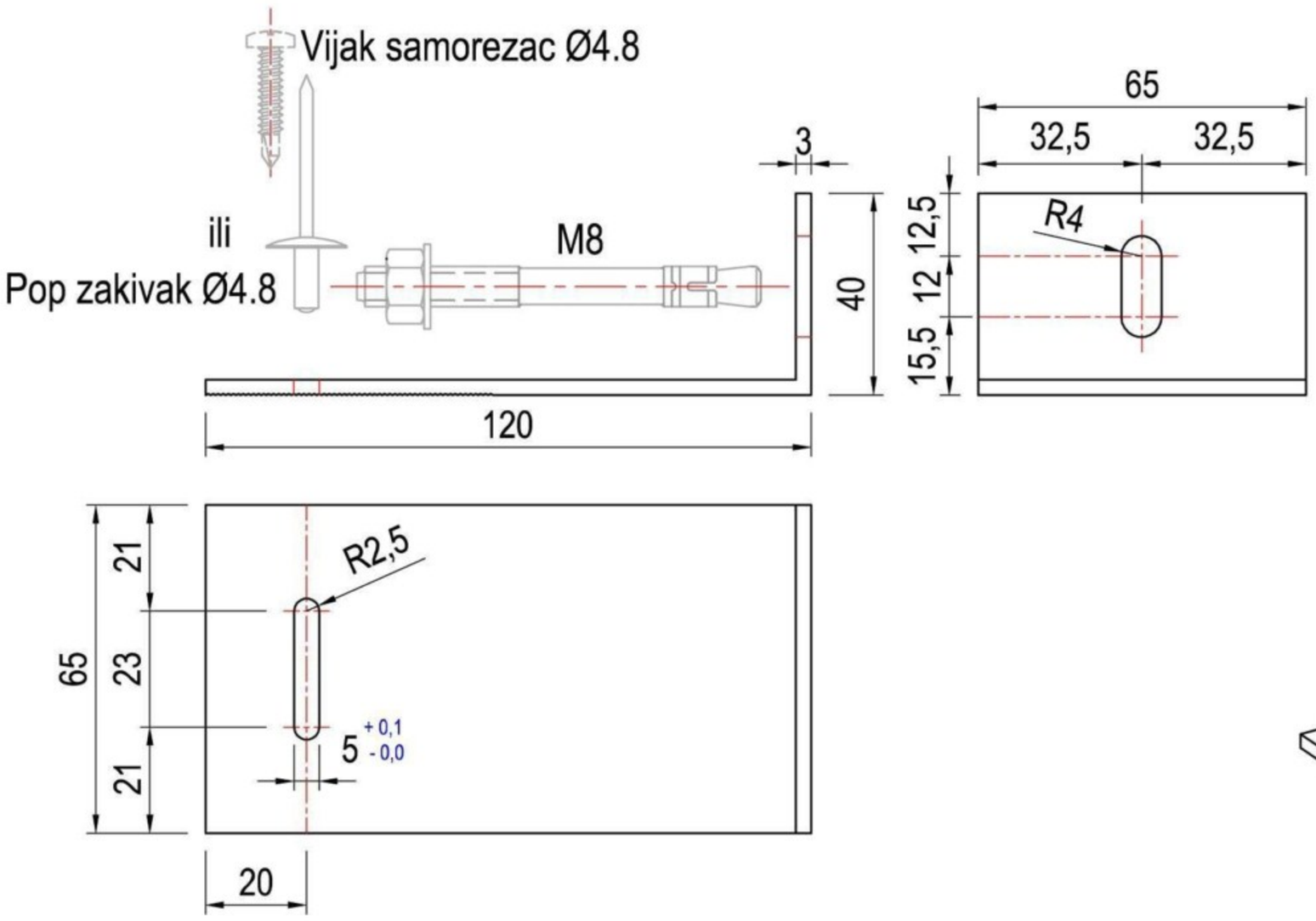


Art TMGKA4

Fiksni anker
Fixed anchor

Materijal : Al

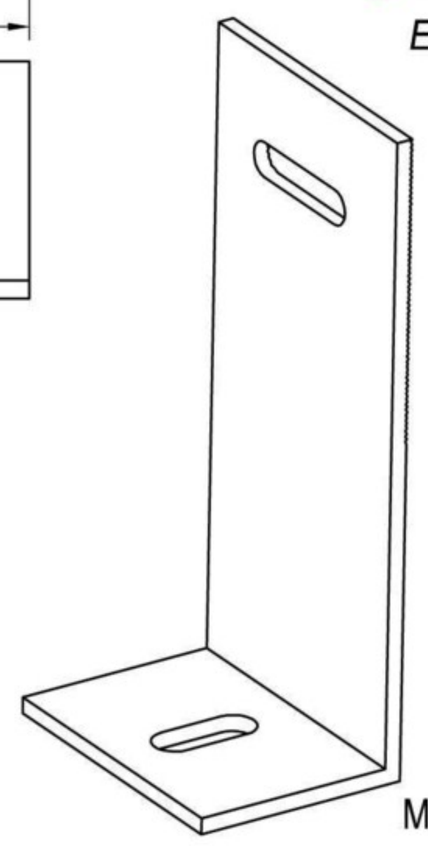
R 1:2



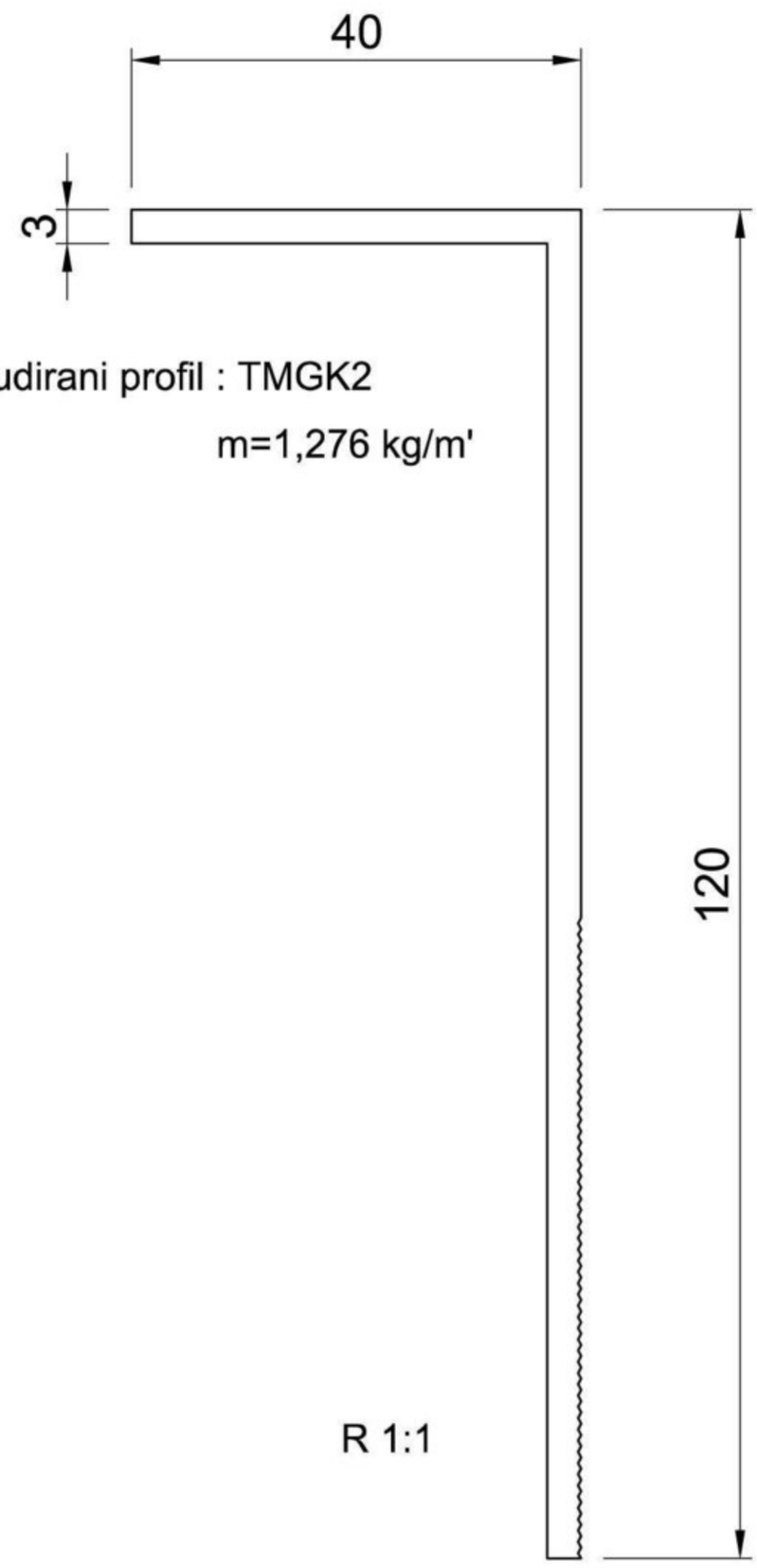
Art TMGKA5

Dilatacionii anker

Expansion anchor



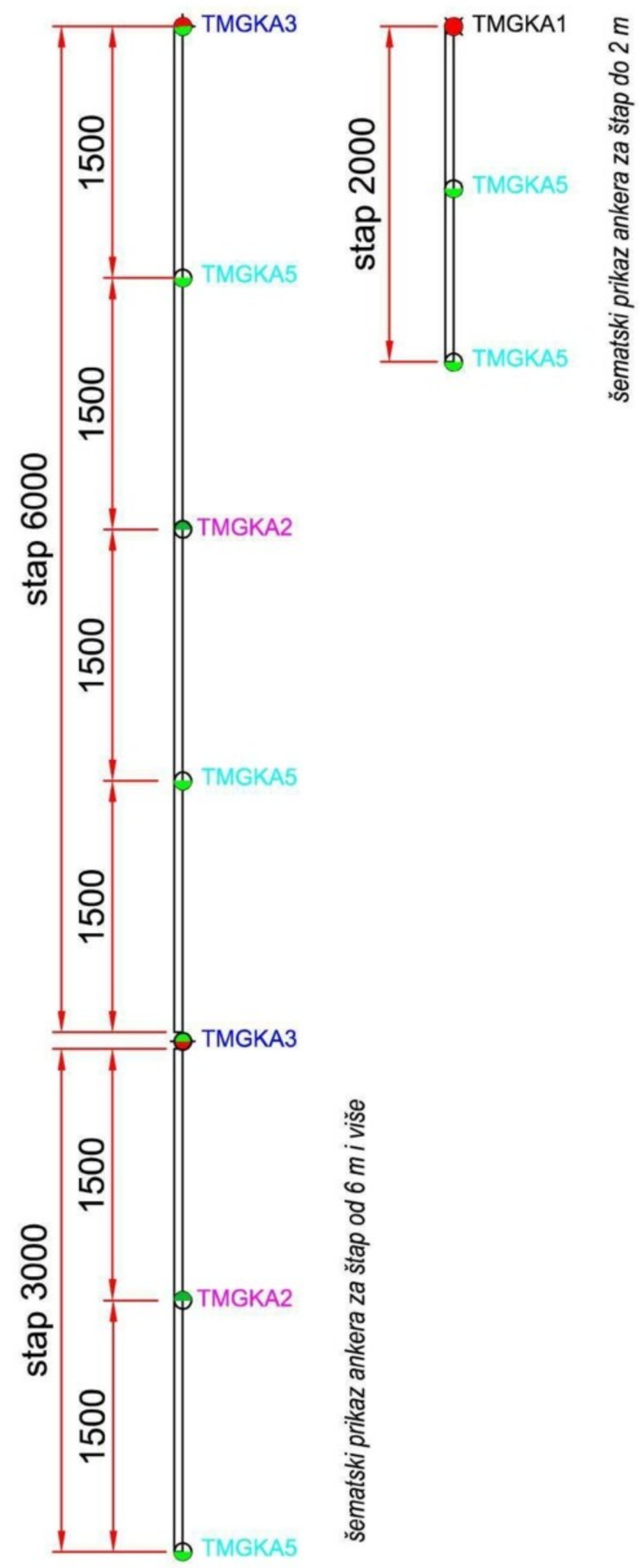
Materijal : Al



Za izradu ankera ekstrudirani profil : TMGK2

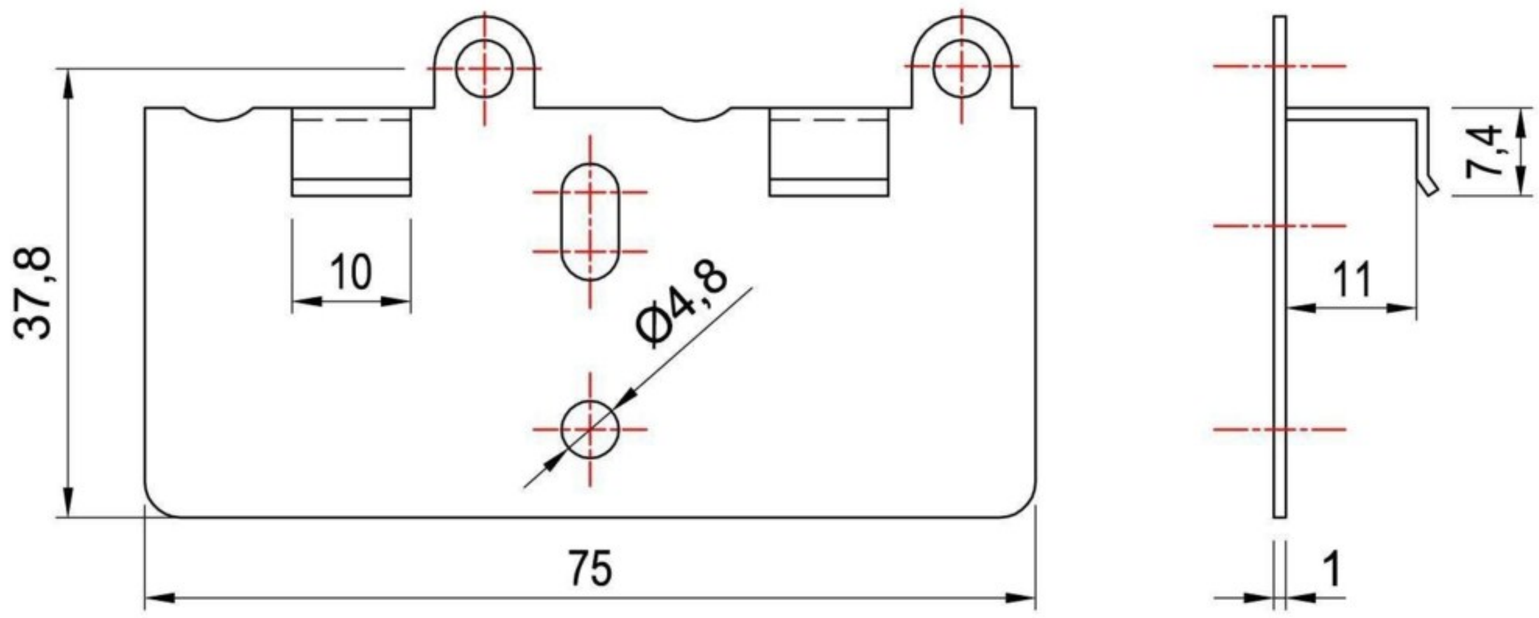
m=1,276 kg/m'

R 1:1



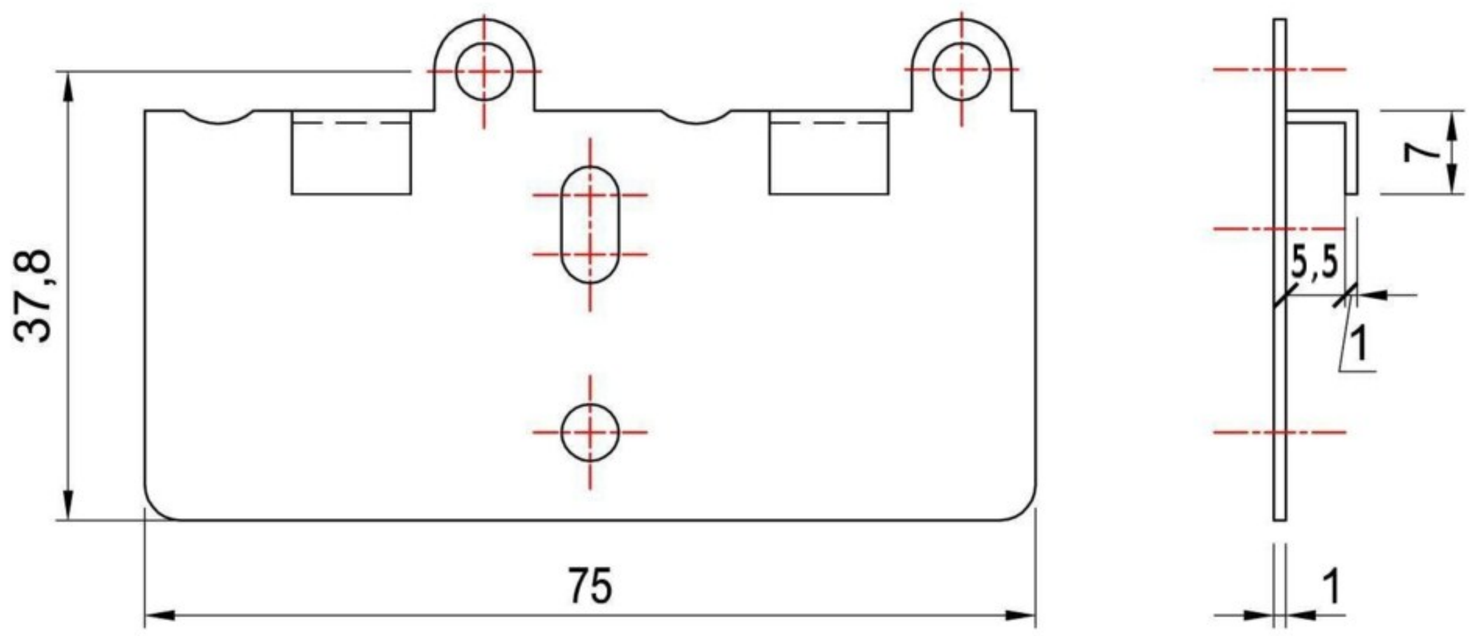
šematski prikaz ankera za štap do 2 m

šematski prikaz ankera za štap od 6 m i više



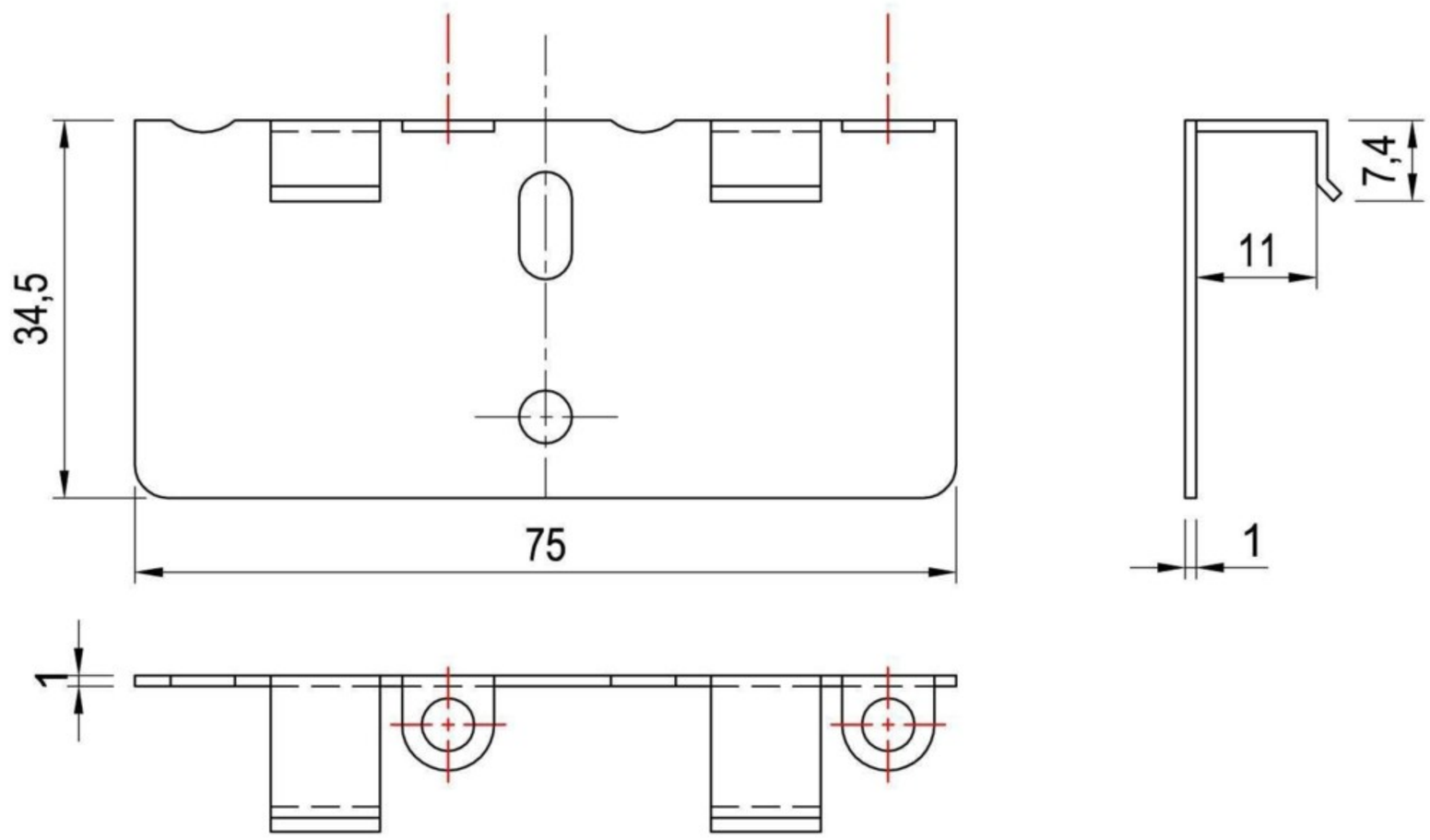
INOX NOSEĆA PLOČICA-VIDLJIVA
Stainless steel plate

Artikal : TMGKS1



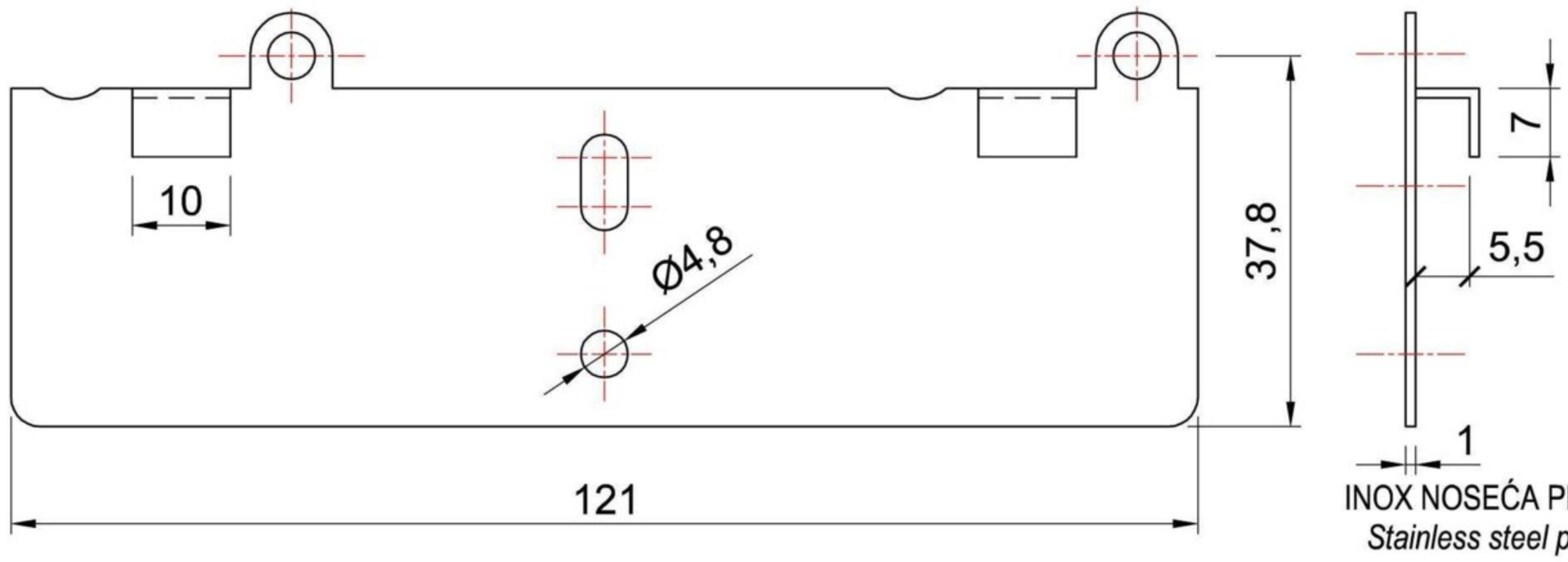
INOX NOSEĆA PLOČICA - SKRIVENA
Stainless steel plate

Artikal : TMGKS2



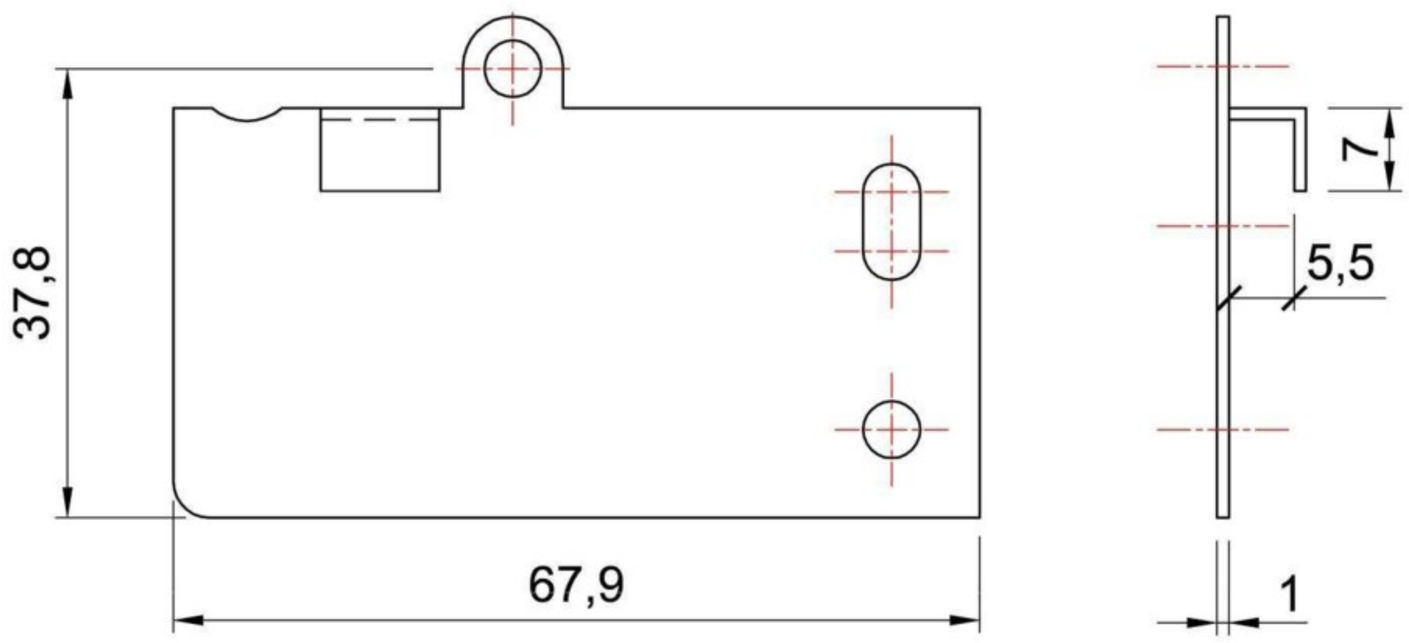
INOX NOSEĆA PLOČICA - POČETNA
Stainless steel plate

Artikal : TMGKS3



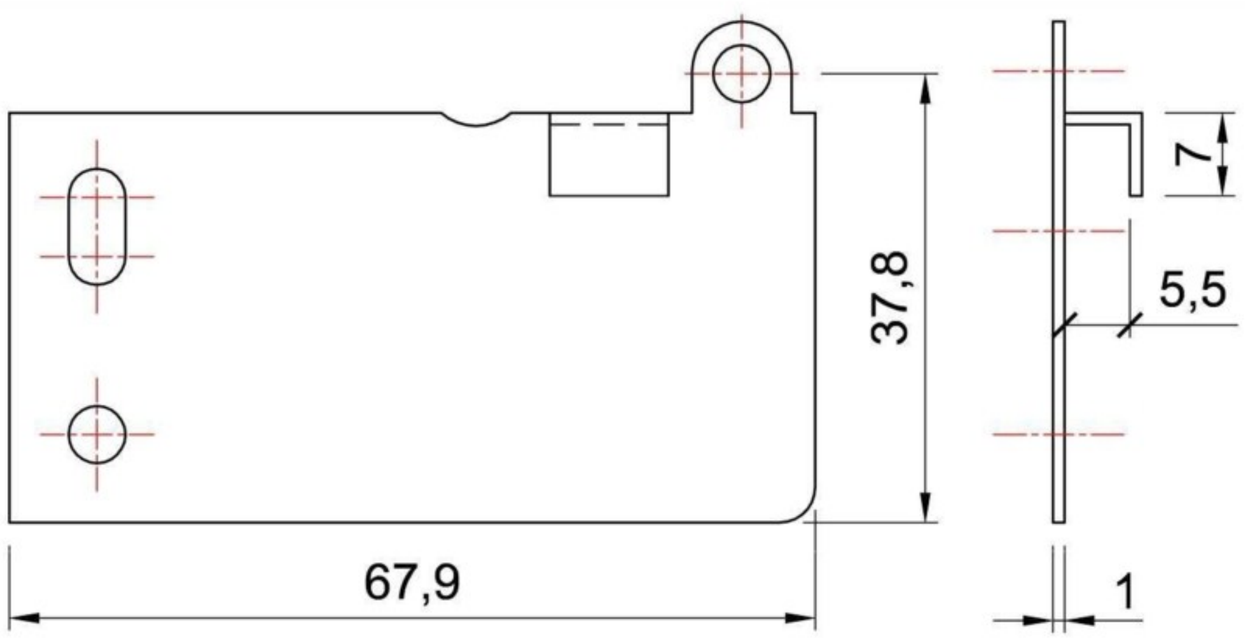
INOX NOSEĆA PLOČICA
Stainless steel plate

Artikal : TMGKS7



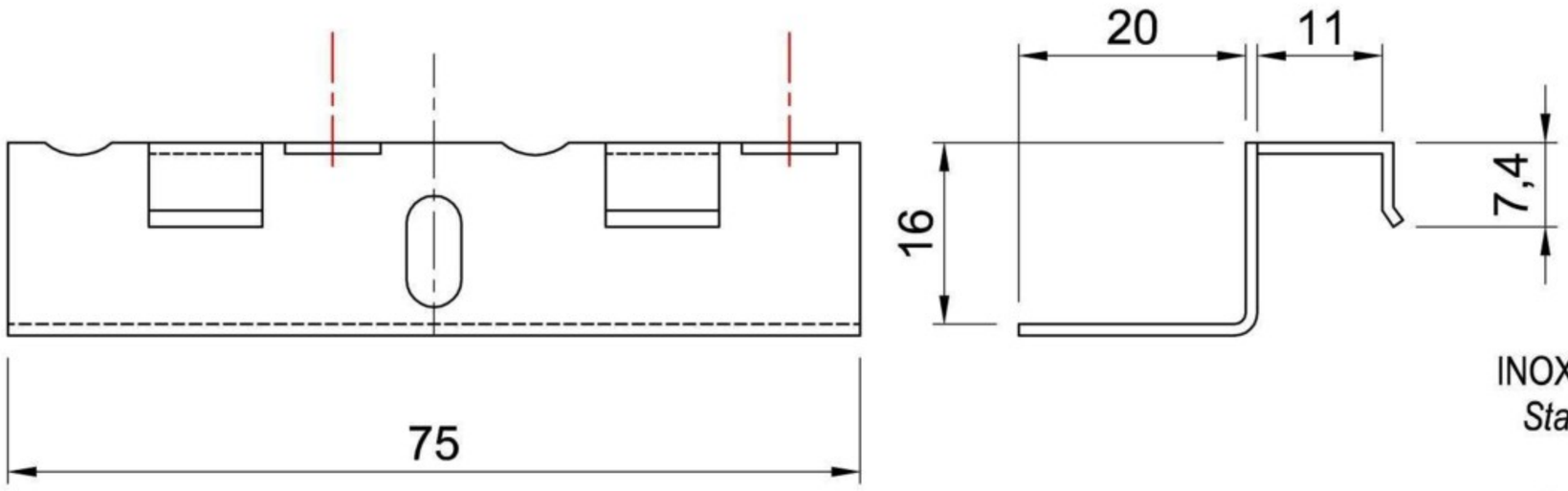
INOX NOSEĆA PLOČICA
Stainless steel plate

Artikal : TMGKS8



INOX NOSEĆA PLOČICA
Stainless steel plate

Artikal : TMGKS9



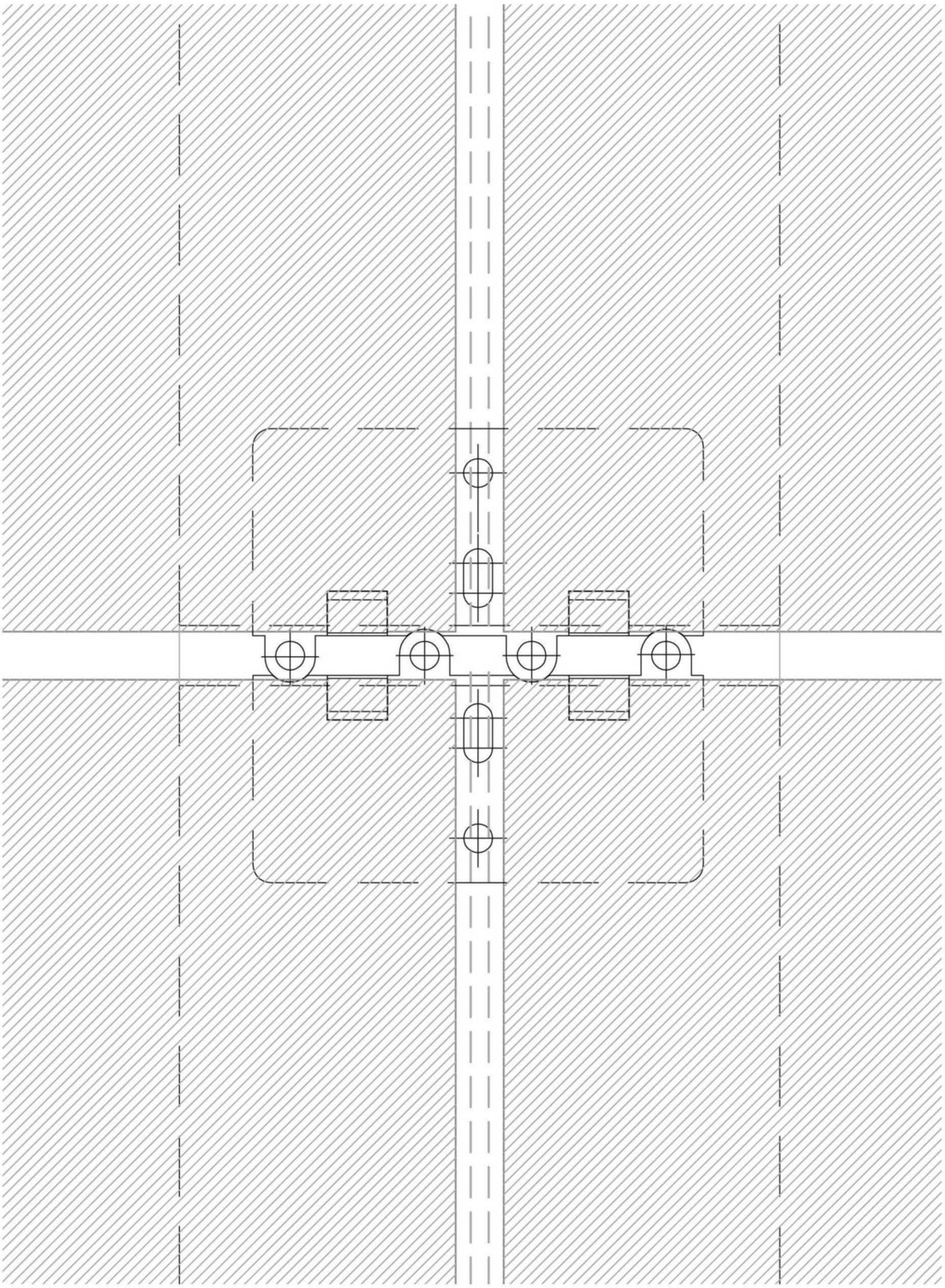
INOX NOSEĆA PLOČICA
Stainless steel plate

Artikal : TMGKS10

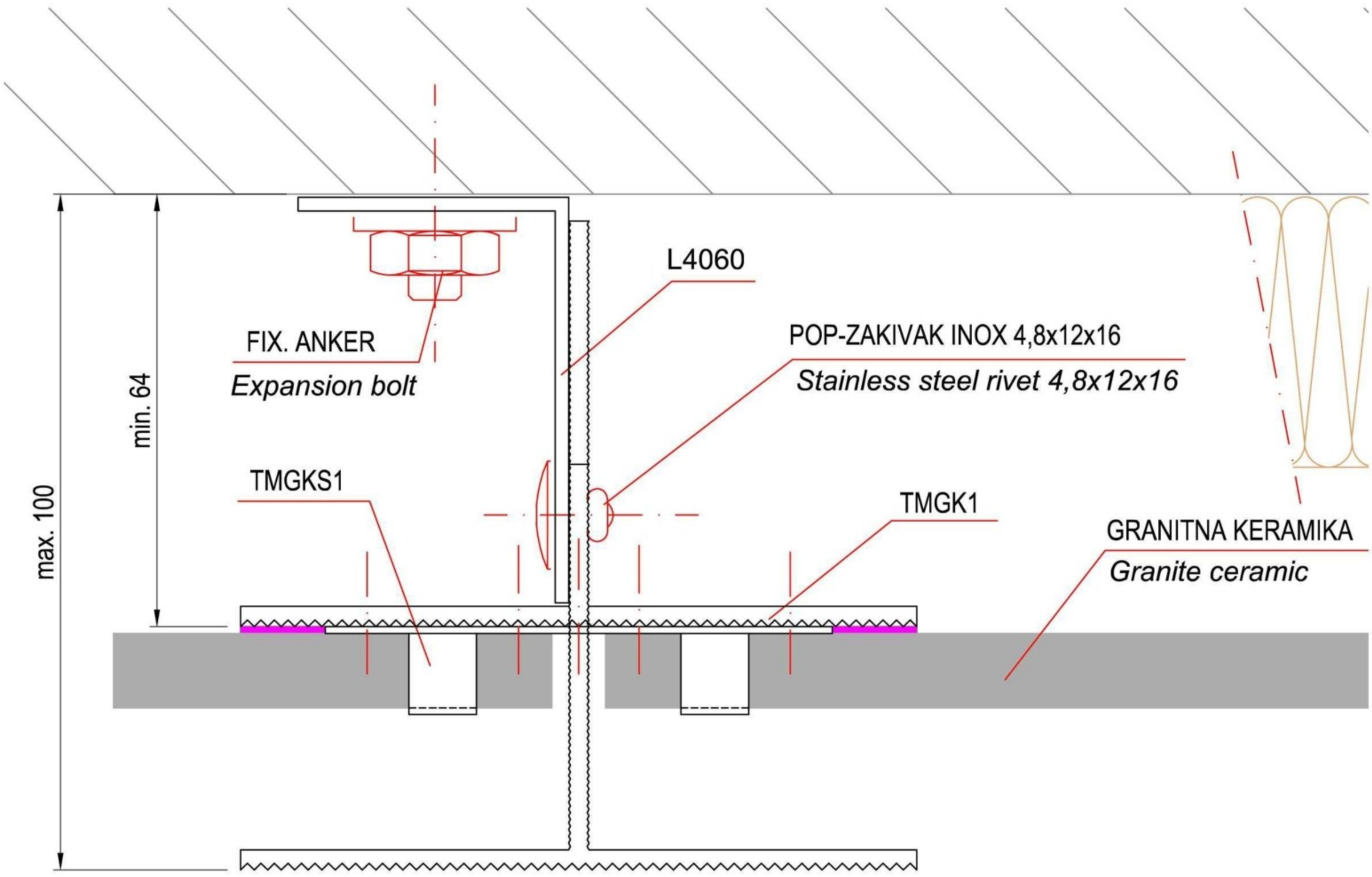
TEHNOMARKET TMGK 11

Ventilirana fasada / Ventilated facade

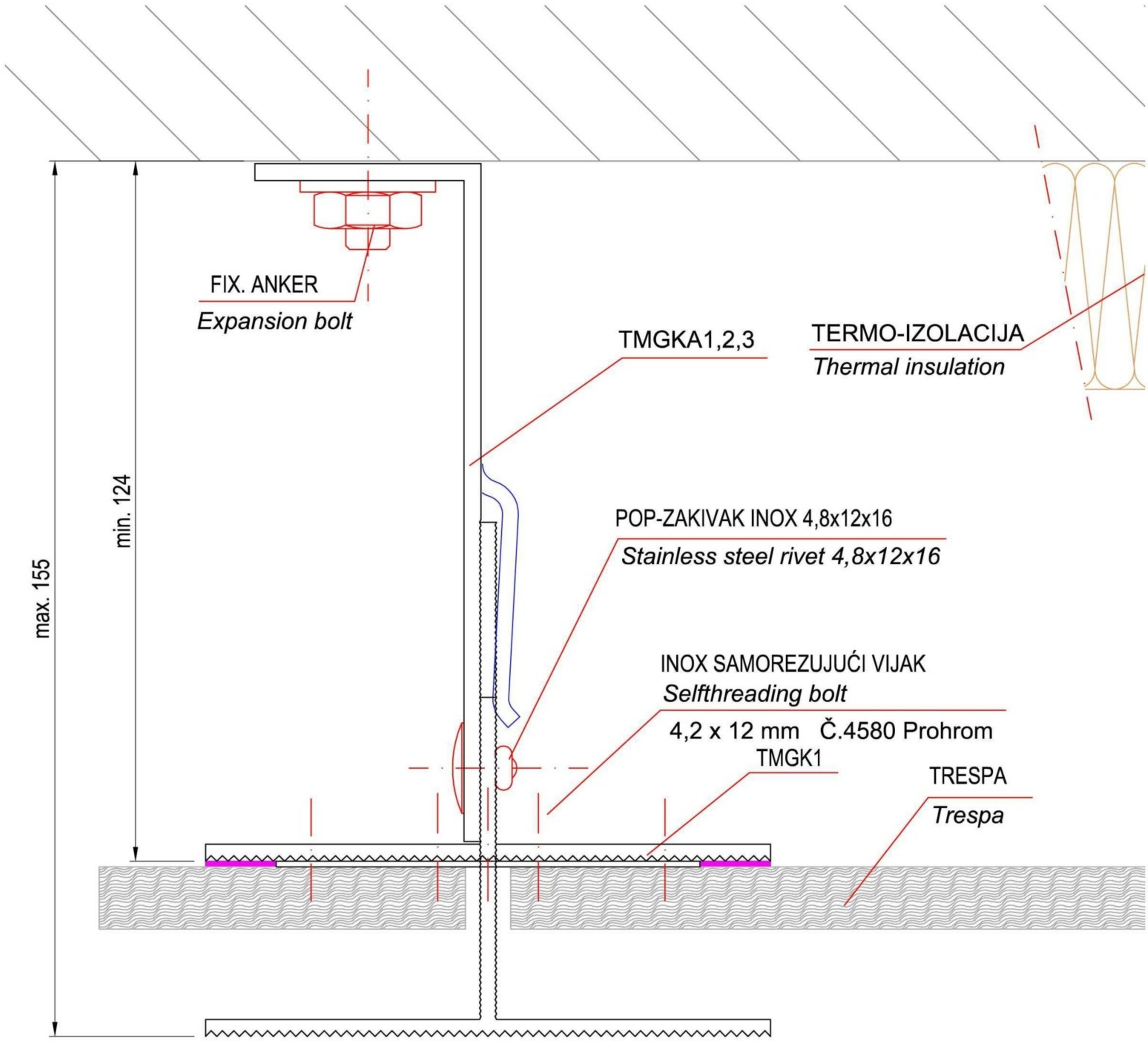
R 1:1



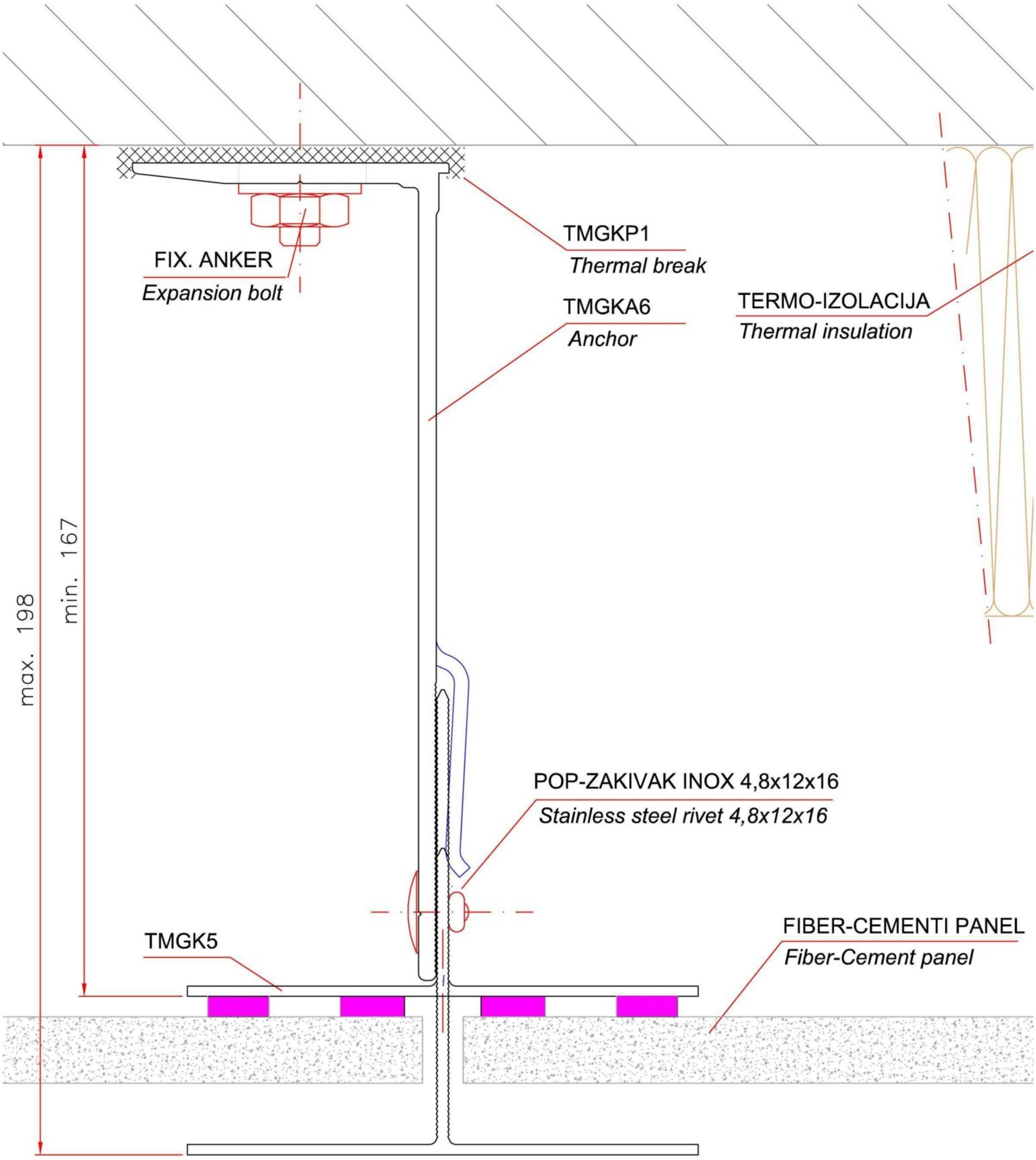
R 1:1


L4060
FIX. ANKER
Expansion bolt
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
min. 64
max. 100
TMGKS1
TMGK1
GRANITNA KERAMIKA
Granite ceramic

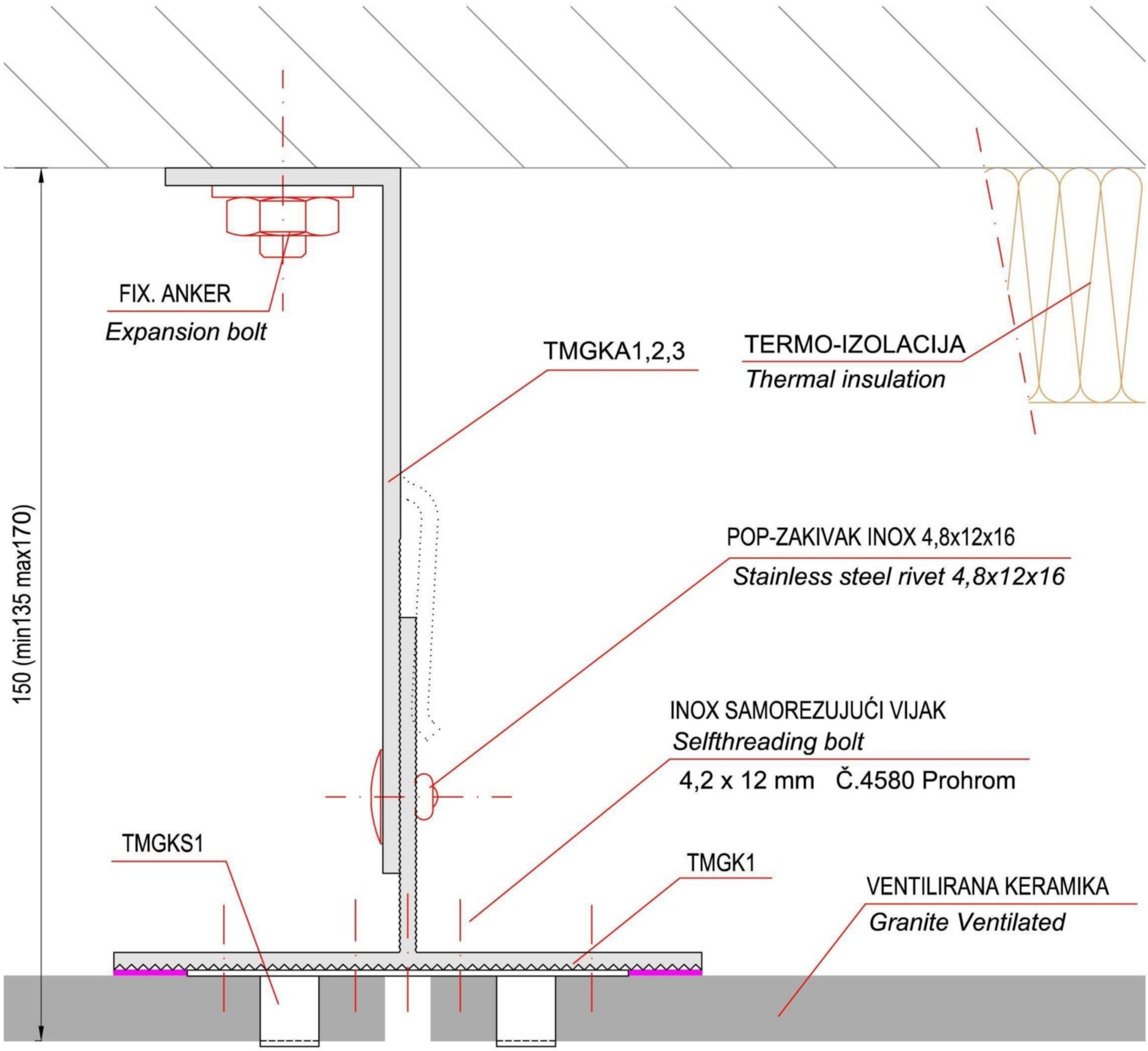
R 1:1


FIX. ANKER
Expansion bolt
TMGKA1,2,3
TERMO-IZOLACIJA
Thermal insulation
min. 124
max. 155
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom
TMGK1
TRESPA
Trespa

R 1:1

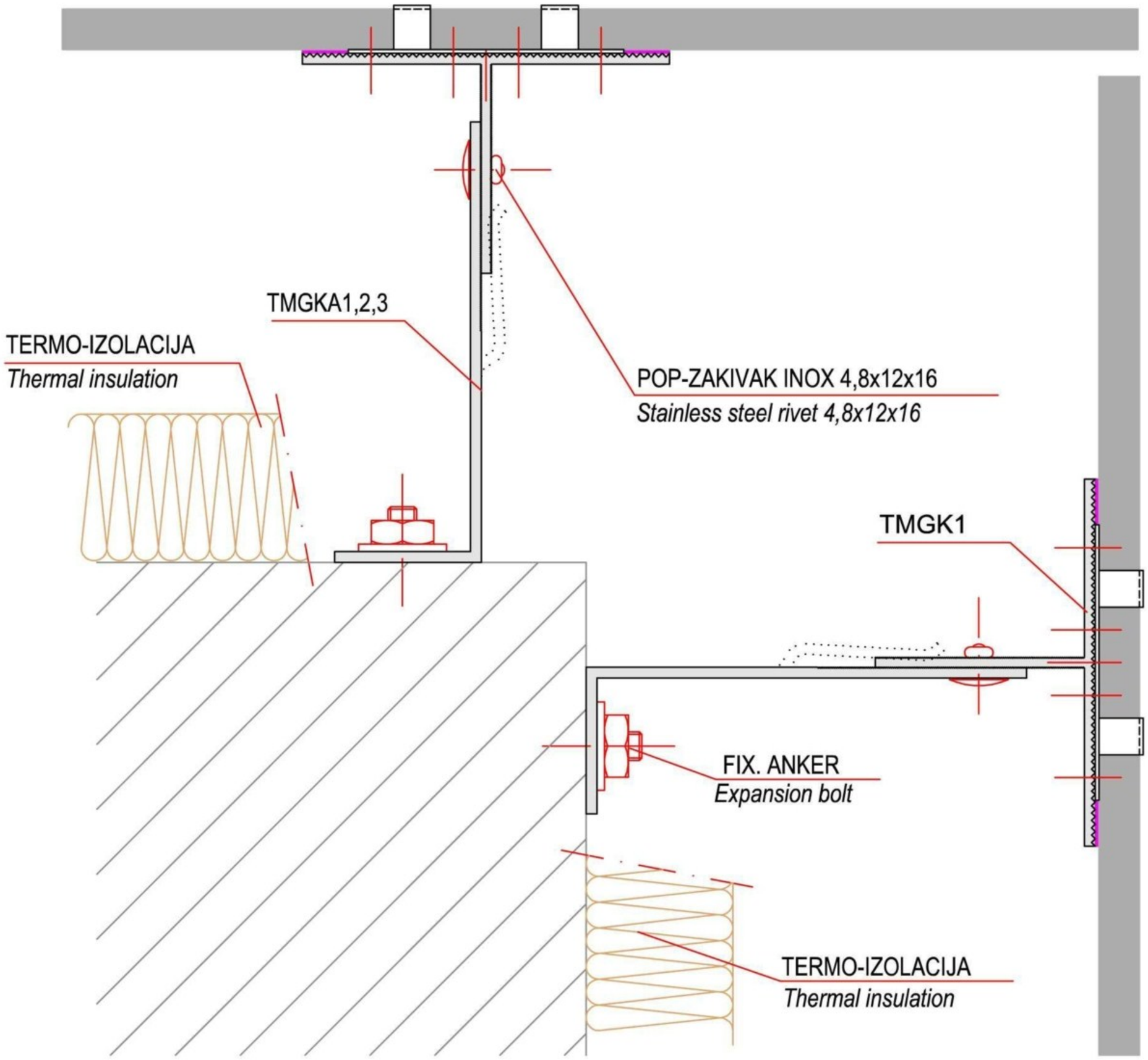

FIX. ANKER
Expansion bolt
TMGKP1
Thermal break
TMGKA6
Anchor
TERMO-IZOLACIJA
Thermal insulation
max. 198
min. 167
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
TMGK5
FIBER-CEMENTI PANEL
Fiber-Cement panel

R 1:1

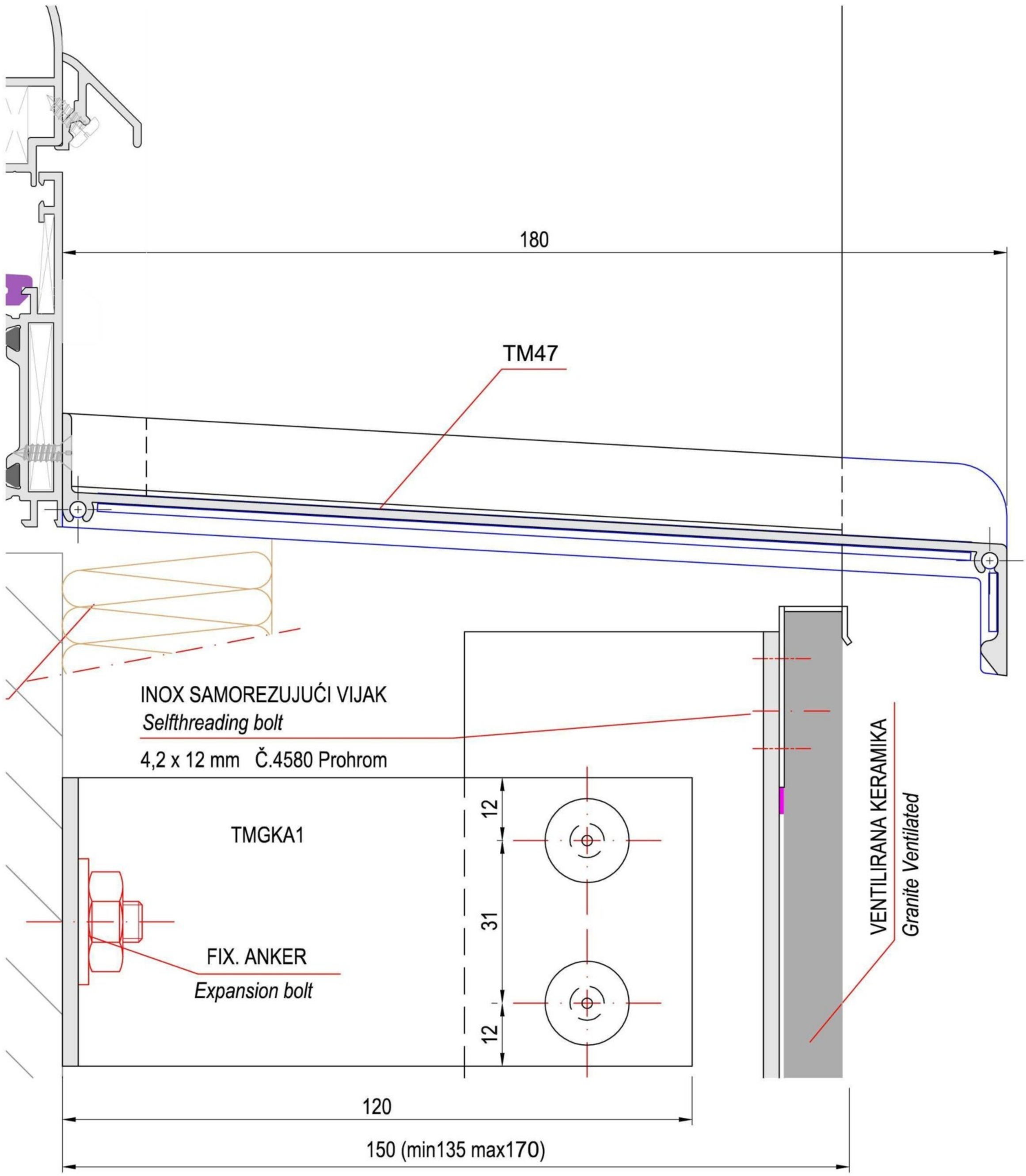

FIX. ANKER
Expansion bolt
TMGKA1,2,3
TERMO-IZOLACIJA
Thermal insulation
150 (min135 max170)
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom
TMGKS1
TMGK1
VENTILIRANA KERAMIKA
Granite Ventilated

TEHNOMARKET

R 1:2


TMGKA1,2,3
TERMO-IZOLACIJA
Thermal insulation
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
TMGK1
FIX. ANKER
Expansion bolt
TERMO-IZOLACIJA
Thermal insulation

R 1:1


180
TM47
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom
TMGKA1
FIX. ANKER
Expansion bolt
12
31
12
VENTILIRANA KERAMIKA
Granite Ventilated
120
150 (min135 max170)

R 1:1

TERMO-IZOLACIJA
Thermal insulation

FIX. ANKER
Expansion bolt

TMGKA1,2,3

TMGKS1

POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16

L4040

VENTILIRANA KERAMIKA
Granite Ventilated

TMGK1

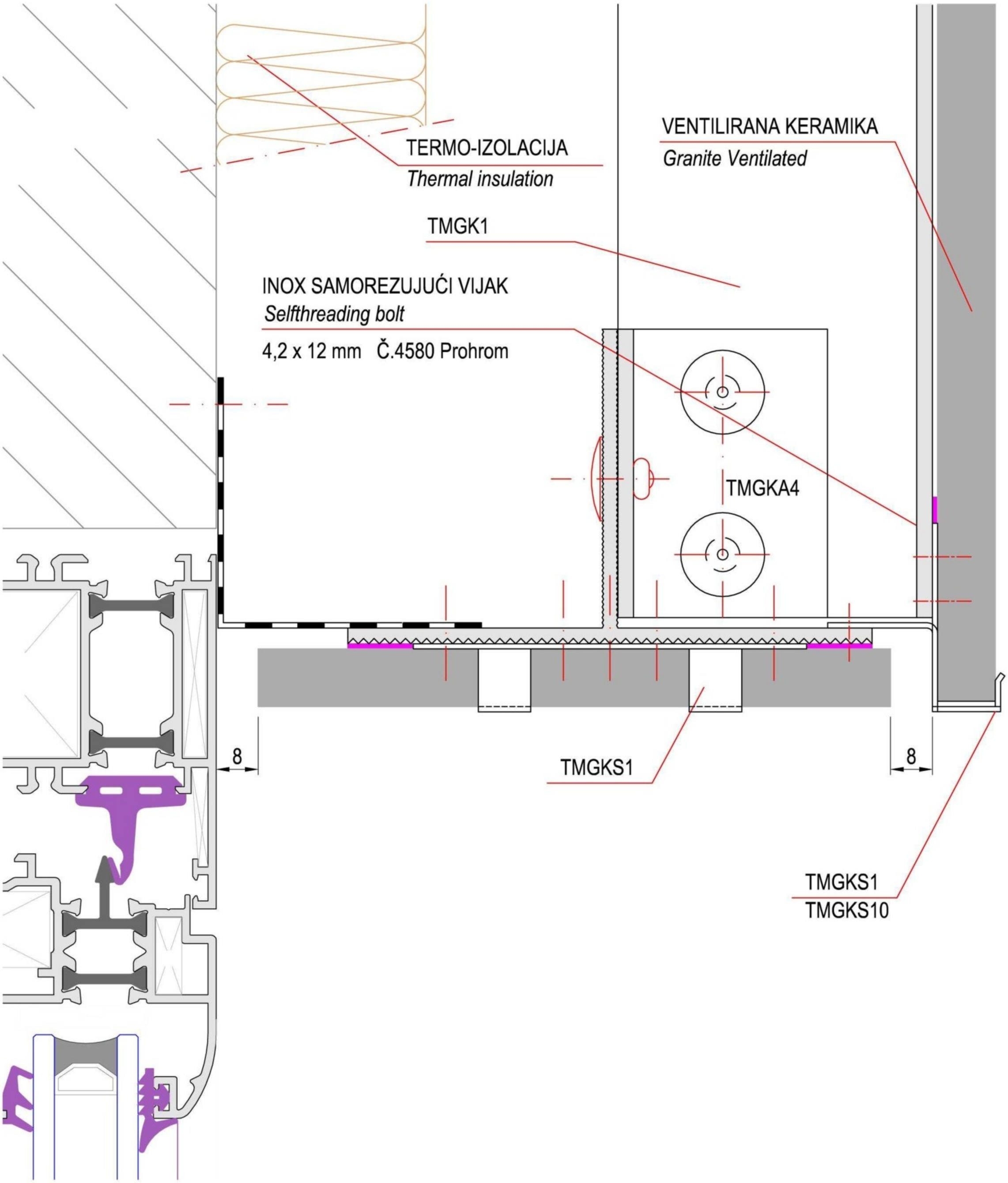
8

8

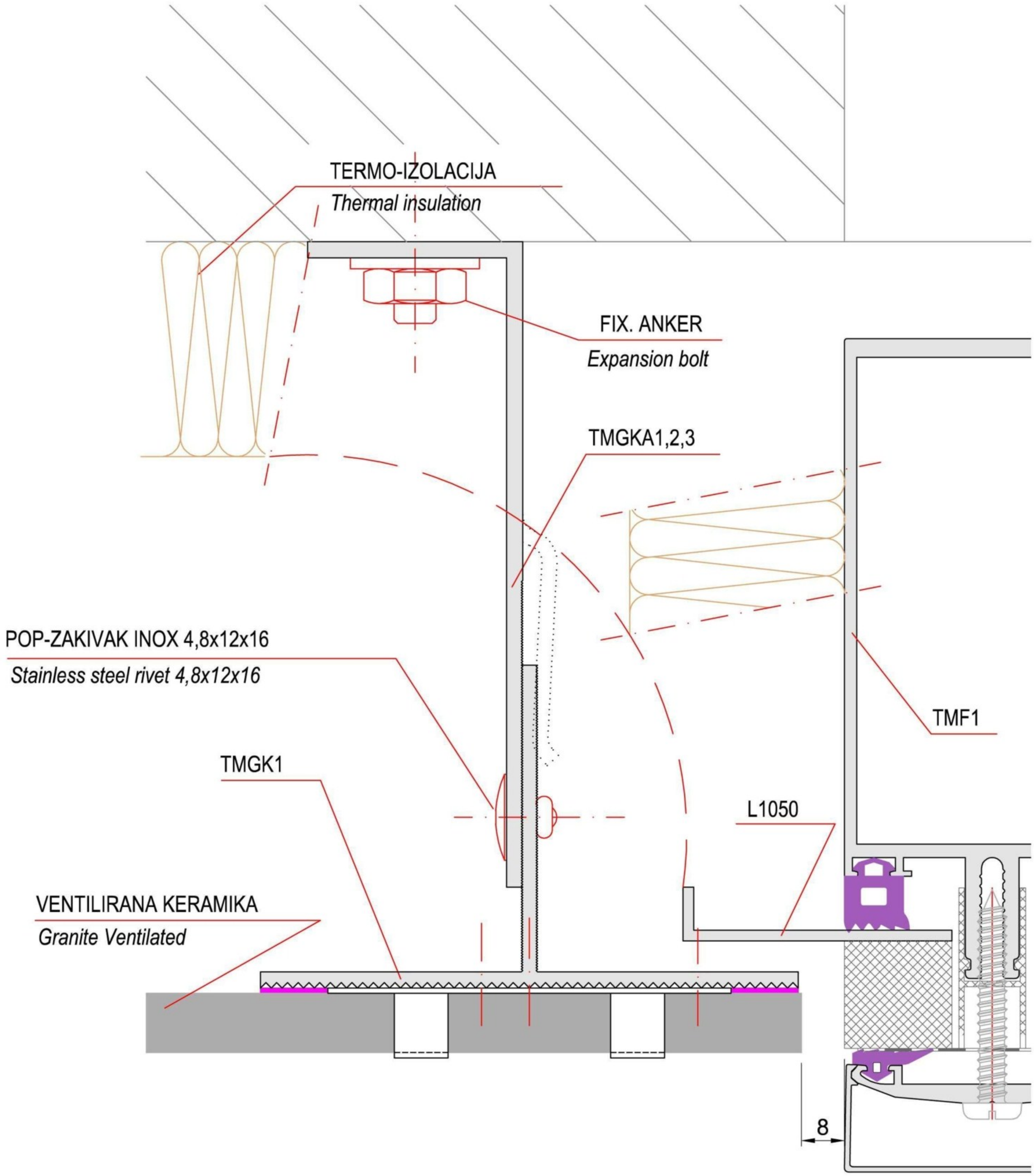
TEHNOMARKET TMGK 11

Ventilirana fasada / Ventilated facade

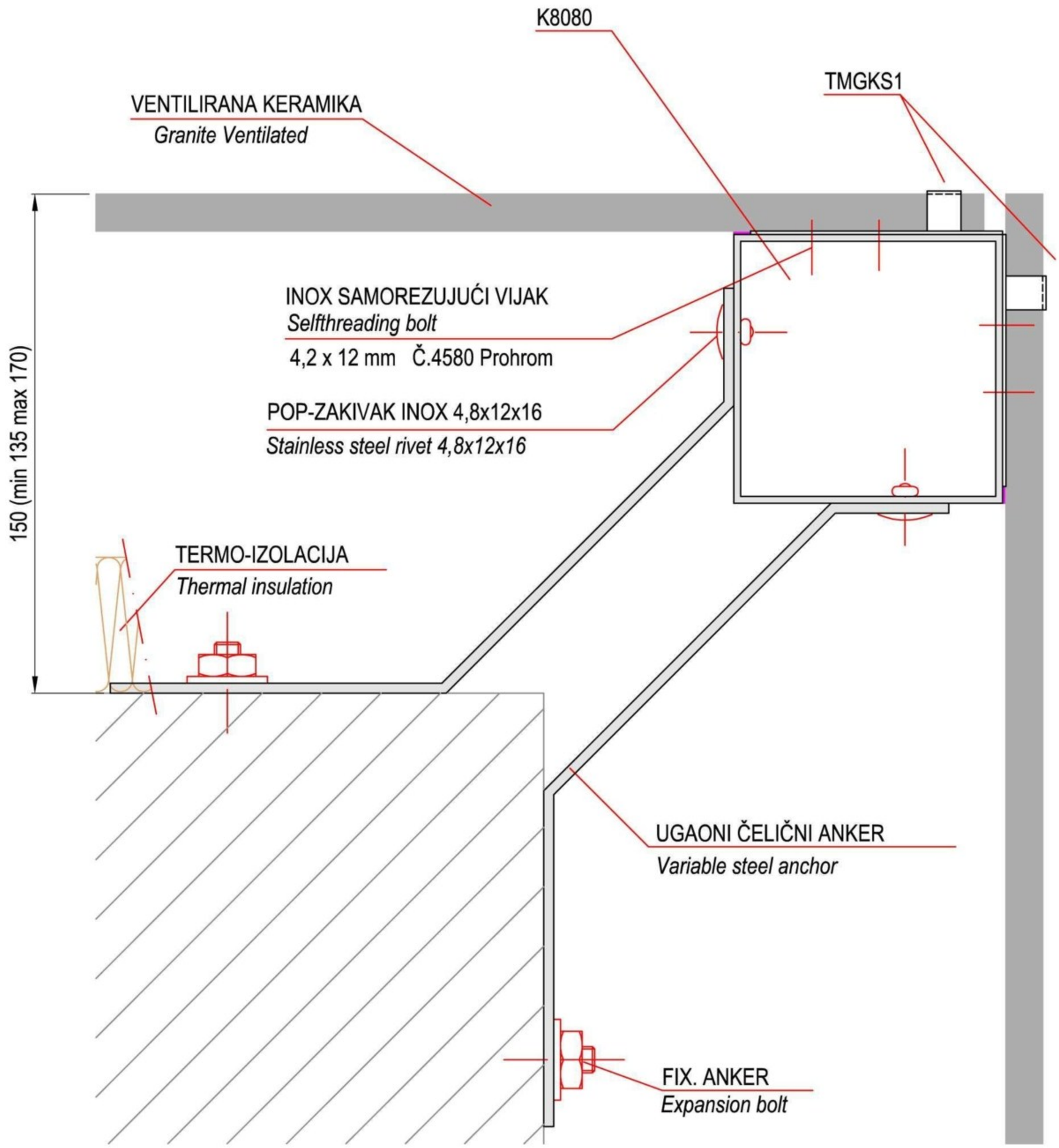
R 1:1

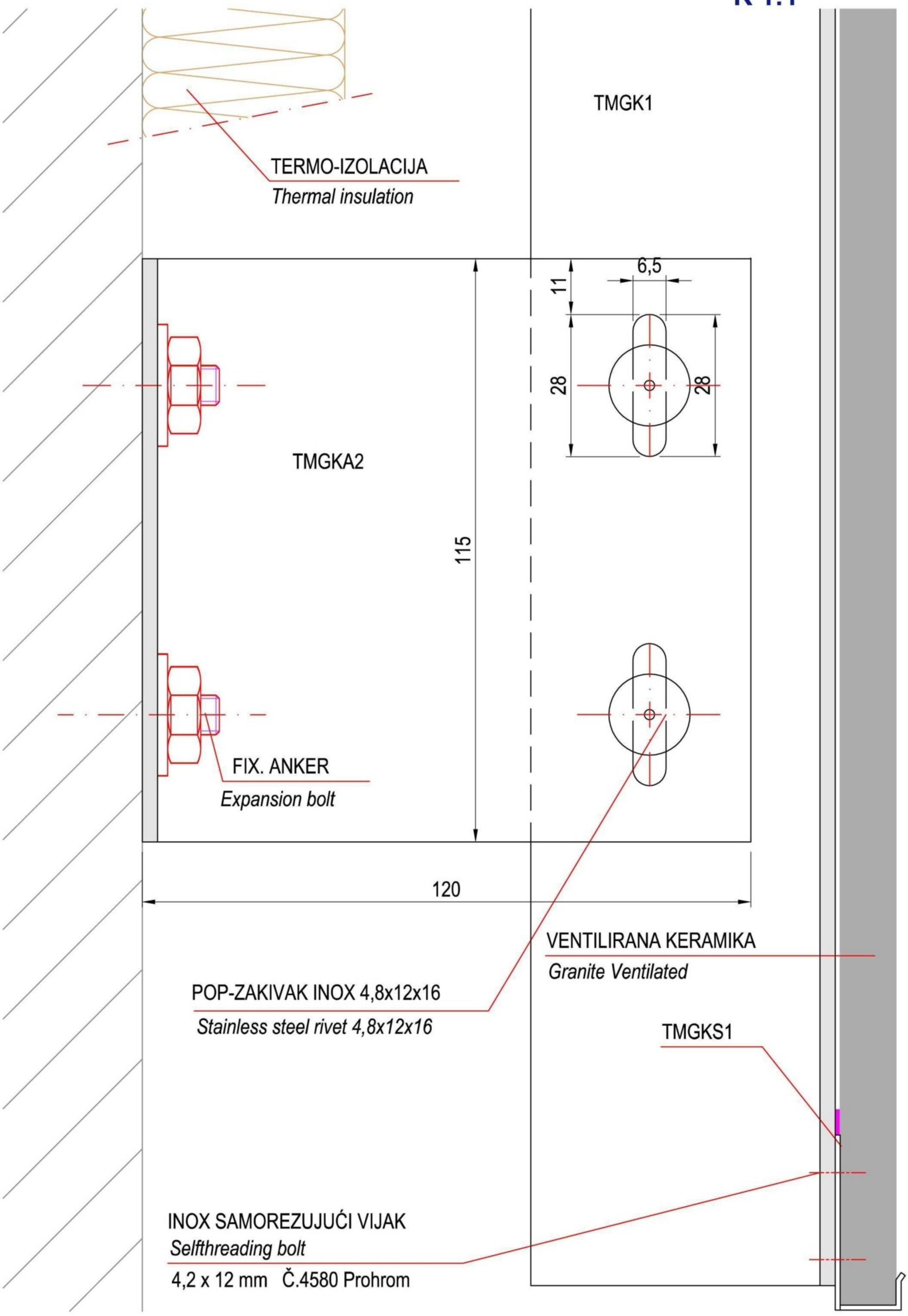


R 1:1


TERMO-IZOLACIJA
Thermal insulation
FIX. ANKER
Expansion bolt
TMGKA1,2,3
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
TMF1
TMGK1
L1050
VENTILIRANA KERAMIKA
Granite Ventilated
8

R 1:2

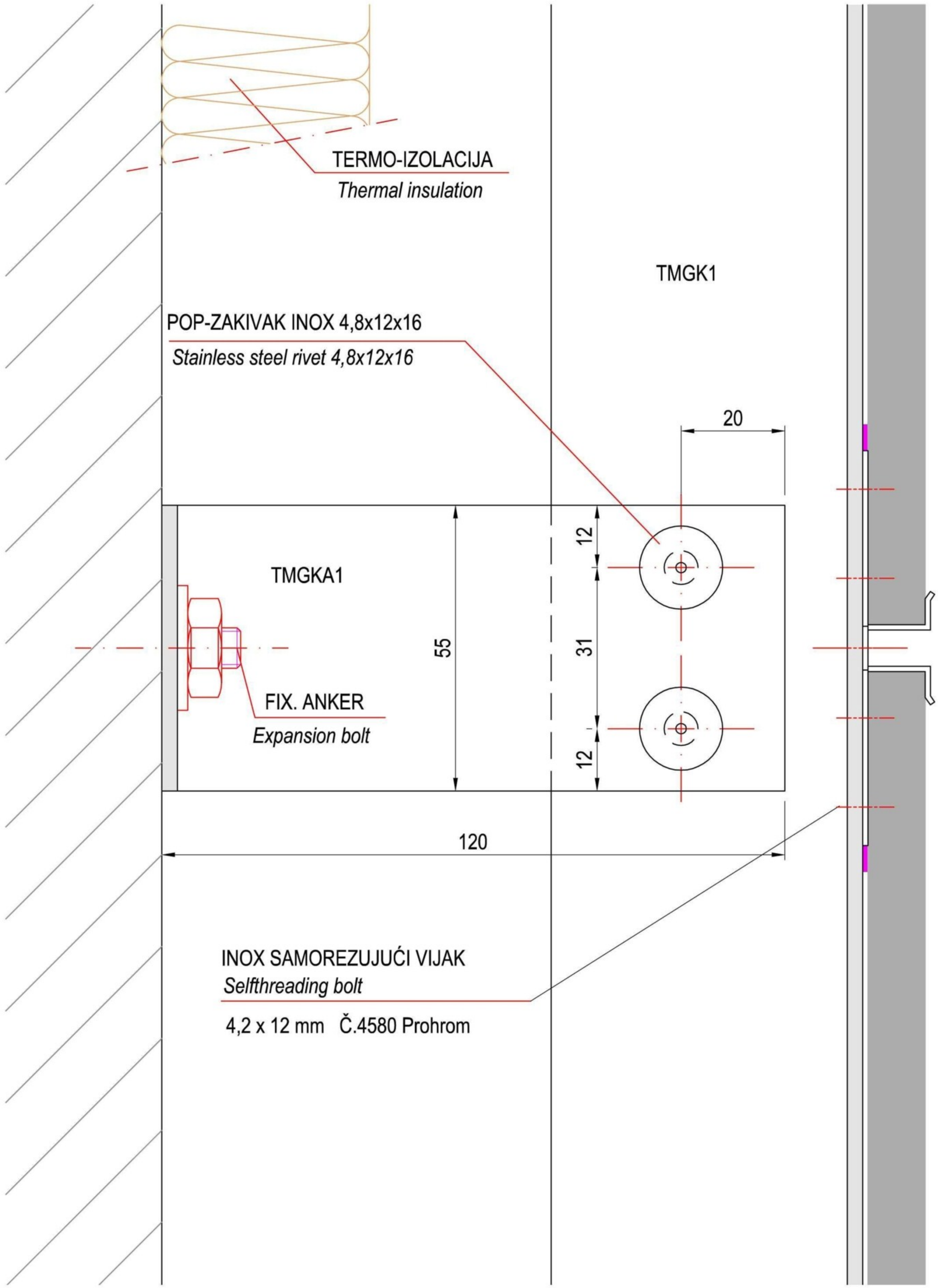

K8080
TMGKS1
VENTILIRANA KERAMIKA
Granite Ventilated
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
150 (min 135 max 170)
TERMO-IZOLACIJA
Thermal insulation
UGAONI ČELIČNI ANKER
Variable steel anchor
FIX. ANKER
Expansion bolt

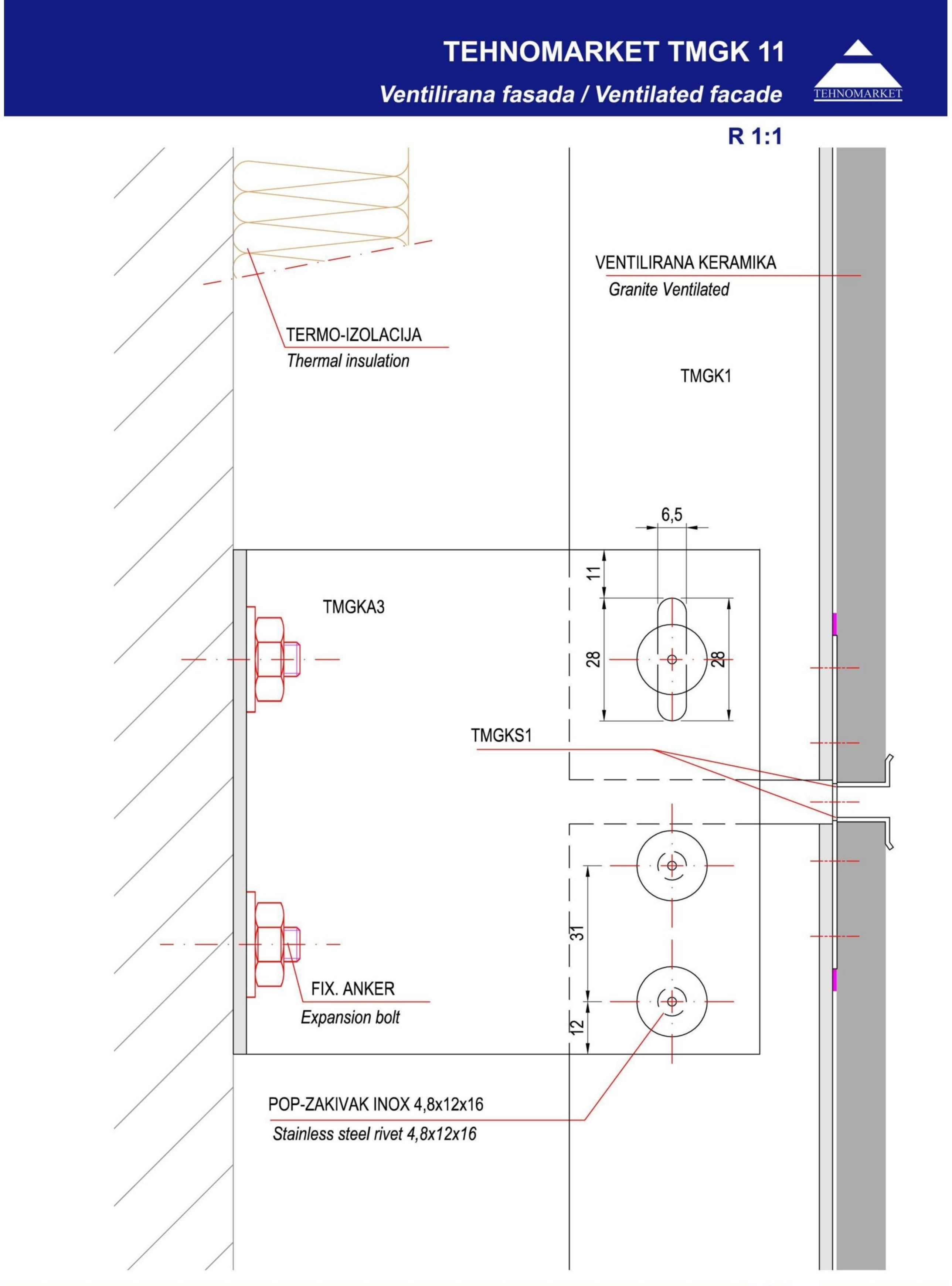

R 1:1
TMGK1
TERMO-IZOLACIJA
Thermal insulation
6,5
11
28
28
TMGKA2
115
FIX. ANKER
Expansion bolt
120
VENTILIRANA KERAMIKA
Granite Ventilated
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
TMGKS1
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom

TEHNOMARKET TMGK 11

Ventilirana fasada / Ventilated facade

R 1:1

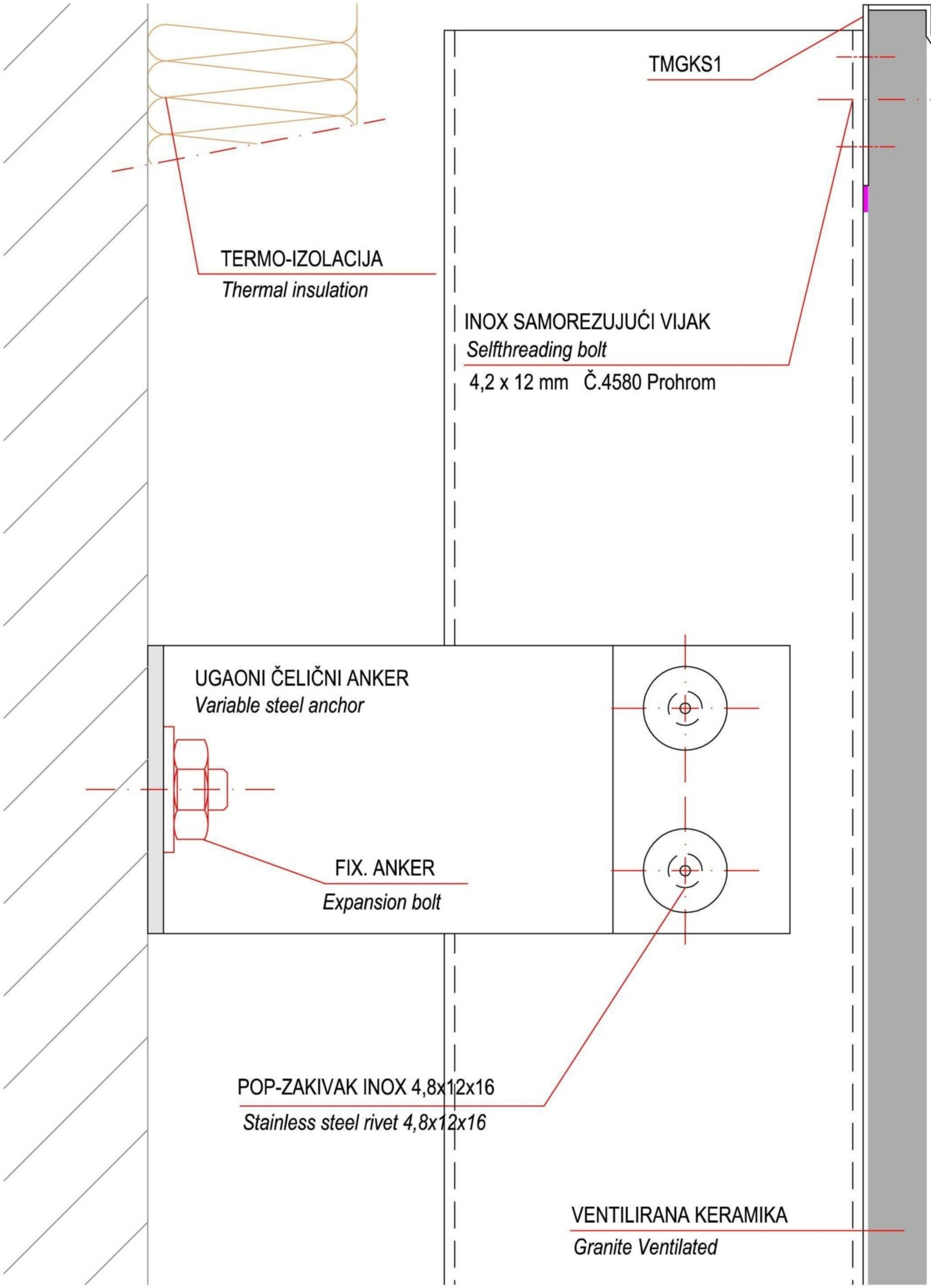



R 1:1
VENTILIRANA KERAMIKA
Granite Ventilated
TERMO-IZOLACIJA
Thermal insulation
TMGK1
6,5
11
TMGKA3
28
28
TMGKS1
31
FIX. ANKER
Expansion bolt
12
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16

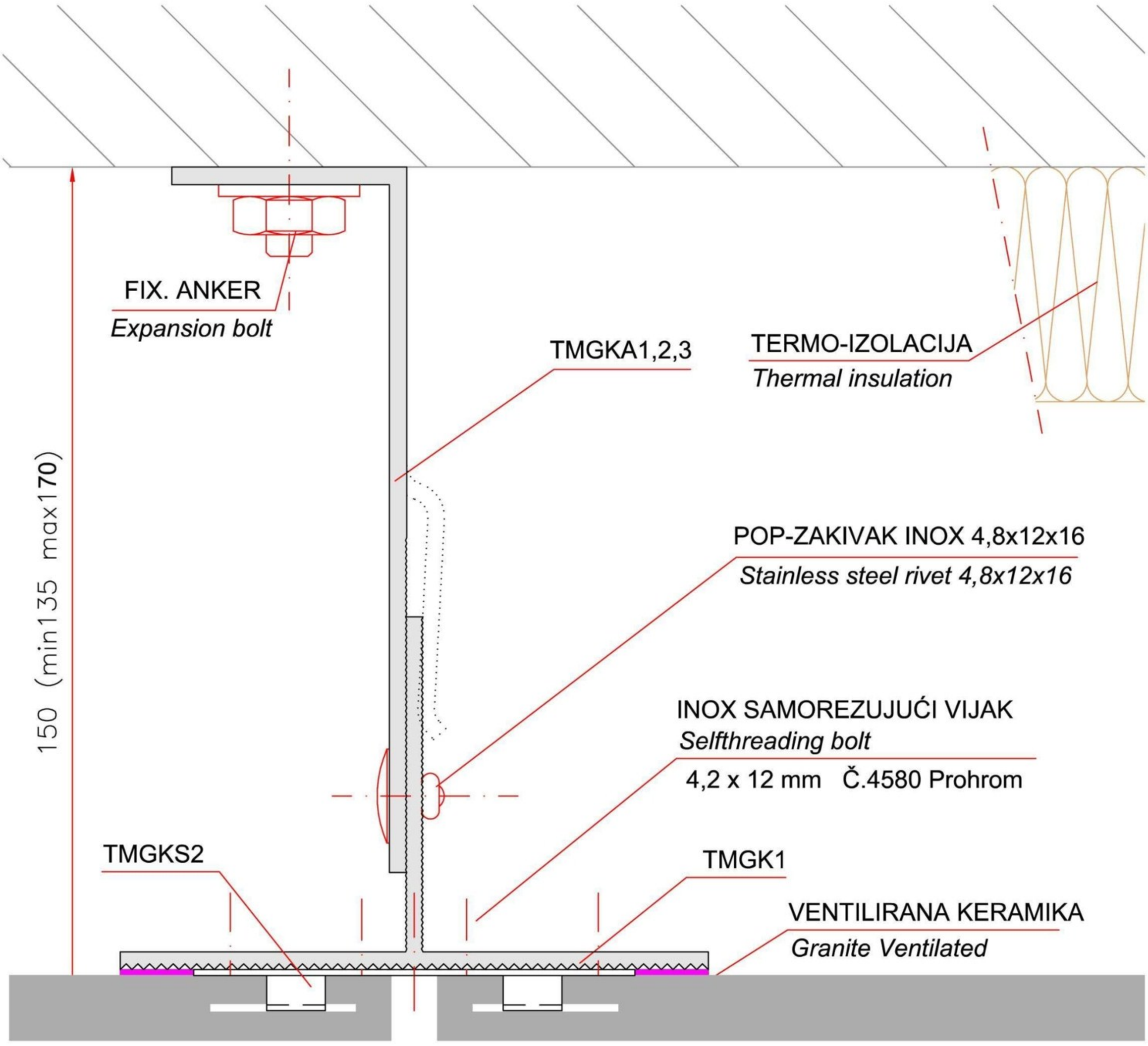
TEHNOMARKET TMGK 11

Ventilirana fasada / Ventilated facade

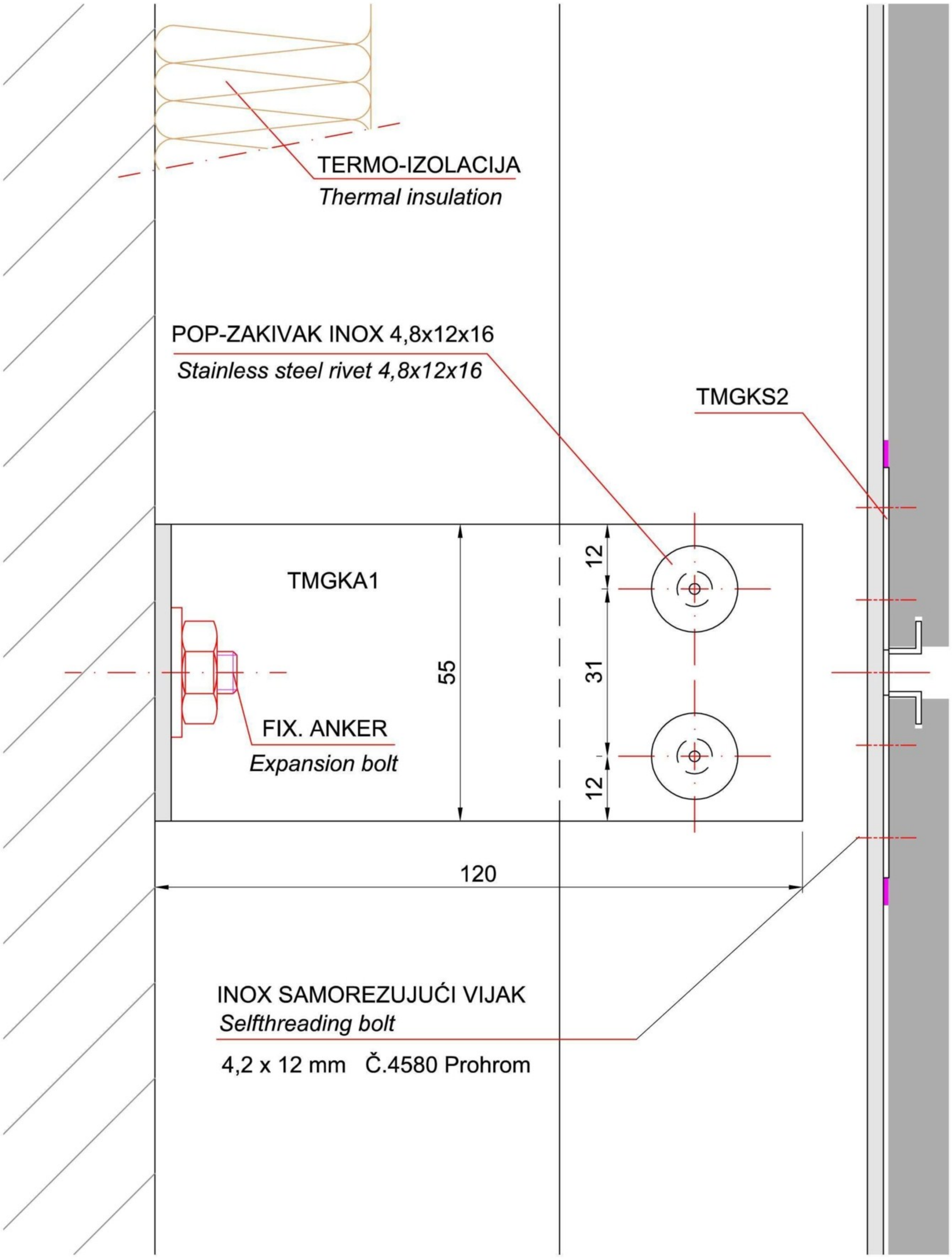
R 1:1



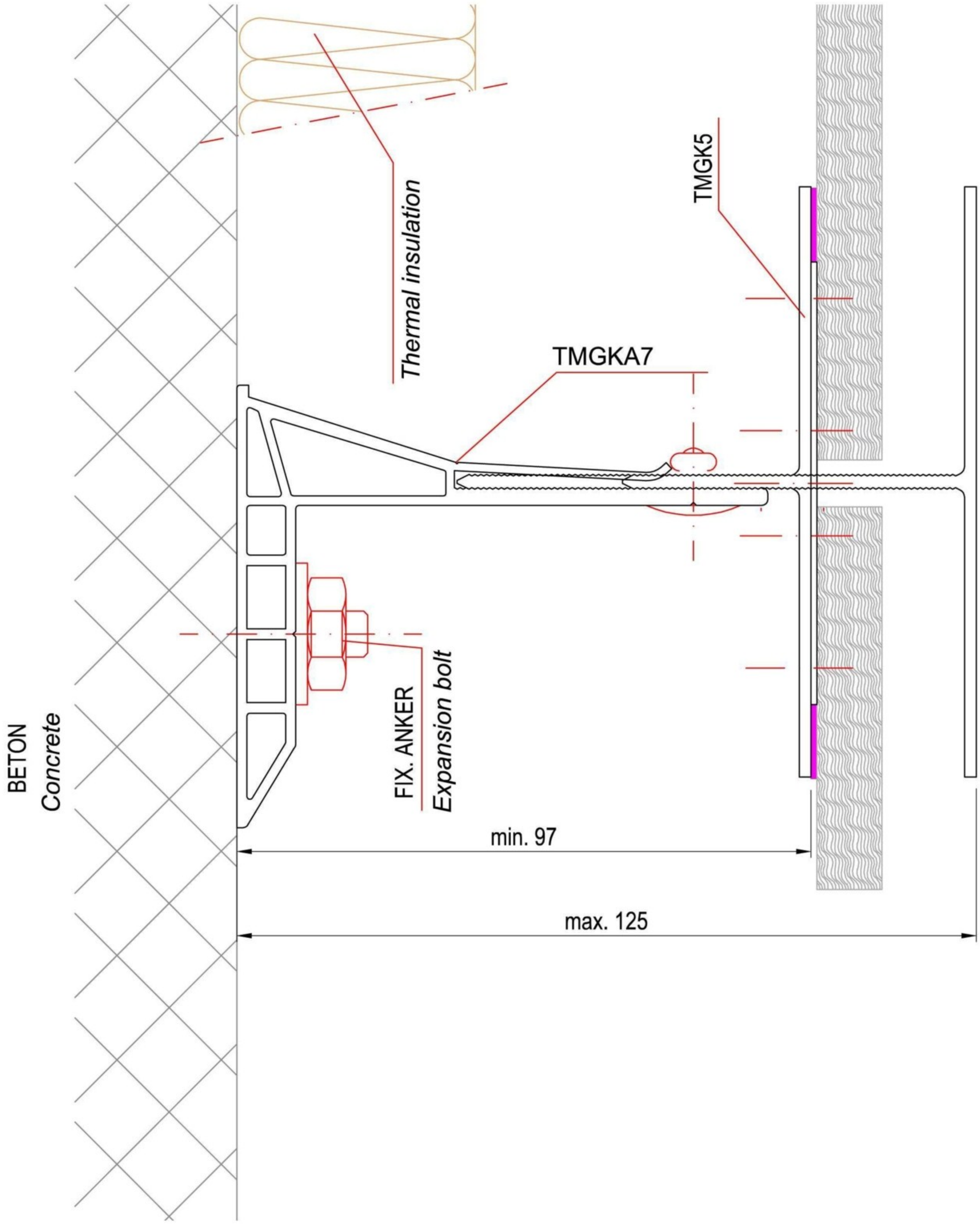
R 1:1


FIX. ANKER
Expansion bolt
TMGKA1,2,3
TERMO-IZOLACIJA
Thermal insulation
150 (min135 max170)
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom
TMGKS2
TMGK1
VENTILIRANA KERAMIKA
Granite Ventilated

R 1:1


TERMO-IZOLACIJA
Thermal insulation
POP-ZAKIVAK INOX 4,8x12x16
Stainless steel rivet 4,8x12x16
TMGKS2
TMGKA1
55
12
31
12
FIX. ANKER
Expansion bolt
120
INOX SAMOREZUJUĆI VIJAK
Selfthreading bolt
4,2 x 12 mm Č.4580 Prohrom

R 1:1


Thermal insulation
TMGK5
TMGKA7
BETON
Concrete
FIX. ANKER
Expansion bolt
min. 97
max. 125

Beleške / Notes