

POTKONSTRUKCIJA SUBSTRUCTURE FOR
ZA VENTILISANU FASADU THE VENTILATED FACADE

concept design_ arh_ tabasevic jelena_2014



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Tabat

ŠTA JE VENTILISANA FASADA?

Za ventilisanu fasadu smatraju se strukture koje su realizovane "u suvo", a sa namenom da pokriju jednu vertikalnu površinu. Slobodna površina između fasadne obloge i konstruktivnog dela objekta je projektovana da vazduh koji se nalazi između može slobodno i prirodno da struji, nezavisno od doba godine ili dana.

Ventilisanu fasadu čine sloj za:

- termoizolaciju
- ventilaciju (neprekidni vazdušni sloj)
- fasadnu oblogu (kamen, keramika, opekarski proizvod i drugi).

Ventilisane fasade omogućuju, ne samo brojne estetske prednosti, već nude i životnu udobnost i trajnost arhitektonskog dela.

ESTETIKA I ARHITEKTONSKA SLOBODA

Ovakav sistem fasade projektantu omogućava neograničen izbor odabira obrada i boja obloga. Prirodni materijal, kamen, na fasadi odaje impozantan vizuelni efekat. Uz veliku mogućnost postavljanja i raspoređivanja fasadne obloge na različite načine, projektant ima slobodu izražavanja. U prazan prostor između fasadne obloge i konstruktivnog dela objekta moguće je smestiti različite instalacije bez narušavanja arhitekture same zgrade.

TEHNIČKE KARAKTERISTIKE

Zaštita fasade od atmosferskih uticaja kao što su: kiša, snežne padavine, vetar, sunčevi zraci, u potpunosti je efikasna. Međuprostor-sloj za ventilaciju koji omogućava ventiliranje doprinosi eliminisanju vlage i pojavu fleka od kondenza na spoljnom delu fasade. Fasada omogućava eventualne popravke na zgradi, kao i radove na održavanju.

IZOLACIJA

Sve vodeće zemlje sveta su već uvele striktno standarde za projektovanje fasadnih omotača zgrade. Znamo da je najosetljivija tačka pri uštedi energije baš spoljni zid objekta. Iz tog razloga termička izolacija ventilisane fasade je smeštena u prazan prostor između fasadnog dela obloge i konstruktivnog dela zgrade, pa time osetno može da doprinese uštedi energije i preko 20%. Kombinacijom kamene obloge i vazdušnog prostora dodatno se povećava i zvučna izolovanost zgrade.

WHAT IS VENTILATED FACADE?

Ventilated facade is a structure built „dry“, with a purpose to cover one vertical surface. The gap between the cladding and the building structure is designed so that the air between them can flow freely and naturally, regardless of the time of year or day.

Ventilated façade is composed of:

- the layer of thermal insulation
- layer of ventilation (infinite air layer)
- layer of cladding (stone, ceramics, brick, and other materials).

Beside numerous aesthetic advantages, ventilated facades also provide environmental comfort and architectural durability

AESTHETICS AND ARCHITECTURAL FREEDOM

This type of façade system allows the designer to implement an unlimited range of processing techniques as well as to choose from an endless variety of cladding colors. Façade made of natural materials, such as stone, produces a powerful visual effect. A great possibility of installing the cladding in different ways gives the designer a freedom of expression. Various installations can be placed in the air gap between the cladding and the building structure without ruining the building's architecture.

TECHNICAL SPECIFICATIONS

The façade is fully protected from the weather conditions such as: rain, snow, wind and sun. The inner layer of ventilation helps to eliminate the moisture and occurrence of condensation stains on the external part of the façade. If needed, this type of façade can be easily repaired, as well as maintained.

INSULATION

All leading world countries have already introduced strict standards for cladding design. We are familiar with the fact that the most sensitive area when considering energy savings is the very external wall of the building. This is why the thermal insulation of the ventilated façade is located in the air gap between the cladding and the building structure, and is therefore able to contribute considerably to saving energy, up to over 20%. This combination of stone cladding and air gap further increases the soundproofing of the building

KOJE SU PREDNOSTI VENTILISANIH FASADA?

FASADE OTPORNE NA TERMIČKE PROMENE

Odvajanjem fasadne obloge od konstruktivnog dela zgrade štitimo zgradu od atmosferskih uticaja, a time povećavamo i postojanost strukture objekta.



FACADES RESISTANT TO THERMAL CHANGES

By separating the cladding from the building structure, we protect the building from weather conditions, thereby increasing the stability of the building structure.

STRUKTURA KOJA JE OTPORNA I POSTOJANA

Ventilisana fasada je rešenje za oblaganje i zaštitu spoljnih zidova koja nudi brojne funkcionalne i estetske prednosti. Prirodni materijal, kamen, daje spektakularan vizuelni efekat. Mala absorpcija vode, kao i lakoća održavanja i čišćenja daju ovoj fasadi dug vek trajanja.



RESISTANT AND STABLE STRUCTURE

Ventilated façade is the solution for cladding and protection of the external walls which offers numerous functional and aesthetic benefits. Natural materials, such as stone, produce a remarkable visual effect. Low water absorption as well as easy maintenance account for the long life of this type of façade.

REVIZIJA

Sistem Tabaš nudi rešenje za eventualne popravke, demontažu ili zamenu oštećenih ploča, kao i za radove na održavanju.



REVISION

Tabaş system offers a solution for possible repairs, removal or replacement of damaged slabs, as well as maintenance.



WHAT ARE THE ADVANTAGES OF VENTILATED FACADES?

UŠTEDA ENERGIJE

Zgrada na kojoj se nalazi ventilisani zid praktično poseduje sistem koji može osetno da doprinese uštedi energije. Zimi smanjuje utrošak energije za grejanjem, a leti za hlađenjem.



ENERGY SAVINGS

A building with a ventilated façade practically possesses a system that can substantially contribute to saving energy. In wintertime, it reduces the energy used for heating, and in summertime it reduces the energy used for cooling.

VENTILACIJA SPREČAVA VLAGU

Ventilirajuća fasada eliminiše vlagu i sprečav pojavu fleka i kondenza na fasadi. Praktično se u potpunosti sprečavaju negativni efekti atmosferskih padavina.



VENTILATION PREVENTS MOISTURE

Ventilated façade eliminates moisture and prevents the occurrence of condensation stains on the façade. In other words, it completely prevents the negative effects of weather conditions.

ZVUCNA IZOLACIJA

Kombinacija obloge od prirodnog materijala, kamena i vazdušnog prostora znatno se povećavaju fonoizolacione karakterisike spoljnog zida zahvaljujući stvaranju "duplog zida" koji je odvojen vazdušnom strujom-sloja za ventilaciju.



SOUNDPROOFING

The combination of cladding made of natural material, stone, and the air gap significantly increases the phono-insulating characteristics of the external wall, due to the formation of a "double wall" which is separated by the air current in the ventilation layer.



USLUGE KOJE PRUŽA FIRMA TABAŠ

Tehnički biro firme Tabaš je tim koji na osnovu dugogodišnjeg iskustva za jako kratak vremenski period može da izradi ponudu na Vaš upit uz pružanje konsultanskih usluga. Za izradu ponude, neophodan nam je projekat vašeg objekta, kao i tehnički opis fasade.

PROJEKTOVANJE

Na početku izrade svakog projekta, naši Projektanti mogu vam pružiti pomoć pri odabiru sistema za Vašu fasadu. Na raspolaganju smo da protumačimo specifične potrebe svakog klijenta, daćemo konsultacije o tipu materijala i vrstama obrade. Takođe, postoji veliki broj tipskih detalja, koji vam u fazi izrade idejnog projekta mogu pomoći.

Faza definisanja sistema potkonstrukcije je faza u kojoj, uzevši u obzir podatke o: vrsti konstrukcije objekta na kojoj se fiksira fasada, udaljenja lica fasadne obloge od same konstrukcije objekta, veličina i vrsta ploča fasadne obloge, težina ploča, kao i klimatski uslovi, možemo definisati i odabrati sistem potkonstrukcije.

Izrada statičkog proračuna za svaki veći objekat je obavezna prvenstveno radi sigurnosti samog objekta. Svaki statički proračun sadrži izradu detaljnog proračuna koji definise i dimenzionise sve nosive elemente fasade, uzimajući u obzir lokalne uslove (seizmička zona, brzina vetra, temperaturne promene i dr.)

Izrada grafičkih priloga, koji sadrže sve karakteristične detalje, kao i celokupan plan montaže. Plan montaže služi za tačno definisanje svih površina koje se oblažu ventilisanom fasadom. U ovoj fazi je moguće uraditi sve novonastale izmene, a pre montaže, koje su prateći deo izvodjenja svakog objekta. Pri izradi karakterističnih detalja, moguće je uklopiti i ostale pozicije na objektu sa pozicijom fasade.

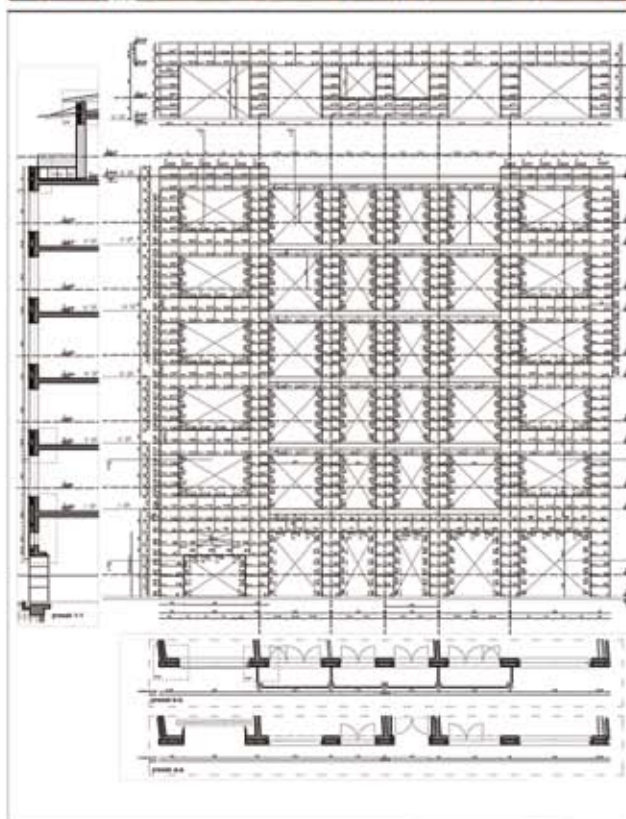
Izrada precizne dokumentacije za naručivanje fasadne obloge, u ovoj fazi tačnim merenjem utvrđuju se krajnje dimenzije fasadne obloge-pojedinačnih ploča, kao i izrada dokumentacije koja služi za sečenje i obradu fasadne obloge-krojne liste - specifikacije.

MONTAŽA

Usluga može biti personalizovana u skladu sa posebnim zahtevima klijenta.

Usluga „ključ u ruke“: u ovom slučaju montažu obavljaju specijalizovane ekipe Tabaš, koje imaju odgovarajuću opremu i instrumente neophodne za precizno i profesionalno izvođenje radova. Prisustvo naših stručnjaka garantuje da će radovi biti korektno izvršeni, sa ciljem da klijent bude siguran u njihovu kvalitetnu izradu, kako enterijera tako i eksterijera.

„Vidovi“ asistencije: u slučaju da Naručilac radova koristi sopstvene ekipe za izvođenje radova, Tabaš može da obezbedi potrebnu obuku za izradu fasada po pravilima struke i zanata, isporučuje potrebnu opremu i šalje stručno lice koje daje instrukcije na samom gradilištu.



SERVICES PROVIDED BY THE COMPANY TABAŠ



The Technical Bureau of the company Tabaš is a highly experienced team able to promptly make an offer at your request, as well as provide consulting services. In order to make an offer, we need the design of your building, as well as a technical description of the façade.

DESIGN

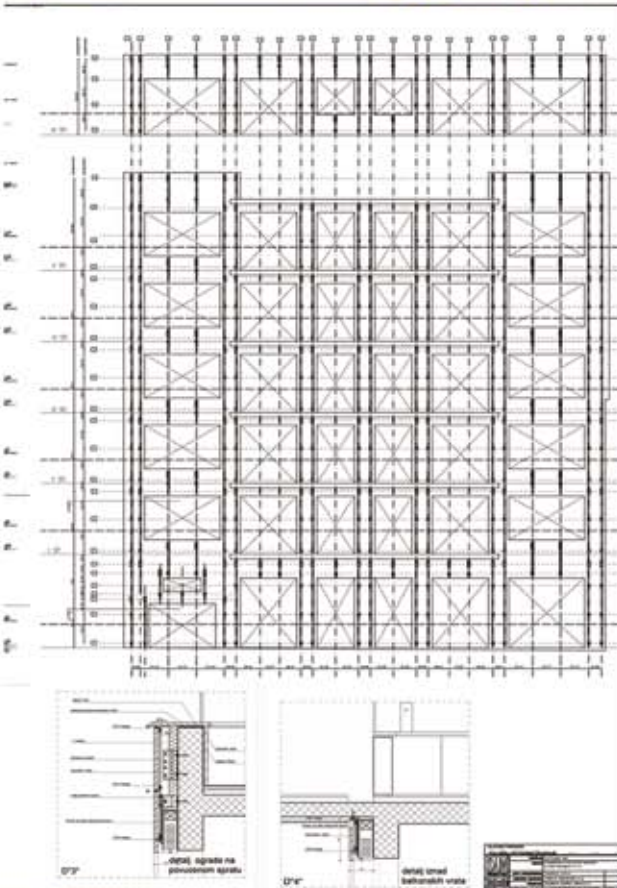
When starting the development of your design, our designers can provide you with assistance in choosing the system for your façade. We are available to analyze the specific needs of every client, provide consultations on the type of material and different processing techniques. There are also a great number of standard details which can help you in the stage of making the design.

The defining of the substructure system is a stage where we are able to define and choose a substructure system, having in mind the information about: the type of building structure where the cladding is to be installed, distance of the face of the cladding from the building structure, size and type of cladding slabs, slab weight, as well as weather conditions.

Making the structural analysis for large buildings is required primarily because of the safety of the very building. Each structural analysis includes preparation of a detailed analysis defining and dimensioning all load-bearing elements of the façade, taking into account the local conditions (seismic zone, wind speed, temperature changes, etc.).

Making graphs. Graphs contain all the specific details, as well as the entire erection plan. Erection plan is used to correctly define all surfaces that should be ventilated. At this stage, before the installation, it is possible to make all the newly emerged changes which follow every execution of building works. In developing the specific details, it is possible to set up the other positions (glass façade, etc.) on the building according to the position of the façade.

Making exact documentation for ordering cladding. At this stage, we use exact measurements to determine the final dimensions of the cladding – individual slabs, and also prepare documentation used for cutting and processing of cladding – stone cutting plans.



INSTALLATION

The service can be customized according to the client's special requests.

The "turnkey" service: in this case, the installation is carried out by Tabaš's specialized teams that have appropriate equipment and tools necessary for precise and professional execution of works. Our experts guarantee the works will be carried out correctly, and their goal is to do a quality work, both in the interior and in the exterior, so that the client is satisfied.

"Ways" of assisting: in case the Orderer of Works uses his own teams for execution of works, Tabaš can provide the necessary training for installing facades, following the rules of craft, deliver the needed equipment and send an expert who will give instructions on the site.

ELEMENTI POTKONSTRUKCIJE "TABAŠ"

ANKERI

ankerni nosač V

- legura AW 6063 T6
- izradjen od L profila
- dimenzije 70x50 debljine 4mm
- oznaka primarnog nosača je **TVp**, dužine-246mm
- oznaka sekundarnog nosača je **TVs**, dužine-96mm
- koriste se za fasade gde je termički sloj debljine 5cm ili gde termičkog sloja nema.
- Vezni materijal (ankeri) za fiksiranje u beton mogu biti $\varnothing 8$ ili $\varnothing 10$

ankerni nosač A

- legura AW 6063 T6
- izradjen od jedinstvenog L profila ojačanog kosnikom
- dimenzije profila 115x85 debljine 5mm
- oznaka primarnog nosača je **TAp**, dužine-246mm
- oznaka sekundarnog nosača je **TAs**, dužine-96mm
- koriste se za fasade gde je termički sloj debljine oko 10cm.
- Vezni materijal (ankeri) za fiksiranje u beton mogu biti $\varnothing 8$, $\varnothing 10$ ili $\varnothing 12$ mm
- otvori na nosaču su promeljivi zavisno od potreba na samom objektu.

ankerni nosač N

- legura AW 6063 T6 ili AW 6082 T6
- izradjen od namenskog L profila
- dimenzije 70x180 promenljive debljine od 4-7mm
- oznaka primarnog nosača je **TNp**, dužine-246mm ili 296mm
- oznaka sekundarnog nosača je **TNs**, L-96mm
- koriste se za fasade gde je termički sloj debljine oko 15cm.
- Vezni materijal (ankeri) za fiksiranje u beton mogu biti $\varnothing 8$, $\varnothing 10$ ili $\varnothing 12$ mm
- otvori na nosaču su promeljivi zavisno od potreba na samom objektu.

ANCHORED BRACKET

bracket V

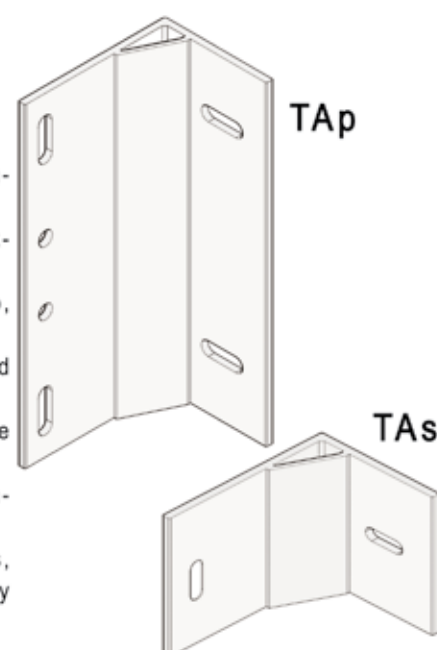
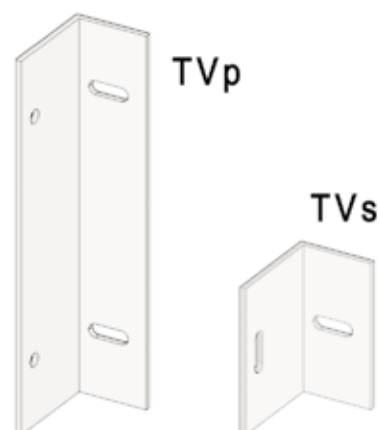
- alloy AW 6063 T6
- made of L profile
- dimensions: 70x50, thickness 4mm
- the primary bracket is marked TVp, 246mm long
- the secondary bracket is marked TVs, 96mm long
- they are used for facades where the thermal layer is 5cm thick, or where there is no thermal layer.
- Fixings (anchors) for fixing in concrete can be $\varnothing 8$ or $\varnothing 10$

bracket A

- alloy AW 6063 T6
- made of the unique L profile reinforced with a stay
- profile dimensions: 115x85, thickness 5mm
- the primary bracket is marked TAp, 246mm long
- the secondary bracket is marked TAs, 96mm long
- they are used for facades where the thermal layer is around 10cm thick.
- Fixings (anchors) for fixing in concrete can be $\varnothing 8$, $\varnothing 10$ or $\varnothing 12$ mm
- the spans on the bracket are various, depending on the needs of the very building.

bracket N

- alloy AW 6063 T6 or AW 6082 T6
- made of the purpose L profile
- dimensions: 70x180, various thicknesses: 4-7mm
- the primary bracket is marked TNp, 246mm or 296mm long
- the secondary bracket is marked TNs, L-96mm
- they are used for facades where the thermal layer is around 15cm thick.
- Fixings (anchors) for fixing in concrete can be $\varnothing 8$, $\varnothing 10$ or $\varnothing 12$ mm
- the spans on the bracket are various, depending on the needs of the very building.



SUBSTRUCTURE ELEMENTS "TABAŠ"

HORIZONTALNI NOSAČI

nosač za ploče debljine 3cm

- legura AW 6063 T6,
- profil je složenog poprečnog preseka, debljine 4mm, pera d=3mm
- horizontalni nosači za direktno prihvatanje ploča d=2cm, 3cm, 4cm i deblje
- ploče d=3cm, mogu biti visine do 200cm
- oznake su TH1, TH2 i TH3, zavisno od namene koju imaju.

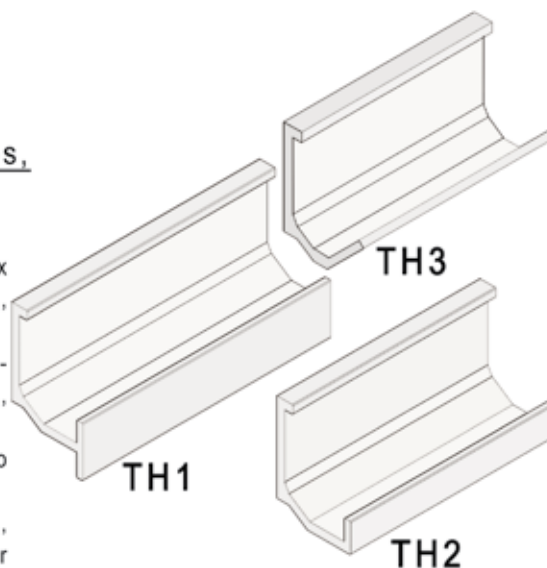
nosač za ploče debljine 2cm

- legura AW 6063 T6,
- profil je složenog poprečnog preseka, debljine 3mm, pera d=2mm
- horizontalni nosači za direktno prihvatanje ploča d=2cm, 3cm.
- ploče d=2cm, mogu biti visine do 80cm, a tokodje mogu nositi i ploče d=3cm, visine 60cm
- oznake su TH1/2, TH2/2 i TH3/2, zavisno od namene koju imaju.

HORIZONTAL RAILS

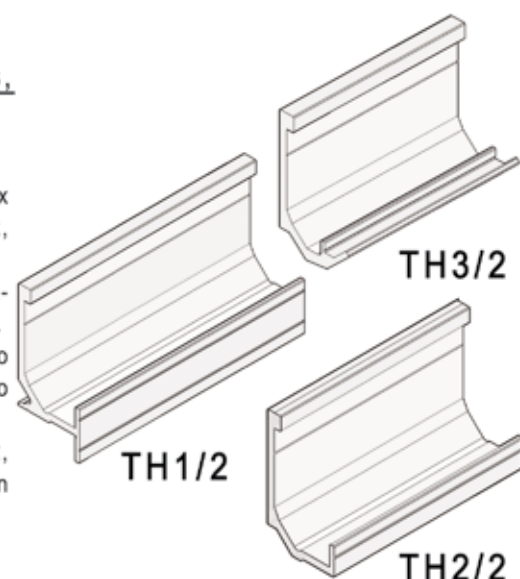
horizontal rail for slabs, 3 cm thick

- alloy AW 6063 T6,
- Profile made of complex cross-sectional, 4mm thick, tongue d=3mm
- horizontal rails for direct attachment of slabs d=2cm, 3cm, 4cm and thicker
- slabs d=3cm, can be up to 200cm high
- the rails are marked TH1, TH2 i TH3, depending on their purpose.



horizontal rail for slabs, 2cm thick

- alloy AW 6063 T6,
- Profile is made of a complex cross-sectional, 3mm thick, tongue d=2mm
- horizontal rails for direct attachment of slabs d=2cm, 3cm.
- slabs d=2cm, can be up to 80cm high, and they can also hold slabs d=3cm, 60cm high
- the rails are marked TH1/2, TH2/2 i TH3/2, depending on their purpose.

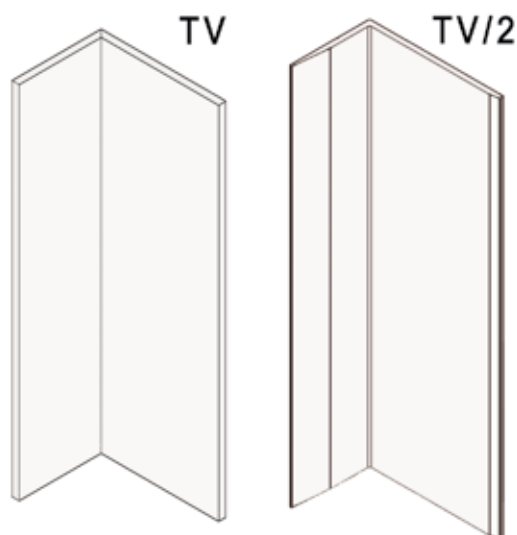


VERTIKALNI NOSAČI

- legura AW 6063 T6
- element TV izradjeni od L profila dimenzija Ax B 70x50 debljine 4mm
- koristi se kao vertikalni profil za prihvatanje horizontalnih nosača oznake TH1, TH2 i TH3
- element TV/2, L profil dimenzija Ax B 75x45 debljine 3mm, sa konusnim krajevima
- koristi se kao vertikalni profil za prihvatanje horizontalnih nosača oznake TH1/2, TH2/2 i TH3/2

VERTICAL MULLIONS

- alloy AW 6063 T6
- element TV made of L profiles, dimensions: Ax B 70x50, 4mm thick
- it is used as vertical profile for attaching horizontal rails marked TH1, TH2 i TH3
- element TV/2, L profile, dimensions: Ax B 75x45, 3mm, with conical ends
- it is used as vertical profile for attaching horizontal rails marked TH1/2, TH2/2 i TH3/2



SISTEMI POTKONSTRUKCIJE TABAŠ

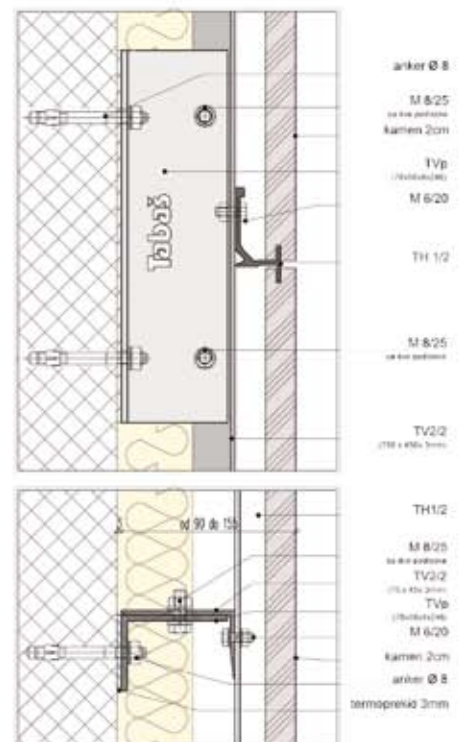
SISTEM TABAŠ V.10.2

- sloj termike ~ d=5cm
- standardno udaljenje lica kamena d=2cm, od konstrukcije objekta 110mm-155mm (postoji rešenje za manje i veće udaljenje)
- ankeri za vezu sa betonom su dva M8 A4, na vertikalnom međusobnom odstojanju od 160mm
- zavrtnjevi koje nose vertikalnu TV/2 uz primarni nosač TVp su dva M8 A2.
- horizontalni nosači se fiksiraju sa 1 M6 A2 za vertikalnu koje su na međusobnom udaljenju od 100cm
- sistem je projektovan za kamen debljine 2cm i 3cm.

TABAŠ SYSTEM V.10.2

- thermal layer ~ d=5cm
- standard distance from the face of stone d=2cm to the building structure is 110mm-155mm (also exists solution for smaller or larger distances)
- there are two M8 A4 anchors for concrete fixing, with the vertical distance of 160mm between them
- there are two M8 A2 bolts holding the TV/2 vertical profile with the TVp primary bracket.
- horizontal rails are fixed with 1 M6 A2 to the vertical profile with a distance of 100cm between them
- system is designed for the stone thickness 2cm and 3cm.

sklop V.10.2_udaljenje od 90 do 155mm



SUBSTRUCTURE SYSTEMS TABAŠ

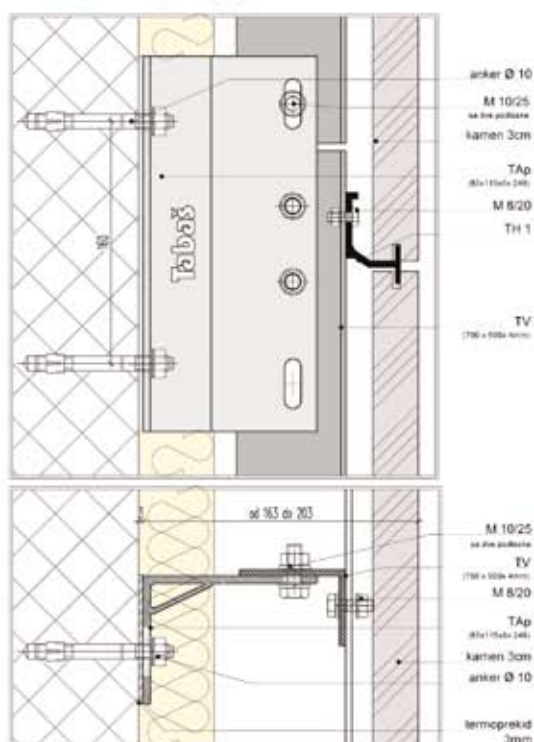
SISTEM TABAŠ A.20.3

- sloj termike ~ d=10cm
- standardno udaljenje za lica kamena d=3cm do konstrukcije objekta je 160mm-200mm
- fiksiranje ankera TAp za betonski zid vrši se sa dva ankera M10 A4, koji su postavljeni na vertikalnom međusobnom odstojanju od 160mm
- vertikala TV je sa dva zavrtnja M10 A2 pričvršćena za anker TAp, za spratnu visinu od 4.500mm.
- horizontalni nosači TH1, TH2 i TH3 se fiksiraju sa jednim zavrtnjem M8 A2 za vertikalni profil TV
- visina kamenih ploča d=3cm je do 200mm, dužina nije ograničena za određene vrste kamena.
- sa vertikalom TV se "pokrivaju" i spratne visine do 6.0m
- sistem je projektovan za kamen debljine 3cm i 4cm.

TABAŠ SYSTEM A.20.3

- thermal layer ~ d=10cm
- standard distance from the face of stone d=3cm to the building structure is 160mm-200mm
- fixing TAp bracket to a concrete wall is done using two anchors M10 A4, which are placed so that the vertical distance between them is 160mm
- the vertical profile TV is attached to the TAp bracket with two M10 A2 bolts, for a floor height of 4.500mm.
- horizontal rails TH1, TH2i TH3 are fixed with one M8 A2 bolt to the vertical profile TV
- the stone slabs d=3cm are up to 200mm high, length is not limited for certain types of stone.
- the TV vertical profile "covers" floor heights up to 6.0m high.
- system is designed for the stone thickness 3cm and 4cm.

Sklop A.20.3_udaljenje od 163 do 203



SISTEM TABAŠ N.30.2

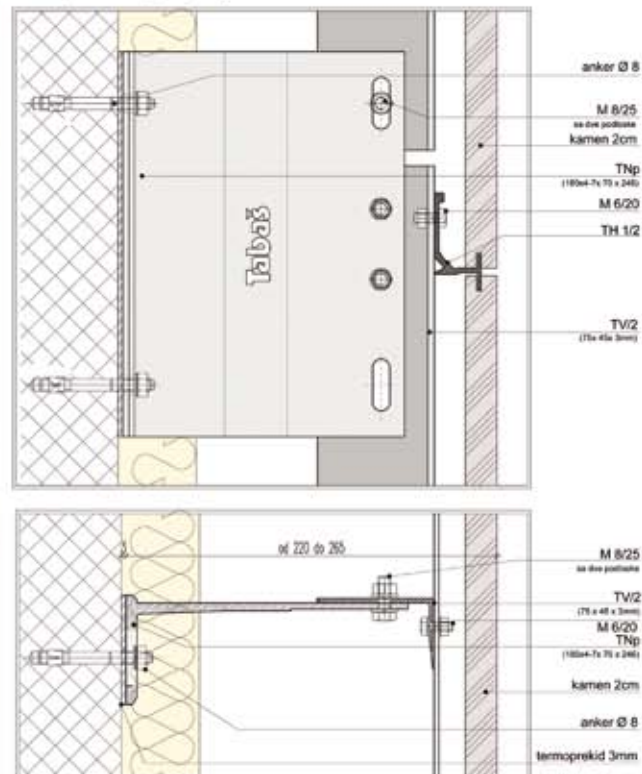
- sloj termike ~ d=15cm
- standardno udaljenje lica kamena d=2cm do konstrukcije objekta je 220mm-265mm
- fiksiranje anker nosača TN za betonski zid vrši se sa dva ankera M8 A4, koji su postavljeni na vertikalnom međusobnom odstojanju od 180mm
- vertikalna TV/2 je sa dva zavrtnja M8 A2 pričvršćena za anker TN.
- horizontalni nosači TH1/2, TH2/2 i TH3/2 se fiksiraju sa jednim zavrtnjem M6 A2 za vertikalni profil TV/2
- visina kamenih ploča d=2cm je do 800mm.
- za kamen d=3cm, sistem prelazi u oznaku N.30.3. Ovaj sistem može da nosi ploče d=3cm, visine do 600mm. (sa izmenom dimenzija šrafova i ankera)

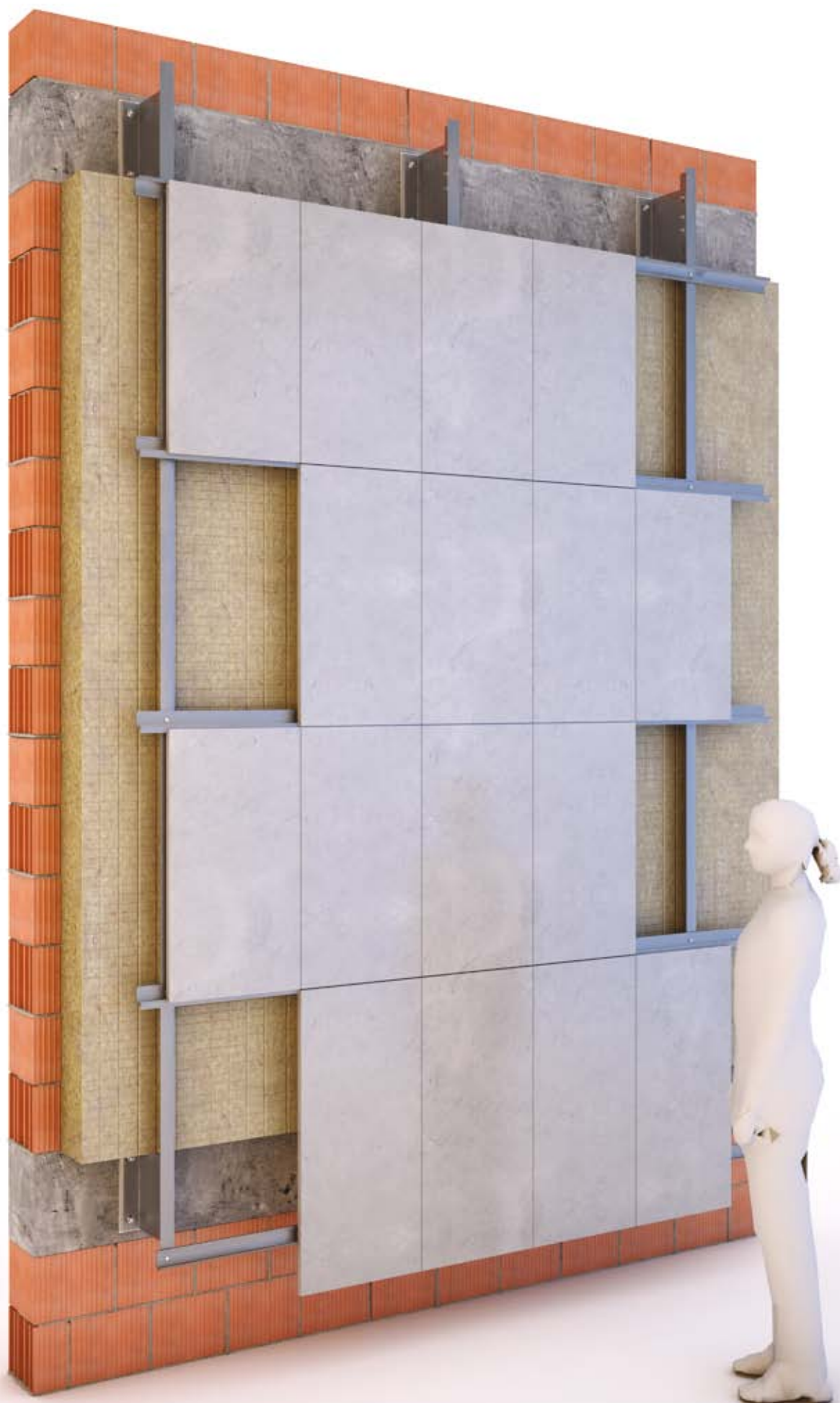
TABAŠ SYSTEM N.30.2

- thermal layer ~ d=15cm
- standard distance from the face of stone d=2cm to the building structure is 220mm-265mm
- fixing TN bracket to a concrete wall is done using two screws (anchors) M8 A4, which are placed so that the vertical distance between them is 180mm
- the vertical profile TV/2 is attached to the TN bracket with two M8 A2 bolts.
- horizontal rails TH1/2, TH2/2 i TH3/2 are fixed with one M6 A2 bolt to the vertical profile TV/2
- the stone slabs d=2cm are up to 800mm high, length is not limited for certain types of stone.
- for stone d=3cm, the system is marked N.30.3. This system can hold slabs d=3cm, up to 600mm high. (with a change in dimensions of bolts and anchors for concrete).



Sklop N.30.2_udaljenje od 220 do 265

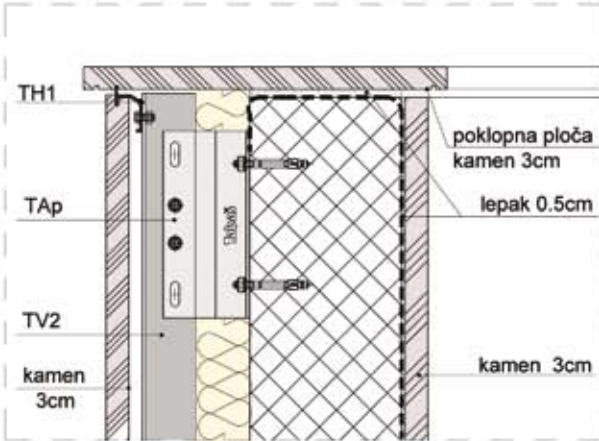




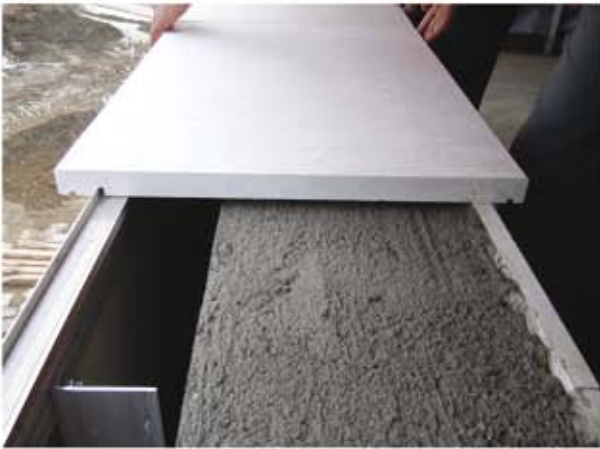
KARAKTERISTIČNI DETAJI

DETALJI ZAVRŠETAKA

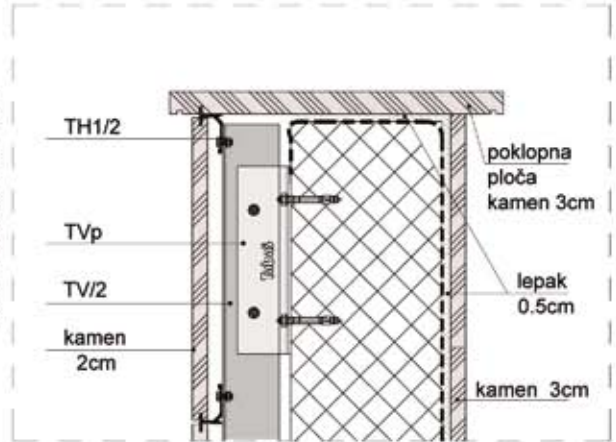
TERMINATIONS



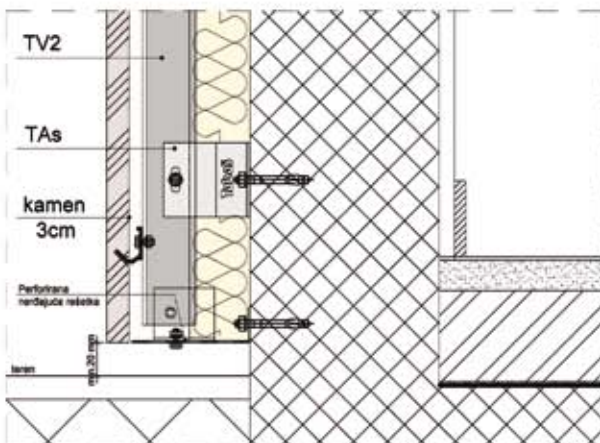
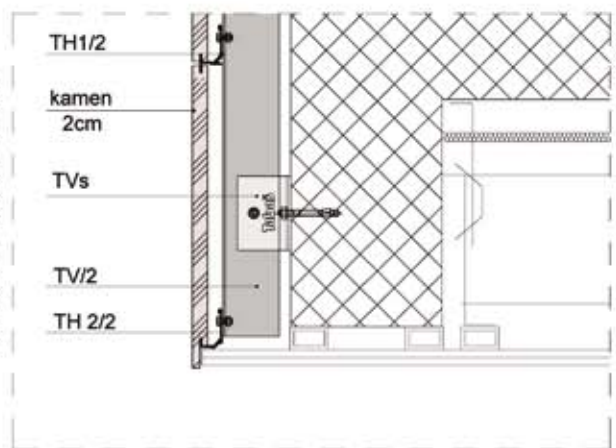
DETALJ KROVNOG NADZIDKA
TOP DETAIL



DETALJ POKLOPNE PLOČE NA TERASI
TOP TERRACE DETAIL



DETALJ ZAVRŠNE PLOČE NA TERASI
BOTTOM TERRACE DETAIL

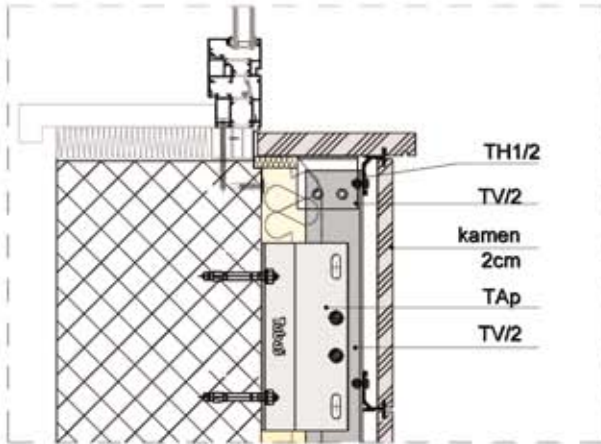


DETALJ POČETNE PLOČE
BOTTOM DETAIL



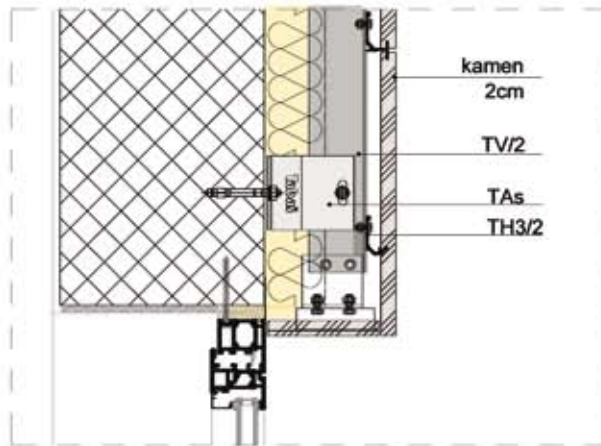
CARACTERISTIC DETAILS

DETALJI PROZORA I VRATA



DETALJ PROZORSKE KLUPICE
WINDOWS BOTTOM

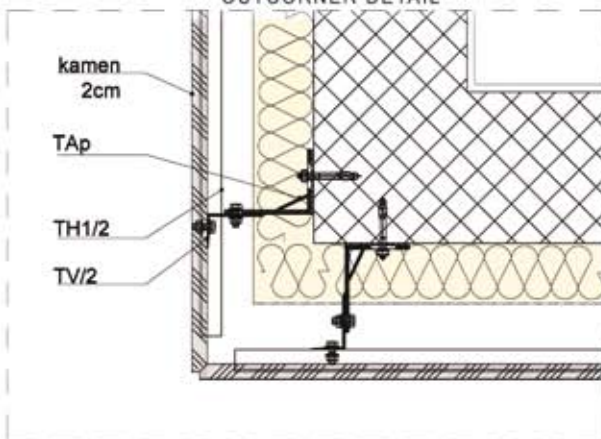
WINDOWS AND DOORS SOLUTIONS



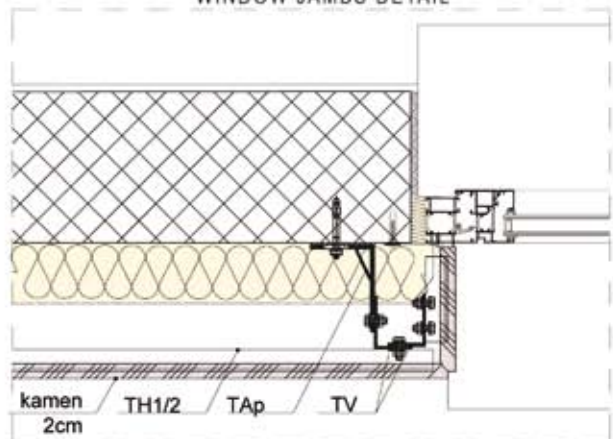
DETALJ IZNAD PROZORA
WINDOWS LINTEL



DETALJ UGLA ZGRADE
OUTCORNER DETAIL



DETALJ ŠPALETNE
WINDOW JAMBS DETAIL





CENTAR OBLASNE KONTROLE LETENJA Beograd
TABAŠ sistem I.40.8 , A 30.3 , A 20.3







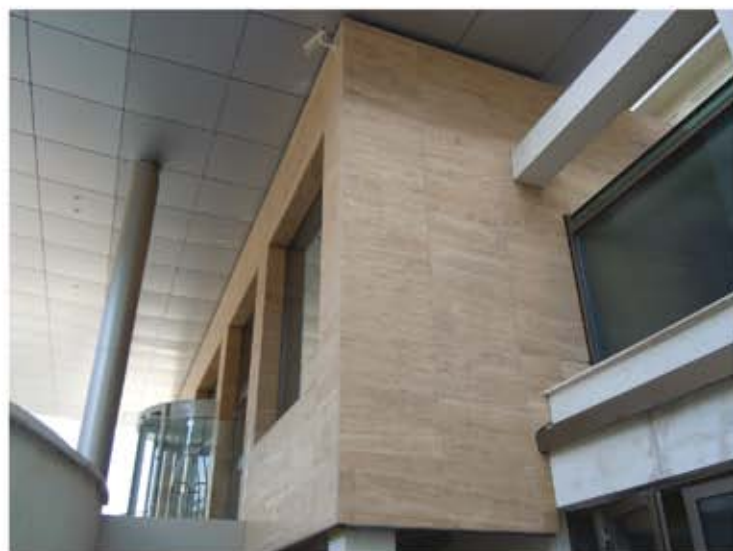


AG
Info: 011 262 262



POSLOVNO STAMBENI OBJEKAT Beograd
TABAŠ sistem A.20.3







PRODAJA
STANOVA
063/666-366
063/248-670

STAMBENO POSLOVNI OBJEKAT Beograd
TABAS A.20.3























POTKONSTRUKCIJA SUBSTRUCTURE FOR
ZA VENTILISANU FASADU THE VENTILATED FACADE

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