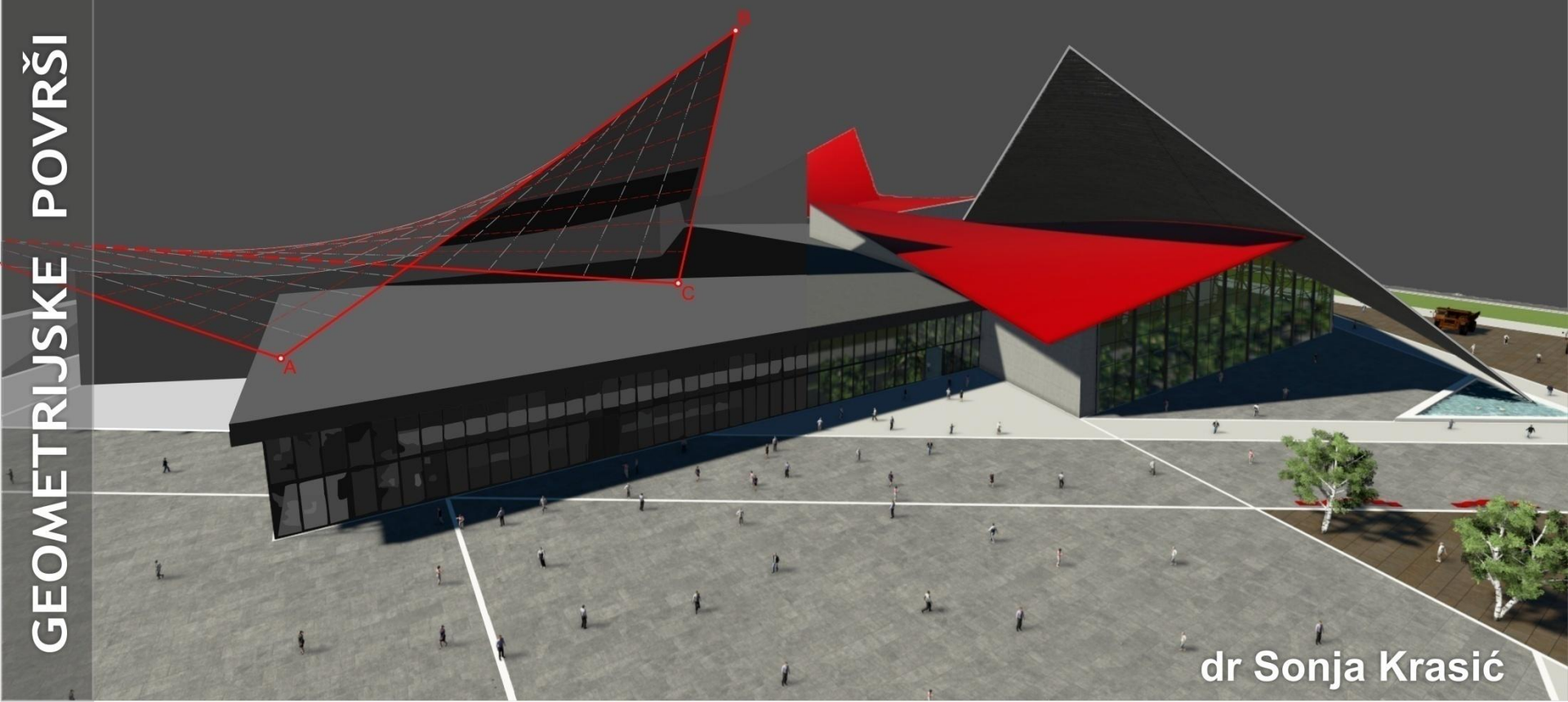


IV PREDAVANJE

POVRŠI JEDNOSTRUKO ZAKRIVLJENOSTI





GEOMETRIJSKE POVRŠI U ARHITEKTURI

I PRAVOIZVODNE POVRŠI

I.1. RAZVOJNE:

I.1.1. POLIEDARSKE

I.1.1.1. Pravi poliedri

I.1.1.2. Piramide i prizme

I.1.2. JEDNOSTRUKO-ZAKRIVLJENE

I.1.2.1. **Konusi i oblice**

I.1.2.2. Konvolutne površi

I.2. NERAZVOJNE:

I.2.1. JEDNOSTRUKO-IZVODNE

I.2.1.1. Helikoidi

I.2.1.2. Cilindroidi

I.2.1.3. Konoidi

I.2.1.4. Tetroidi

I.2.2. DVOSTRUKO-IZVODNE

I.2.2.1. Jednograni obrtni hiperboloid

I.2.2.2. Jednograni eliptični hiperboloid

I.2.2.3. Hiperbolički paraboloid

II DVOSTRUKO ZAKRIVLJENE POVRŠI

II.1. OPŠTE POVRŠI

II.1.1. LOPTA (SFERA)

II.1.2. ELIPSOID

II.1.3. PARABOLOID

II.1.4. DVOGRANI HIPERBOLOID

II.2. OBRTNE POVRŠI

II.2.1. OPŠTE

II.2.2. TORUSI

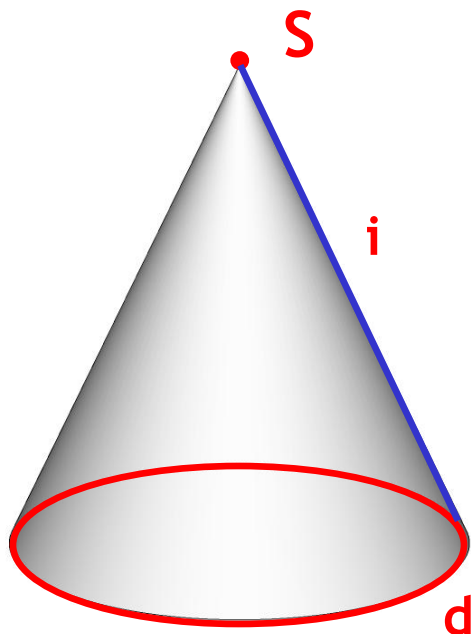
II.3. KLIZNE (TRANSLACIJSKE) POVRŠI



JEDNOSTRUKO-ZAKRIVLJENE POVRŠI

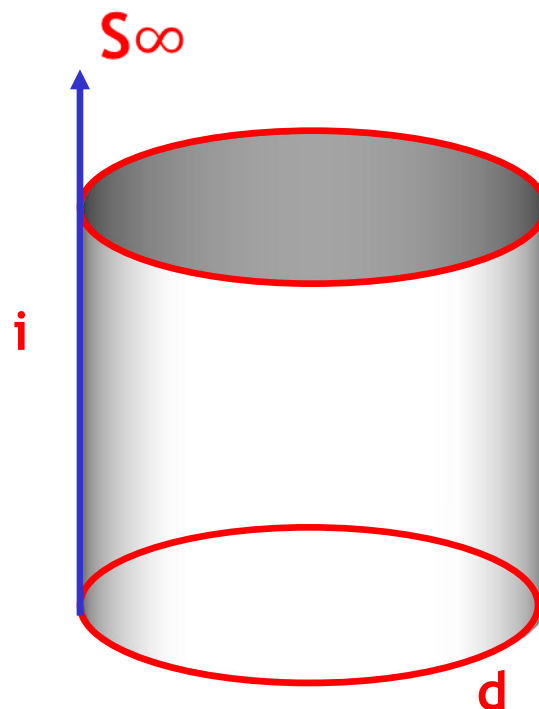
KONUSI I OBLICE

KONUSI I OBLICE



KONUSI

- vrh - tačka S
- bazis - ravna ili prostorna kriva d
- izvodnice i



OBLICE

- vrh - tačka S^∞
- dva bazisa - ravne ili prostorne krive d
- paralelne izvodnice i

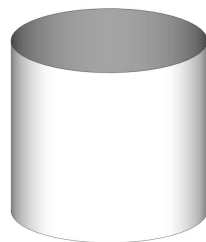


Fig.1

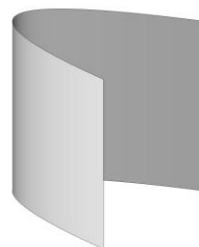


Fig.2

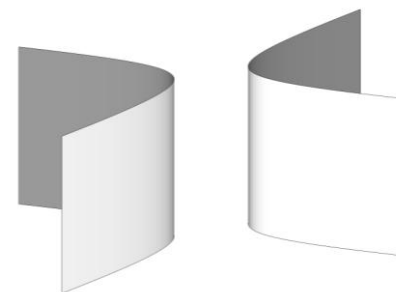


Fig.3

Različita podela:

Prema bazu:

- kružne (bazis je krug, konusi i oblice)
- eliptične (bazis je elipsa, oblice, sl.1)
- parabolične (bazis je parabola, oblice, sl.2)
- hiperbolične (bazis je hiperbola, oblice, sl.3)

Prema položaju ose prema ravni bazisa konusi i oblice su:

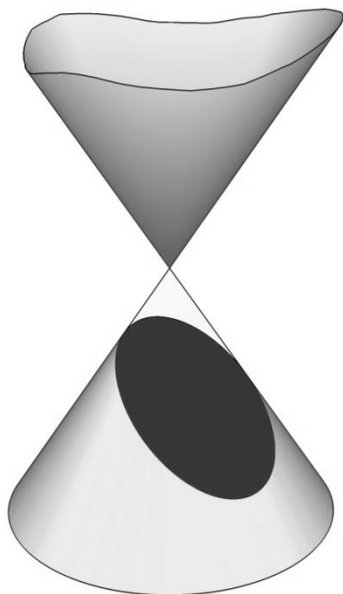
- obrtni (rotacioni), ako je osa površi (konus ili oblica) upravna na ravan bazisa
- kose, ako osa stoji koso u odnosu na ravan bazisa

KONUSI I OBLICE

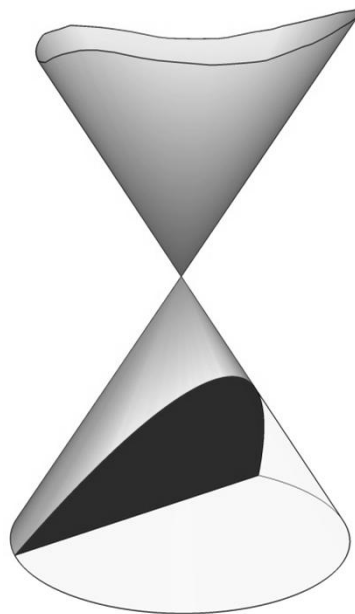
Ravni preseci konusa

- a) **elipsa** (sve tačke u konačnosti)
- b) **parabola** (jedna beskonačno daleka tačka)
- c) **hiperbola** (dve beskonačno daleke tačke)

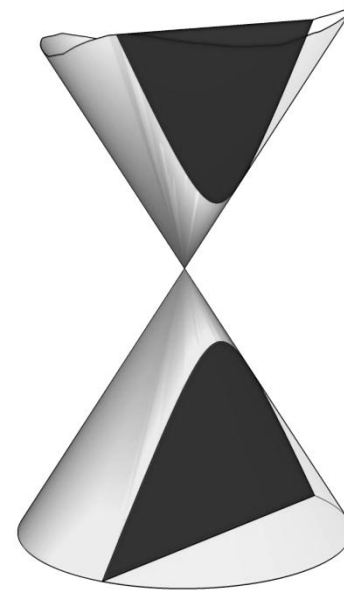
a



b



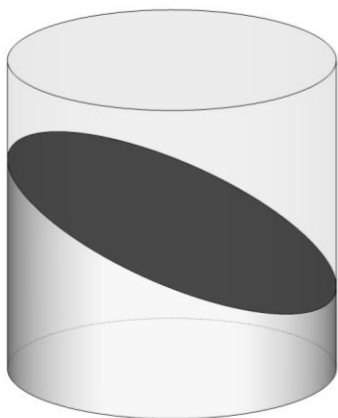
c



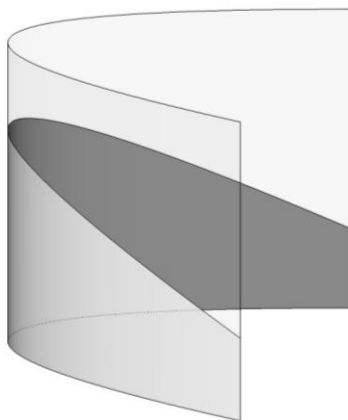
KONUSI I OBLICE

Ravni preseki oblica

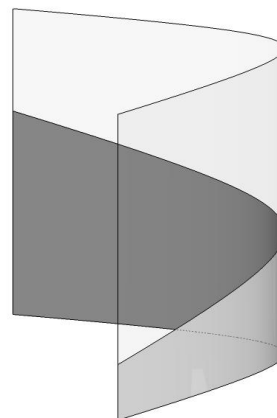
- a) **elipsa** (sve tačke u konačnosti)
- b) **parabola** (jedna beskonačno daleka tačka)
- c) **hiperbola** (dve beskonačno daleke tačke)



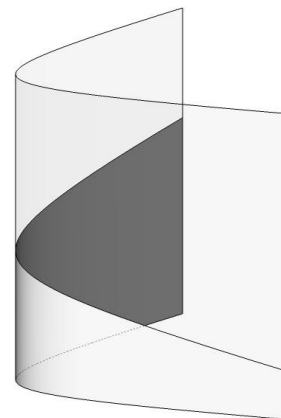
a)



b)

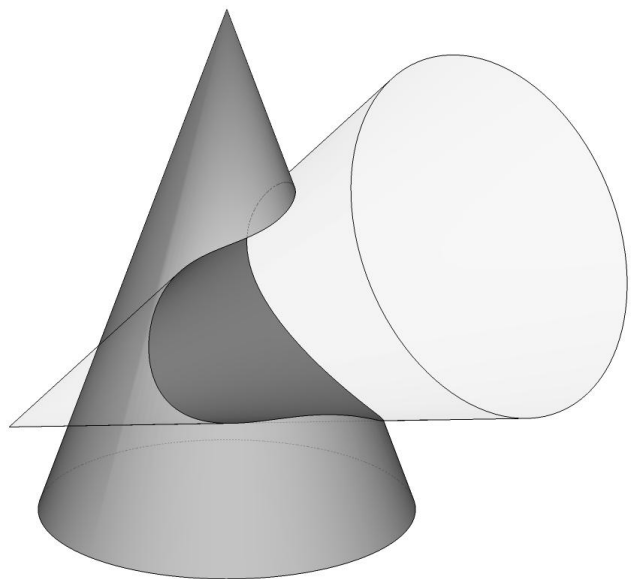


c)

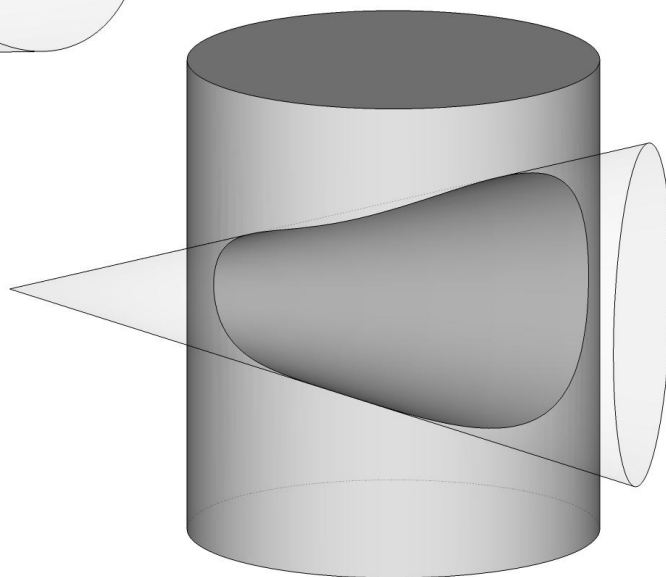


KONUSI I OBLICE

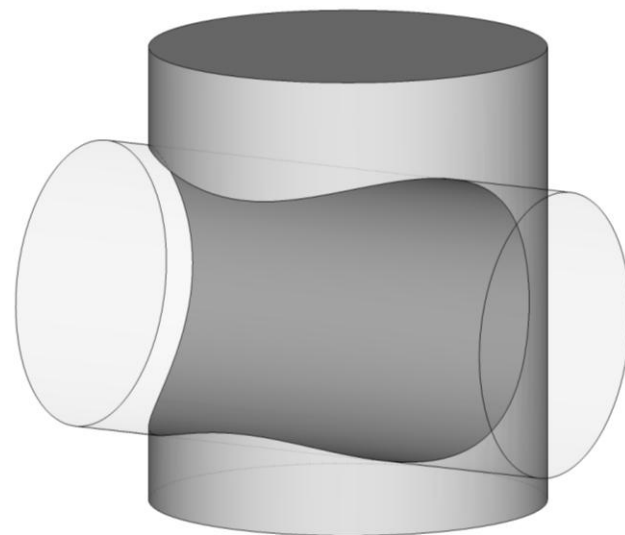
Prodori



Sl.1

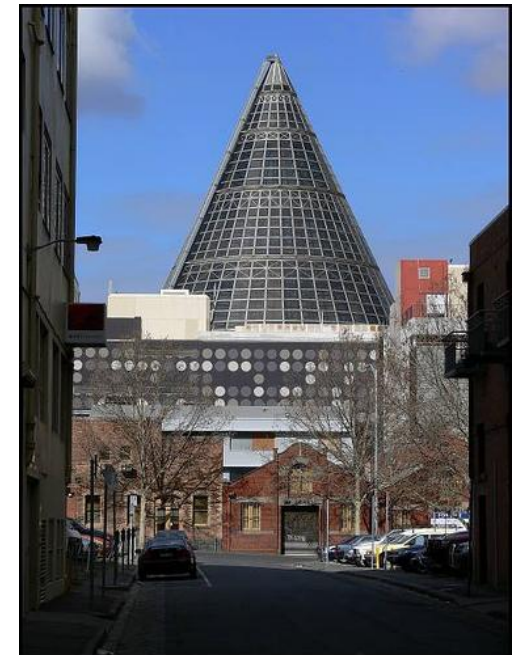


Sl.2



Sl.3

PRIMENA KONUSA U ARHITEKTURI



PRIMENA OBLICA U ARHITEKTURI





Primena konusa u arhitekturi

Tržni centar, Central
Station, Melburn,
Australija, arh. Ashton
Raggatt McDougal,
2005.g.





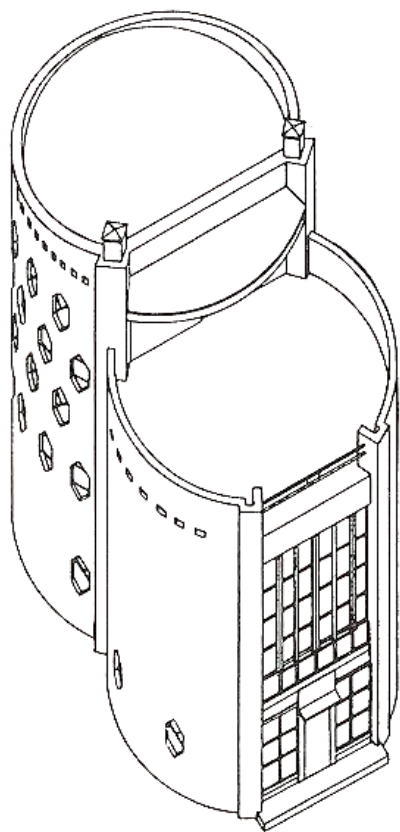
Katedrala San Sebastian, Rio de Janeiro, Brazil, arh. Lord Ivo Antônio Calliari, 1976.g.



Muzej stakla, Takoma, USA, WA, arh. Artur Erikson, 2002.g.

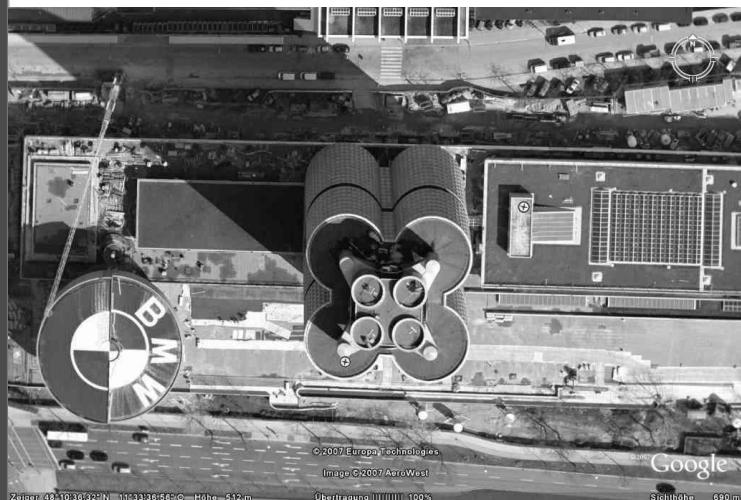


Bašta krila leptira, Muzej igračaka, Ročester, UK, arh. Macon Chaintreuil Jensen i Stark, 2006.g.



Dom Melnikova,
Moskva, Rusija, arh.
K.S.Melnikov, 1929.g





BMW*s upravna zgrada,
Minhen, Nemačka, arh.
Karl Schwanzer, 2006.g





Primena oblica u arhitekturi

Suite Vollard, Curitiba,
Brazil, arh. Bruno de
Franco, 2004.g





Primena oblica u

**Westin Bonaventure
hotel & Suites**, Los
Anđeles, SAD, arh. Džon
Portman, 1977.g



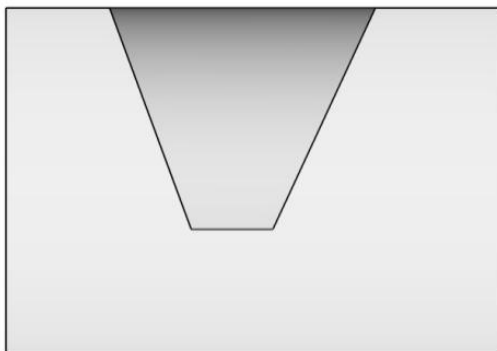


Kongresni centar, Dablin,
Irska, arh. Kevin Roche,
2010.g

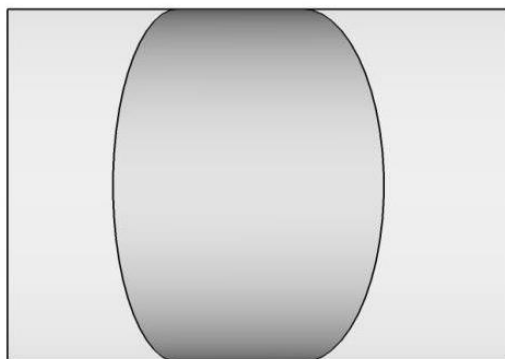
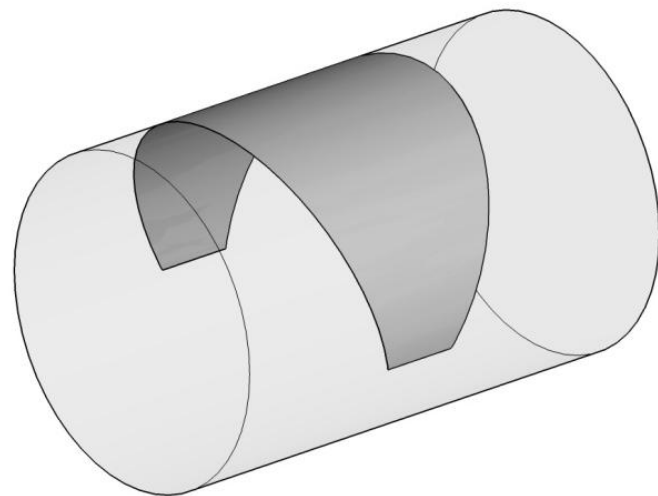


Primena oblica u arhitekturi

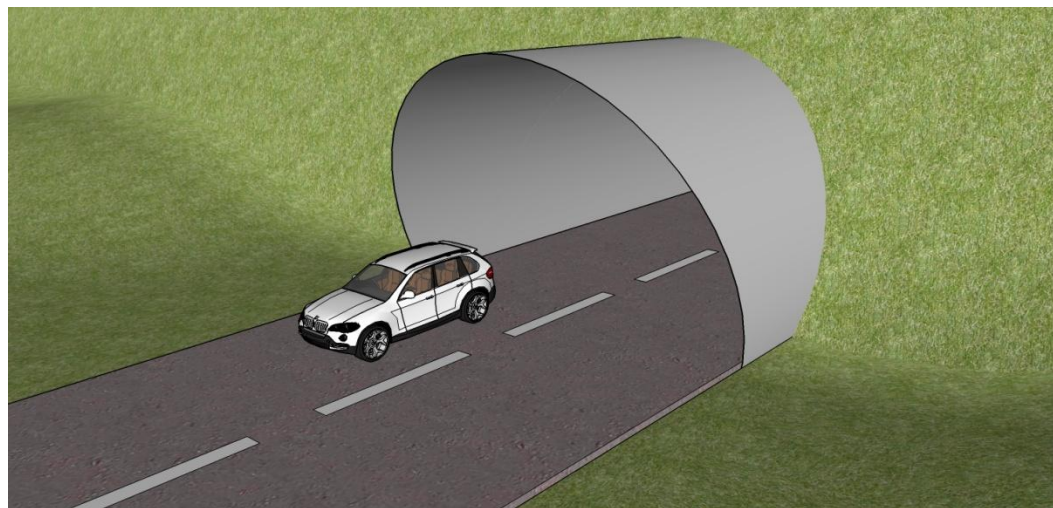
presek



aksonometrija



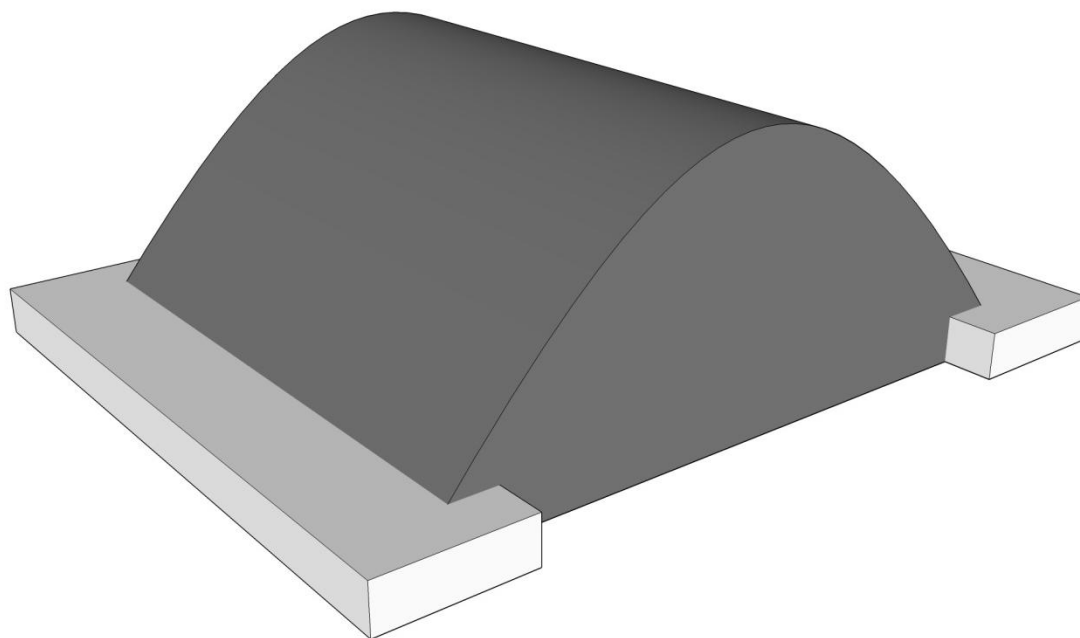
osnova



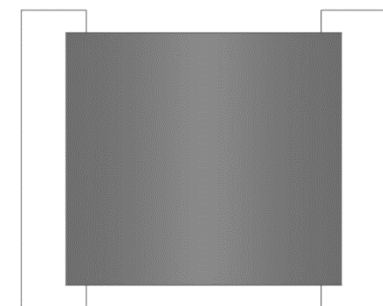
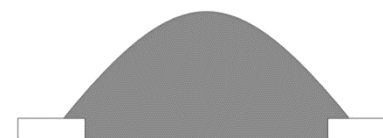
pravougaona osnova

Konstrukcija se koristi za tunele

aksonometrija



presek

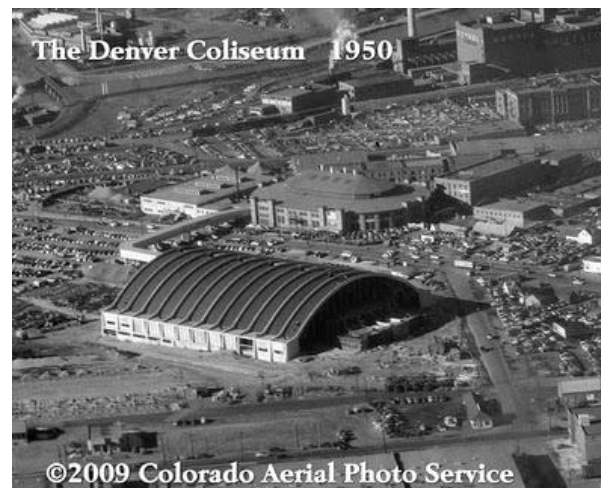


osnova

Hala veletržnice, Keln,
Nemačka, arh. Th. Teichen

pravougaona osnova

Primena oblica u arhitekturi



Denver coliseum, Denver, SAD, arh. Anton Tedesko, 1952.g

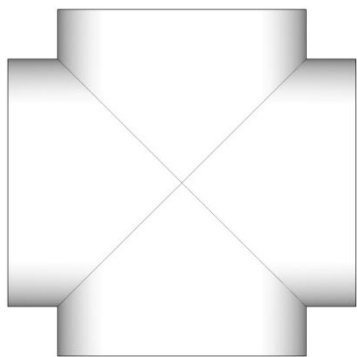


Ellsworth AFB Pride Aircraft Hangar, Rapid City, Južna Dakota, SAD, arh. Anton Tedesko, 1948.g

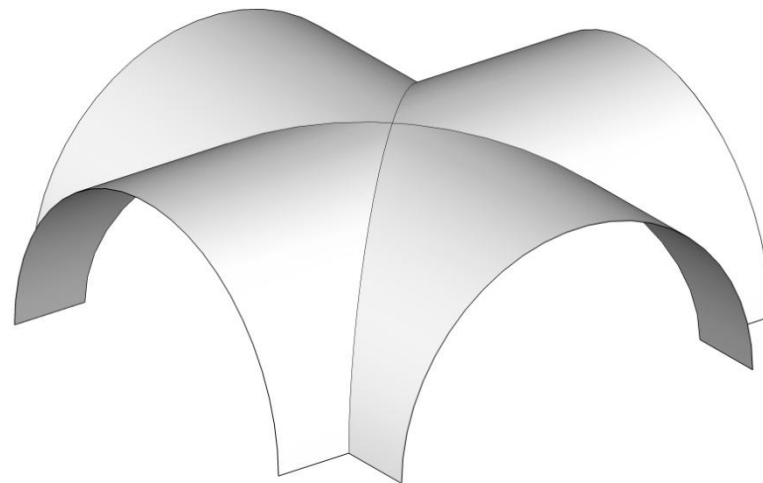
pravougaona osnova

Primena oblica u arhitekturi

Prodor dve obrtne poluobllice

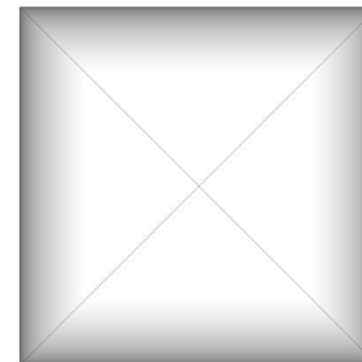
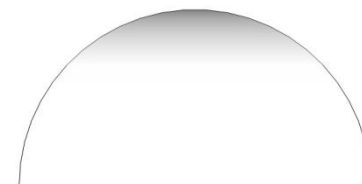


osnova i izgled



aksonometrija

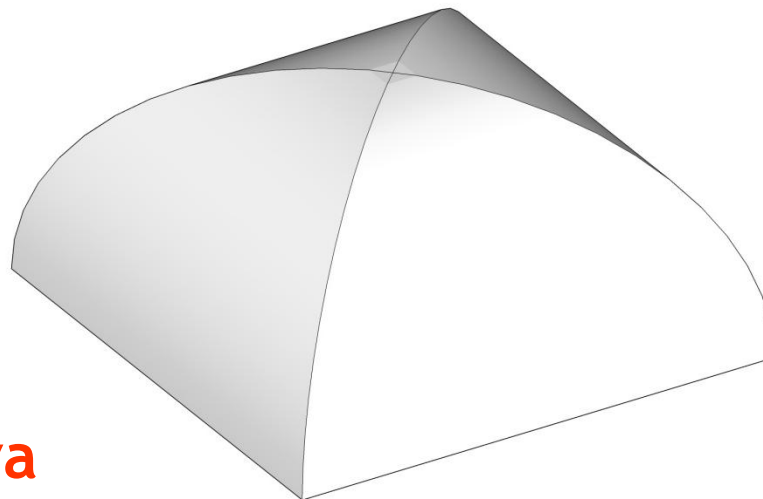
krstati svod



osnova i izgled

manastirski
svod

kvadratna osnova





Aerodromska zgrada, Sent Luis, SAD, arh. Hellmuth Obata & Kassabaum,
eng. Anton Tedesko, 1954.g

pravougana osnova



Primena oblica u arhitekturi

Prodor horizontalnih obrtnih poluoblica



Sportski zimski stadion, Grenobl, Francuska, arh. N. Esquillan i
J. Otzon, 1967.g

osnova romboid

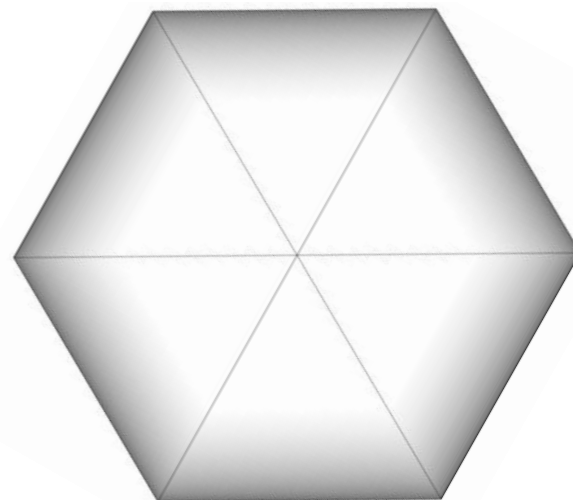
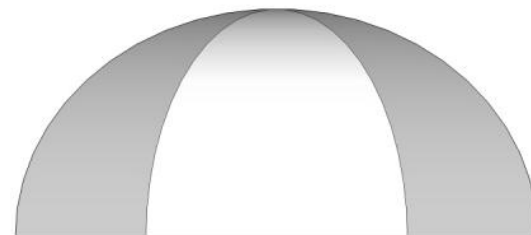
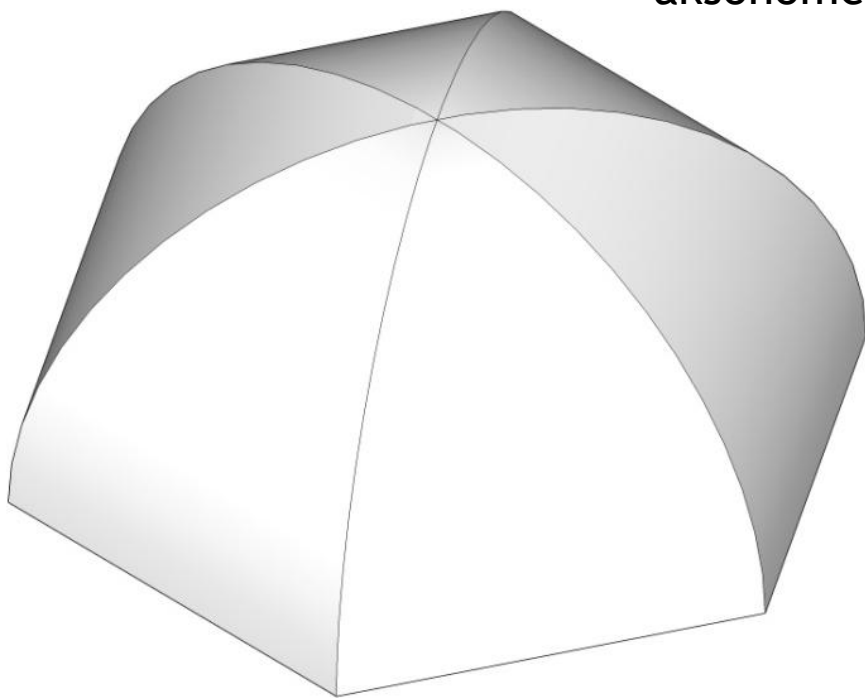


Primena oblica u arhitekturi

Prodor tri obrtne poluoblice

manastirski svod

aksonometrija



šestougana osnova

osnova i izgled

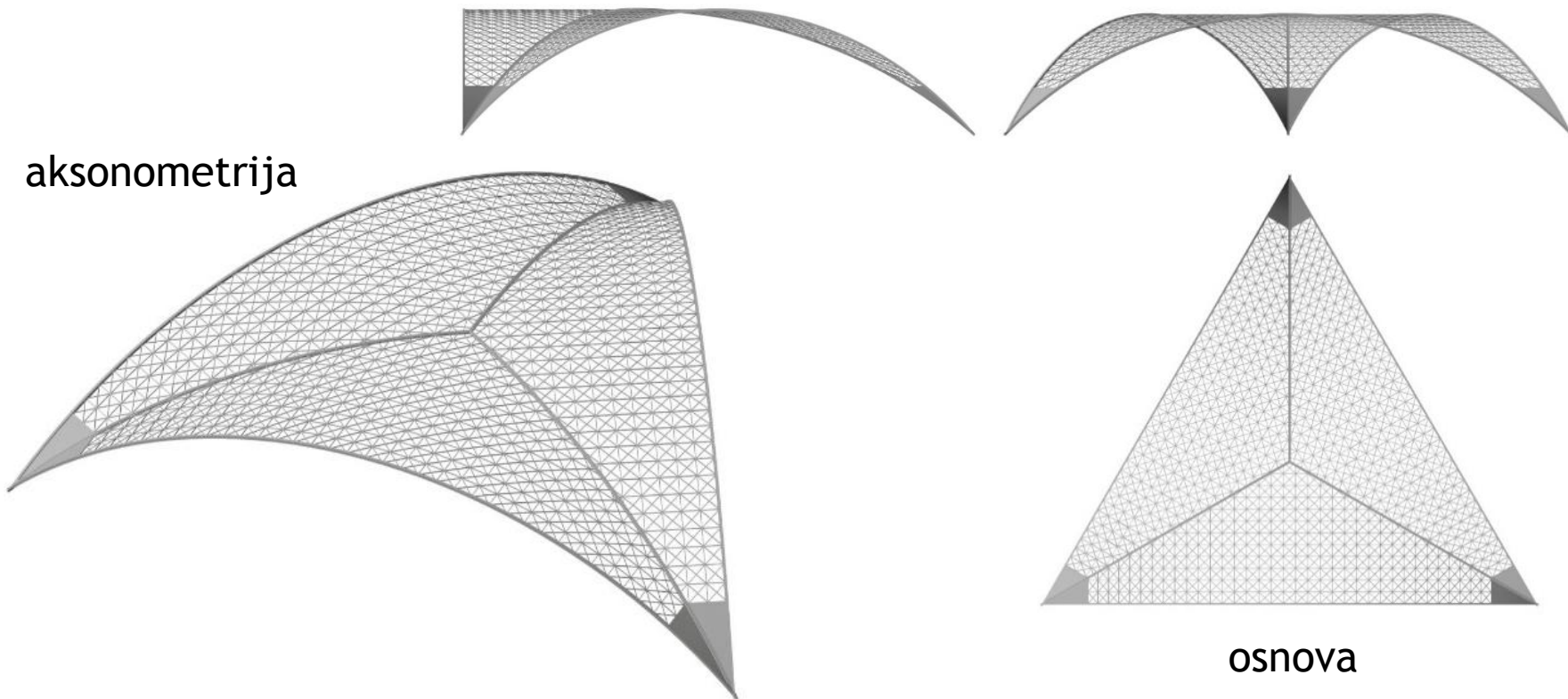
Primena oblica u arhitekturi

Prodor tri kongruentne obrtne poluobljice

izgled II

izgled I

aksonometrija



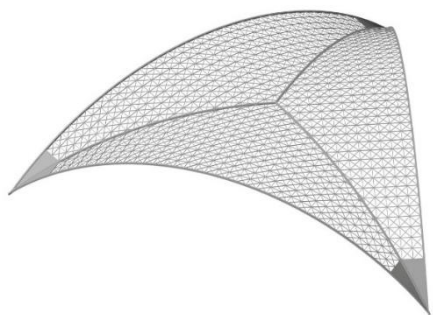
trougaona osnova

Nacionalni centar industrije i tehnike,
Pariz, Francuska, arh. K. De Maji, Zerfis i
Nervi, 1955.g

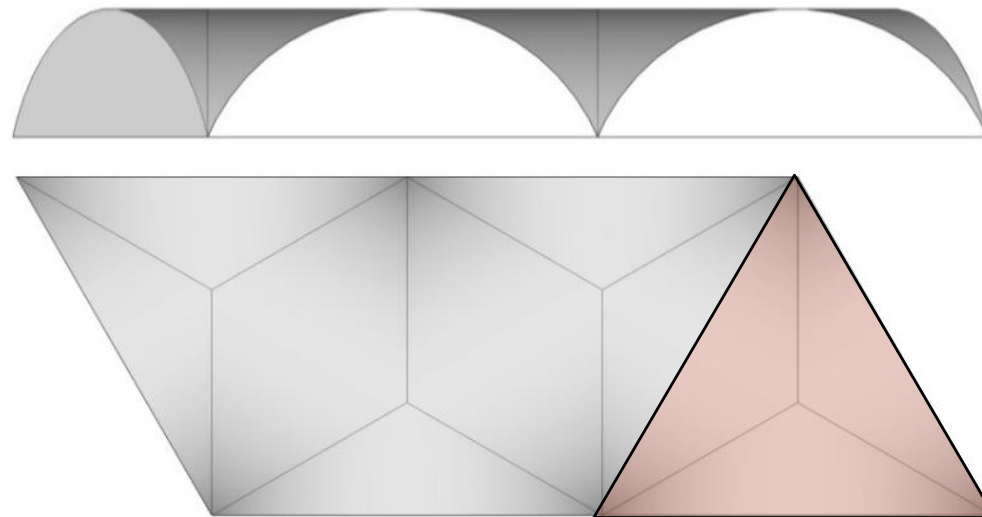
Primena oblica u arhitekturi



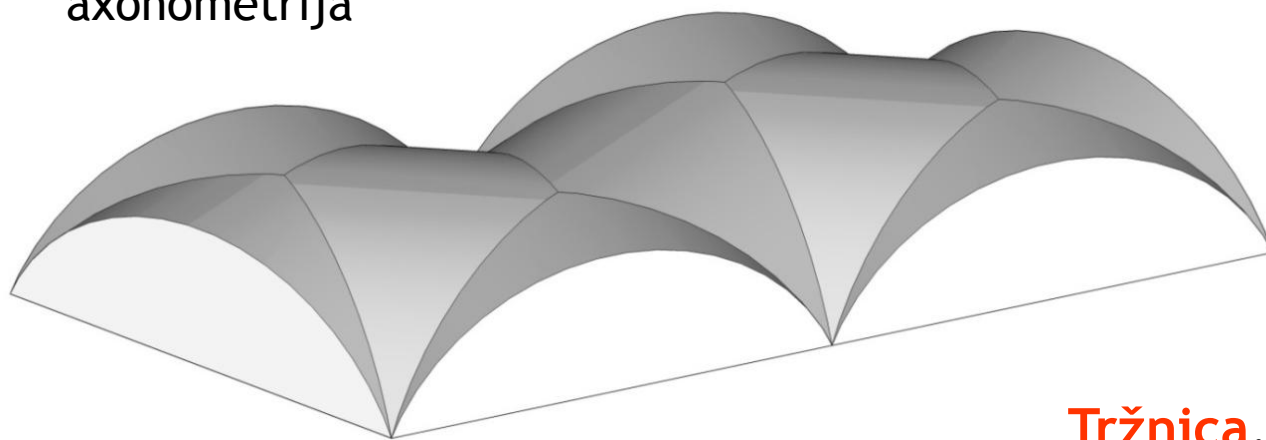
Nacionalni centar industrije i tehnike, Pariz, Francuska,
arh. K. De Maji, Zerfis i Nervi, 1955.g



axonometrija



osnova i izgled

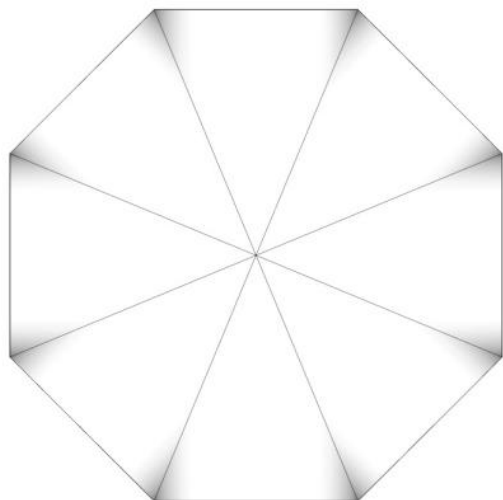
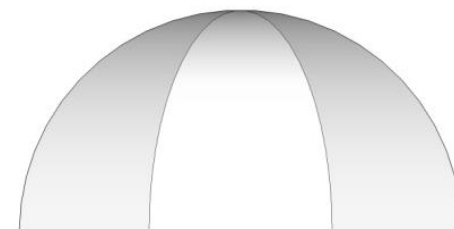


osnova paralelogram

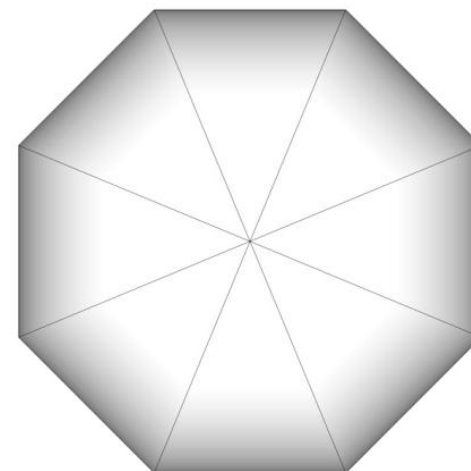
Tržnica, Tresanti, Italija,
arh. G.Vaccaro



manastirski svod



aksonometrija

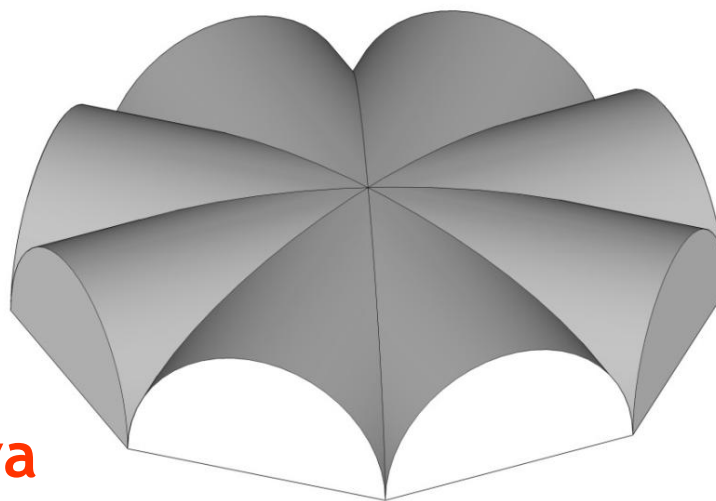


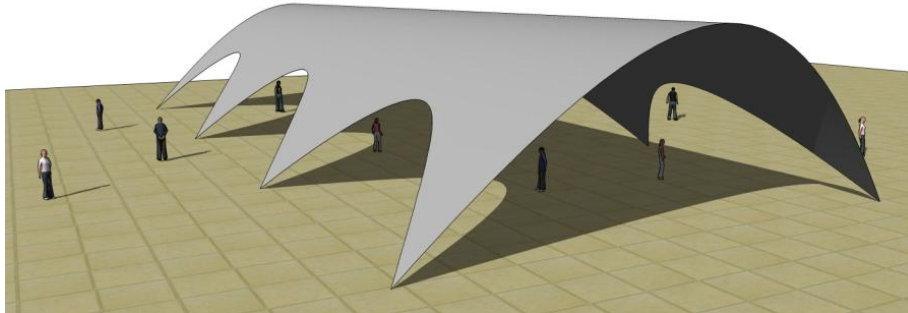
osnova i izgled

osnova i izgled

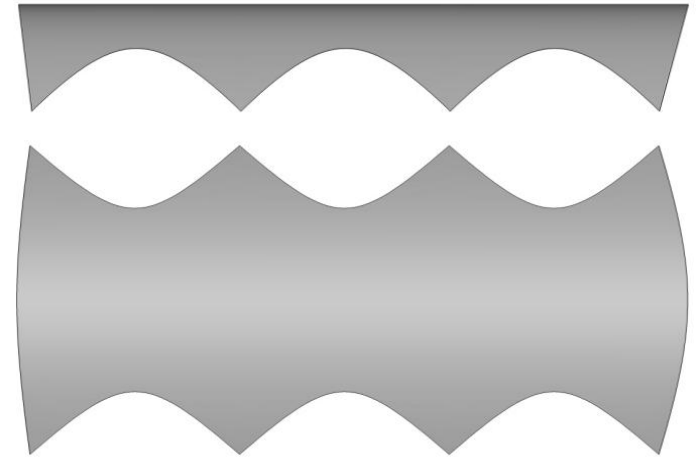
obličast svod

osmougana osnova

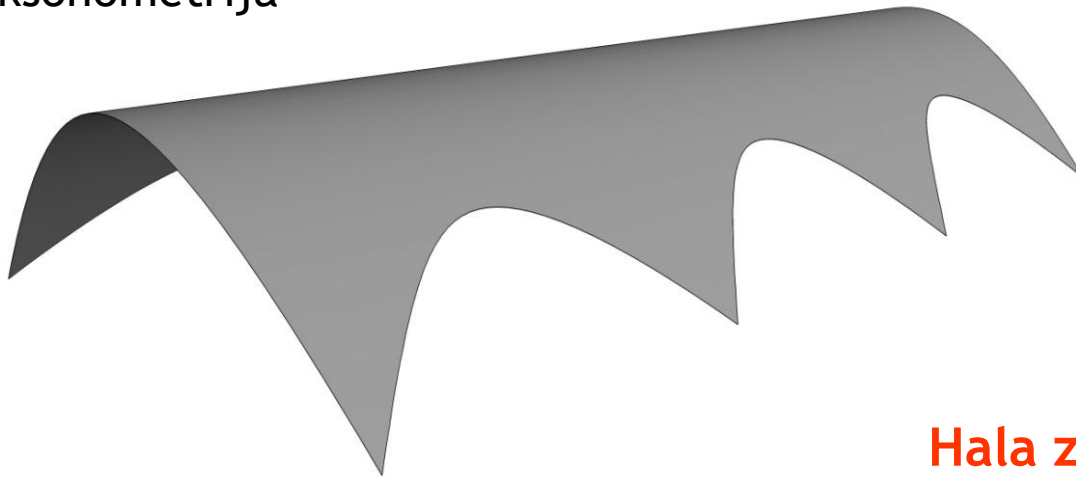




aksonometrija



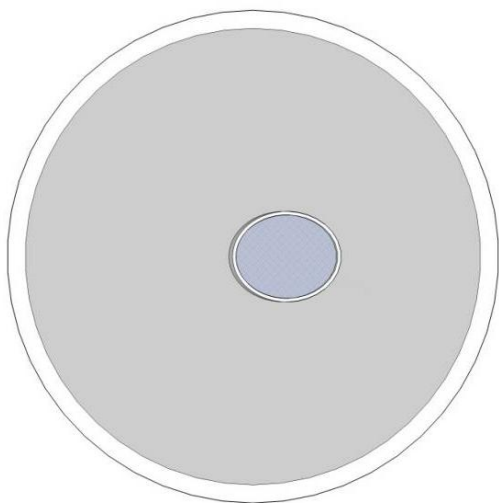
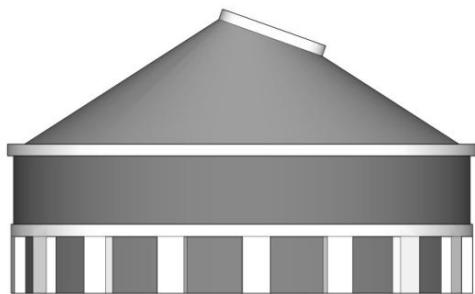
osnova i izgled



pravougaona osnova

Hala za cveće, Pescija, Italija,
arh. Gori, Ricci, Savidi

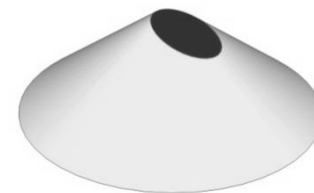
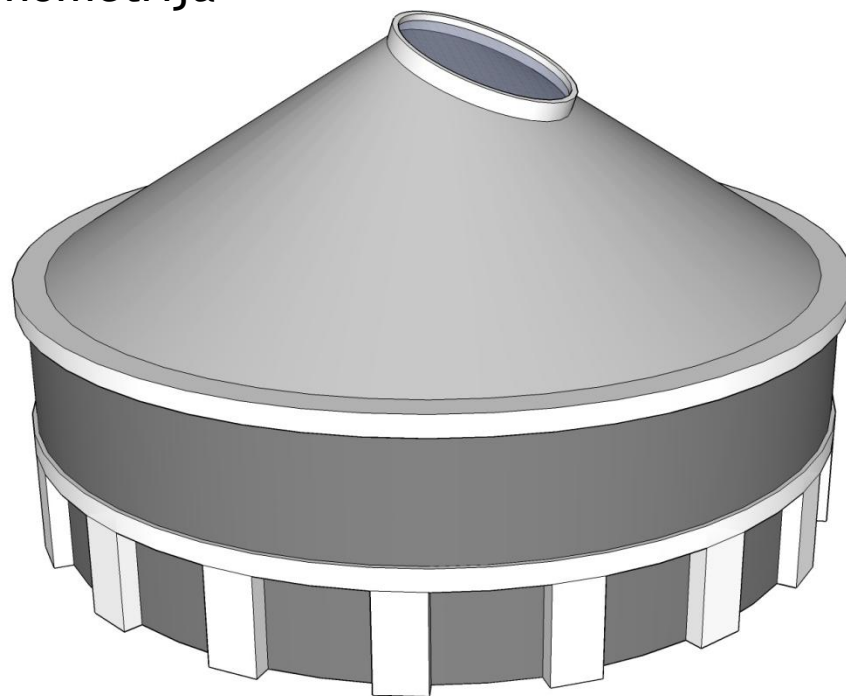
Primena konusa i oblica u arhitekturi



osnova i izgled

kružna osnova

aksonometrija



Kvekerski dom molitve, Univerzitet u Saseksu, Brajton i Hav, UK, arh. B. Spence, 1966.g

Primena konusa i oblica u arhitekturi

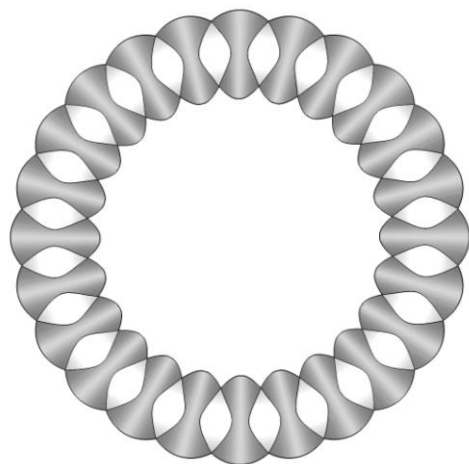


Kvekerski dom molitve, Univerzitet u Saseksu, Brajton i Hav, UK, arh. B. Spence, 1966.g

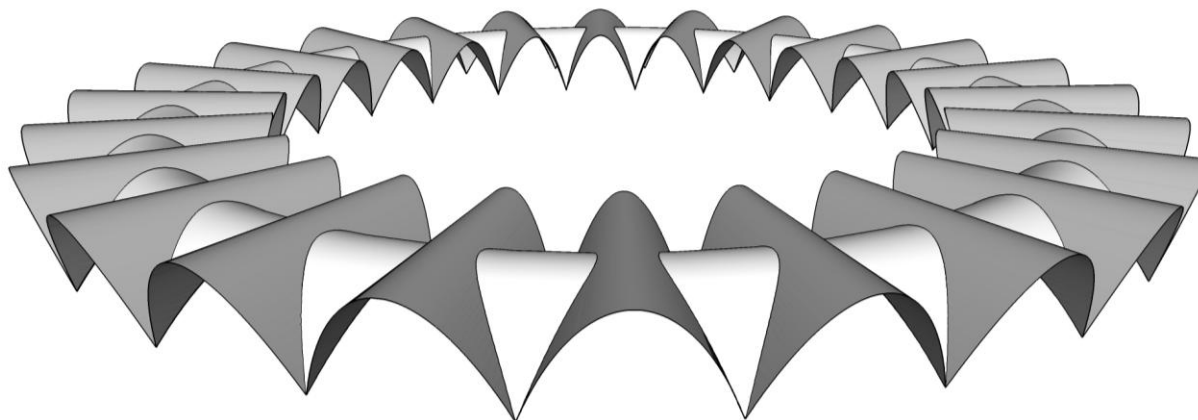
Primena konusa i oblica u arhitekturi

Prodor konusa i oblica

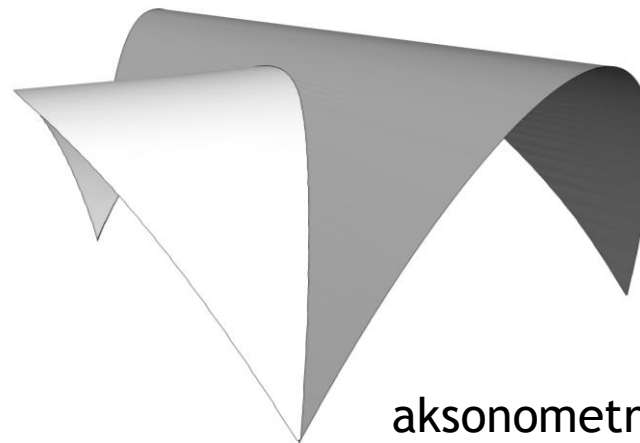
osnova



aksonometrija

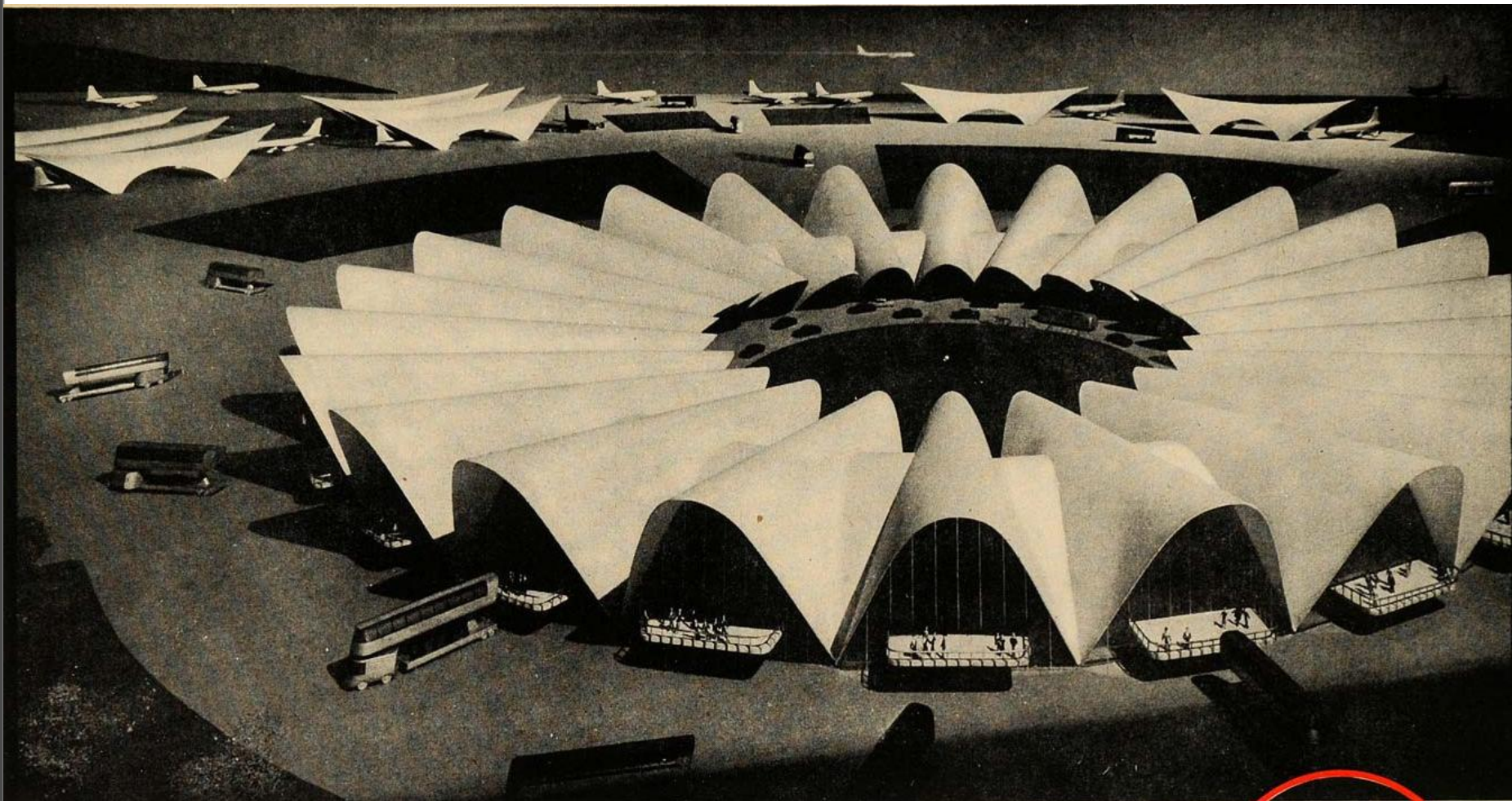


osnova pravilni mnogougao



aksonometrija
osnovne
konusne ljuske

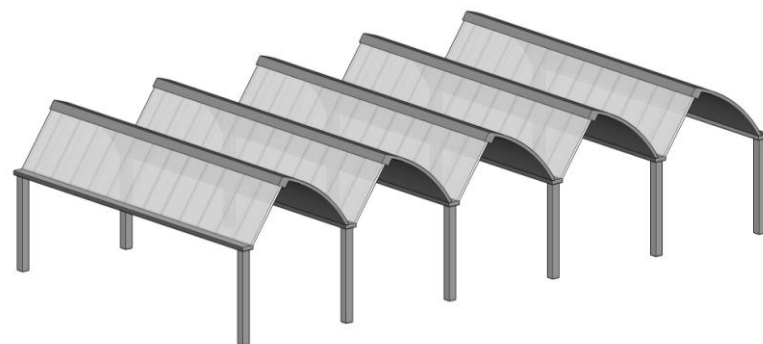
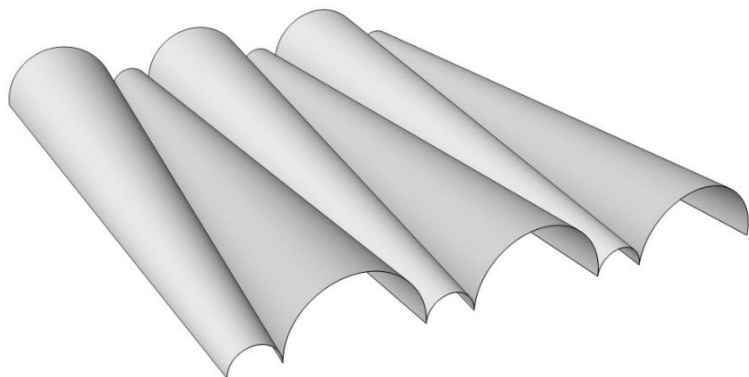
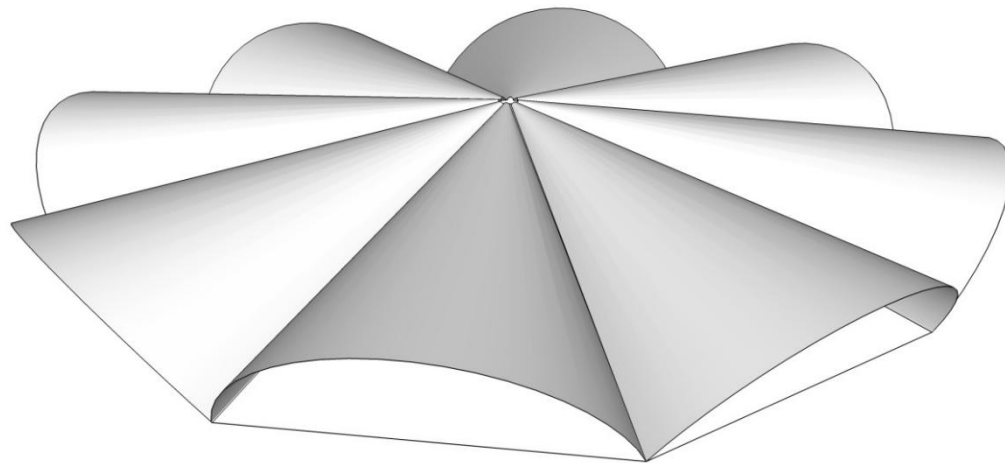
Aerodrom
“Tomorrow”, SAD,
arh. V. Gruen i
Edgardo Contini,
1957.g



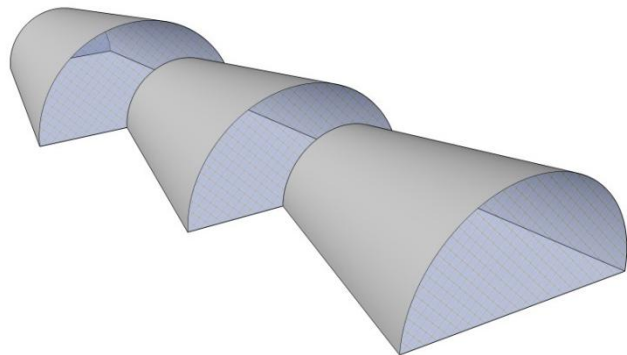
Aerodrom "Tomorrow", SAD, arh. V. Gruen i Edgardo Contini, 1957.g



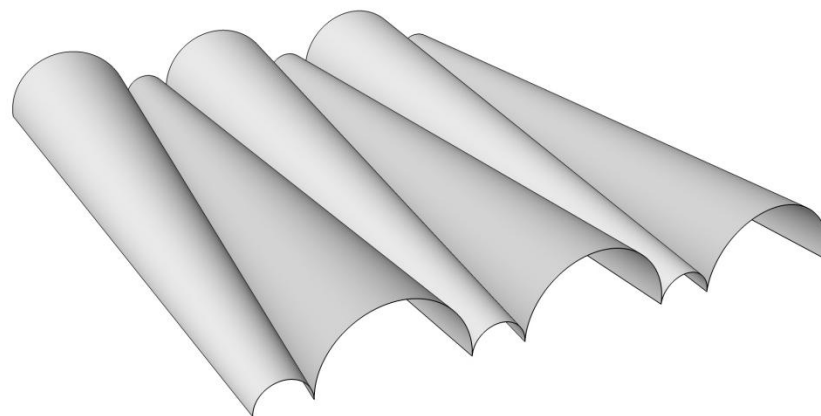
NABORANE KONSTRUKCIJE



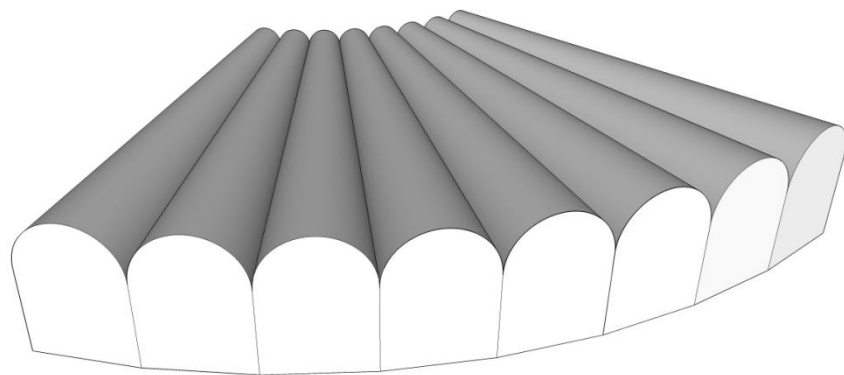
Primena nabora iz delova konusa



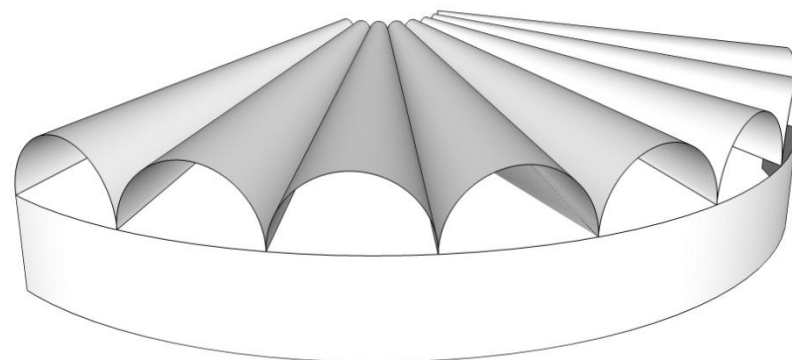
delovi konusa kao posebni segmenti



pravougaona osnova



trapezasta osnova



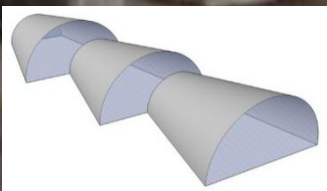
kružna osnova

različite osnove

Primena nabora iz delova konusa



Auditorium hemijske nauke, Meksiko Siti, Meksiko, arh. F. Candela, 1952.g.

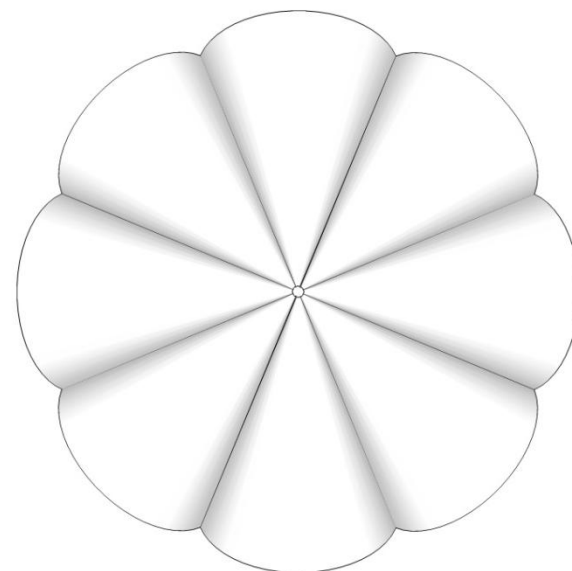
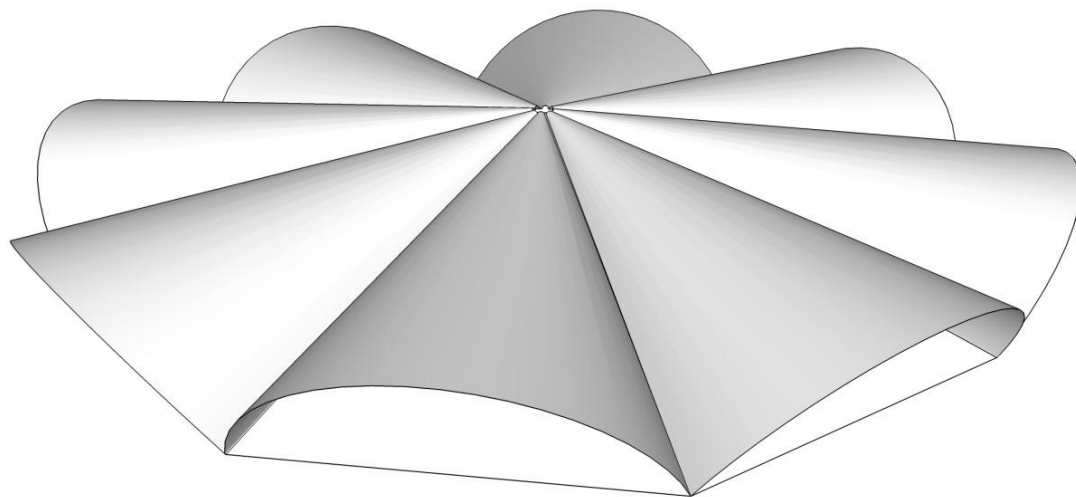


Tkačnica gumenih traka, Gosao, Švajcarska, arh. Dancajzen, Fozer i Hosdort, 1954.g

Primena nabora iz delova konusa

Prodor osam obrtnih polukonusa

aksonometrija

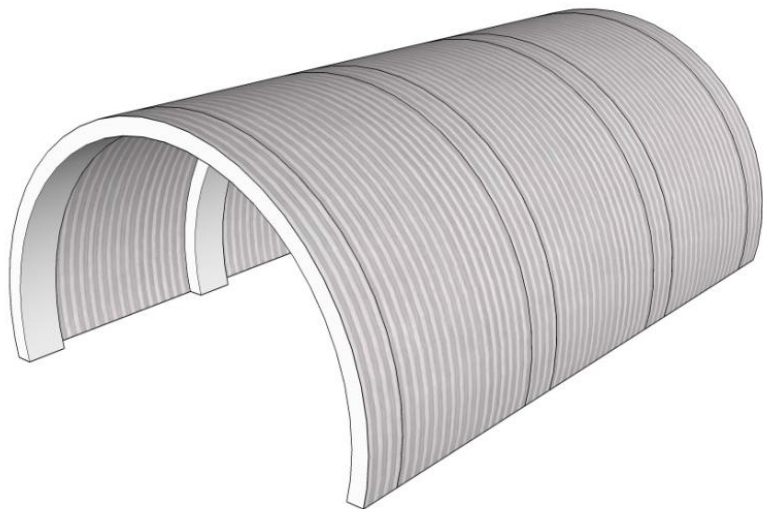


osnova i izgled

Crkva Hristovog raspeća, Ponte
Tresa, Italija

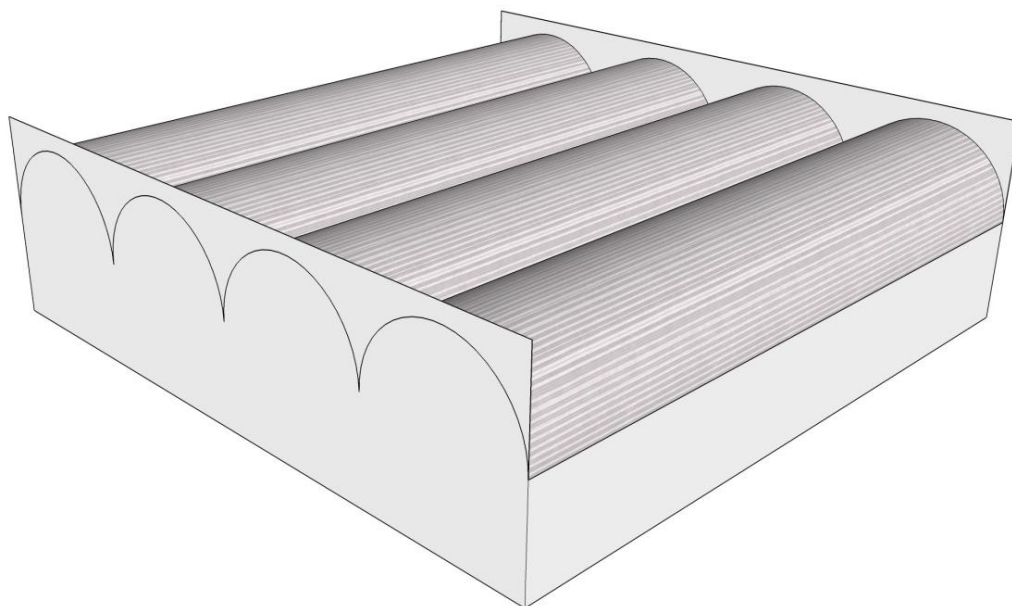
kružna osnova

Primena nabora iz delova oblica



Kratka ljuska (3)

Duga ljuska (4)

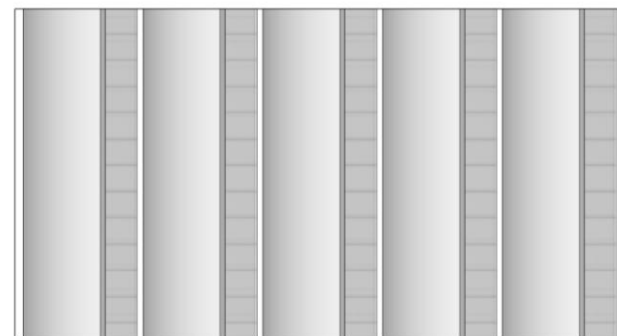
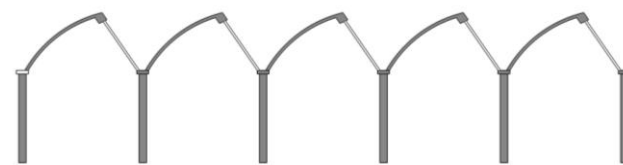


pravougaona osnova

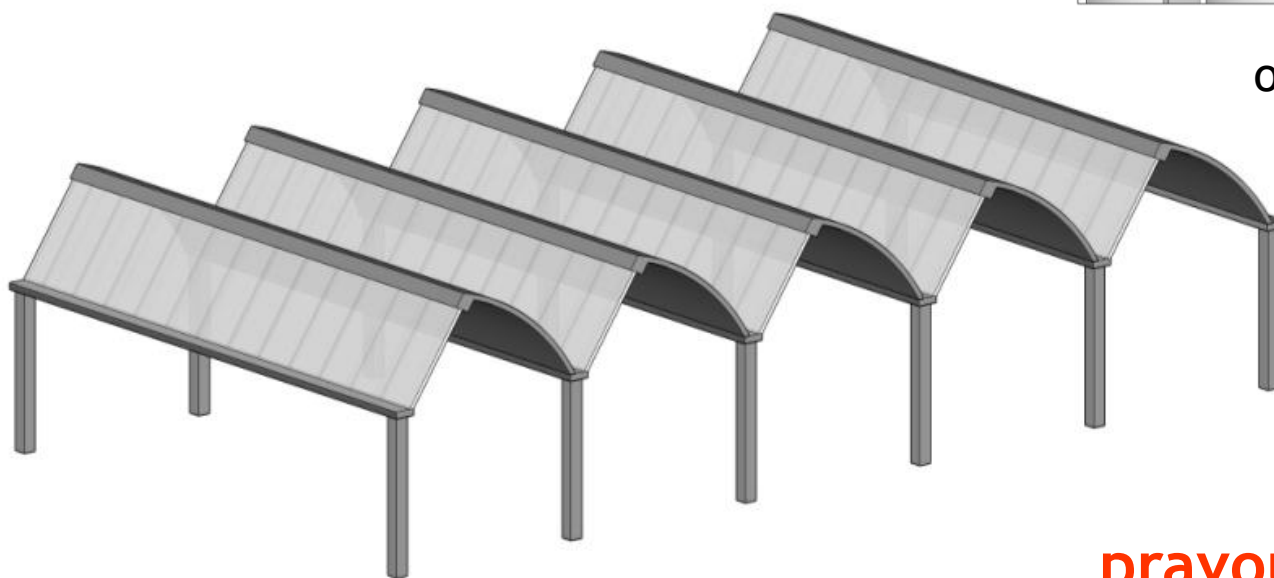


Primena nabora iz delova oblica

Industrijska hala, Virzburg, Nemačka,
arh. E. Schorsch i E. Falkheimer



aksonometrija



osnova i izgled

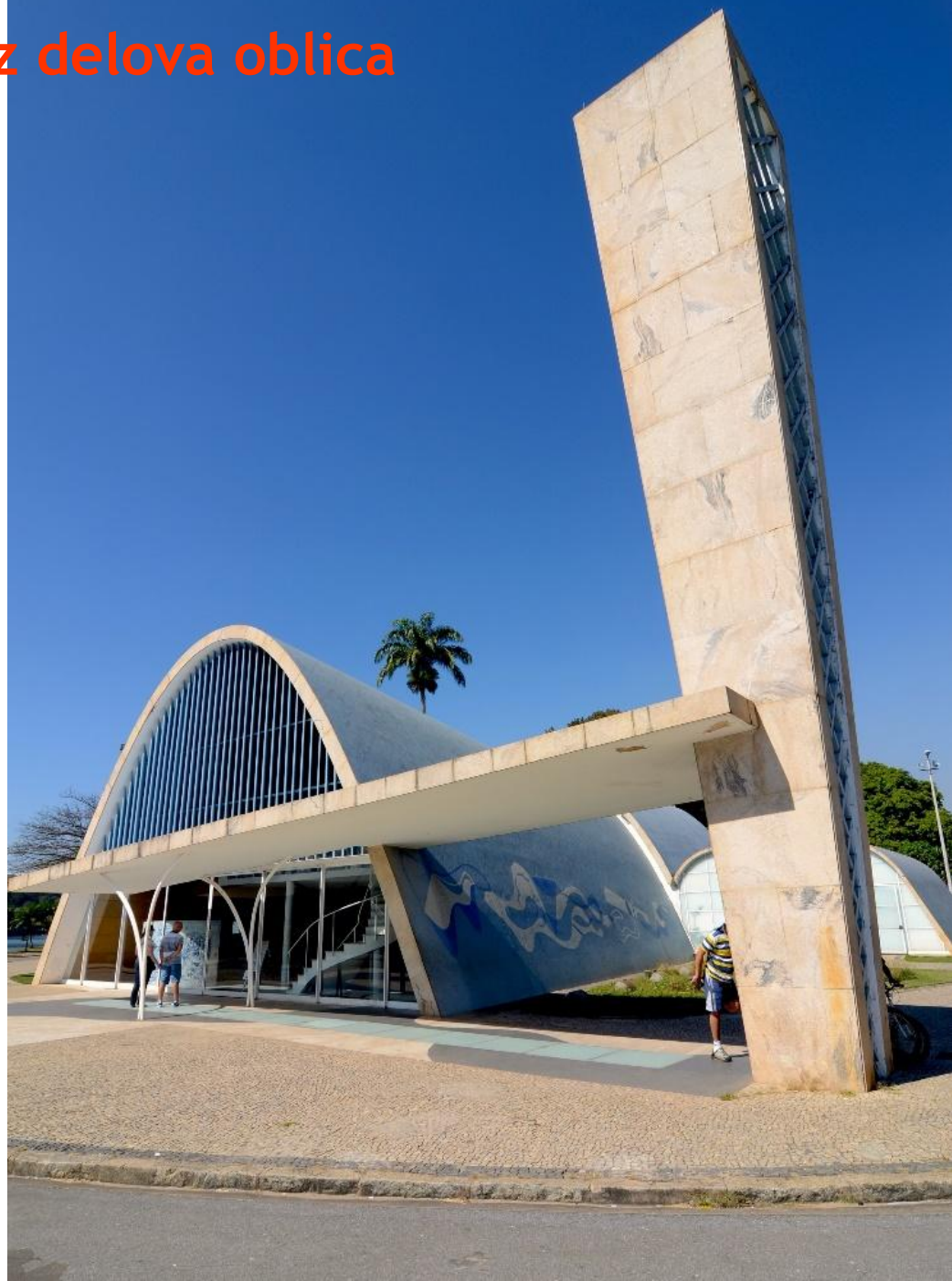
pravougaona osnova



Primena nabora iz delova oblica



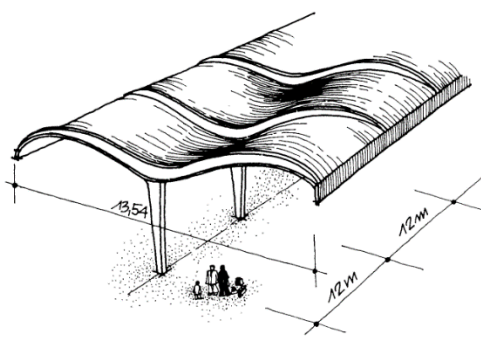
Crkva Svetog Franje Asiškog,
Pampula, Brazil, arh. O.
Niemeyer, 1943.g





Savremeni teatar Niteroi, Rio de Žaneiro, Brazil, arh. O Niemeyer, 2007.g

Primena nabora iz delova oblica



Peron autobuske stanice, Koblenc, Nemačka

Primena poliedarskih i jednostruko zakrivljenih površi u arhitekturi



Weisman art Museum, Mineapolis, SAD, arh. Frank Gehry, 1994.g



Primena poliedarskih i jednostruko zakrivljenih površi u arhitekturi



RICARDO RAMIREZ—THE TECH

Ray and Maria Stata Center, Massachusetts, SAD, arh. Frank Gehry, 2003.g



Primena poliedarskih i jednostruko zakrivljenih površi u arhitekturi



Američki Centar, Francuska nacionalna biblioteka, muzej i teatar,
Pariz, Francuska, arh. Frank Gehry, 1994.g

KONUSI

- vrh - tačka S
- bazis - ravna ili prostorna kriva d
- izvodnice i

OBLICE

- vrh - tačka S_{∞}
- dva bazisa - ravne ili prostorne krive d
- paralelne izvodnice i

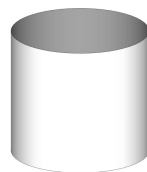


Fig.1

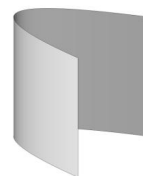


Fig.2

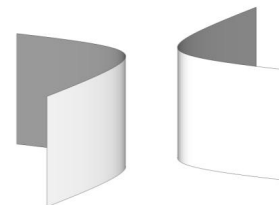


Fig.3

Prema bazisu:

- kružne (bazis je krug, konusi i oblice)
- eliptične (bazis je elipsa, oblice, sl.1)
- parabolične (bazis je parabola, oblice, sl.2)
- hiperbolične (bazis je hiperbola, oblice, sl.3)

Prema položaju ose prema ravni bazisa konusi i oblice su:

- obrtni (rotacioni), ako je osa površi (konus ili oblica) upravna na ravan bazisa
- kose, ako osa stoji koso u odnosu na ravan bazisa



Studentski grafički radovi

Primena konusa i oblica u arhitekturi

КОНУС И ОБЛИЦА

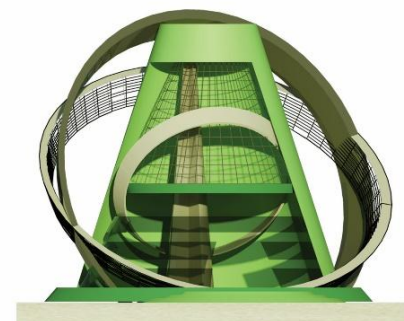
ОСНОВА



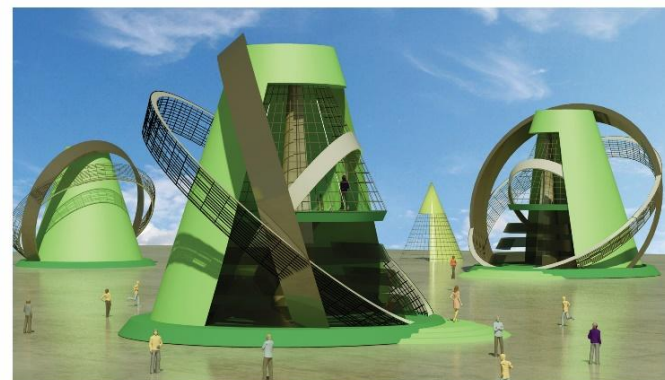
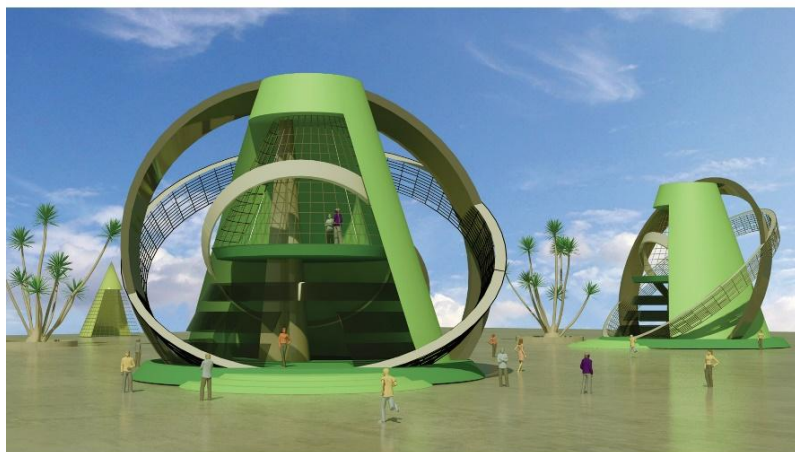
ИЗГЛЕД 1



ИЗГЛЕД 2



ПЕРСПЕКТИВНИ ПРИКАЗ



04

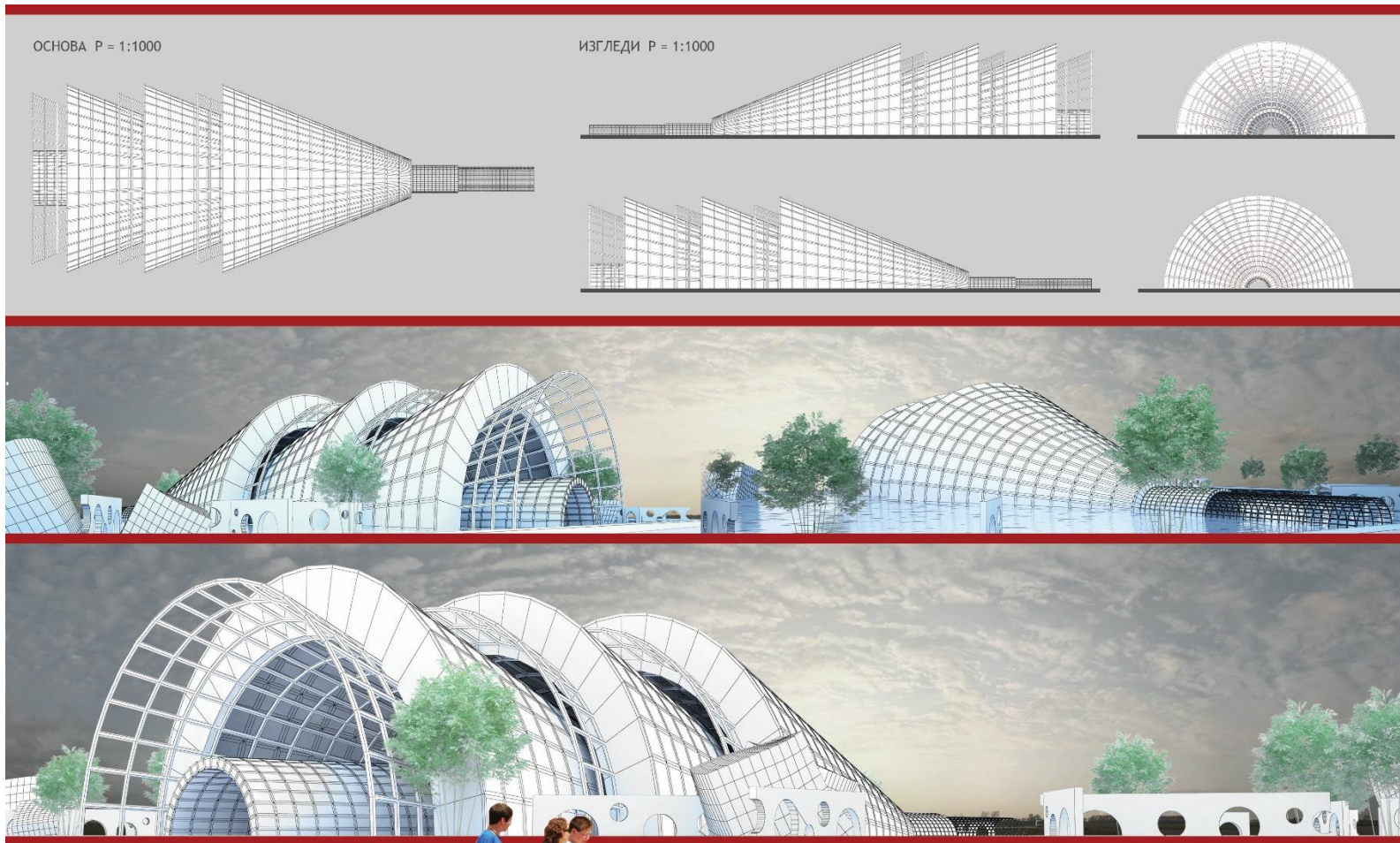


грађевинско-архитектонски факултет у нишу
геометријске површи у архитектури

Јелена Стаменковић МРА 178/10

Jelena Stamenković, grafički rad, student, generacija 2011/12

Primena konusa i oblica u arhitekturi



КОНУСИ И ОБЛИЦЕ



03



грађевинско-архитектонски факултет у нишу
геометријске површи у архитектури

Професор: Соња Красић
Асистент: Владан Николић

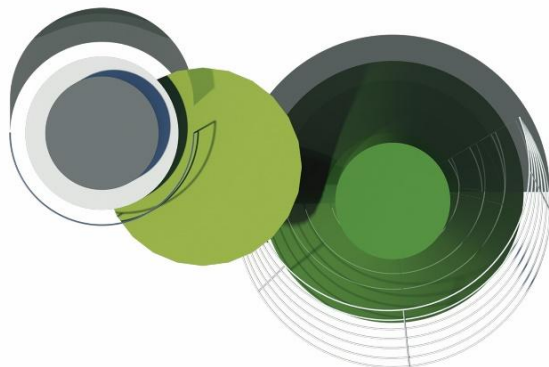
Душан Ранђеловић МРА 169/10

Dušan Randelović, grafički rad, student, generacija 2011/12

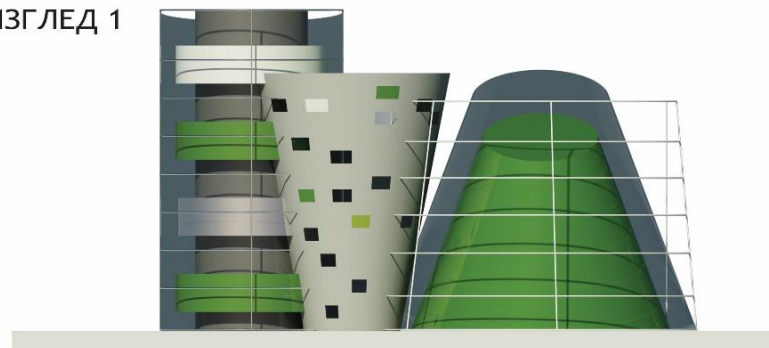
Primena konusa i oblica u arhitekturi

КОНУС И ОБЛИЦА

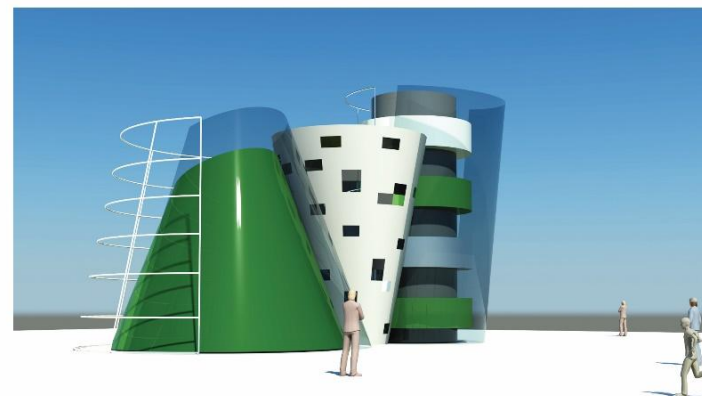
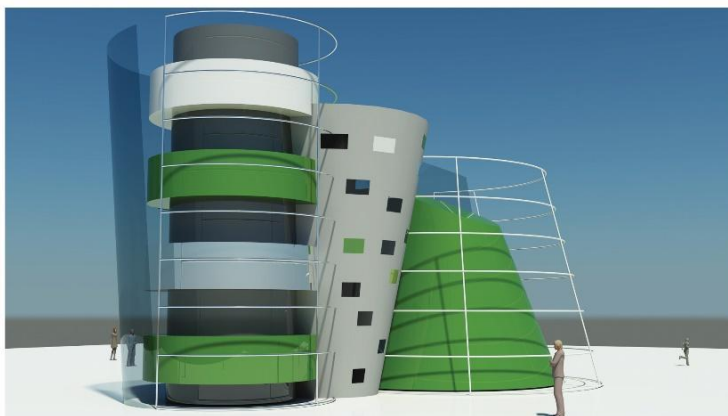
ОСНОВА



ИЗГЛЕД 1



ПЕРСПЕКТИВНИ ПРИКАЗ



03

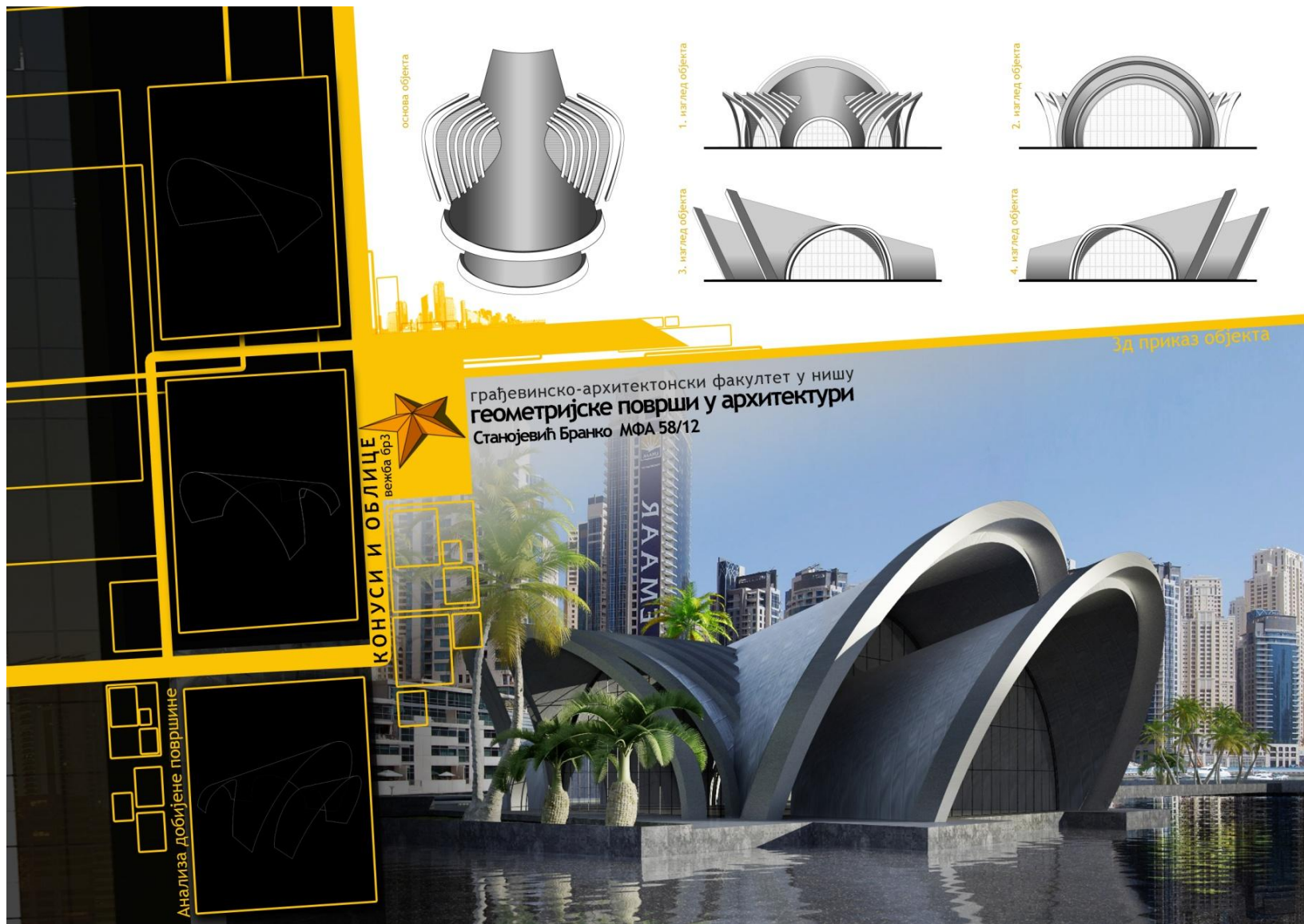


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геометријске површи у архитектури

Јована Ладић МРА 152/10

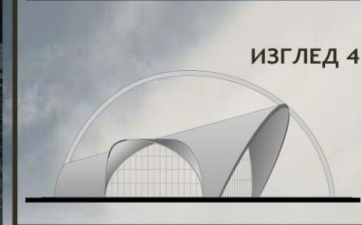
Jovana Ladić, grafički rad, student, generacija 2011/12

Primena konusa i oblica u arhitekturi



Branko Stanojević, grafički rad, student, generacija 2012/13

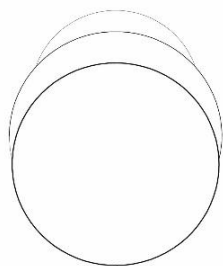
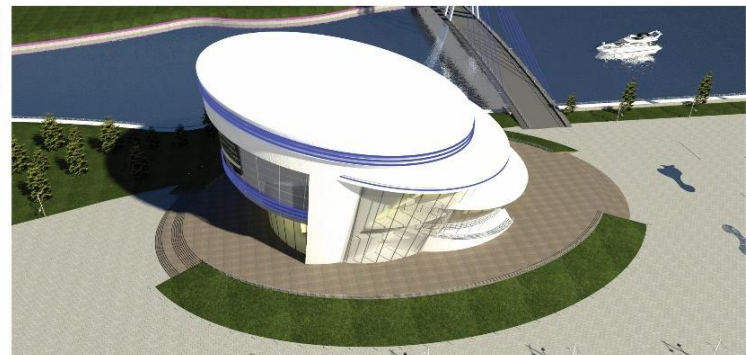
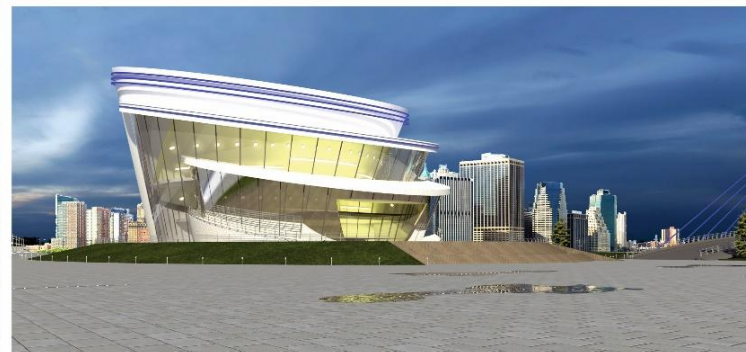
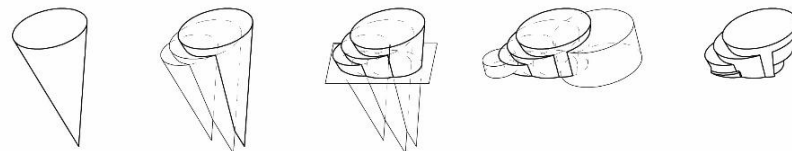
Primena konusa u arhitekturi



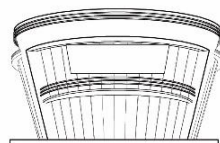
Miloš Mišković, grafički rad, student, generacija 2012/13

Primena konusa u arhitekturi

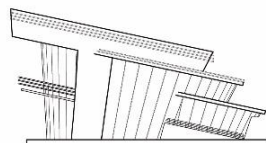
КОНУСИ И ОБЛИЦЕ



основа



изглед 1



изглед 2



03



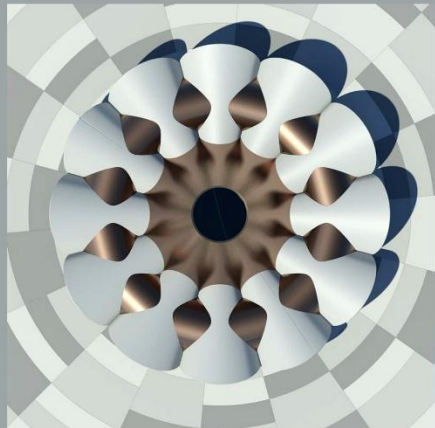
грађевинско-архитектонски факултет у нишу
геометријске површи у архитектури

Стефан Пешић МРА265/13

3. ОБЛИЦА И КОНУС

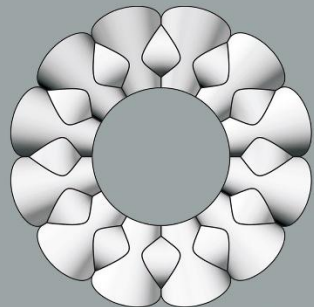
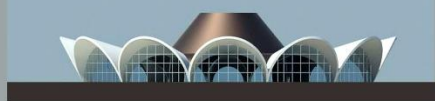
основа објекта

0 1 2 3 4 5m



изглед објекта

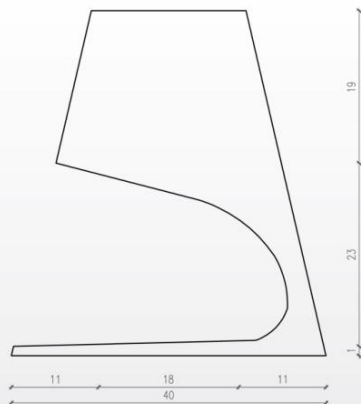
0 1 2 3 4 5m



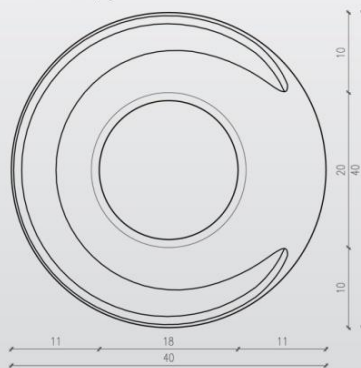
грађевинско-архитектонски факултет
геометријске површи у архитектури
студент: Милица Вељковић МРА 333/14

Primena konusa u arhitekturi

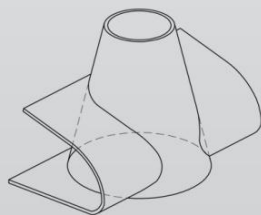
изглед лампе, $p=1:5$

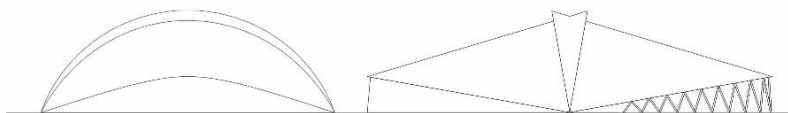


основа лампе, $p=1:5$



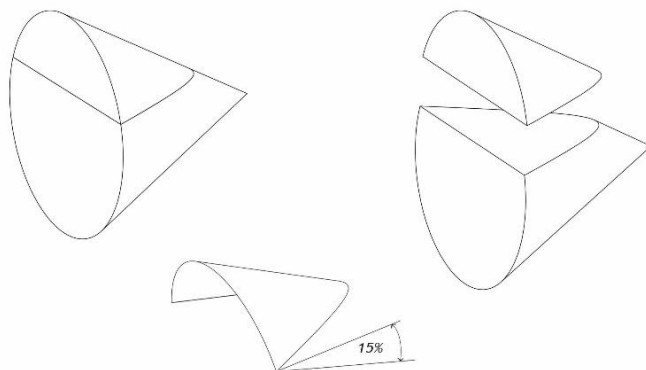
шема засецања конуса



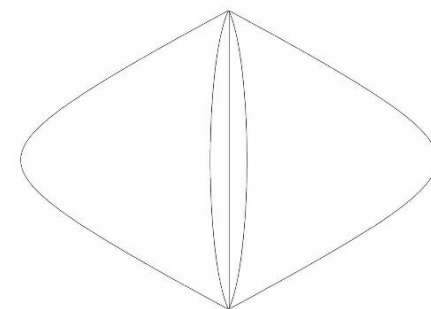
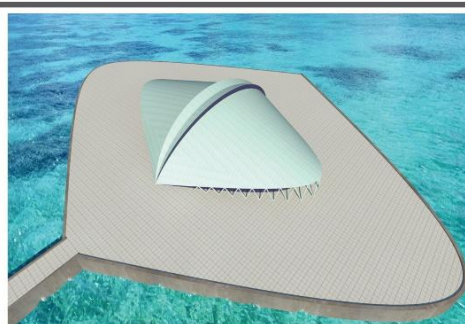
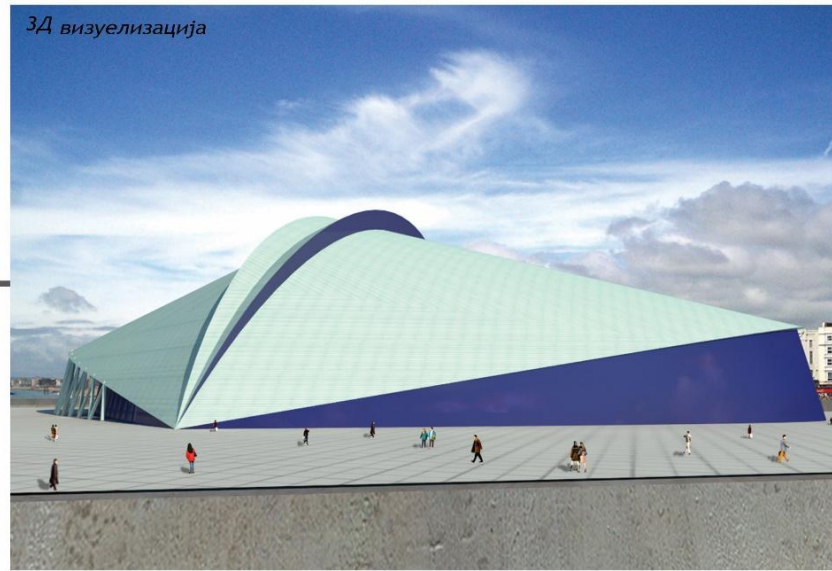


изглед 1

изглед 2



елементи



основа

03



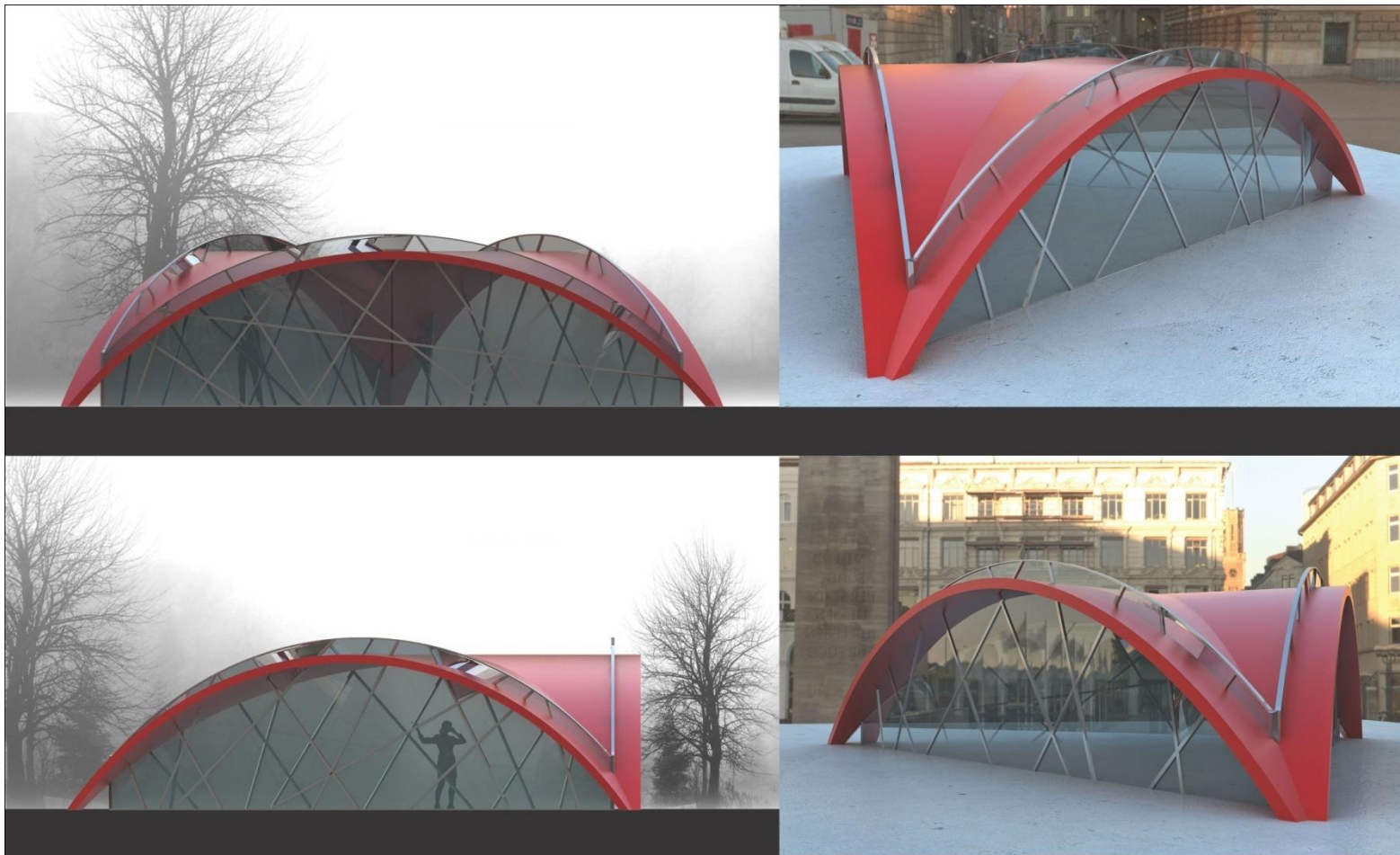
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геометријске површи у архитектури

Primena konusa u arhitekturi



Nikolaos Savidis, grafički rad, student, generacija 2013/14

Primena oblica u arhitekturi

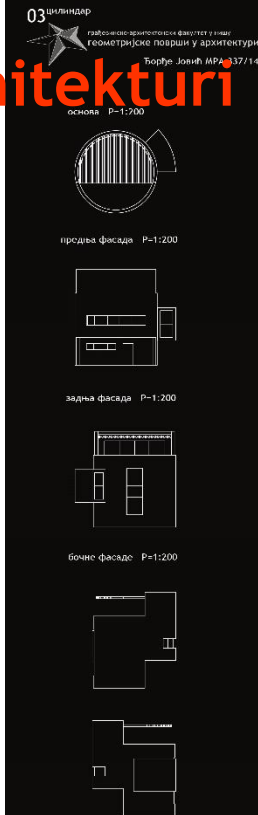


Primena oblica u arhitekturi

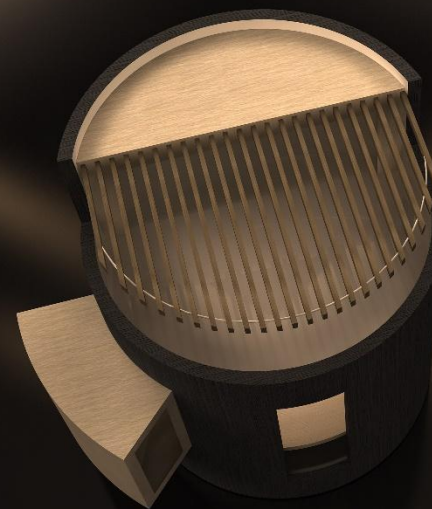


Branko Stanojević, grafički rad, student, generacija 2012/13

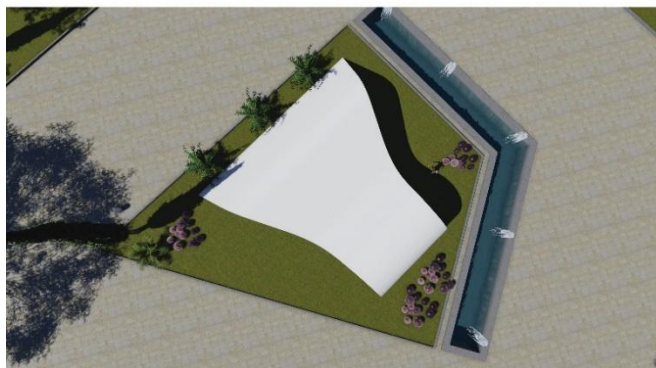
Primena oblica u arhitekturi



Ђорђе Јовић, граfiчки рад,
student, generacija 2014/15



Primena oblica u arhitekturi



ОБЛИЦА-03

основа

поглед са стране

фронтални поглед



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геометријске површи у архитектури

Ирена Стојадиновић РА 1718/11

Irena Stojadinović, grafički rad, student, generacija 2014/15



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Geometrijske površi u arhitekturi, dr Sonja Krasić, Niš, Građevinsko-arhitektonski fakultet, 2012.g

Prof. Dr Miroslav Marković, Nacrtna geometrija, Niš, 1998.g

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Crteži:

Petar Pejić, student, generacija 2010/11