



DESIGN
TOGETHER
WITH BIM



İçindekiler

1. Biz kimiz /
2. Yarışma Hedefimiz
3. Yarışma iş programımız
4. BIM Uygulama Planı
5. Mimari Tasarımda BIM
6. Yapısal Tasarımda BIM
7. Mekanik Tasarımda BIM
8. Parametrik ve Generatif Tasarım
9. Kullanılan Yazılımlar (Python, C#, Dynamo vb.)
10. İş Programı (Zamana göre projenin iş planlaması)
11. Çözülen Uyumsuz Çakışma Listesi(En fazla 3 adet örnek)
12. Çalışma Koordinasyonu (Görev dağılımları, birlikte çalışma aşamaları)
13. Sürdürülebilirlik Stratejisi Çalışmaları ve Enerji Analizleri
14. Referanslar



IFC

Biz Kimiz Tanışma Toplantısı

1 Ocak 2021
20:00 Her Hafta

Hedefler

- Bu toplantıda ne başarmak istiyoruz?

Güncellemeler

- Her üyenin yapılacaklar listesinde ne var? Paylaşılacak bir güncelleme var mı?

Engeller

- Yeterli kaynaklarımız bulunuyormu

Eylem Kalemleri

- Toplantıda kabul edilen hedeflere göre ekibin sonraki adımları ne?

Diğer Hatırlatmalar

- Bitirmeden önce konuşmamız gereken herhangi bir sorun veya endişeniz var mı?

Katılımcılar



M. Ali Doğru



Merve Kılıç



Ayşenur Baltacı



Zehra Alacakanat



Enes Damat

PROJE YOL HARİTASI



Ekipler

1. çeyrek

2. Çeyrek

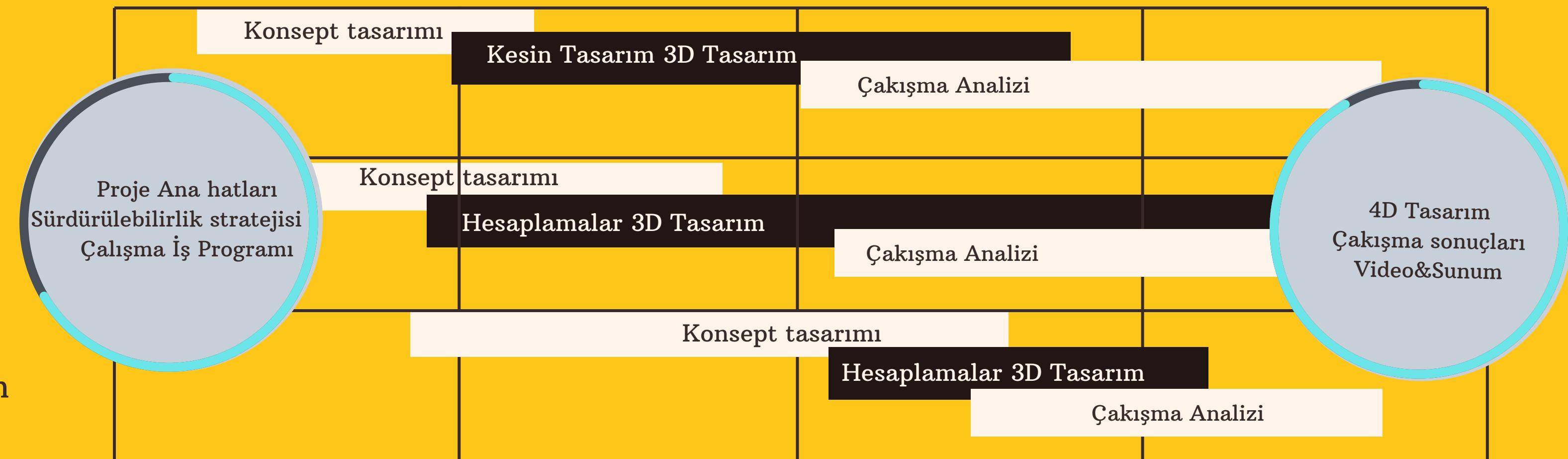
3. Çeyrek

4. çeyrek

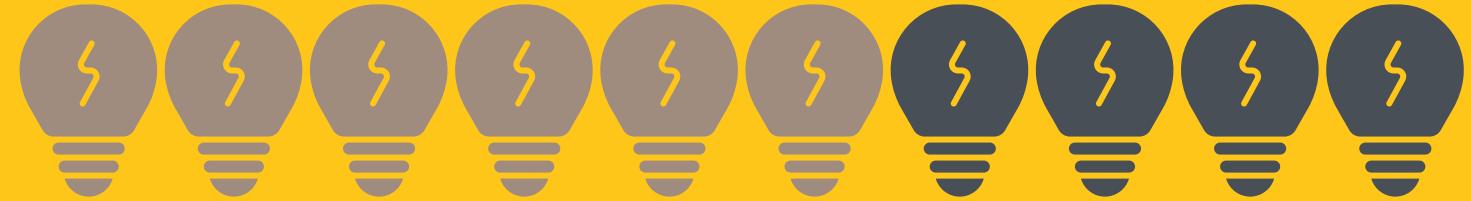
Mimar

İnşaat Müh

Makine Müh



Proje hedefleri



Parametrik Tasarım

Generative Tasarım

BIM modelleme ve koordinasyon süreci

3B tasarım ve koordinasyon/ çakışma süreci

4B modelleme

Kalite üretimi

Paftalama



Proje hedefleri



BIM UYGULAMA PLANI



LOD Level



Roller ve sorumluluklar



Bilgi paylaşım



Koordinasyon



KALITE KONTROL



TEKNİK ALT YAPI İHTİYACI



Model Dosyası isimlendirme



BİRİMLER, KOORDİNAT MERKEZİ

LOD Tablosu

IFC		
SYSTEM/COMPONENT	RELEVANT ATTRIBUTE TABLES	LOD
<u>ELEMENTS</u>		
<u>SUBSTRUCTURE</u>		400
Foundations	A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete	200
Foundations (Eng.)	A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete	350
Standard Foundations	A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete	350
<u>SHELL</u>		100
Floor Construction	A, B Cold Formed Metal Framing; A, B Masonry; A, B Metal Deck; A, B Precast Concrete; A,B Steel Joist; A, B Structural Steel; A, B Concrete; A, B Wood	200
Floor Construction (Eng.)	A, B Cold Formed Metal Framing; A, B Masonry; A, B Metal Deck; A, B Precast Concrete; A,B Steel Joist; A, B Structural Steel; A, B Concrete; A, B Wood	350
Floor Structural Frame		200
Concrete	A, B Concrete	350
Steel Framing Columns	A, B Structural Steel	200
Roof Construction	A, B Cold Formed Metal Framing; A, B Masonry; A, B	100



Time or LOD

BIM UYGULAMA PLANI



Bilgi paylaşım

Roller ve sorumluluklar

Görevi	Şirket	İsim	Email	Bölüm
Proje sorumlusu	IFC	Muhammed Ali Doğru	malidggru@gmail.com	İnşaat mühendisliği
4B sorumlusu	IFC	Zehra Alacakanaat	zehraalacakanaat@hotmail.com	İnşaat mühendisliği
BIM -Desing sorumlusu	IFC	Ayşenur Baltacı	aysebaltac0@gmail.com	Mimarlık-İnşaat müh.
Desing sorumlusu	IFC	Merve Kılınç	merve.klnc.1@hotmail.com	Mimar
Tasarim sorumlusu	IFC	Muhammet Ali Kaloğan	malikavlogan@gmail.com	Makina mühendisi
BIM koordinatörü	IFC	Ali Enes Damat	enesdamat@gmail.com	Makina mühendisi



Koordinasyon
Her Pazar

Programlar



BIM UYGULAMA PLANI

Model Dosyası isimlendirme

BİRİMLER, KOORDİNAT MERKEZİ

KALITE KONTROL

DTw22 – IFC – STA – PLANLAMA – ZEMİNKAT_4D MODEL	STATİK
DTw22 – IFC – MIM – CEPHE – PENCEREDETAYI_ZEMİN KAT	MİMARİ
DTw22 – IFC – MEP – BORU – ENERJİHESABI_ZEMİN KAT	MAKİNE

BIM UYGULAMA PLANI

BİRİMLER, KOORDİNAT MERKEZİ

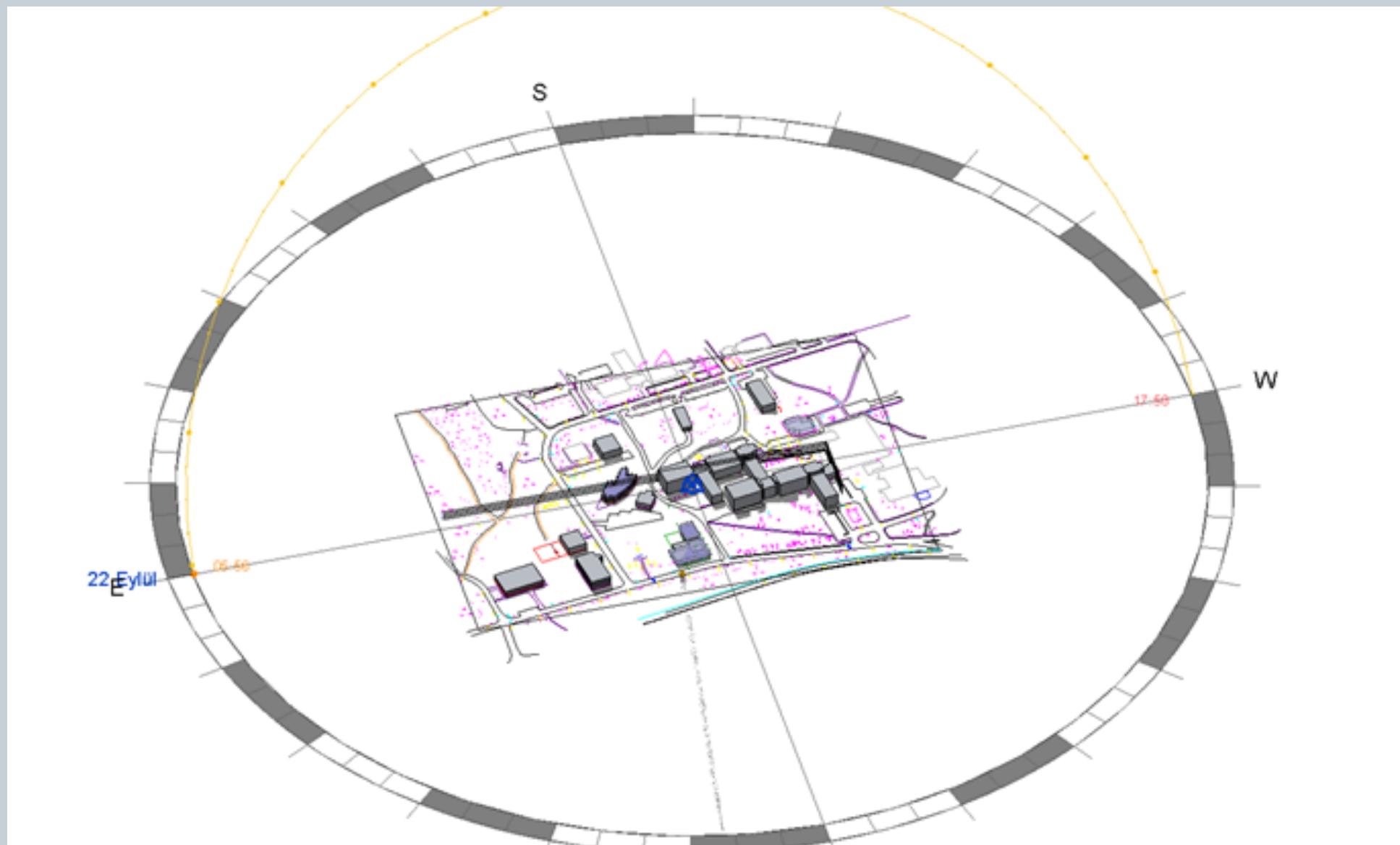
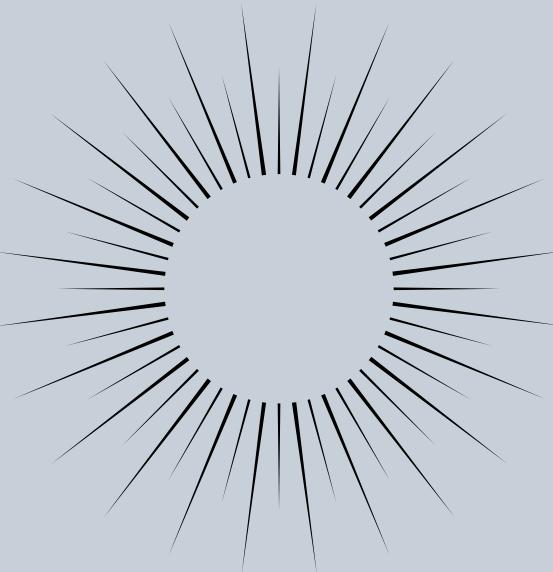
Revit	cm
Idecad	cm -m
Autocad	mm- cm
Proje koordinatlari	41.107495, 29.027019

KALITE KONTROL

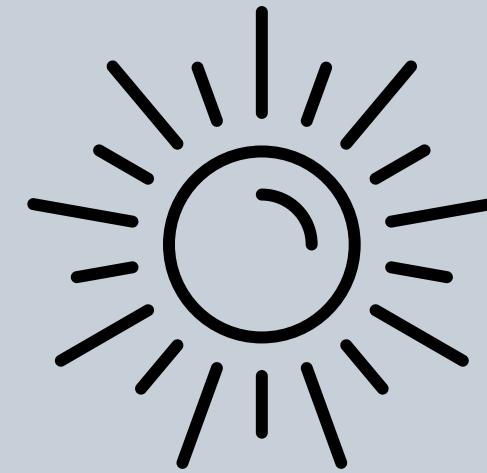


Sürdürülebilirlik & Enerji Analizi

Güneş- Gölge Analizi



Fall Gölge durumu
Spring Gölge
Bir yıllık güneş periyodu
hesaplanmıştır



Sürdürülebilirlik & Enerji Analizi

Güneş Enerji Analizi

The image shows a screenshot of a software interface for solar analysis. On the left, a 'Solar Analysis' window displays a 3D model of a building with a blue roof. The results section shows 'Cumulative Insolation' of **2.252.796 kWh** over **1.035 m²**. Below this, 'Study Settings' indicate **2.177 m² selected** from **9/30 to 9/30 sunrise to sunset**. The 'Results Settings' panel allows selecting 'Type' (Cumulative Insolation), 'Style' (Solar Analysis Default), and 'Export' (Insolation csv). A bar chart in the bottom left shows 'Benchmark Comparison' at **1323 kWh / m² / yr** for '324'. A 'Model History' table shows values of **1.323** for 'ALL UNROTATED', 'SCENARIO - UNTILTED SCENARIO', and 'SCENARIO - UNTILTED EASTWARD'. On the right, a larger 3D view of a city street shows buildings with various solar panel installations and shading patterns. A 'Building Form' panel shows a 3D wireframe of a building with a red '324' badge. A 'Building Orientation' panel provides information on how building rotation affects solar exposure.

Solar Analysis

Study Type: Custom

Surfaces: <user selection>

Results

Cumulative Insolation
2.252.796 kWh
1.035 m²

Study Settings
2.177 m² selected
9/30 to 9/30 sunrise to sunset

Results Settings

Type: Cumulative Insolation

Style: Solar Analysis Default

Export: Insolation csv

Benchmark Comparison
kWh / m² / yr

Category	Value
324	1323

Model History
kWh / m² / yr

Setting	Value
ALL UNROTATED	1.323
SCENARIO - UNTILTED SCENARIO	1.323
SCENARIO - UNTILTED EASTWARD	1.323

Building Orientation

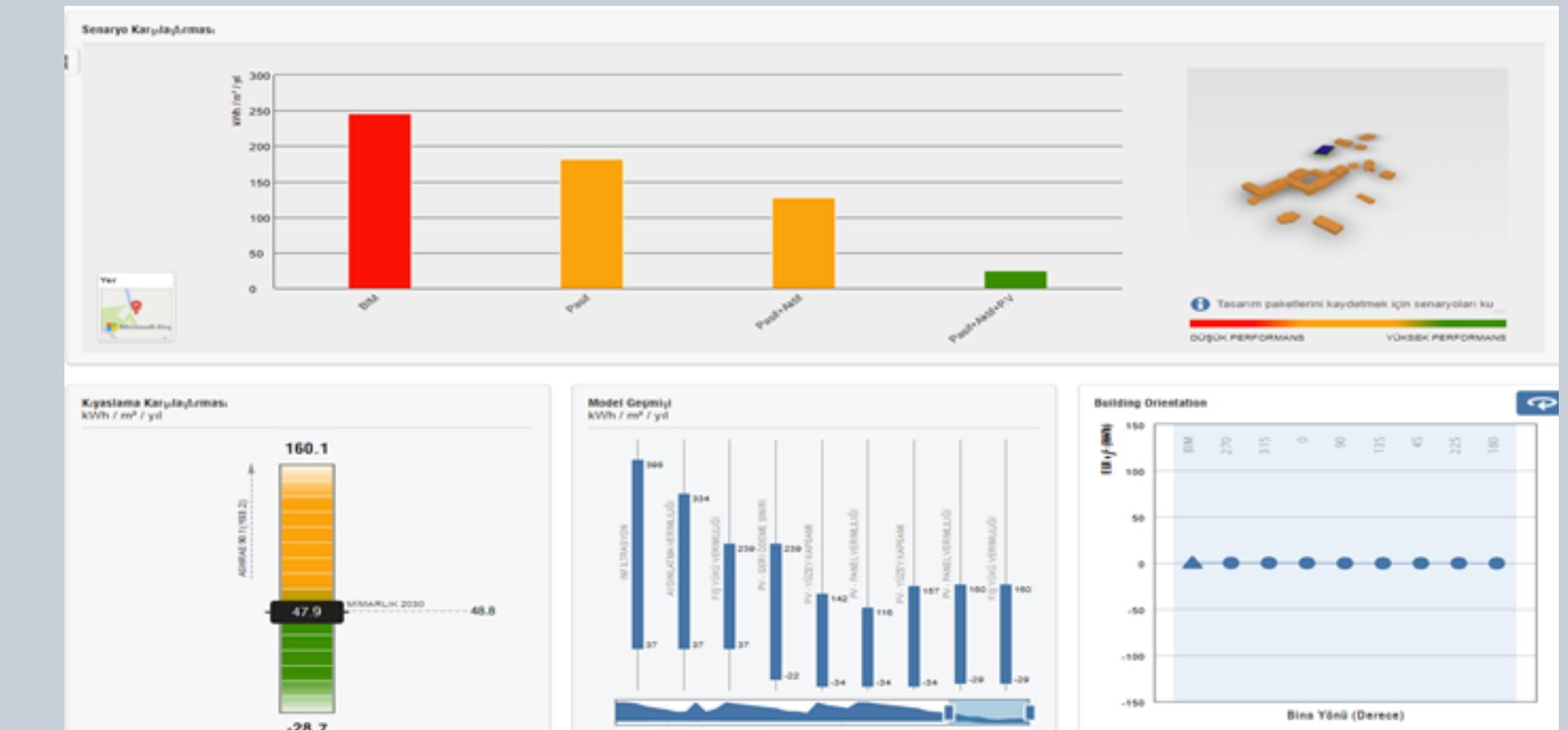
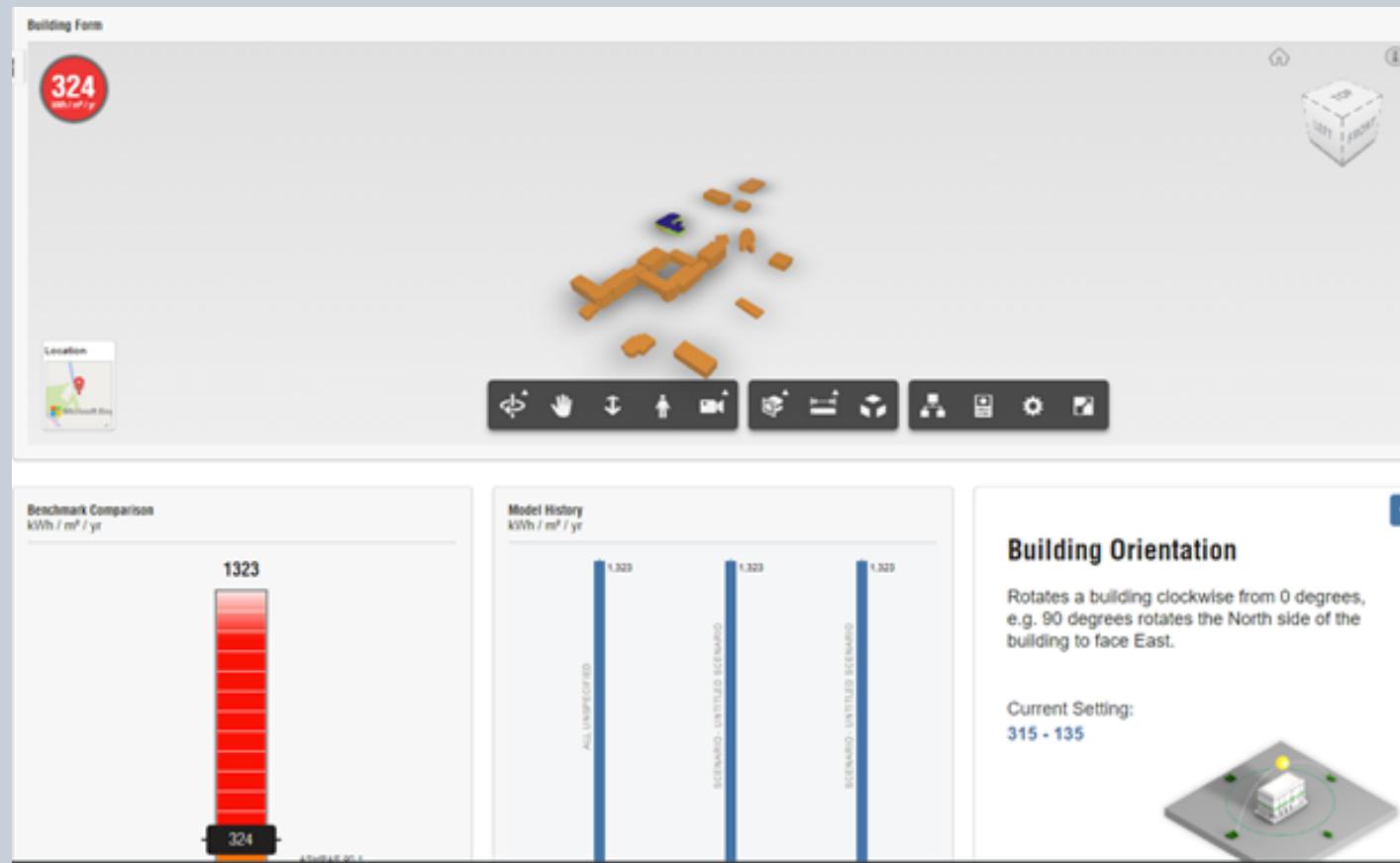
Rotates a building clockwise from 0 degrees, e.g. 90 degrees rotates the North side of the building to face East.

Current Setting:
315 - 135

Sürdürülebilirlik & Enerji Analizi



Güneş Enerji Analizi

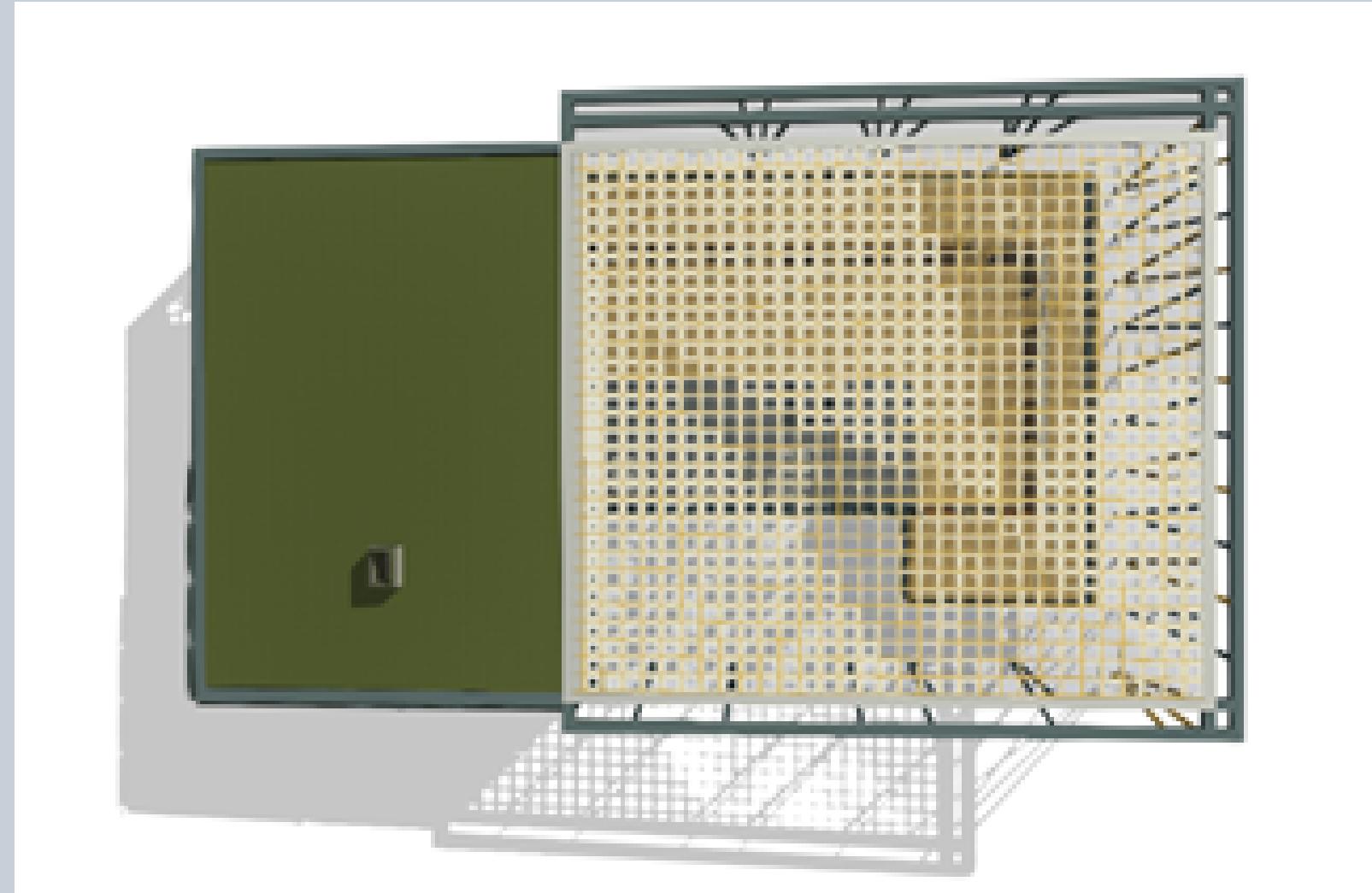
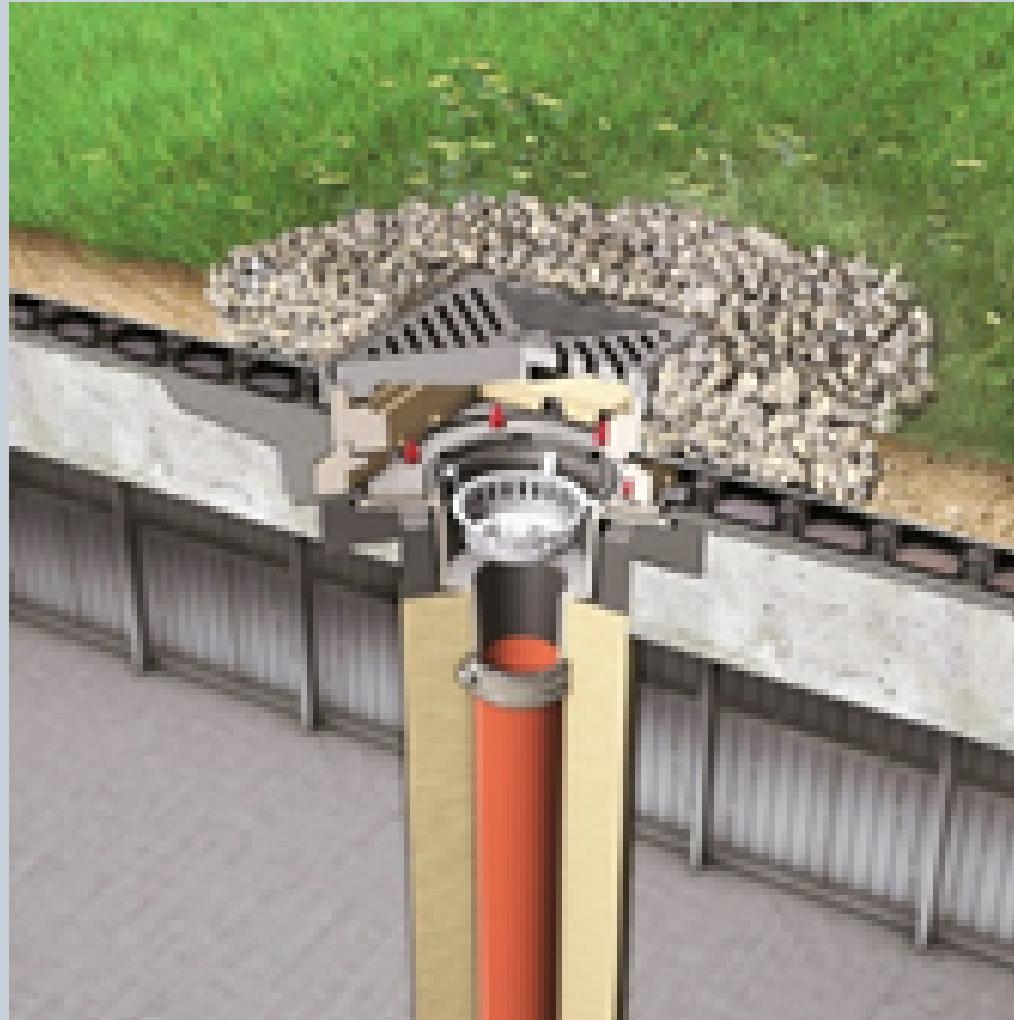


1035 kWh/ m²



1347 kWh/ m²
veri odaklı tasarım

Sürdürülebilirlik & Enerji Analizi

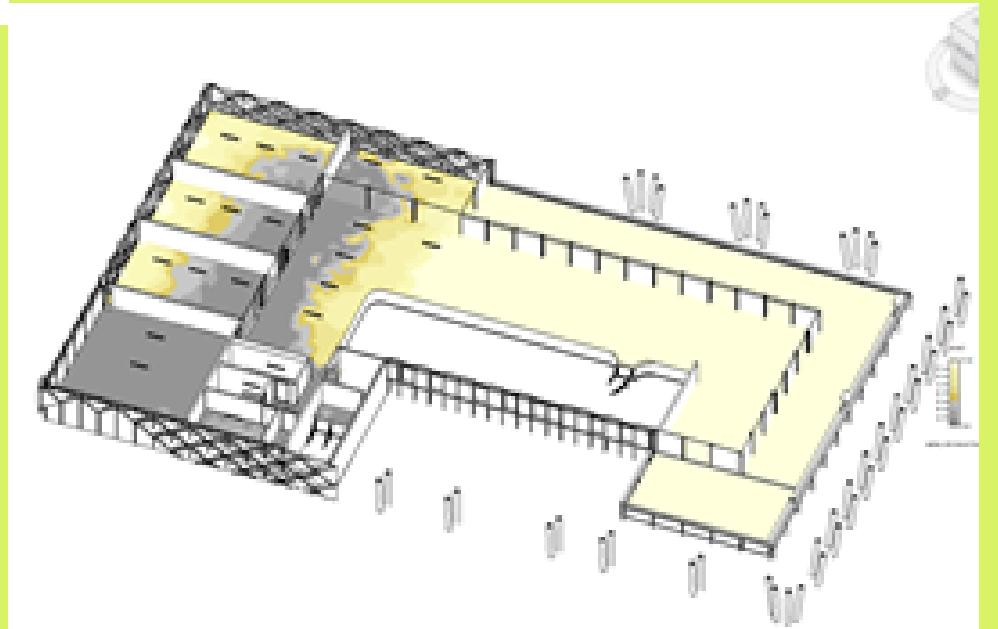
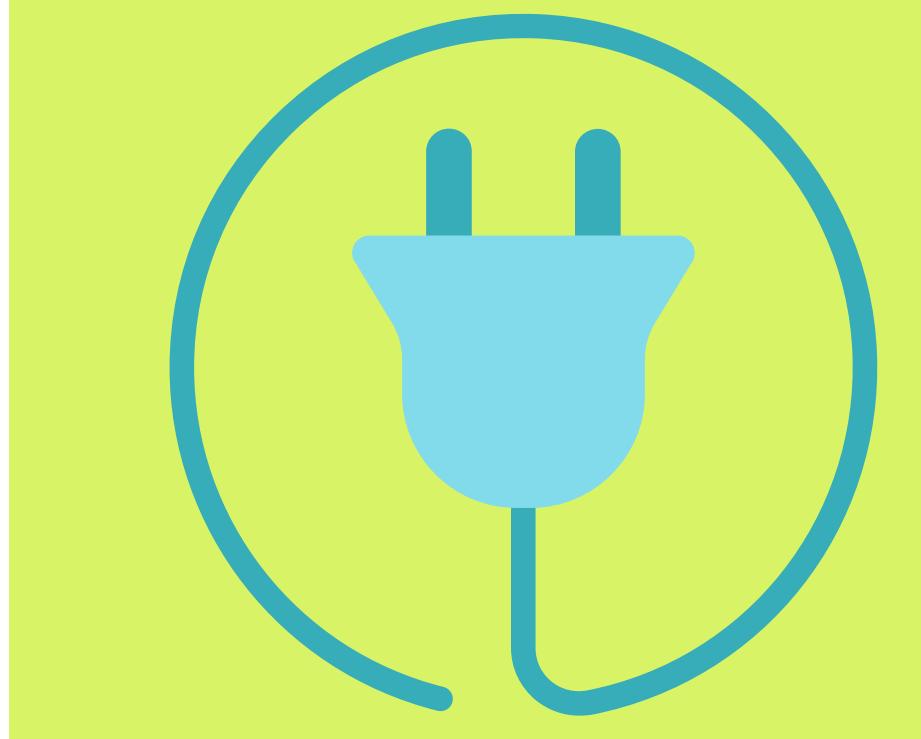
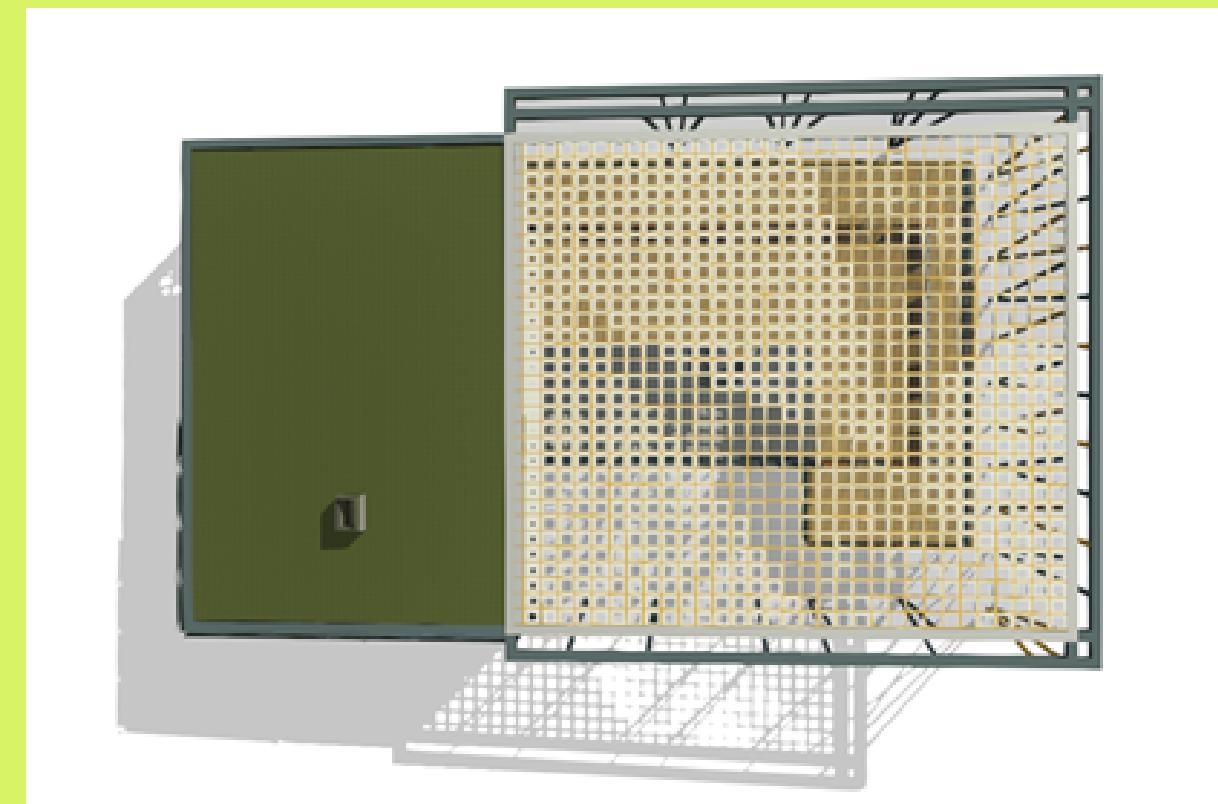


Yağmur suyunu depolama, filtreleme ve tekrar kullanım için geliştirilmiş olan bu sistem sayesinde daha fazla tasarruf hedeflenmiştir.

Sürdürülebilirlik & Enerji Analizi

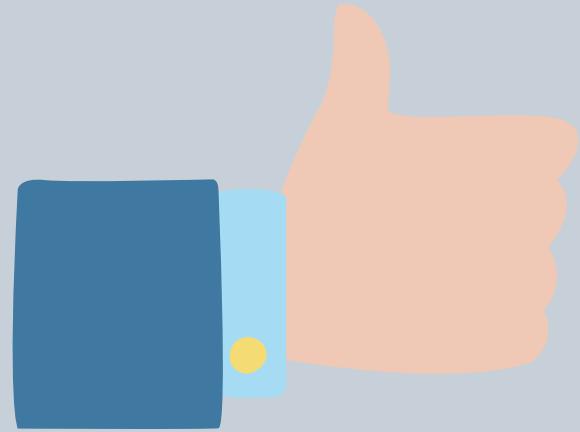
ENERJİ ETKİN TASARIMIN ÇATI VE CEPHELERE YANSIMASI

- Yenilenebilir enerji kaynaklarının kullanımı
- Isı yalıtımı
- Doğal aydınlatma
- Doğal havalandırma
- Güneş kontrolü şeklinde sınıflandırılabilirmektedir

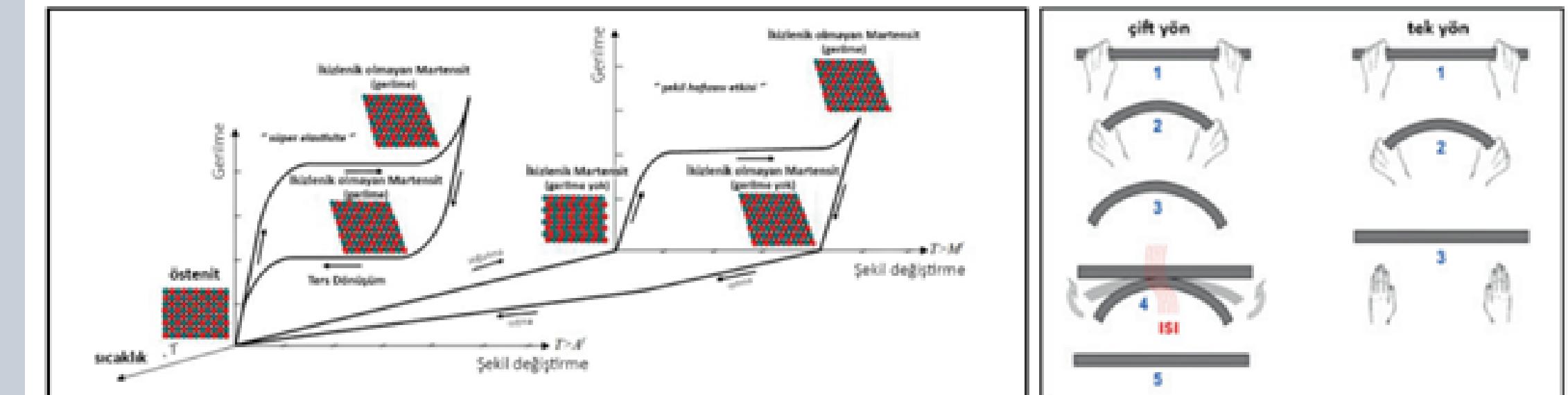
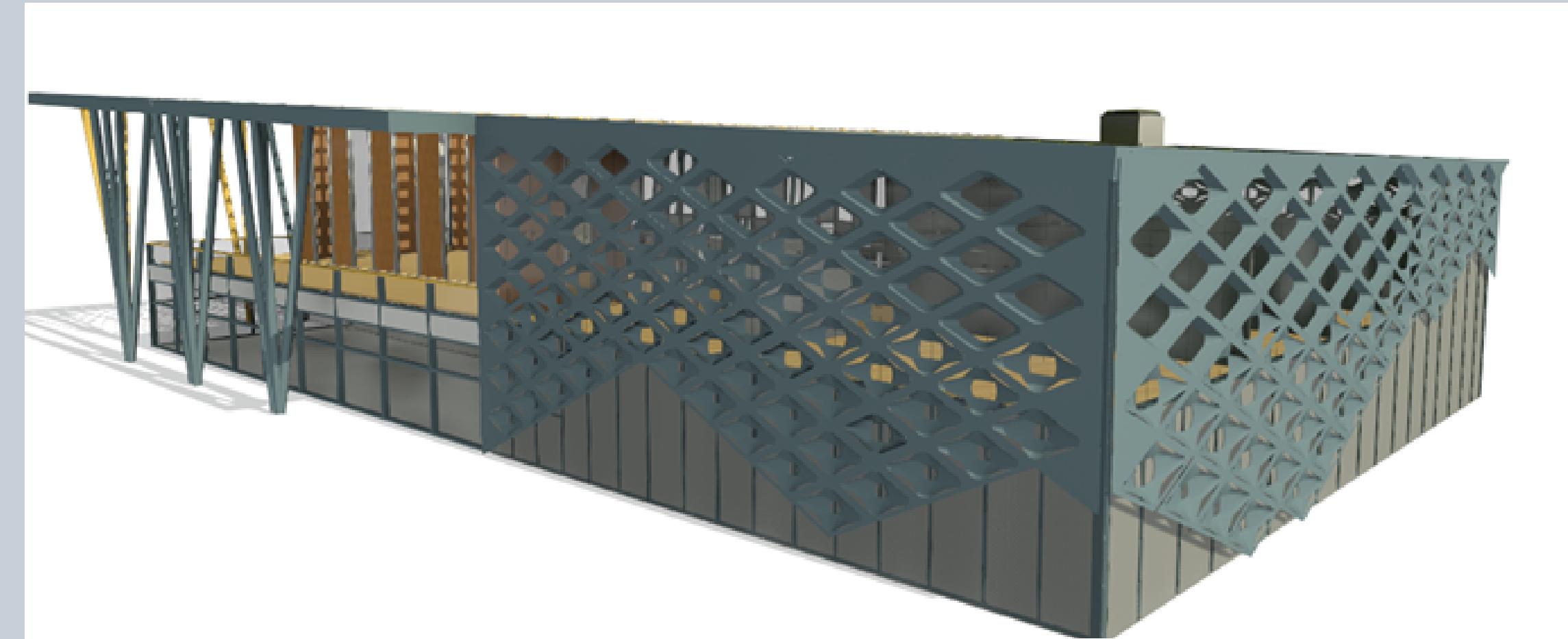


Sürdürülebilirlik & Enerji Analizi

Cephede sürdürülebilir enerji kurgusu

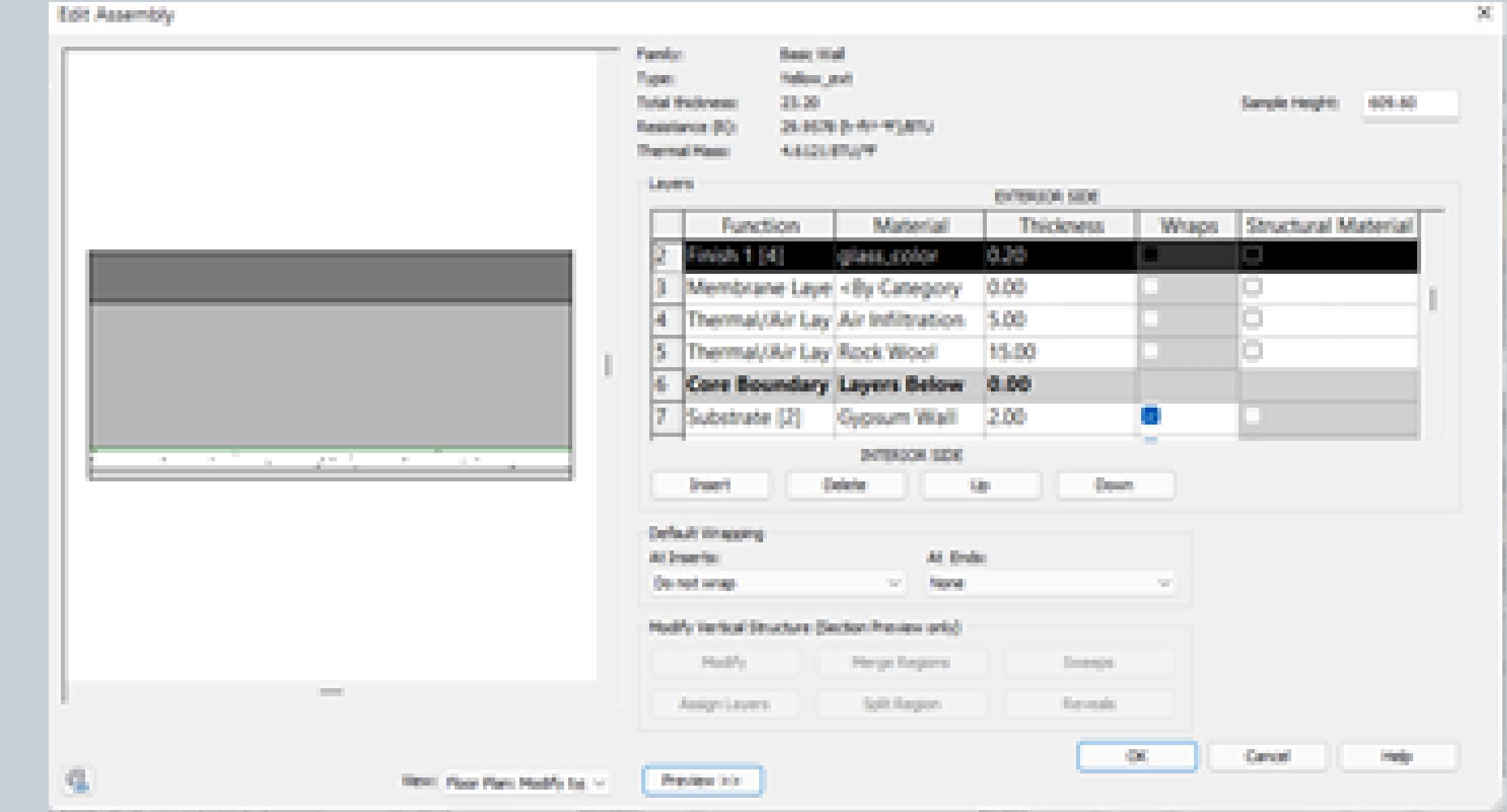


Fotovoltaik, düşük enerjili ve kamaşma önleyici cam malzeme ve cephede kullanılan kaplama malzemelri sayesinde güneş enerjisini elektiriğe dönüştürerek kullanıyoruz. İklimlendirmeye maxsimum fayda sağlamak amacıyla alınan bu kararda malzeme olarak **ısı hafızalı** alaşımalar tercih edildi. buna ek olarak ısı ve ışık durumuna göre **açıları değişebilen** parametrik tasarım sayesinde iklimlendirmeyi daha kolay kontrol altına alabiliyoruz



Sürdürülebilirlik & Enerji Analizi

Yapılar geneline bakıldığında en fazla enerji kaybı ısınma ve soğutma durumlarında olduğu gibi en fazla enerji kaybı ve israfı da yine bu durumlarda gerçekleşiyor. Bu duruma çözüm olarak geliştiridğimiz duvar malzeme katmanları sağdaki görselde mevcuttur.



İsı yalıtımları için geliştirdiğimiz hava boşlukları içeren duvar malzemesi sayesinde yapı içerisindeki ısı kaybını en az seviyeye indirmek için kullanıldı

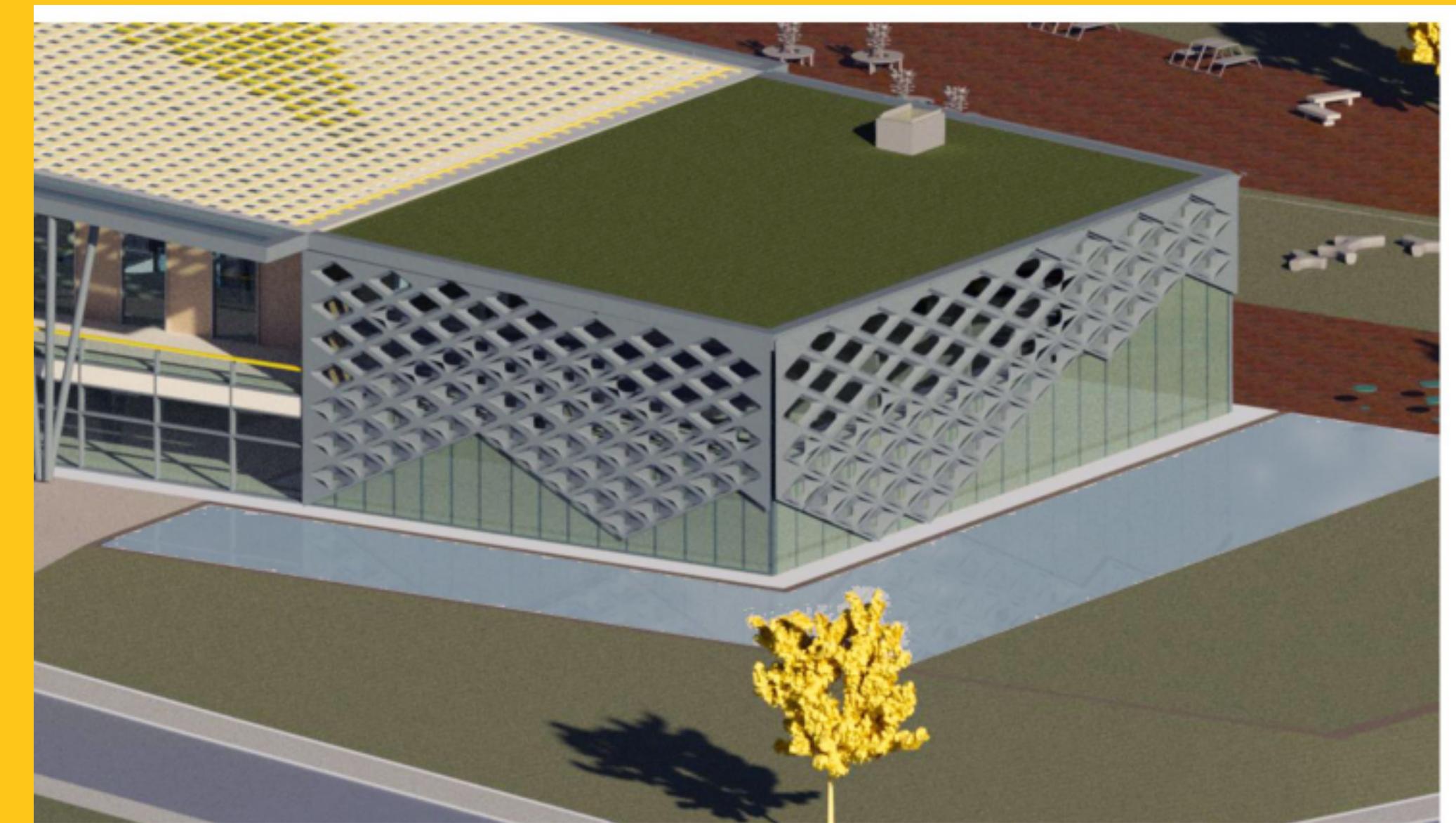
PARAMETRİK VE ÜRETKEN MODELLEME İLE VERİ ODAKLI TASARIM

REVİT Dynamo İle Parametrik Cephe Tasarımı

I. Adaptif Familyaların Oluşturulması:

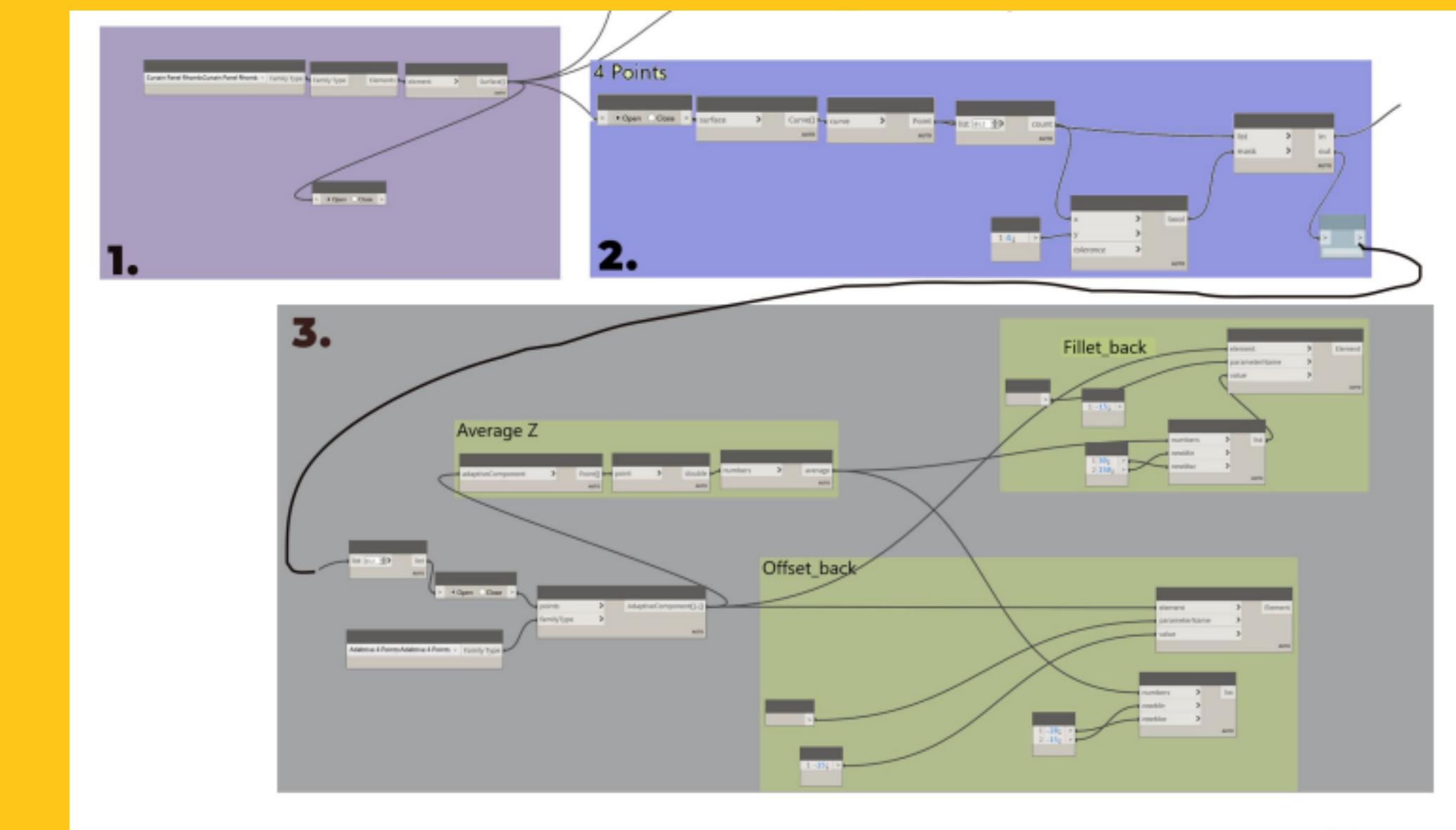
II. Dynamo kodu ile Hedef Yüzeylere Panellerin Atanarak Giydirme Cephe Panellerinin Modellenmesi:

III. REVİT Dynamo İle Generative Çatı Tasarımı

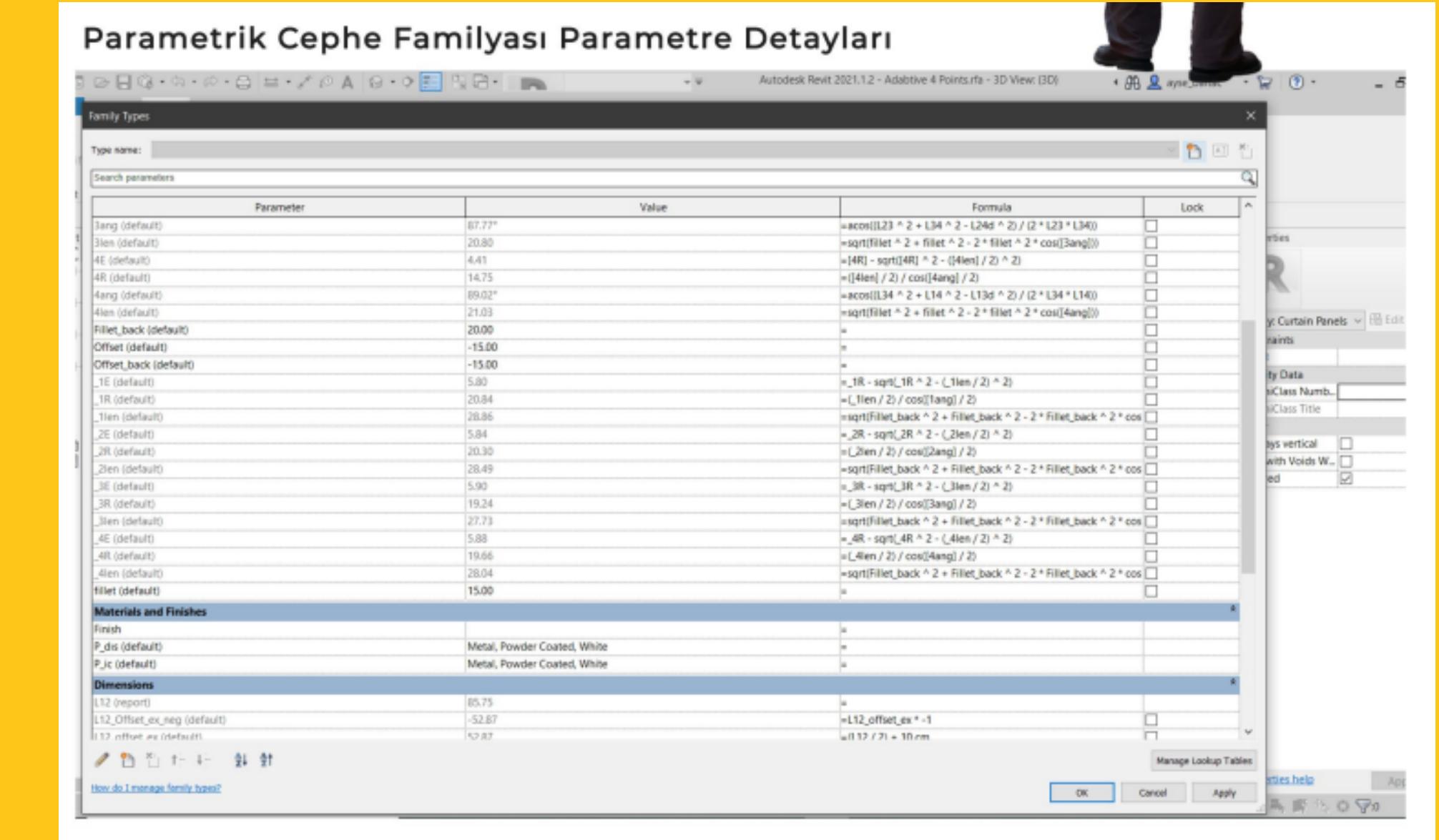
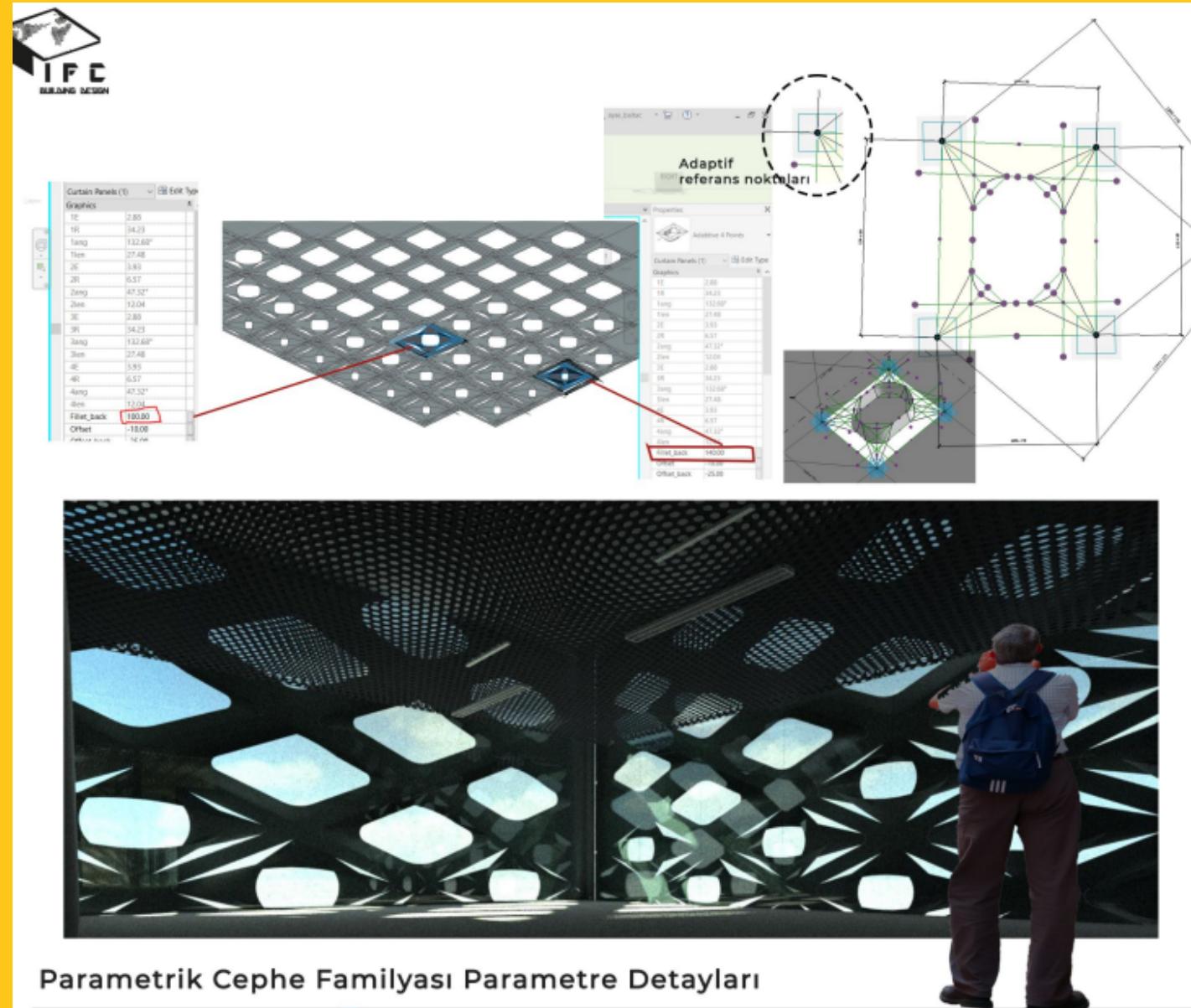


PARAMETRİK VE ÜRETKEN MODELLEME İLE VERİ ODAKLI TASARIM

- Hazırlanan kod 3 kısımdan oluşmaktadır:



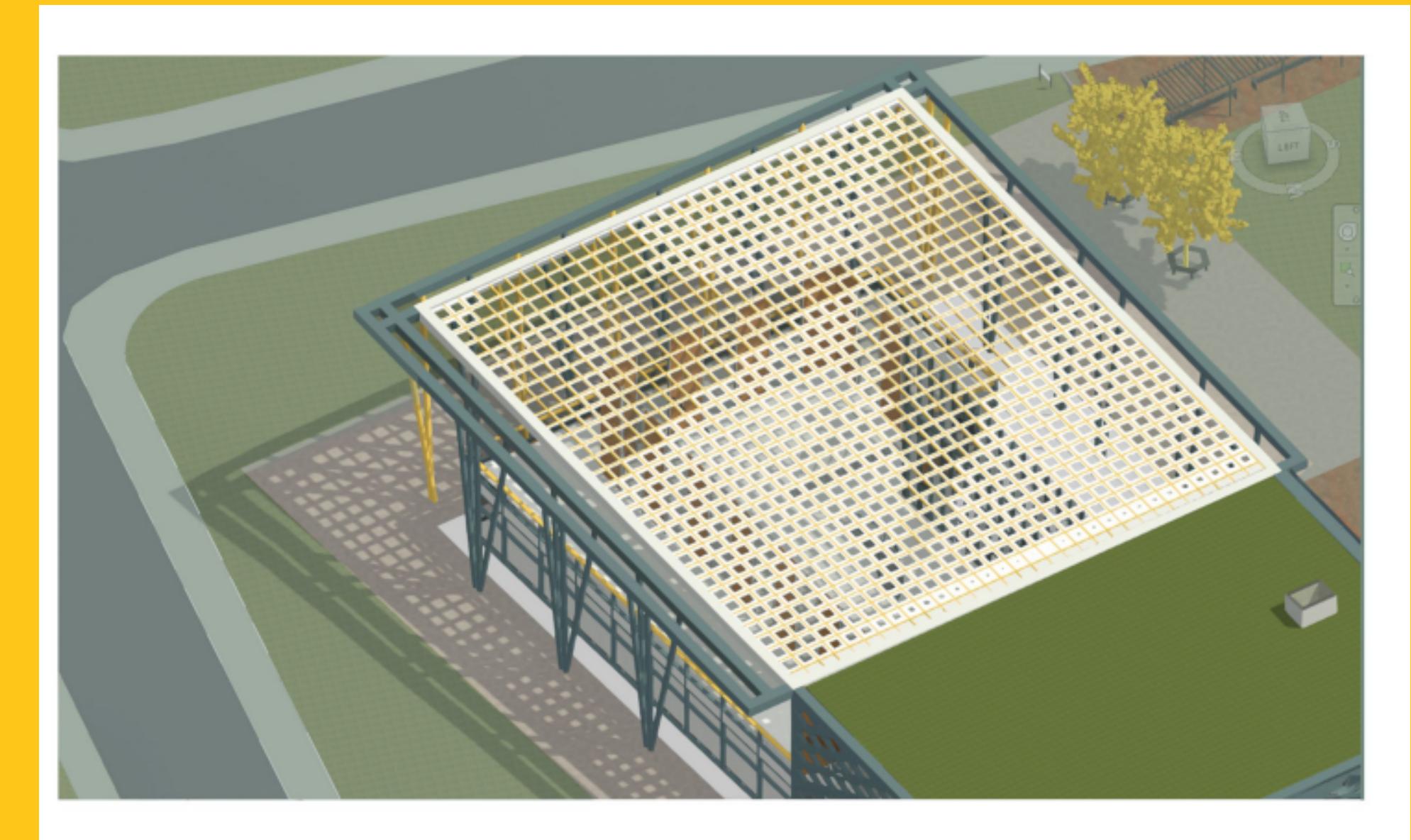
PARAMETRİK VE ÜRETKEN MODELLEME İLE VERİ ODAKLI TASARIM



PARAMETRİK VE ÜRETKEN MODELLEME İLE VERİ ODAKLI TASARIM

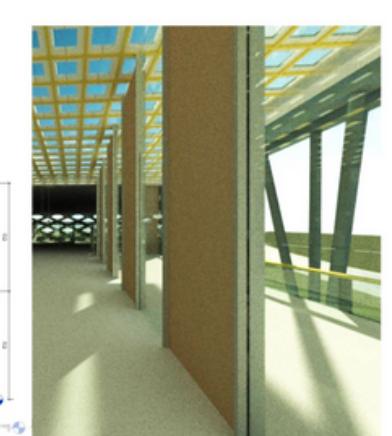
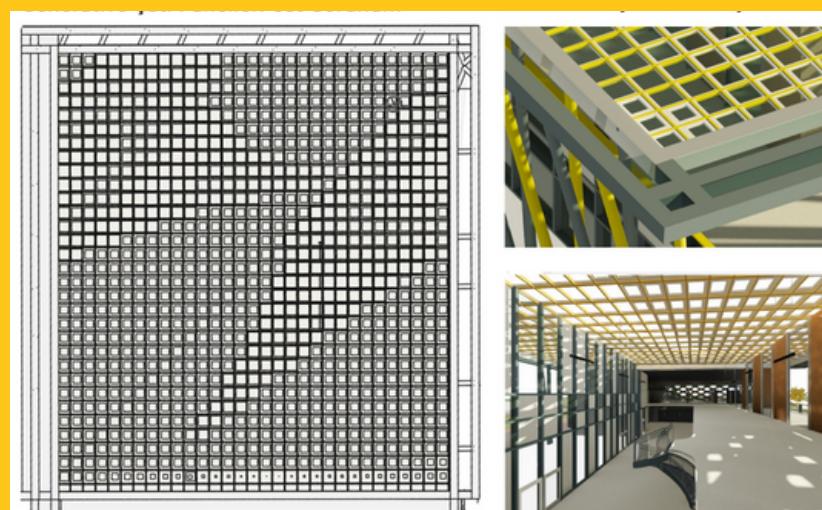
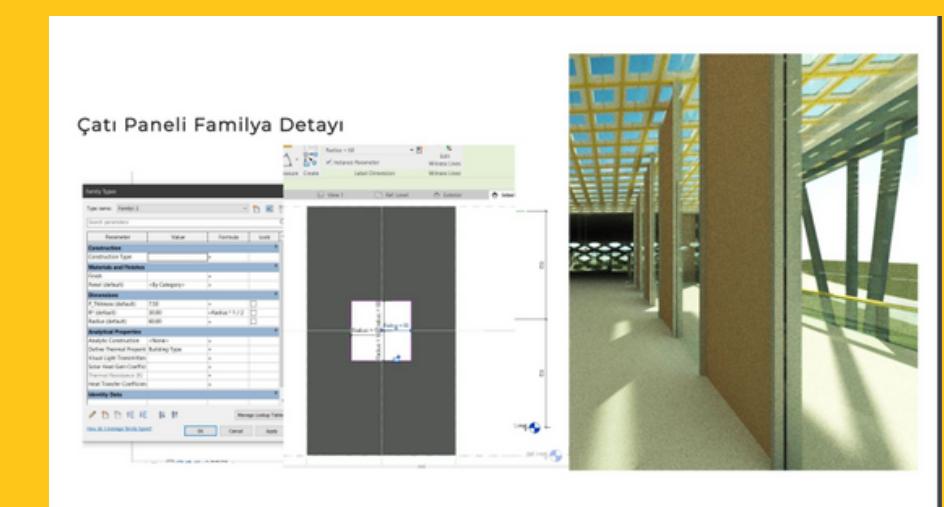
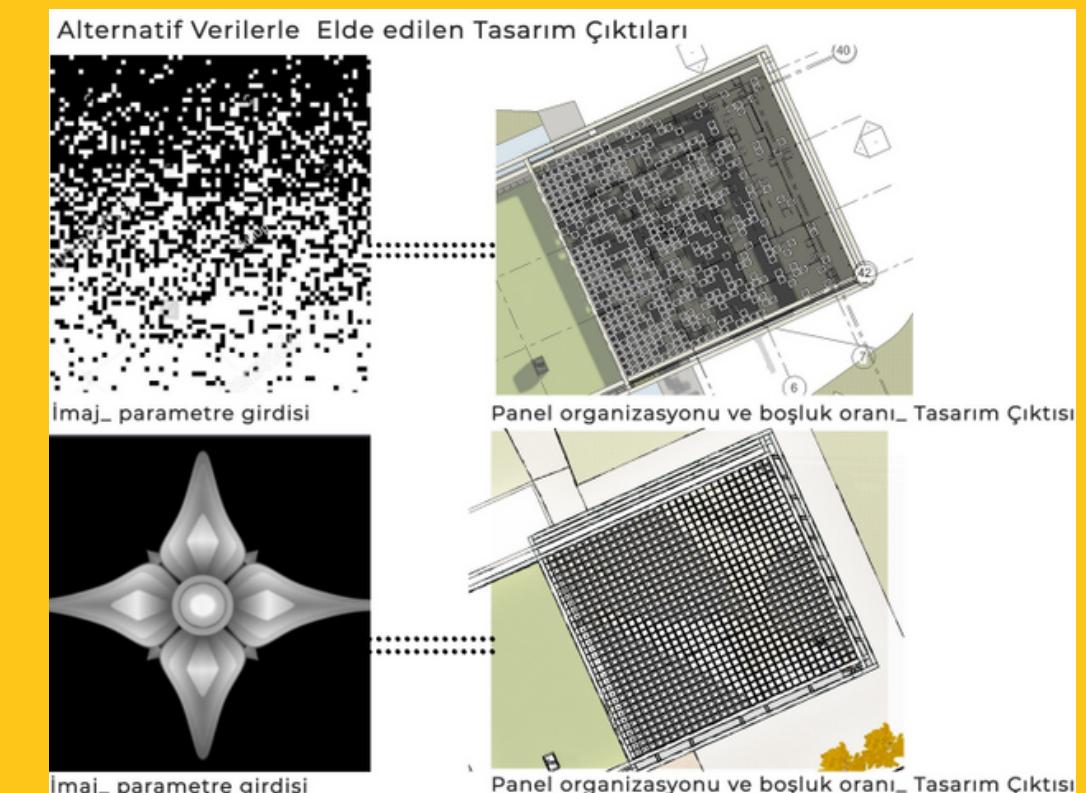
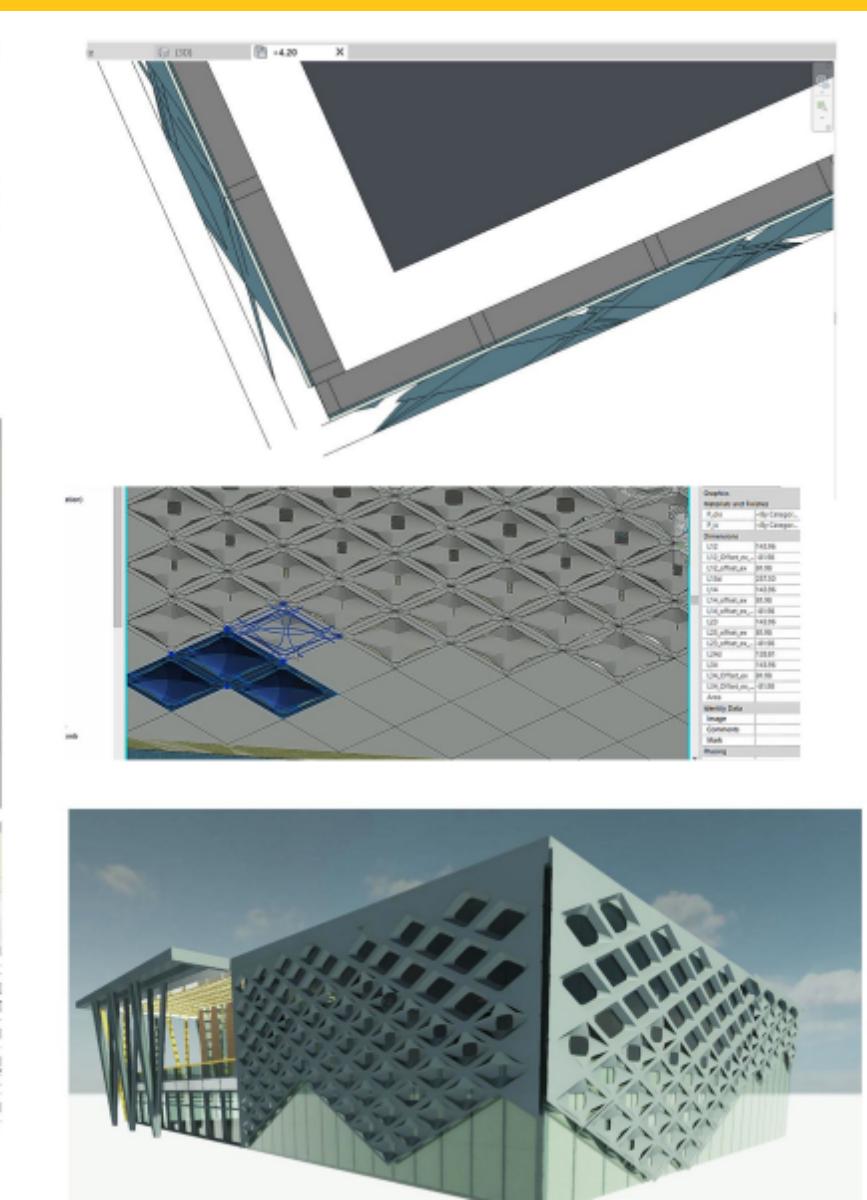
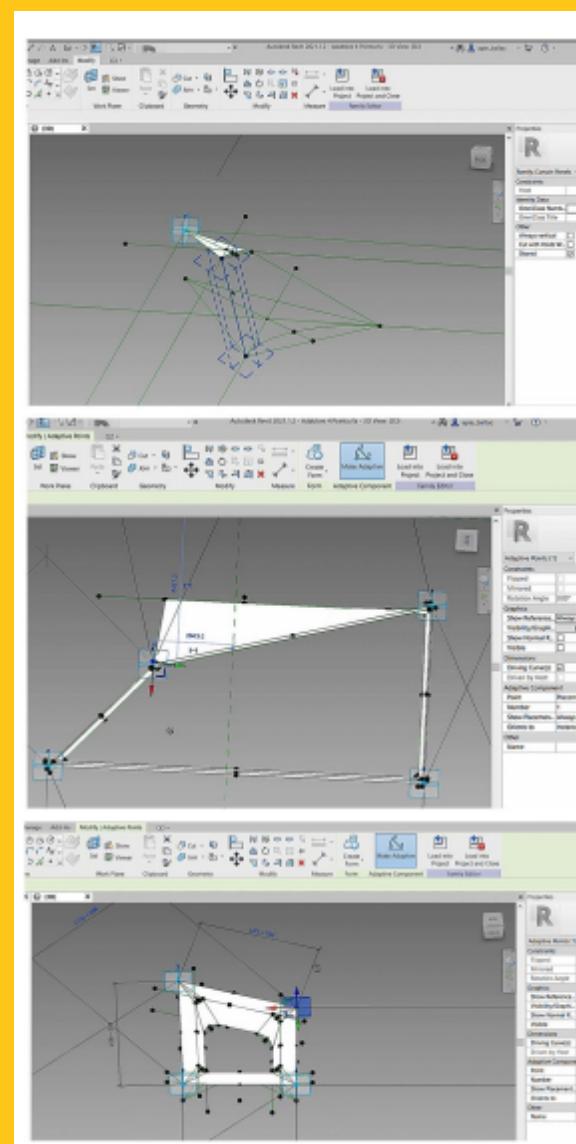
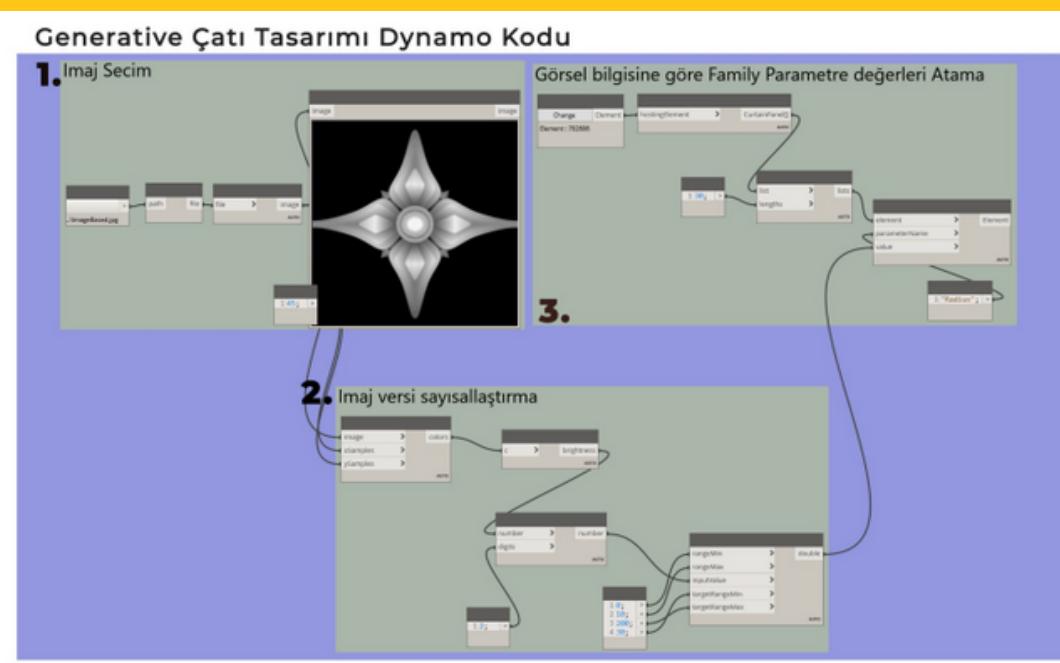
III. REVİT Dynamo İle Generative Çatı Tasarımı

- bitkilendirilmiş ve yağmur suyunu depolama
- kısmi ve değişken saydamlığa sahip panellerle



PARAMETRİK VE ÜRETKEN MODELLEME İLE VERİ ODAKLI TASARIM

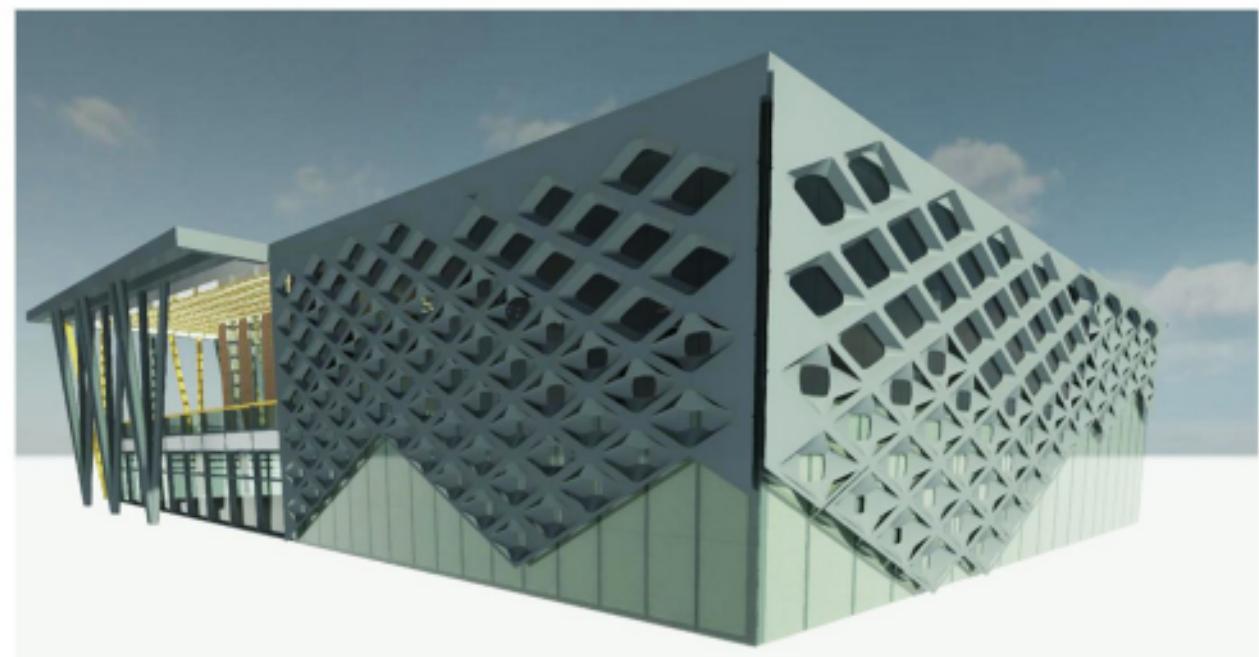
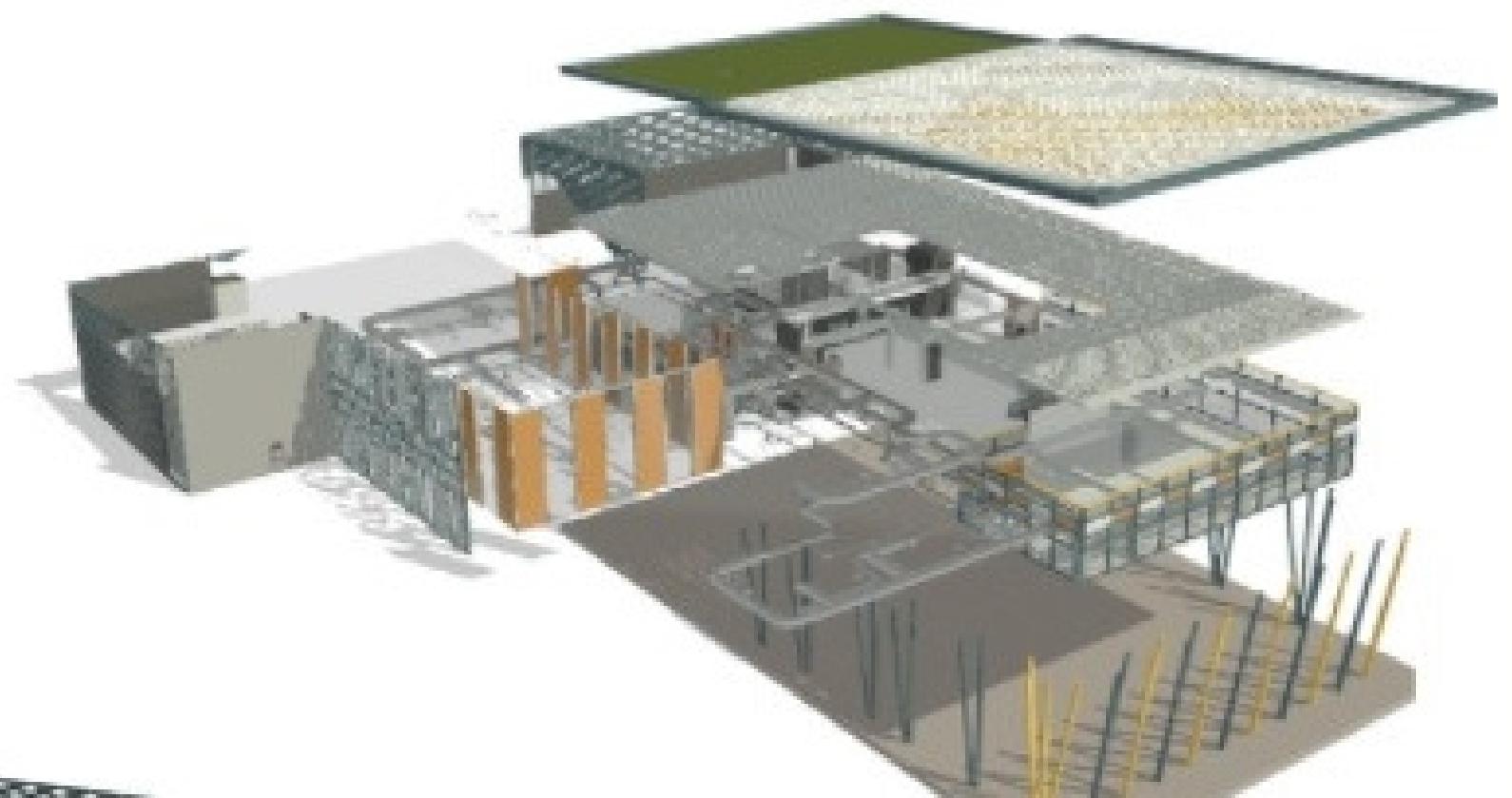
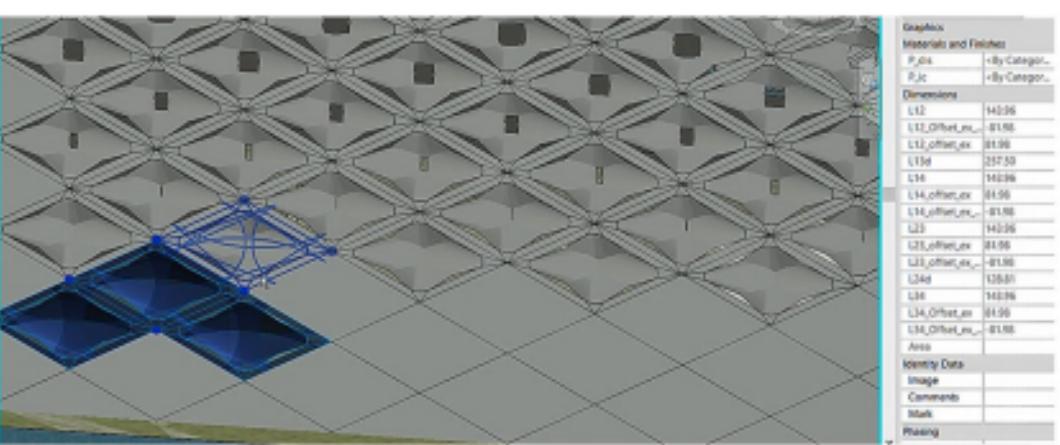
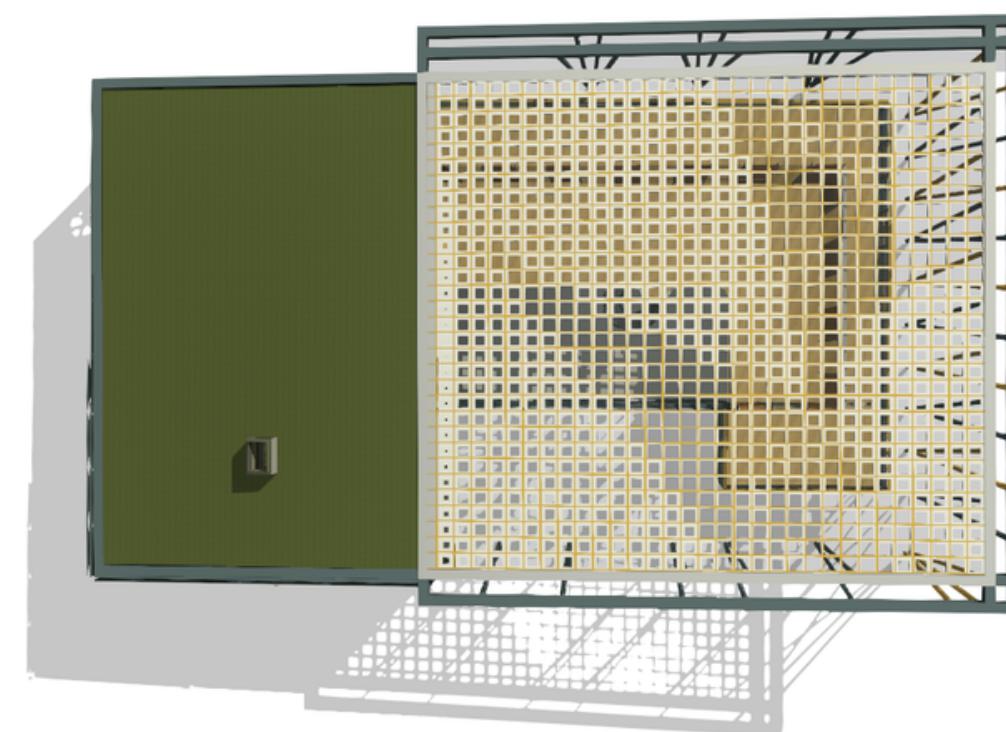
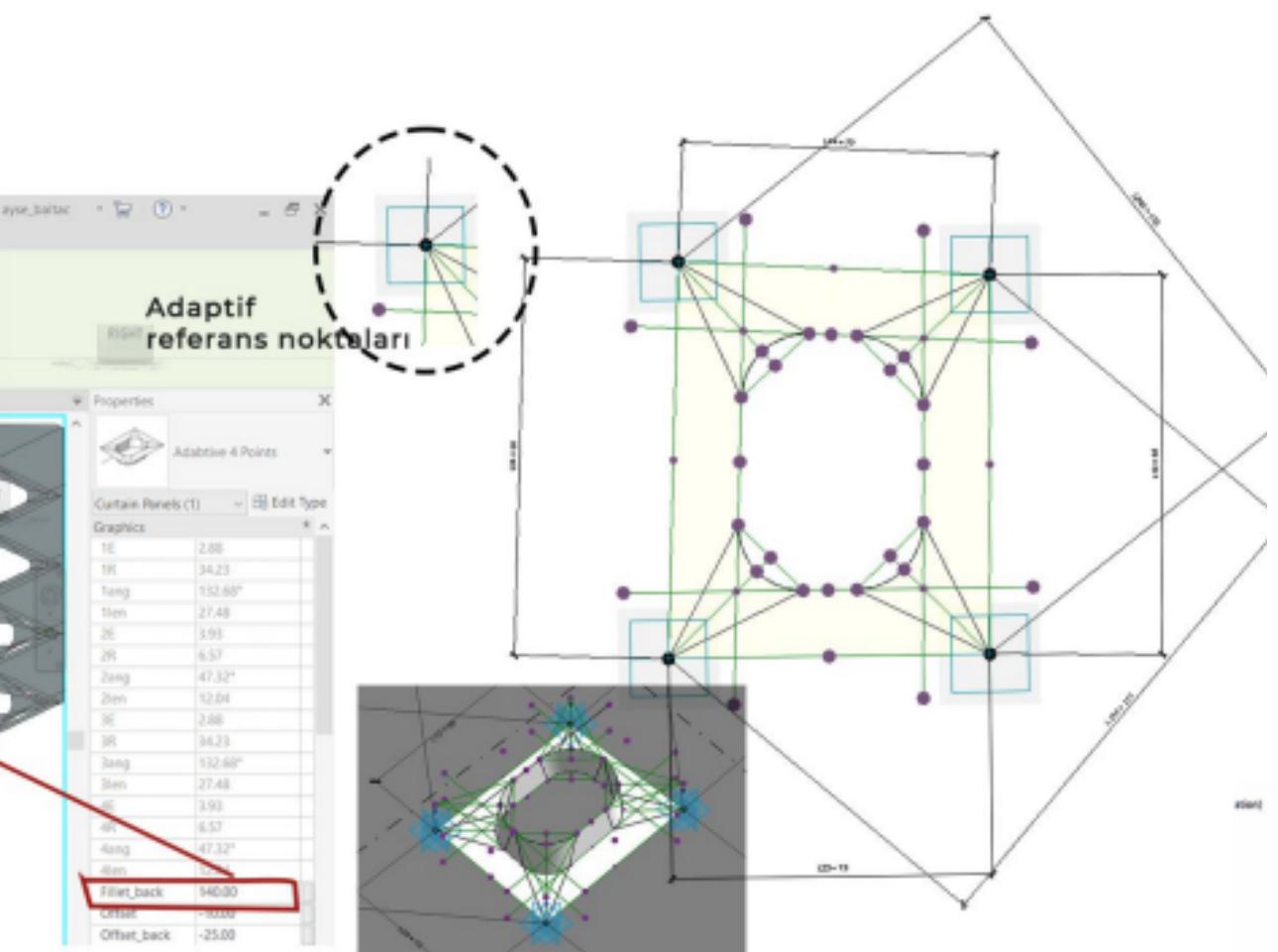
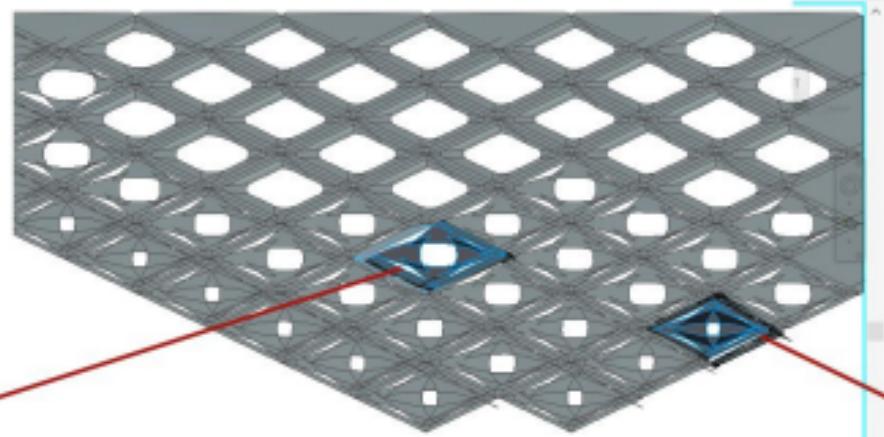
III. REVIT Dynamo İle Generative Çatı Tasarımı



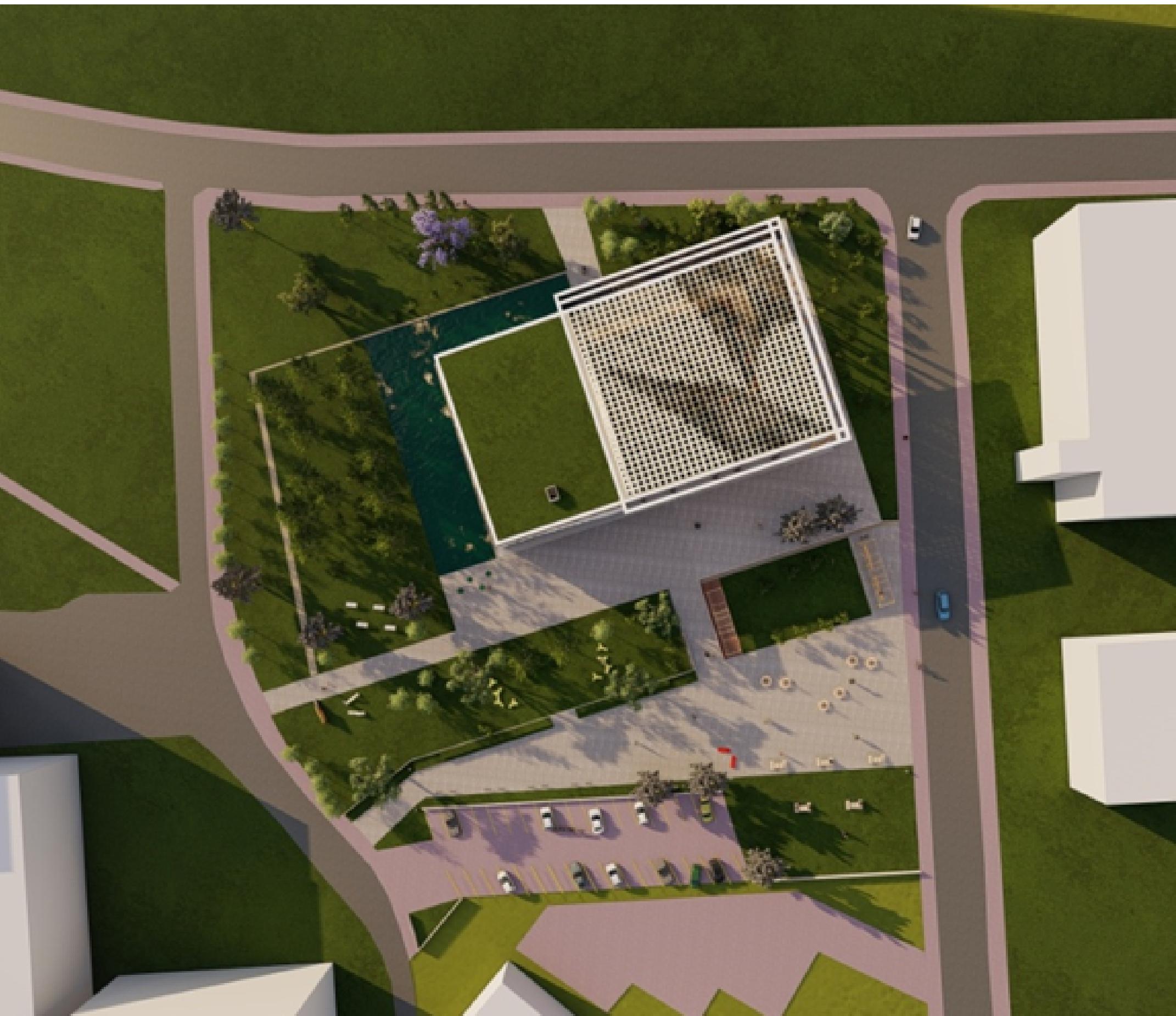


Kütle Tasarımı

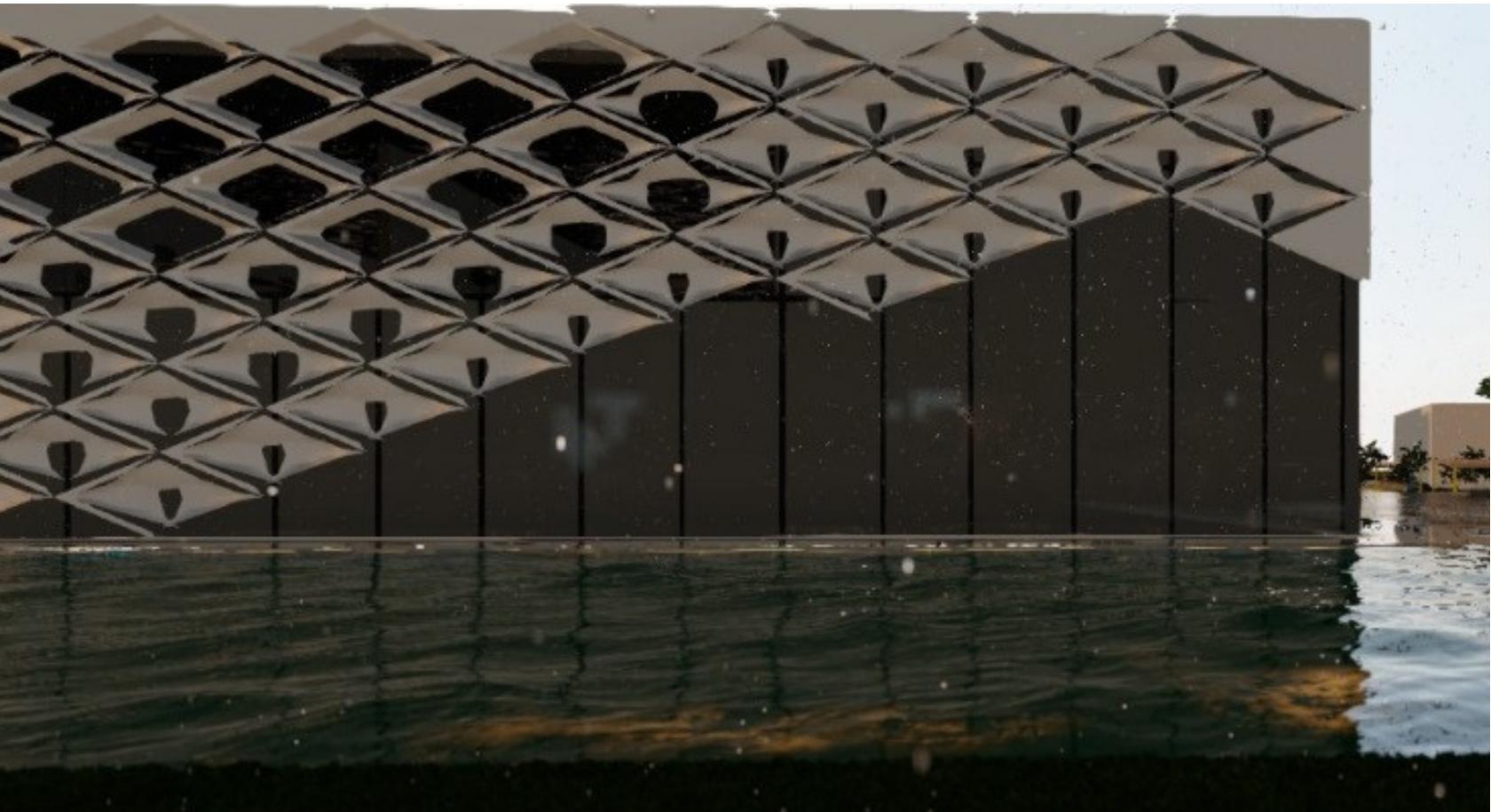
Curtain Panels (1) ▾	Edit Type
Graphics	
1E	2.88
1R	34.23
1ang	132.68°
1len	27.48
2E	3.93
2R	6.57
2ang	47.32°
2len	12.04
3E	2.88
3R	34.23
3ang	132.68°
3len	27.48
4E	3.93
4R	6.57
4ang	47.32°
4len	12.04
Fillet_back	100.00
Offset	-10.00
Offset_inwards	10.00 mm



MİMARI TASARIMDA BIM



MİMARİ TASARIMDA BIM



İTÜ Ayazağa içerisinde, Yeşil Kampüs anlayışının korunarak sürdürüldüğü bir proje tasarım yaklaşımı benimsenmiştir. Tasarım süreci boyunca sürdürülebilirlik stratejileri incelenerek, insana ve çevreye saygılı yaklaşan mekansal öneriler geliştirilmek istenmiştir.

Ayrıca, tasarım süreci boyunca, iş akışını verimli ve kolay kılabilecek çeşitli yazılımlar kullanılarak en güncel yöntemlerle mimari tasarım oluşturmak istenmiştir

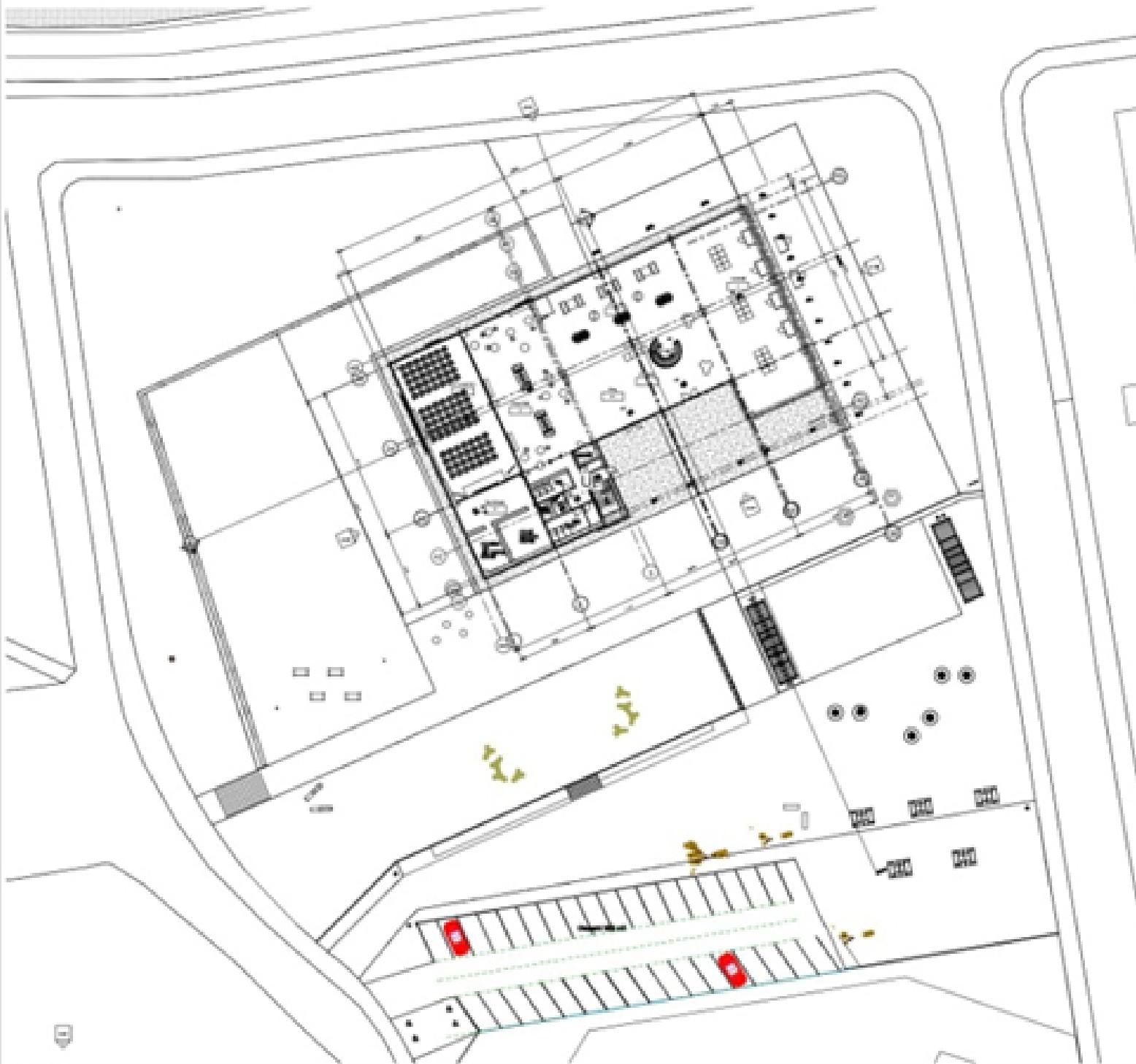
MİMARİ TASARIMDA BIM

- Mimari Tasarım Süreci erken ve olgun evre olarak iki adımda oluşmaktadır. Erken evre süresince; çevresel analiz, program çözümü ve kütle önerisi geliştirildi.
- Olgun evre aşamasında ise, cephe ve çatı Tasarıma başlarken ilk olarak; İTÜ Ayazağa kampüsünde bulunan arazi fotoğraflanarak incelenmiştir. Burada bulunan komşu yapılar ve çevresel koşullar analiz edilerek mimari tasarım girdileri oluşturulmaya başlanmıştır.



MİMARI TASARIMDA BIM

PLANLAR

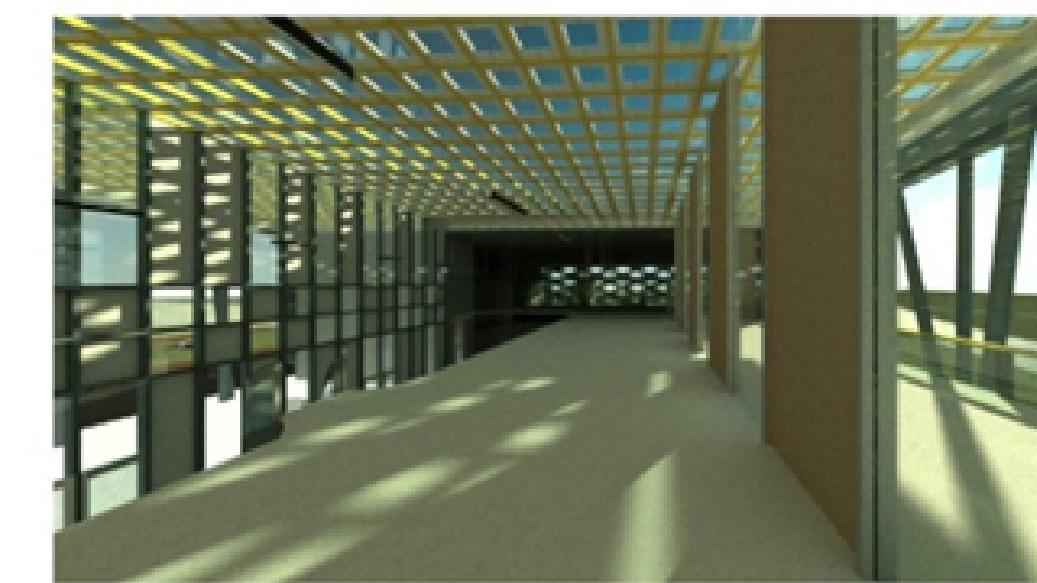


IFC
SOSYAL MERKEZ

Owner
ITU SOSYAL MERKEZ
Kat Planları

A101

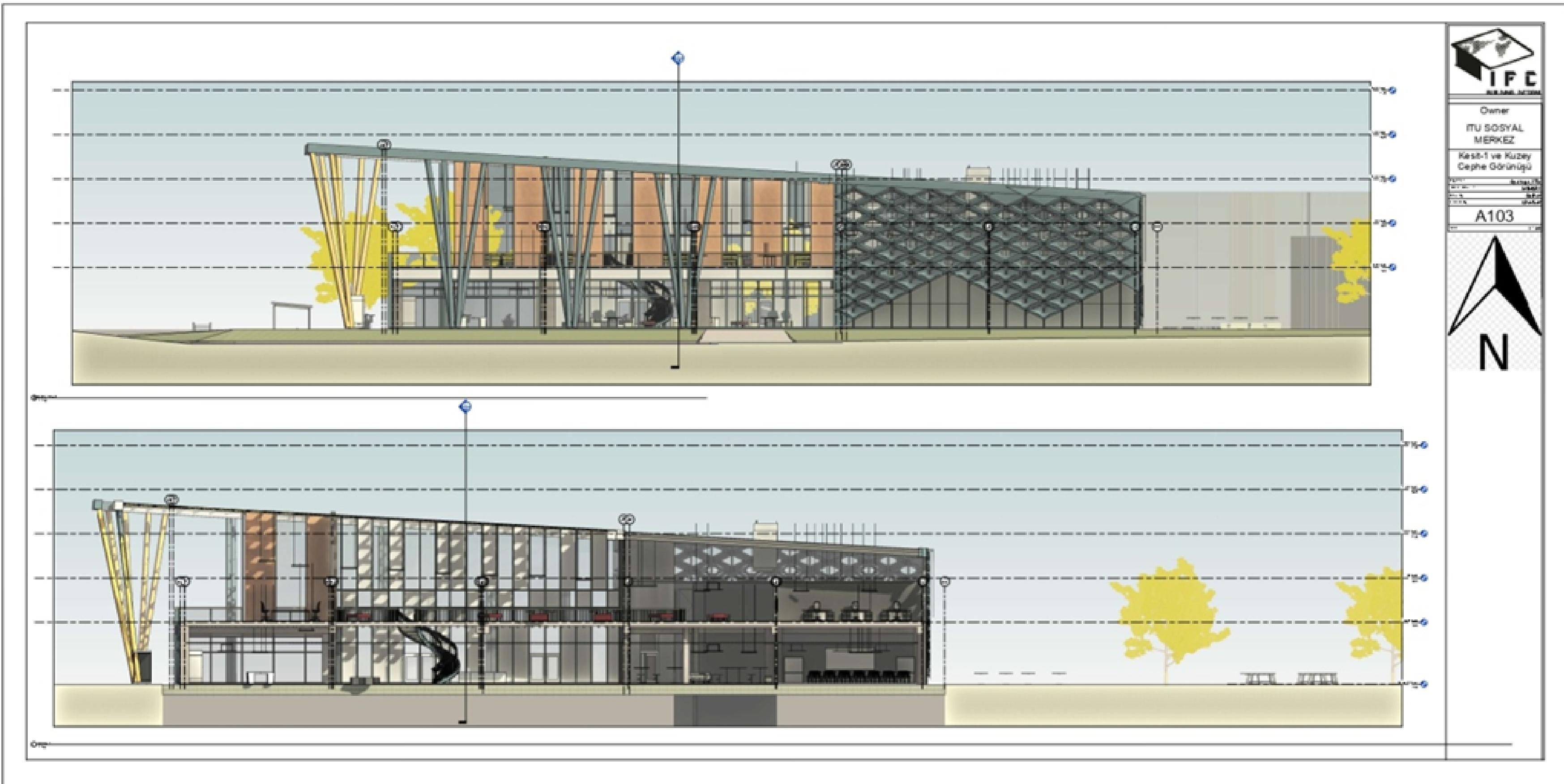
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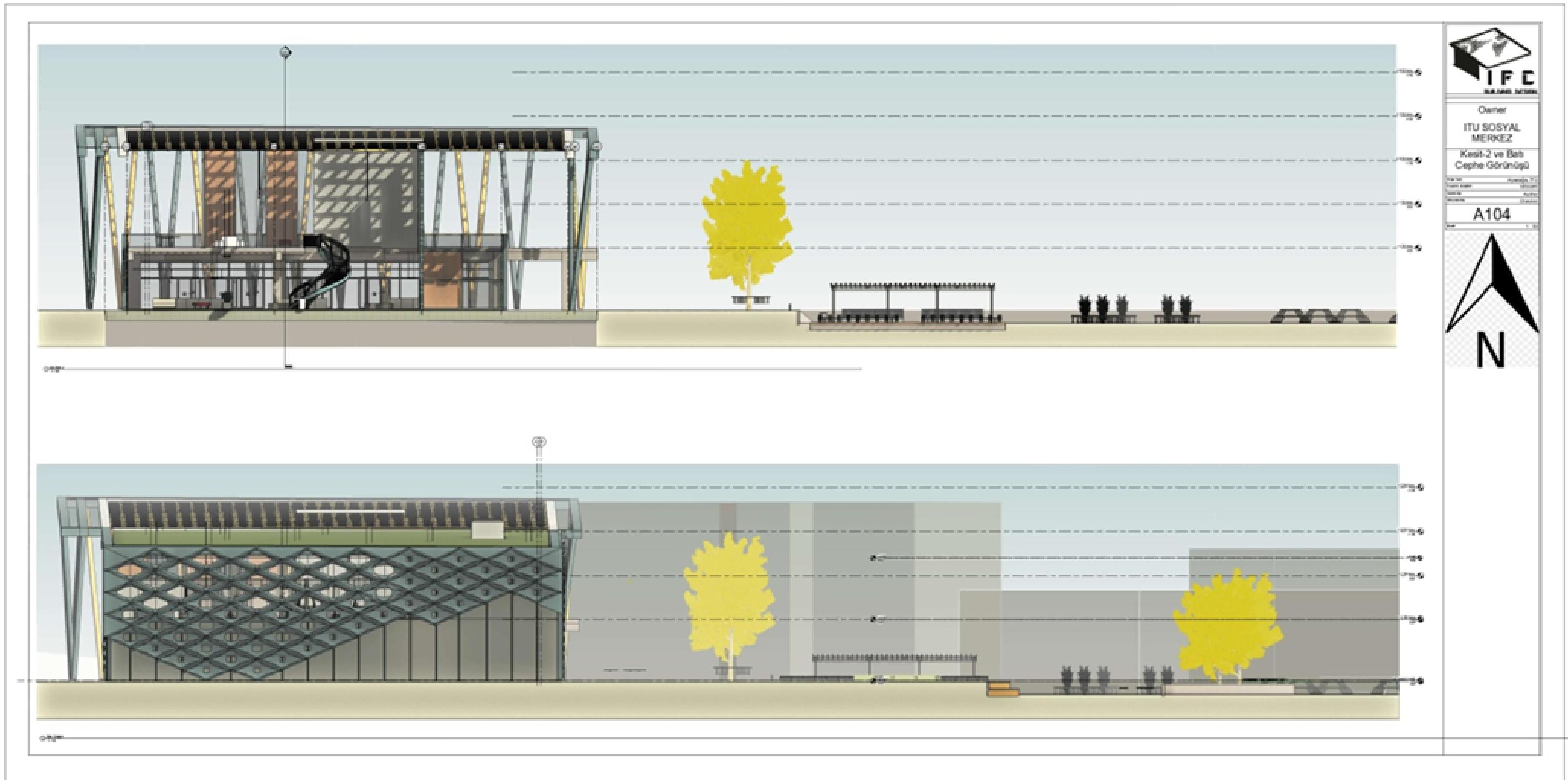
MİMARI TASARIMDA BIM



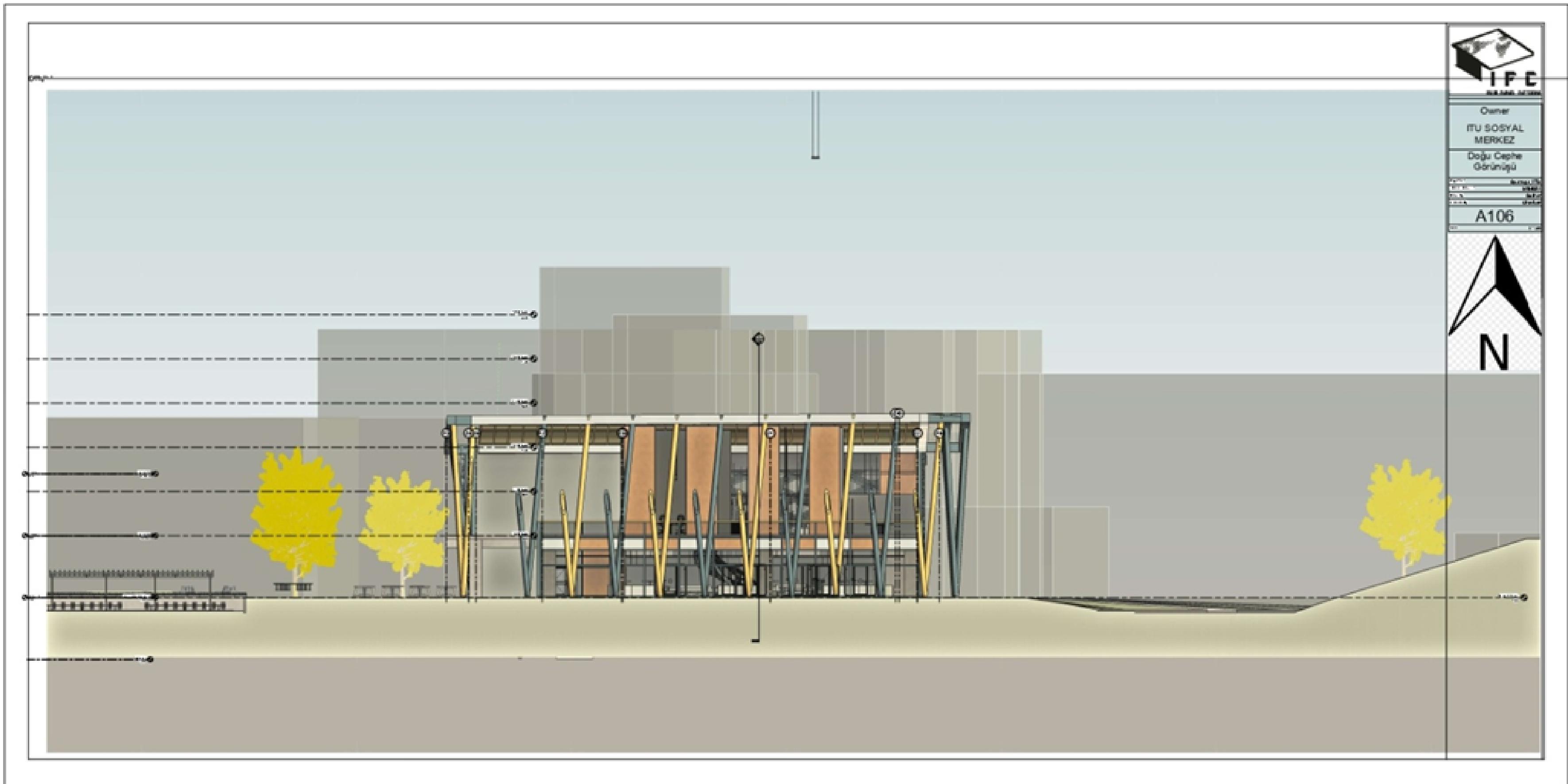
MİMARI TASARIMDA BIM



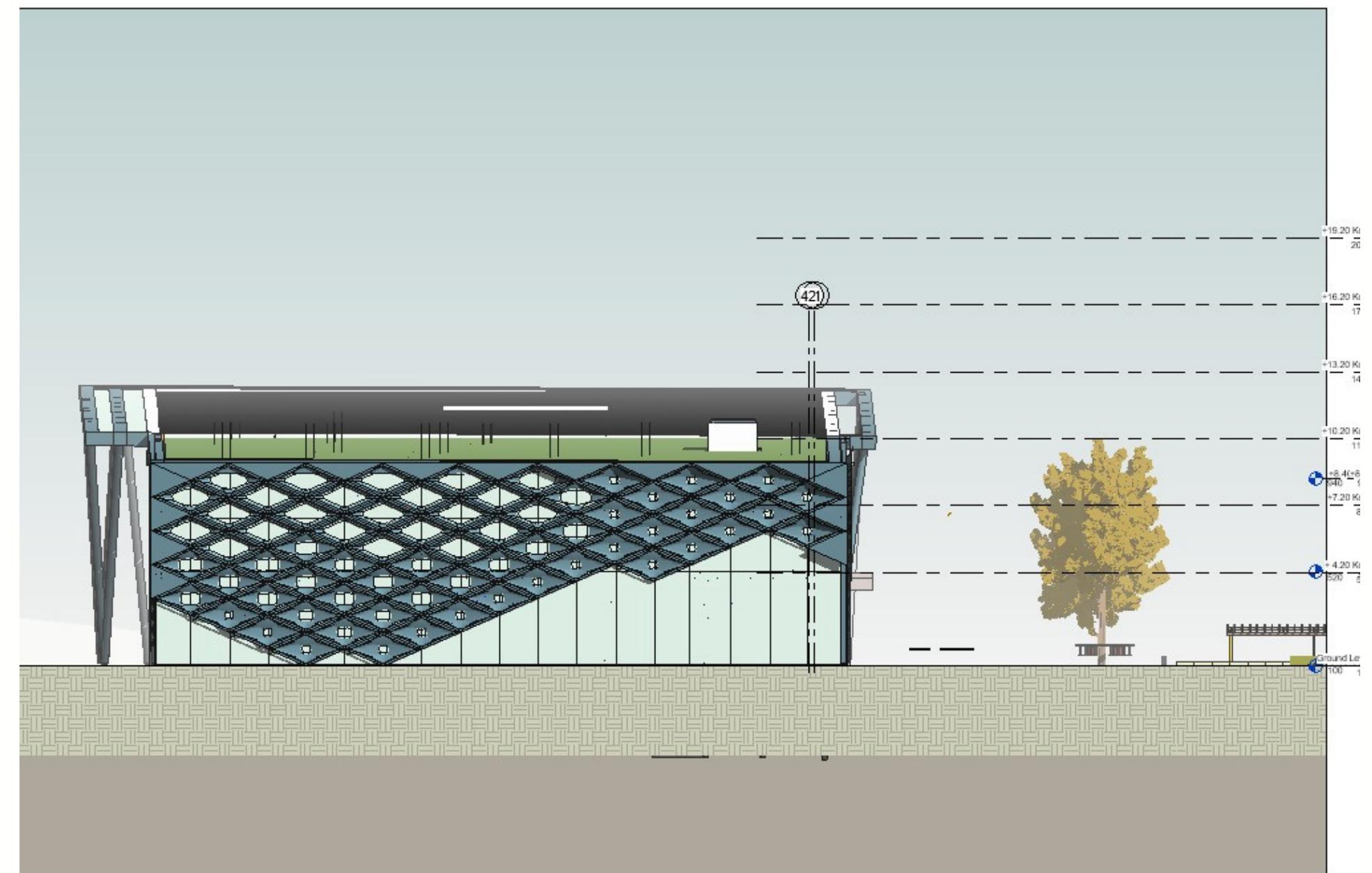
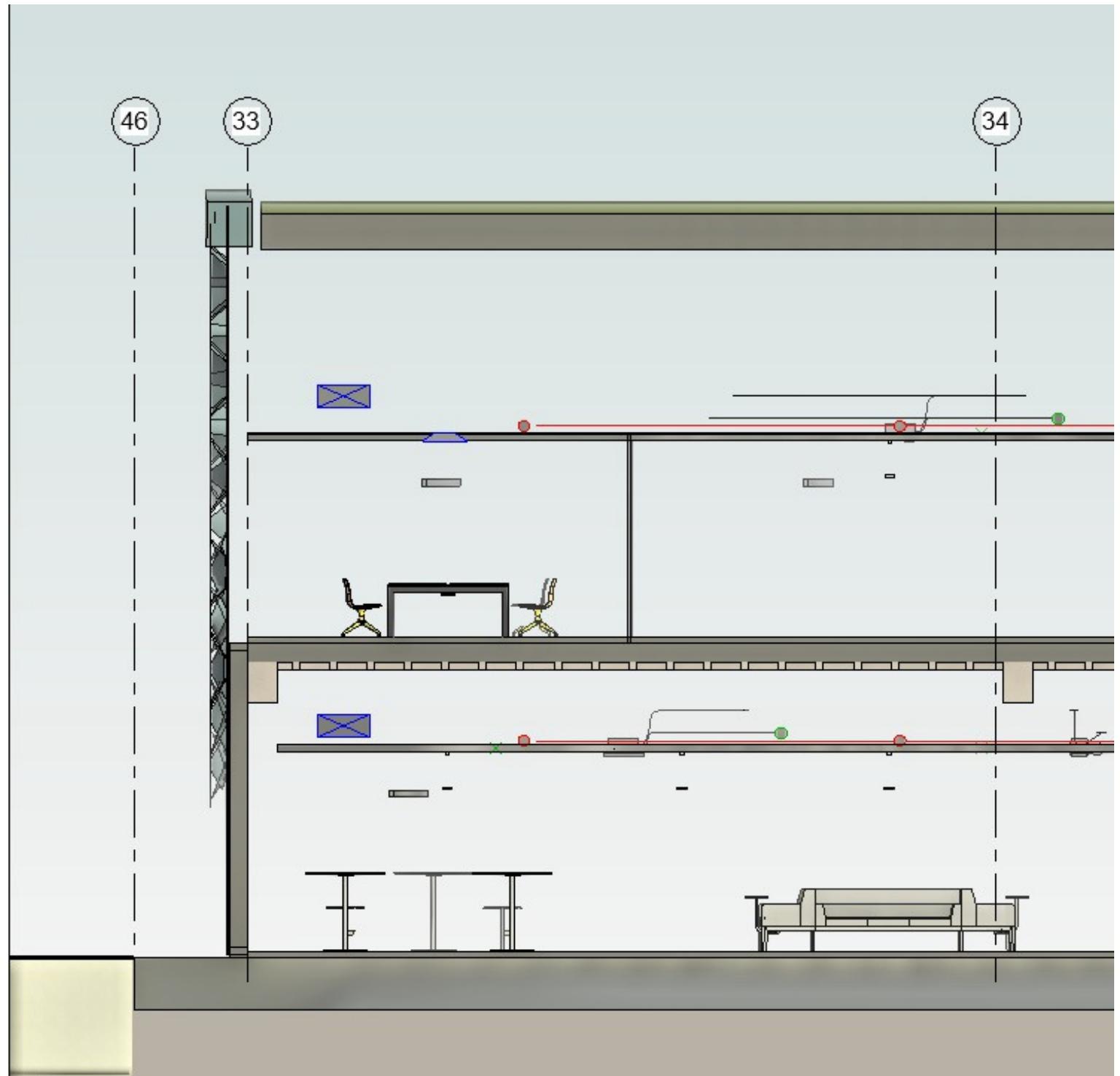
MİMARI TASARIMDA BIM



MİMARİ TASARIMDA BIM



MİMARI TASARIMDA BIM





Statik Tasarımda BIM

- Proje alanının koordinatları:
41.107495, 29.027019
- Yerel zemin sınıfı ZC'dir.
- Projenin uygulanacağı zeminde eğim olmayıp düz bir zemin olarak kabul edilecektir.
- Zemin emniyet gerilmesi
zem=300kN/m² 'dir.

01	Deprem Düzeyi	DD-2
02	Zemin Sınıfı	ZC
03	Tasarım Spektrumları	$S_{DS} = 0.871$
04	Bina Kullanım Sınıfı	BKS = 2
05	Deprem Tasarım Sınıfı	DTS = 1
06	Kat Kotlan	$H_N = 4.20 \text{ m}$
07	Bina Yükseklik Sınıfı	BYS = 8
08	Performans Hedefi	NPH = KH, DTY = DGT
09	Taşıyıcı Sistem	Betonarme
10	Döşeme Tipi	Kırışılı veya Kaset Döşemeler
11	Diyafra姆 Tipi	Yan Rijit Diyafraム
12	Süneklik Düzeyi	Yüksek
13	R Katsayısı - X	$R = 6, D = 2.5$
14	R Katsayısı - Y	$R = 6, D = 2.5$
	✓	Sonuç

3.1.1'de tanımlanan Bina Kullanım Sınıfları'na ve DD-2 deprem yer hareketi düzeyi için 2.3.2.2'de tanımlanan Kısa Periyot Tasarım Spektral İvme Katsayı'sına bağlı olarak, bu Yönetmelik'te deprem etkisi altında tasarımda esas alınacak Deprem Tasarım Sınıfları (DTS), Tablo 3.2'ye göre belirlenmiştir.

$S_{DS} = 0.871$ hesaplanmıştır, BKS = 2 koşulunu sağladığı için DTS = 1 seçilmiştir.

Tablo 3.2 - Deprem Tasarım Sınıfları (DTS)

DD-2 Deprem Yer Hareketi Düzeyinde Kısa Periyot Tasarım Spektral İvme Katsayı (SDS)	Bina Kullanım Sınıfı	
	BKS = 1	BKS = 2, 3
$SDS < 0.33$	DTS = 4a	DTS = 4
$0.33 \leq SDS < 0.50$	DTS = 3a	DTS = 3
$0.50 \leq SDS < 0.75$	DTS = 2a	DTS = 2
$0.75 \leq SDS$	DTS = 1a	DTS = 1

BKS = Bina kullanım sınıfı

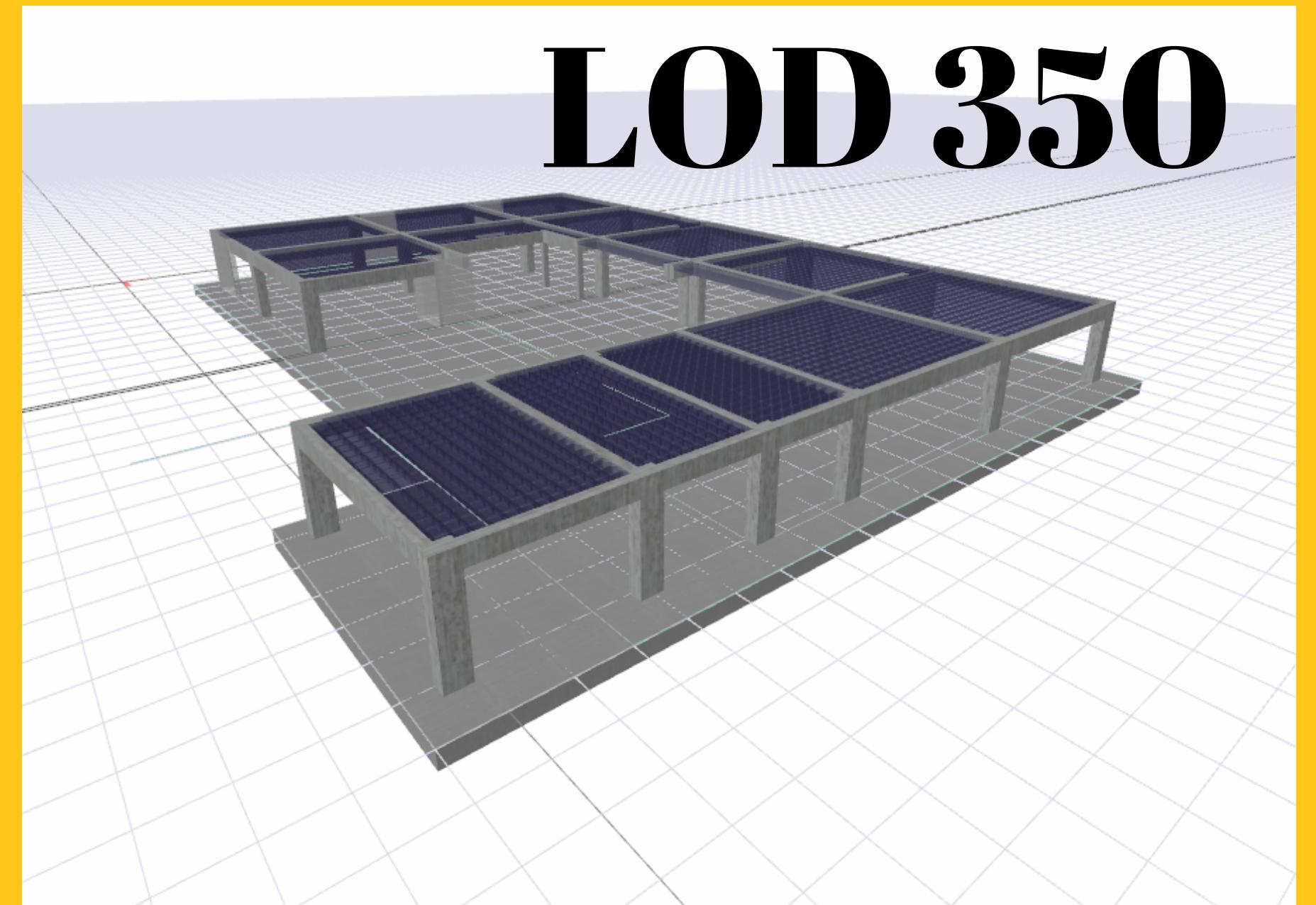
SDS = Kısa periyot tasarım spektral ivme katsayı [boyutsuz]

DTS = Deprem tasarım sınıfı



Statik Tasarımında BIM

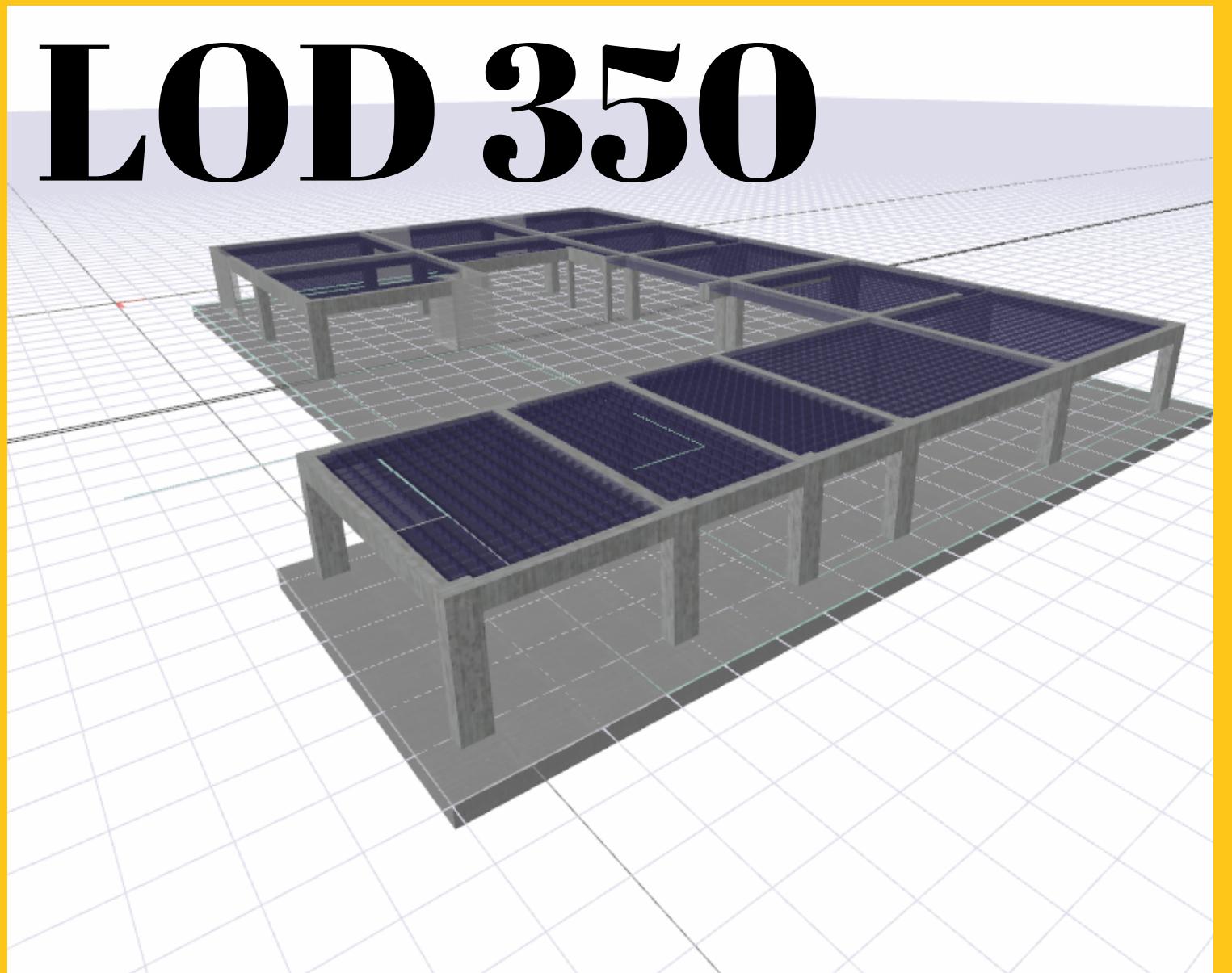
- C35
- Temel: 70 cm
- Kolon: 60&90 cm
- Kiriş: 40&70 cm
- Döşeme:Kaset Döşeme
- Çatı : Çelik Taşıyıcı



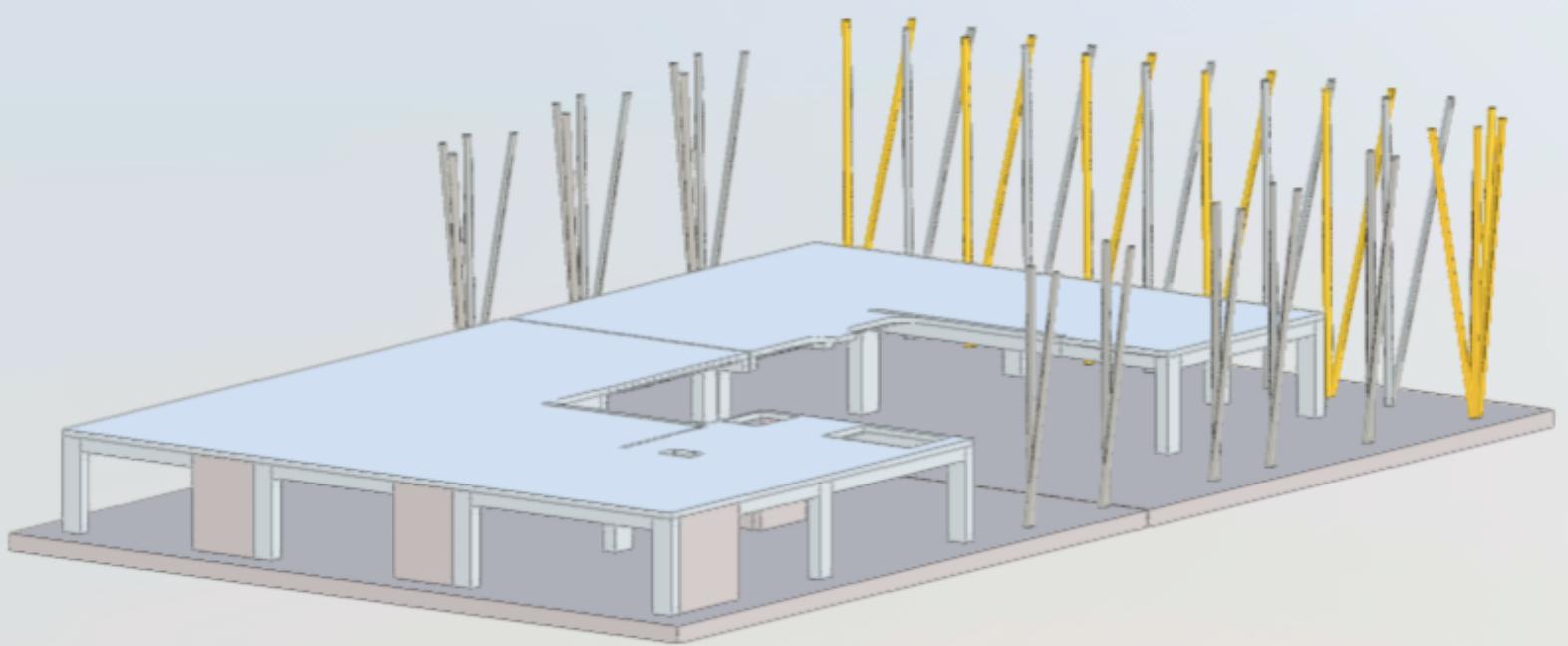
Statik Tasarımında BIM



LOD 350



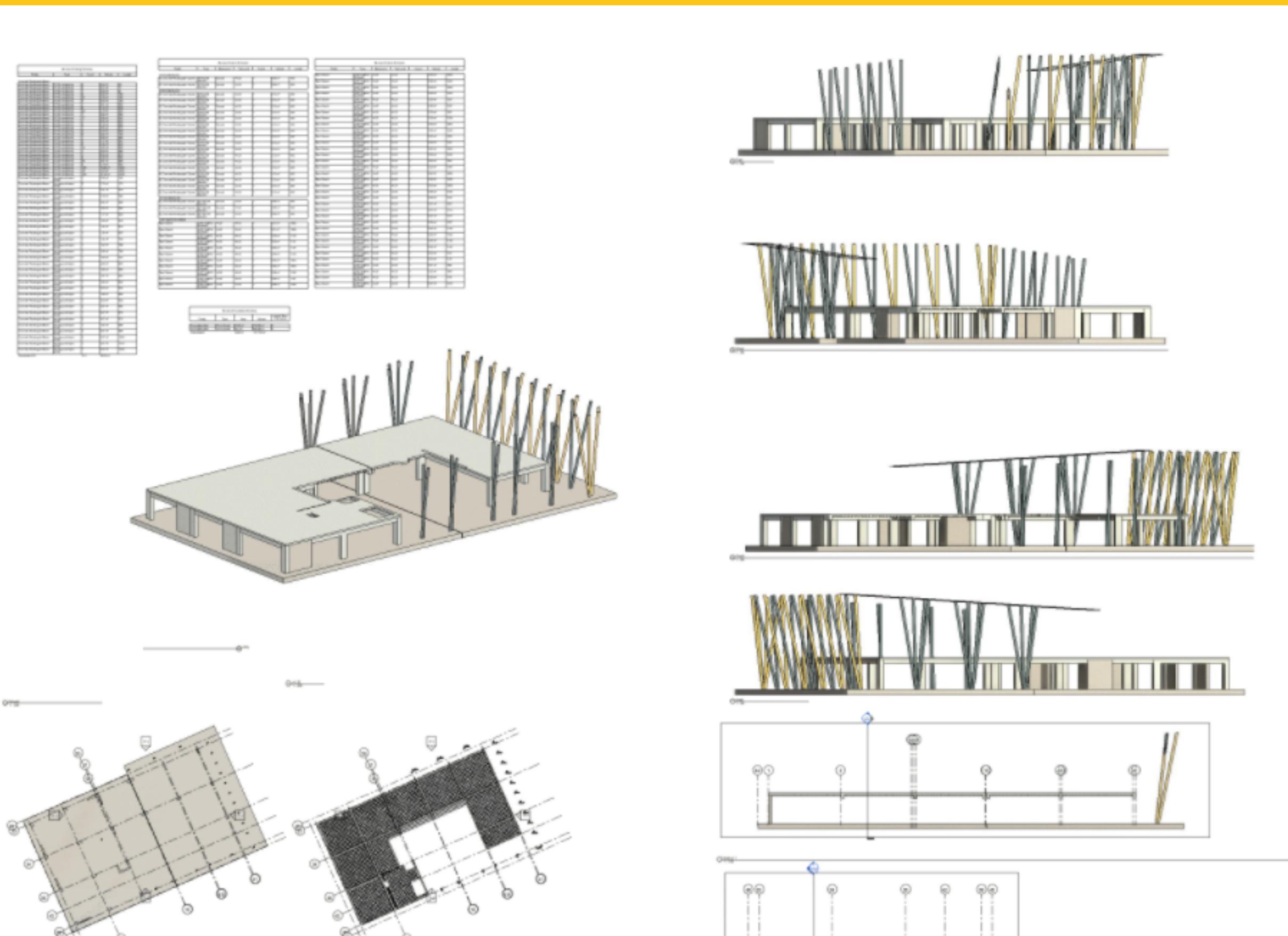
LOD 200



Metraj

ideCAD®

Statik Tasarımında BIM

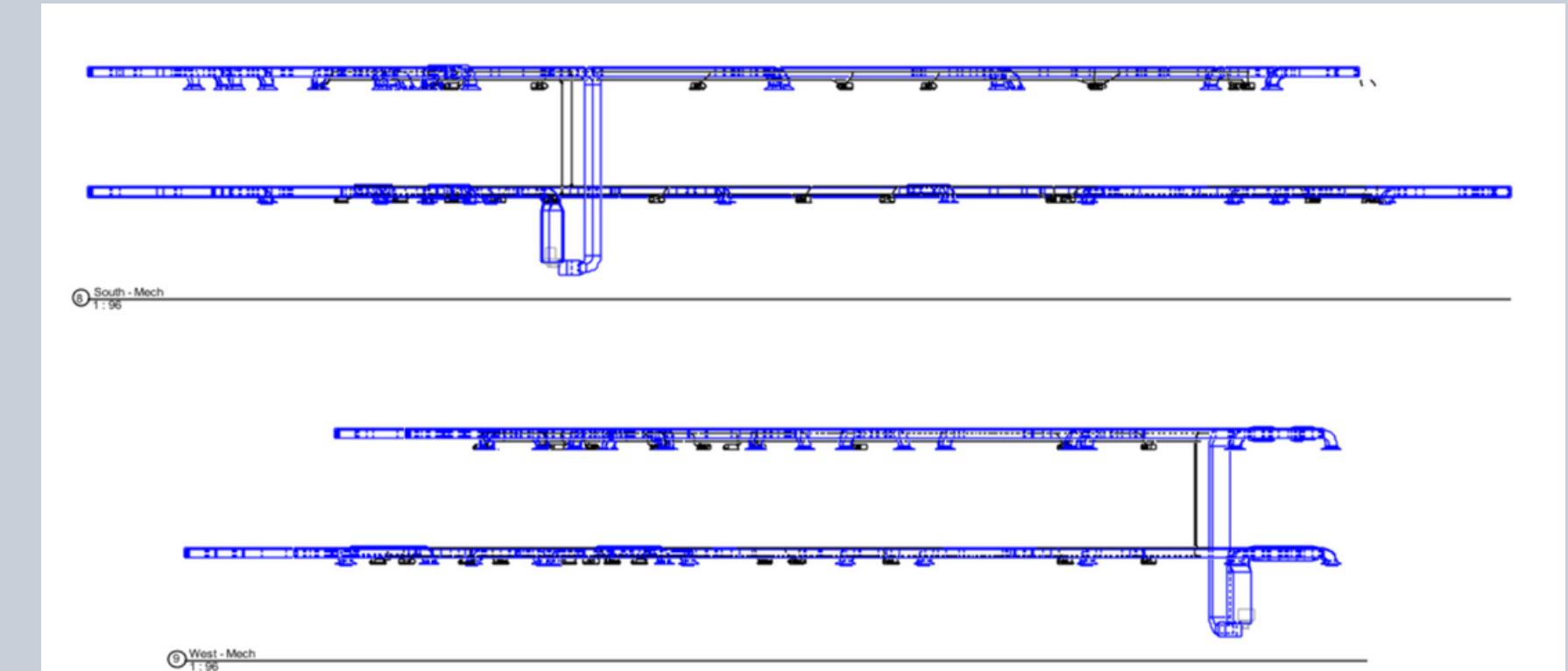
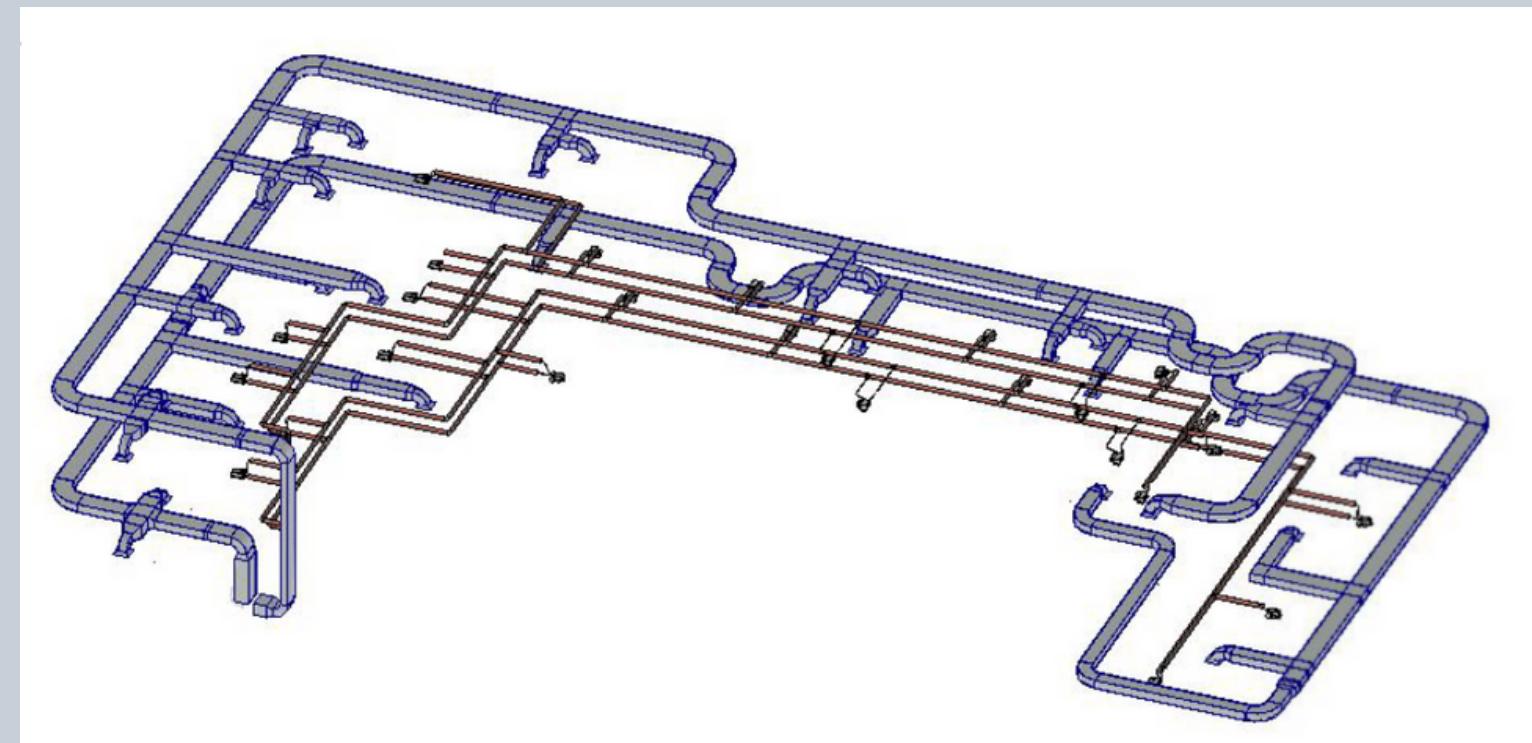


R

Mekanik Tasarımda BIM

Genel Tasarım

- Isıtma-Soğutma tesisatı
- Havalandırma-Klima tesisatı



LOD200-LOD300

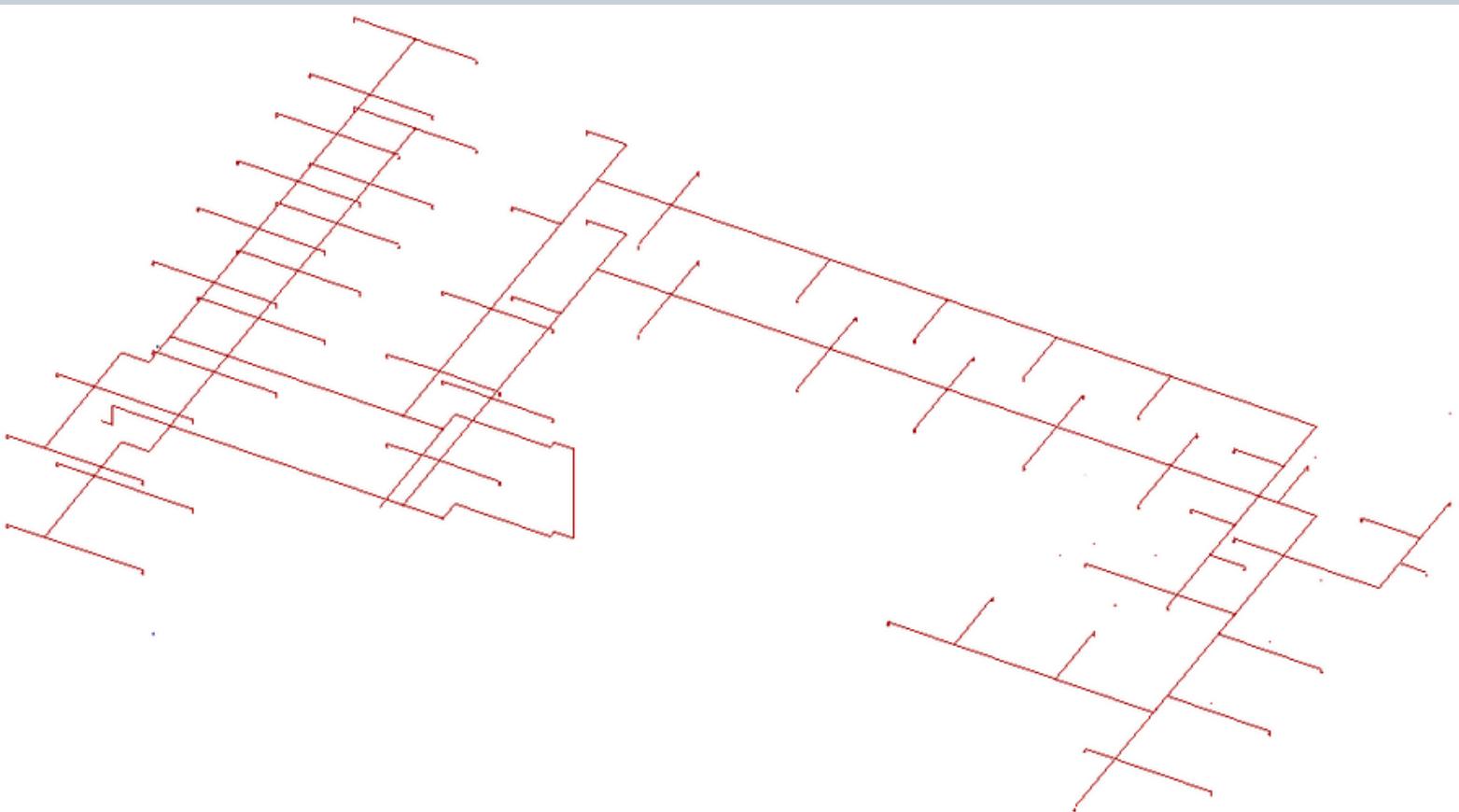
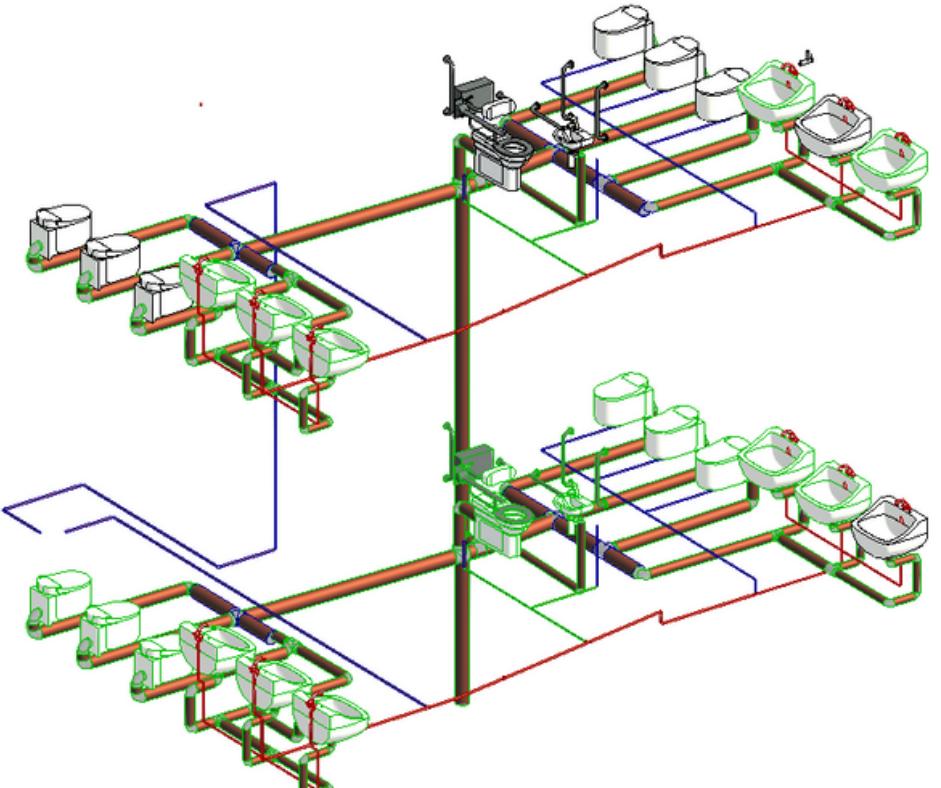




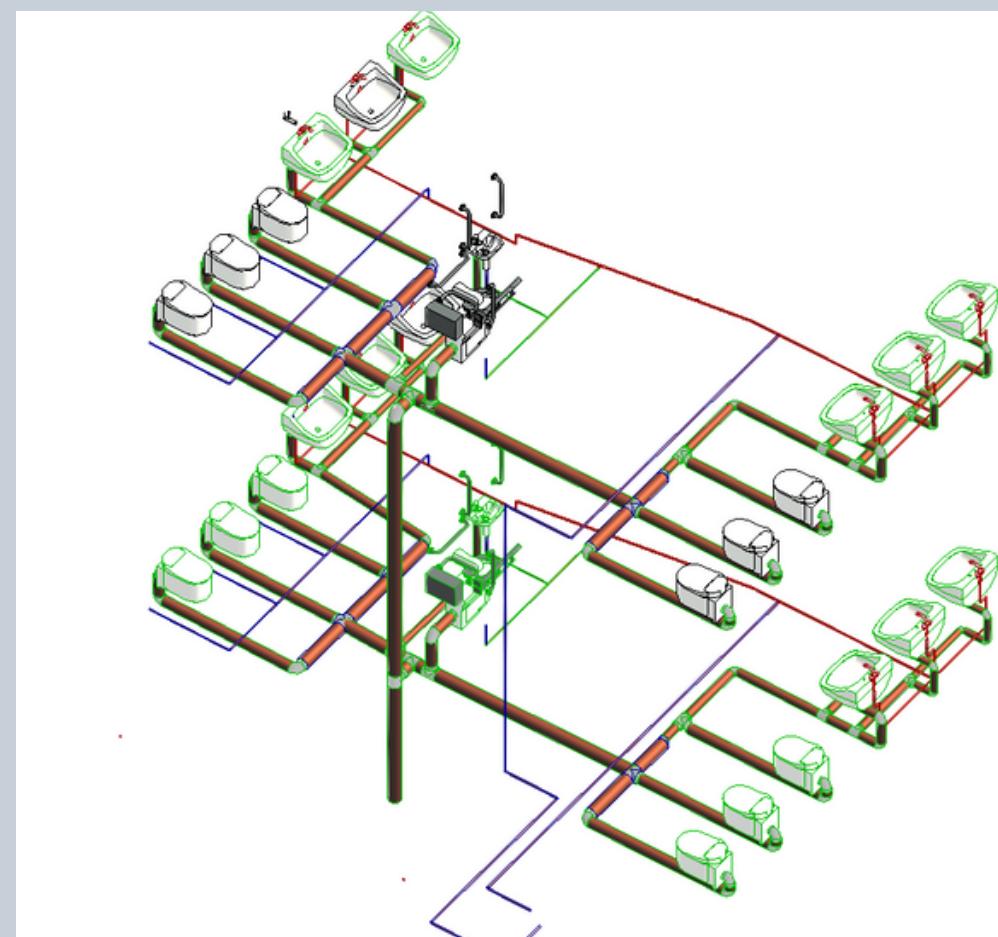
Mekanik Tasarımda BIM

Genel Tasarım

- Temiz su tesisatı
- Atık su ve yağmur tesisatı
- Yangından korunma tesisatı



LOD200-LOD300

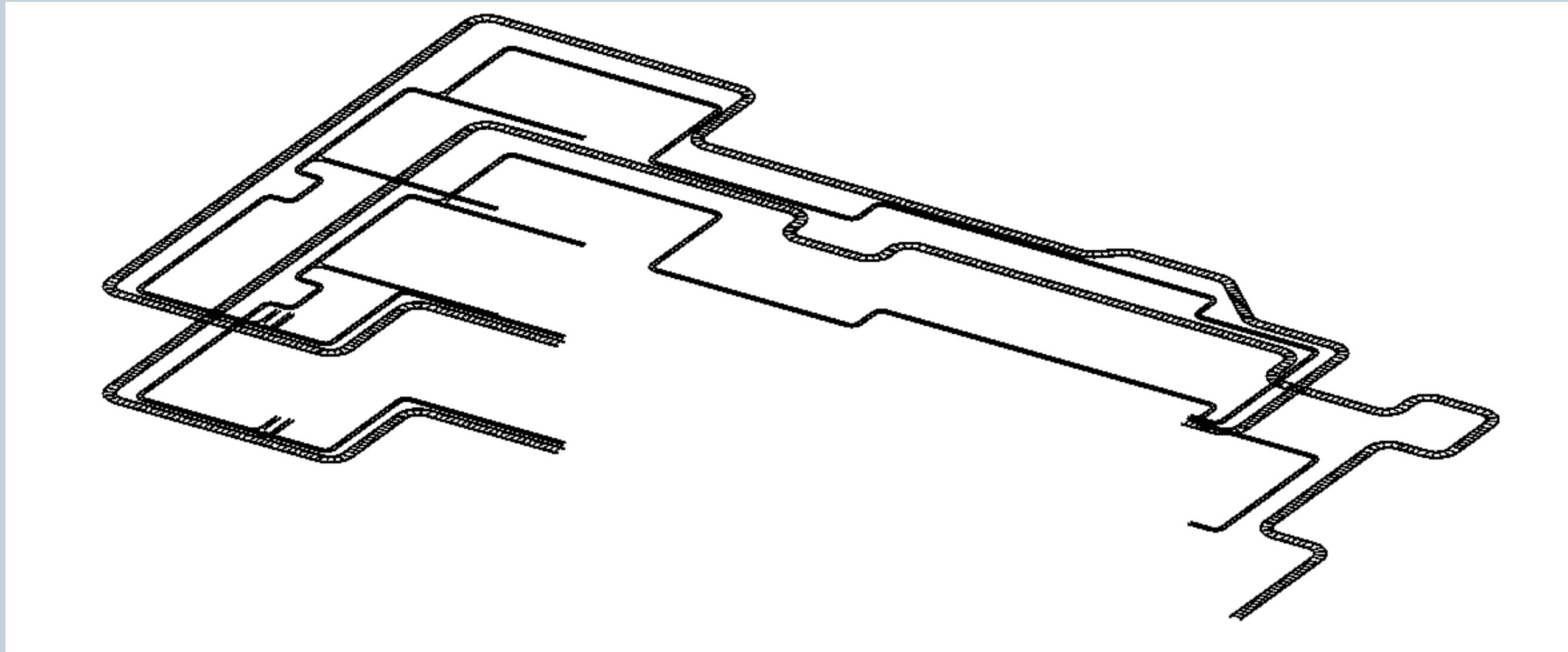


Mekanik Tasarımda BIM

Genel Tasarım

- Aydınlatma tesisatı

LOD200-LOD300



- Aydınlatma malzemeleri Mimari Tasarım

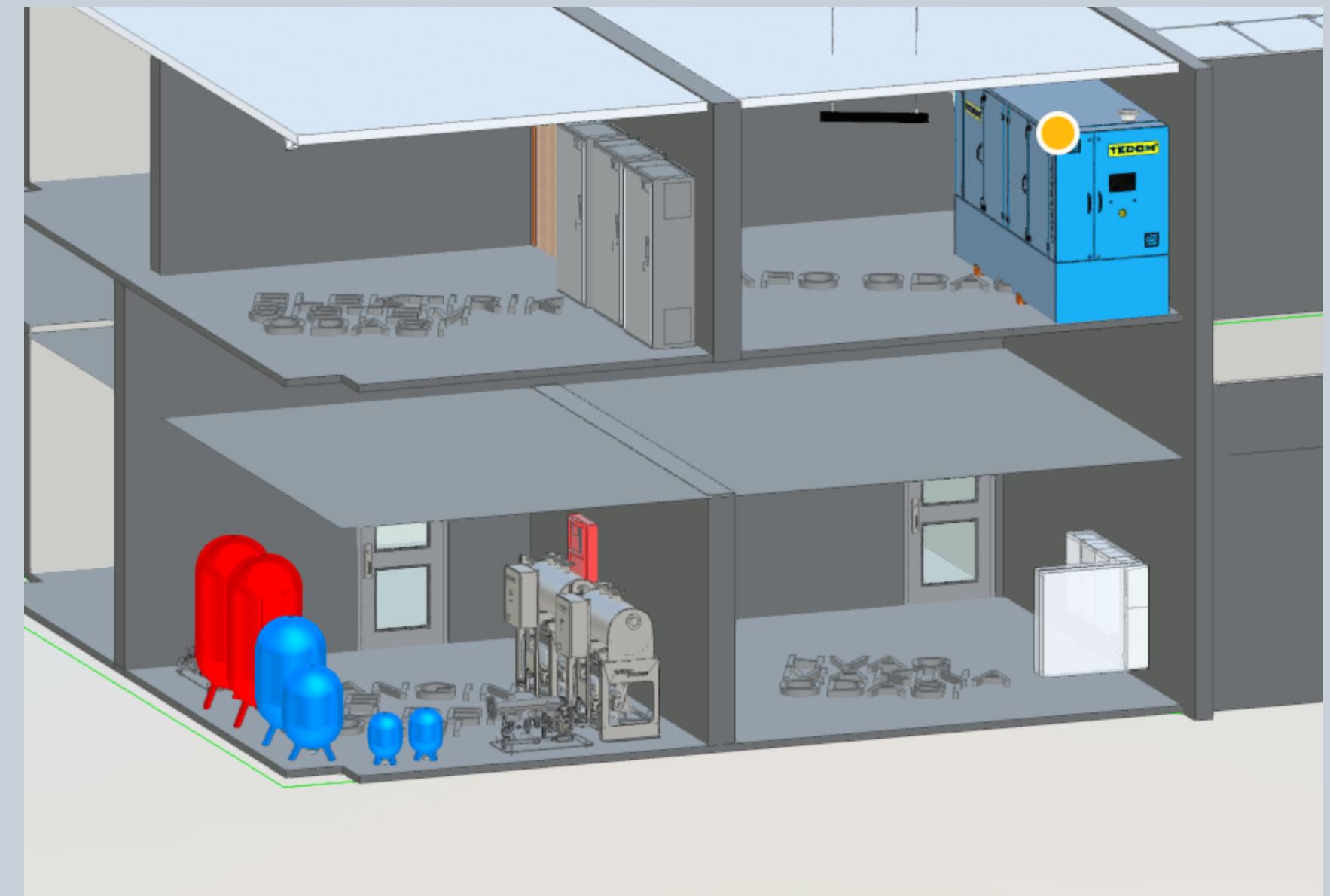
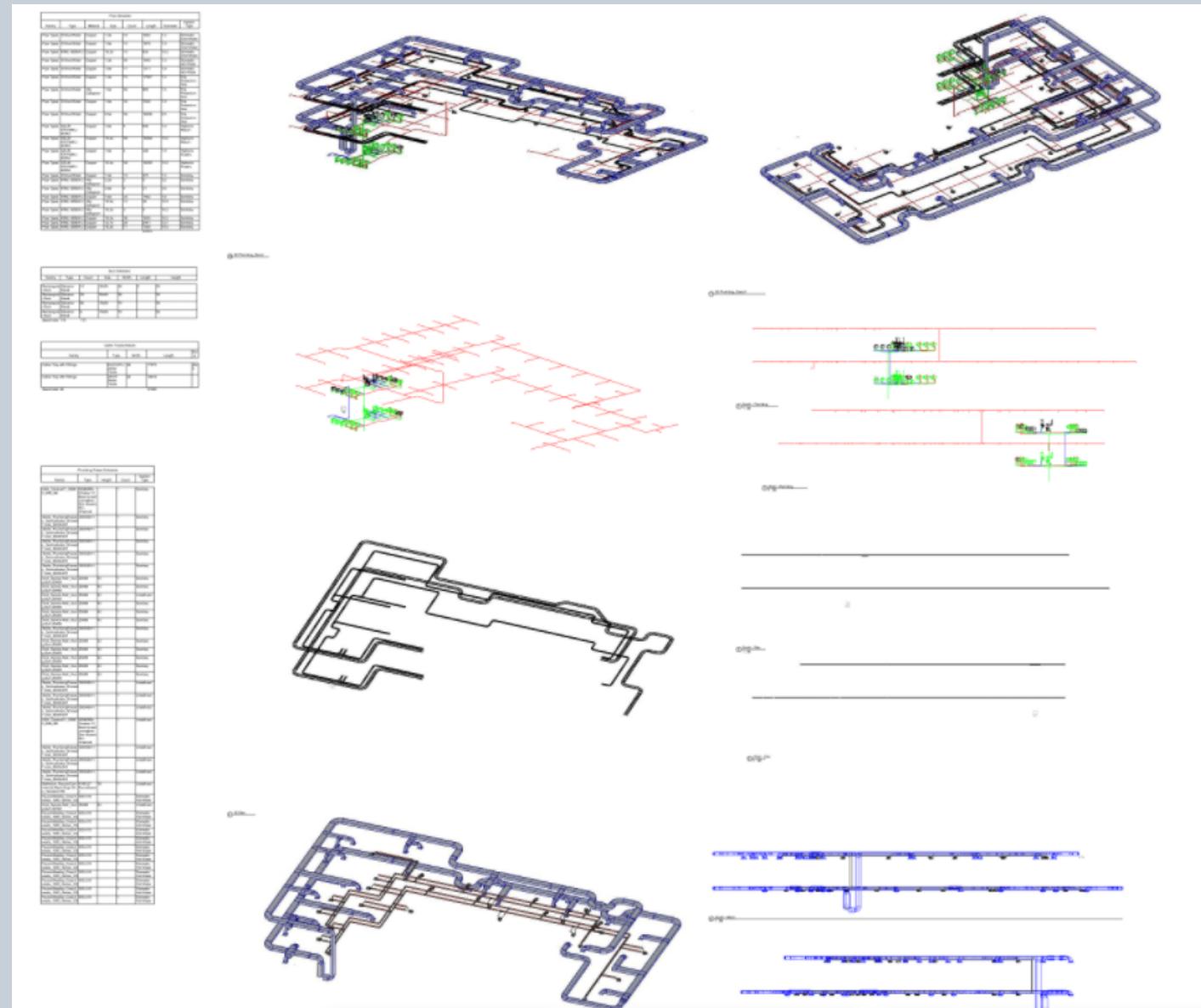




Mekanik Tasarımda BIM

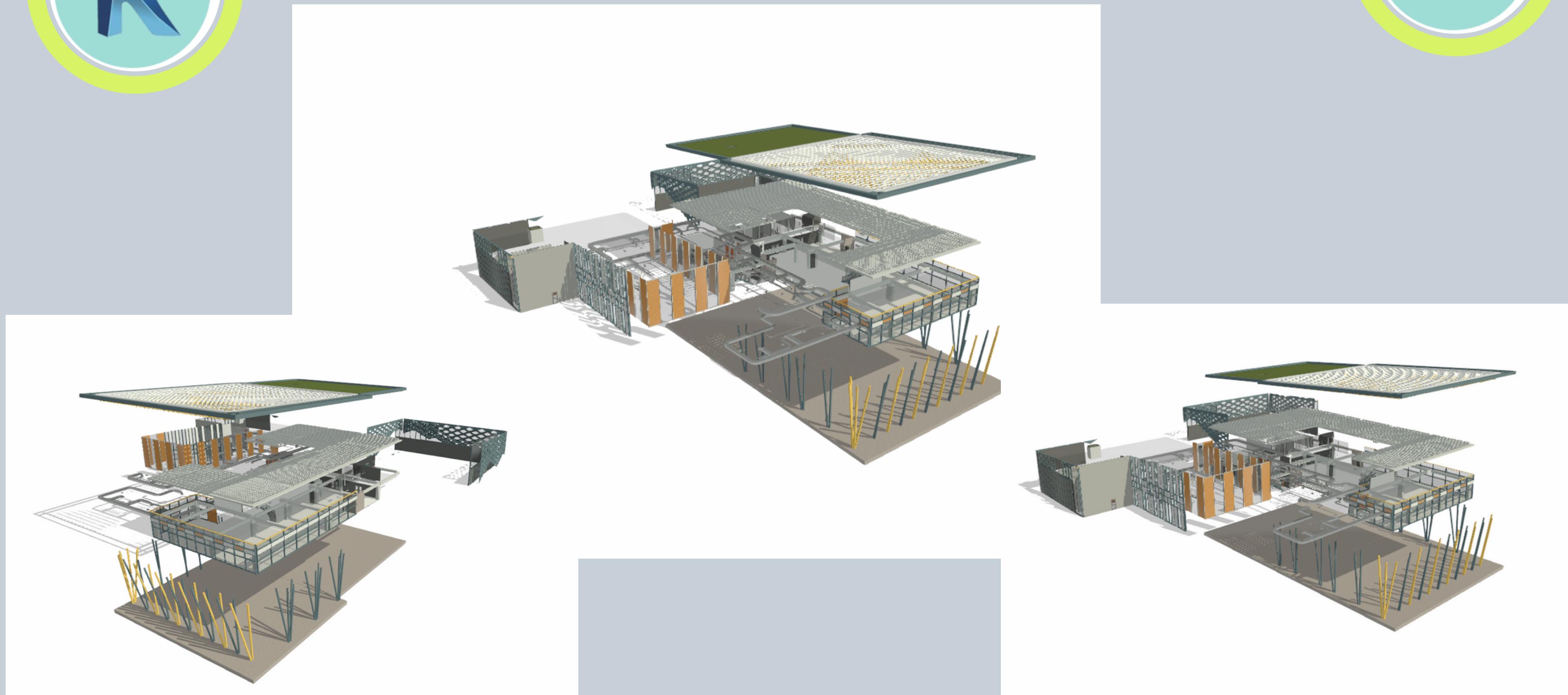


Metraj





Sistem Fonksiyon Şeması



N

Çakışma Analizi

R

I01-ARC/ARC ⚠️

Last Run: 16 Mart 2022 Çarşamba 20:07:48
Clashes - Total: 386 (Open: 291 Closed: 95)

	Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved	
⚠️	I01-ARC/ARC	Old	386	291	0	0	95	0	
	I02-MEC/MEC	Done	237	3	0	0	234	0	
	I03-STA/STA	Done	3804	105	0	0	3699	0	
	T01-ARC/MEC	Done	40	40	0	0	0	0	
	T02-ARC/STA	Done	301	268	0	0	33	0	

	Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved	
	I03-STA/STA	Done	3804	105	0	0	3699	0	
	T01-ARC/MEC	Done	40	40	0	0	0	0	
	T02-ARC/STA	Done	301	268	0	0	33	0	
	T03-STA/MEC	Done	38	38	0	0	0	0	

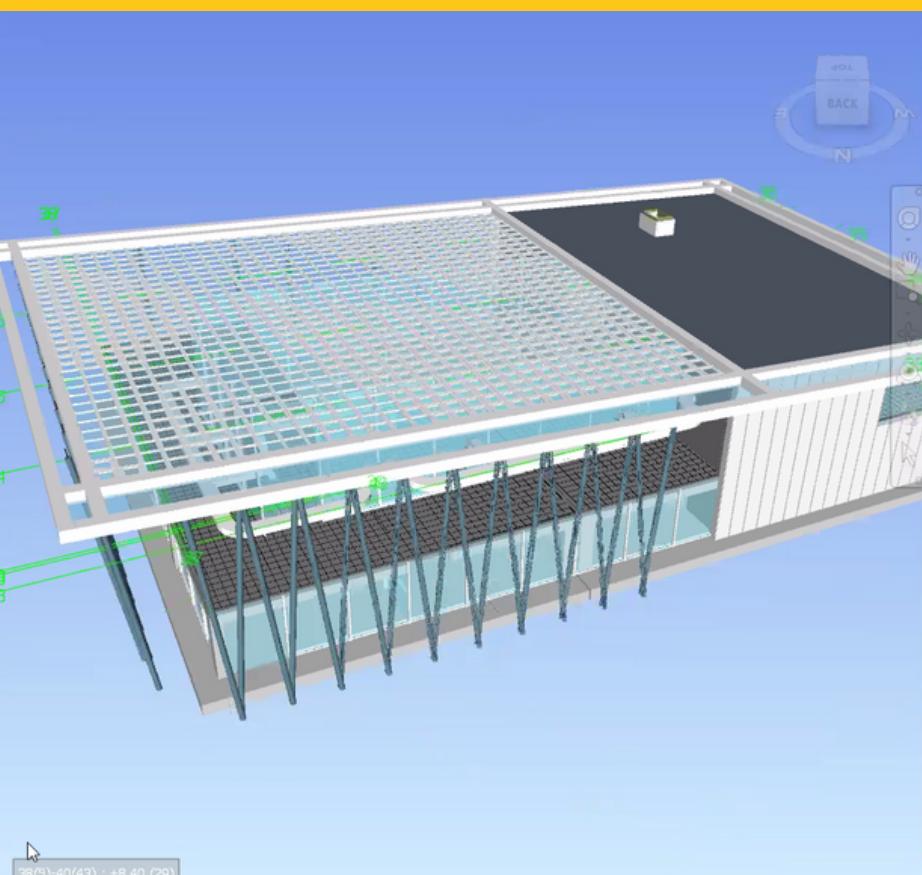
Clash Detective

Last Run: 16 Mart 2022 Çarşamba 20:07:48
Clashes - Total: 386 (Open: 291 Closed: 95)

	Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved	
⚠️	I01-ARC/ARC	Old	386	291	0	0	95	0	
	I02-MEC/MEC	Done	237	3	0	0	234	0	
	I03-STA/STA	Done	3804	105	0	0	3699	0	
	T01-ARC/MEC	Done	40	40	0	0	0	0	
	T02-ARC/STA	Done	301	268	0	0	33	0	

Selection A Standard
 DTw22_IFC_ARC_CI.ifc.ifc.ifc.nwc
 DTw22_IFC_MEC_GENEL.ifc.ifc.nwc
 DTw22_IFC_STA_Genel.ifc.ifc.nwc

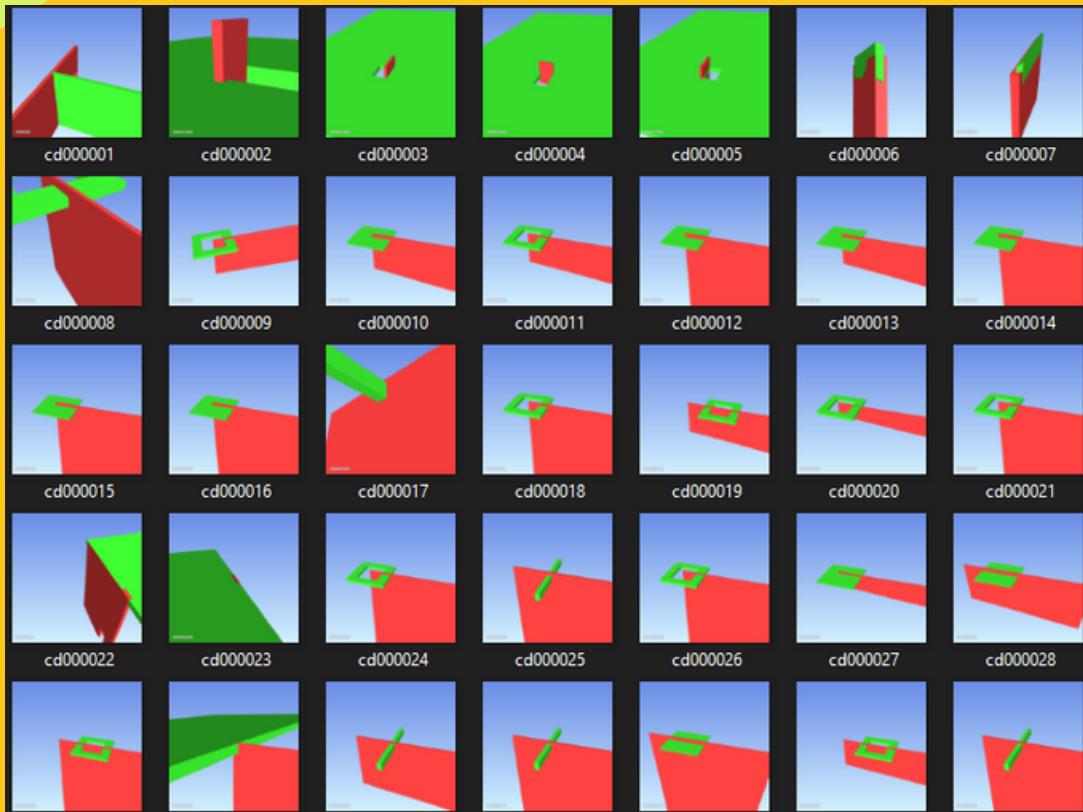
Selection B Standard
 DTw22_IFC_ARC_CI.ifc.ifc.ifc.nwc
 DTw22_IFC_MEC_GENEL.ifc.ifc.nwc
 DTw22_IFC_STA_Genel.ifc.ifc.nwc



N

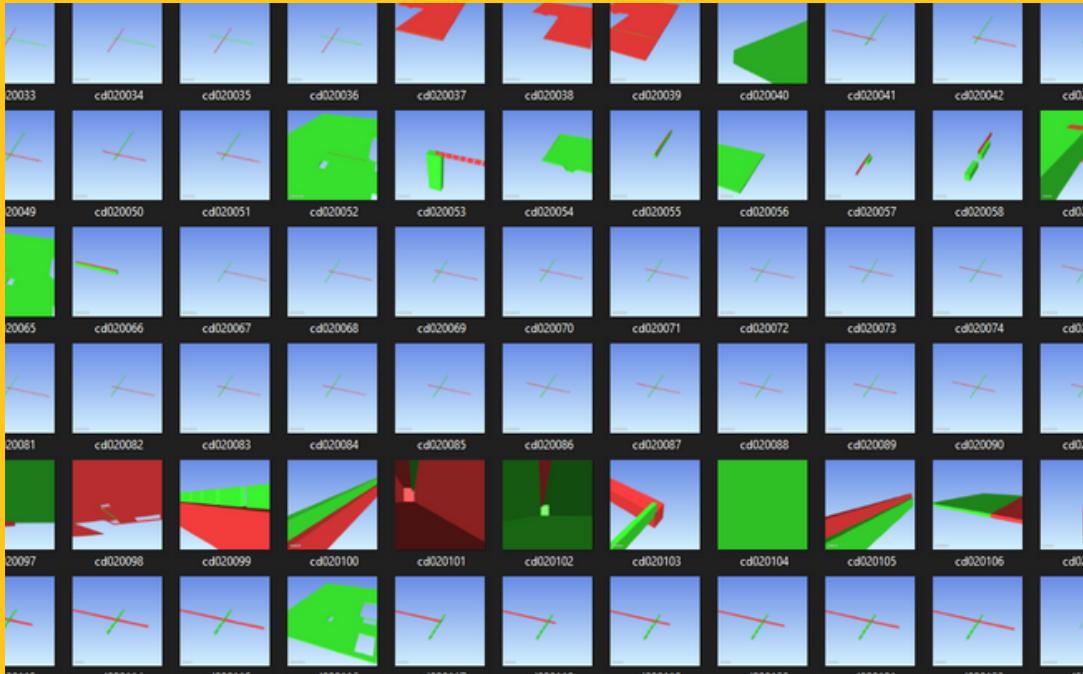
Çakışma Analizi

R



T02-ARC/STA	Tolerance	Clashes	New	Active	Reviewed	Approved	Resolved	Type	Status
	0.100m	301	268	0	0	33	0	Hard (Conservative)	OK

Image	Clash Name	Status	Distance	Grid Location	Description	Date Found	Assigned To	Date Approved	Approved By	Clash Point	Item 1			Item 2			Comments		
											Item ID	Layer	Item Name	Item Type	Item ID	Layer	Item Name	Item Type	
	Clash39	New	-0.410	5-35 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:86.369, y:107.812, z:5.200	Element ID: 3078	Ground	System Panel-Glazed (4)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC
	Clash157	New	-0.250	5-35 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:84.771, y:111.715, z:5.200	Element ID: 3147	Ground	Rectangular Mullion-2.5" x 5" rectangularW (14)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC
	Clash161	New	-0.250	5-33 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:79.617, y:123.059, z:5.200	Element ID: 3123	Ground	System Panel-Glazed (11)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC
	Clash162	New	-0.250	5-33 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:79.613, y:123.068, z:5.200	Element ID: 3123	Ground	System Panel-Glazed (11)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC
	Clash163	New	-0.250	5-35 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:86.403, y:107.818, z:5.200	Element ID: 3670	Ground	System Panel-Glazed (22)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC
	Clash164	New	-0.250	5-34 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:80.975, y:120.009, z:5.200	Element ID: 3123	Ground	System Panel-Glazed (11)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 1: Assigned to ARC



I03-STA/STA	Tolerance	Clashes	New	Active	Reviewed	Approved	Resolved	Type	Status
	0.100m	3804	105	0	0	3699	0	Hard (Conservative)	OK

Image	Clash Name	Status	Distance	Grid Location	Description	Date Found	Assigned To	Date Approved	Approved By	Clash Point	Item 1			Item 2			Comments		
											Item ID	Layer	Item Name	Item Type	Item ID	Layer	Item Name	Item Type	
	Clash33	New	-0.250	7-34 : +4.20	Hard (Conservative)	2022/3/16 17:08	STA			x:91.236, y:120.698, z:5.200	Element ID: 3763	+4.20	Concrete-Rectangular Beam-10*35 cm dişli kırış (144)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to STA
	Clash36	New	-0.250	7-35 : +4.20	Hard (Conservative)	2022/3/16 17:08	STA			x:95.839, y:111.130, z:5.200	Element ID: 3920	+4.20	Concrete-Rectangular Beam-10*35 cm dişli kırış (206)	Composite	Element ID: 3107	+4.20	Floor:25 cm döşeme:456171	IfcSlab: Floor:25 cm döşeme	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to STA
	Clash41	New	-0.250	3-34 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:63.647, y:108.414, z:5.200	Element ID: 3699	+4.20	Concrete-Rectangular Beam-10*35 cm dişli kırış (141)	Composite	Element ID: 3270	+4.20	Default Floor	Solid	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to ARC
	Clash42	New	-0.250	4-34 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:72.143, y:112.197, z:5.200	Element ID: 4009	+4.20	Concrete-Rectangular Beam-10*35 cm dişli kırış (230)	Composite	Element ID: 3270	+4.20	Default Floor	Solid	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to ARC
	Clash43	New	-0.250	3-34 : +4.20	Hard (Conservative)	2022/3/16 17:08	ARC			x:64.243, y:108.337, z:5.200	Element ID: 3596	+4.20	Concrete-Rectangular Beam-10*35 cm dişli kırış (100)	Composite	Element ID: 3270	+4.20	Default Floor	Solid	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to ARC
	Clash5	New	-0.250		Hard (Conservative)	2022/3/16 17:08	ARC			x:64.671, y:98.033, z:5.200	Element ID: 3051	+4.20	Concrete-Rectangular Beam-Ana taşıyıcı	IfcBeam: Concrete-Rectangular	Element ID: 3270	+4.20	Default Floor	Solid	#0 - Zehra Alacakana - 2022/3/16 17:54 Assigned to ARC



Çakışma Analizi



STA/MEC

Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved	
I03-STA/STA	Done	3804	105	0	0	3699	0	
T01-ARC/MEC	Done	40	40	0	0	0	0	
T02-ARC/STA	Done	301	268	0	0	33	0	
T03-STA/MEC	Done	38	38	0	0	0	0	

Add Test Reset All Compact All Delete All Update All

Rules Select Results Report

New Group [] Assign [] None [] Re-run Test

Name Status Level Grid Int... Found

Clash30	New	+4.20	2(1)-36(5)	20:09:25 16-03-20
Clash31	New			20:09:25 16-03-20
Clash32	New			20:09:25 16-03-20
Clash33	New	+4.20	2(1)-36(5)	20:09:25 16-03-20
Clash34	New			20:09:25 16-03-20
Clash35	New	+4.20	2(1)-35(...	20:09:25 16-03-20
Clash36	New			20:09:25 16-03-20
Clash37	New	+4.20	2(1)-35(...	20:09:25 16-03-20
Clash38	New			20:09:25 16-03-20

Highlighting Item 1 Item 2 Use item colors Highlight all clashes

Isolation Dim Other Hide Other Transparent dimming Auto reveal

Viewpoint Auto-update Animate transitions

Items

Item 1 Highlight [] Item 2 Highlight []

Item Name: Concrete-Rectangular Beam:10*35 cm dişli
Item Type: IfcBeam: Concrete-Rectangular Beam:10*35 cm dişli

Item Name: Rectangular Duct:Galvaniz Kanal:1378964
Item Type: IfcDuctSegment: Rectangular Duct:Galvaniz Kanal

DTw22_IFC_STA_Genel.ifc.nwc DTw22_IFC_MEC_GENEL.ifc.nwc

Project Number Default

Orbit Tool

N

R

Çakışma Analizi

ARC/ARC

I01-ARC/ARC ⚠️ Last Run: 16 Mart 2022 Çarşamba 20:07:48
Clashes - Total: 386 (Open: 291 Closed: 95)

Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved
I01-ARC/ARC	Old	386	291	0	0	95	0
I02-MEC/MEC	Done	237	3	0	0	234	0
I03-STA/STA	Done	3804	105	0	0	3699	0
T01-ARC/MEC	Done	40	40	0	0	0	0
T02-ARC/STA	Done	301	268	0	0	33	0

Add Test Reset All Compact All Delete All Update All

Rules Select Results Report

New Group [+] Assign [X] None [↻] Re-run Test

Name	Status	Level	Grid Int...	Found
Clash43	1 New	+4.20	2-35(-4)	20:08:07 16-03-20
Clash48	1 New	+8.40 (1)	35(-5)-3...	20:08:07 16-03-20
Clash49	1 New	+8.40 (1)	35(-3)-3...	20:08:07 16-03-20
Clash50	1 New	+8.40 (1)	35(-2)-3...	20:08:07 16-03-20
Clash53	1 New	+8.40 (1)	35(-3)-3...	20:08:07 16-03-20
Clash73	1 New	+8.40 (2)	35(-2)-3...	20:08:07 16-03-20
Clash74	1 New	+8.40 (2)	35(-4)-3...	20:08:07 16-03-20
Clash79	1 New	+8.40 (3)	37(-10)...	20:08:07 16-03-20
Clash80	1 New	+8.40 (2)	37(-13)...	20:08:07 16-03-20

Highlighting
Item 1 [] Item 2 []
Use item colors
 Highlight all clashes

Isolation
Dim Other Hide Other
 Transparent dimming
 Auto reveal

Display Settings
Viewpoint
Auto-update
 Animate transitions

Items

Item 1 [] Highlight [] Item 2 [] Highlight []

Item Name: Basic Wall:Generic - 8":408547
Item Type: IfcWall: Basic Wall:Generic - 8"

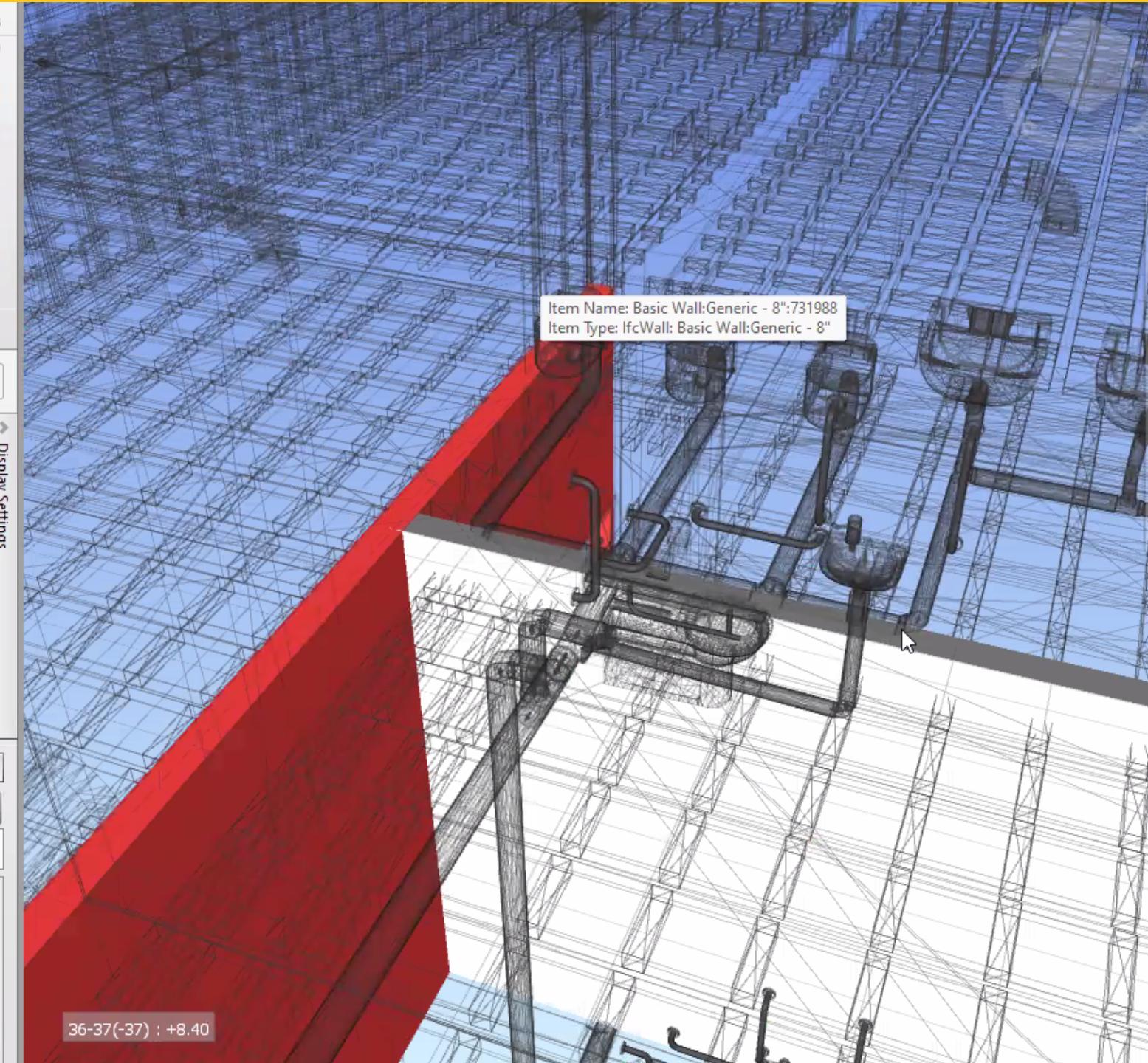
DTw22_IFC_ARC_CI.ifc.ifc.nwc

Project Number
Default
IFCBUILDING
Ground
IfcWall
Basic Wall:Generic - 8"
Basic Wall:Generic - 8":408547

DTw22_IFC_ARC_CI.ifc.ifc.nwc

Project Number
Default
IFCBUILDING
Ground
IfcWall
Basic Wall:Generic - 8"
Basic Wall:Generic - 8":409141

36-37(-37) : +8,40



N

R

Çakışma Analizi

ARC/MEC

T01-ARC/MEC

Last Run: 16 Mart 2022 Çarşamba 20:08:09
Clashes - Total: 40 (Open: 40 Closed: 0)

Name	Status	Clashes	New	Active	Reviewed	Approved	Resolved
I01-ARC/ARC	Old	386	291	0	0	95	0
I02-MEC/MEC	Done	237	3	0	0	234	0
I03-STA/STA	Done	3804	105	0	0	3699	0
T01-ARC/MEC	Done	40	40	0	0	0	0
T02-ARC/STA	Done	301	268	0	0	33	0

Add Test Reset All Compact All Delete All Update All

Rules Select Results Report

New Group Assign Re-run Test

None Dim Other Hide Other Transparent dimming Auto reveal

Display Settings

Name	Status	Level	Grid Int...	Found
Clash1	New	+4.20	2-35(-2)	20:08:09 16-03-20
Clash2	New	+8.40	35(-2)-3...	20:08:09 16-03-20
Clash3	New	+4.20	2-35(-3)	20:08:09 16-03-20
Clash4	New			20:08:09 16-03-20
Clash5	New			20:08:09 16-03-20
Clash6	New			20:08:09 16-03-20
Clash7	New			20:08:09 16-03-20
Clash8	New			20:08:09 16-03-20
Clash9	New			20:08:09 16-03-20
Clash10	New			20:08:09 16-03-20

Items

Item 1 Item 2

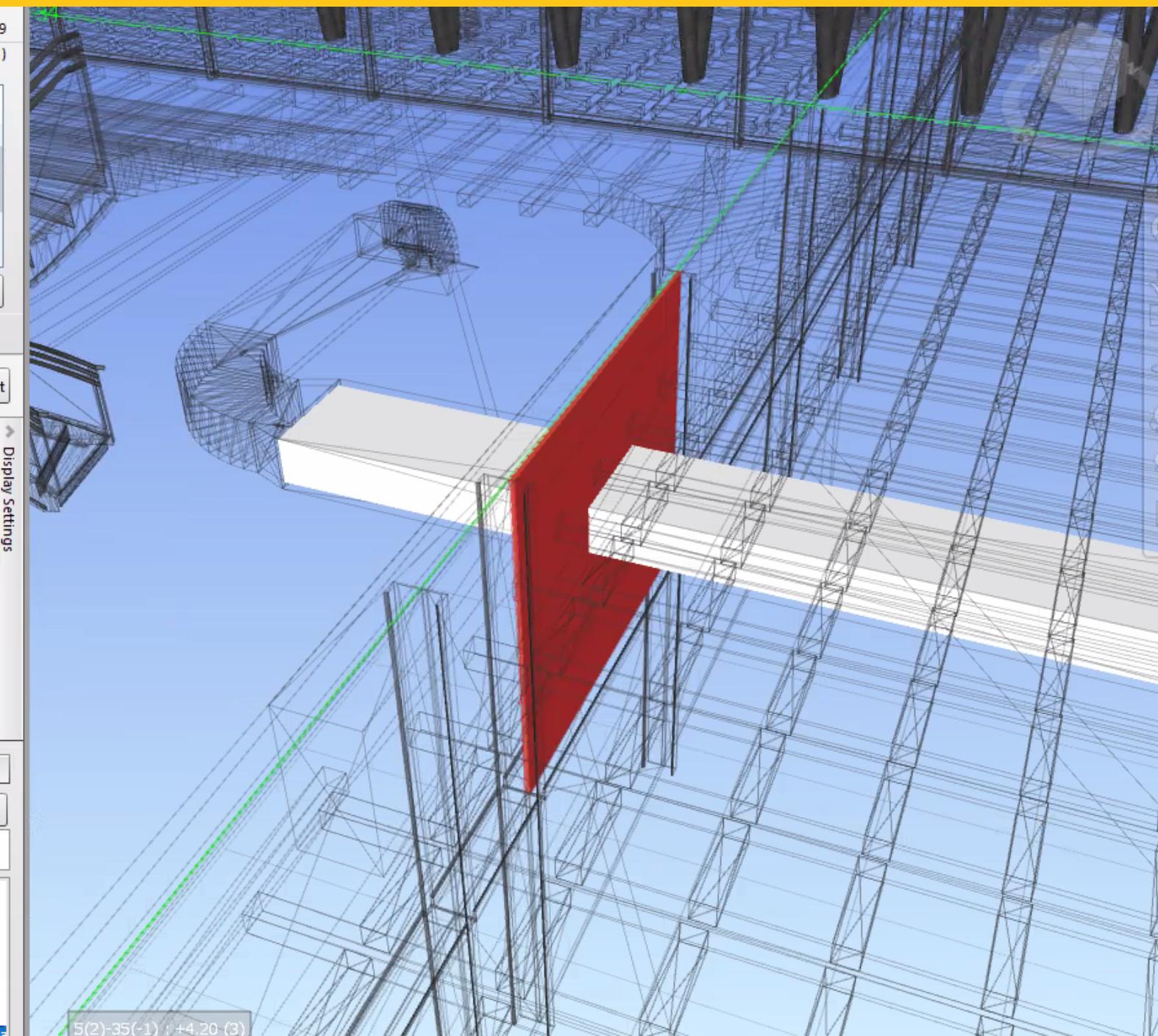
Item Name: System Panel:Glazed:737377
Item Type: IfcPlate: System Panel:Glazed

Item Name: Rectangular Duct:Galvaniz Kanal:1364112
Item Type: IfcDuctSegment: Rectangular Duct:Galvaniz Kanal

DTw22_IFC_ARC_CI.ifc.ifc.nwc DTw22_IFC_MEC_GENEL.ifc.nwc

Project Number Default IFCBUILDING Ground IfcCurtainWall Curtain Wall:Curtain Wall 1

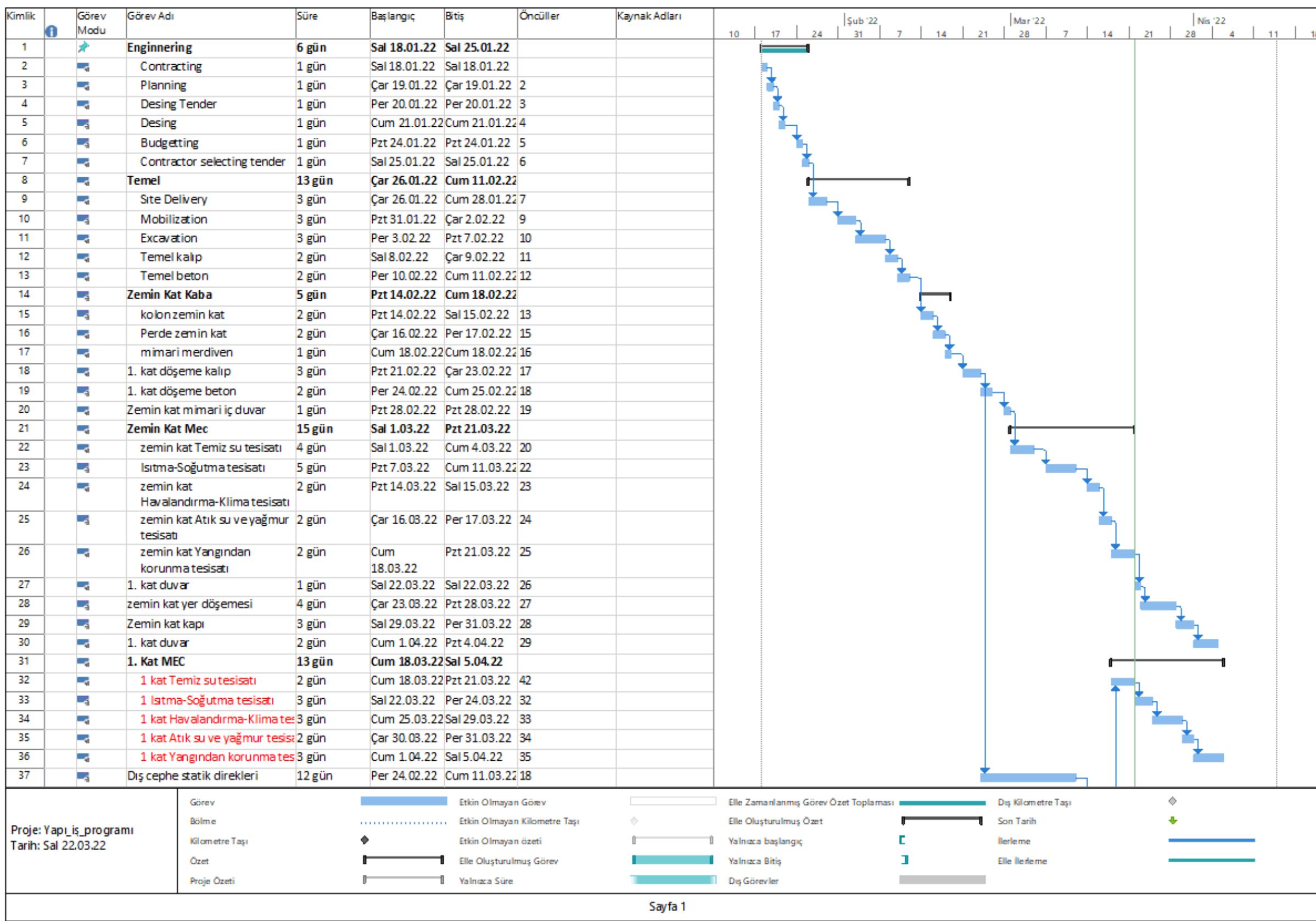
Rectangular Duct:Galvaniz Kanal





3 Ay

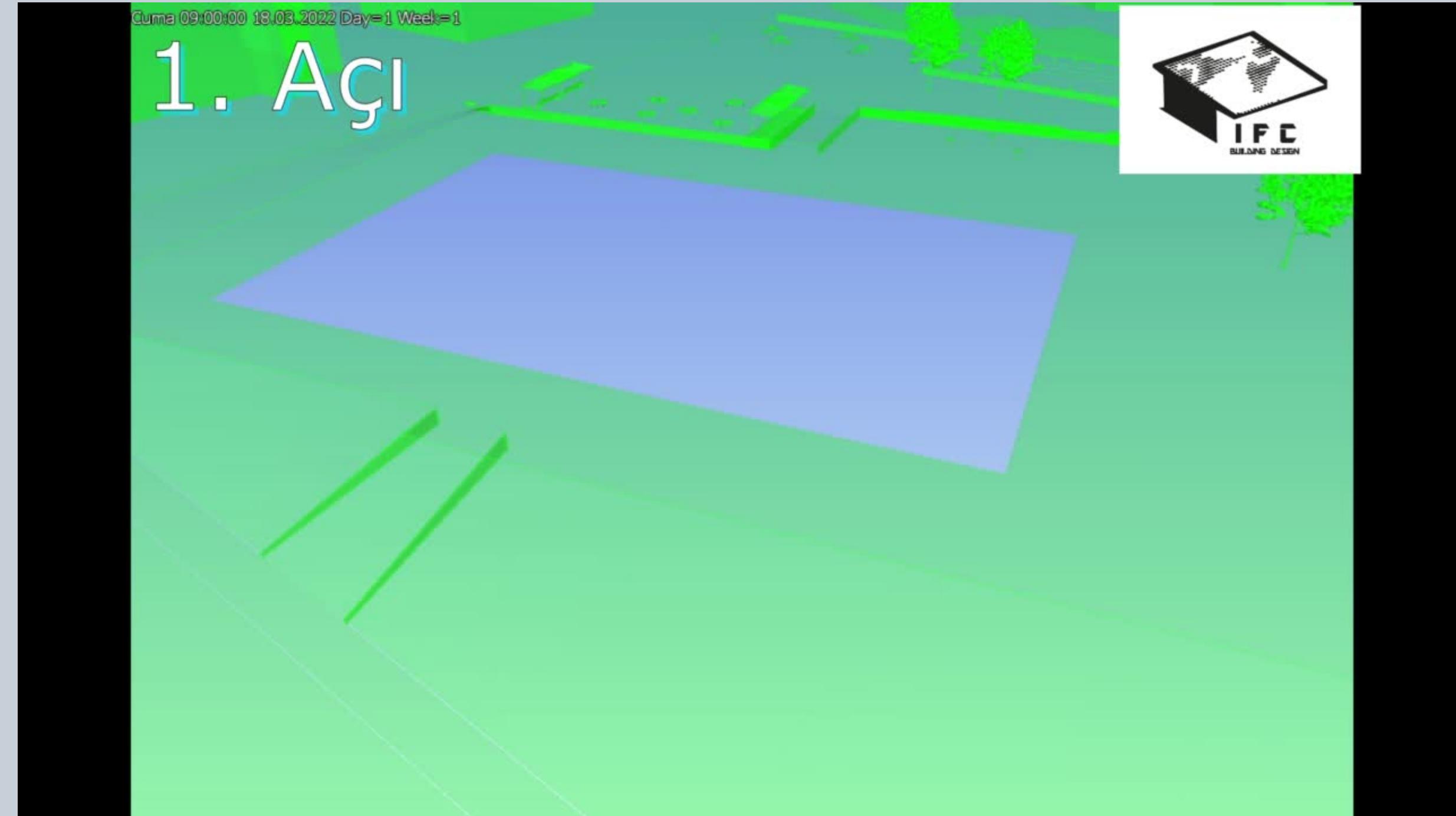
İş Programı & 4D simülasyon





İş Programı & 4D simülasyon

3 Ay



neler kazandık

Takım oyuncusu

Sorumluluk Bilinci

Disiplinler arası çalışma

Kritik karar verme

Analitik düşünme

Süreç Yönetimi

Güçlü iletişim

Yönetim

Planlama

Hedef odaklı



Neler Yapabili̇rdik



5D Model

LOD seviyesi artırımı

REFERANSLAR

Uyarlanabilir Cephe Sistemlerinde Şekil Hafızalı Alaşımlar ve Uygulamaları
<https://dergipark.org.tr/tr/pub/ajesa/issue/52409/560566>

Yüksek Binalarda Enerji Etkin Çatı ve Cephe Sistemlerinin Önemi
<https://dergipark.org.tr/tr/pub/politeknik/issue/64892/770354>

Dynamo Primer websitesi: <https://primer.dynamobim.org/>

Dynamo Forum Sitesi: <https://forum.dynamobim.com/>

Design Together With BIM Eğitim Videoleri

Revit Experiments Youtube Kanalı Image Based Curtain Wall Tutorial Video: <https://www.youtube.com/watch?v=UgKwPuX04kQ&list=LL&index=30&t=1240s>

Revit Life Youtube Kanalı Dynamo eğitim videoları :
https://www.youtube.com/channel/UCPQl8Eu8dpRAqYjhUxw_sIw

<https://bim.psu.edu/>

TAV Construction BIM Execution Plan

ISO 19650-1 , Organization of information about construction works

ISO 19650-2, Organization of information about construction works — Information management using building information modelling — Part 2: Delivery phase of assets

BIM Project Execution Planning Guide / Computer Integrated Construction Research Group at Penn State

A Standard Framework and Guide to BS 1192

BIM Forum LEVEL OF DEVELOPMENT (LOD) SPECIFICATION PART I & COMMENTARY For Building Information Models