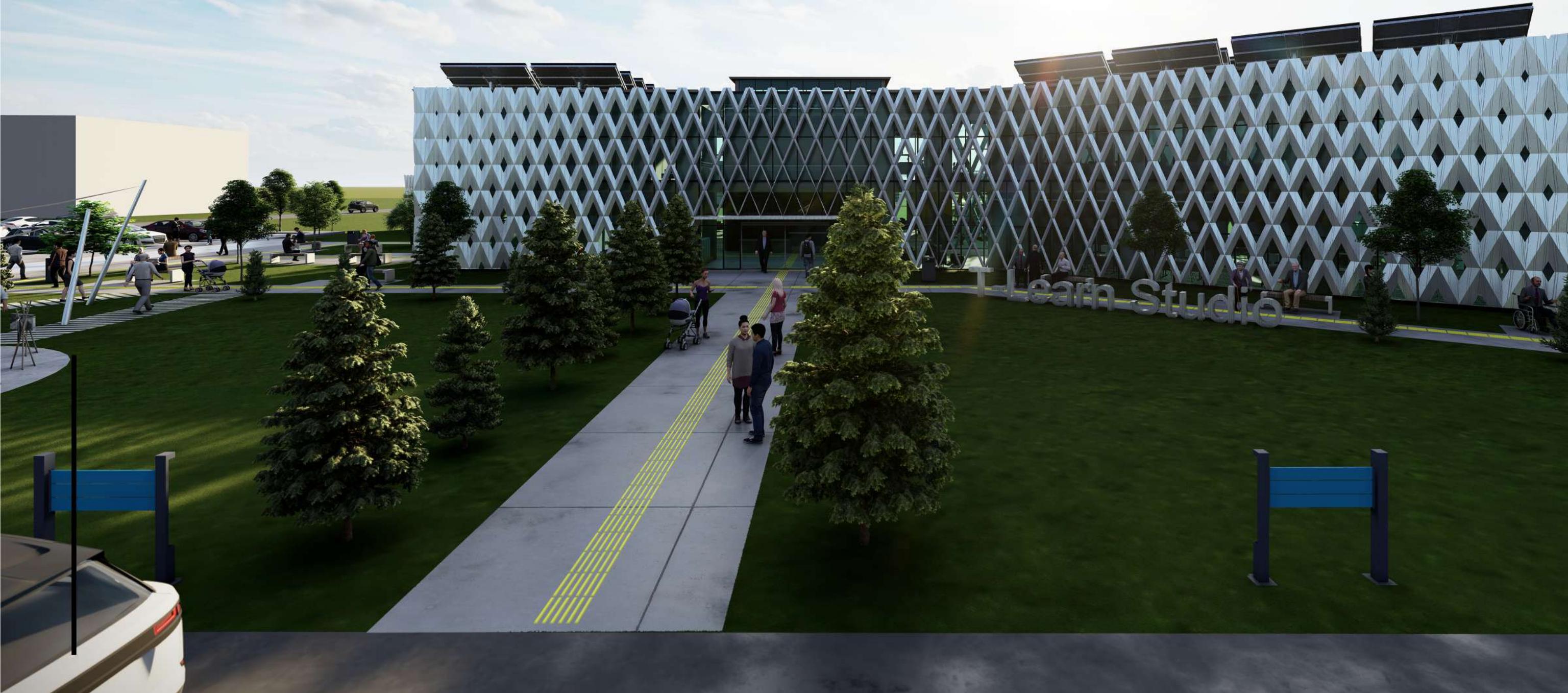




ENGELİ ANLAMA MERKEZİ

İSTANBUL TEKNİK ÜNİVERSİTESİ
AYAZAĞA KAMPÜSÜ





- 1 Organizasyon Şeması**
- 2 Çalışma Koordinasyonu**
- 3 BIM Uygulama Planı**
- 4 Kullanılan Yazılımlar**
- 5 Lod Matrisi**
- 6 Mimari Çalışma Prensibi**
- 7 Planlar**
- 8 Kesitler**

- 9 Yapısal Tasarım**
- 10 Mekanik Tasarım**
- 11 Sistem Fonksiyonu**
- 12 4D Simülasyon**
- 13 Insight Analizi**
- 14 Sürdürülebilirlik Stratejisi**
- 15 Referanslar**



EKİP ORGANİZASYONU



NUREFŞAN KURU
MİMAR



BÜŞRA TOSUN
MİMAR



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DOĞUKAN EFE GÜZELSES
MAKİNE MÜHENDİSİ



BATU ERDAL
MAKİNE MÜHENDİSİ



MUSA CANBAKİŞ
İNŞAAT MÜHENDİSİ



UĞUR BAKŞI
İNŞAAT MÜHENDİSİ



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TESLİM DOSYALARı/FORMATLAR

	Dosya	Format	Görev
Mimari Statik Mekanik	3D Modeler	.rvt ve .ifc	Büşra ve Uğur
	Family	.rfa	Nurefşan
	Kat Planları	Model dosyası içinde	Büşra ve Nurefşan
	Kesit ve Görünüşler	Model dosyası içinde	Büşra ve Nurefşan
	Cephe	Model dosyası içinde	Büşra
	Hesap Raporları	.pdf	Ekipler kendi içerisinde yaptı
	Sistem Fonksiyon Şemaları		Büşra
	Kolon Şemaları	.rvt	Musa
Animasyon Videosu Render	.mp4	Büşra	
	.jpeg	Büşra	
	BEP	.pdf	Musa
	Yarışma İş Programı	.pdf	Uğur
	Yapı İş Programı	.pdf	Musa
	4D Simülasyon Video	.webm	Musa
	4D Navisworks Dosyası	.nwd	Musa, Doğukan ve Batu
	Metraj Revit içinde	Model dosyası içinde	Ekipler kendi içerisinde yaptı
BIM Süreci	Lod Matrisi	.pdf veya .xlxs	Nurefşan
	Enerji Analizi Raporu	.pdf	Büşra
	Statik Proje Raporu	.pptx veya .pdf	Uğur

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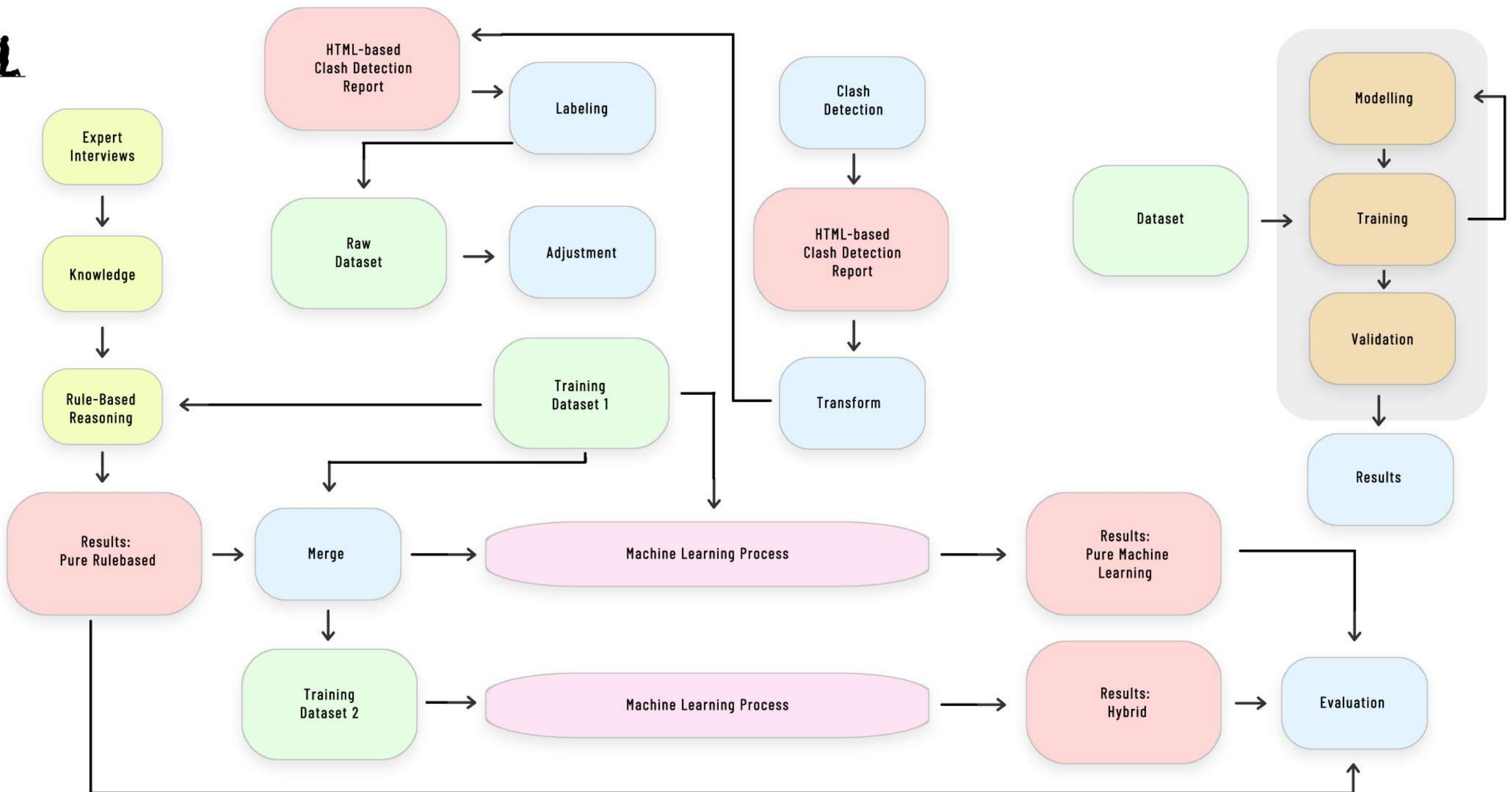


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BIM UYGULAMA PLANI



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LOD MATRİSİ

	FOUNDATIONS	
	Standard Foundations	300
	Wall Foundations	300
	Column Foundations	300
	SLABS-ON-GRADE	300
SUBSTRUCTURE	Structural Slabs-on-Grade	300
	Pits and Bases	300
	SHELL	300
	Superstructure	300
	Floor Structure	300
	Floor Construction	300
	Concrete	300
ARCHİTECTURAL	Family	350
	Floor	300
	Walls	350
	Stairs	300
	Green Roof	300
	Curtain Panel	300
	Suspended Ceiling	300
MECHANICAL	Pump	300
	Booster	300
	HVAC	300
	Expansion Tank	300
	Water Tank	300
	Water and Gas Mitigation	300
	Building Subdrainage	300
	Foundation Drainage	300
	Underslab Drainage	300

TESLİM FORMATLARI

İş Birliği	Architect	Structural Analyses Engineer	Structural Bim Designer	Mechanical Engineer
Architect		dwg and IFC	IFC, dwg and .rvt	.rvt
Structural Analyses Engineer	dwg and IFC		IFC	IFC
Structural Bim Designer	IFC, dwg and .rvt	IFC		IFC and .rvt
Mechanical Engineer	.rvt	IFC	IFC and .rvt	



CALISMA ORGANIZASYONU



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BIM 360™

BIM_T-Learn Studio son.rvt v1 ile Birlikte Yeni İnşaat_Tasarım

BIM_T-Learn Studio son.rvt v2 ile Birlikte Yeni Construction_Design

Değişiklikler

1064	738	209
Katma	Kaldırıldı	Değiştirilmiş

Disciplines affected

Modification type

Arama + Filtre

Flat Result List Result as Tree

Aynı anda görüntülenecek çok fazla sonuç var. Miktarı azaltmak için filtreleri kullanın.

BIM_T-Learn Studio son.rvt v1 ile Birlikte Yeni İnşaat_Tasarım

BIM_T-Learn Studio son.rvt v2 ile Birlikte Yeni Construction_Design

Değişiklikler

1064	738	209
Katma	Kaldırıldı	Değiştirilmiş

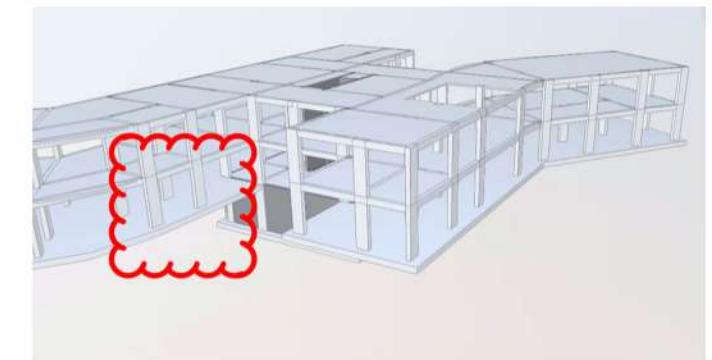
Disciplines affected

Modification type

Arama + Filtre

Flat Result List Ağaç olarak sonuç

Aynı anda görüntülenecek çok fazla sonuç var. Miktarı azaltmak için filtreleri kullanın.



DESIGN

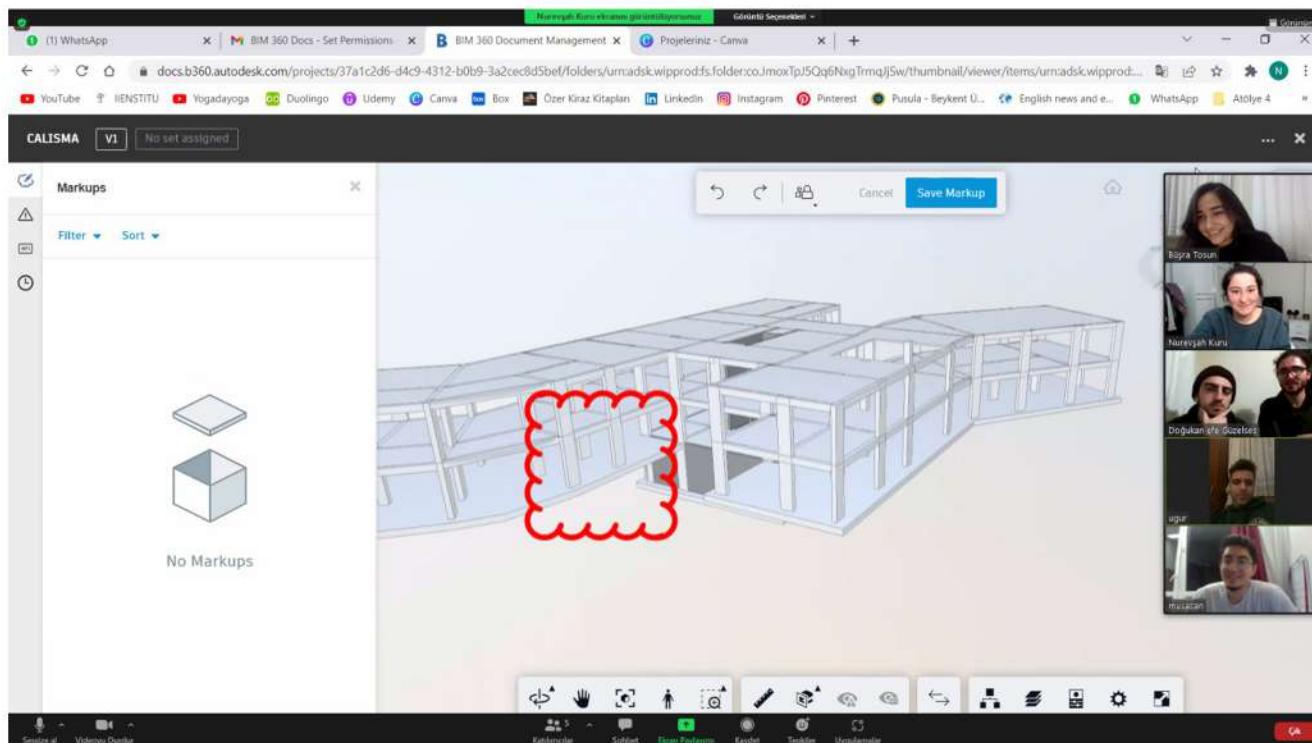
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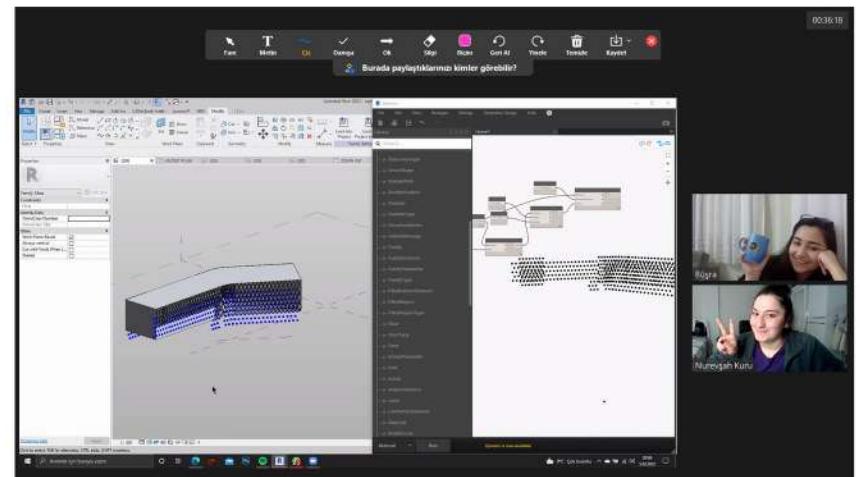
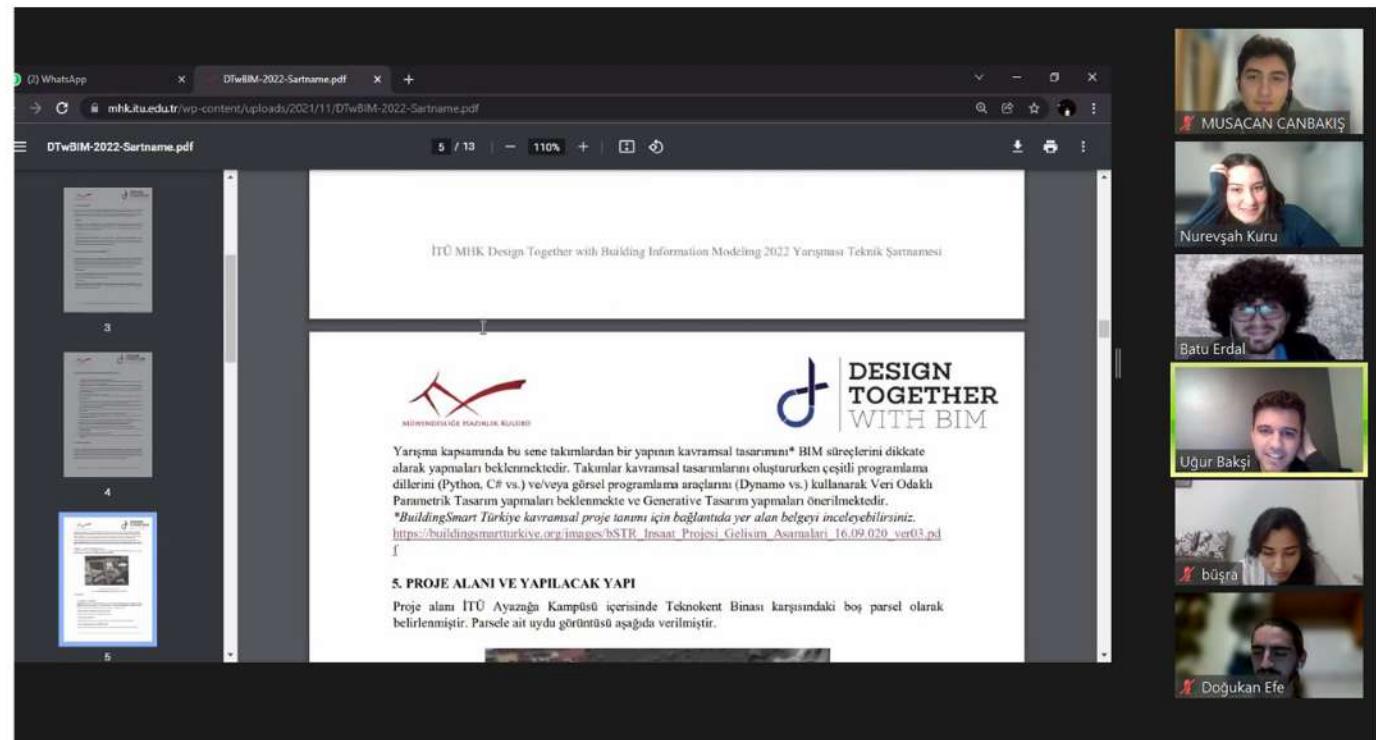
ÇALIŞMA KOORDİNASYONU

HEP BİRLİKTE



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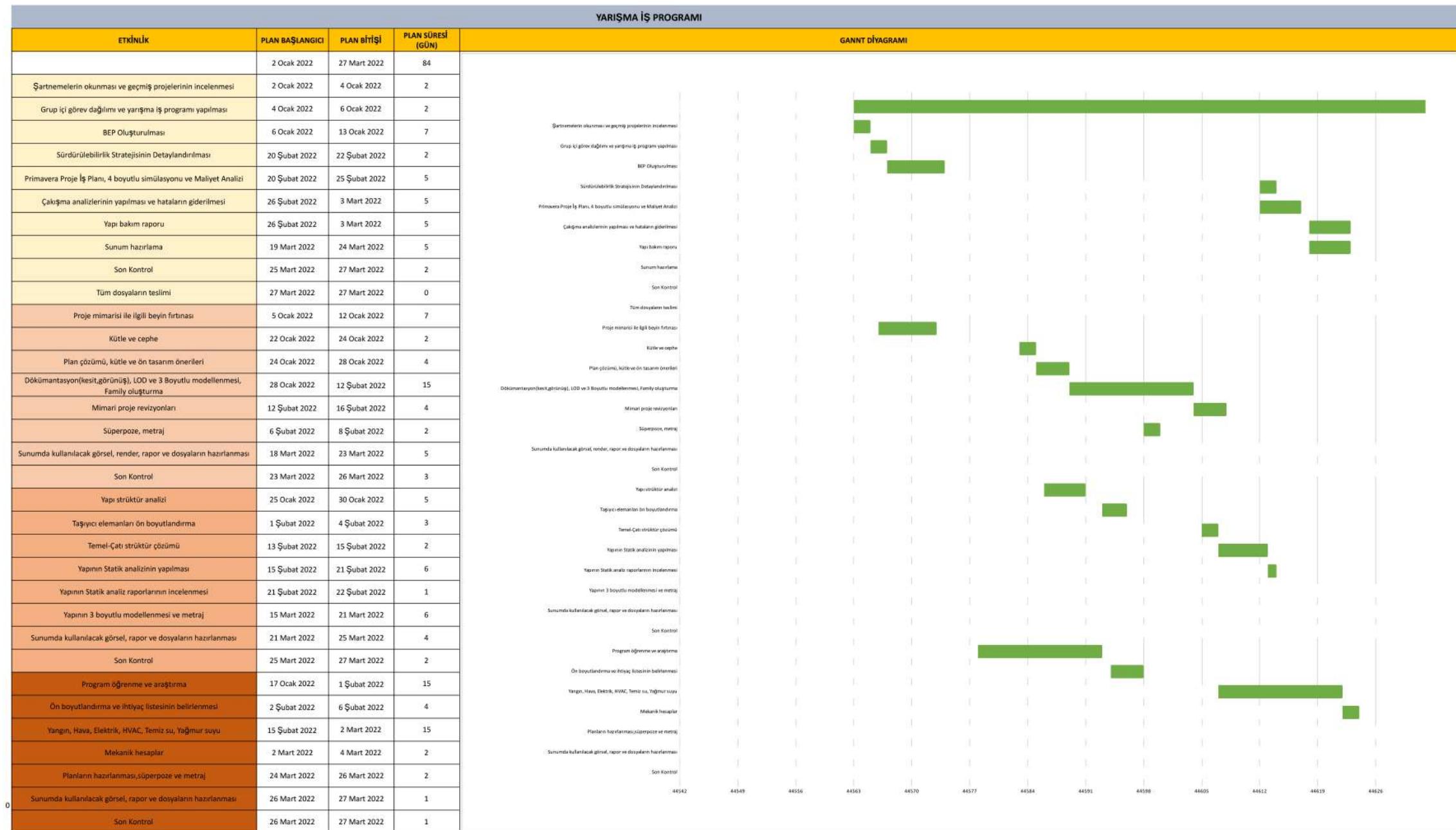


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YARIŞMA İŞ PROGRAMI



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KULLANILAN PROGRAMLAR



I

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R



A

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B

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N

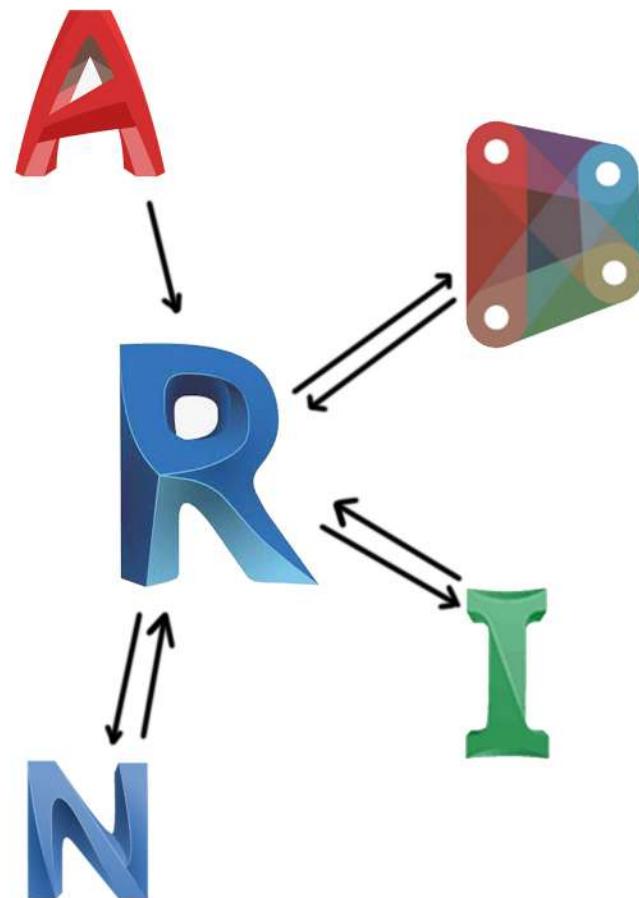


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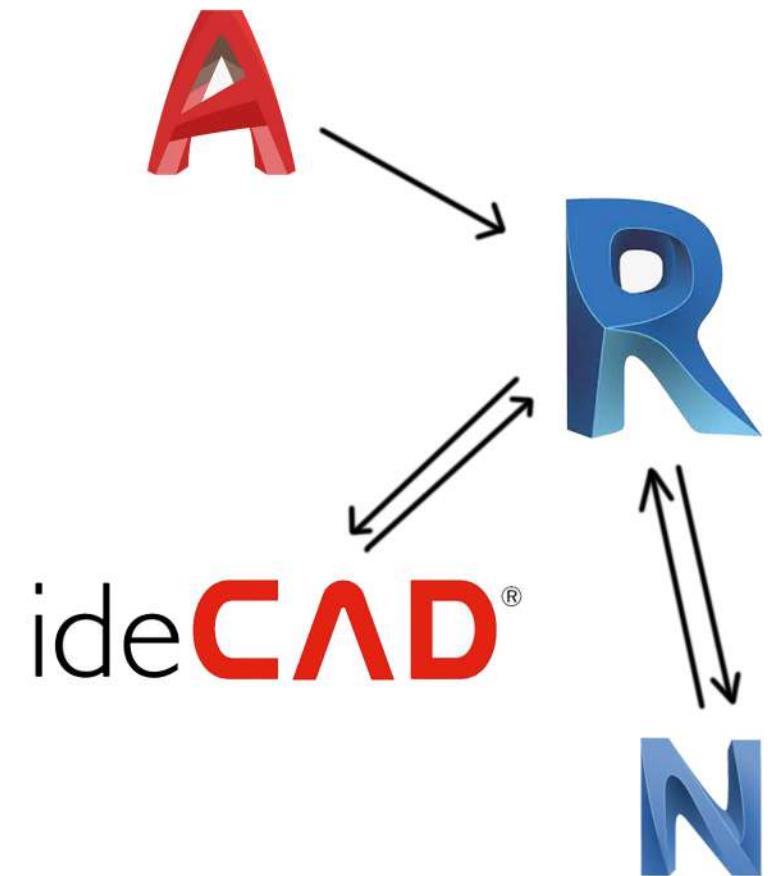
TASARIMDA KULLANILAN PROGRAMLAR



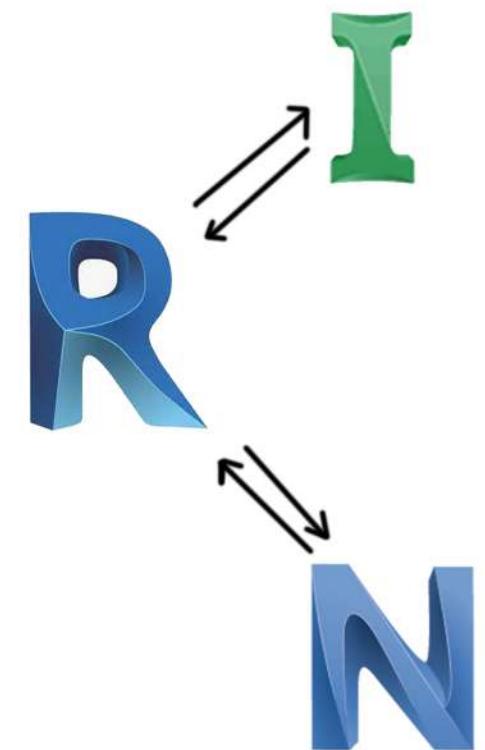
MİMARI TASARIM



YAPISAL TASARIM



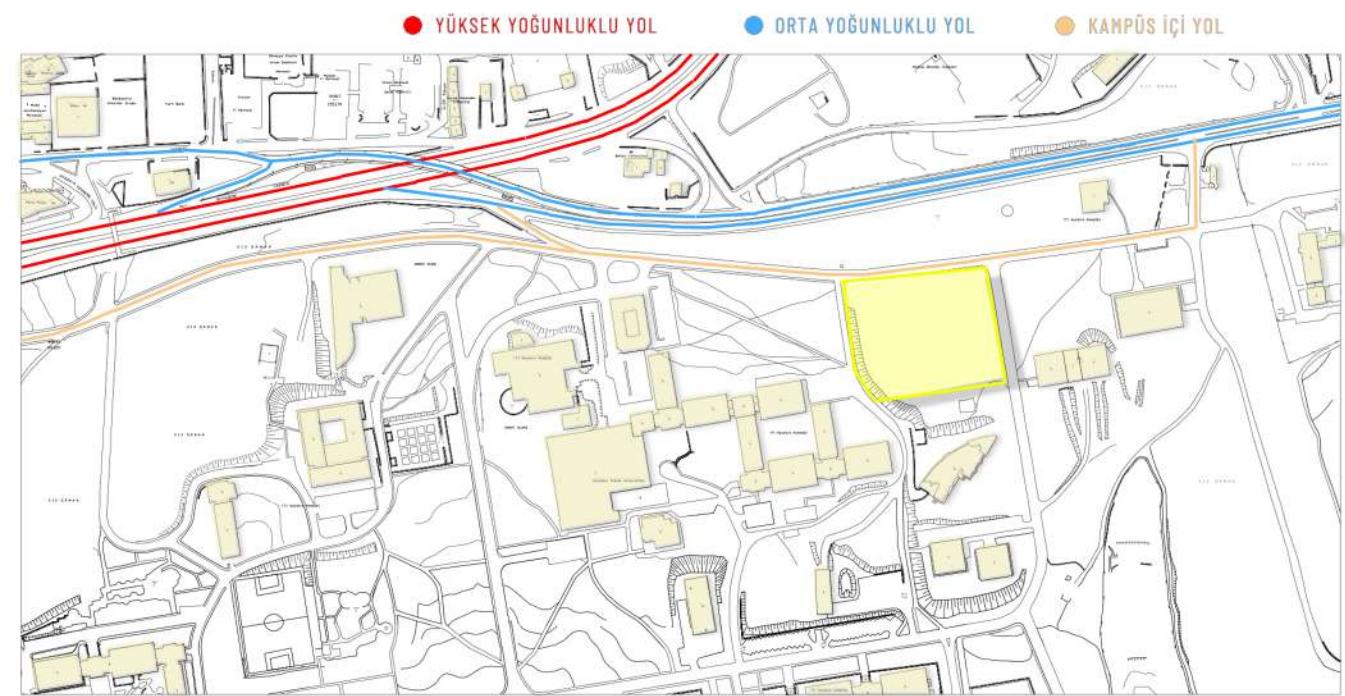
MEKANİK TASARIM



ÇEVRE ANALİZİ



● DOLU



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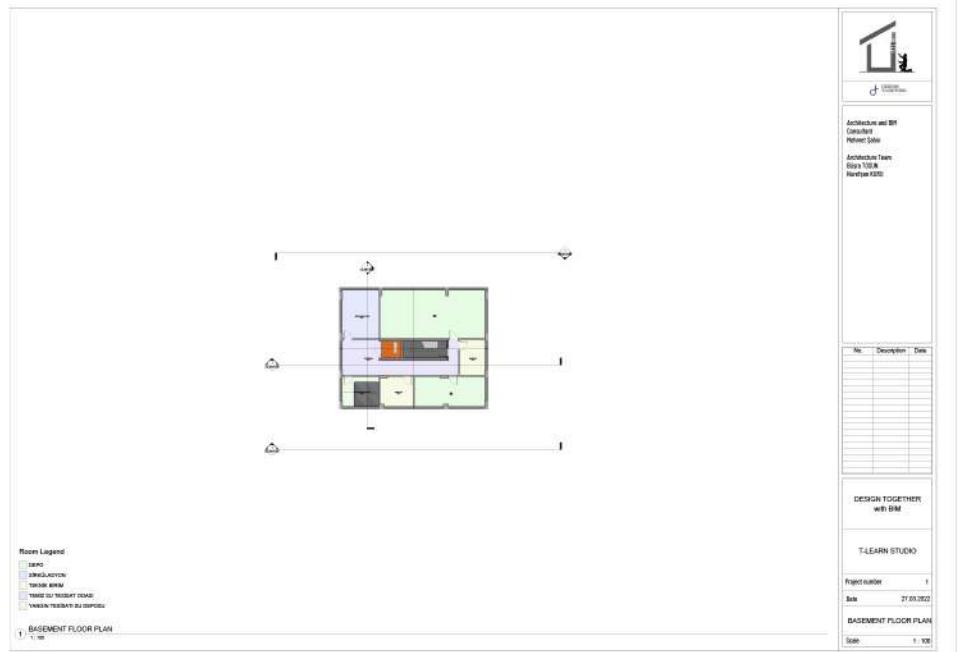
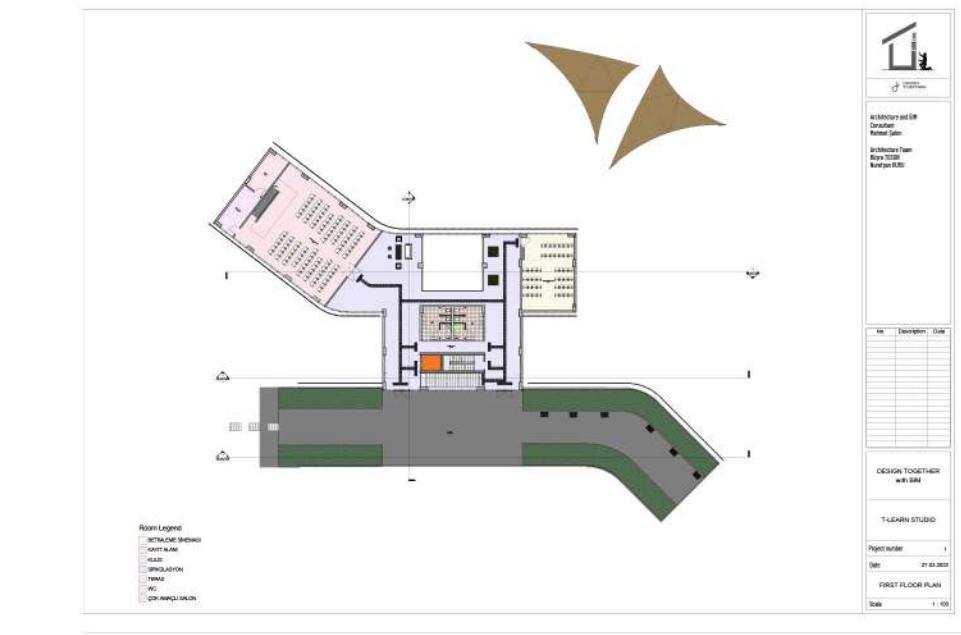
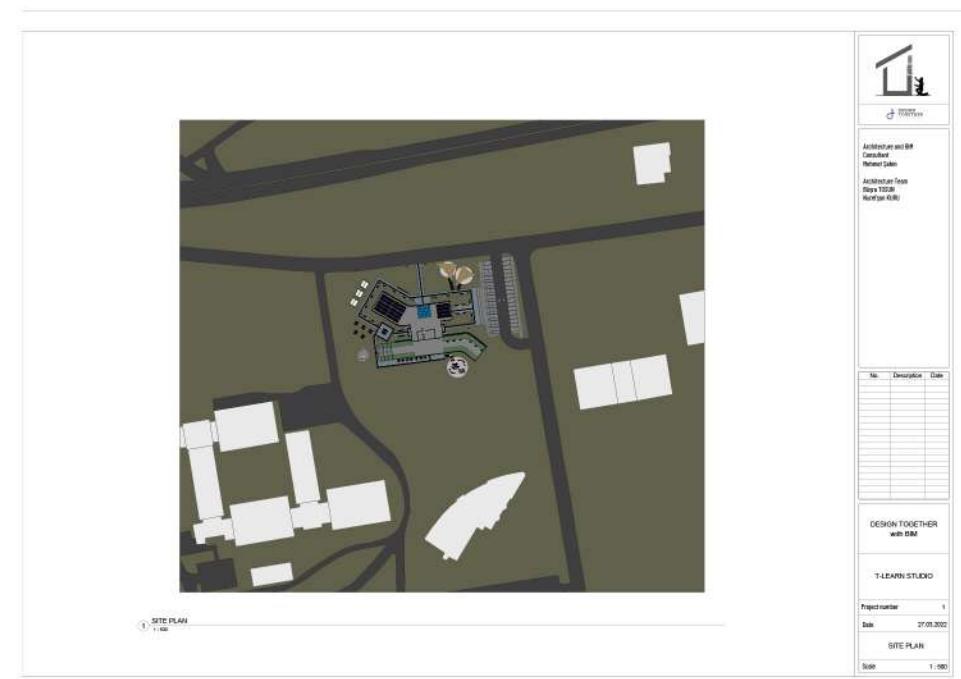


MİMARI TASARIM

PLANLAR

DESIGN

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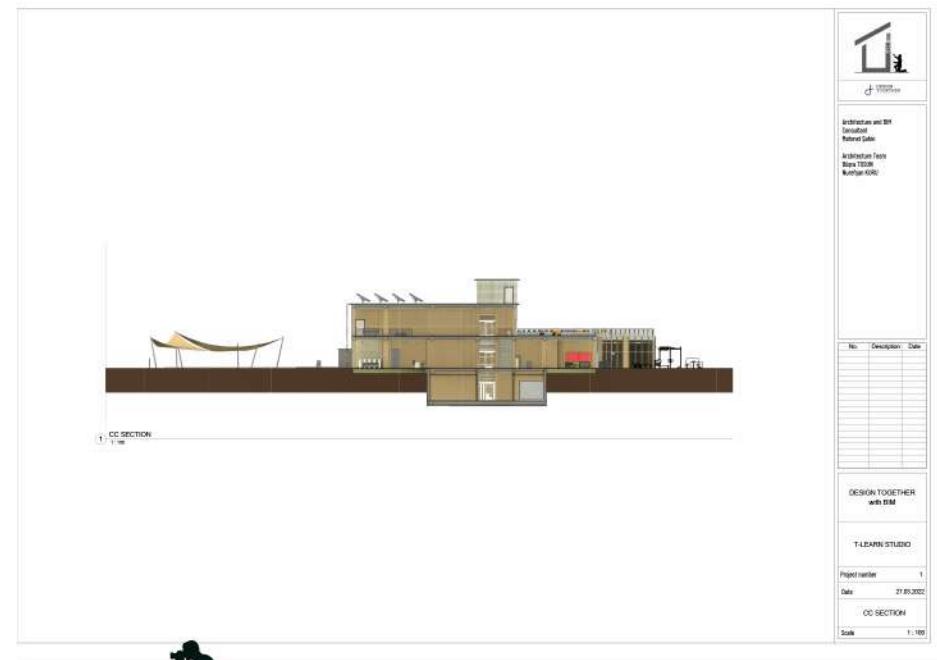


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DESIGN

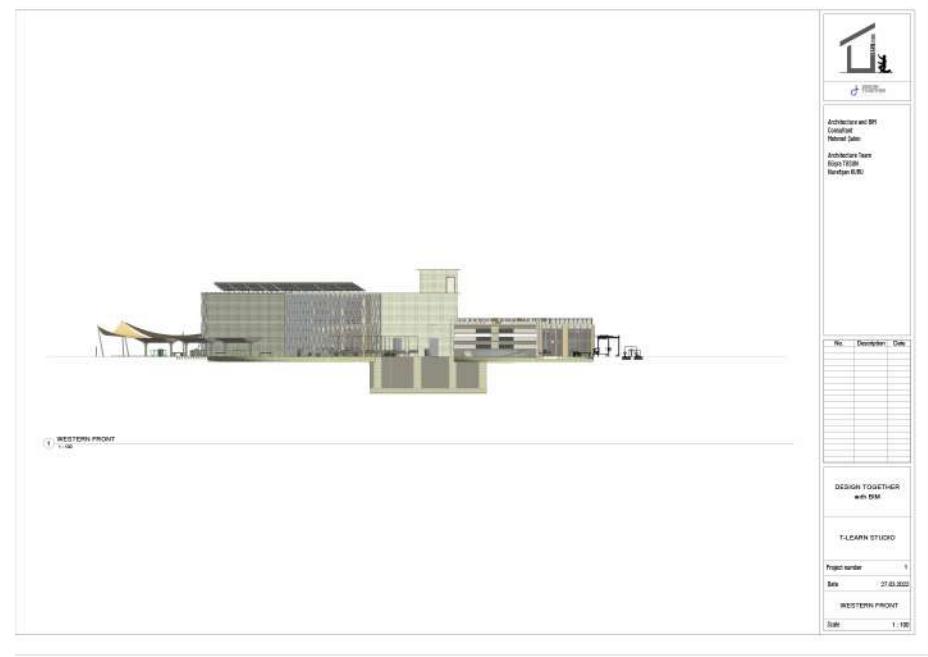
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DESIGN

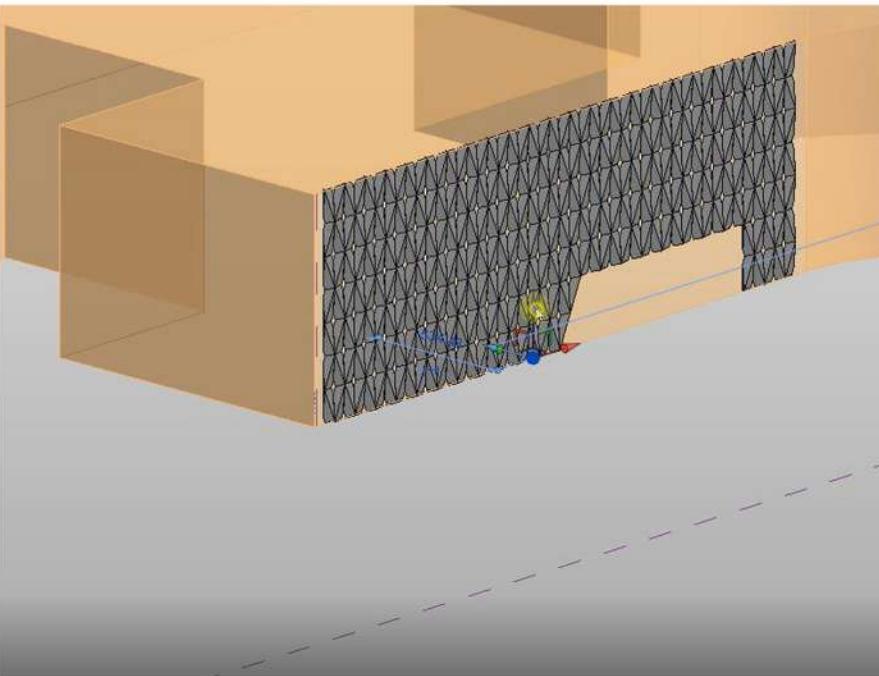
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PARAMETRİK TASARIM

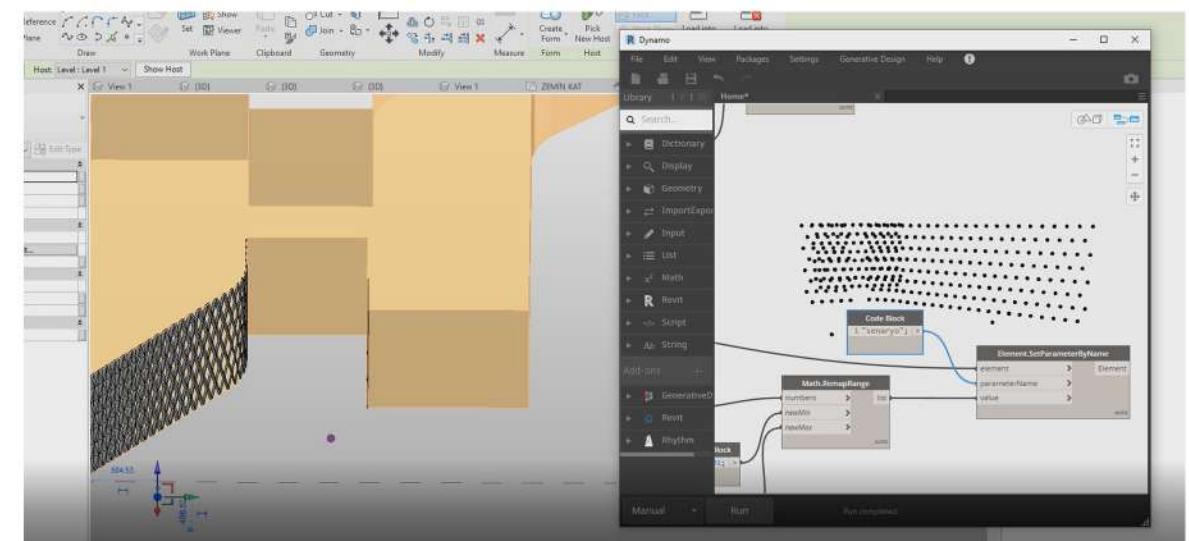
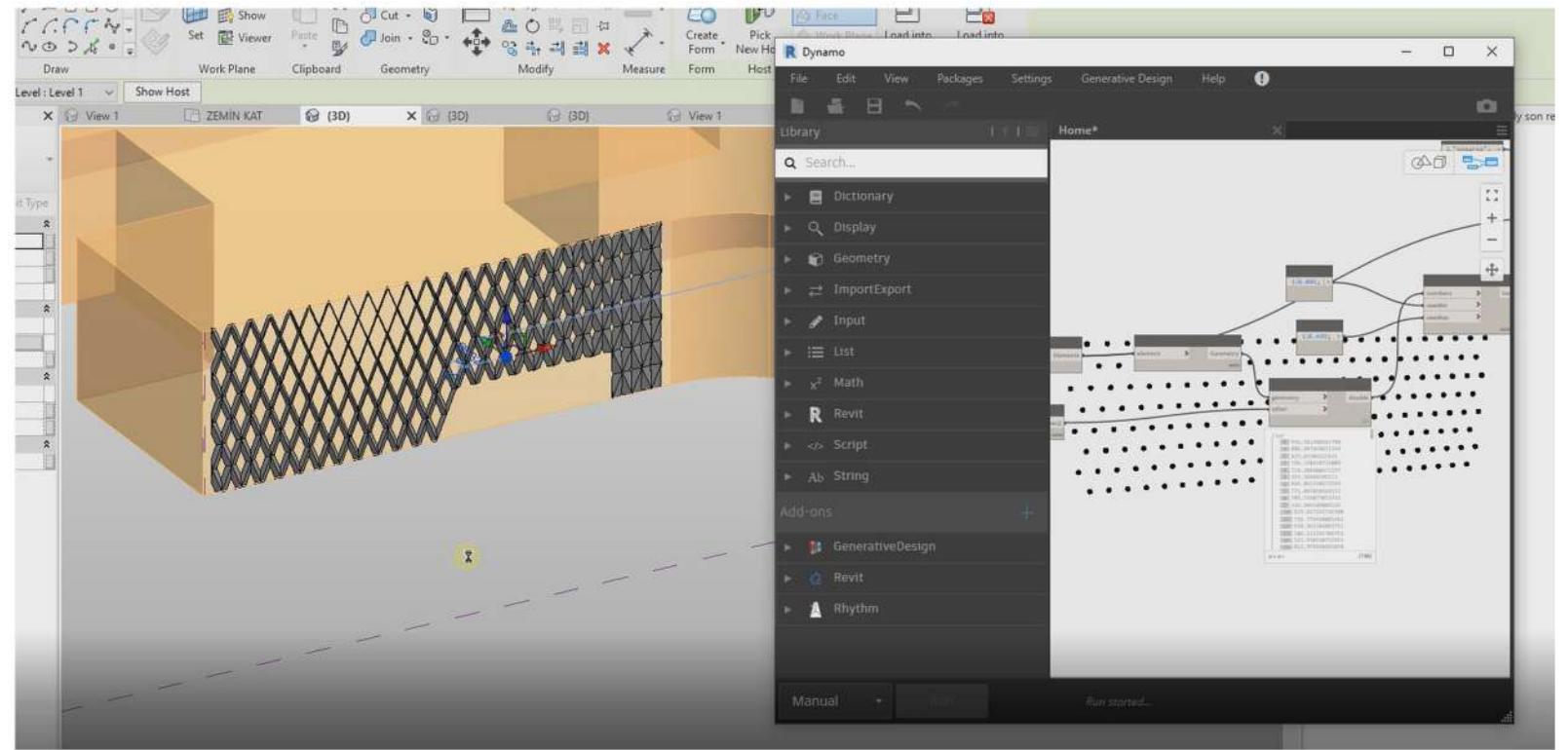


PARAMETRİK PANEL



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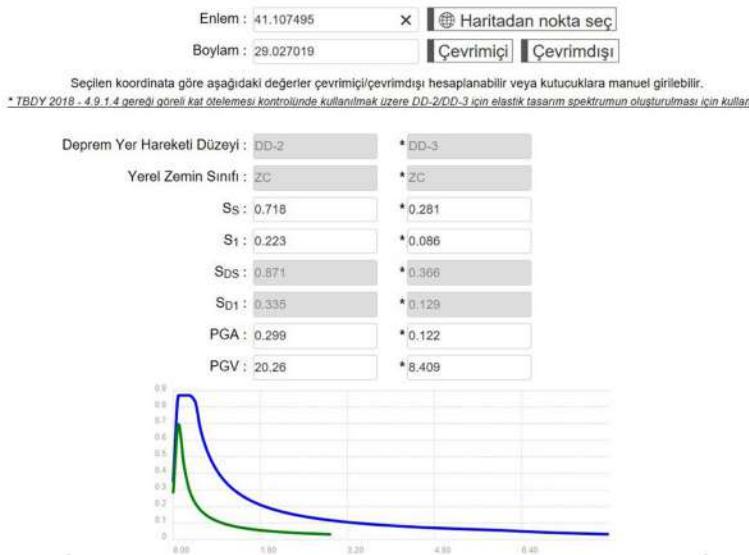
Revit üzerinde parametrik bir panel tasarımı yapılmış, sonrasında dynamo da revit üzerinden seçilen referans noktası üzerinden cephe tasarımı yapılmıştır.



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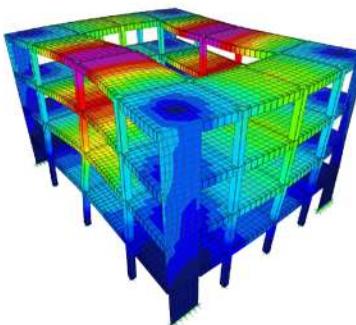


DTS = 1a ve HN = 8.00 olduğu için BYS = 7 seçilmiştir.

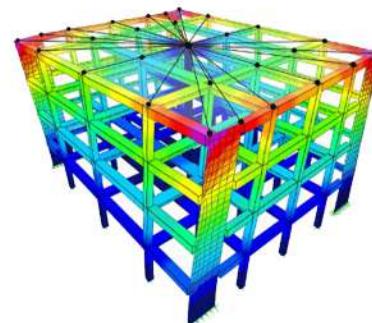
Tablo 3.3 – Bina Yükseklik Sınıfları ve Deprem Tasarım Sınıflarına Göre Tanımlanan Bina Yükseklik Aralıkları

Bina Yükseklik Sınıfı	Bina Yükseklik Sınıfları ve Deprem Tasarım Sınıflarına Göre Tanımlanan Bina Yükseklik Aralıkları [m]		
	DTS = 1, 1a, 2, 2a	DTS = 3, 3a	DTS = 4, 4a
BYS = 1	HN > 70	HN > 91	HN > 105
BYS = 2	56 < HN ≤ 70	70 ≤ HN ≤ 91	91 < HN ≤ 105
BYS = 3	42 < HN ≤ 56	56 ≤ HN ≤ 70	56 < HN ≤ 91
BYS = 4	28 < HN ≤ 42		42 < HN ≤ 56
BYS = 5	17.5 < HN ≤ 28		28 < HN ≤ 42
BYS = 6	10.5 < HN ≤ 17.5		17.5 < HN ≤ 28
BYS = 7	7 < HN ≤ 10.5		10.5 < HN ≤ 17.5
BYS = 8	HN ≤ 7		HN ≤ 10.5

Yarı Rijit Diyafram
(Dösemeler ile birlikte analiz modeli)



Tam Rijit Diyafram
(Matematiksel rijit diyafram modeli)



Bina Taşıyıcı Sistemi				
	A. YERİNDE DÖKME BETONARME BİNA TAŞIYICI SİSTEMLERİ A1. Süneklik Düzeyi Yüksek Taşıyıcı Sistemler	Taşıyıcı Sistem Davranışı Katsayıları R	Dayanım Fazlalığı Katsayıları D	
	A11. Deprem etkilerinin tamamının moment aktaran süneklik düzeyi yüksek betonarme çerçevelerle karşılaşıldığı binalar	8	3	BYS ≥ 3
	A12. Deprem etkilerinin tamamının süneklik düzeyi yüksek bağı kıraklı (boşluklu) betonarme perdelerle karşılaşıldığı binalar	7	2.5	BYS ≥ 2
	A13. Deprem etkilerinin tamamının süneklik düzeyi yüksek boşluksuz betonarme perdelerle karşılaşıldığı binalar	6	2.5	BYS ≥ 2
	A14. Deprem etkilerinin moment aktaran süneklik düzeyi yüksek betonarme çerçevelerle ile süneklik düzeyi yüksek bağı kıraklı (boşluklu) betonarme perdeler tarafından birlikte karşılaşıldığı binalar (Bkz: 4.3.4.5)	8	2.5	BYS ≥ 2
	A15. Deprem etkilerinin moment aktaran süneklik düzeyi yüksek betonarme çerçeveler ile süneklik düzeyi yüksek boşluksuz betonarme perdeler tarafından birlikte karşılaşıldığı binalar (Bkz: 4.3.4.5)	7	2.5	BYS ≥ 2
	A16. Deprem etkilerinin tamamının çatı düzeyindeki bağlantıları mafsalı olan ve yüksekliği 12 m'yi geçmeyen süneklik düzeyi yüksek betonarme kolonlar tarafından karşılaşıldığı tek katlı binalar	3	2	-





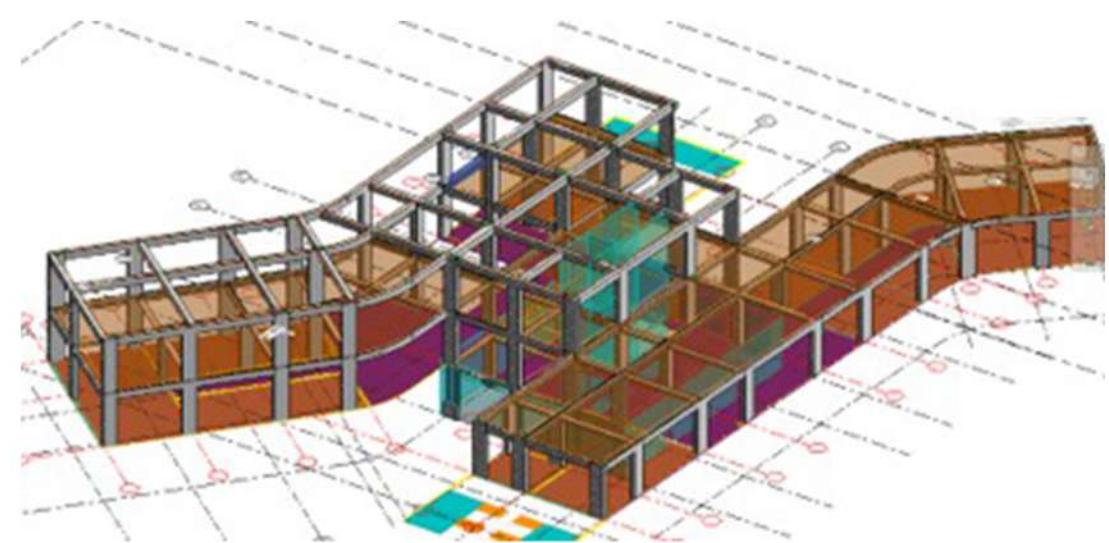
YAPISAL TASARIM

TAŞIYICI SİSTEM

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R



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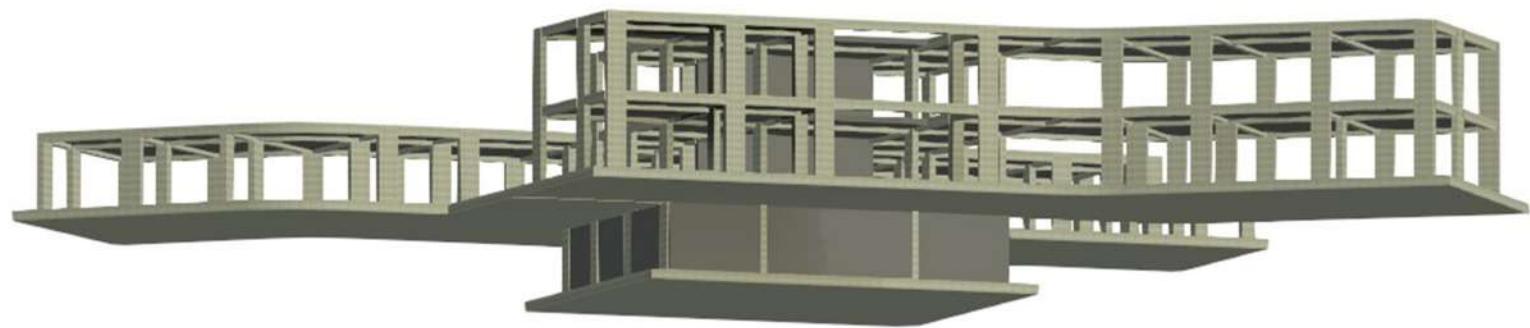
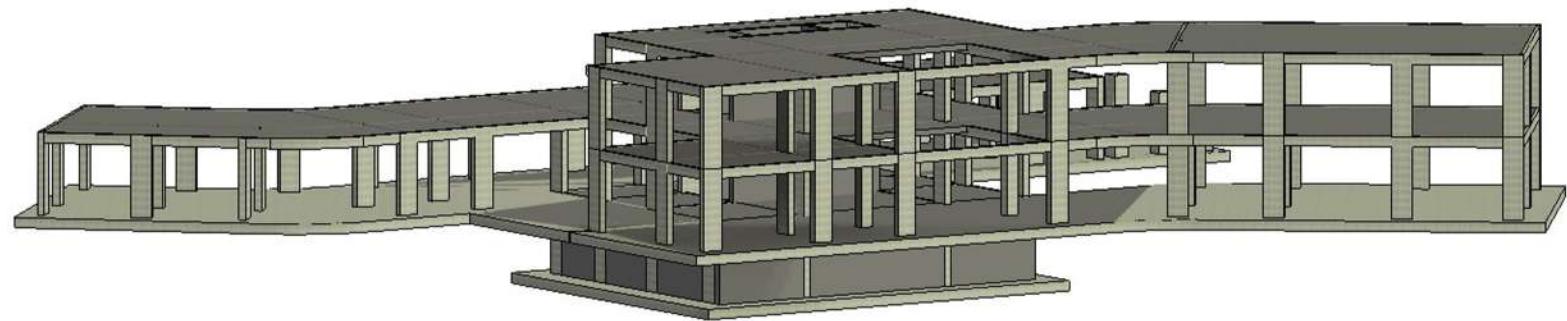
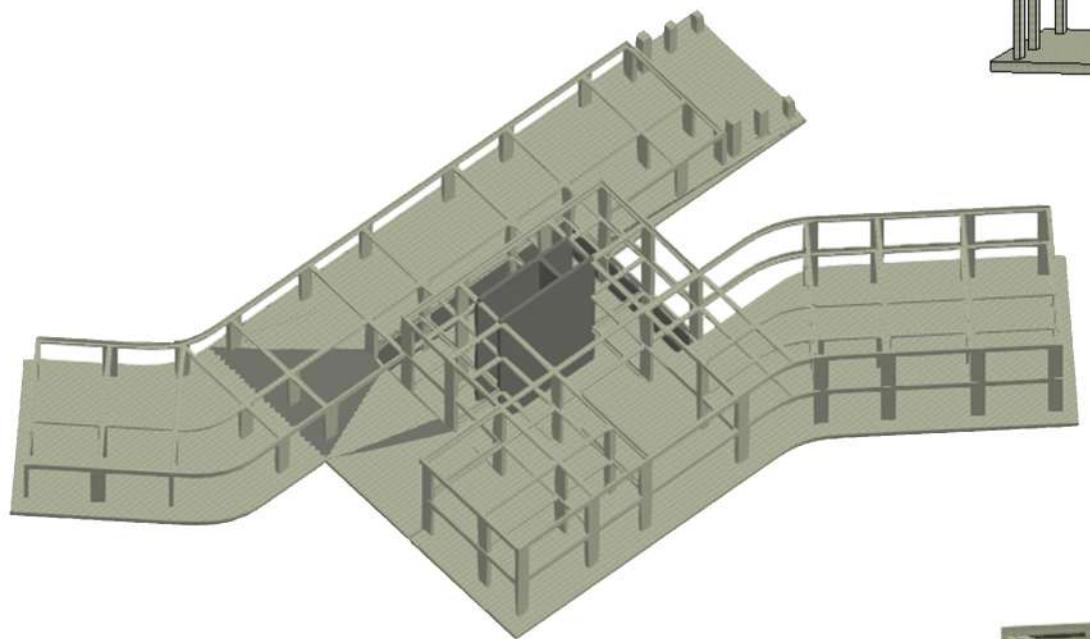


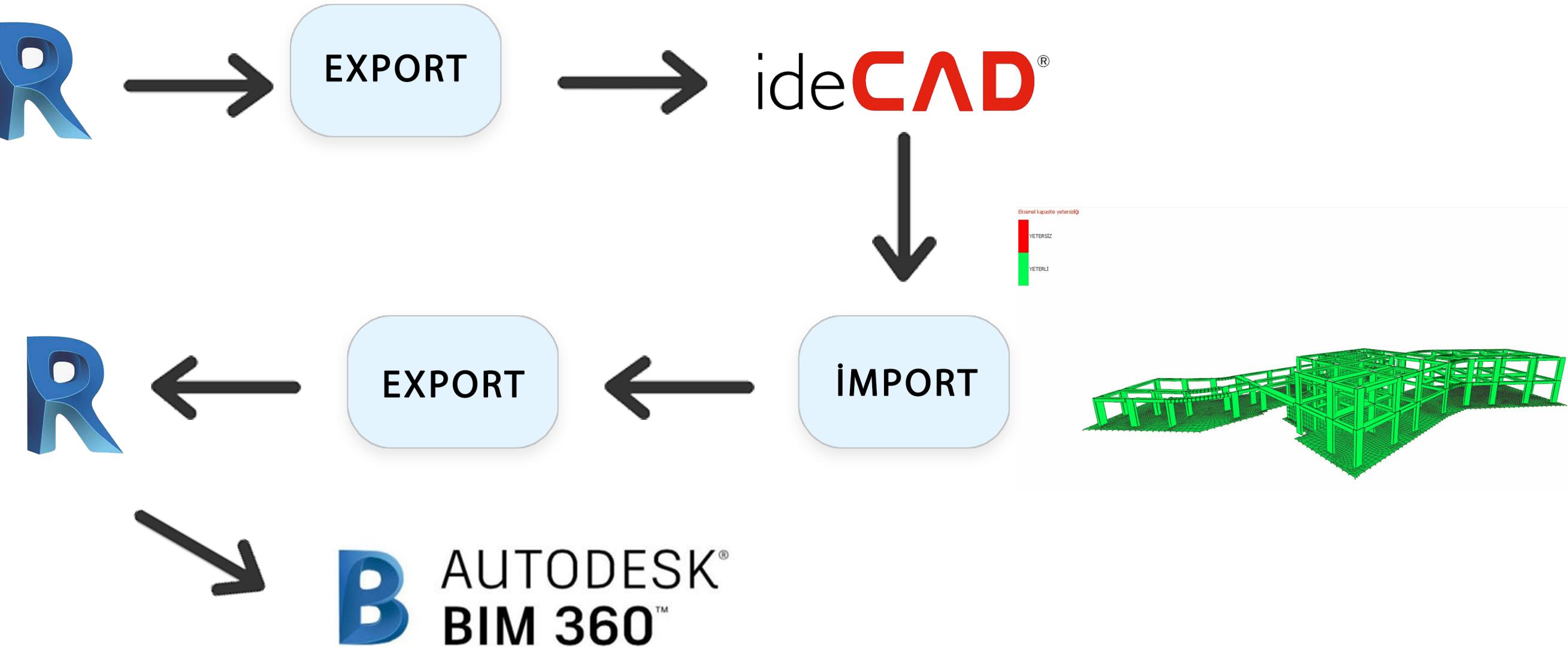
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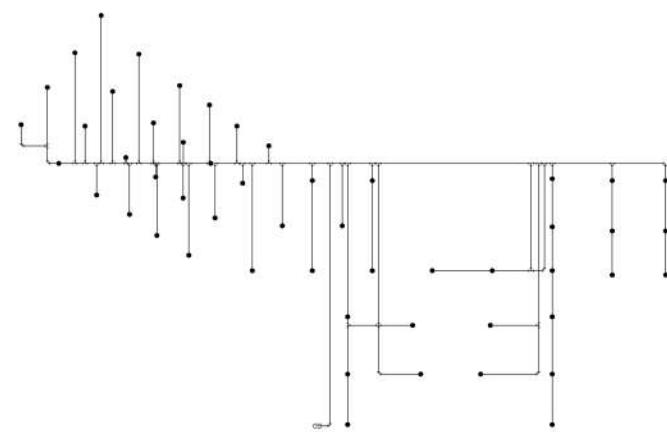
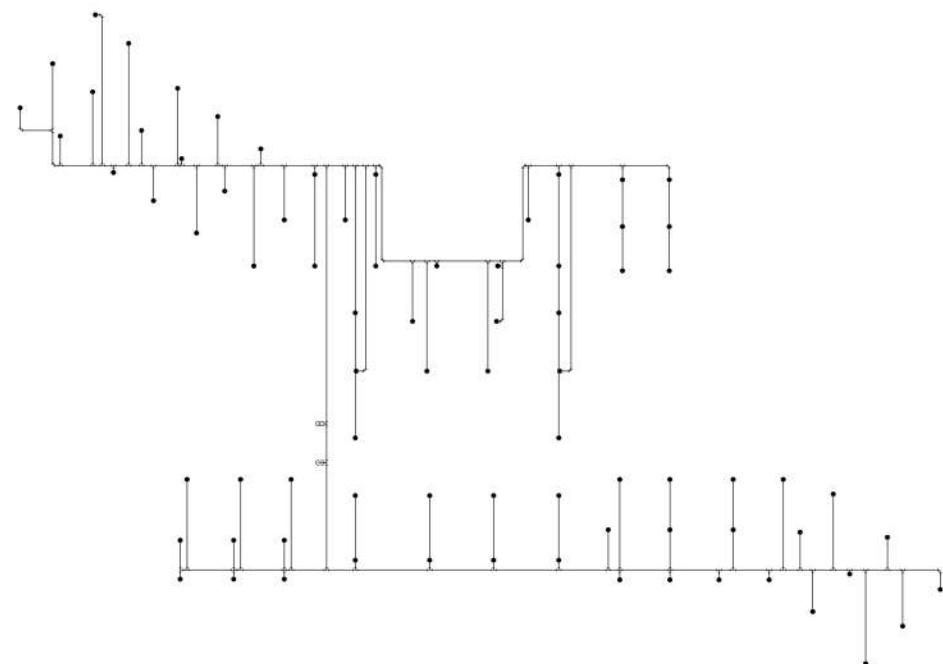
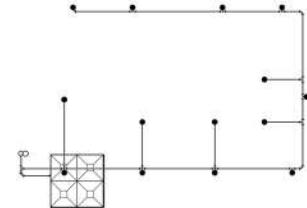
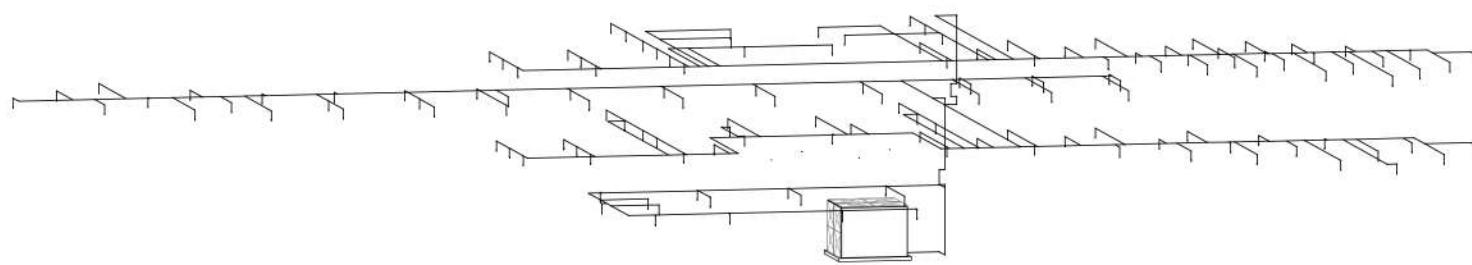
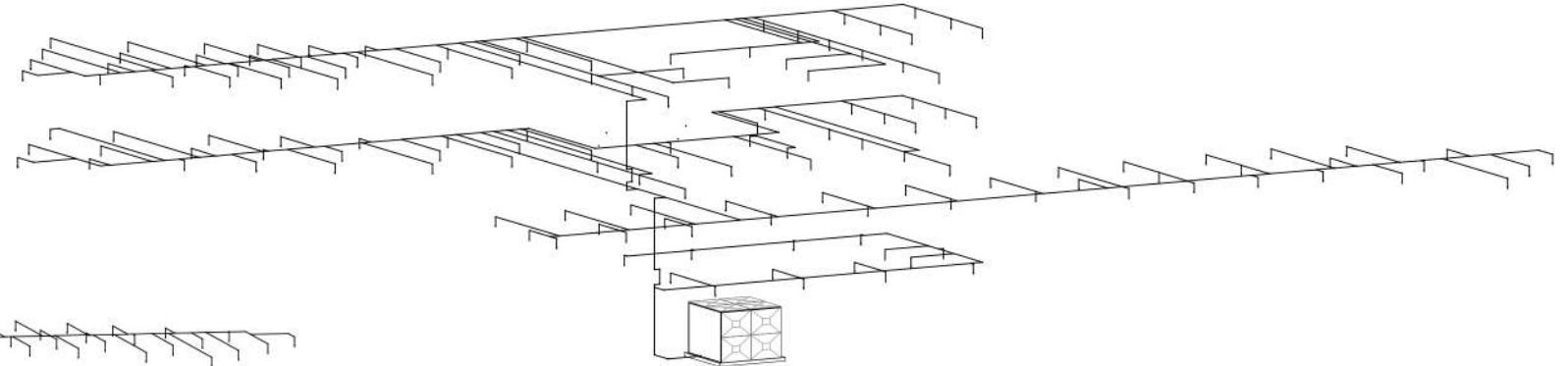
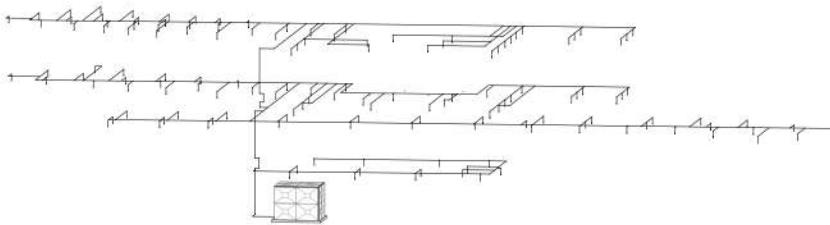




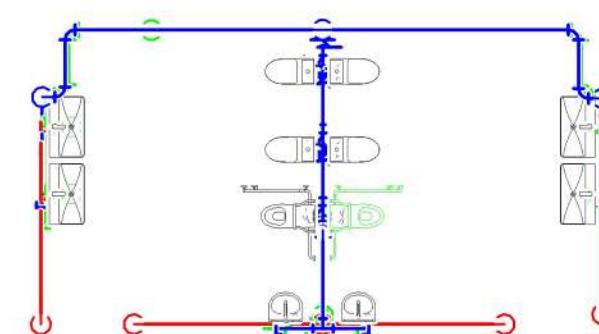
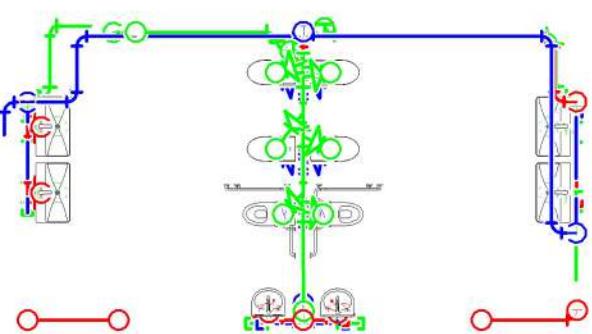
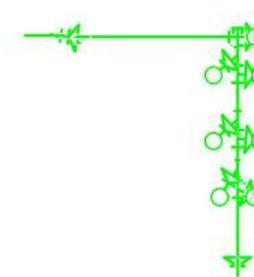
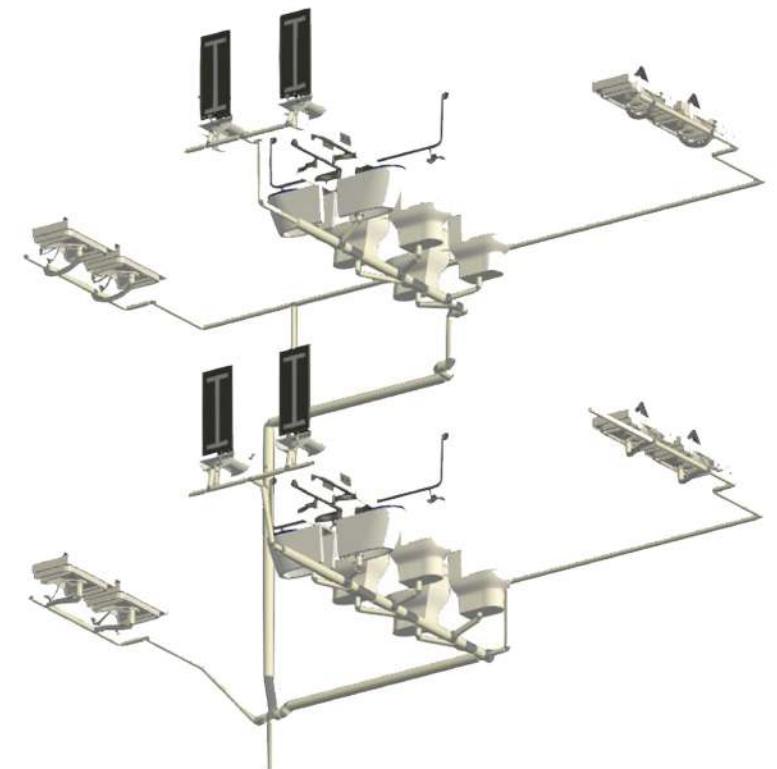
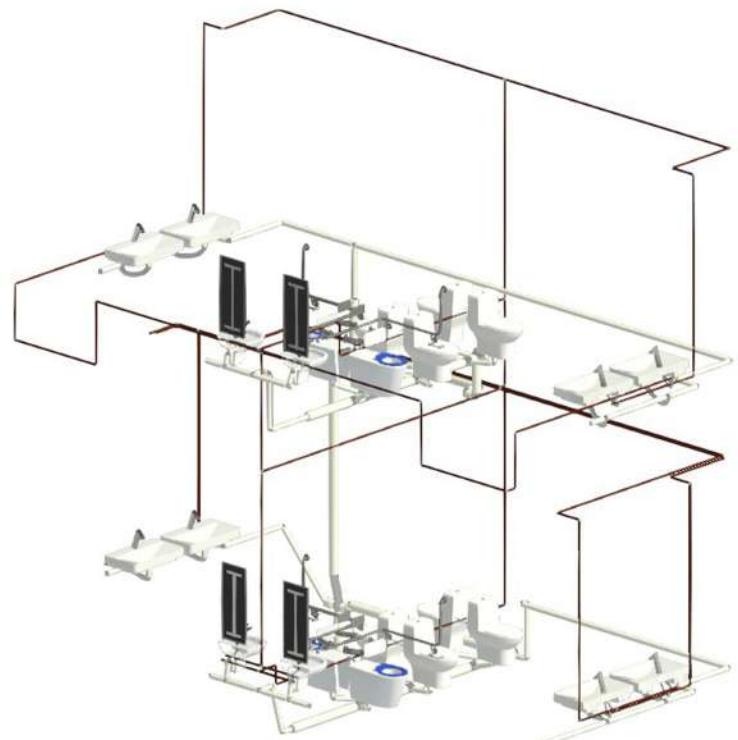
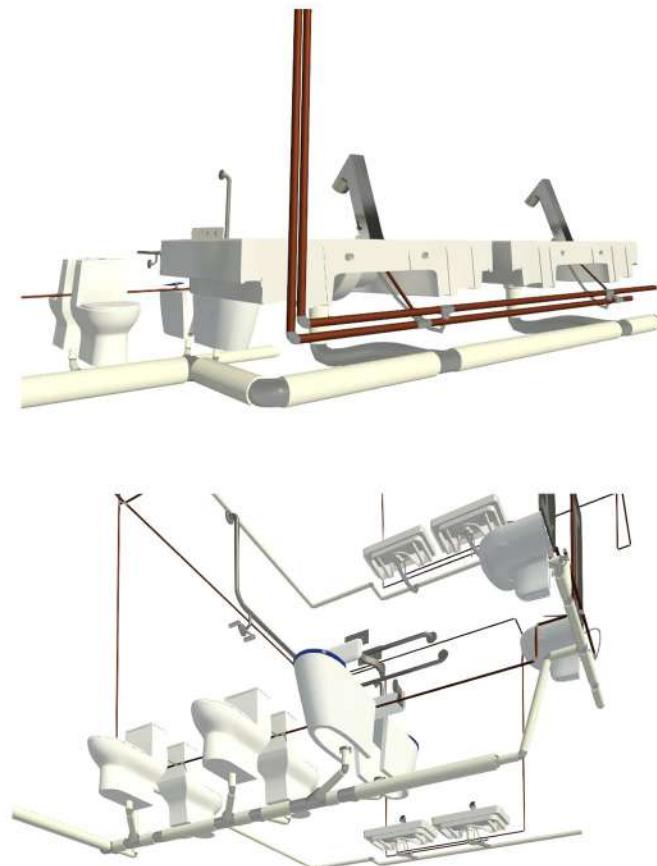


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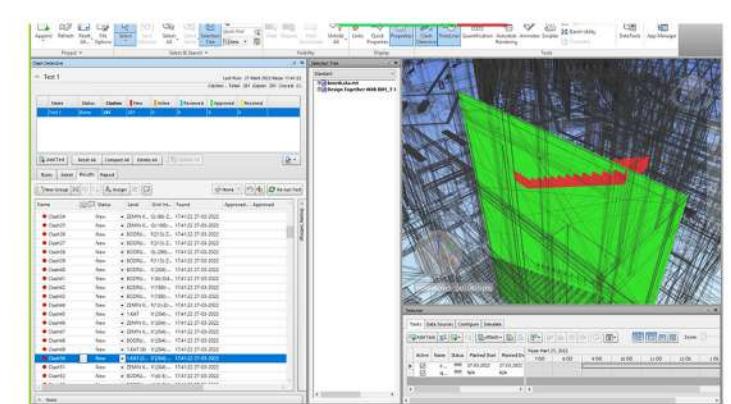
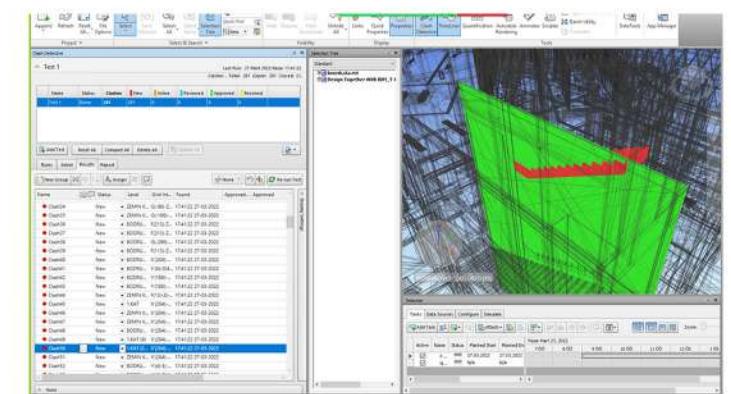
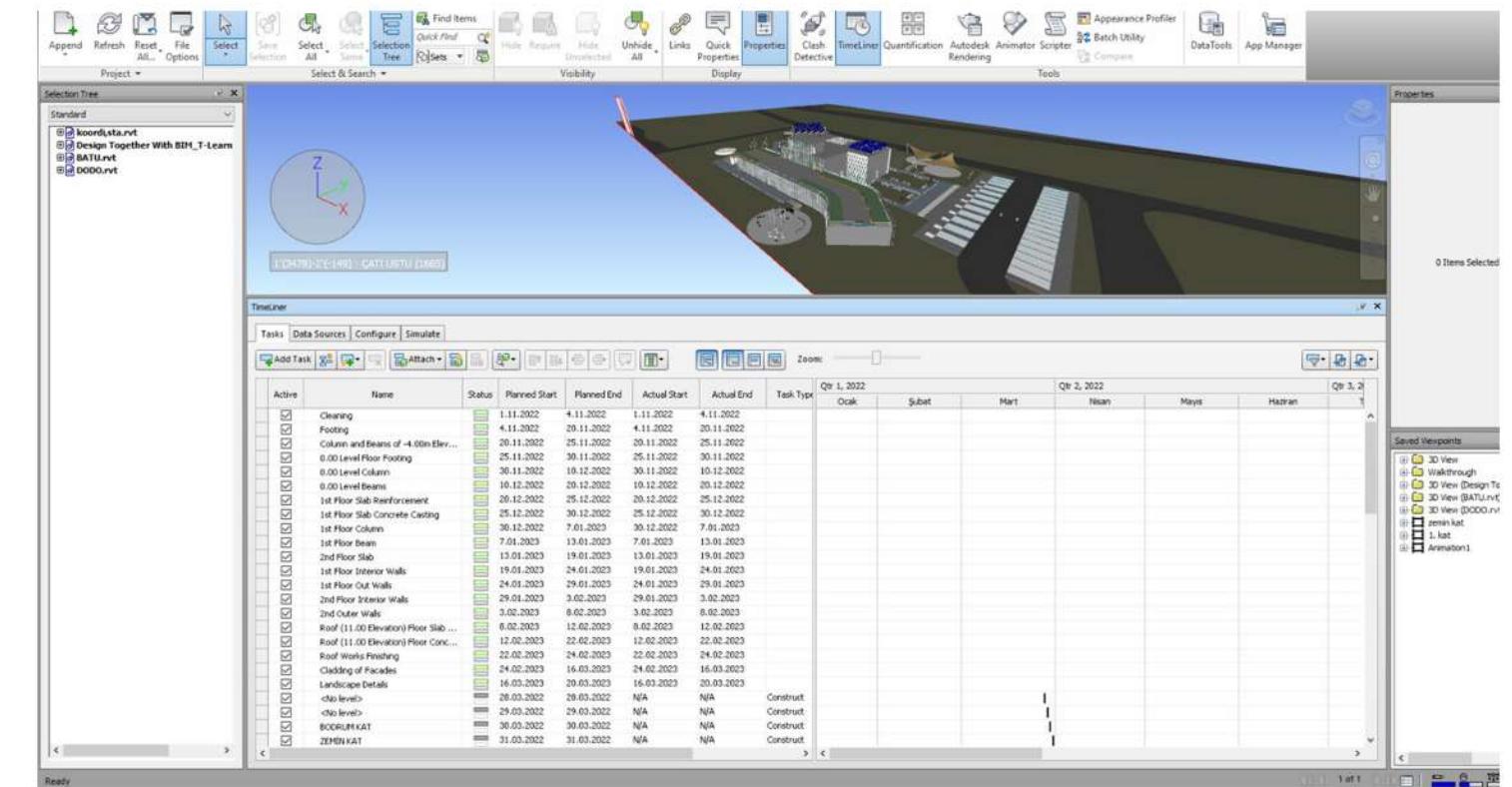
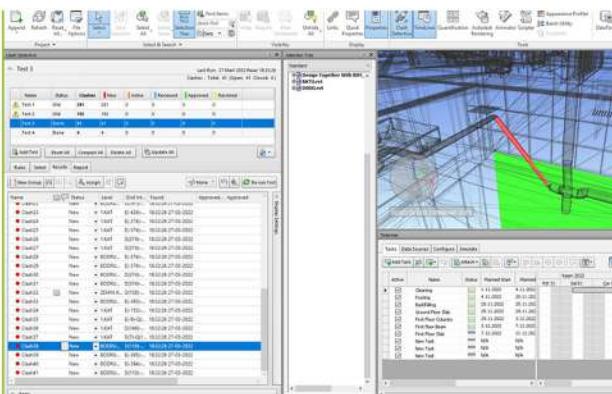
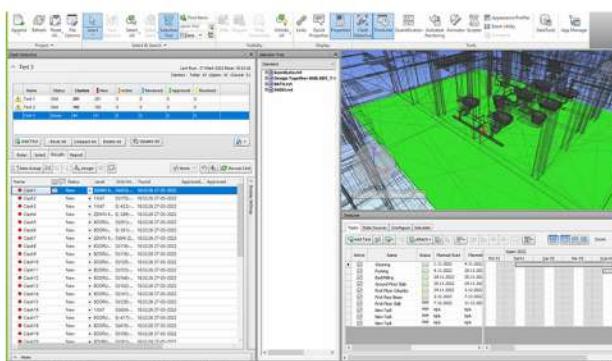
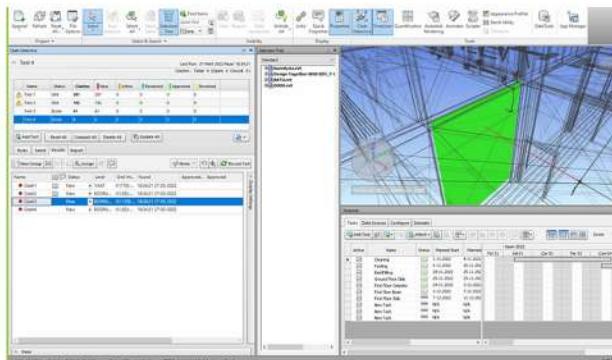




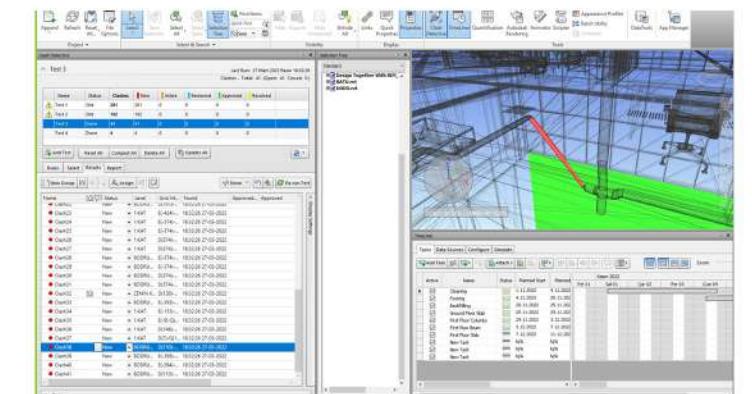
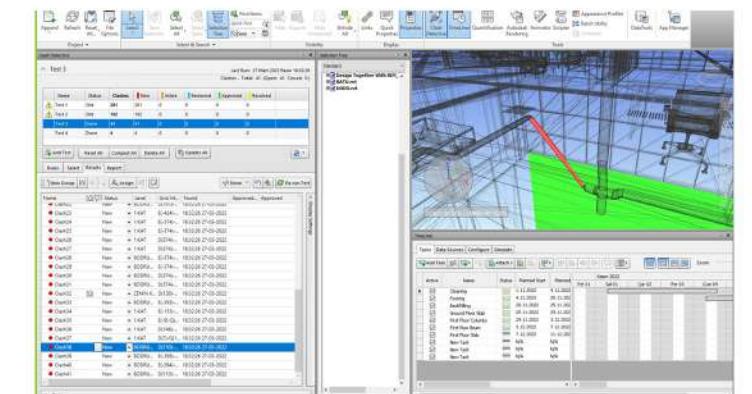
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ARCHITECTURE-STRUCTURE



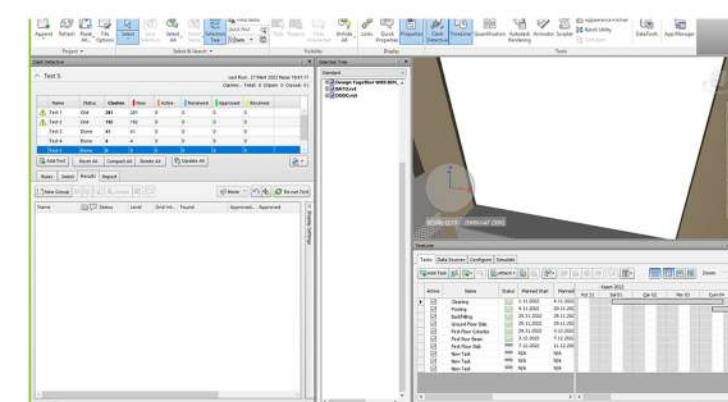
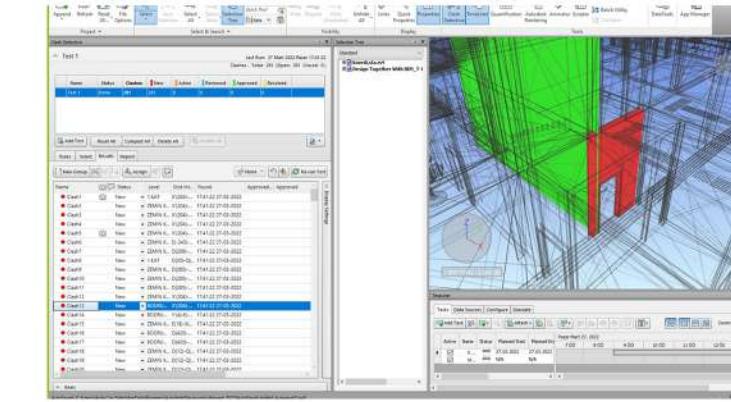
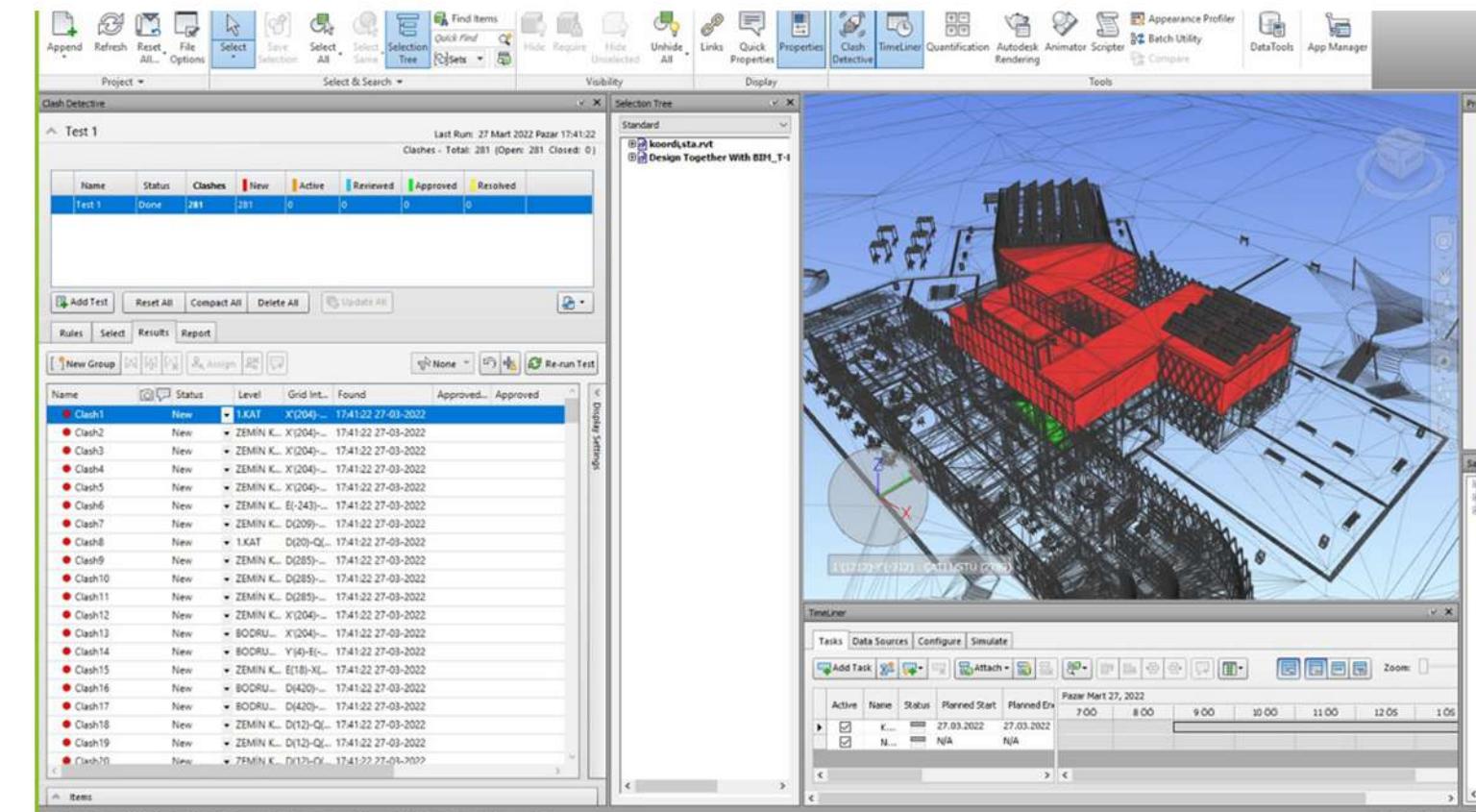
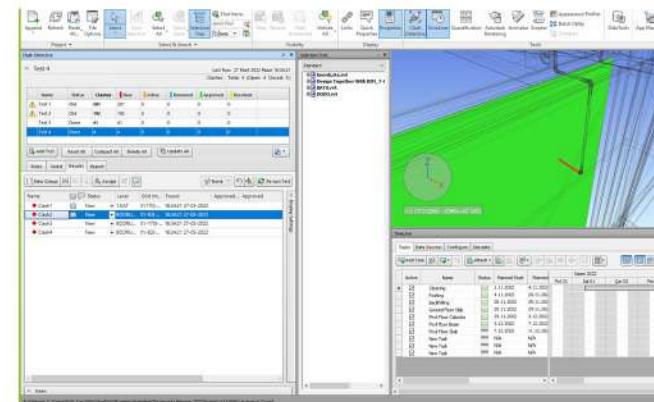
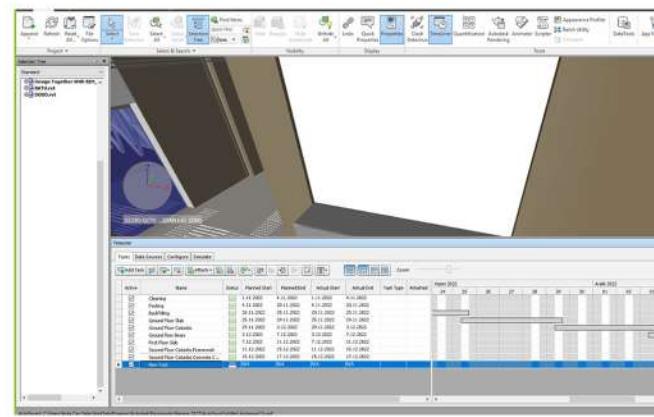
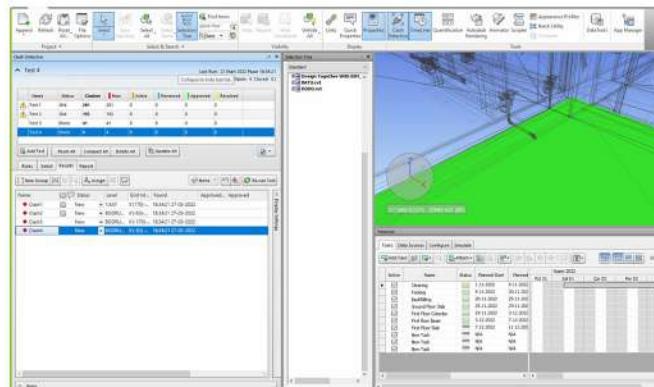
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ÇAKIŞMALAR



DESIGN

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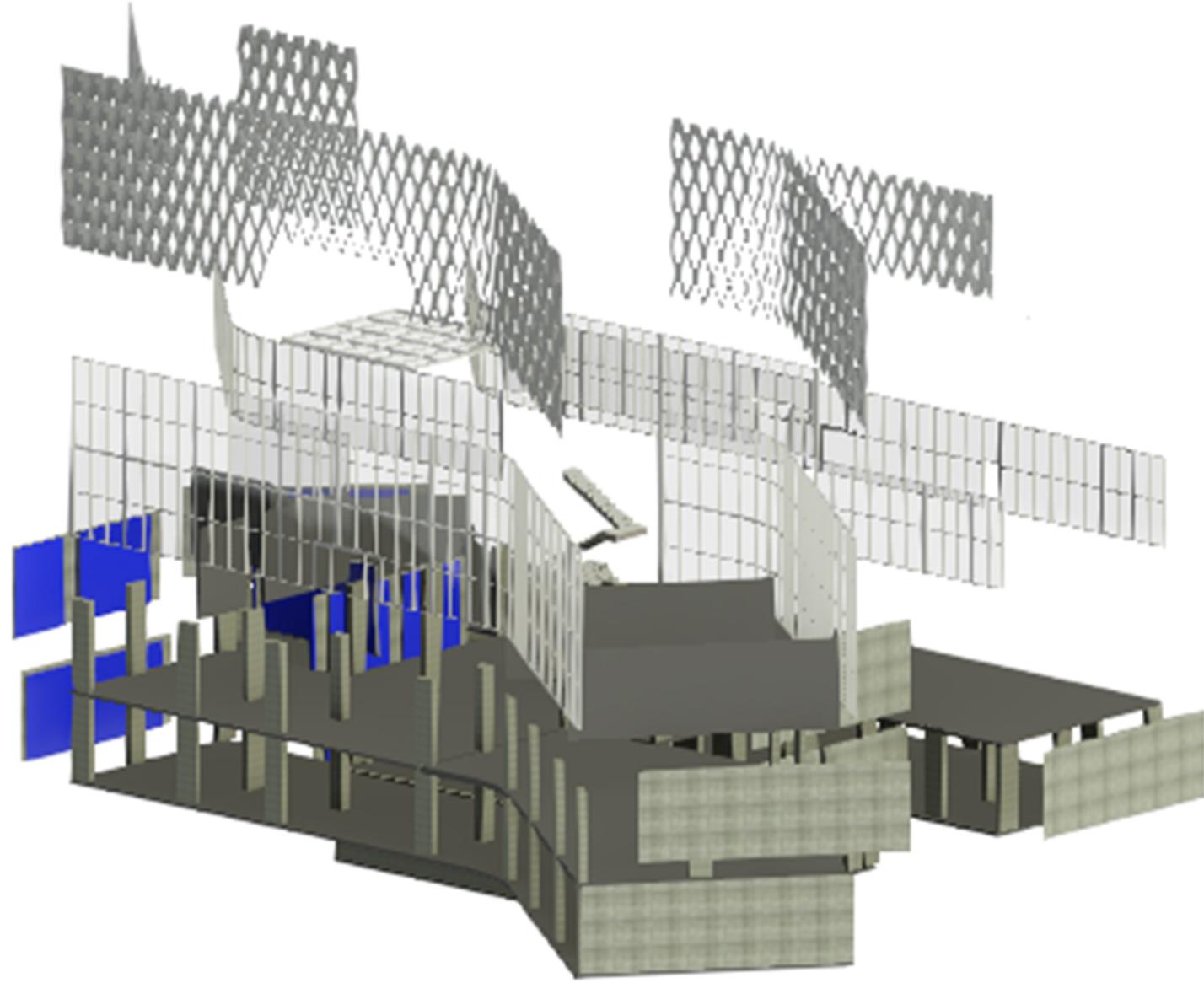
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SİSTEM FONKSİYON ŞEMASI



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YAPI İŞ PROGRAMI



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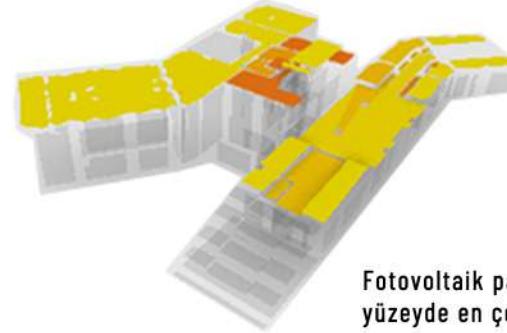
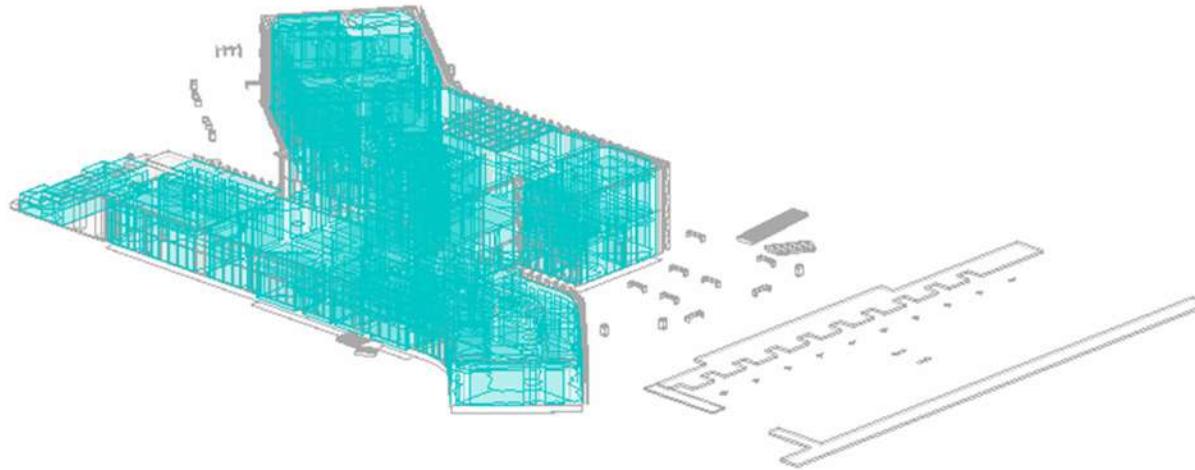
ITU Ayazağa Engellileri Anıtma Merkezi		Classic Schedule Layout										27 Mar 22 15:16														
Activity ID	Activity Name	Panned	Start	Finish	Predecto	Activity Type	Sep 26			Oct 03			Sep 26			Oct 03			Sep 26			Oct 03				
		Duration					S	S	M	T	W	F	S	S	M	T	W	F	S	S	M	T	W	F	S	
Engelli Merkezi ITU Ayazağa Engellileri Anıtma Merkezi																										
Engelli Merkezi.1 Sub Structure																										
A01	Cleaning	1d	01.A.	01.A.		Task Depen																				
A10	Mating	1d	01.A.	02.A.	A0	Task Depen																				
A20	Excavation	3d	02.A.	05.A.	A10	Task Depen																				
A30	PCC	4d	06.A.	09.A.	A20	Task Depen																				
A40	Footing	4d	09.A.	13.A.	A30	Task Depen																				
A50	Battling	4d	13.A.	16.A.	A40	Task Depen																				
A60	starting to superstructure	0d	01.A.	01.A.		Task Depen																				
Engelli Merkezi.2 A BLOCK Superstructure																										
B10	Zemin kıl-prefabrik 10cm	1d	15.A.	18.A.	A50	Task Depen																				
B20	Laying reinforcement	6d	18.A.	23.A.	B10	Task Depen																				
B30	Laying formwork	4d	23.A.	27.A.	B20	Task Depen																				
B40	Leaving a Gap for Mechanical Connections	1d	27.A.	28.A.	B30	Task Depen																				
B50	0.00+00 Concrete (C30) 40cm	7d	28.A.	29.A.	B40	Task Depen																				
B60	0.00+00 Column reinforcement	7d	29.A.	21.M.	B50	Task Depen																				
B70	0.00+00 Column molding	4d	28.M.	03.N.	B60	Task Depen																				
B80	0.00+00 Column concrete casting	1d	03.J.	03.J.	B70	Task Depen																				
B90	Transportation of Elevator Equipment	1d	04.J.	04.J.	B80	Task Depen																				
C10	+4.00 Beam Laying Ladder reinforcement	6d	04.J.	10.J.	B90	Task Depen																				
C20	+4.00 Beam Laying Ladder formwork	5d	04.J.	09.J.	B10	Task Depen																				
C30	Leaving Space for Mechanical Connections	10d	09.J.	19.J.	C20	Task Depen																				
C40	+4.00 Concrete Beam Layng Stars	1d	10.J.	11.J.	C30	Task Depen																				
C50	+4.00+0.00 Column reinforcement	4d	11.J.	15.J.	C40	Task Depen																				
C60	+4.00+0.00 Column molding	1d	15.J.	16.J.	C50	Task Depen																				
C70	+4.00+0.00 Column concrete casting	1d	16.J.	17.J.	C60	Task Depen																				
C80	+8.00 Beam Laying Ladder reinforcement	5d	17.J.	22.J.	C70	Task Depen																				
C90	+8.00 Beam Laying Ladder formwork	4d	22.J.	25.J.	D10	Task Depen																				
C100	+8.00 Beam Laying concrete	2d	25.J.	27.J.	D10	Task Depen																				
C110	Transportation of Elevator Equipment	3d	27.J.	29.J.	D10	Task Depen																				
C120	The Ground floor is plastered with paint	2d	03.S.	05.S.	A120	Task Depen																				
C130	Cladding of Stairs	3d	05.S.	07.S.	A120	Task Depen																				
C140	Stair Railings	1d	10.S.	10.S.	A130	Task Depen																				
C150	Leaving a Gap for Mechanical Connections	1d	10.S.	12.S.	A130	Task Depen																				
C160	4.00+00 outer wall	1d	12.S.	13.S.	A130	Task Depen																				
C170	+4.00+0.00 interior wall	1d	12.S.	13.S.	A130	Task Depen																				
C180	+4.00+0.00 plaster panel	1d	13.S.	14.S.	A130	Task Depen																				
Engelli Merkezi.3 B BLOCK Superstructure																										
A120	Elevator Installation	4d	01.A.	05.A.		Task Depen																				
A160	Solar Panels	9d	01.A.	09.A.		Task Depen																				
Engelli Merkezi.3.1 B BLOCK MEP																										
A129	The Ground floor is plastered with paint	2d	03.S.	05.S.	A120	Task Depen																				
A130	Ground Floor Covering of the Ground Floor	2d	05.S.	07.S.	A120	Task Depen																				
A131	Cladding of Stairs	3d	07.S.	09.S.	A130	Task Depen																				
A132	Star Railings	1d	10.S.	10.S.	A130	Task Depen																				
A133	Leaving a Gap for Mechanical Connections	1d	10.S.	12.S.	A130	Task Depen																				
A134	4.00+00 outer wall	1d	12.S.	13.S.	A130	Task Depen																				
A135	+4.00+0.00 interior wall	1d	12.S.	13.S.	A130	Task Depen																				
A136	+4.00+0.00 plaster panel	1d	13.S.	14.S.	A130	Task Depen																				
Engelli Merkezi.3.1.1 B BLOCK Electrical																										
A146	Installation of Sewerage	3d	04.O.	06.O.	A1460	Task Depen																				
A147	pumping	2d	01.O.	03.O.	A1460	Task Depen																				

ENERJİ ANALİZİ



DESIGN

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Fotovoltaik paneller güneşin geliş açısına göre yüzeye en çok ışık alan bölgelere yerleştirilmiştir.

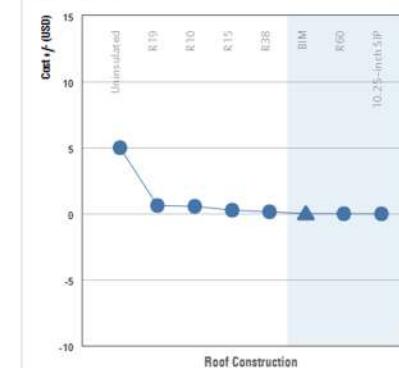
Çatı İnşaatı

Çatı konstrüksyonlarının ısı kayiplarına ve kazanımlarına karşı genel yeteneğini temsil eder.

Geçerli Ayar:
BIM - 10,25 inç SIP



Roof Construction



PV - Yüzey Kapsamı

Bakım erişimi, çatı ekipmanı ve sistem altyapısı için alan varsayıarak, PV paneller için ne kadar çatı alanı kullanılabileceğini tanımlar.

Geçerli Ayar:
75 % - 90 %

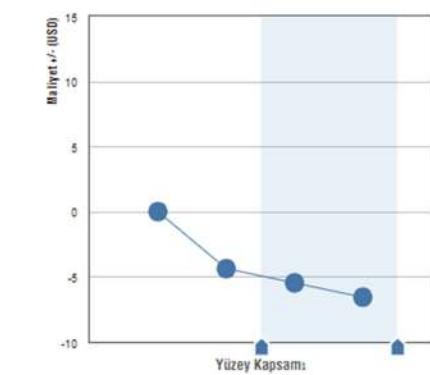


Enerji Maliyeti

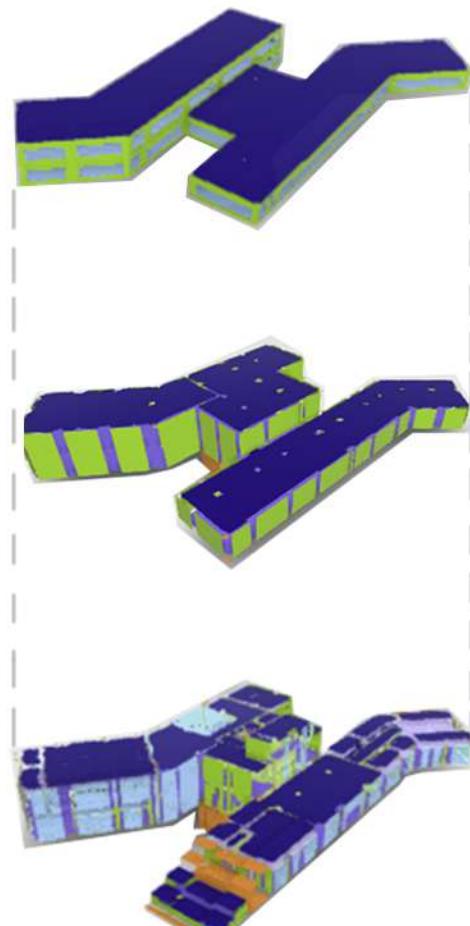
USD / m² / yıl



PV - Yüzey Kapsamı:



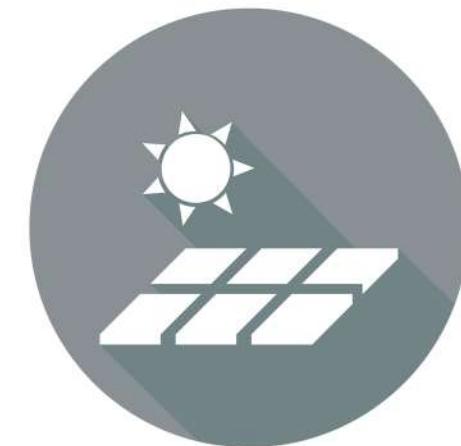
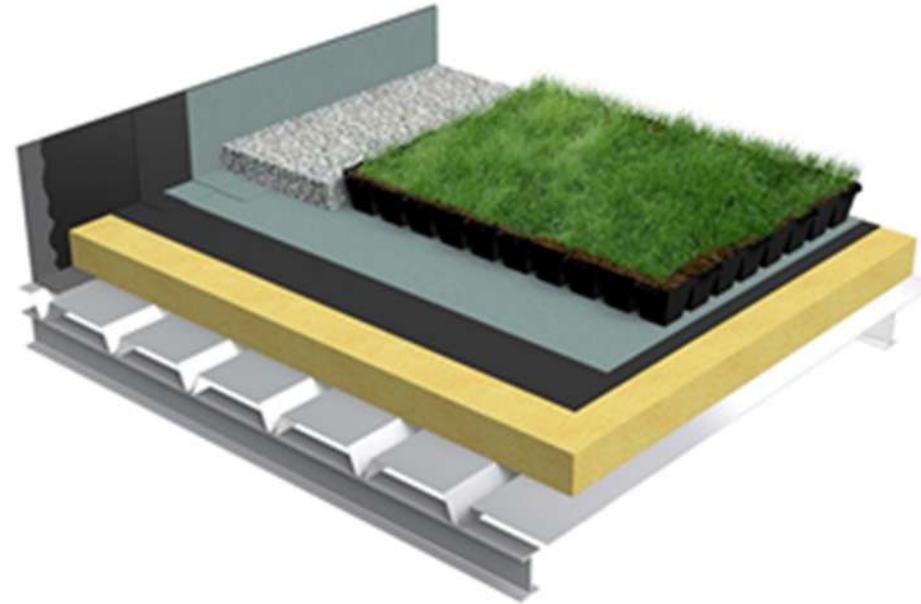
Proje birçok kez enerji analizine sokulmuş ve proje üzerinde revizeler gerçekleştirilmiştir.



Enerji analizinde aldığımız veriler doğrultusunda doğu ve batı cephesinde pencere oranları düşürülmüştür.

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SÜRDÜRÜLEBİLİRLİK STRATEJİSİ



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- <https://forums.autodesk.com/t5/turkiye/ct-p/2062>

