SPECTRA CONSULTANCY ENGINEERING

Trusted Partner for Structural Engineering

www.spectracons.com

fcoskun@spectracons.com

+90(505)665 83 60

SPECTRA

ABOUT US

SPECTRA Consultancy

Structural Engineering & Detailing Services

Founded in Ankara, Türkiye in 2024, SPECTRA Consultancy is a specialized structural engineering and detailing firm dedicated to delivering high-quality, innovative, and cost-effective solutions. We offer a comprehensive range of services with particular expertise in:

- Industrial facilities
- Simple and combined cycle power plants
- Superstructure and infrastructure projects

At SPECTRA Consultancy, we pride ourselves on our technical excellence, attention to detail, and client-focused approach. Our team is committed to supporting each project from concept to completion, ensuring tailored solutions that meet the specific needs of our clients.

SPECTRA

ABOUT US

SPECTRA Consultancy possesses the capability to deliver engineering and detailing services in full compliance with a wide range of international codes and standards, including ICC, ACI, ASCE, AISC, EN, SP, and others. Our adaptability to various specifications enables us to effectively support projects worldwide across diverse industries.

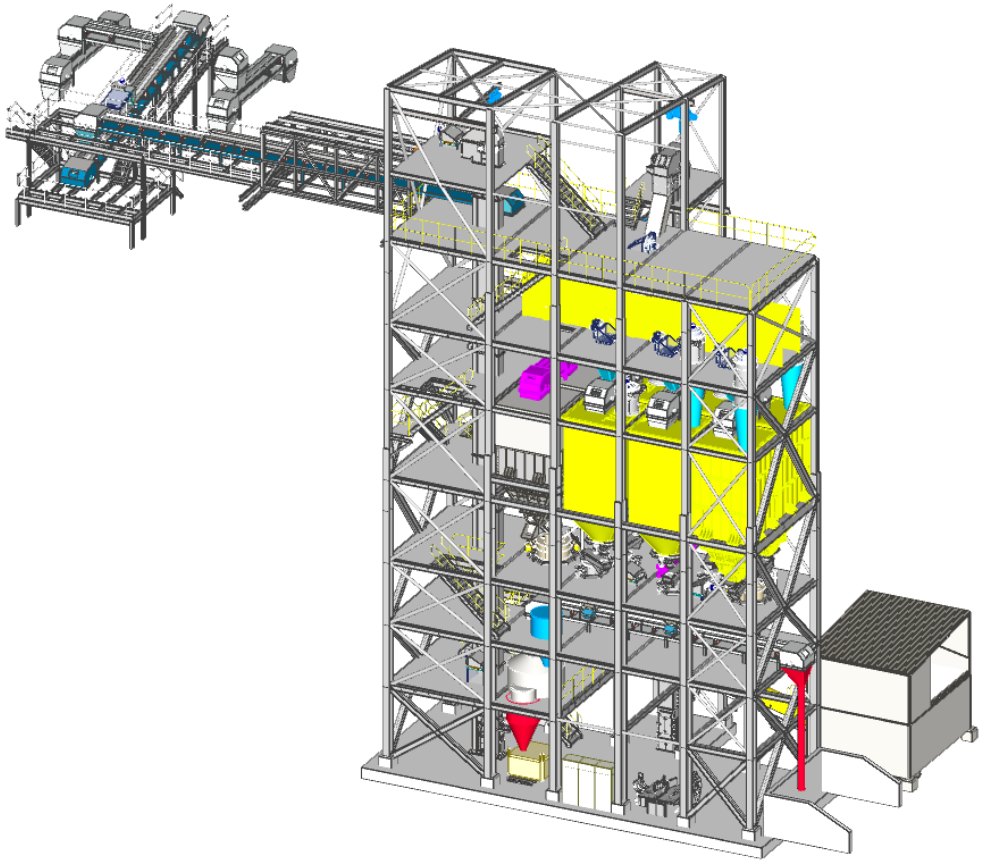
We are also proficient in utilizing leading structural analysis and detailing software to enhance the quality and efficiency of our services. Our software expertise includes:

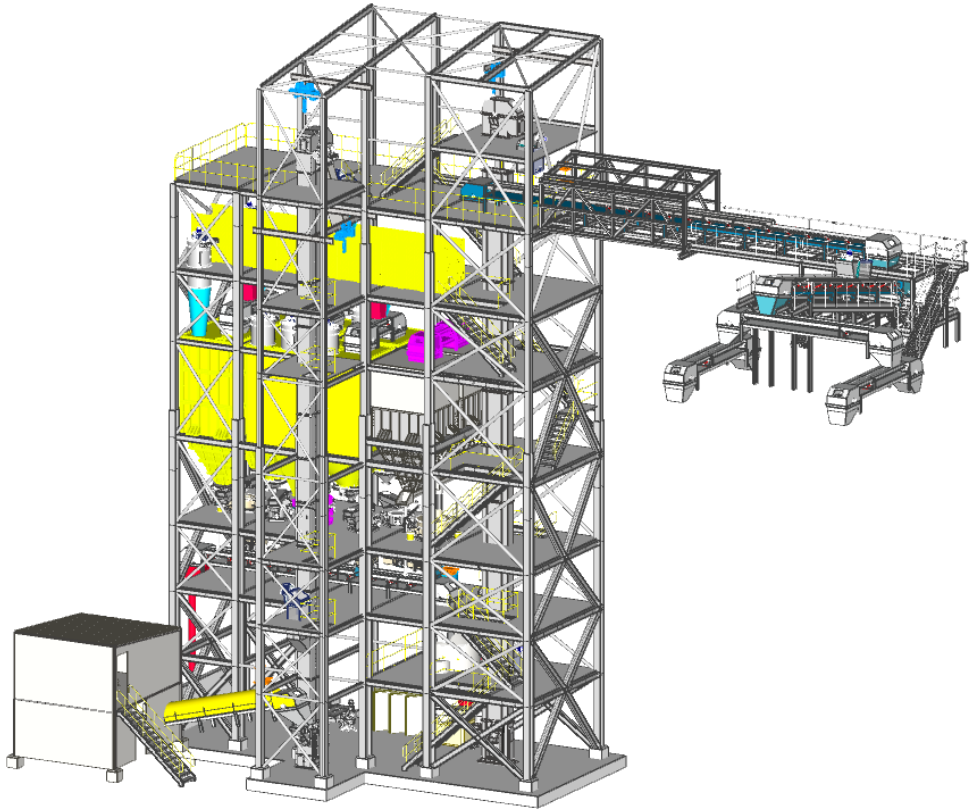
Structural Analysis&Design: CSI SAP2000, ETABS, SAFE, Prota Structures, Lira-SAPR, IDEA StatiCa

Structural Detailing: TEKLA Structures, Allplan, Revit, and other Autodesk Products

By combining deep engineering knowledge with cutting-edge technology, SPECTRA Consultancy consistently delivers solutions that are both practical and forward-thinking.

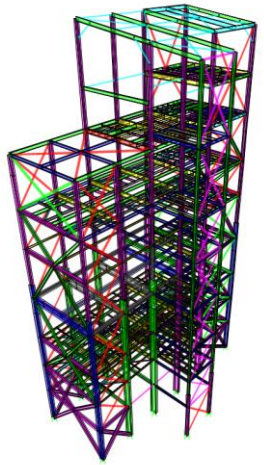
Completed projects, either executed directly by SPECTRA Consultancy or by its founder prior to the establishment of the company, are presented below.





SPECTRA

Stonewool Plant, Spain - Engineering & Steel Detailing, 2025 / ARTCON INDUSTRY



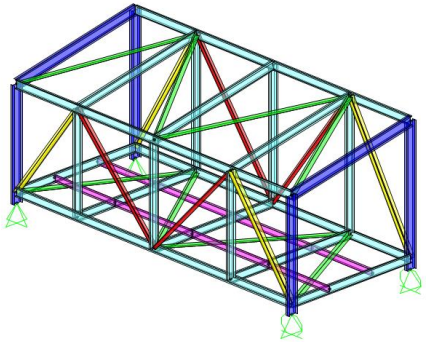


Tabla 3.4. Valores del coeficiente de exposición c_e

	Grado de aspereza del entorno	Altura del punto considerado (m)							
		3	6	9	12	15	18	24	30
I	Borde del mar o de un lago, con una superficie de agua en la dirección del viento de al menos 5 km de longitud	2,4	2,7	3,0	3,1	3,3	3,4	3,5	3,7
II	Terreno rural llano sin obstáculos ni arbolado de importancia	2,1	2,5	2,7	2,9	3,0	3,1	3,3	3,5
III	Zona rural accidentada o llana con algunos obstáculos aislados, como árboles o construcciones pequeñas	1,6	2,0	2,3	2,5	2,6	2,7	2,9	3,1
IV	Zona urbana en general, industrial o forestal	1,3	1,4	1,7	1,9	2,1	2,2	2,4	2,6
V	Centro de negocio de grandes ciudades, con profusión de edificios en altura	1,2	1,2	1,2	1,4	1,5	1,6	1,9	2,0

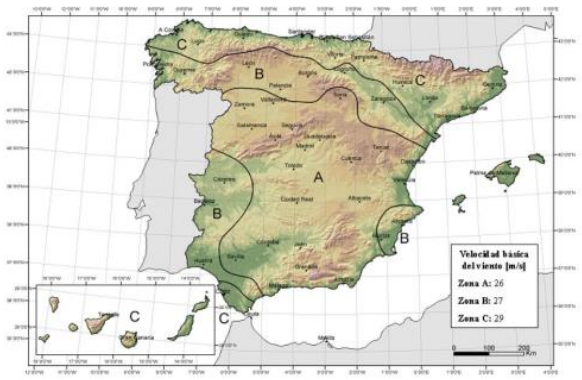


Table 4.1 - Indicative equivalent static design forces due to vehicular impact on members supporting structures over or adjacent to roadways.

Category of traffic	Force F_{dx} [a] [kN]	Force F_{dy} [a] [kN]
Motorways and country national and main roads	1000	500
Country roads in rural area	750	375
Roads in urban area	500	250
Courtyards and parking garages with access to:		
- Cars	50	25
- Lorries [b]	150	75

[a] x = direction of normal travel, y = perpendicular to the direction of normal travel.

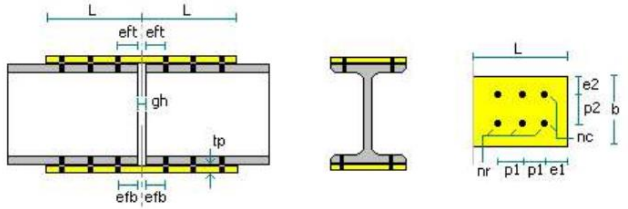
[b] The term "lorry" refers to vehicles with maximum gross weight greater than 3,5 tonnes.

Table 2. 1. Load combination factors, ψ, for buildings

Action	ψ_0	ψ_1	ψ_2
Imposed loads			
Category A: domestic, residential areas	0.7	0.5	0.3
Category B: office areas	0.7	0.5	0.3
Category C: congregation areas	0.7	0.7	0.6
Category D: shopping areas	0.7	0.7	0.6
Category E: parking and traffic areas vehicle weight <30 kN	0.7	0.7	0.6
Category F: roofs accessible with occupancy according to categories A to G	(*)	(*)	(*)
Category G: roofs accessible for maintenance and repair only	0	0	0
Snow			
altitude > 1000 *m*	0.7	0.5	0.2
altitude ≤ 1000 *m*	0.5	0.2	0
Wind	0.6	0.5	0
Temperature	0.6	0.5	0
Soil variable loads	0.7	0.7	0.7

General information

Connector



SPECTRA

EN 1993-1-1:2005
CHECKERED PLATE DESIGN
SPC-ST_EN-MC-016_V01

Checkered Plate Design for Simply Supported on Four Edges

Design of checkered plate is based on info provided in Steel Designers' Manual, 6th Edition by Davison&Owens, 30.1.1. In the 7th edition of the book, below table is given as reference without additional information regarding deflections.

Ultimate load capacity (kN/m²) for floor plates simply supported on two edges stressed to 275 n/mm²

Thickness on plain mm	Span (mm)							
	600	800	1000	1200	1400	1600	1800	2000
4.5	20.48	11.62	7.45	5.17	3.80	2.95	2.28	1.87
6.0	36.77	20.68	13.28	9.20	6.73	5.20	4.07	3.30
8.0	65.40	36.87	23.48	16.38	11.97	9.23	7.23	5.93
10.0	102.03	57.42	36.67	25.55	18.70	14.45	11.30	9.25
12.5	159.70	89.85	57.40	39.98	29.27	22.62	17.68	14.50

Stiffeners should be used for spans in excess of 1100mm to avoid excessive deflections.

$Plate := "6/7"$ $Material := "S235"$ $B := 750\ mm$ $L := 5000\ mm$ Plate short&long dims

$w_i := 6\ \frac{kN}{m^2}$ Assumed distr. load $\gamma_f := 1.6$ Load factor

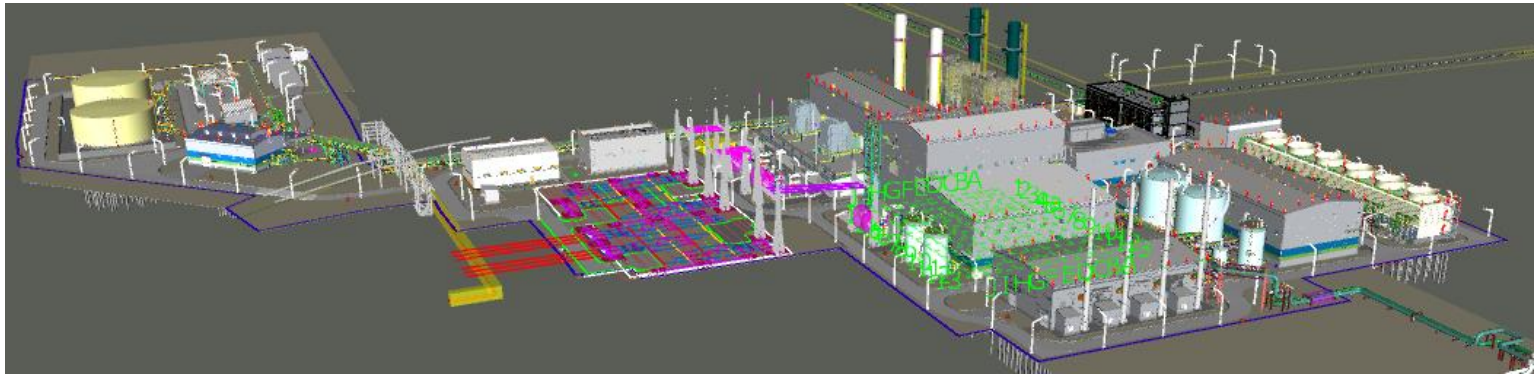
$Wi := 2\ kN$ Assumed point load $Def\_l := 100$ Deflection Limit, L/...

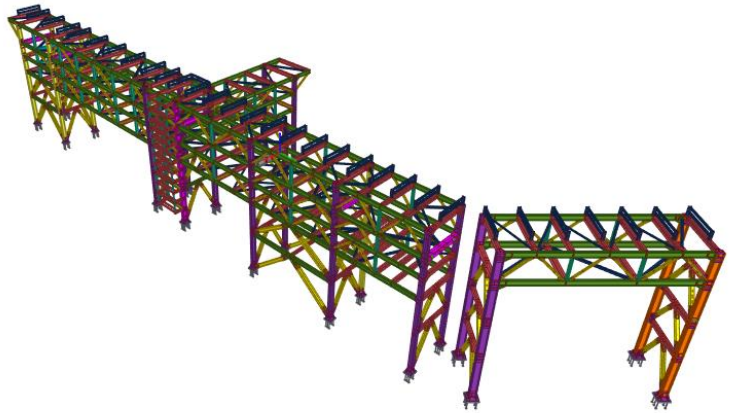
$\delta all := \frac{B}{Def\_l} = 7.5\ mm$ $r := 50\ mm$ Concentrated load contact area radius

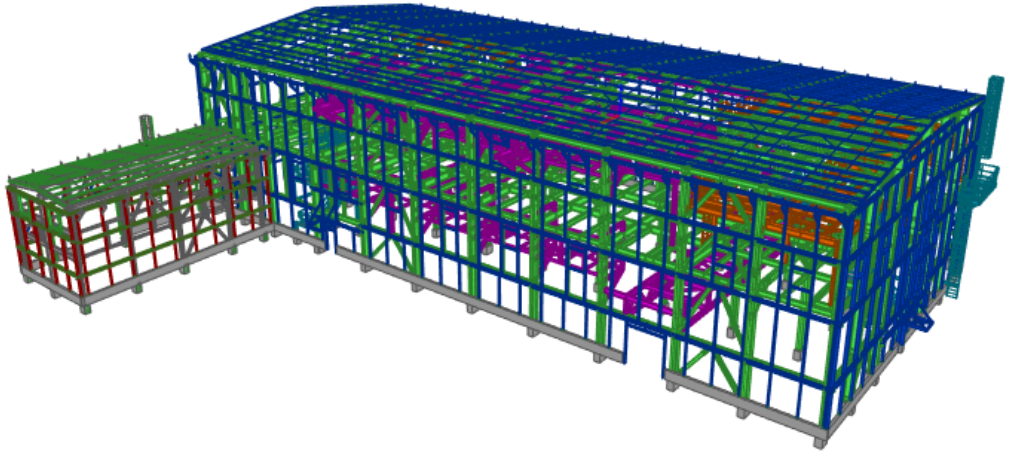
$f_y = 235\ MPa$ $E := 200000\ MPa$ $t = 6\ mm$ $DL\_plate = 0.51\ kPa$

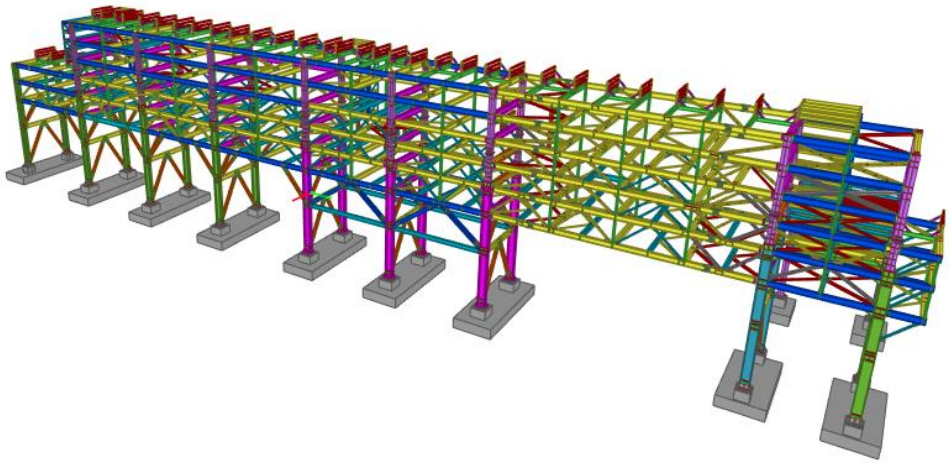
SPECTRA

Stonewool Plant, Spain - Engineering & Steel Detailing, 2025 / ARTCON INDUSTRY

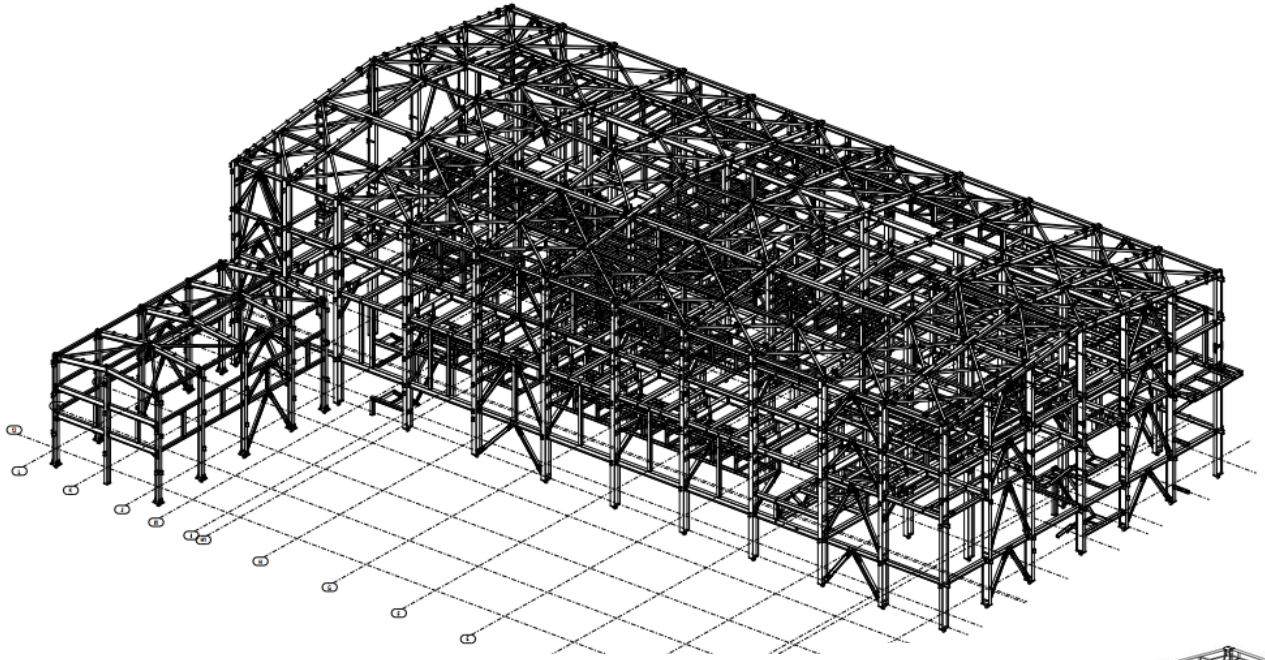


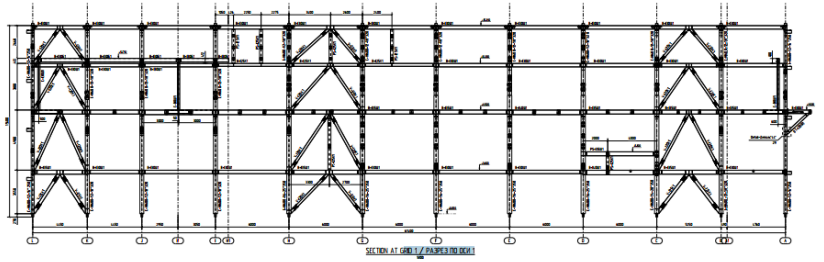


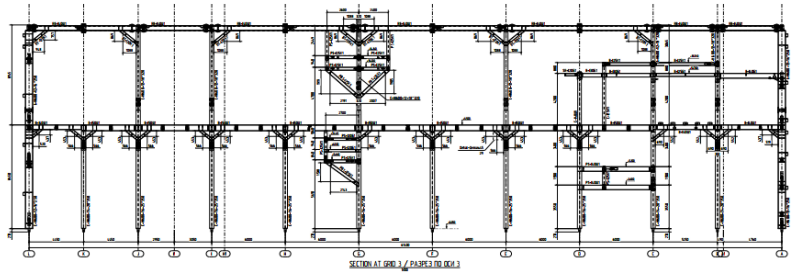


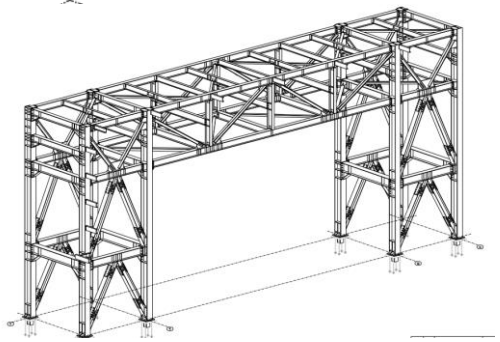


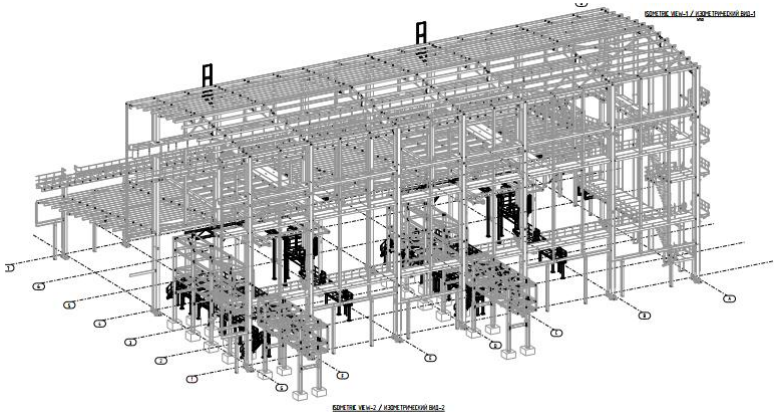
Cogeneration Plant, Kazakhistan - Engineering & Steel Detailing of WTP/FWP/Piperacks/Secondary Structures, 2024-2025 / AKSA ENERJİ



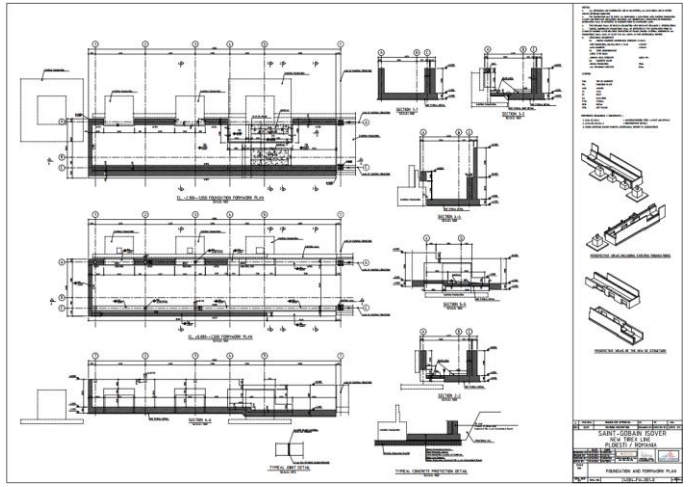


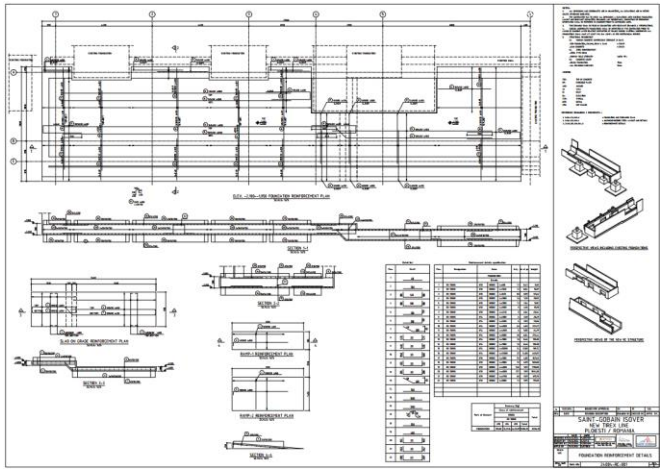


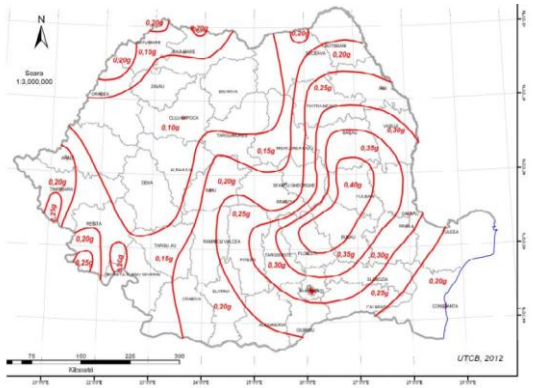




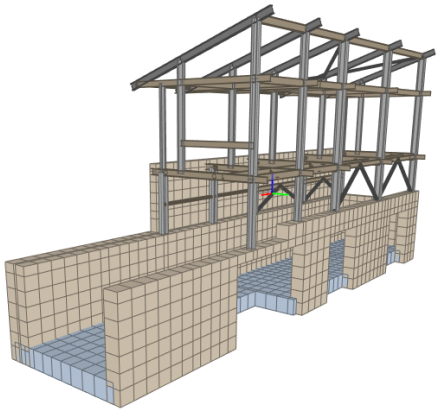
Co-generation Plant, Kazakhistan - Engineering & Steel Detailing of WTP/FWP/Piperacks/Secondary Structures, 2024-2025 / AKSA ENERJİ

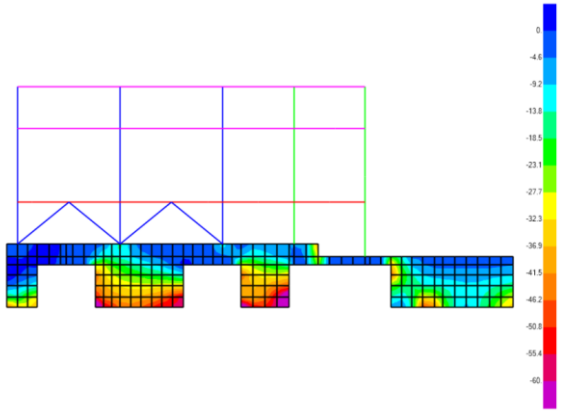


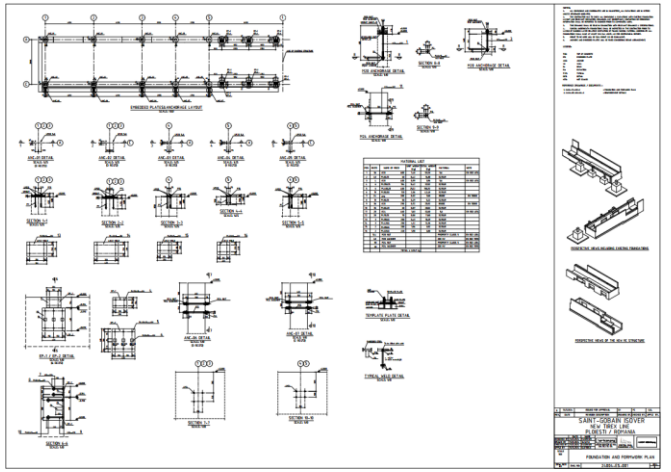




Zonarea valorilor de vârf ale accelerației terenului pentru proiectare a_g cu IMR = 225 ani și 20% probabilitate de depășire în 50 de ani







6.3.2.3 *Actions induced by forklifts*

(1) Forklifts should be classified in 6 classes FL 1 to FL 6 depending on net weight, dimensions and hoisting loads, see Table 6.5.

Table 6.5 - Dimensions of forklift according to classes FL

Class of Forklift	Net weight [kN]	Hoisting load [kN]	Width of axle a [m]	Overall width b [m]	Overall length l [m]
FL 1	21	10	0,85	1,00	2,60
FL 2	31	15	0,95	1,10	3,00
FL 3	44	25	1,00	1,20	3,30
FL 4	60	40	1,20	1,40	4,00
FL 5	90	60	1,50	1,90	4,60
FL 6	110	80	1,80	2,30	5,10

Table 6.6 - Axle loads of forklifts

Class of forklifts	Axle load Q_i [kN]
FL 1	26
FL 2	40
FL 3	63
FL 4	90
FL 5	140
FL 6	170

(4) The dynamic factor φ for forklifts takes into account the inertial effects caused by acceleration and deceleration of the hoisting load and should be taken as:

$\varphi = 1{,}40$ for pneumatic tyres,

$\varphi = 2{,}00$ for solid tyres.

(5) For forklifts having a net weight greater than 110 kN the loads should be defined by a more accurate analysis.

(6) The vertical axle load Q_k and $Q_{k,dyn}$ of a forklift should be arranged according to Figure 6.1.

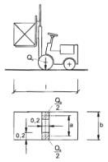
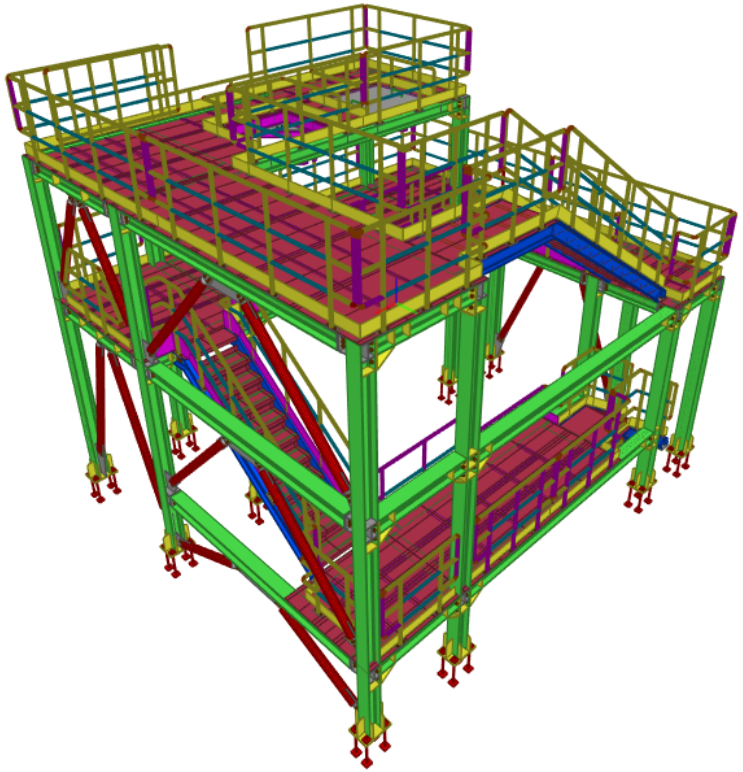
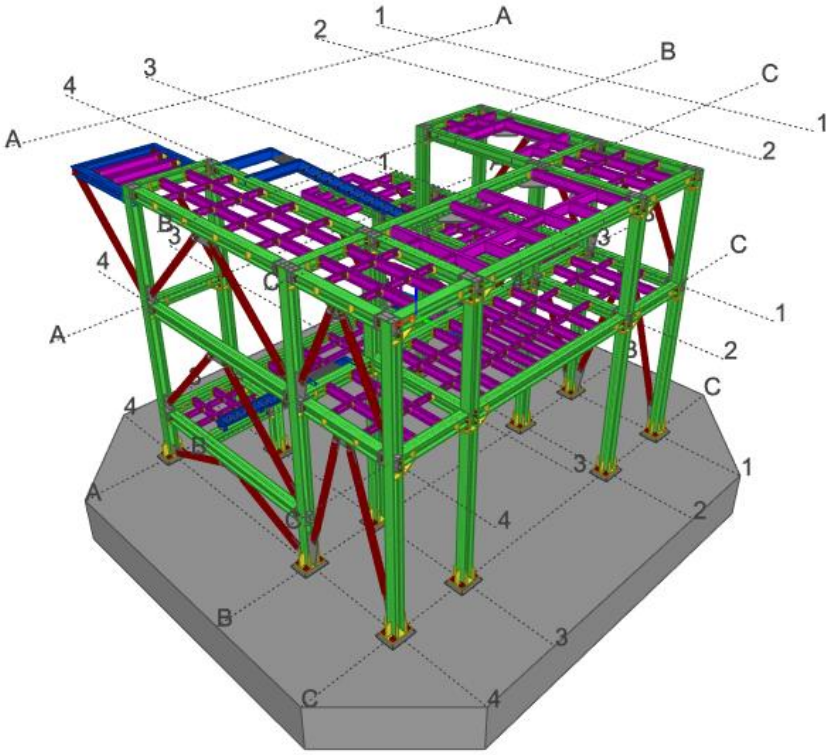


Figure 6.1 - Dimensions of forklifts

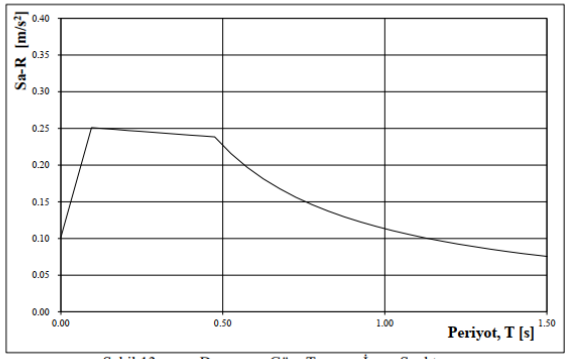
SPECTRA

St Gobain Isover Project, Romania - Engineering & Steel/RC Detailing, 2024 – ARTCON INDUSTRY

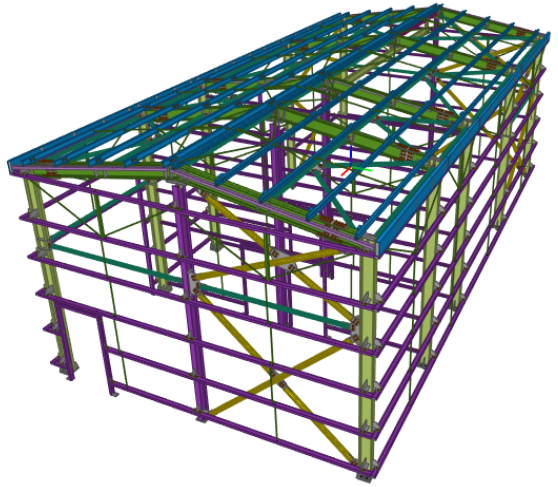


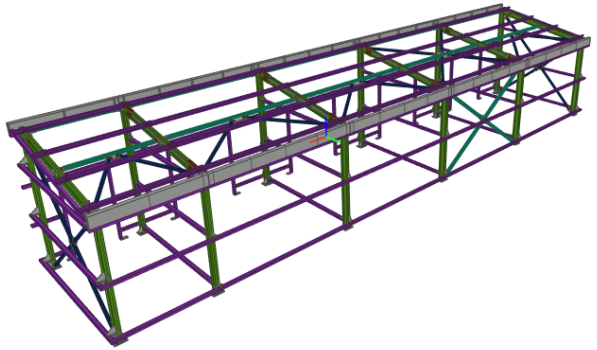


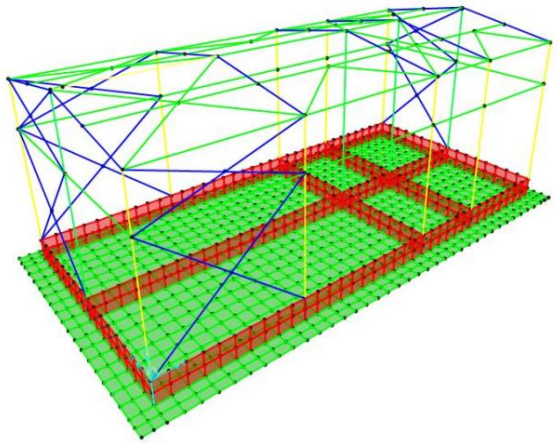
Site Class :	**D**	T	Sae	Sa-R
S_1 :	0.129	0	0.25	0.102
S_s :	0.439	0.095	0.64	0.251
F_1 :	**2.34**	0.133	0.64	0.250
F_S :	**1.45**	0.171	0.64	0.248
S_{D1} :	**0.302**	0.209	0.64	0.247
S_{DS} :	**0.636**	0.247	0.64	0.246
T_B :	**0.475**	**0.285**	**0.64**	**0.245**
T_A :	**0.095**	**0.323**	**0.64**	**0.243**
T_L :	**6.000**	0.361	0.64	0.242
R :	**4.0**	0.399	0.64	0.241
D :	**2.5**	0.437	0.64	0.240
I :	**1.5**	0.475	0.64	0.239
		0.525	0.58	0.216



Şekil 13. Dayanıma Göre Tasarım İvme Spektrumu







SPECTRA

Proje Adı:
Rüzgar Basınç Kuvveti Etkisi ile Değerlendirme

Rev No:01

AŞIK TASARIMI ÇYTHYE-2016

Açıklık: 5.2 m
Gergi s.: 1
Aşık: UPN 120
Malzeme: S235

Kesit Karakteristikleri

G:	0.134	kN/m
I_{1-1}:	3640000	mm^4
$W_{pl,1-1}$:	72600	mm^3
I_{2-2}:	432000	mm^4
$W_{pl,2-2}$:	21200	mm^3
f_y:	235	N/mm^2

Yük Analizi

P_{KAR}:	0.6	kN/m^2
Aşık ar.:	1	m
Çatı Açısı:	9.65	Derece 0.17 rad
Kaplama:	0.2	kN/m^2
Rüzgar:	0.416	kN/m^2 (basınç + olarak girilmelidir)
δ_{max}: (L/)	200	Deplasman limiti

	kN/m		
	G	S	W
g_{1-1}:	0.33	0.59	0.42
g_{2-2}:	0.06	0.10	0.00

	1.2G+1.6S	1.2G+1.6S+0.8W	1.2G+0.5S+1.6W	0.9G+1.6W
g_{1-1}:	1.342	1.674	1.356	0.962
g_{2-2}:	0.228	0.228	0.117	0.050

(Dayanım Kombinasyonları)

	G+S	G+0.5S+0.5W	G+W	G+0.5S+W
g_{1-1}:	0.921	0.833	0.745	1.041
g_{2-2}:	0.157	0.106	0.056	0.106

(Deplasman Kombinasyonları)

SPECTRA
ÇYTHYE-2018
ROLLED I SECTION MONORAIL BEAM DESIGN
SPC-ST_EN-MC-003_V01

1. GEOMETRY / INPUT

$Profile$ = "IPE240" $Material$ = "S275"

$L_b = 5200\ mm$ (L for LTB)

X-X = major axis
Y-Y = minor axis

LTB length is assumed to be the maximum distance between supports where top flange is under compression. Where bottom flange is under compression,max of below cases are considered to be on safe side:

a) Length between supports
b) In case of cantilever part, 3 times the cantilever length
c) Distance between inflection points

For all cases Cb factor will be taken as 1.4 since the loading is at bottom flange and main calculations as per moment diagrams are ignored conservatively.

$E = 210000\ MPa$ $\nu = 0.3$ $G = \frac{E}{2 \cdot (1+\nu)} = 80769.231\ MPa$

$\phi_b = 0.9$ $C_b = 1.4$

$f_y = 275\ MPa$ $f_u = 430\ MPa$

Loads:

$P_V = 18\ kN$ $P_H = 1.8\ kN$ Nominal Loads applied to monorail

$Mz = 30.65\ kN \cdot m$ $My1 = 2.99\ kN \cdot m$ From analysis model

$Mz = 1.6 \cdot P_H \cdot \left(\frac{h}{2} - tf\right) = 0.317\ kN \cdot m$

$P_{HZ} = \frac{Mz}{ho} = 1.379\ kN$

$My2 = \frac{P_{HZ}}{P_V} My1 \cdot 2 = 4.58\ kN \cdot m$

Only bottom flange will be used for this moment. For simplicity this moment value multiplied by 2 and will be added to My1.

$My = My1 + My2 = 7.57\ kN \cdot m$

7. LOCAL FLANGE BENDING CHECK

$k1 = \frac{tw}{2} + r = 18.1\ mm$

$f_b = \frac{0.75 \cdot P_V}{tf^2} = 140.566\ MPa$

$F_b = 0.9 \cdot f_y = 247.5\ MPa$

$f_b = \frac{M}{S} = \frac{3eP_{END}}{4et_f^2} = \frac{0.75P_{END}}{t_f^2}$

8. DESIGN SUMMARY

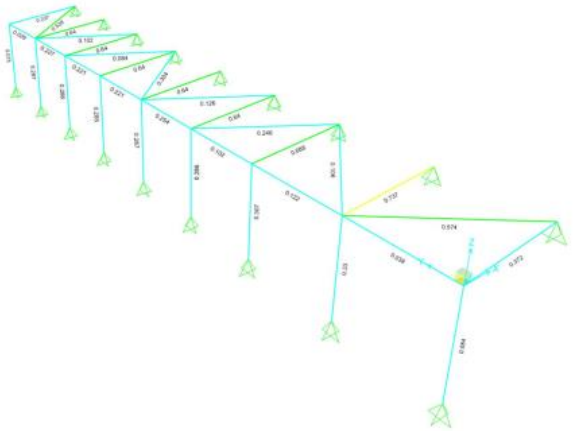
$Class = 1$

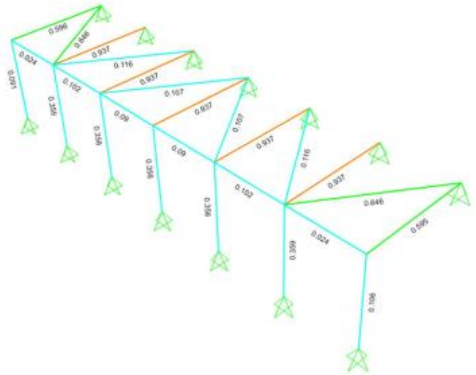
$CapacityRatio = 0.865$

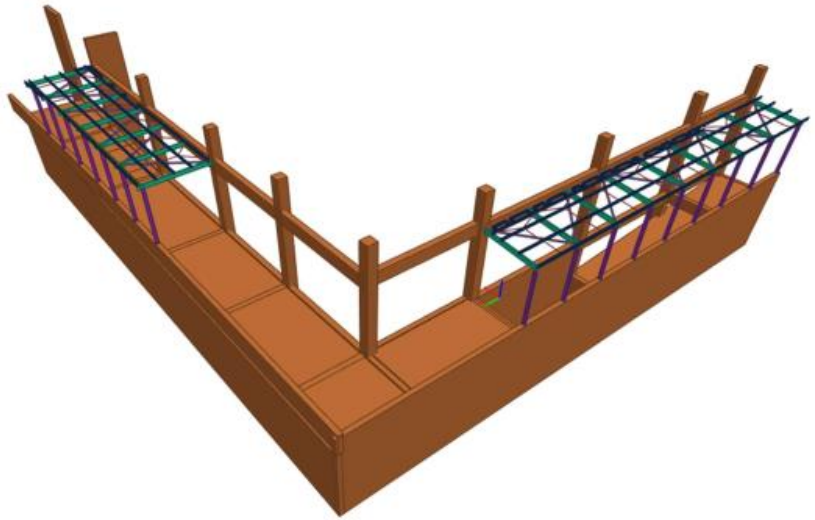
$FlangeBending = \frac{f_b}{F_b} = 0.568$

SPECTRA

WRH&WWH Warehouses– Türkiye, 2024 - ENERJİSA







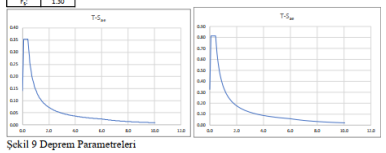
ıfı kabulü ile aşağıdaki

Spektral İvme (DD-2* Tasarım Depremi)

Deprem	Sa	S1
DD-1	1.299	0.310
DD-2*	0.627	0.154
DD-3	0.221	0.060
DD-4	0.154	0.044

Z Sınıfı:	ZD
Ss:	0.627
S1:	0.154
Fs:	2.29
F1:	1.50

SDs:	0.81
SD1:	0.35
TA:	0.087
TB:	0.434



Şekil 9 Deprem Parametreleri

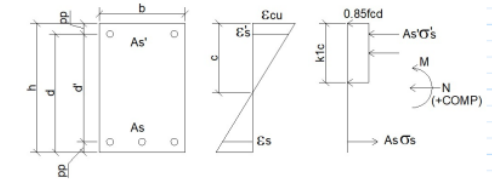
Batı tarafında bulunan sundurma deprem yüklerinin tamamının mevcut binaya transfer edilmesi nedeniyle, eleman tasarım ve bağlantı detaylarında sadelik ve güvenli tarafta kalmak için R=1 D=1 kullanılmasının uygun olduğu düşünülmüştür. Bu duruma karşılık olarak Sa değeri 0.814 hesaplanmıştır.

DD-3 deprem düzeyi için deplasman kontrolleri, sistemin doğrudan mevcut bina ile entegrasyonu nedeniyle batı tarafı için gerekli değildir. Kuzey tarafı için ilgili bölümde gösterilecektir. DD-3 deprem düzeiy için Sa değeri 0.354 olarak hesaplanmıştır.

SPECTRA

TS500-2000
EĞİLME ELEMANLARININ TASARIMI
SPC-RC-MC-001_V01

TS500 EĞİLME ve KESME KUVVETİ ALTINDA TASARIM-K201



$b := 300\ mm$ Kesit genişliği $pp := 100\ mm$ Çekme Donatısı ağırlık merkezine olan mesafe, paspayı

$h := 600\ mm$ Kesit yüksekliği

$N_d := 00\ kN$ Tasarım eksenel kuvveti (+Basınç)

$M_d := 84.3\ kN \cdot m$ Tasarım eğilme momenti

$V_d := 84.33\ kN$ Tasarım kesme kuvveti

$f_{ck} := 16\ MPa$ Beton karakteristik basınç dayanımı $f_{yk} := 420\ MPa$ Donatı karakteristik akma dayanımı

$\gamma_{mc} := 1.5$ Beton için malzeme katsayısı $\gamma_{ms} := 1.15$ Donatı için malzeme katsayısı

$\varepsilon_{cu} := 0.003$ Beton ezilme birim kısalması $d := h - pp = 500\ mm$ $d' := h - 2 \cdot pp = 400\ mm$

$E_c := 3250 \cdot MPa \cdot \sqrt{\frac{f_{ck}}{MPa}} + 14000\ MPa = (2.7 \cdot 10^4)\ MPa$ Beton elastisite modülü

$E_s := 200000\ MPa$ Donatı elastisite modülü

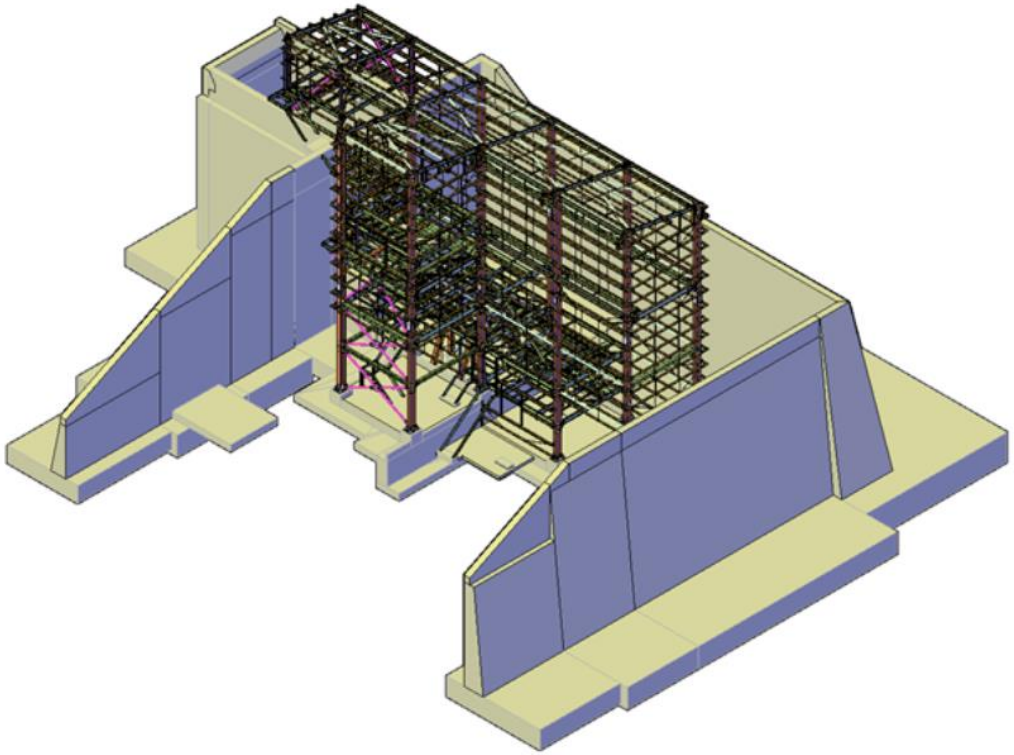
$f_{ctk} := 0.35 \cdot MPa \cdot \sqrt{\frac{f_{ck}}{MPa}} = 1.4\ MPa$ $f_{ctd} := \frac{f_{ctk}}{\gamma_{mc}} = 0.933\ MPa$ Beton karakteristik/tasarım çekme dayanımı

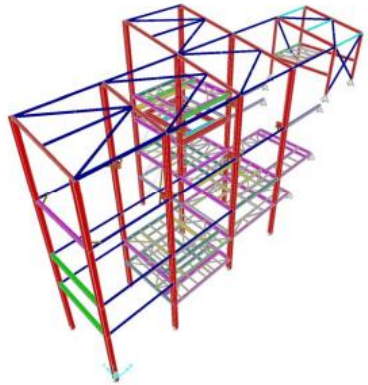
$f_{cd} := \frac{f_{ck}}{\gamma_{mc}} = 10.667\ MPa$ Beton tasarım basınç dayanımı

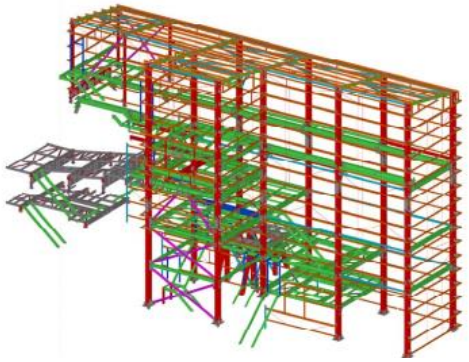
$f_{yd} := \frac{f_{yk}}{\gamma_{ms}} = 365.217\ MPa$ Donatı tasarım akma dayanımı

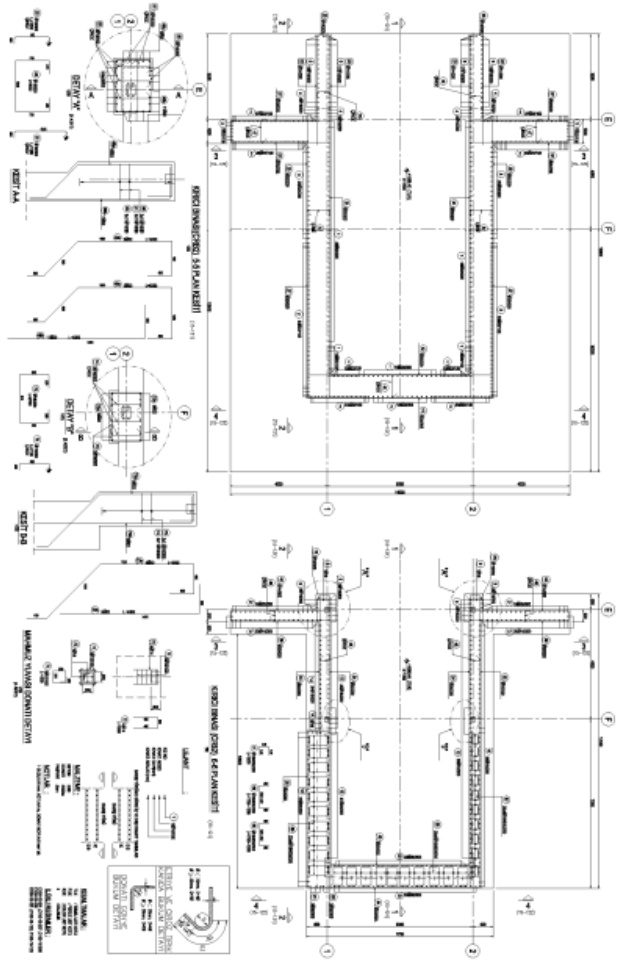
SPECTRA

PTT Ardahan Facilities Sheds– Türkiye, 2024

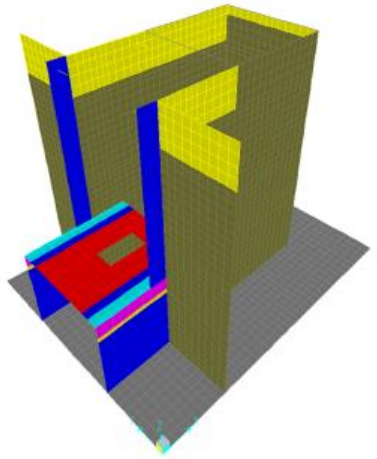


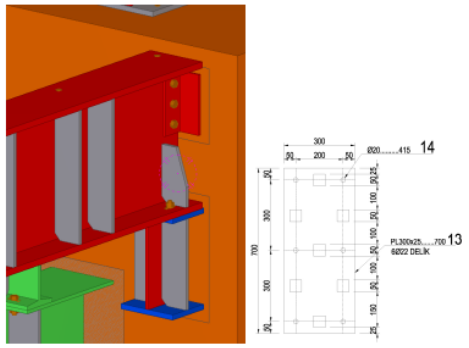


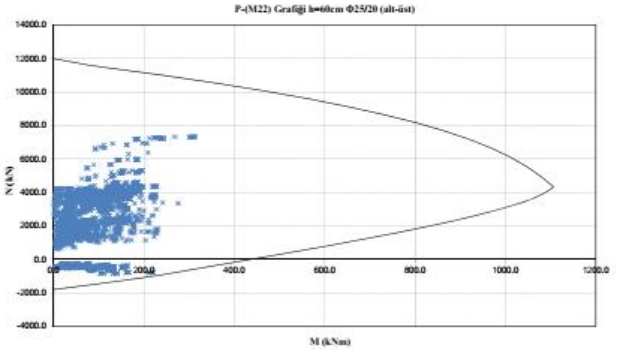


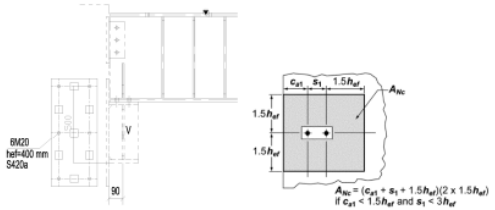


Ovacık Gold Mine Crushing Plant, Türkiye - Engineering & RC&Steel Detailing – KOZA GOLD CORP.





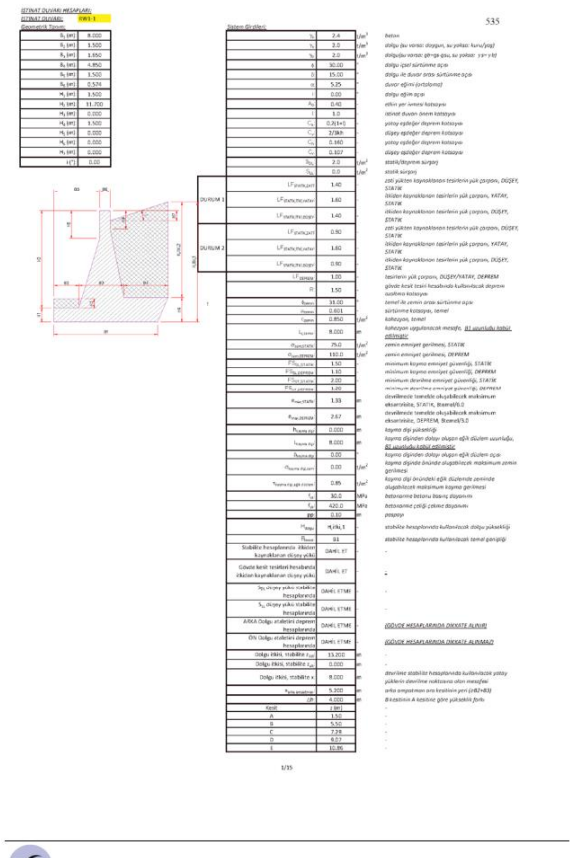


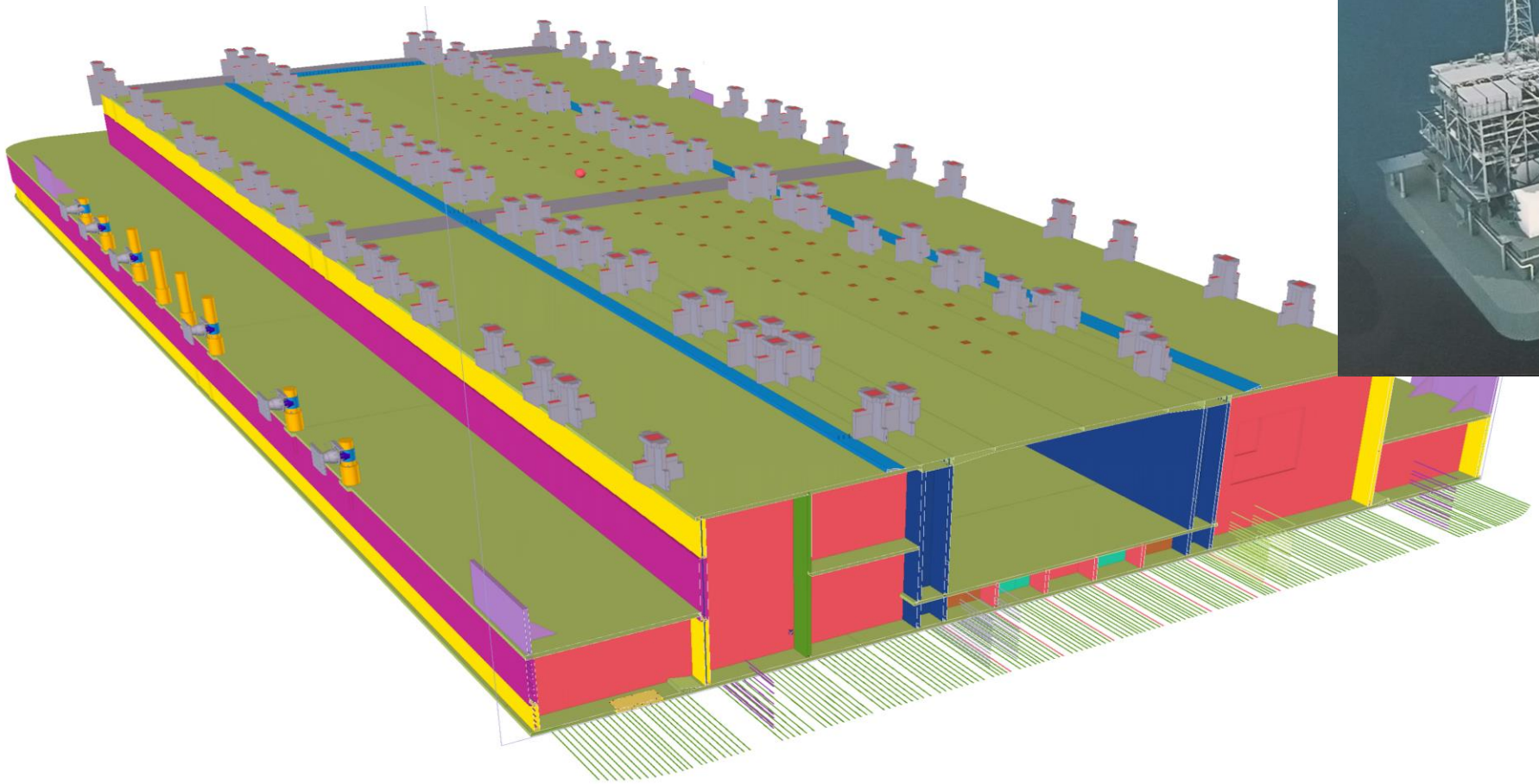


$A_{ncc}=9*400^2=1440000$ mm²
$A_{nc}=3*400*(3*400+200)=1680000$ mm²
$N_b=k_c*\lambda_a*\sqrt{f_c}*h_{ef}^{1.5}=10*1.0*\sqrt{30}*400^{1.5}/1000=438$ kN (1 adet ankraj için)

$0.75\phi N_{cbg}=0.75*0.7*A_{nc}/A_{ncc}*1.0*1.25*1.0*N_b=335$ kN > 75.6 kN

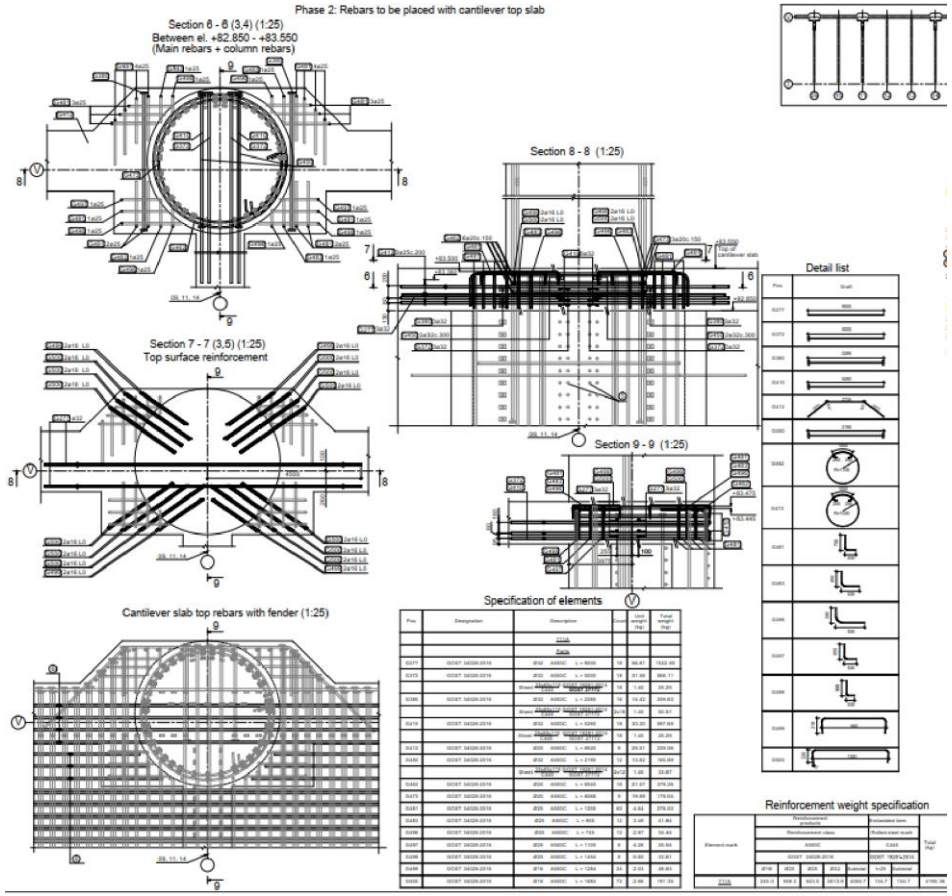
Ankraj çekme kuvvetlerinden dolayı mesnet kirişi üst flanşı hizasında oluşacak olan moment,
e:100 mm M=75.6*0.1=7.56 kNm $W_{pl}=300*25^2/4=46875$ mm³
$0.9*f_y*W_{pl}=0.9*235*46875/10^6=9.9$ kNm > 7.56 kNm

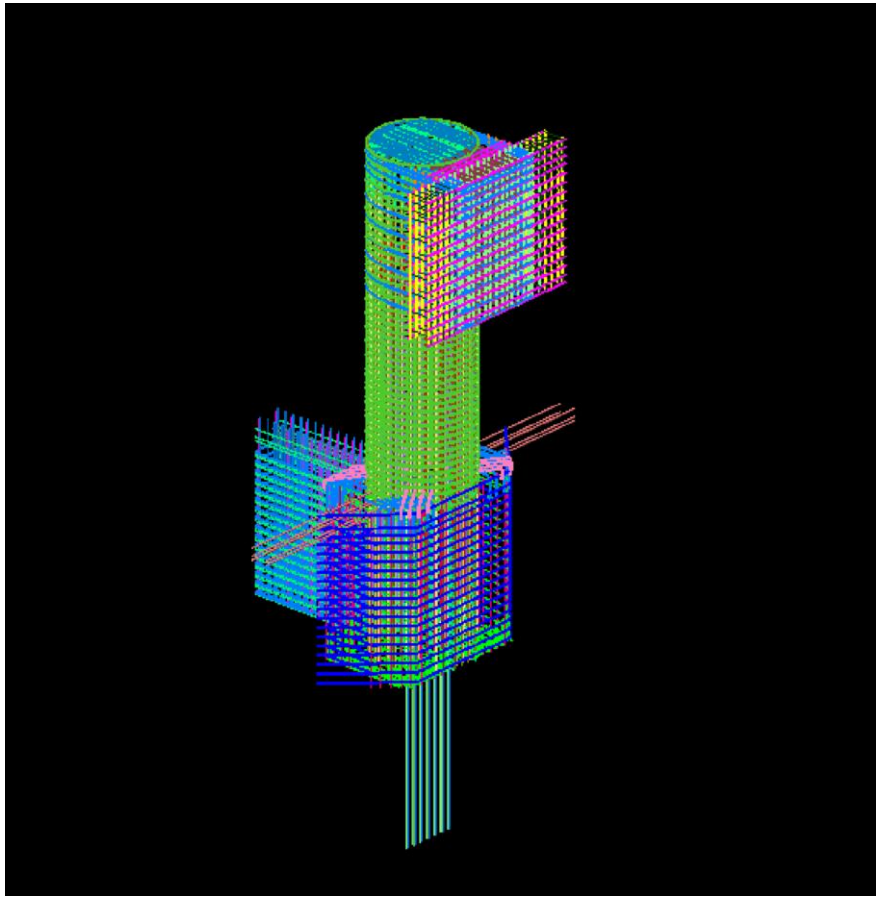




SPECTRA

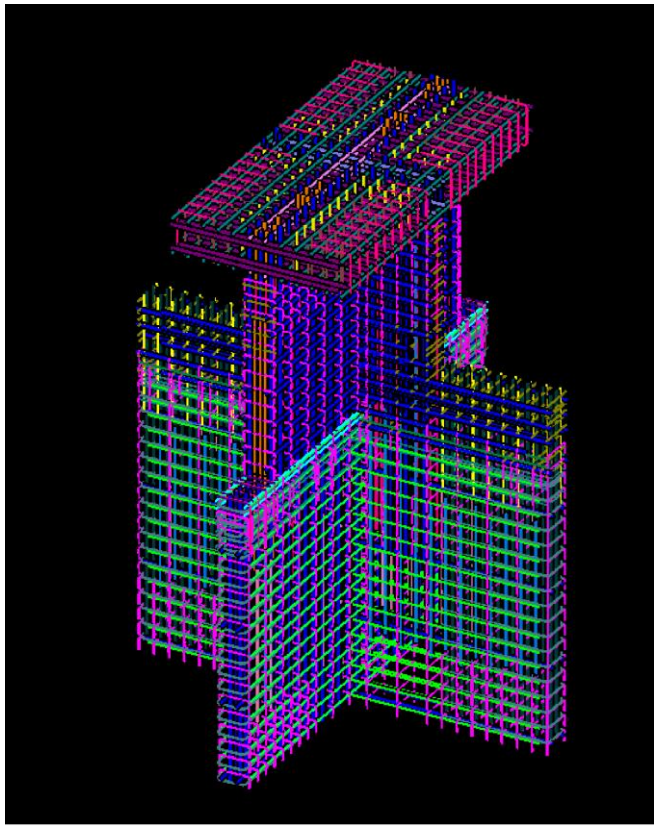
Arctic LNG2 Project, Russia GBS 1/2/3 - 3D RC
Detailing of All Components - RONESANS

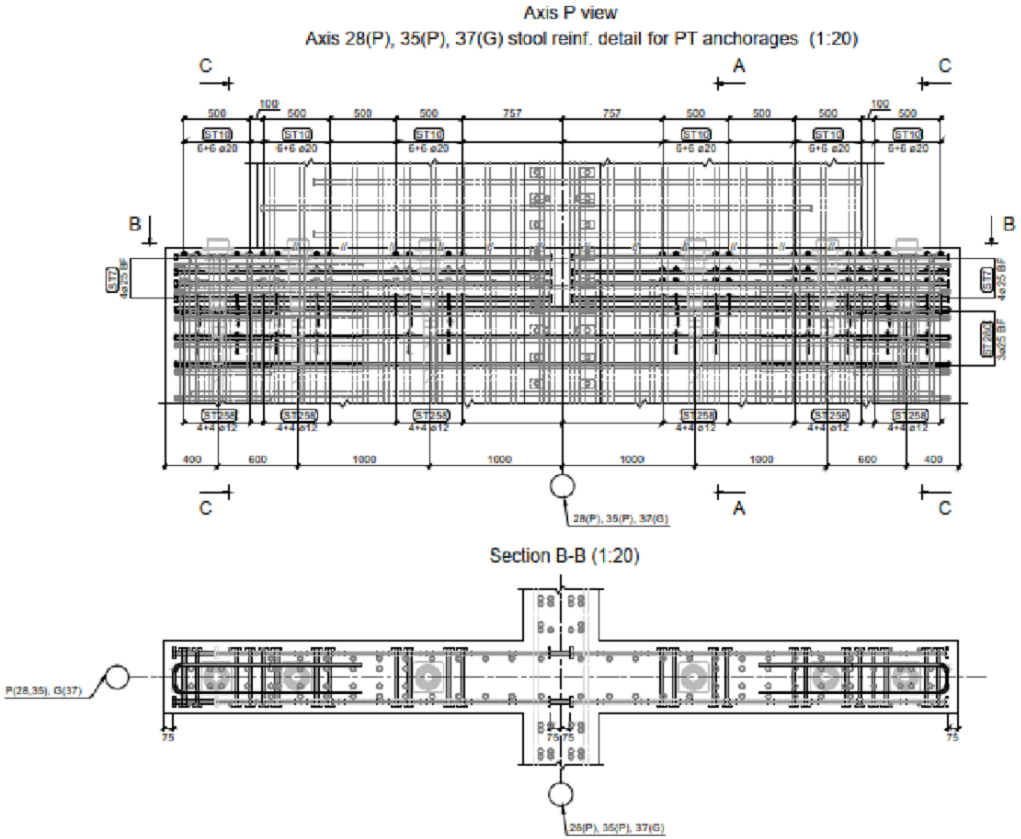


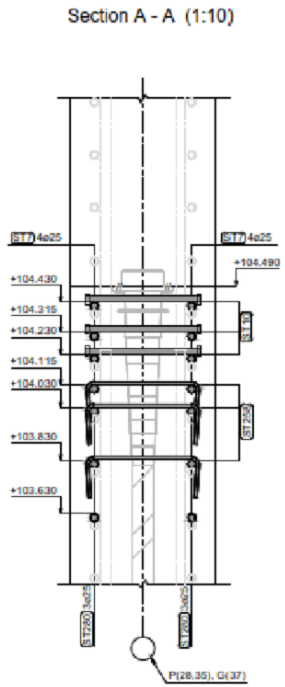


SPECTRA

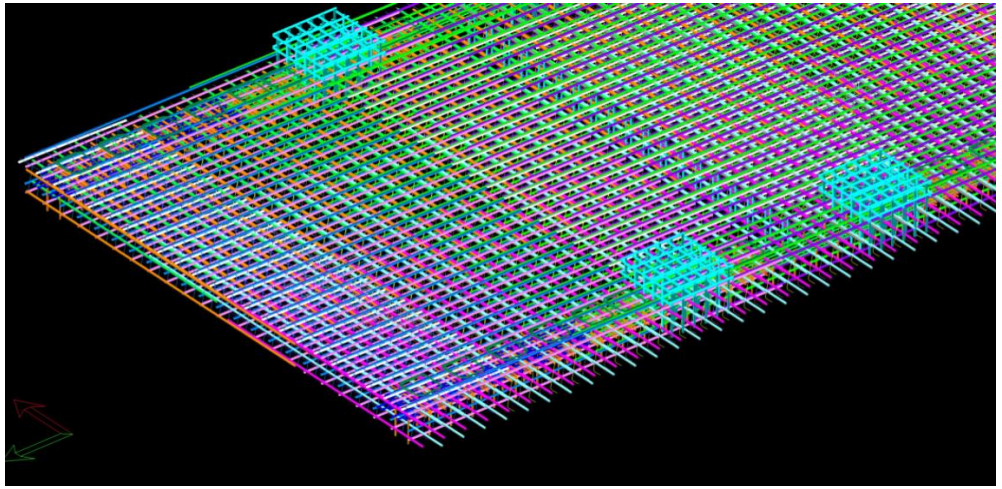
Arctic LNG2 Project, Russia GBS 1/2/3 - 3D RC Detailing of All Components - RONESANS

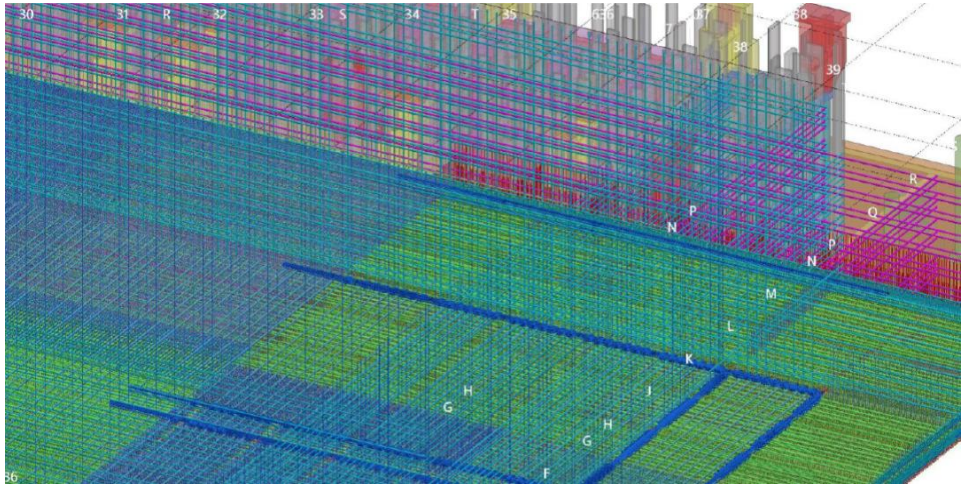


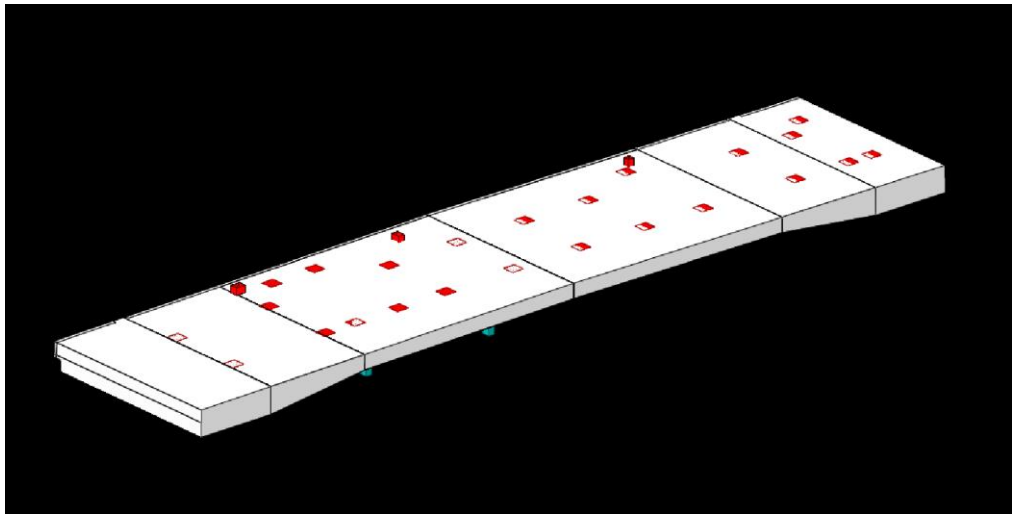


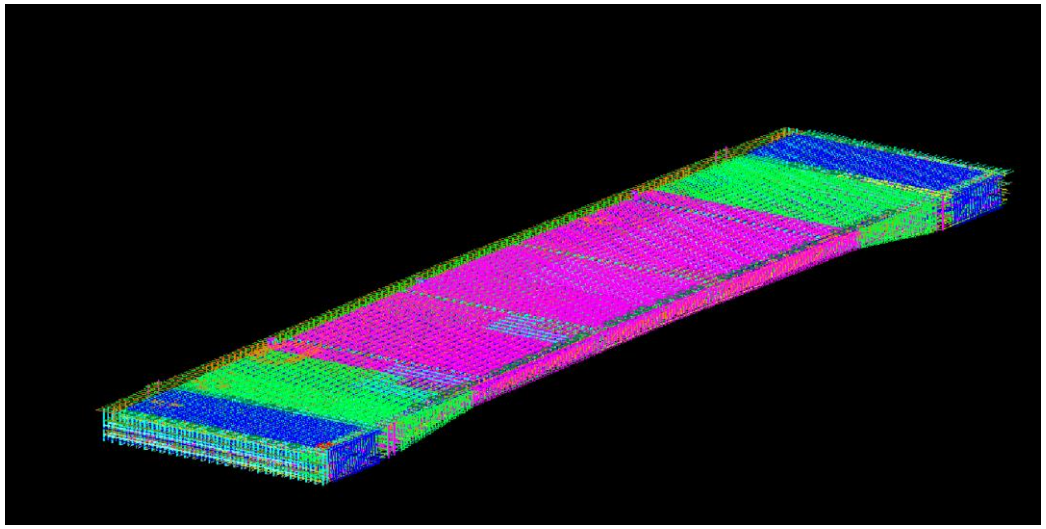


Arctic LNG2 Project, Russia GBS 1/2/3 - 3D RC Detailing of All Components - RONESANS



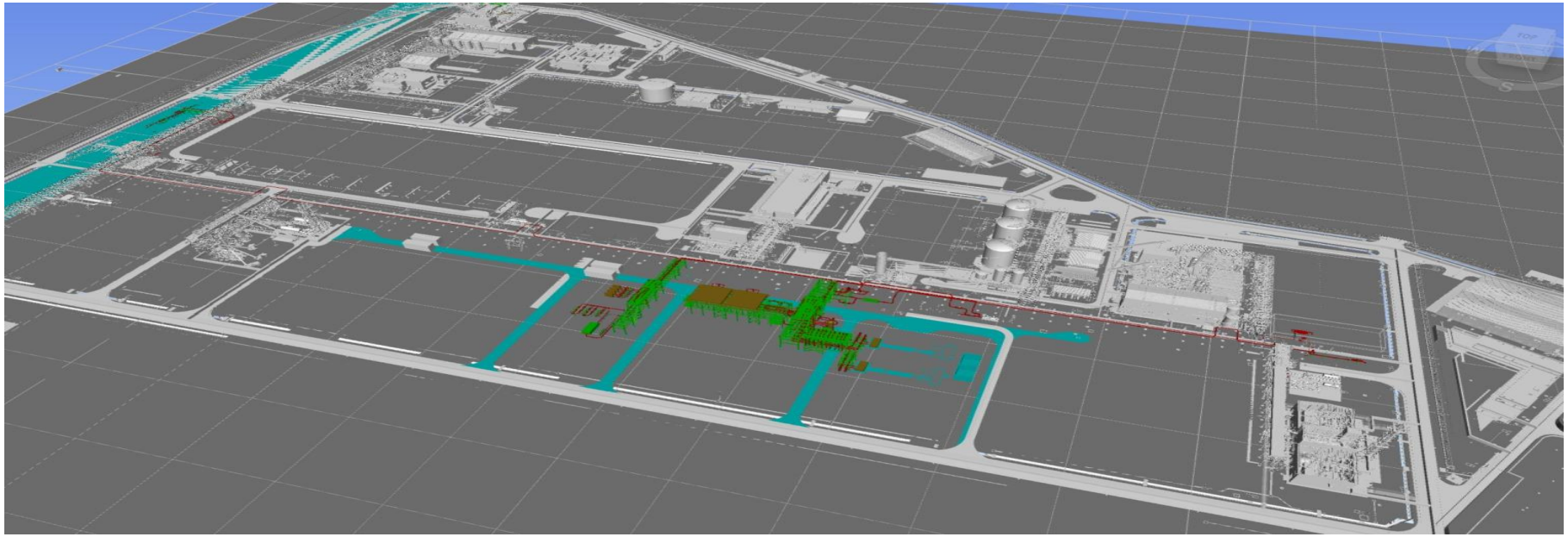


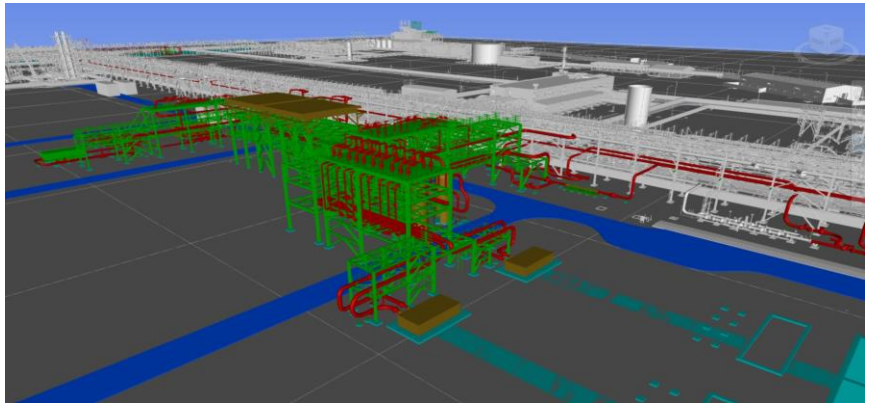


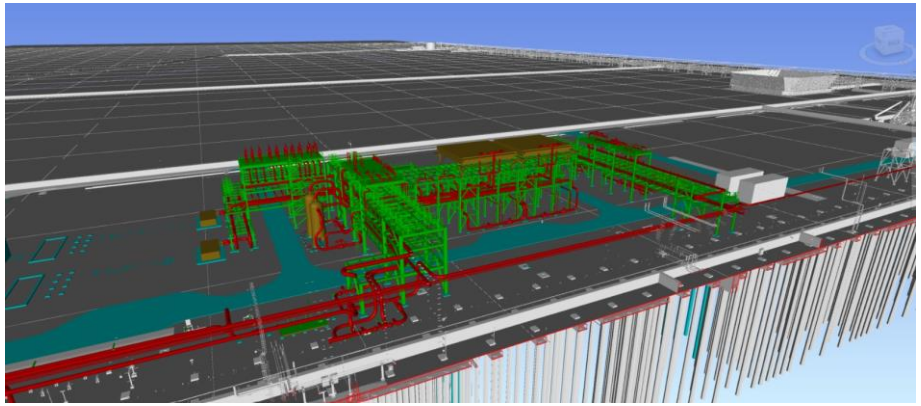


SPECTRA

Arctic LNG2 Project, Russia GBS 1/2/3 - 3D RC
Detailing of All Components - RONESANS

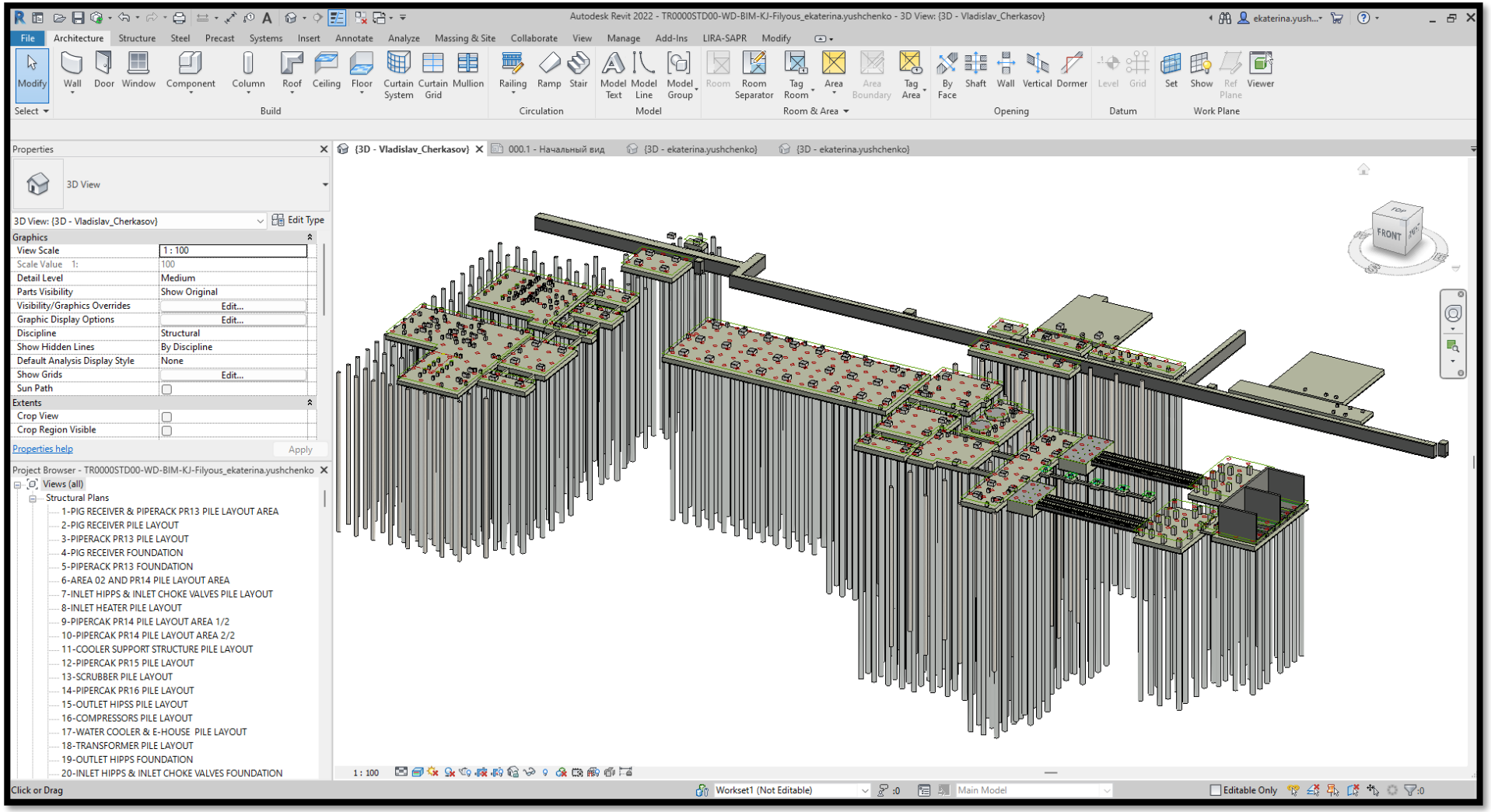






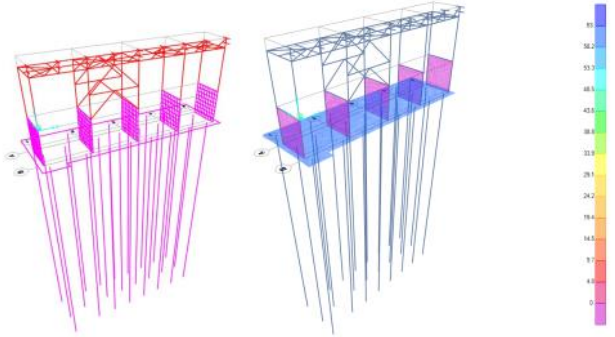
SPECTRA

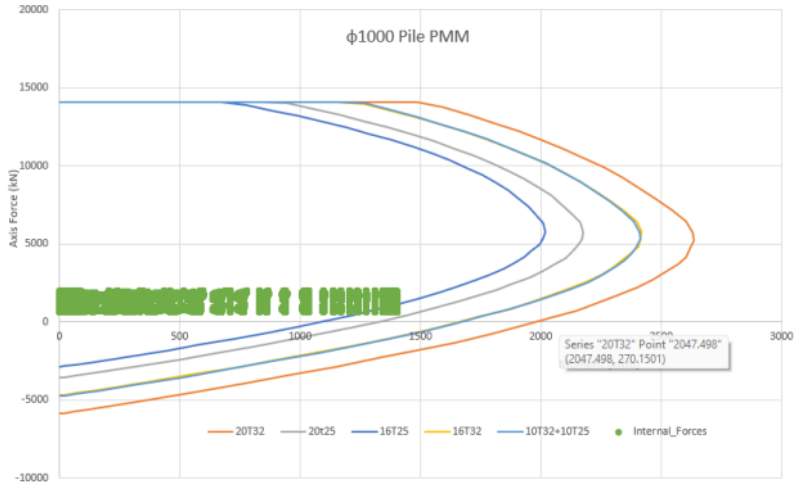
Sakarya Gas Field Development -
PHASE 1&2A, Türkiye – Engineering & RC&Steel Detailing
(Phase 1 is grey colour) – TPAO

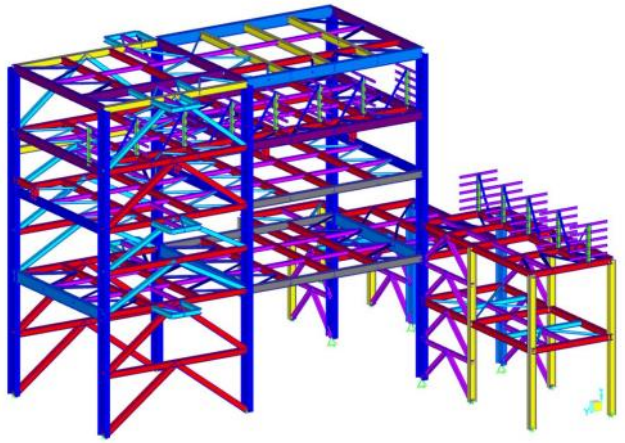


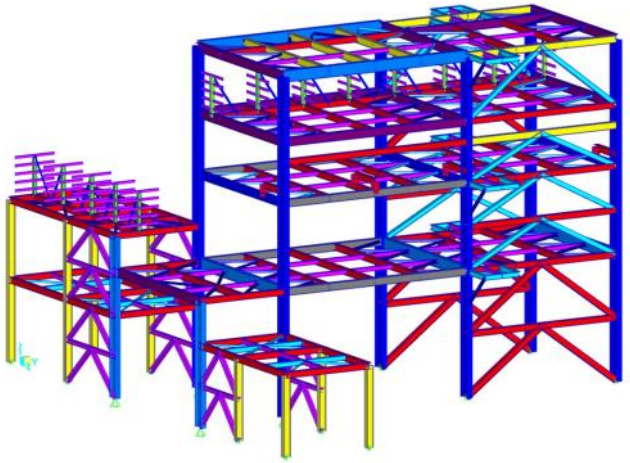
SPECTRA

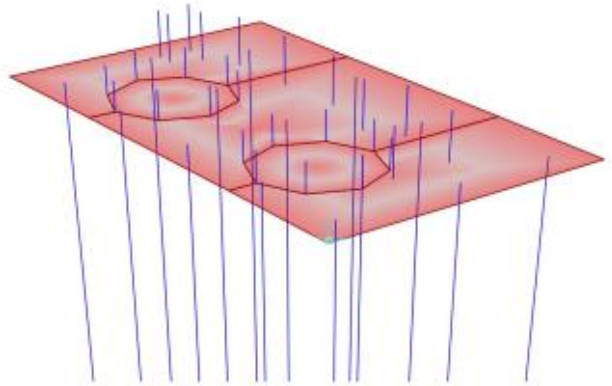
Sakarya Gas Field Development - PHASE 1&2A, Türkiye – Engineering & RC&Steel Detailing (Phase 1 is grey colour) – TPAO

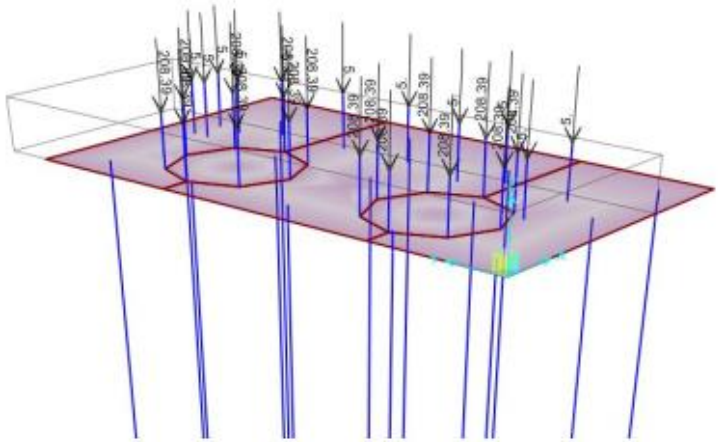




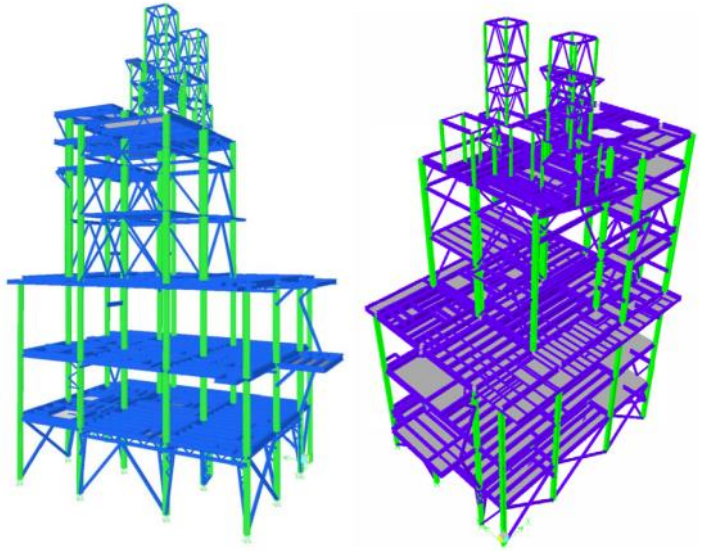


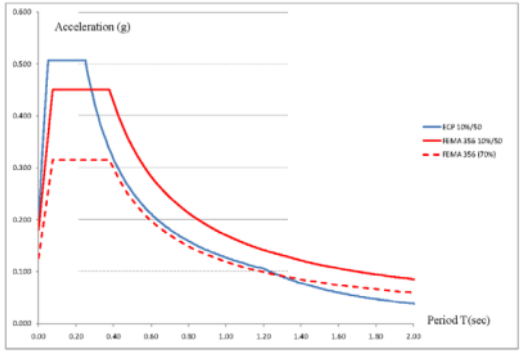






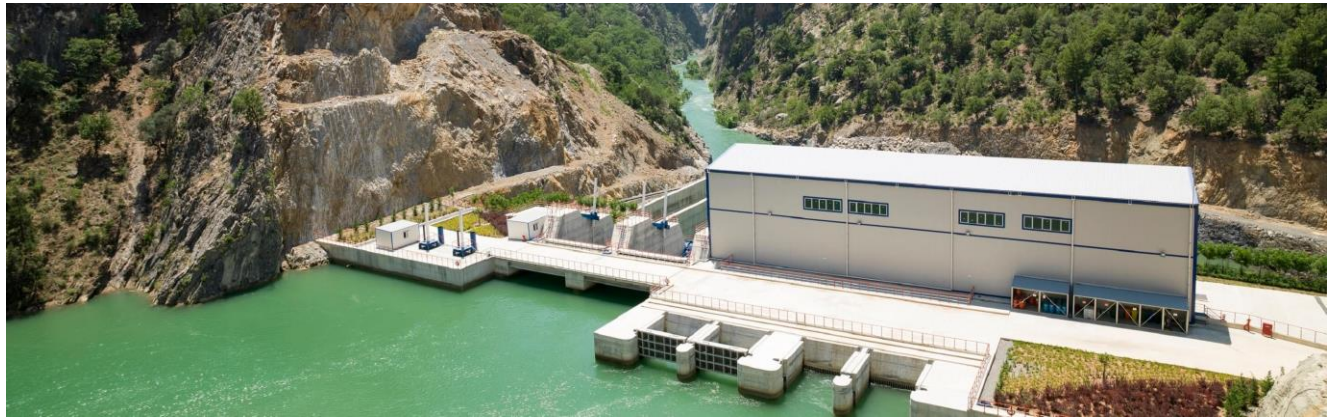
Sakarya Gas Field Development -
PHASE 1&2A, Türkiye – Engineering & RC&Steel Detailing
(Phase 1 is grey colour) – TPAO



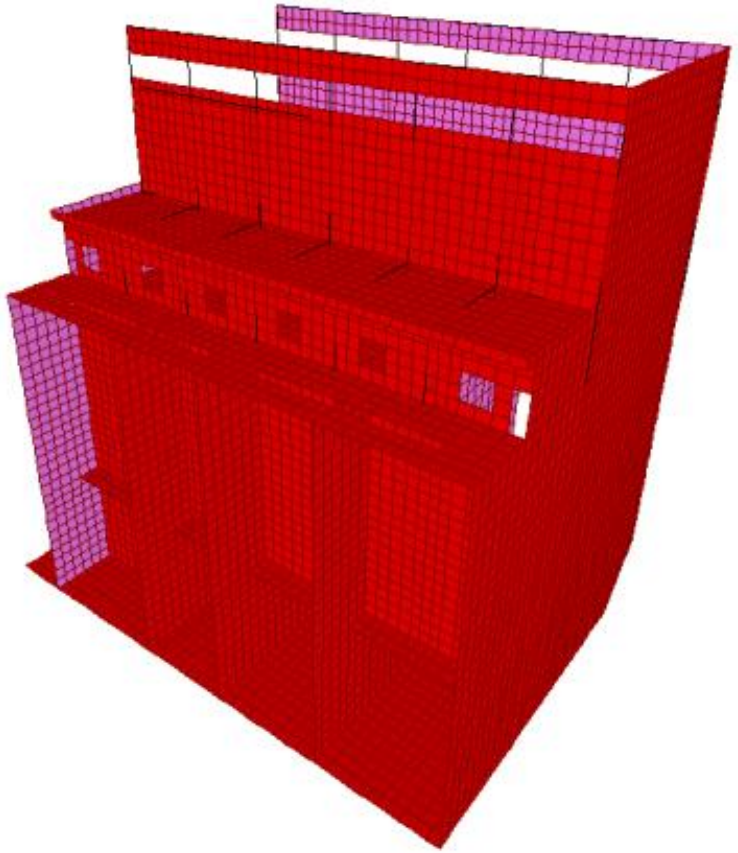


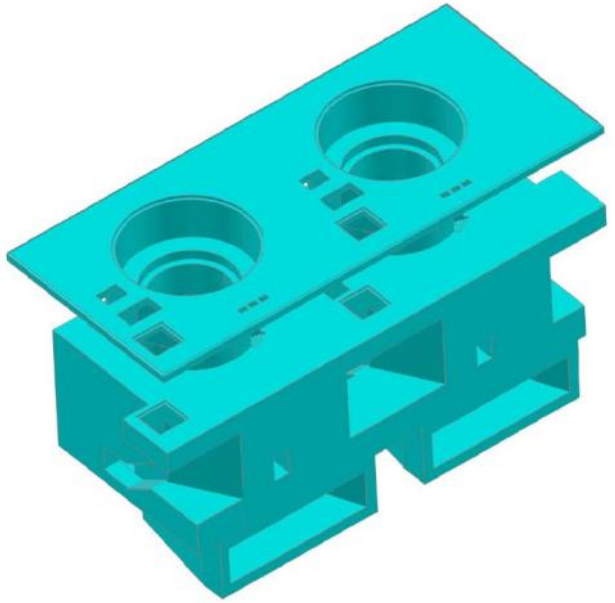
SPECTRA

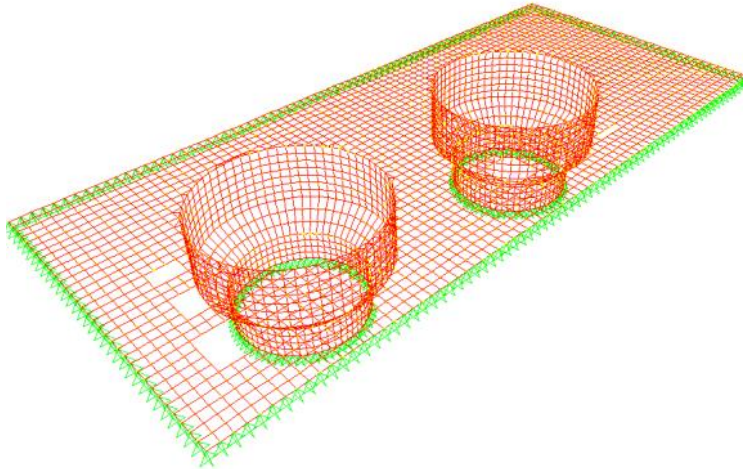
P&G Cairo Factory Old Tower Structural Assesment and Retrofit, Egypt– Engineering & RC&Steel Detailing – Procter and Gamble



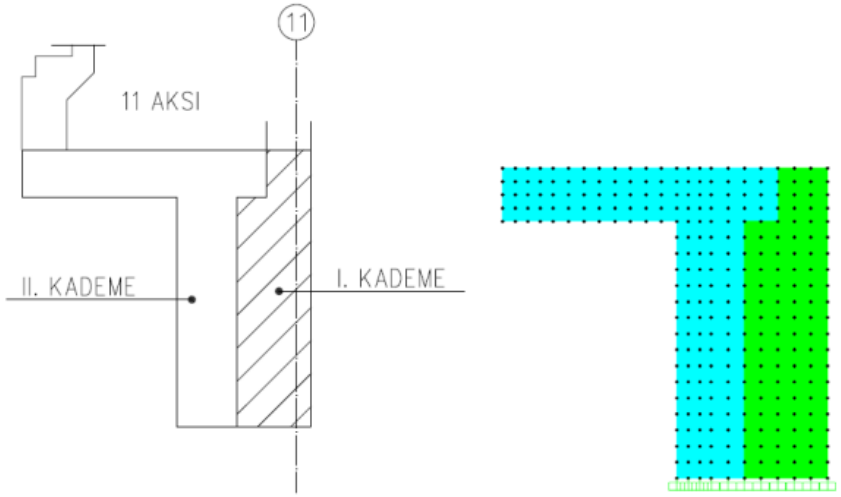
Kuşaklı Weirhouse and HEPP, Türkiye– Engineering & RC&Steel Detailing - ENERJİSA

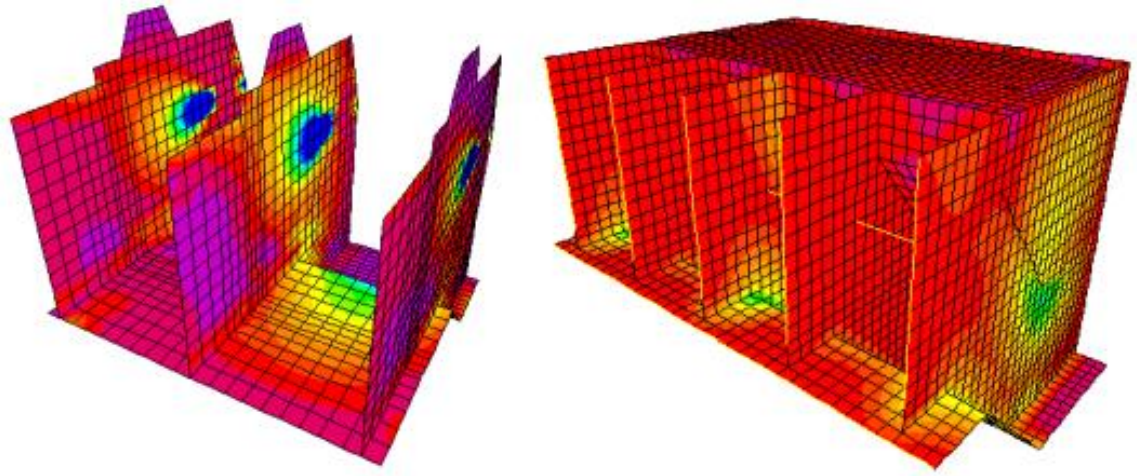




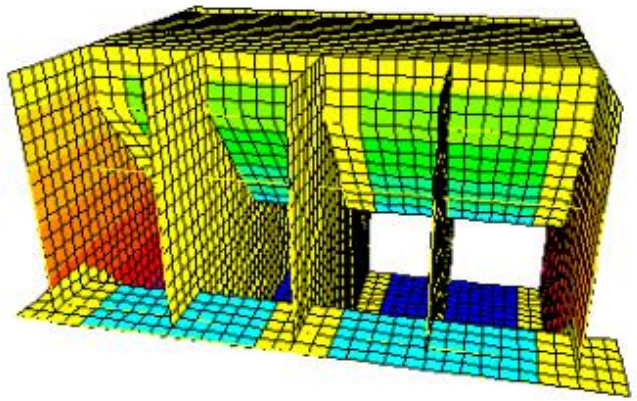


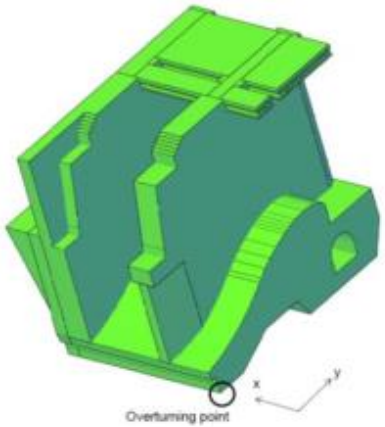
Kuşaklı Weirhouse and HEPP, Türkiye– Engineering & RC&Steel Detailing - ENERJİSA

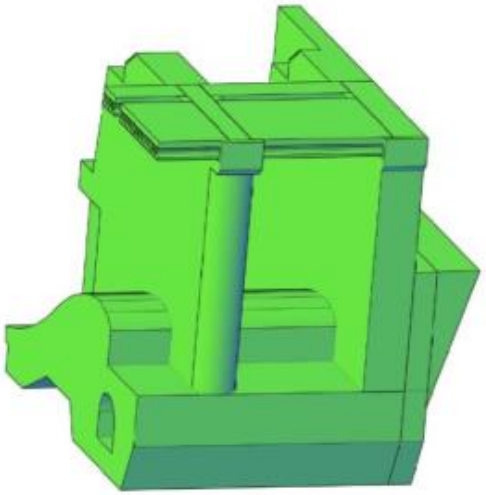


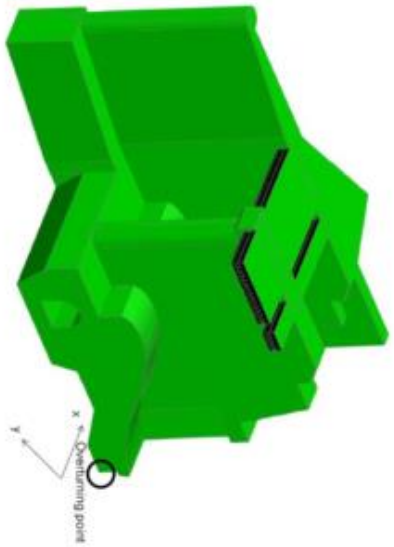


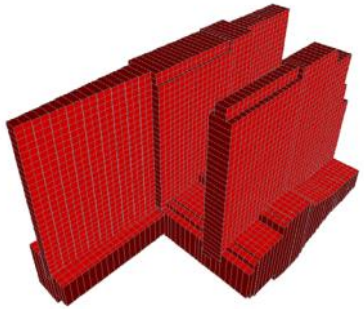
Kuşaklı Weirhouse and HEPP, Türkiye– Engineering & RC&Steel Detailing - ENERJİSA

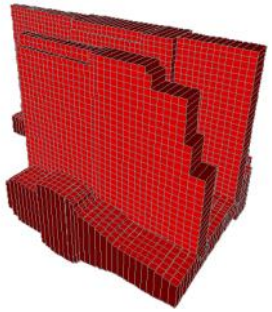






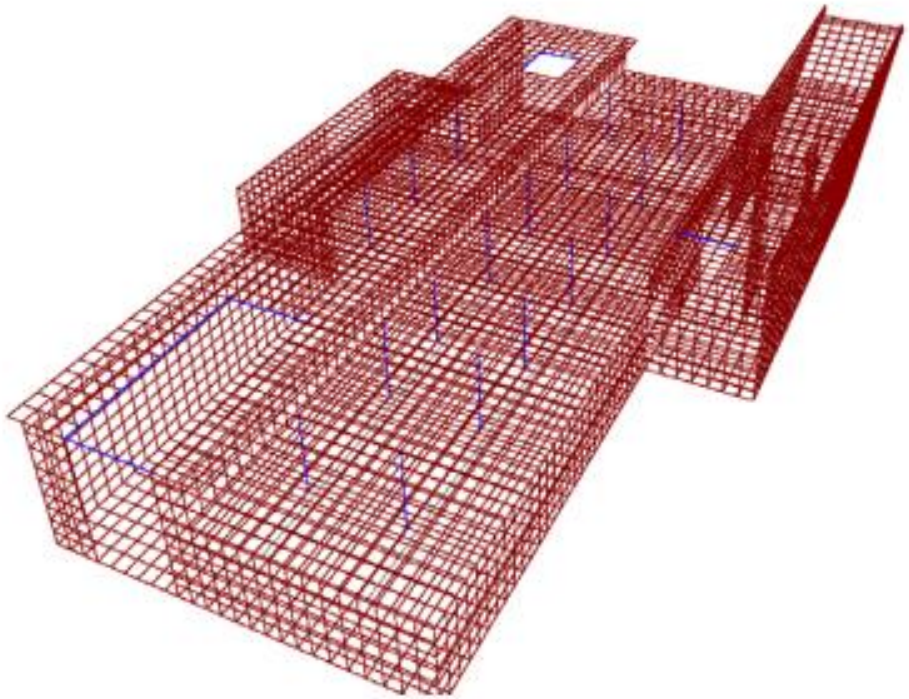


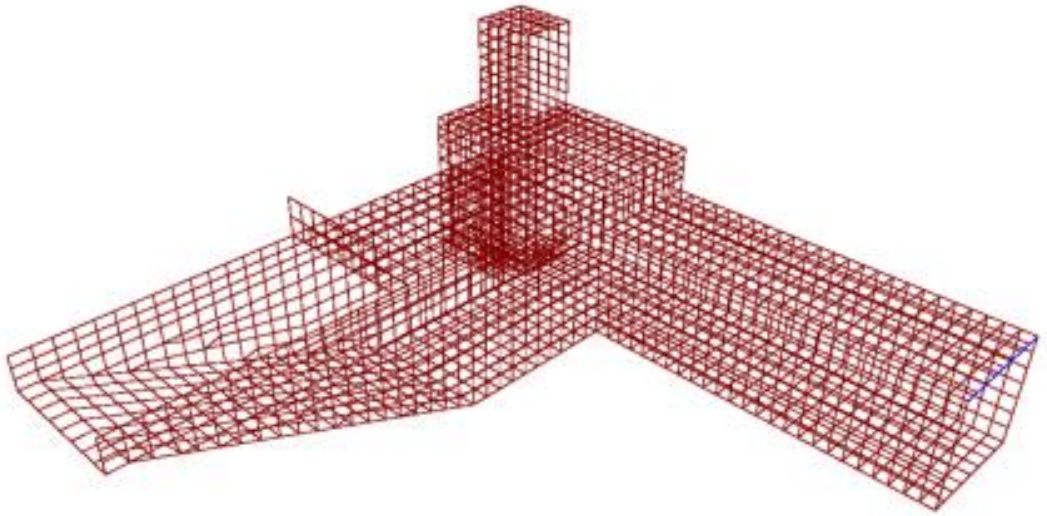




SPECTRA

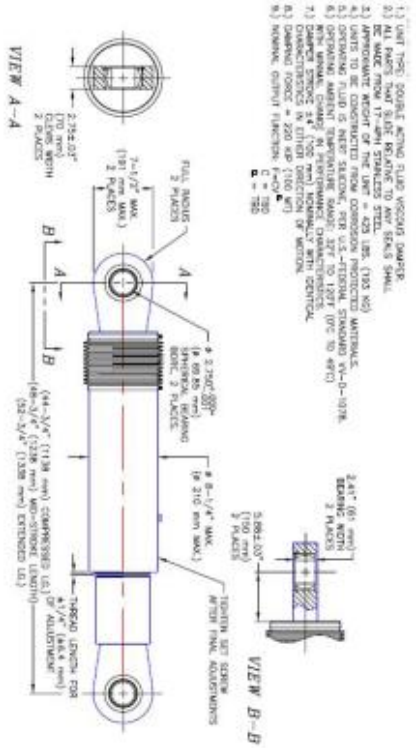
Kuşaklı Weirhouse and HEPP, Türkiye –
Engineering & RC&Steel Detailing - ENERJİSA

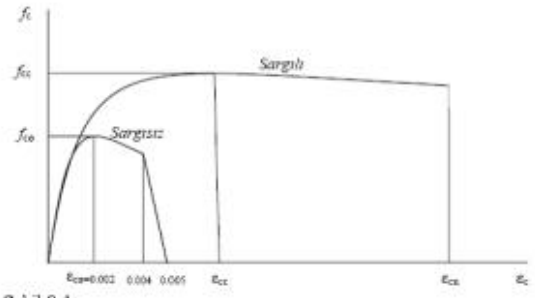




SPECTRA

Marmaray Subway Stations, Türkiye – Engineering &
RC Detailing - Ministry of Transport and Infrastructure

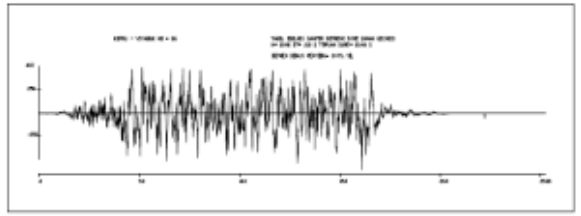




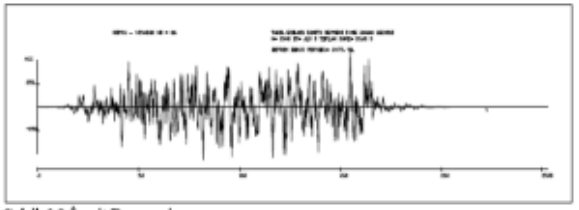
Şekil 8.1

Kalste	f_{sy} (Mpa)	ε_{sy}	ε_{sh}	ε_{su}	f_{su} (Mpa)
S220	220	0.0011	0.011	0.16	275
S420	420	0.0021	0.008	0.10	550

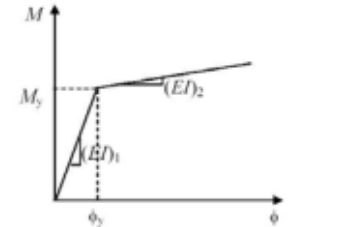
Şekil 8.2



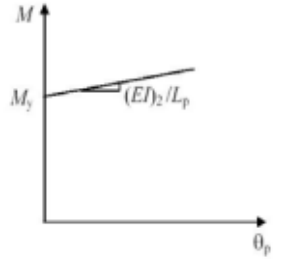
Şekil 6.1 San Fernando Depremi



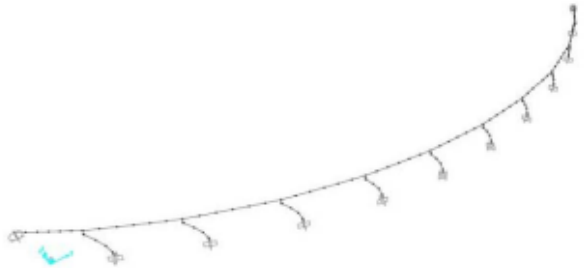
Şekil 6.2 İzmit Depremi



Şekil 10.1 İki doğrulu moment eğrilik diyagramı

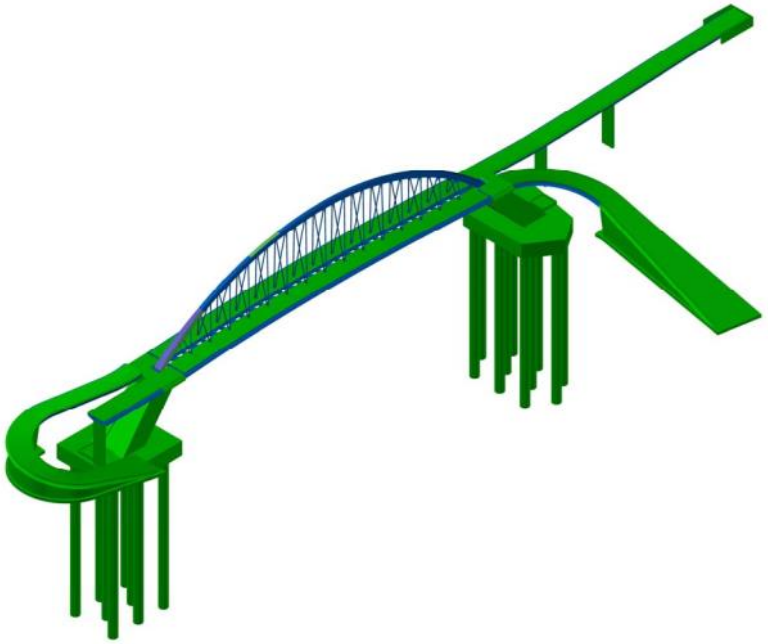


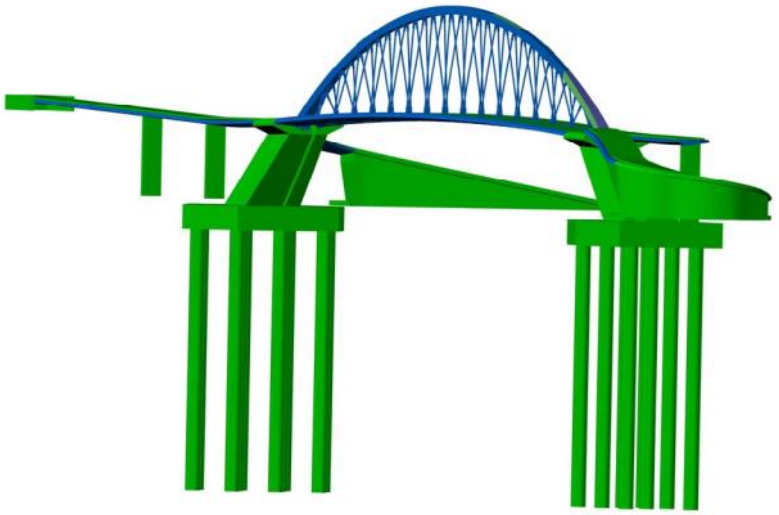
Şekil 10.2 Moment plastik dönme diyagramı

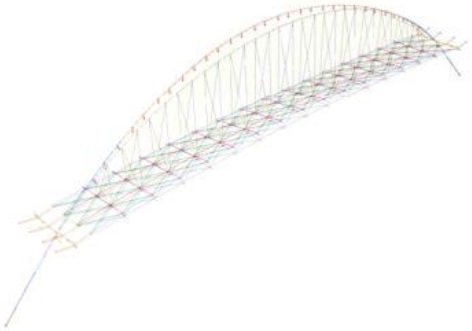


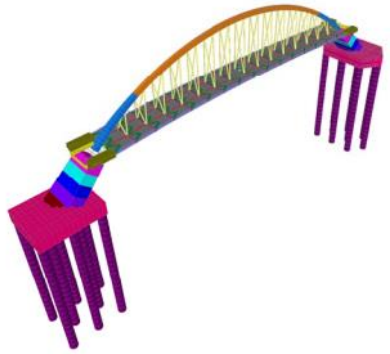
SPECTRA

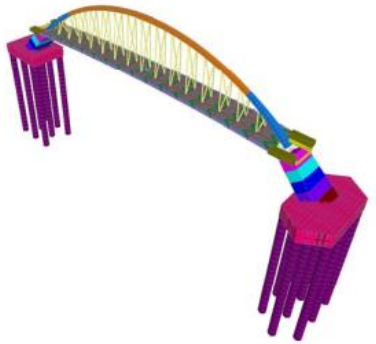
Badoni Bridge Retrofit, Türkiye - Engineering & Detailing – General Directorate of Highways



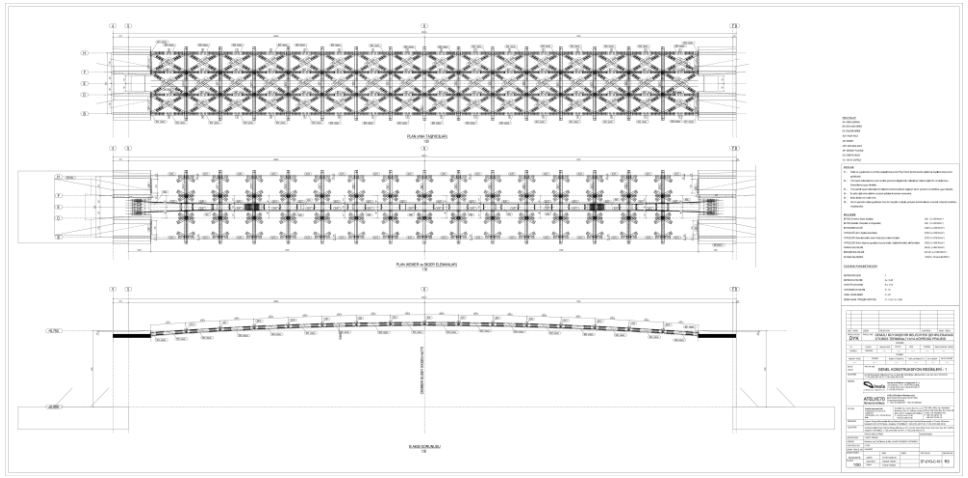


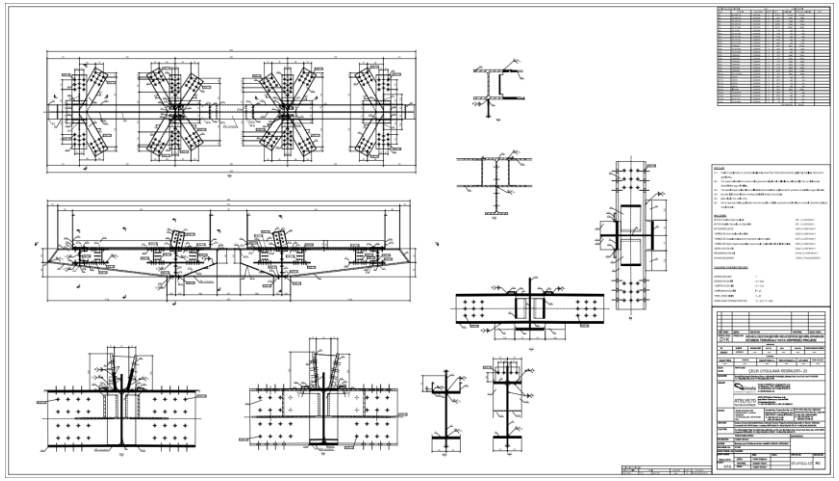


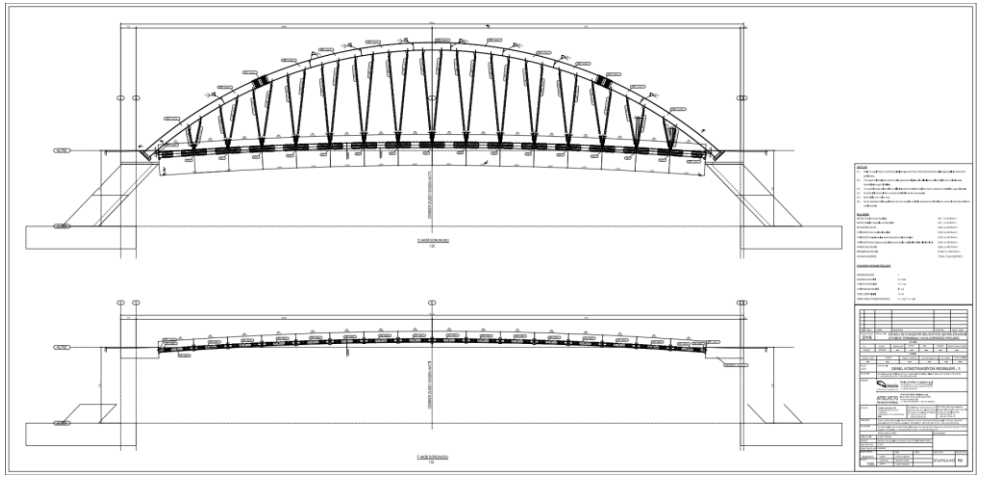


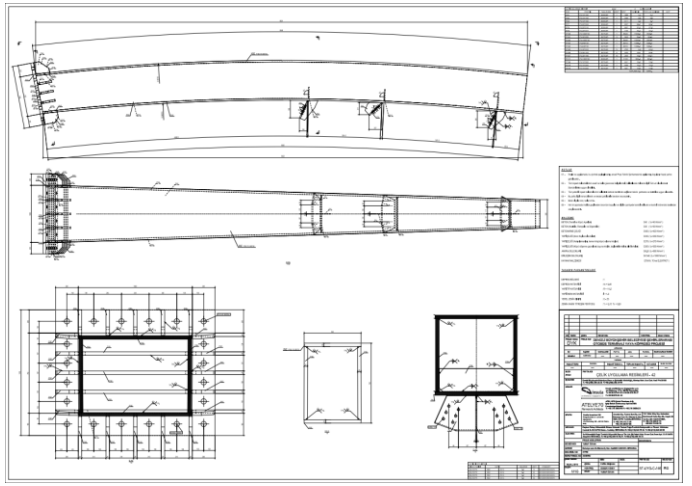


Denizli Mun. Footbridge, Türkiye Engineering & Detailing – Denizli Municipality



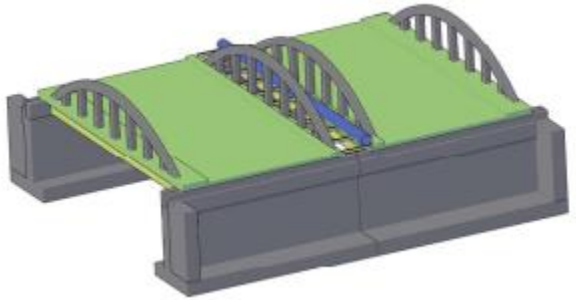


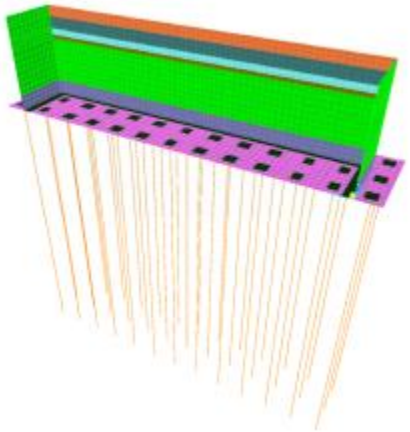


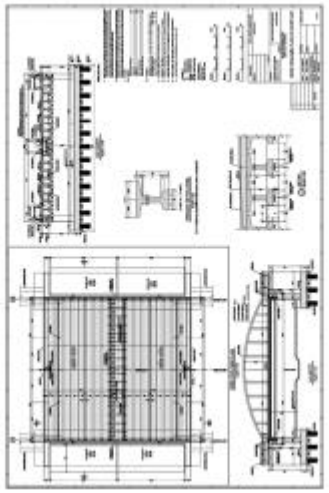


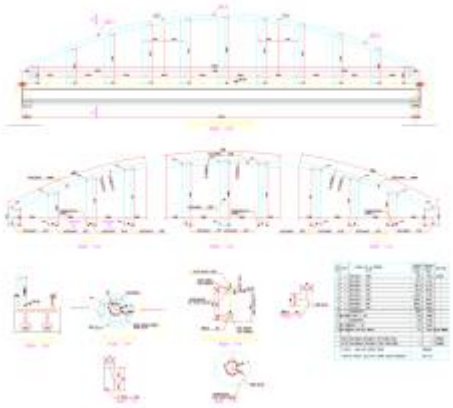
SPECTRA

Denizli Mun. Footbridge, Türkiye Engineering & Detailing – Denizli Municipality

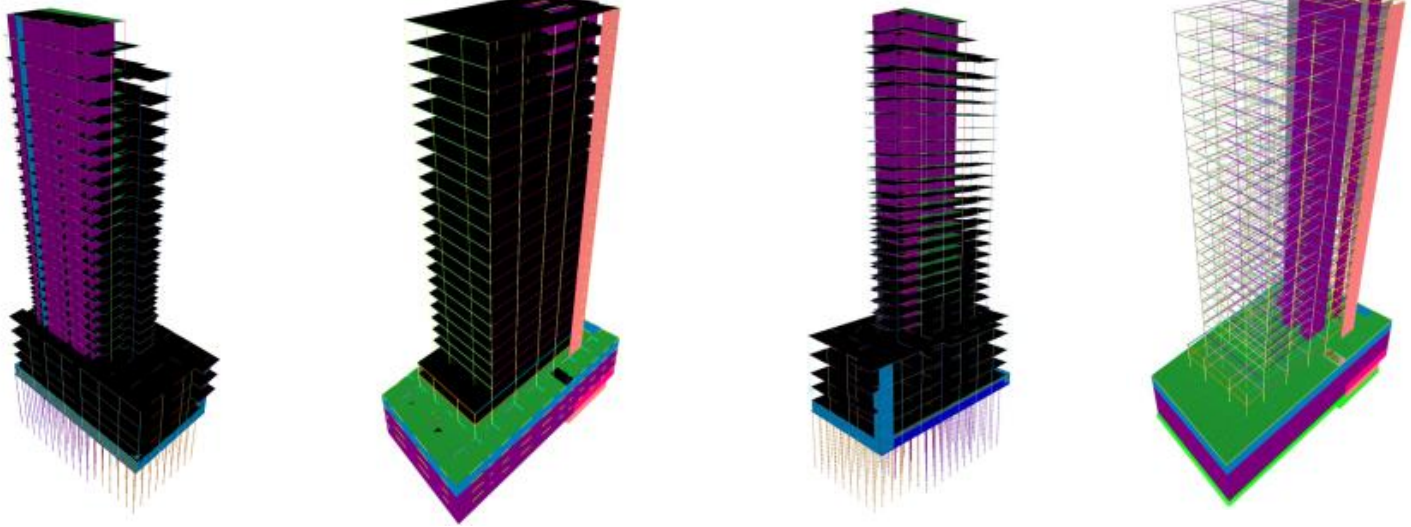




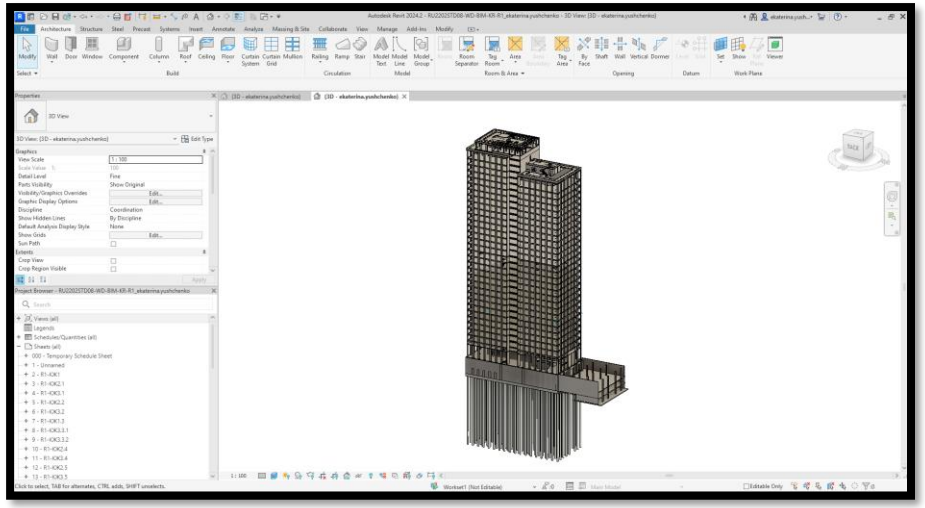


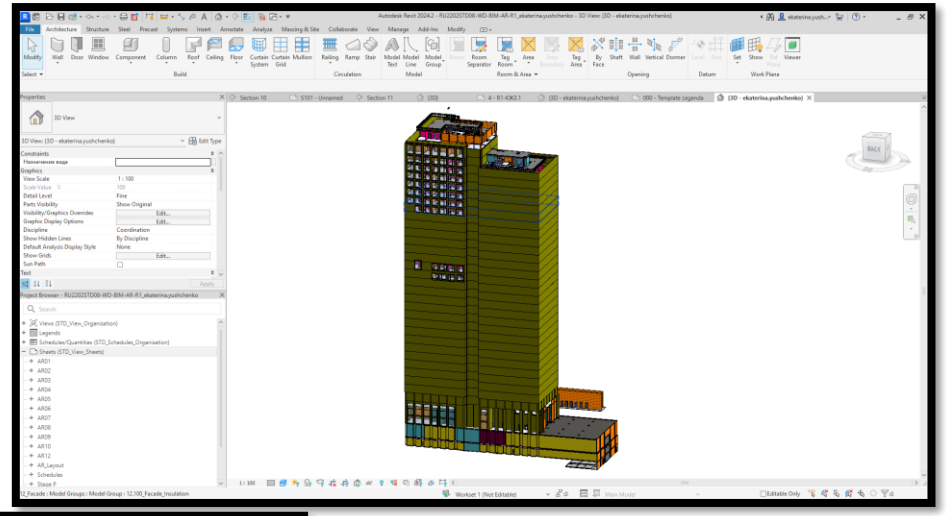


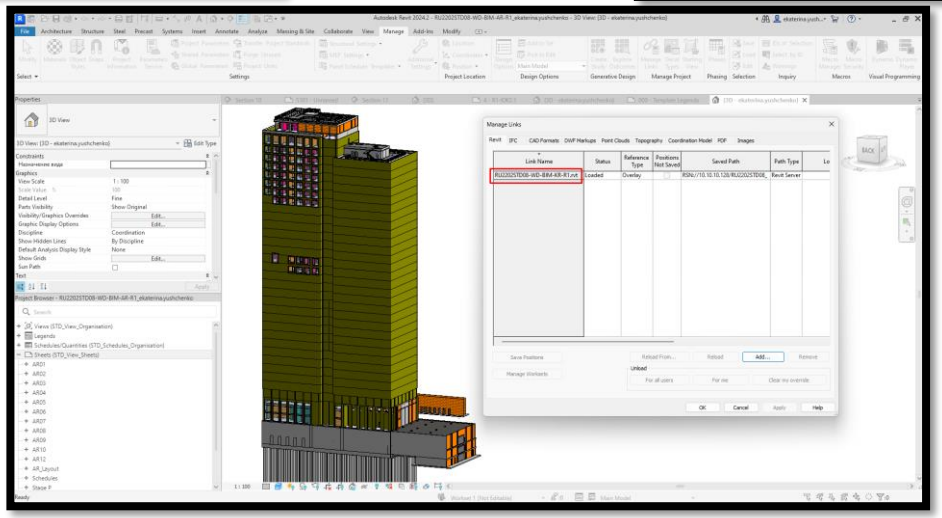
Nizip Bridge, Türkiye - Engineering & Detailing –
State Hydraulic Works



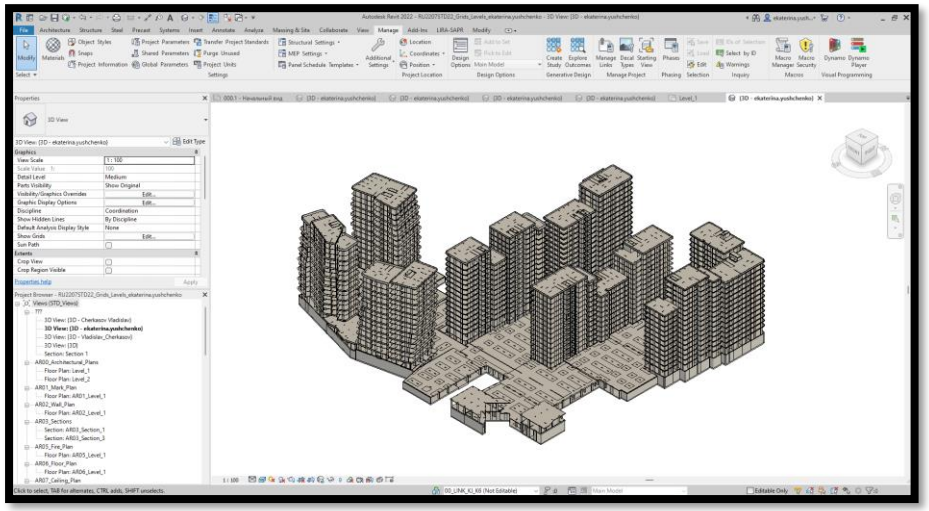
Zincirlikuyu Tower Seismic Design, Türkiye –
Design Check as per National Codes – GAP Co.

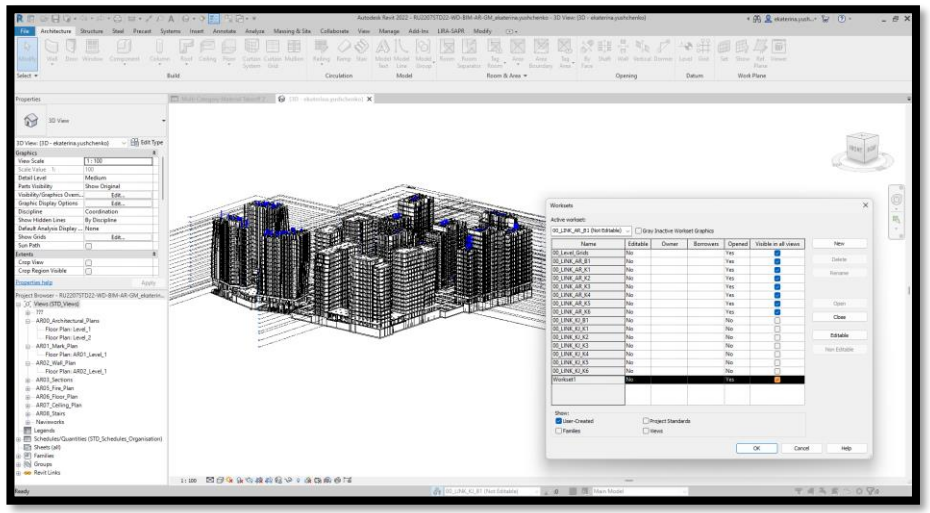


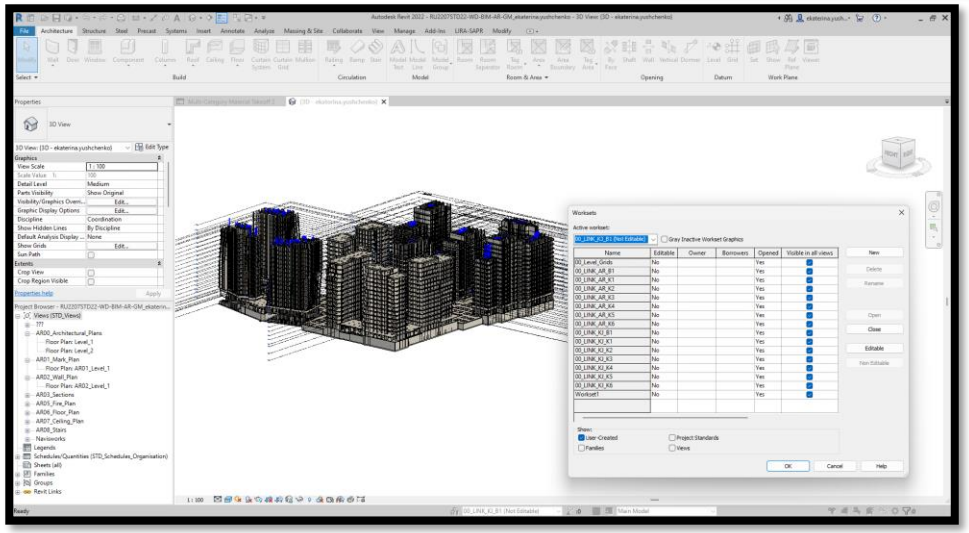




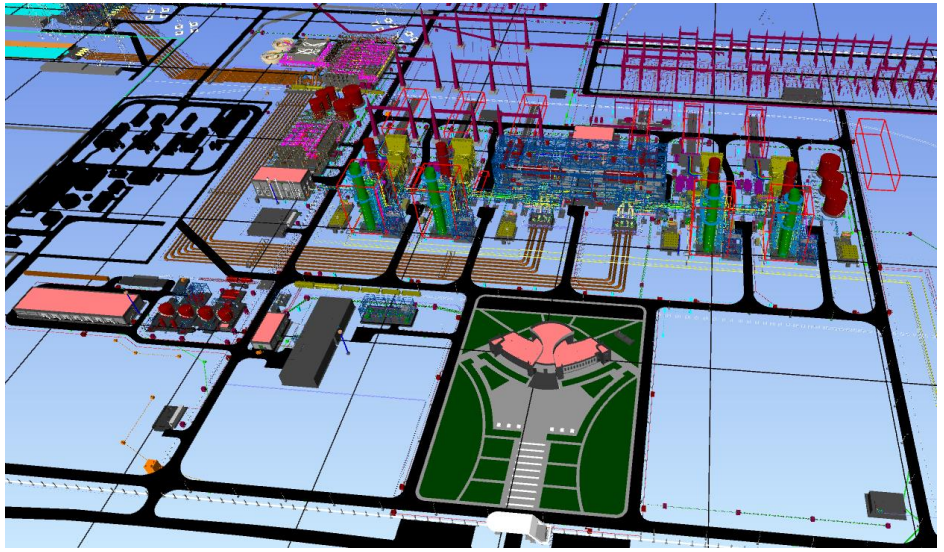
Prime Park Towers - R1/R9, Russia - Engineering & Detailing – GES Cons.





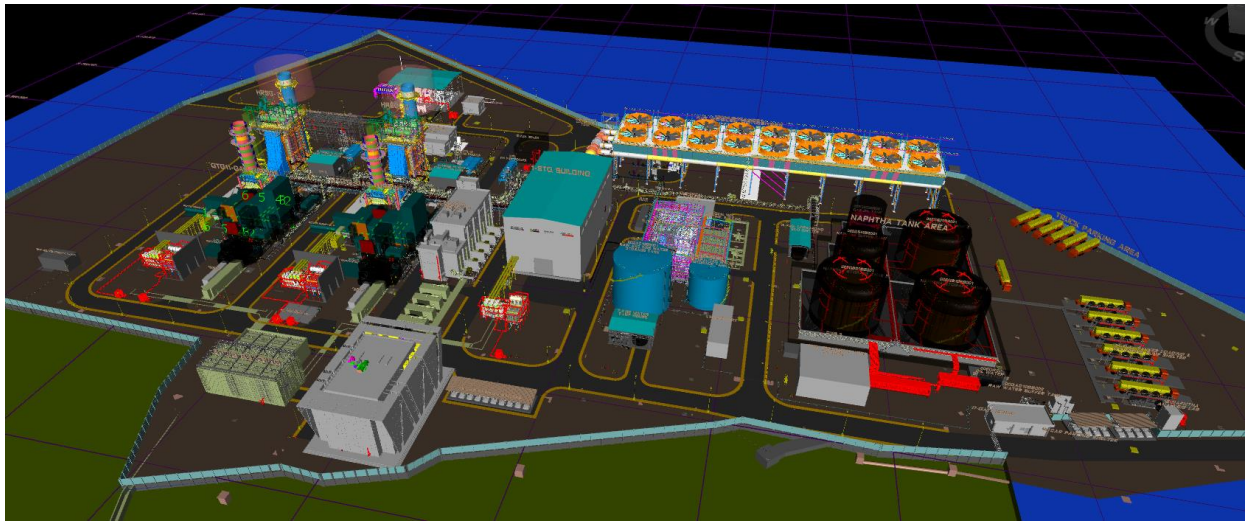


PREOBRAJENSKAYA RESIDENCES II, Russia -
Engineering & Detailing – GES Cons.



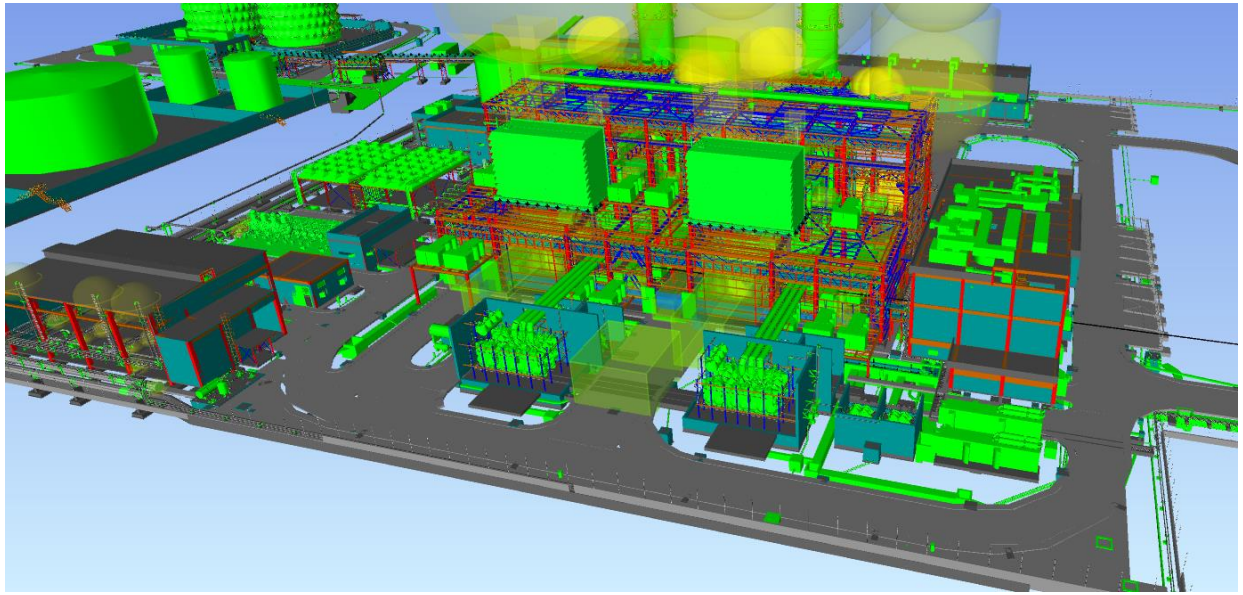
SPECTRA

Mary-3 Combined Cycle Power Plant (Structural Design&Detailing) – CALIK ENERGY



SPECTRA

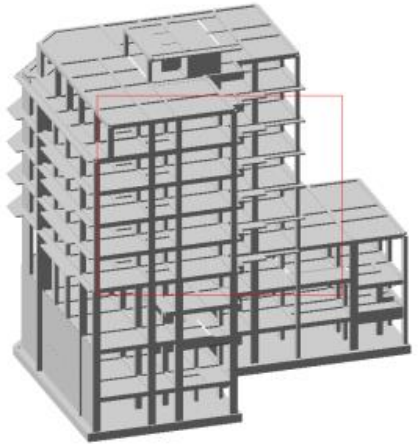
Cap des Biches Combined Cycle Power Plant, Senegal
(Structural Design&Detailing) – CALIK ENERGY

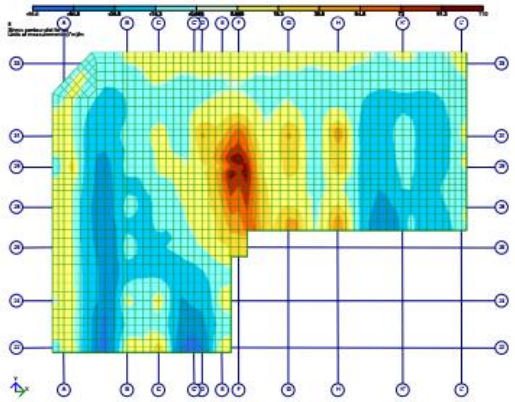


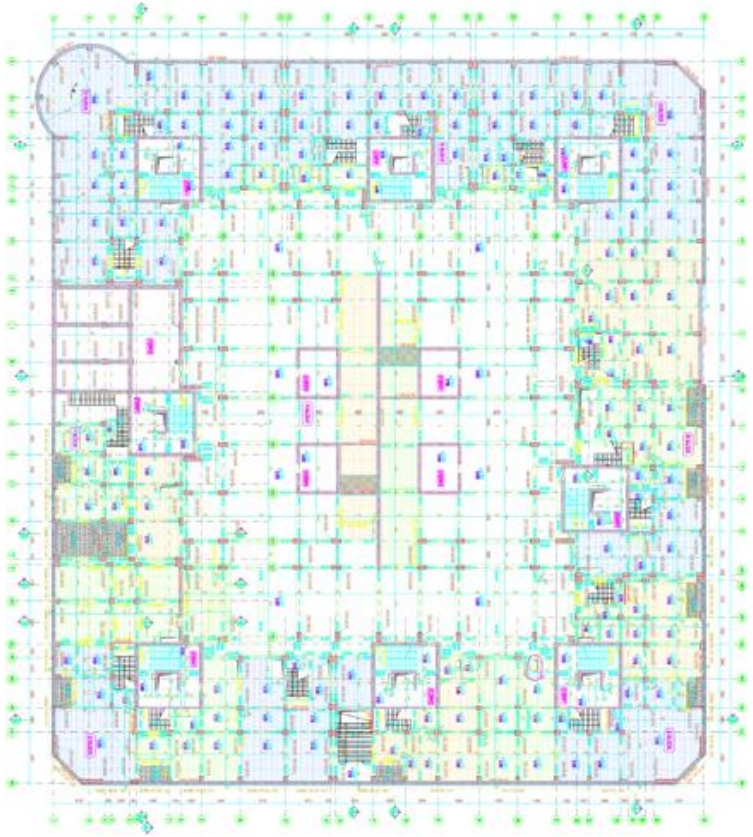
SPECTRA

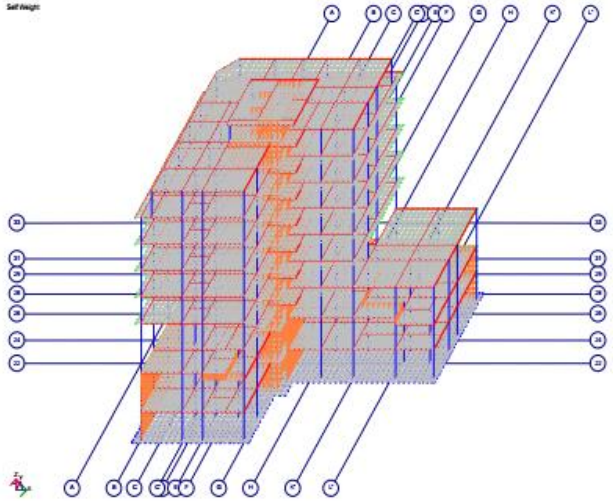
Al-Khums Simple Cycle Power Plant (Structural Design&Detailing) – CALIK ENERGY

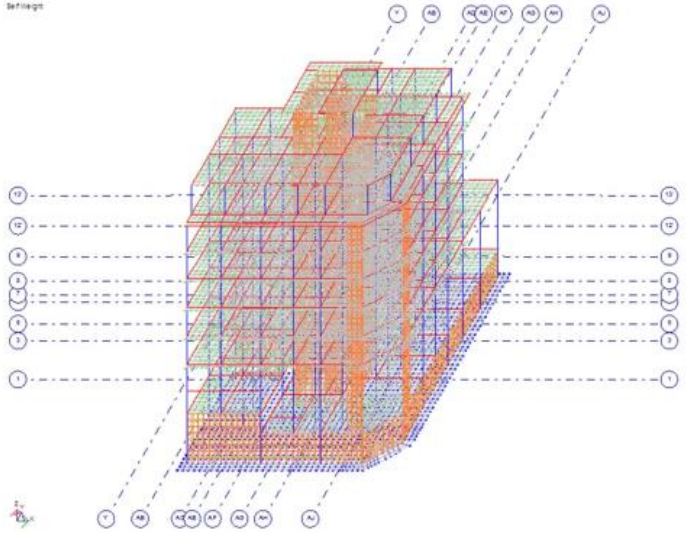
Content not shown as per confidentiality agreement. The King Abdullah Bin Abdulaziz's Project (KAP2) was launched in 2013 to develop security facilities across Saudi Arabia in order to upgrade the military standards of the Kingdom. This 'program' is spread over 44 sites among 5 zones in the country with a total construction area of over 3,5 million square-meters. Although fundamentally a 'public security' project; KAP2 consists of a variety of building types including medical centers, training facilities, shooting ranges, clinics & forensic laboratories, recreational facilities, auditoriums and congregational facilities, mosques, shops, sports buildings and other institutional facilities.





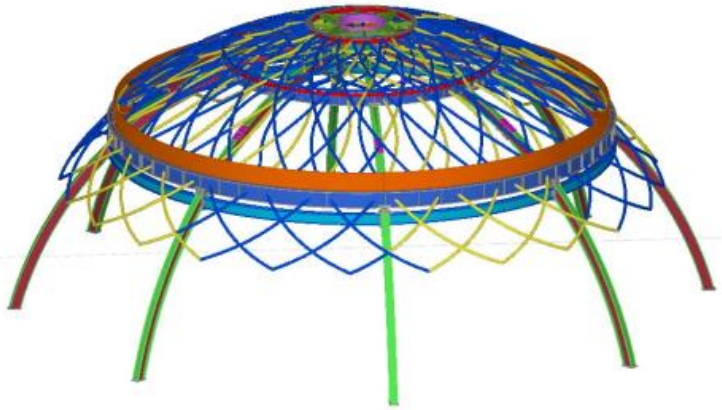


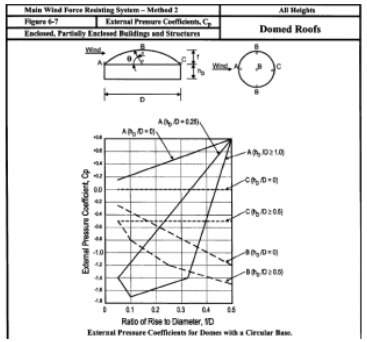


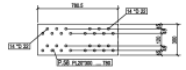


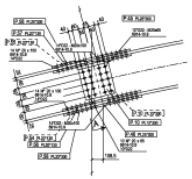
SPECTRA

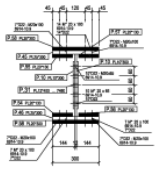
Design&Detailing of Sample Structures Completed

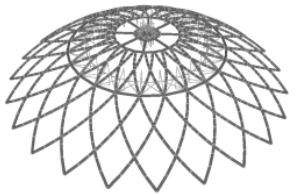


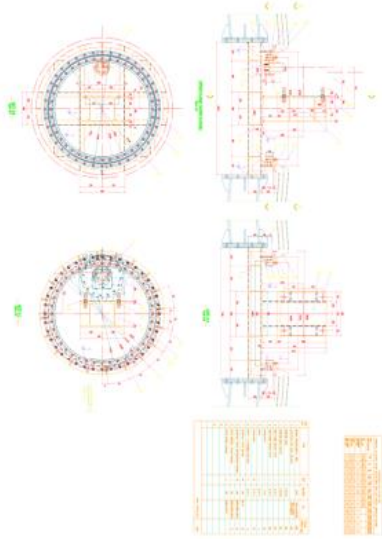






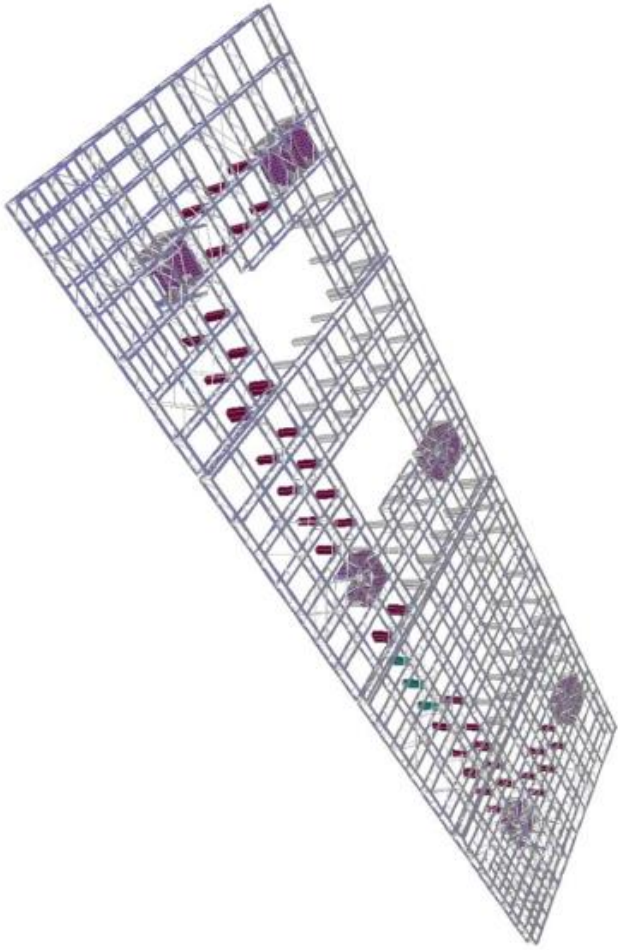


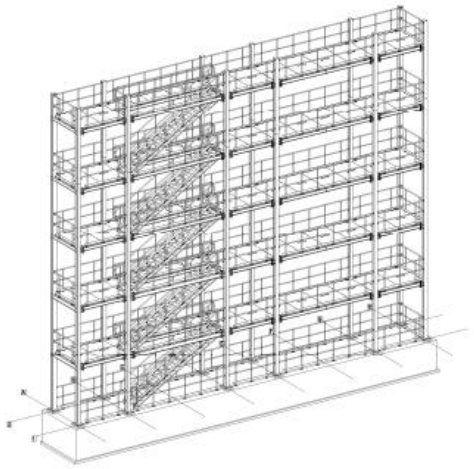


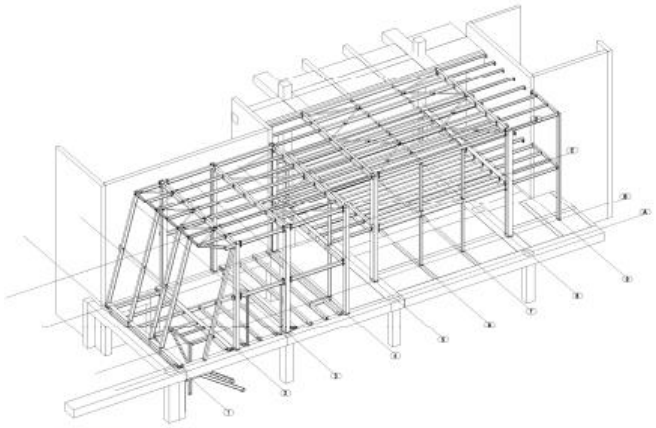


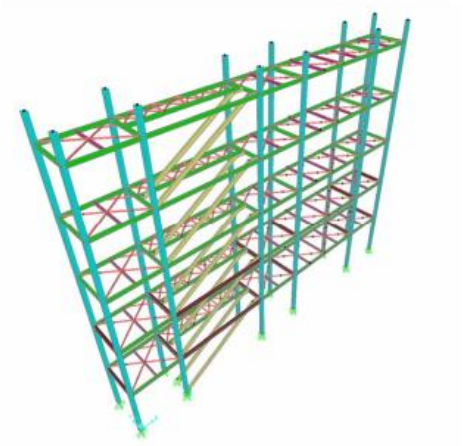
SPECTRA

Design&Detailing of Sample Structures Completed



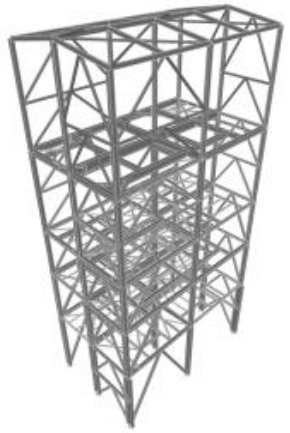


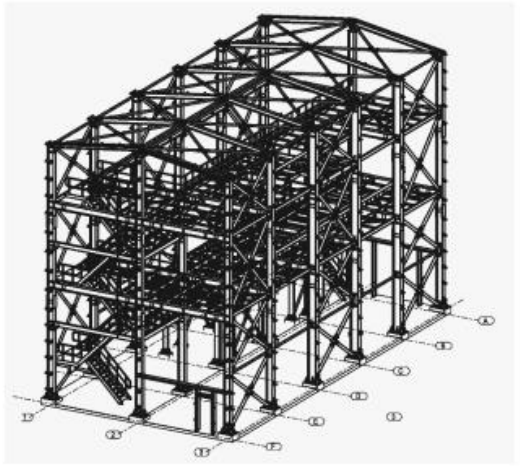


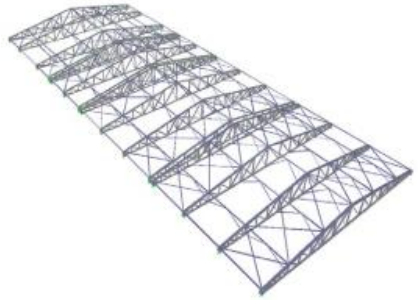


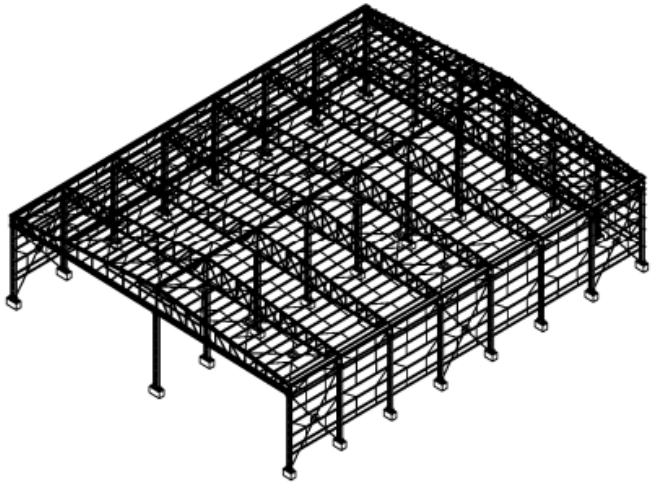
SPECTRA

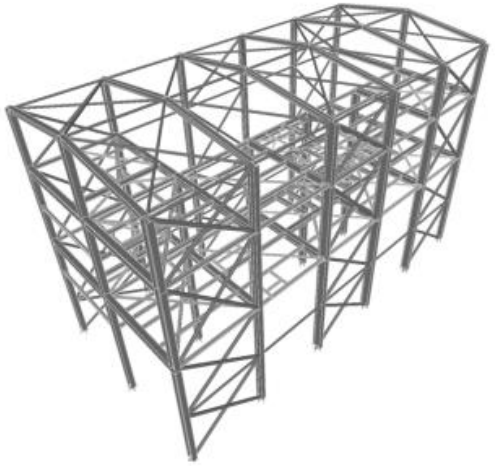
Design&Detailing of Sample Structures Completed

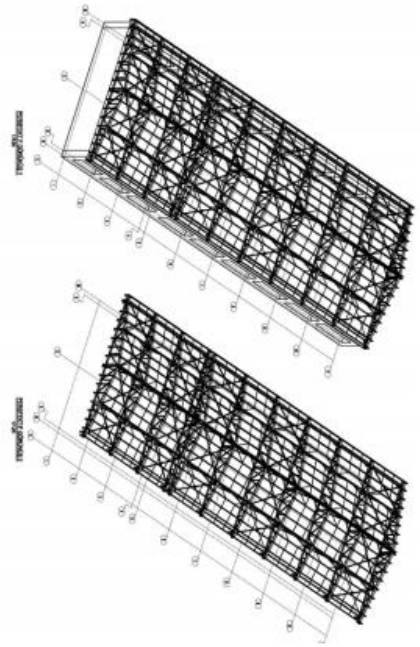












Design&Detailing of Sample Structures Completed

SPECTRA

Design&Detailing of Sample Structures Completed

Design&Detailing of Sample Structures Completed