

*'Engineering for perfection'*



**yapiray**

OUR PURPOSE  
IS TO SIMPLIFY  
*Perfection*





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Tekirdağ - Muratlı Railway Project





# DESIGN MANUFACTURE *Construct*

YAPIRAY, with the objective of serving in the construction of railway systems, was established within the body of YAPI MERKEZİ, as a specialist company by counting on the acquired experiences as its intellectual capital.

YAPIRAY has successfully carried out design and implementation experience, which includes various engineering solutions in railway systems, to the present thanks to well-organized human resources and specialized machinery park.

The main objective of YAPIRAY is to maintain sustainability and trust that has been established as a result of activities in the railway systems.

Since 1998, YAPIRAY is a multifunctional company which can manage every scale of [Turnkey Railway Projects](#) and [rehabilitation works](#) on railway lines [under traffic operation](#) with high engineering design solutions. At the same time YAPIRAY is the manufacturer of various types of prefabricated concrete elements for railway systems.

Bozkurt - Dinar Railway Renewal Construction





# ACCURATE EFFICIENT *Continuous*

YAPIRAY's main objective is to fulfil railway constructions in the most efficient and accurate way with its huge experience in managing various projects under tough and challenging conditions simultaneously. Yet, this is not enough. That's why, we look forward to scaling up our targets continuously.



Awash - Kombolcha - Hara Gebaya Railway Project

# IMPROVE SUSTAIN *Rehabilitate*

Track rehabilitation is essential to achieve the sustainability of railway line operations. In consequently, YAPIRAY is ready to renew the railway lines across the globe. To the present, rehabilitation of 500 km railway lines has been a magnificent experience and success for YAPIRAY.



Irmak - Karabük - Zonguldak Railway Rehabilitation Project



# PRECISION DURABILITY *Quality*

YAPIRAY provides prefabricated concrete products with high-level of quality and long service life. RAYTON® and RAYKAS® sleeper plants are at the customers' services constantly for production of railway elements for main lines and turnouts. Moreover, YAPIRAY provides mobility of the plants nearby big-scale execution works based on special needs of the projects. Besides, settled plants are aiming to satisfy customers' needs all the time. YAPIRAY assures robustness of all products in accordance with EN 13230 series / AREMA based on the request of the employer.



# DESIGN DEVELOP *Realize*

Need-based products are the backbone of research and development for us. Thanks to our 20 years of knowledge in railway engineering, tailor-made solutions for each customer are provided by our in-house design department. YAPIRAY response to customer needs with innovative solutions including but not limited to European Norms, UIC and AREMA standards.



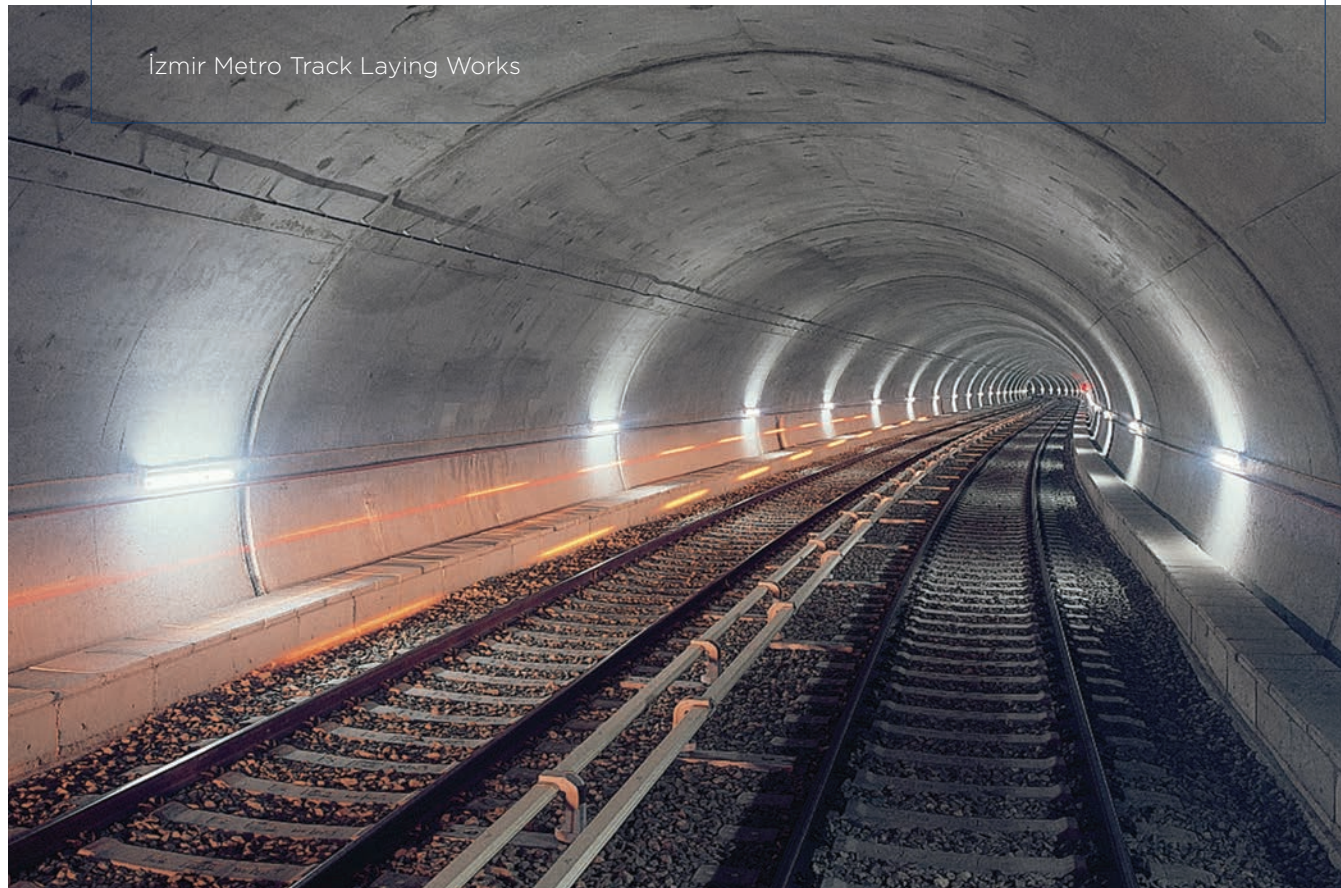


# FOCUS CONCENTRATE *Health and Safety*

YAPIRAY carries on being a forerunner in railway systems by providing quality solutions that combines its policies with experience. YAPIRAY plans and carries out all of its activities primarily by focusing on “Occupational Health and Safety”.

YAPIRAY aims to make its Quality, Occupational Health and Safety Management Systems sustainable with the active participation of all its employees and suppliers. We undertake to fulfil the legal and related legislative requirements to meet the obligations arising from the agreements and to provide the internal and external stakeholders with the requirements arising from their institutional responsibilities.

Izmir Metro Track Laying Works



# SUSTAIN ENVIRONMENT *Think Green*

As YAPIRAY we care about people. We connect them with their beloved ones but also we feel a responsibility to leave a better planet to future generations in shape than we found. From the design phase to the execution on site, we focus on reduction of our own carbon footprint by searching the optimum solutions.





# BEAT BEAT AGAIN *Challenges*

## Extreme Temperatures

from -30°C degree to 50°C degree

## Extreme Altitudes

under Bosphorus (-62 m) to the highest mountains of Ethiopia (+2800 m)

## Under Traffic Operation

track rehabilitation without interrupting the train operation  
(track usage 72 hrs. YAPIRAY, 48 hrs. TCDD)

## Well-Organized Operation

7 different projects in 4 different countries in 3 different continents

## Supersonic Line

1.5 Mach (1850 km/h) max speed *(No, there is no typo mistake!)*

## Heavy or Speed

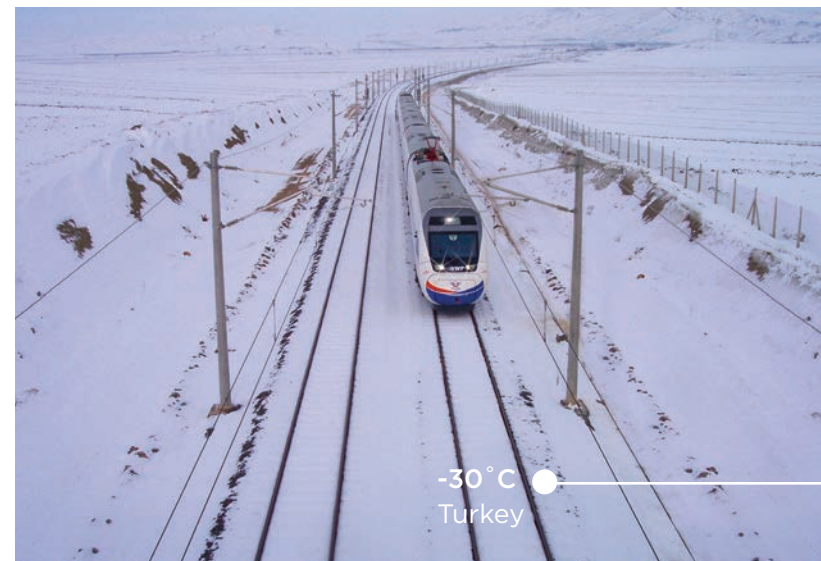
up to 35 tons of axle load or up to 300 km/h at high speed lines



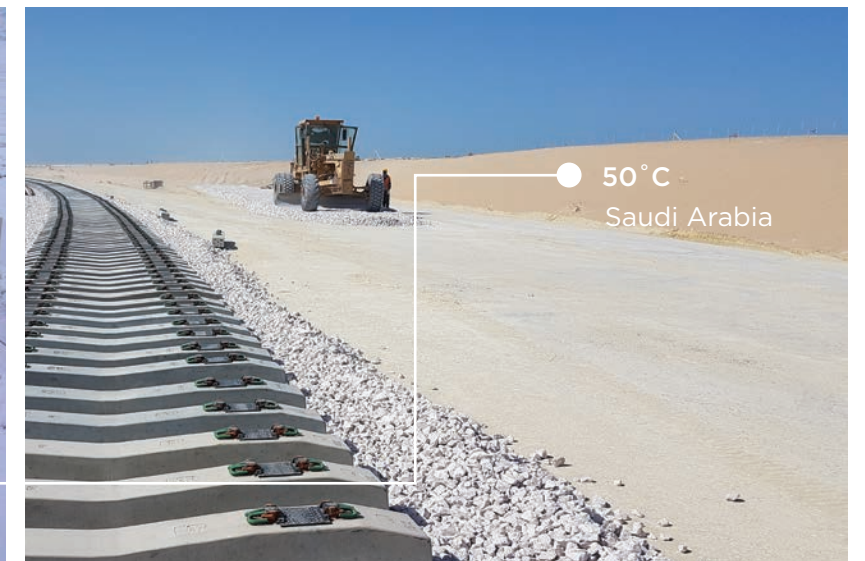
2800 meter Ethiopia Mountains



-62 meters  
Below Sea Level  
Bosphorus



-30 °C  
Turkey



50 °C  
Saudi Arabia



1,5 Mach

Longest  
Supersonic  
Test Track  
in Europe

Turkey

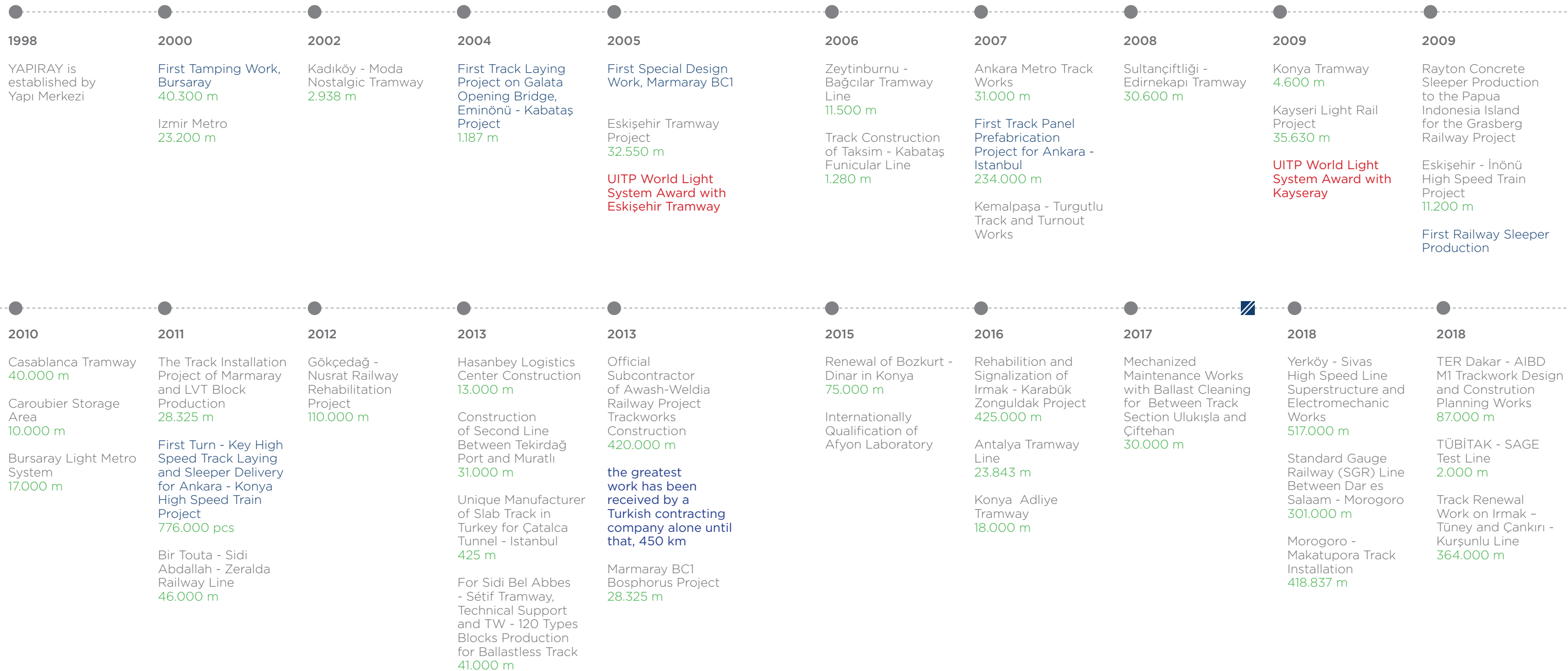


# NUMBERS KILOMETERS *Success*

Track Distance

Awards

On-going





# NUMBERS TELL *The Real Story*



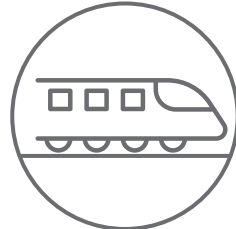
High Investment  
Budget for  
R&D



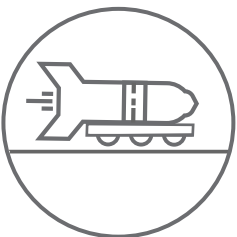
750  
Employees



Sleeper Production  
1.000.000 pcs/year  
Slab Track Production  
20.000 pcs/year



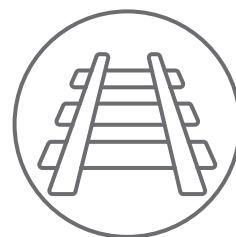
300 km/h in  
High Speed Lines



Supersonic Sled Test Track  
1,5 Mach (1850 km/h)



Know-How



Finished: 1.24 Million Meters  
On-going: 1.4 Million Meters



8 Countries  
3 Continents





INTERACTIVE  
EFFICIENT  
ACCURATE  
*Serving Humanity*

SOME OF OUR PROJECTS





# Awash - Kombolcha - Hara Gebaya Railway Line ETHIOPIA



Project Start - End Dates	06.2014/On-going
Line Length	428 km
Switch Type and Quantity	1/12 R=500, 37 Units 1/9 R=300, 69 Units
Sleeper Type	B58 - 2.5
Sleeper Quantity	700.000





# Dar es Salaam - Morogoro - Makutupora Railway Line TANZANIA



Project Start - End Dates	05.2018/On-going
Line Length	558 km
Switch Type and Quantity	1/24 R:1320, 13 Units 1/9 R:300, 155 Units 1/12 R:1500, 47 Units
Sleeper Type	Heavy Haul, Turnout and Bridge
Sleeper Quantity	1.200.000





# Yerköy - Sivas High Speed Railway Line TURKEY



Project Start - End Dates	05.2018/On-going
Line Length	417 km Ballasted and 101 km Ballastless Track
Switch Type and Quantity	1/12 R:500, 20 Units 1/9 R:300, 13 Units 1/24 R:2600/1600, 42 Units 1/18.5 R:1200, 27 Units
Sleeper Type	B07, B320, Turnout and Rayton Slab Track
Sleeper Quantity	730.000





# Irmak - Karabük - Zonguldak Railway Rehabilitation Project TURKEY

Project Start - End Dates	07.2017/01.2018
Switch Type and Quantity	1/9 - R:300, 200 Units
Sleeper Type	B58-2.4
Line Length	415 km Mainline, 65 km Siding
Sleeper Quantity	24.458





# Ankara - Konya High Speed Railway Line

TURKEY



Project Start - End Dates	11.2008 - 08.2011
Line Length	465 km
Switch Type and Quantity	1/9 R:300, 2 Units 1/12 R:500, 46 Units 1/29 R:300, 10 Units 1/46 R:3550, 28 Units
Sleeper Type	B70
Sleeper Quantity	766.000





# Marmaray BC1

## TURKEY

Project Start - End Dates	2011/2013
Line Length	3 km Ballasted and 26 km Direct Fixation
Switch Type and Quantity	1/7 R:140, 7 Units 1/9 R:300, 5 Units
Sleeper Type	B70 and LVT Block





# TÜBİTAK - SAGE

## Test Campus

### TURKEY



Project Start - End Dates	06.2017/09.2018
Track Length	2 km Supersonic Sled Test Track
Design Criteria	1000 kg/1.5 Mach
Max Speed	4.5 Mach
Max Payload	3500 kg
Fastening System	Special Yapıray Design
Buildings	Control Building Data Building Energetic Material Depots Administration Buildings





# Other Projects



Beyoğlu Nostalgic Tramway



Konya Tramway

İzmir Metro  
Kadıköy - Moda Nostalgic Tramway  
ESTRAM - Eskişehir Tramway  
Beyoğlu Nostalgic Tramway  
Ankara Metro 3. Phase, Line Works  
Galata Bridge Tram Laying Works  
Eminönü - Sirkeci Tramway  
Zeytinburnu - Bağcılar Tramway  
Taksim - Kabataş Funicular  
Kayseri Tramway  
Hasanbey Logistic Center Trackwork  
Tekirdağ - Muratlı Line Works  
Bozkurt - Dinar Railway Line  
Konya Tramway  
Sidi Bel Abbas Tramway  
Sétif Tramway  
Casablanca Tramway  
Ter Dakar M1 Railway Project  
Kayaş - Yerköy Sleeper and Slab Track Production

Turkey, 1998 - 2000  
Turkey, 2002 - 2003  
Turkey, 2003 - 2004  
Turkey, 2002 - 2003  
Turkey, 2003 - 2007  
Turkey, 2003 - 2004  
Turkey, 2004 - 2005  
Turkey, 2004 - 2006  
Turkey, 2005 - 2006  
Turkey, 2006 - 2009  
Turkey, 2011 - 2013  
Turkey, 2011 - 2013  
Turkey, 2013 - 2015  
Turkey, 2013 - 2015  
Algeria, 2013 - 2017  
Algeria, 2014 - On-going  
Morocco, 2016 - On-going  
Senegal, 2018 - On-going  
Turkey, 2018 - On-going



Bozkurt - Dinar Railway Track Renewal



Taksim - Kabataş Funicular System



Eskişehir Light Rail System (Estram)



Casablanca Tramway



# HI-TECH MACHINERY *Park and Equipments*

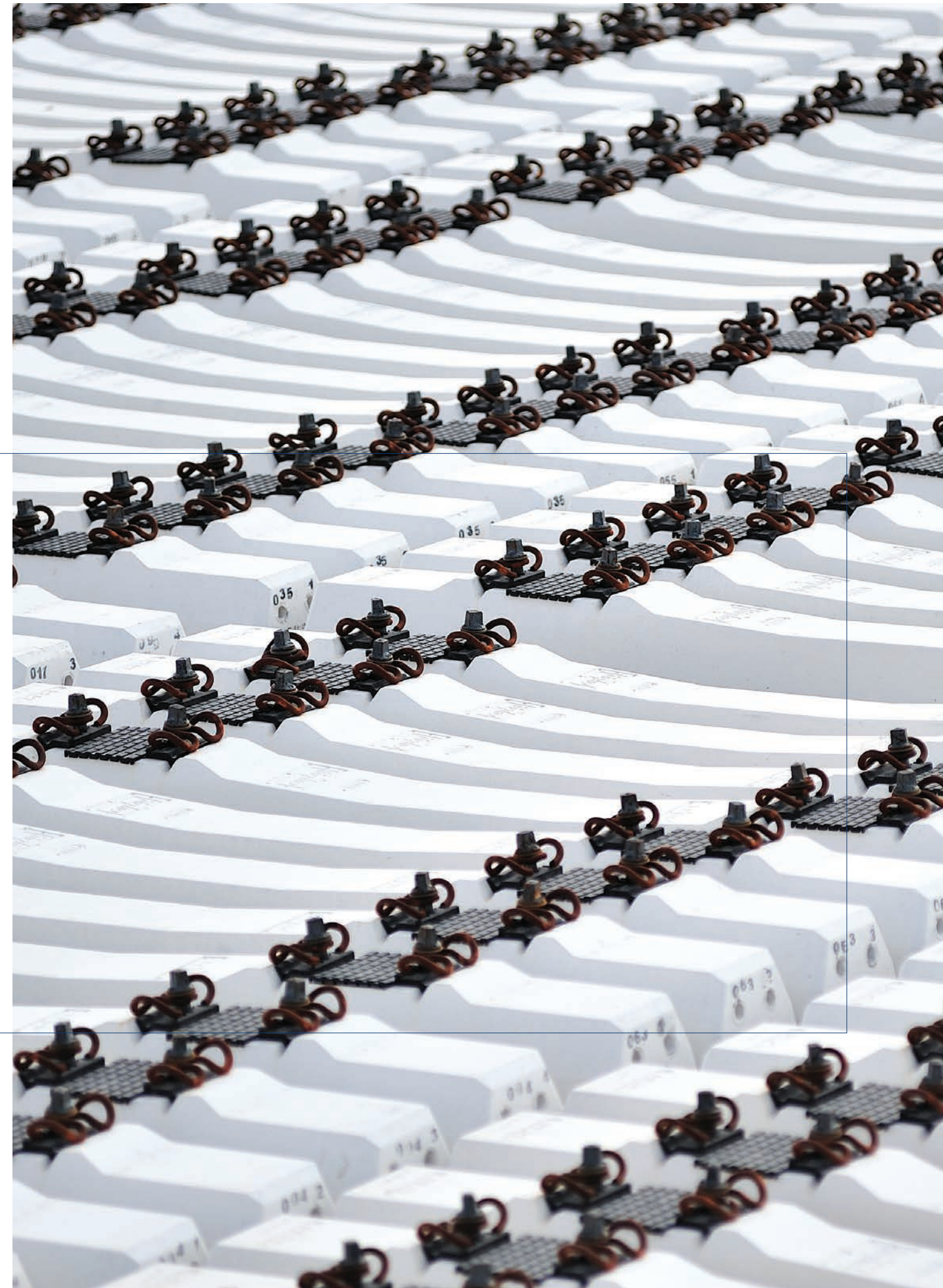
YAPIRAY has its own specified machinery park with a total value of approximately 50 million €. This machinery park is one of the most important advantages for key projects, like; new construction of high-speed & freight railway projects, maintenance and renewal of existing lines, various types of metro projects.

Machineries	Brands	Quantity
Tamping Machine, Dynamic Track Stabilizer & Regulator	Plasser & Theurer	13
Flash Butt Welding Machines	Schlatter	5
Track and Turnout Laying Machines	Vaicar/Lancer/PEM	9
Locomotives	LDH/LDE	8
Unimog	Mercedes-Benz	6
Railway Excavators	Liebherr/Atlas/O&K	11
Ballast (Hopper) Wagons	Faccpp Type	26
Silo Wagons	Ucs Types	15
Flat Wagons	Ks/La/Rgs/Smmns-w Types	54
Gantry Cranes	Bvs/Çesan	4





# SLEEPERS SLAB TRACK *Products*





# B07 PRESTRESSED *Sleeper*

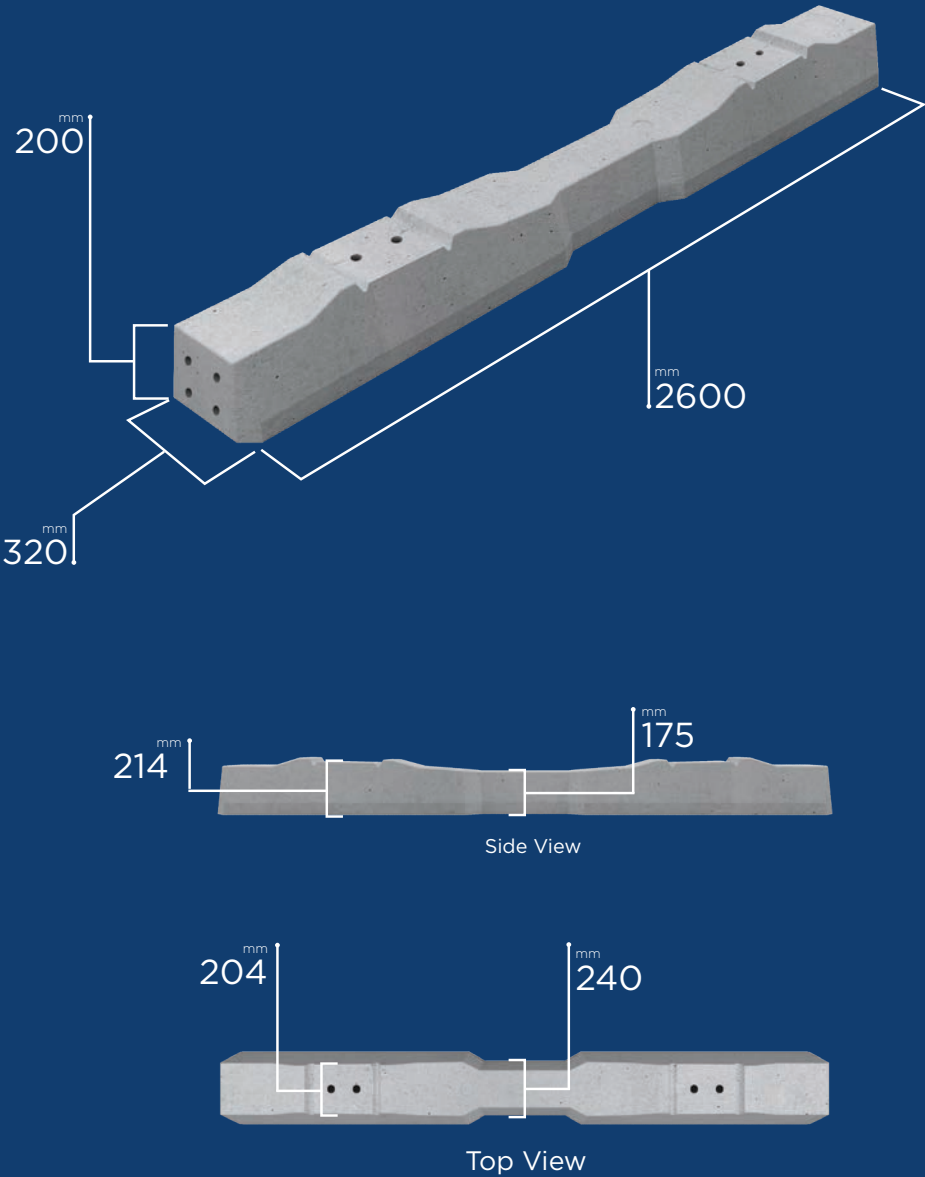


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C50/60
Design Speed*	300 km/h	Volume	140 dm <sup>3</sup>
Rail Type*	60 E2, 60 E1 (UIC 60)	Weight (excluding rail fastenings)*	350 kg
Rail Fastening Type*	W21	Sleeper Shoulder	1814 mm
Real Seat Cant*	1:40	Total Area of Sleeper Bottom	7944 cm <sup>2</sup>
Gauge	1436 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B07 PRESTRESSED CONCRETE SLEEPER



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# B70 PRESTRESSED *Sleeper*

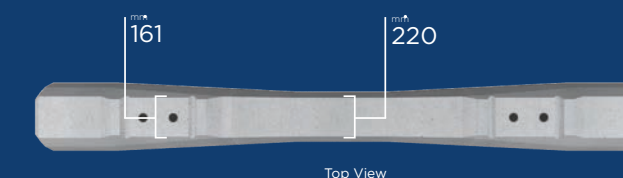
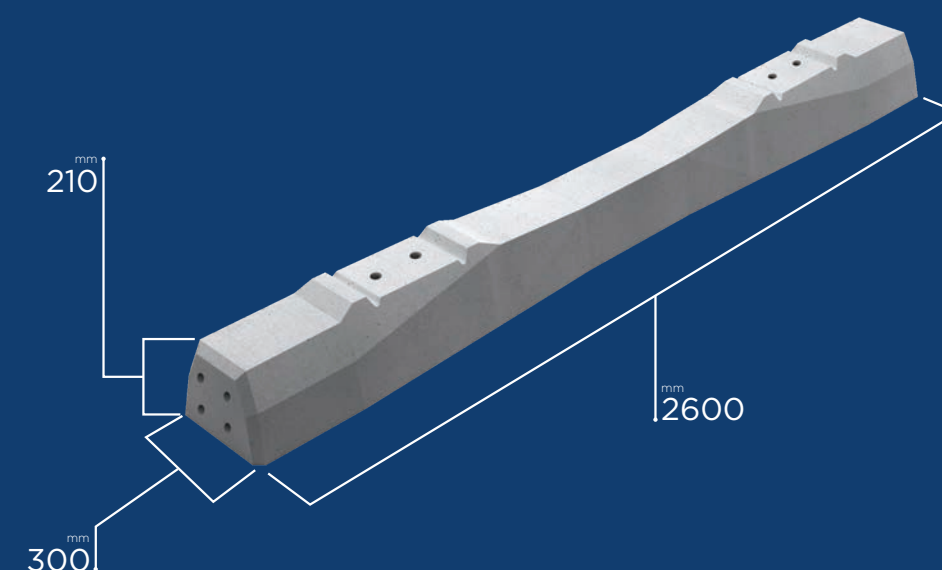


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C65/80
Design Speed*	300 km/h	Volume	115 dm <sup>3</sup>
Rail Type*	60 E2, 60 E1	Weight (excluding rail fastenings)*	294,5 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1813 mm
Rail Seat Cant*	1:40	Total Area of Sleeper Bottom	6832 cm <sup>2</sup>
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B70 PRESTRESSED CONCRETE SLEEPER





# HH (HEAVY HAUL) PRESTRESSED *Sleeper*

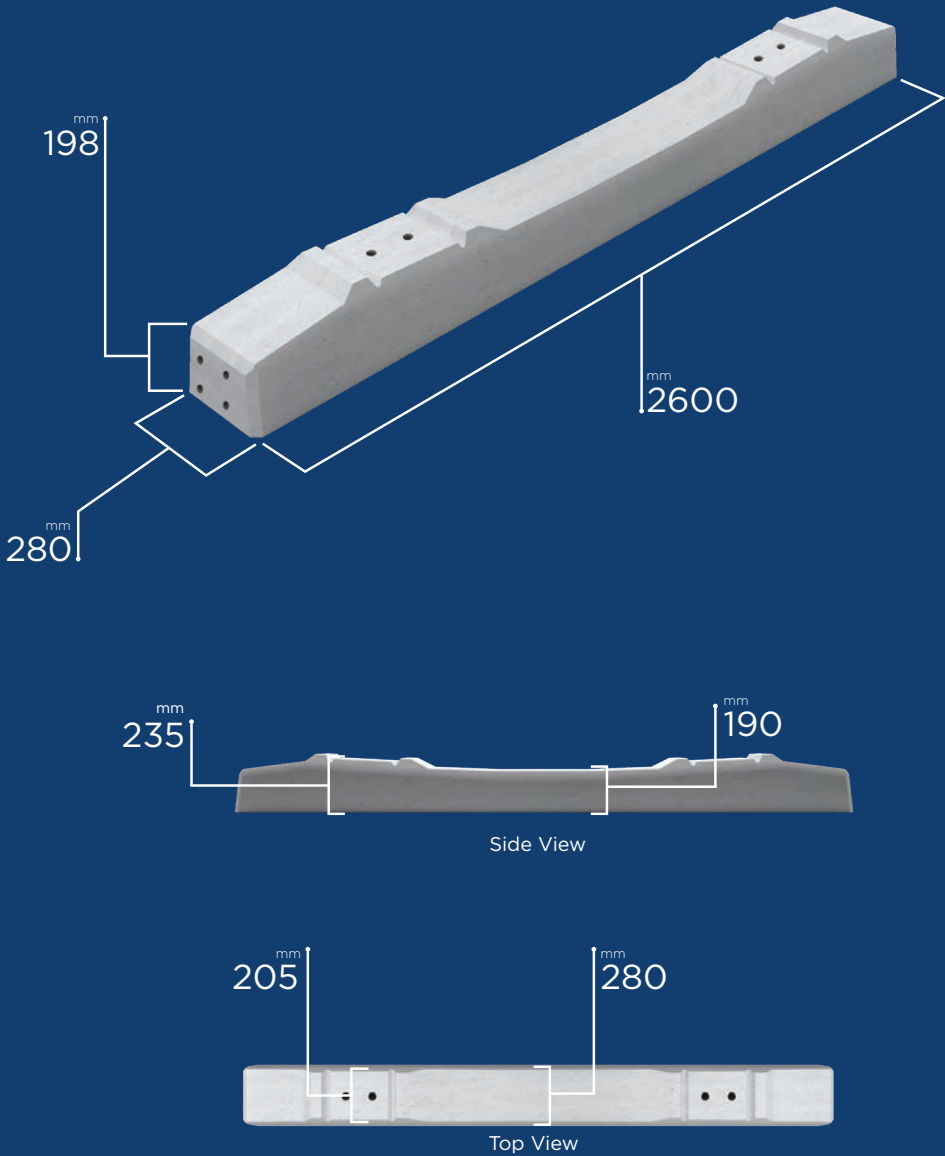


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	350 kN - 250 kN	Concrete Quality*	C50/60
Design Speed*	120 km/h - 160 km/h	Volume	143 dm³
Rail Type*	60 E1	Weight (excluding rail fastenings)*	353.2 kg
Rail Fastening Type*	W14 HH	Sleeper Shoulder	1823 mm
Real Seat Cant*	1:20	Total Area of Sleeper Bottom	7280 cm²
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## HH (Heavy Haul) PRESTRESSED CONCRETE SLEEPER



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# B70 - DG PRESTRESSED *Sleeper*

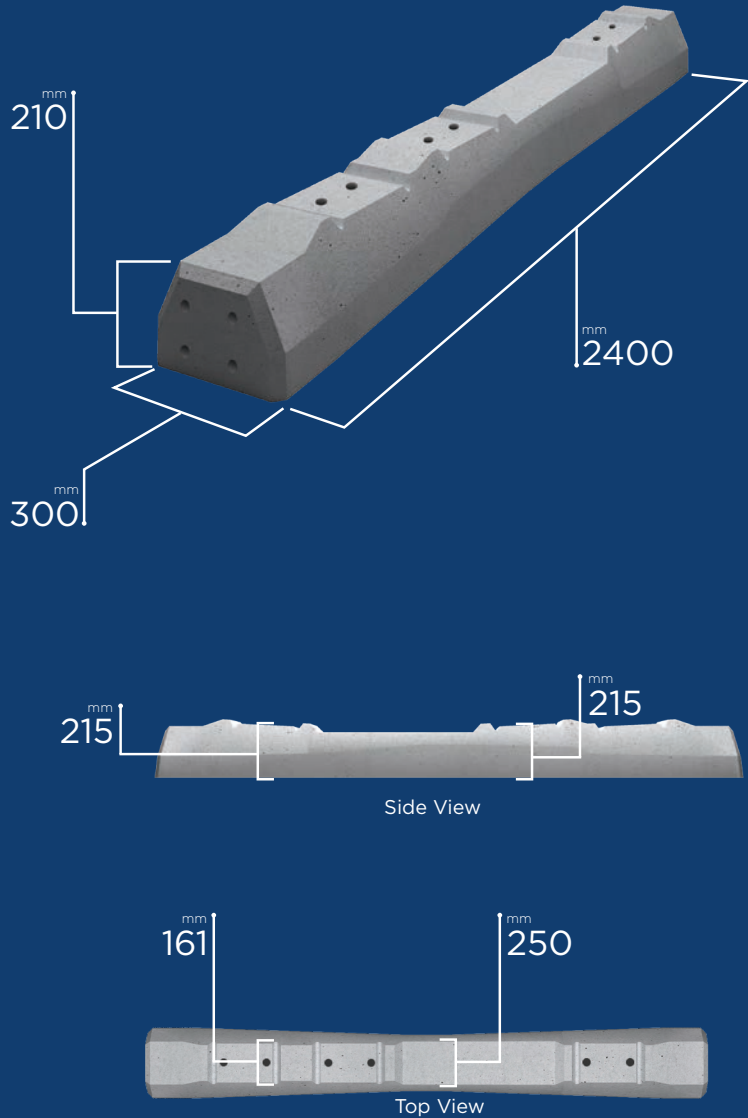


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	225 kN	Concrete Quality*	C50/60
Design Speed*	160 km/h - 120 km/h	Volume	118 dm³
Rail Type*	54 E1	Weight (excluding rail fastenings)*	285 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1808.2 mm / 1373.2 mm
Real Seat Cant*	1:20	Total Area of Sleeper Bottom	6520 cm²
Gauge	1435 <sup>-1/+2</sup> mm - 1000 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B70 - DG PRESTRESSED CONCRETE SLEEPER



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# B70 2.4 PRESTRESSED *Sleeper*

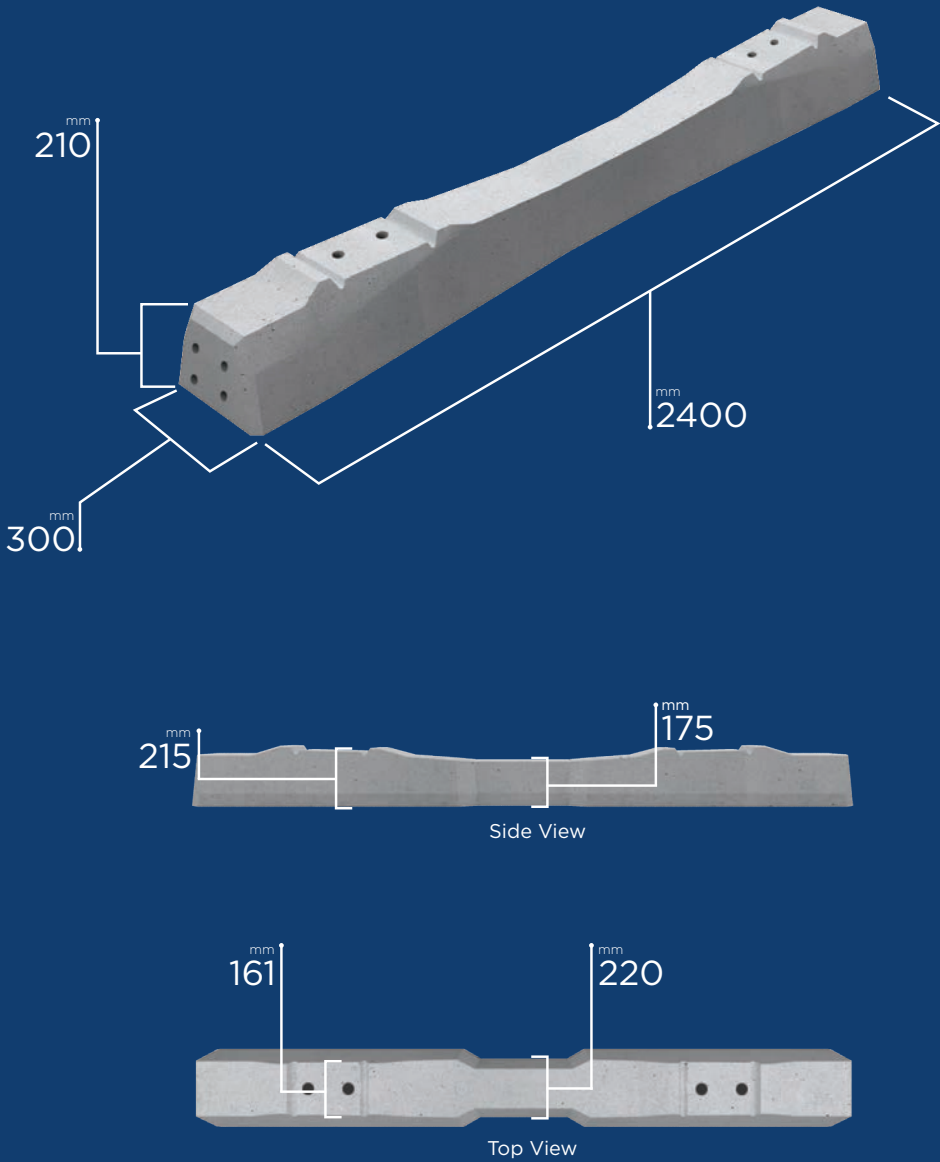


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C50/60
Design Speed*	160 km/h	Volume	105 dm <sup>3</sup>
Rail Type*	60 E1	Weight (excluding rail fastenings)*	250 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1813 mm
Real Seat Cant*	1:20	Total Area of Sleeper Bottom	6232 cm <sup>2</sup>
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B70 2.4 PRESTRESSED CONCRETE SLEEPER



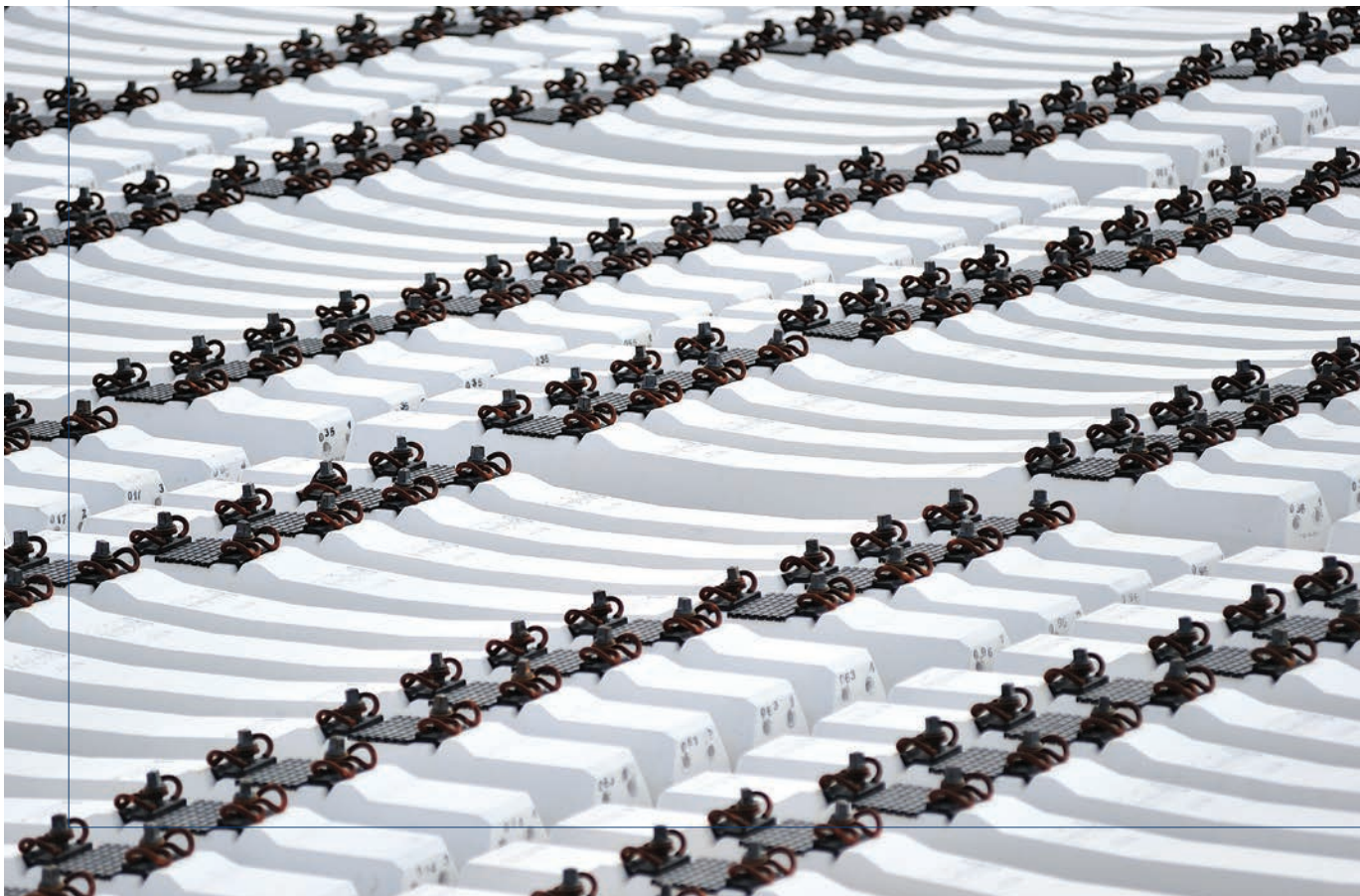
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# B58 2.4

## PRESTRESSED

### Sleeper

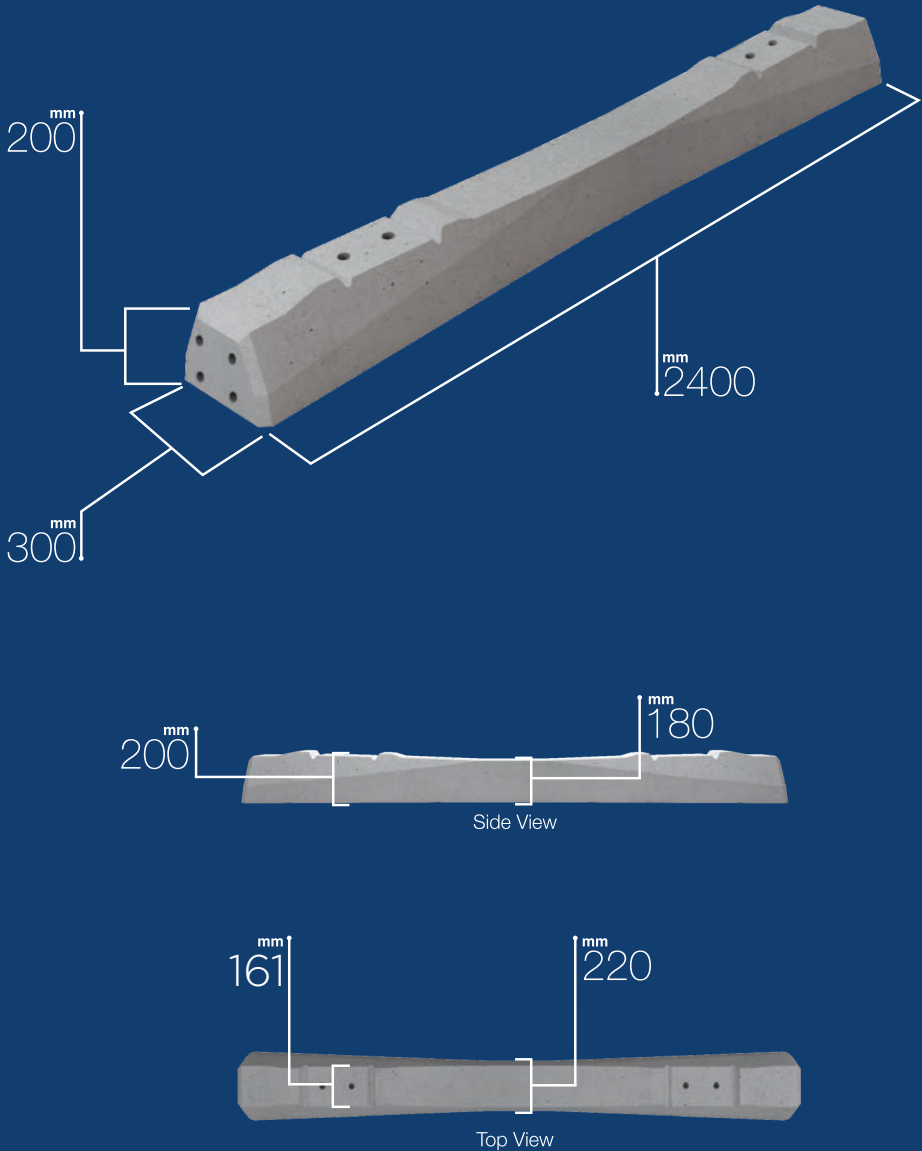


#### TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C50/60
Design Speed*	160 km/h	Volume	102.5 dm³
Rail Type*	49 E1	Weight (excluding rail fastenings)*	255 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1783 mm
Real Seat Cant*	1:40	Total Area of Sleeper Bottom	6128 cm²
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B58 2.4 PRESTRESSED CONCRETE SLEEPER





# B58 2.5 PRESTRESSED *Sleeper*

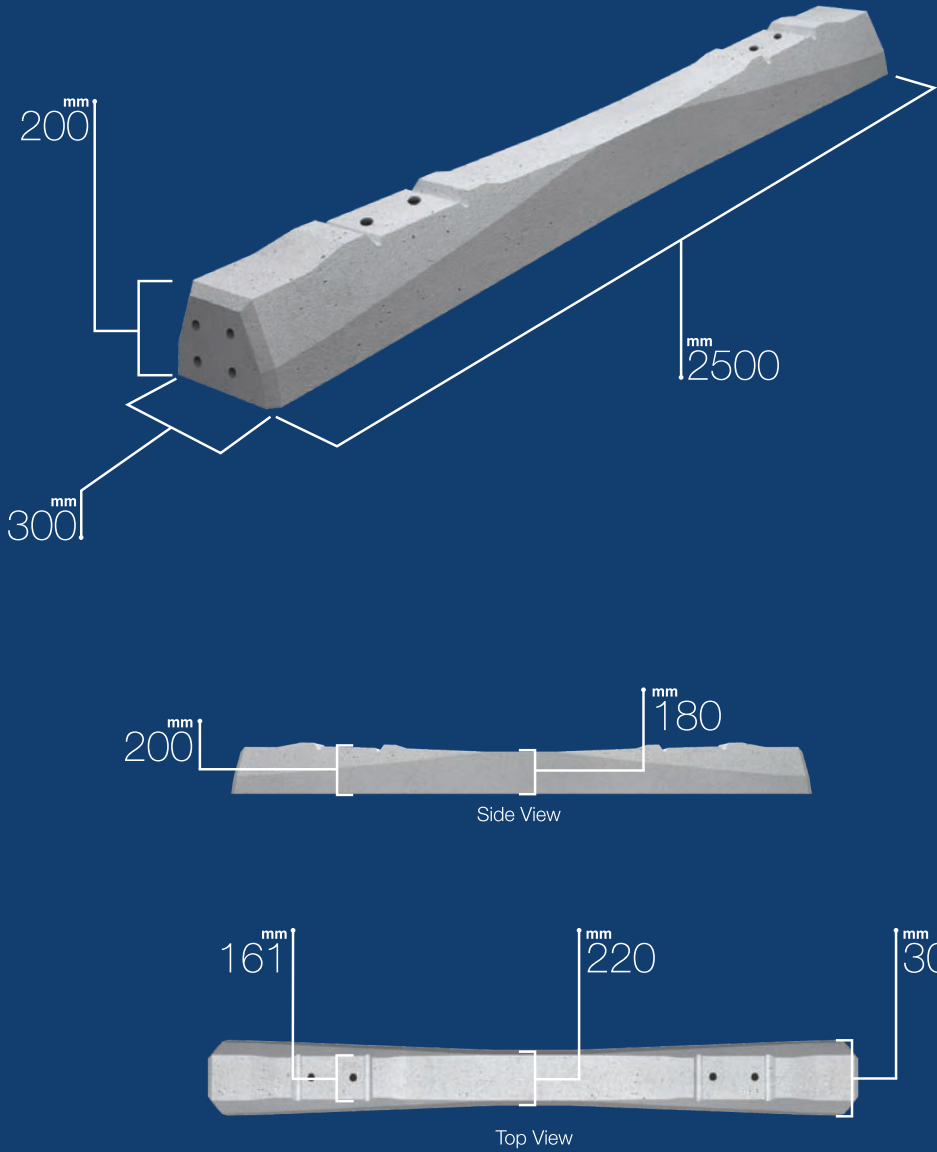


## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C50/60
Design Speed*	120 km/h	Volume	107 dm <sup>3</sup>
Rail Type*	54 E1 (UIC 54)	Weight (excluding rail fastenings)*	286 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1800 mm
Real Seat Cant*	1:40	Total Area of Sleeper Bottom	6520 cm <sup>2</sup>
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## B58 2.5 PRESTRESSED CONCRETE SLEEPER



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# B320

## PRESTRESSED

### *Sleeper*

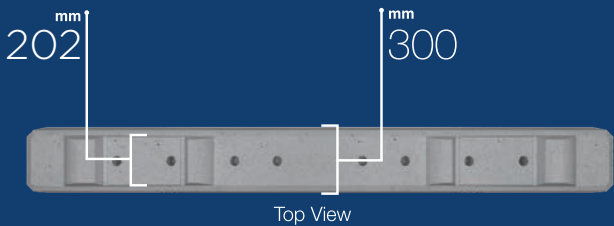
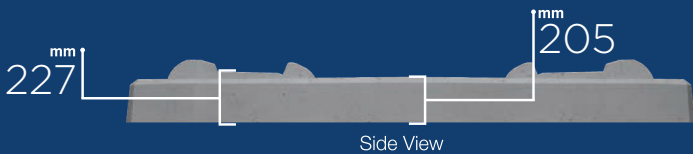
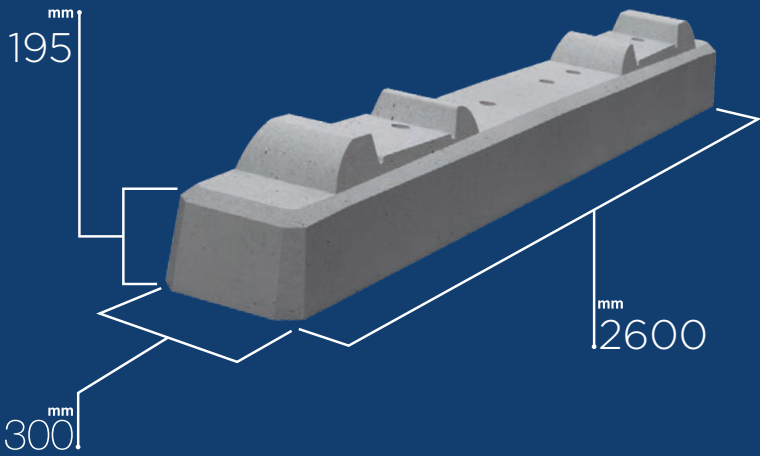


#### TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 kN	Concrete Quality*	C65/80
Design Speed*	300 km/h	Volume	159 dm <sup>3</sup>
Rail Type*	60 E2	Weight (excluding rail fastenings)*	397.5 kg
Rail Fastening Type*	System 300 and System KS	Sleeper Shoulder	1892 mm
Real Seat Cant*	1:40	Total Area of Sleeper Bottom	7768 cm <sup>2</sup>
Gauge	1436 <sup>-1/+2</sup> mm	Intended Purpose	Transition Zone Sleeper

## B320 PRESTRESSED CONCRETE SLEEPER



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# M450 V PRESTRESSED *Sleeper*

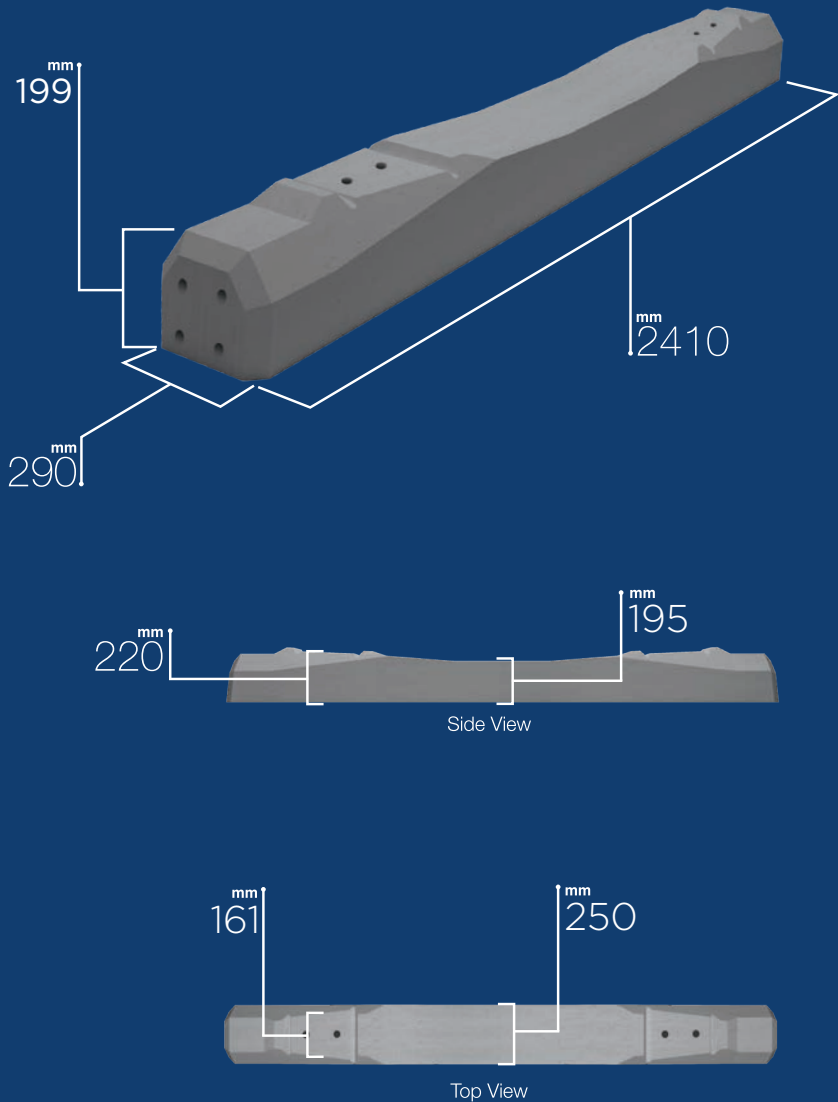


TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	225 kN	Concrete Quality*	C50/60
Design Speed*	160 km/h	Volume	111.8 dm³
Rail Type*	60 E1	Weight (excluding rail fastenings)*	285 kg
Rail Fastening Type*	W14	Sleeper Shoulder	1820 mm
Real Seat Cant*	1:20	Total Area of Sleeper Bottom	6586 cm²
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## M450 V PRESTRESSED CONCRETE SLEEPER



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# PRESTRESSED BRIDGE *Sleeper*



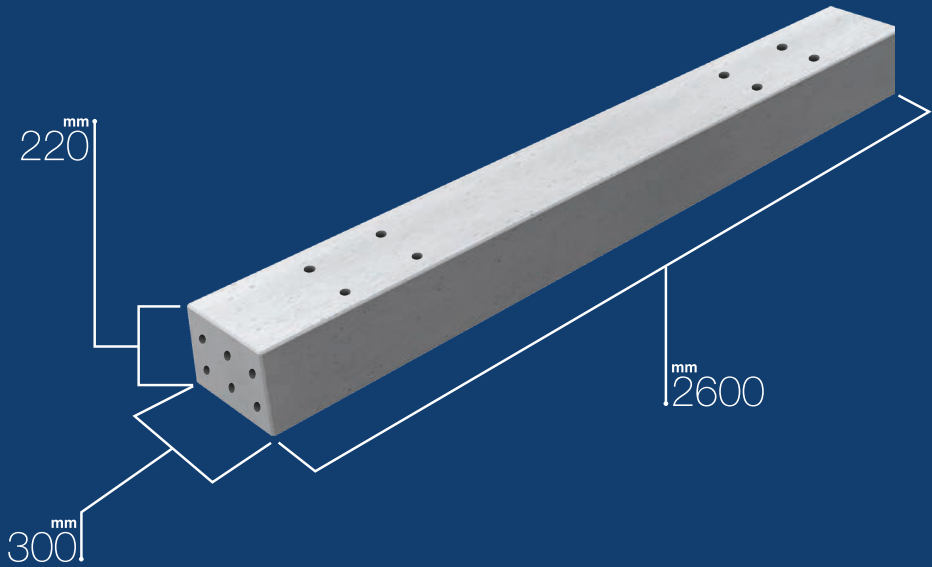
## TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 - 350 kN	Concrete Quality*	C50/60
Design Speed*	300 - 160 km/h	Volume	165 dm <sup>3</sup>
Rail Type*	All Types	Weight (excluding rail fastenings)*	414.7 kg
Rail Fastening Type*	System KS 24	Total Area of Sleeper Bottom	7800 cm <sup>2</sup>
Real Seat Cant*	Various	Intended Purpose	Bridge Sleeper
Gauge	Various		

## Bridge Sleeper for Guard Rail

### PRESTRESSED CONCRETE SLEEPER



Side View



Top View

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# TURNOUT *Sleeper*



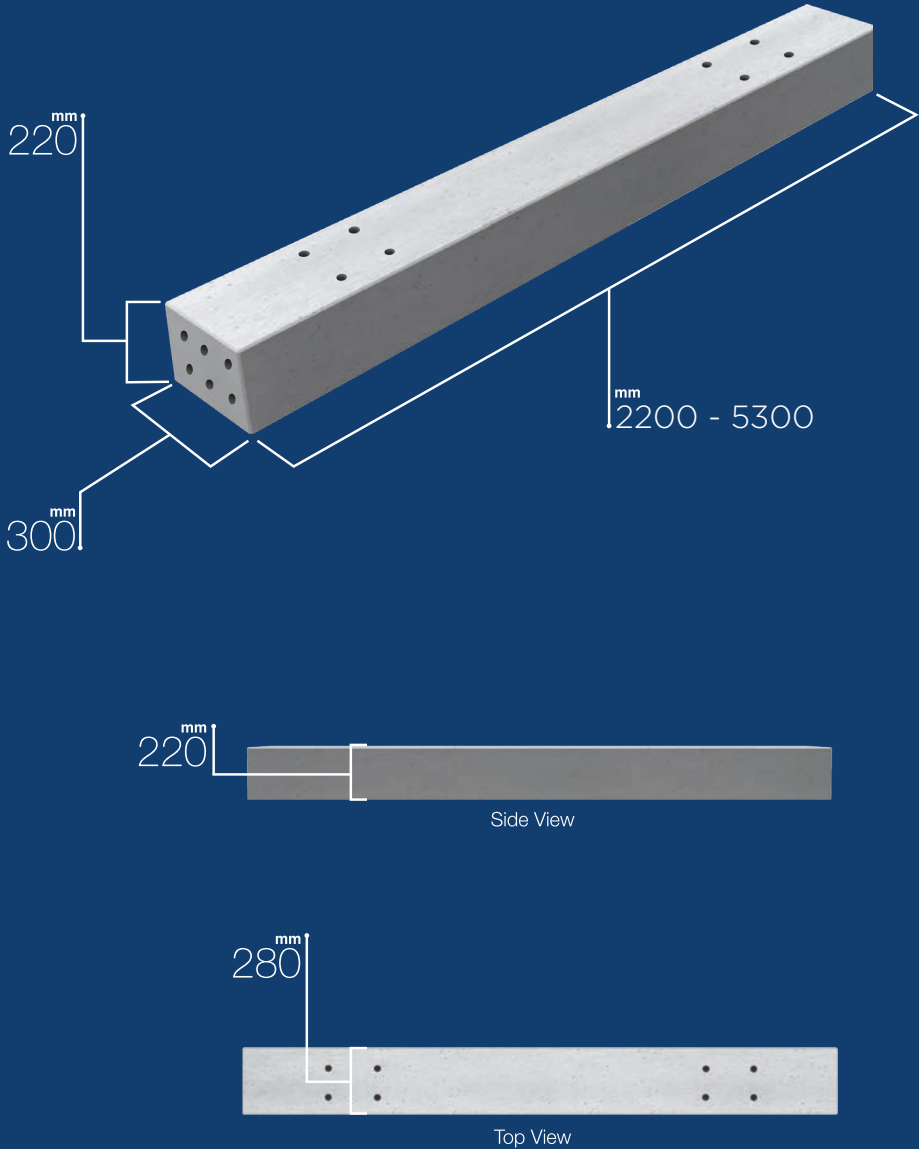
TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	250 - 350 kN	Concrete Quality*	C65/80
Design Speed*	300 - 160 km/h	Volume	63.8 dm <sup>3</sup> /m
Rail Type*	All Types	Weight (excluding rail fastenings)*	160 kg/m
Rail Fastening Type*	W12 or W21T	Total Area of Sleeper Bottom	3000 cm <sup>2</sup> /m
Real Seat Cant*	-	Intended Purpose	Turnout Sleeper
Gauge	1435 <sup>-1/+2</sup> mm		

## Turnout Sleeper

PRESTRESSED CONCRETE SLEEPER



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# RAYTON

# Slab Track



## TECHNICAL SPECIFICATIONS

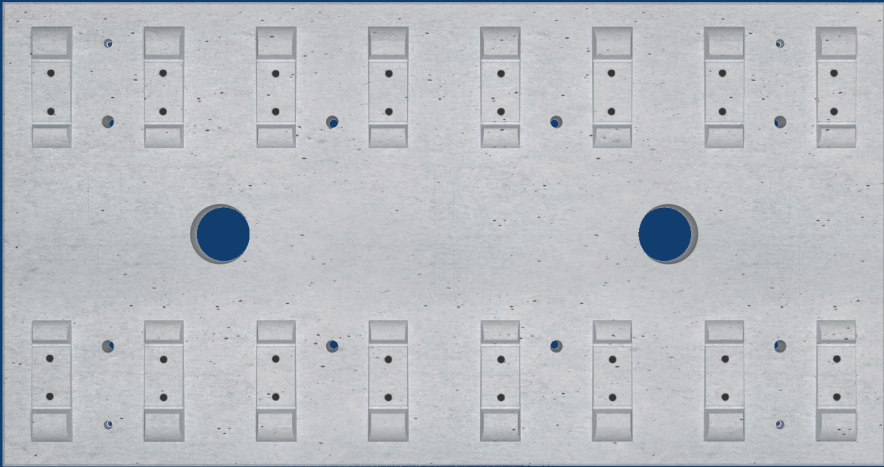
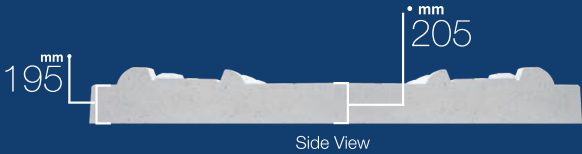
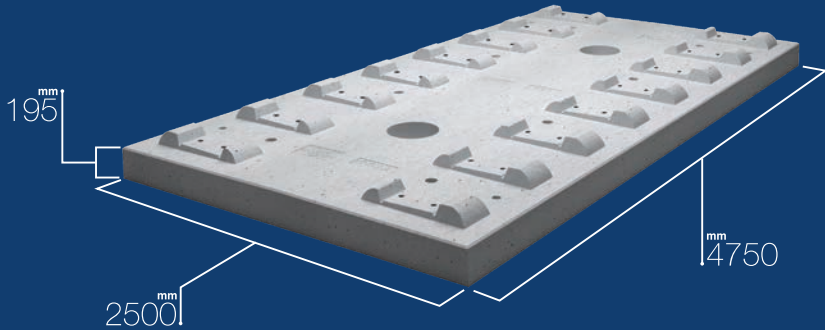
\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	LM 71	Gauge	1436 <sup>-1/+2</sup> mm
Axle Load	250 kN	Concrete Quality*	C50/60
Design Speed*	300 km/h	Weight (excluding rail fastenings)*	6240 kg
Rail Type*	60 E2	Total Area of Bottom	118750 cm <sup>2</sup>
Rail Fastening Type*	System 300-1	Foundation Type*	Various
Real Seat Cant*	1:40		

## Rayton Slab Track

Two different types of Rayton Slab Track are available

- Rayton Post-tensioned Concrete Slab Track
- Rayton Reinforced Concrete Slab Track



Top View

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RAYTON

Slab Track 2.35

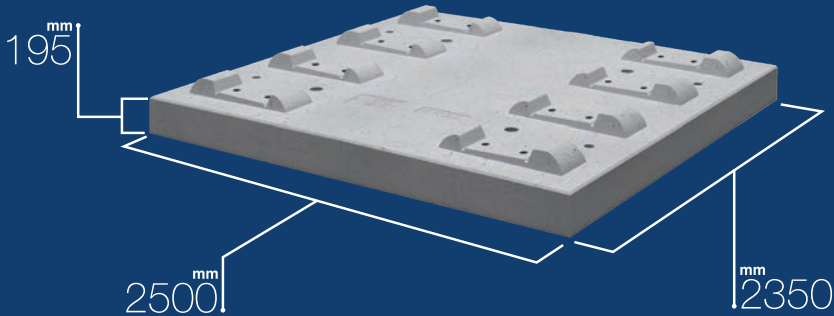


TECHNICAL SPECIFICATIONS

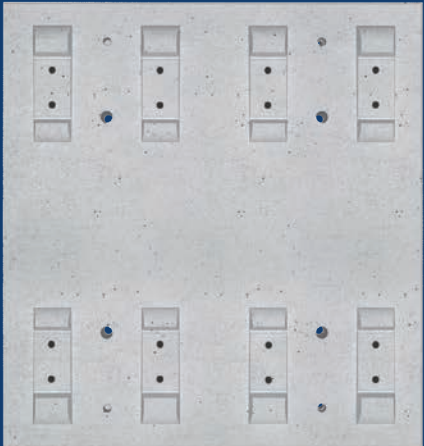
\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	LM 71	Gauge	1436 <sup>-1/+2</sup> mm
Axle Load	250 kN	Concrete Quality*	C50/60
Design Speed*	300 km/h	Weight (excluding rail fastenings)*	3087 kg
Rail Type*	60 E2	Total Area of Sleeper Bottom	58750 cm <sup>2</sup>
Rail Fastening Type*	System 300-1	Foundation Type *	Various
Real Seat Cant*	1:40		

Rayton Slab Track 2.35 (RC)



Side View



Top View

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# TB-12

## REINFORCED

### *Sleeper*

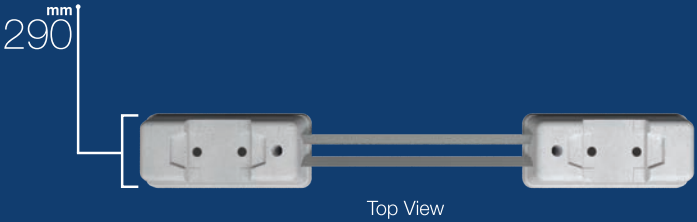
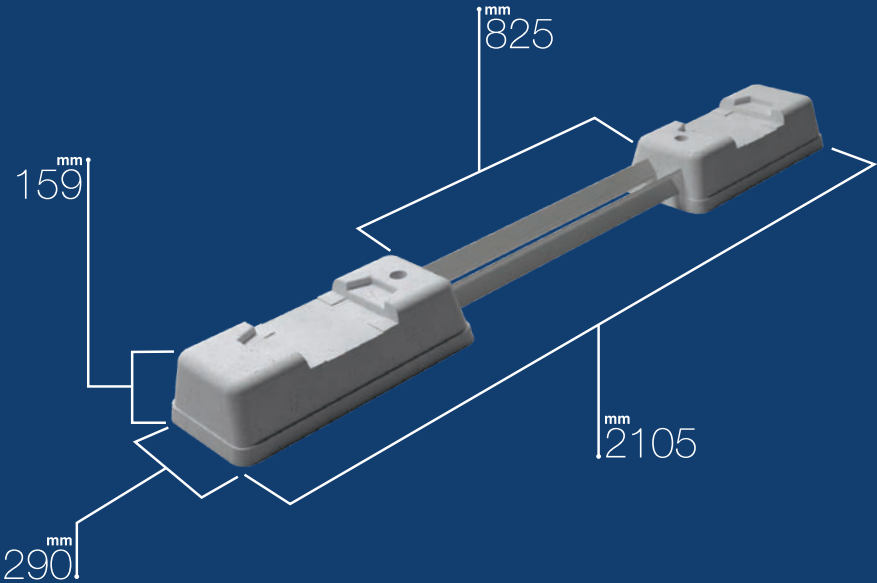


#### TECHNICAL SPECIFICATIONS

\* Marked lines are the values given for standard sleepers and can be modified to meet different requirements.

Design Axle Load*	165 kN	Concrete Quality*	C50/60
Design Speed*	80 km/h	Volume	57 dm <sup>3</sup>
Rail Type*	41 GPU	Weight (excluding rail fastenings)*	148 kg
Real Seat Cant*	-	Total Area of Sleeper Bottom	1829 cm <sup>2</sup>
Gauge	1435 <sup>-1/+2</sup> mm	Intended Purpose	Mainline Sleeper

## TB -12 REINFORCED CONCRETE SLEEPER



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# PRODUCT References



## MAINLINE SLEEPERS

	Production Name	Rail Type	Sleeper Type	Quantity	Project / Employee
1	B70 Monoblock Concrete Sleeper	60E1	Monoblock	873.251	TCDD (Production Between 2009 - 2018)
2	B70 Monoblock Concrete Sleeper	60E1	Monoblock	708080	Ankara - Konya YHT Line / TCDD
3	B70 Monoblock Concrete Sleeper	60E1	Monoblock	23000	Hasanbey Logistics Center / TCDD
4	Sonneville Booted Block	60E1	LVT Block	90.500	Marmaray BC1 / TGN JV
5	B70 Monoblock Concrete Sleeper	60E1	Monoblock	120.968	Renewal of Bozkurt - Dinar / TCDD
6	B58 Monoblock Concrete Sleeper	49E1	Monoblock	238.000	Rehabilitation and Signalization of IKZ Project / TCDD
7	B58 Monoblock Concrete Sleeper	54E1	Monoblock	441.000	Awash - Weldia Railway Project Trackworks Construction
8	B70 Monoblock Concrete Sleeper	60E1	Monoblock	40.000	ALSTOM Transport / Papua New Gine Mine Line
9	B58 Monoblock Concrete Sleeper	49E1	Monoblock	31.000	Antalya Tramway / Antalya
10	TW120	41GPU	Bi Block	46.989	Sétif Tramway / Algeria
11	TW120	41GPU	Bi Block	40.434	Sidi Bel Abbes Tramway Line / Algeria
12	YMPFB Block	60Ri	Block	85.750	ESTRAM - Eskişehir Tramway Line
13	B58 Monoblock Concrete Sleeper	49E1	Monoblock	199.576	Track Renewal Work on Irmak - Tuney - Kurşunlu / TCDD
14	B07 Monoblock Concrete Sleeper	60E2	Monoblock	650.000	Yerköy - Sivas High Speed Line / TCDD
15	Panelray Prefabricated Slab Track	60E2	Slab Track	21.000	Yerköy - Sivas High Speed Line / TCDD
16	B07 Monoblock Concrete Sleeper	60E2	Monoblock	430.000	Kayaş - Yerköy High Speed Line / TCDD
17	B70 Monoblock Concrete Sleeper	60E2	Monoblock	30.000	Kayaş - Yerköy High Speed Line / TCDD
18	Panelray Prefabricated Slab Track	60E2	Slab Track	12.000	Kayaş - Yerköy High Speed Line/TCDD
19	Bridge Sleeper	54E1	Bridge	17.500	Awash - Weldia Railway Project Trackworks Construction

## TURNOUT SLEEPERS

	Production Name	Rail Type	Turnout Type	Length in Meters	Project / Employee
1	Turnout Sleeper	60E1	1/9 R:300	19.118 m	Hasanbey Logistics Center / TCDD
2	Turnout Sleeper	60E1	1/9 R:300	1.694 m	Tekirdağ - Muratlı Railway Line / TCDD
3	Turnout Sleeper	49E1	1/9 R:300	24.200 m	Rehabilitation and Signalization of IKZ Project / TCDD
5	Turnout Sleeper	54E1	1/9 R:300	24.442 m	Awash - Weldia Railway Project Trackworks Construction
6	Turnout Sleeper	60E1	1/9 R:300	17.182 m	VAE Turnout / Turkey Plant
7	Turnout Sleeper	60E1	1/9 R:300	2.420 m	Renewal of Bozkurt - Dinar / TCDD
8	Turnout Sleeper	60E1	1/9 R:300	726 m	Rehabilitation and Signalization of IKZ Project / TCDD



# RESEARCH AND DEVELOPMENT *Laboratory*

In parallel with technologies developing currently, as in many sectors, construction and superstructure sector have experienced important changes. Our objective is the follow innovation and technology and achieve required standard and quality.

Our laboratories have been established in accordance with TS EN ISO/IEC 17025 and aim to operate with the quality management system and ensuring testing services with internationally approved methods. It is aimed to get qualified, fast, reliable testing results for maximum customer satisfaction.

TESTED MATERIAL	NAME OF THE TEST	TESTING MODULE
AGGREGATE	Measurement of Particle Size Distribution via Screening Method	EN 933 - 1
AGGREGATE	Measurement of Loose Bulk Intensity and Clearance Volume	EN 1097 - 3
AGGREGATE	Measurement of Water Content via Drying in a Ventilated Oven	EN 1097 - 5
AGGREGATE	Measurement of Particle Density and Water Absorption Rate	EN 1097 - 6
AGGREGATE	Measurement of Thin Particles Methylene Blue Test	EN 933 - 9
FRESH CONCRETE	Slump Test	EN 12350 - 2
FRESH CONCRETE	Intensity Test	EN 12350 - 6
FRESH CONCRETE	Measurement of Air Content (Pressure Methods)	EN 12350 - 7
HARDENED CONCRETE	Measurement Compressive Strength of Test Samples	EN 12390 - 3
SLEEPER	Measuring Dimensions	EN 13230 - 1
SLEEPER	Positive and Negative Moment Test	EN 13230 - 2
RAIL	Bending Test for Butt-Welded Rails	EN 14587 - 2
RAIL	Bending Test for Alumino Thermic Welded Rails	EN 14730 - 1 + AI





# SAFETY QUALITY *Certificates*



## GROUP COMPANIES





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