



BRIDGE CONCRETE PRODUCT

DESCRIPTION

Precast concrete bridge products are used as superstructure components in bridge construction. Typically, bridge superstructures use I-beams, but they have evolved into various cross-section shapes, such as U-type and T-type beams, with spans up to 50 meters. Whilst, for bridge spans up to 60 meters, Bulb Tee types can be used.

For simple bridge constructions requiring quick implementation, WIKA Beton provides voided slab and channel girder products. These bridges can be immediately used by vehicles after the products are installed, as they already function as the bridge slab.

Next, the Double Tee (slab) product is used in steel frame bridge structures. The use of Double Tee products can shorten the construction time for new bridges, or if used for bridge deck repairs, the bridge can still remain operational because the work can be arranged in such a way that it does not disrupt vehicle traffic.

Based on the prestressing method, beams are produced using two methods: pre-tensioning and post-tensioning, according to the conditions and needs in the field. Pre-tensioned bridge beams are produced monolithically, while post-tensioned beams are produced segmentally to accommodate construction area limitations and facilitate transportation.

The latest favorite in transportation infrastructure, especially in urban areas, is the bridge structure using Box Girders due to their aesthetic appearance. Additionally, box girders have an efficient cross-section that makes the structural load lighter compared to girder structures. Bridges with box sections provide better torsional resistance, which is very beneficial for curved bridge applications. WIKA Beton's Box girders are made segmentally and can be used for bridge spans ranging from 40 meters to 100 meters.

Type of PC Girder

<p>● PC I Girder</p> 	<p>● PC U Girder</p> 	<p>● Bulb Tee</p> 	<p>● Double Tee</p> 
<p>● Voided Slab</p> 	<p>● Channel Girder</p> 	<p>● Box Girder</p> 	

Girder System
Prestressed System

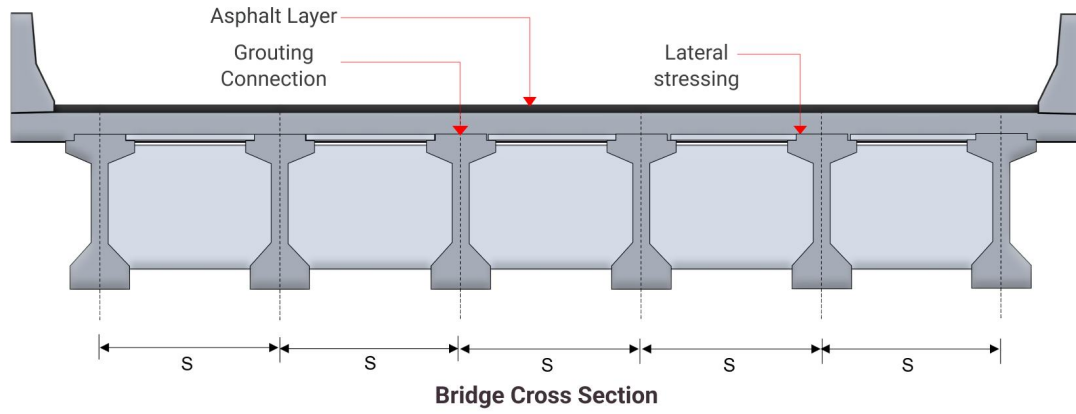
Segmental or Monolit
Post-Tension or Pretension

DESIGN REFERENCE

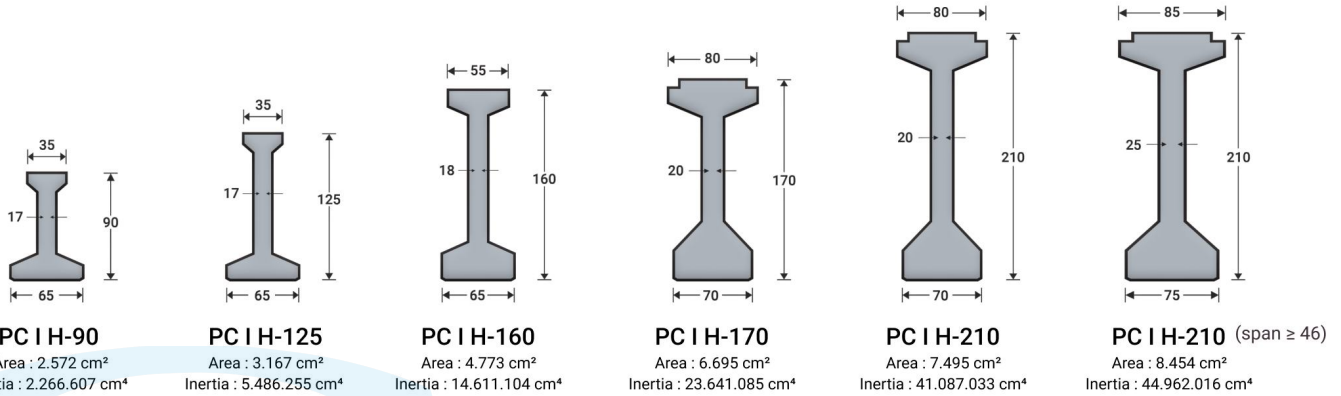
Design	Reference
SNI 6880	Structural Concrete Specification
SNI T - 12	Indonesian Concrete Code : Bridge Concrete Design
SNI 1725	Indonesian Concrete Code : Design Load for Bridge
PCI 7 th Edition	Precast and Prestressed Concrete
AASHTO - LRFD	Bridge Design Specifications

PRODUCT SHAPE

► PC I Girder



Bridge Cross Section



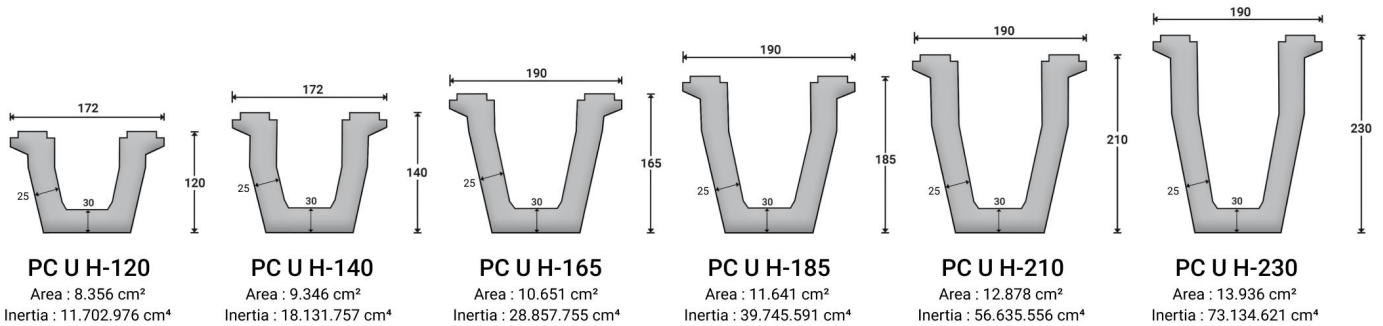
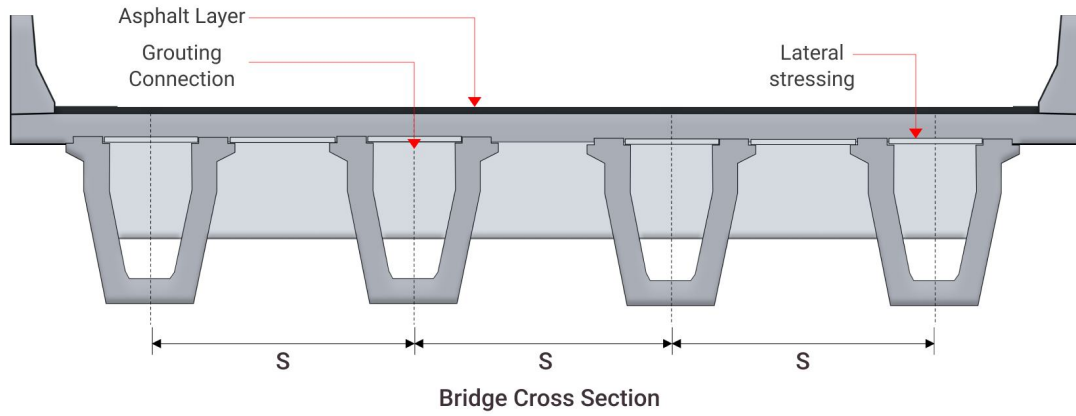
SPECIFICATION

Span (m)	PC I H-90 cm			PC I H-125 cm			PC I H-160 cm			PC I H-170 cm			PC I H-210 cm			
	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN)		Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN)		Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN)		Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN)		Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN)		
	V _{DL}	V _{LL}	V _{Ult}	V _{DL}	V _{LL}	V _{Ult}	V _{DL}	V _{LL}	V _{Ult}	V _{DL}	V _{LL}	V _{Ult}	V _{DL}	V _{LL}	V _{Ult}	
10	185/45	142	316	768												
11	185/45	156	327	803												
12	185/45	170	337	839												
13	185/45	184	345	872												
14	185/45	198	351	903												
15	185/45	212	357	932												
16	140/45	185	303	797	185/45	239	362	977								
17					185/45	256	367	1008								
18					185/45	271	371	1035								
19					185/45	286	374	1061								
20					185/45	300	378	1087								
21					185/45	315	380	1112								
22					140/45	273	321	944	185/45	382	383	1.199				
23					140/50	285	323	964	185/45	398	386	1.226				
24									185/45	415	388	1.252				
25									185/45	431	390	1.278				
26									185/45	448	392	1.303				
27									185/45	464	394	1.329				
28									185/45	481	395	1.354				
29									185/45	497	397	1.378				
30									140/45	439	333	1.181	185/45	571	398	1472
31									140/45	453	334	1.201	185/45	589	400	1498
32													185/45	611	401	1529
33													185/45	629	402	1555
34													185/45	647	403	1582
35													185/45	666	404	1608
36													185/45	684	405	1634
37													185/45	702	406	1659
38													185/50	720	410	1691
39													140/45	637	341	1448
40													140/45	653	342	1470
41													140/45	669	343	1492
42													185/45	834	422	1.856
43													185/45	853	427	1.889
44													185/50	872	431	1.922
45													185/50	891	435	1.955
46													185/50	910	439	1.987
47													185/60	980	443	2.081
48													185/60	1.001	447	2.116
49													140/60	895	346	1.782
50													140/60	913	347	1.806
													140/60	931	348	1.832

Note : • Bridge section parameter : Slab thickness = 250mm, Deck Slab = 70mm, and Asphaltic Layer 100mm
 • Load Factor Refer to SNI 1725
 • Girder for Span above 46m use dapped end section

PRODUCT SHAPE

► PC U Girder



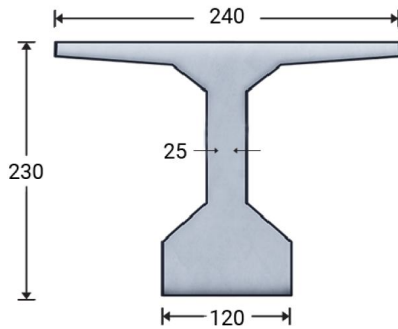
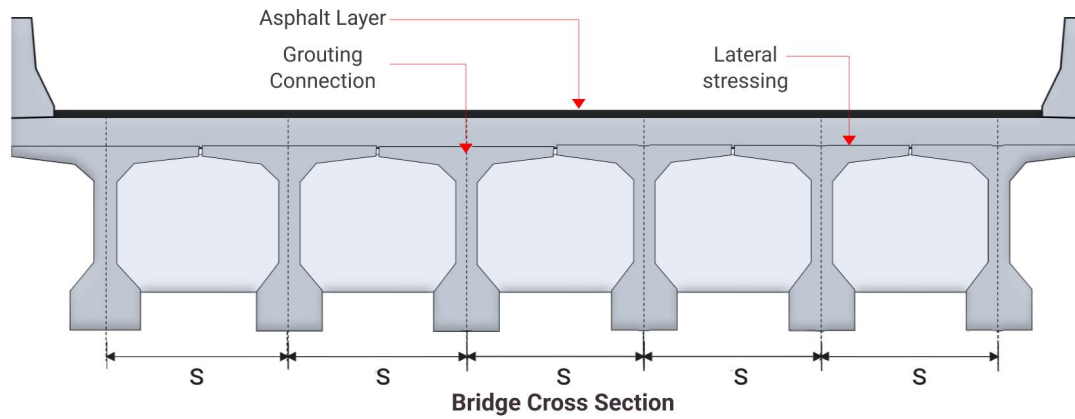
SPECIFICATION

Span (m)	PC U H-120 cm				PC U H-140 cm				PC U H-165 cm				PC U H-185 cm				PC U H-210 cm				PC U H-230 cm			
	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}	Beam Spacing/fc' (cm/MPa)	Beam Support Reaction (kN) V _{DL}	V _{LL}	V _{Ult}
13	310/45	373	519	1.430																				
14	310/45	400	529	1.485																				
15	310/45	427	538	1.537																				
16	310/45	457	545	1.591																				
17	310/45	487	552	1.644																				
18	310/45	514	558	1.691	310/45	540	558	1.721																
19	310/45	542	564	1.737	310/45	568	564	1.769																
20	310/45	569	568	1.782	310/45	597	568	1.815																
21	310/45	596	573	1.826	310/45	625	573	1.861																
22	310/45	623	577	1.870	310/45	653	577	1.906																
23	310/45	650	581	1.912	310/45	681	581	1.950																
24	270/45	615	502	1.720	310/45	710	584	1.994																
25					310/45	738	587	2.037	310/45	801	587	2.113												
26					310/45	773	590	2.088	310/45	831	590	2.158												
27					310/50	801	592	2.130	310/45	861	592	2.202												
28					310/50	829	603	2.188	310/45	890	603	2.261												
29					270/50	781	538	2.001	310/45	920	617	2.326												
30					270/60	807	550	2.057	310/50	950	631	2.391												
31									310/60	980	638	2.443												
32									270/50	928	562	2.230												
33									310/50	1.054	645	2.548												
34									310/50	1.091	652	2.609												
35									310/50	1.122	659	2.662												
36									310/50	1.153	666	2.716												
37									310/50	1.184	673	2.770												
38									310/60	1.215	680	2.823												
39									310/60	1.246	687	2.877												
40									270/60	1.176	604	2.628												
41									270/60	1.205	610	2.676					310/60	1.381	701	3.071				
42																	310/60	1.413	708	3.127				
43																	310/60	1.446	715	3.182				
44																	310/60	1.479	722	3.238				
45																	270/60	1.397	635	2.964	310/60	1.557	729	3.345
46																	270/60	1428	641	3.015	310/60	1.590	736	3.402
47																					310/60	1.623	743	3.458
48																					310/60	1.657	750	3.514
49																					310/70	1.690	757	3.571
50																					310/70	1.723	764	3.627
																					310/70	1.757	771	3.683

Note : Based on bridge load refer to SNI 1725 : 2016 and assume bridge section parameter : 250 mm for CIP Slab, 70 mm concrete deck slab and 50 mm (+50 mm / -0 mm) asphaltic layer

PRODUCT SHAPE

► PC Bulb Tee Girder



PC Bulb Tee H-230

Area : 13.677,5 cm²
Inertia : 104.700.914 cm⁴

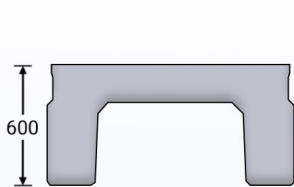
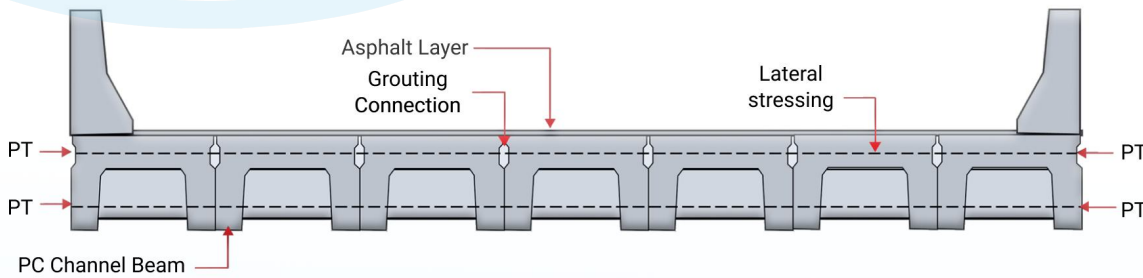
SPECIFICATION

Span (m)	Bulb Tee Beam		Beam Support Reaction (kN)		
	Spacing/fc' (cm/MPa)	Weight (ton/pes)	V _{DL}	V _{LL}	V _{ult}
55	250/70	238	1.727	648	3.358
56	250/70	241	1.755	653	3.403
57	250/70	245	1.782	659	3.448
58	250/70	248	1.810	664	3.492
59	250/70	252	1.838	669	3.537
60	250/70	255	1.865	675	3.582

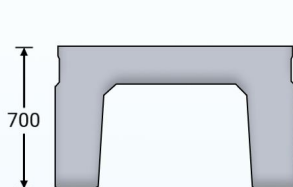
Note : Based on bridge load refer to SNI 1725 : 2016 and assume bridge section parameter using 200 mm topping slab and 50 mm (+50 mm / -0 mm) asphaltic layer

PRODUCT SHAPE

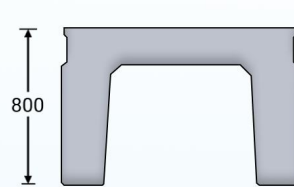
► PC Channel Girder



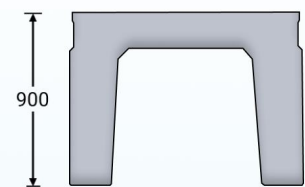
CG 60 x 120
Area : 4.329 cm²
Inertia : 1.293.103 cm⁴



CG 70 x 120
Area : 4.806 cm²
Inertia : 2.023.171 cm⁴



CG 80 x 120
Area : 5.274 cm²
Inertia : 2.968.087 cm⁴



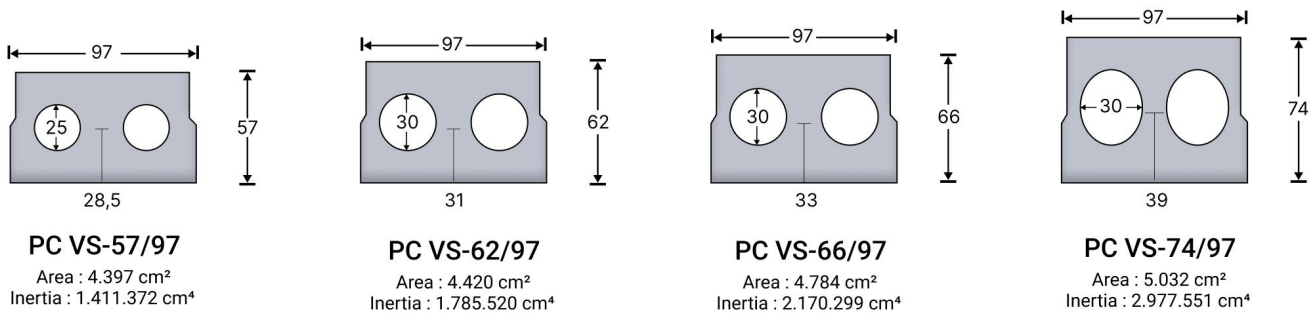
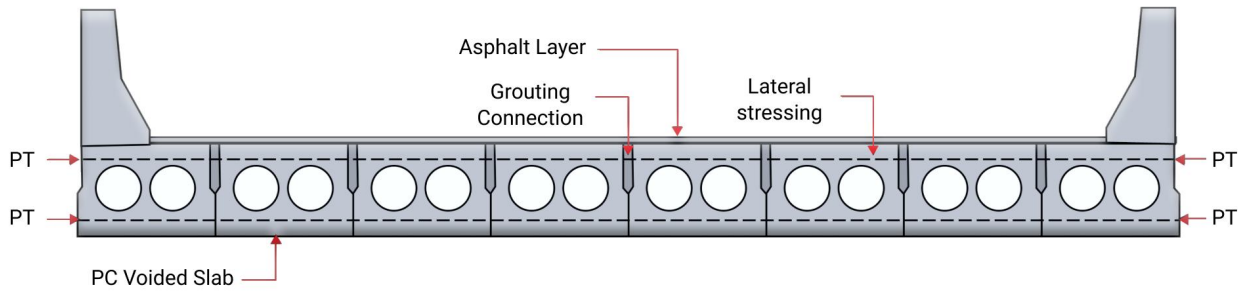
CG 90 x 120
Area : 5.728 cm²
Inertia : 4.142.306,02 cm⁴

SPECIFICATION

Type	Weight (Ton/m)	fc' (MPa)	Span (m)																		
			6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
CG 60 x 120	1,08	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
CG 70 x 120	1,20	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
CG 80 x 120	1,31	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
CG 90 x 120	1,43	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

PRODUCT SHAPE

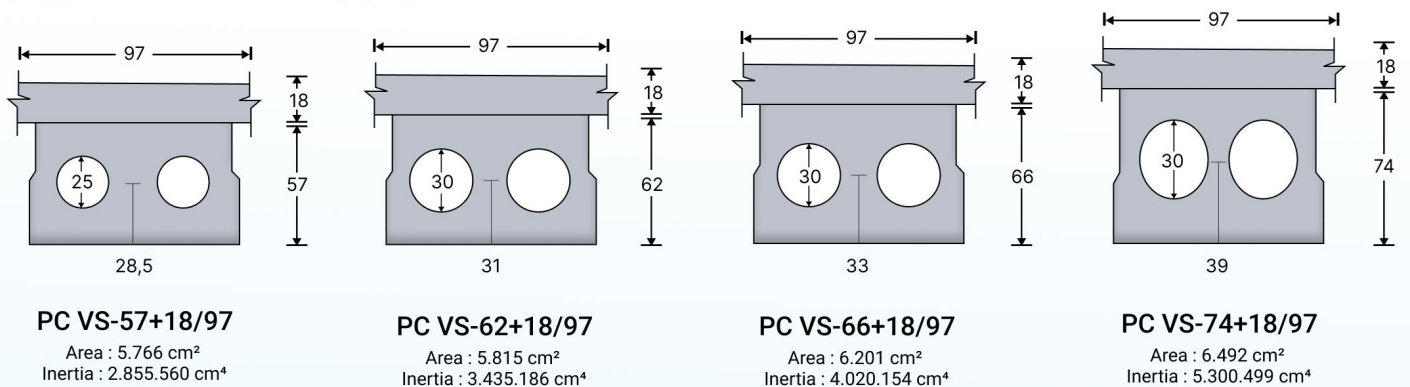
▶ PC Voided Slab



SPECIFICATION

Type	Weight (Ton/m)	fc' (MPa)	Span (m)																
			6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
PC VS 57/97	1,10	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 62/97	1,11	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 66/97	1,20	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 74/97	1,26	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

Optional with Overtopping Slab



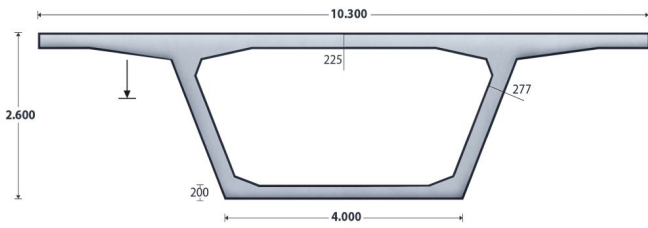
SPECIFICATION

Type	Weight (Ton/m)	fc' (MPa)	Span (m)																
			6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
PC VS 57+18/97	1,44	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 62+18/97	1,45	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 66+18/97	1,55	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
PC VS 74+18/97	1,62	50-70	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

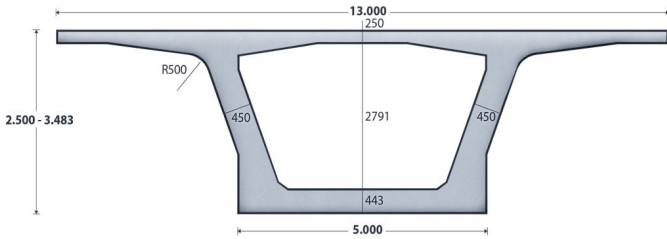
SLAB SHAPE & DIMENSION

► Box Girder

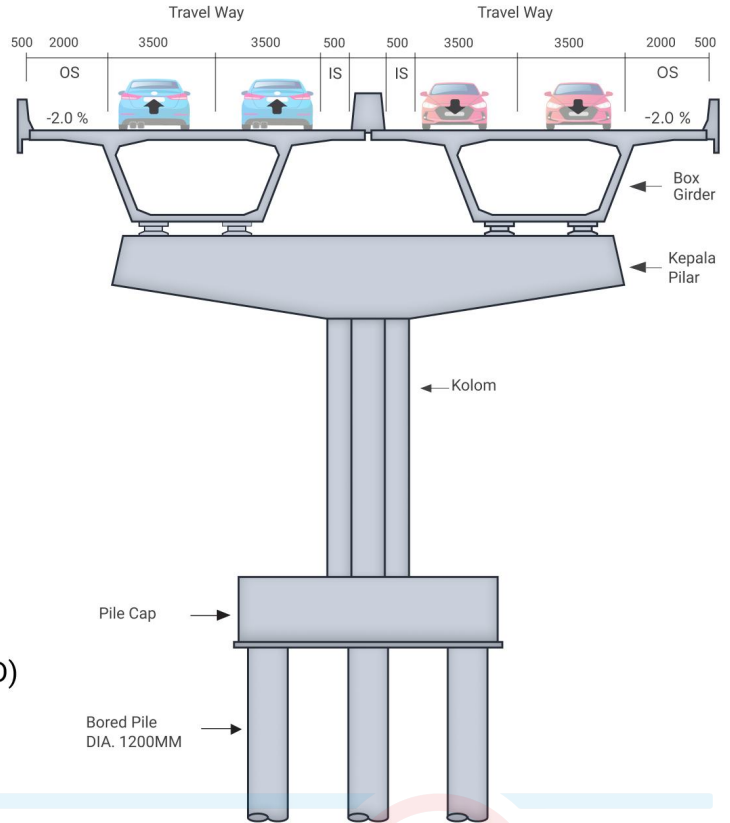
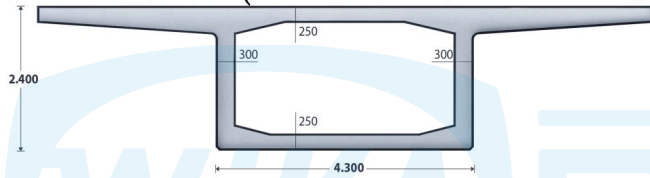
SPAN UP TO 50 m (HIGHWAY & LIGHT RAIL TRAIN)



SPAN UP TO 100 m (HIGHWAY & LIGHT RAIL TRAIN)



SPAN UP TO 40 m (RAILWAY BRIDGE - RM1921 LOAD)



PRODUCT APPLICATION

DIMENSION | PC BOX GIRDER

Load	Span (m)	Height (m)	Width of slab (mm)		Slab Thickness (mm)		Web Thickness (mm)	Installation Method
			Top	Bottom	Top	Bottom		
Highway & Light Rail Train	40 - 50	2,6	10.300	4.000	225	300	277	Span by Span Balance Cantilever
Highway & Light Rail Train	50 - 100	2,5 - 3,5	13.00	5.000	225	250 - 443	450	
Railway Bridge RM-1921	30 - 40	2,4	10.300	4.300	300	250	300	

PROJECT REFERENCE



Tol AP Pettarani
REAAA Mino Best Project
Award 2022



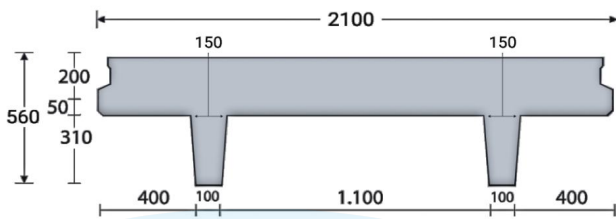
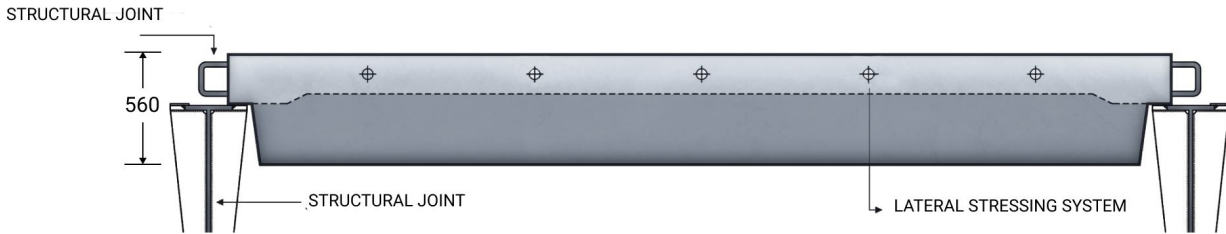
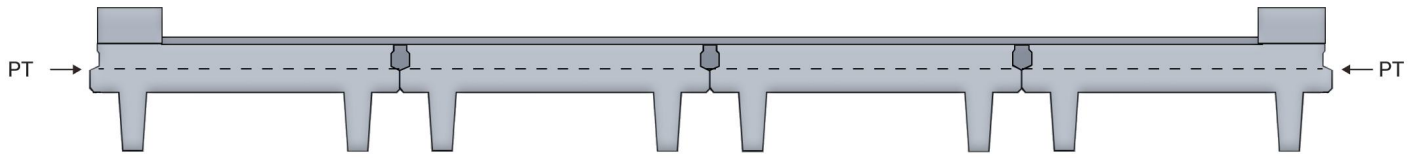
Simpang Susun Semanggi
Special Span 80m with Curve



Mass Rapid Transit (MRT) Jakarta
Phase I (CP101 - CP103)

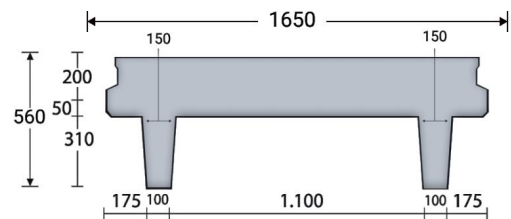


Jalan Layang Kereta Api
Jalur Ganda
Ruas Medan - Araskabu



PC DT H-56 for Class A Bridge

Area : 5.100 cm²
Inertia : 768.247 cm⁴



PC DT H-56 for Class B Bridge

Area : 4.200 cm²
Inertia : 713.802 cm⁴

Note :

CLASS A : 7 meter width of traffic lane with additional 1 meter kerb in each side of bridge
CLASS B : 6 meter width of traffic lane with additional 0,5 meter kerb in each side of bridge

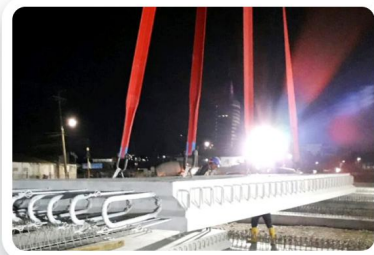
Patent Number : ID P0026747

Certified by The Ministry of Law and Human Right Republic of Indonesia

CUSTOMIZE BRIDGE PRODUCTS



Precast Slab Bridge for Steel or Concrete Girder



Pretention Precast Pile Slab



Segmental or Monolit "T" Beam



Segmental or Monolit Hollow Beam

PRODUCT APPLICATION



PC Voids Slab or PC Chanel Girder



PC I or PC U Girder



Double Tee Slab for Truss Bridge



Bulb Tee Girder