

GUIDELINES

No : 05 / BM / 2005

Standard drawings for road and bridge works

VOLUME TWO



MINISTRY OF PUBLIC WORKS
DIRECTORATE GENERAL OF HIGHWAYS

P R E F A C E

Standard drawings for road and bridge works are consist of two volumes.

The standard drawings for road and bridge works Volume II (two) are referred to the original standard of drawings for road and bridge works which have been partially improved to adapt to the latest technology development.

The standard of drawings for road and bridge works have to be used by considering designed and technical specification. The standard of drawings for road and bridge works are expected to assist planner, supervisor, and executor in applying with the best performance of road and bridge infrastructures.

We do hope the standard drawings will be easily utilized and any corrections to furnish and complete these standard drawings for road and bridge works are highly appreciated.



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CONTRACT	PROJECT	PROVINCE	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO.
ALL	ALL	ALL			0.01
TITLE :					REVISION :
DRAWING LIST					2004

VIODED SLAB

BRIDGE DRAWINGS

**I. GENERAL STANDARD EXPLANATION
PRETENSIONED PRECAST CONCRETE BRIDGE
VIODED SLAB FOR 70 B.M. LOAD CLASS
(70 % B. M. LOAD)**

A. BRIDGE SPAN

Contruction Standard for these pretensioned precast concrete vioded slab type of bridge is made for spans :

5.00 m	11.00 m
6.00 m	12.00 m
7.00 m	13.00 m
8.00 m	14.00 m
9.00 m	15.00 m
10.00 m	16.00 m

B. BRIDGE WIDTH

Road width	: 6.00 m
Trottoar width	: 2 x 0.50 m
Total width	: 7.92 m

C. NUMBER OF VIODED SLAB

Number of flat slabs for each post tensioned concrete type of 70 B.M. loads class bridge is 8 units.

D. BEARING TYPES

This bearing is made of specific sintetic rubber (knows as neoprene, biprene, elastomere) laminatedly slice of steel plates.

The use of this bearings should be indicated in company strength material specification or laboratory test result with Engineer permission.

E. EXPANSION JOINT

According to used material type, there are 2 type :

1. Steel type

This type of expansion joint is used with the rule as stoted in attached design drawings.

2. Rubber type

The use of this rubber expansion joint type should be indicated the company strength material specification or laboratory test result with Engineer permission.

F. RAILING

Railling material is pipe \varnothing 3"

G. THE USE OF STANDARD

1. The use of standard should be under permission of Directorate of Engineering, Directorate General of highways or an expert.
2. The standard is prohibited to be copied without any permission of Directorate of Engineering, Directorate of Highways.

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 4.1.
TITLE : GENERAL STANDARD EXPLANATION					REVISION : 2004

II. ENGINEERING EXPLANATION

A. LOAD UTILITED TO

Load utilited in the calculation of this upper contrution standard type is 70 B.M. load class, 70% load of D and 70% load of T of revised load regulation for highway bridge no.12/1970 Bina Marga.

B. MUTU BAHAN DAN TEGANGAN IZIN

No.	Notes	Material quality	Permissible stress (Kg/cm ²) for calculation	
			Tension / stress limber moment	Transversal Transversal
			[kg]	[kg]
1.	- Vioded Slab - Tlang Sandaran	K.350	115.5/8.98	8.0
			75/0	6.5
2.	- Besl Beton Trottoir	U.24 B(1)100	1400/1400	1120
			35/0	3.0
3.	Pipa sandaran	St.37	1400/1400	1120

load regulation for highway bridge no.12/1970 Bina Marga.

C. BEARING REACTION

Here under is mentioned the result of total bearing reaction calculation for each bridge span, effect of dead load, life load without traction and life load with traction for 70 B.M. load class of pretensioned precast concrete type.

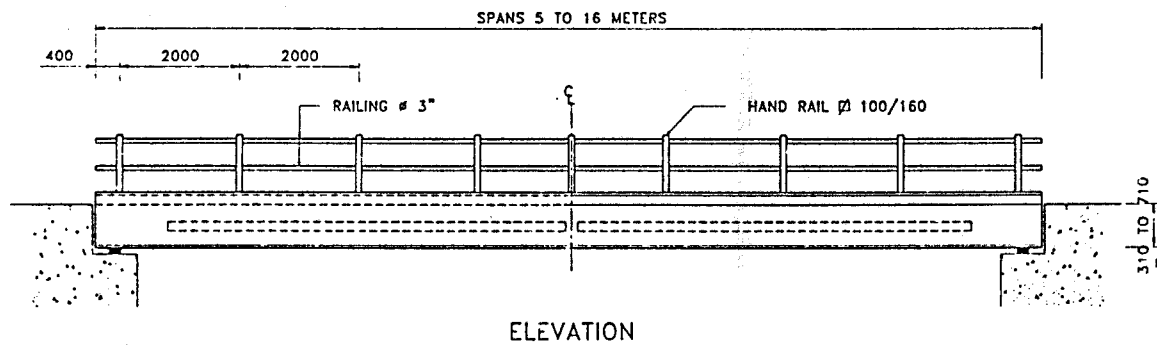
no	Span [m]	Bearing reaction due to dead load [ton]	Bearing reaction due to life load		Total bearing reaction (dead+ life) with traction. [ton]
			Without traction coefficient [ton]	With traction coefficient [ton]	
			1	5.00	
2	6.00	22.73	28.72	35.00	57.73
3	7.00	27.86	30.58	36.75	64.61
4	8.00	31.84	32.44	38.50	70.34
5	9.00	38.42	34.30	40.26	78.68
6	10.00	46.18	36.16	42.02	88.20
7	11.00	55.52	38.02	43.78	99.30
8	12.00	67.50	39.88	45.55	113.05
9	13.00	75.32	41.74	47.32	122.64
10	14.00	82.19	43.60	49.09	131.28
11	15.00	90.37	45.46	50.87	141.24
12	16.00	100.02	47.32	52.64	152.66

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 4.2.
TITLE : ENGINEERING EXPLANATION					REVISION : 2004

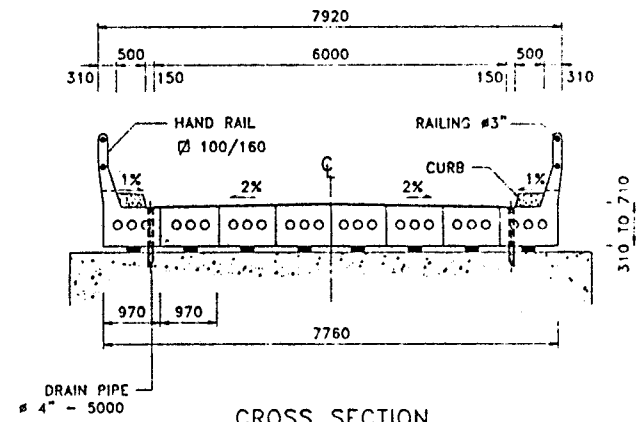
D. WORK VOLUME

Span	Concrete		Reinforcing	CABLE		Railing pipe bridge	Pavement area	Number of elastomer
	Quality K.350	Quality B(1) 100		Plan	Cross			
[m]	[m3]	[m3]	[kg]	[m]	[m]	[m]	[m2]	[Buah]
5.00	11.26	1.45	1.351	604	8	23.2	34.8	16
6.00	15.05	1.70	1.543	816	8	27.2	40.8	16
7.00	18.71	1.95	1.671	999	8	31.2	46.8	16
8.00	21.43	2.20	1.850	1127	8	35.2	52.8	16
9.00	26.23	2.45	2.055	1333	24	39.2	58.8	16
10.00	32.03	2.70	2.252	1642	24	43.2	64.8	16
11.00	39.00	2.95	2.407	2077	24	47.2	70.8	16
12.00	47.85	3.20	2.499	2560	24	51.2	76.8	16
13.00	53.95	3.45	3.513	2760	24	55.2	82.8	16
14.00	58.94	3.70	3.555	3079	24	59.2	88.8	16
15.00	65.04	3.95	3.778	3413	24	63.2	94.8	16
16.00	72.30	4.20	4.185	3764	24	67.2	100.8	16

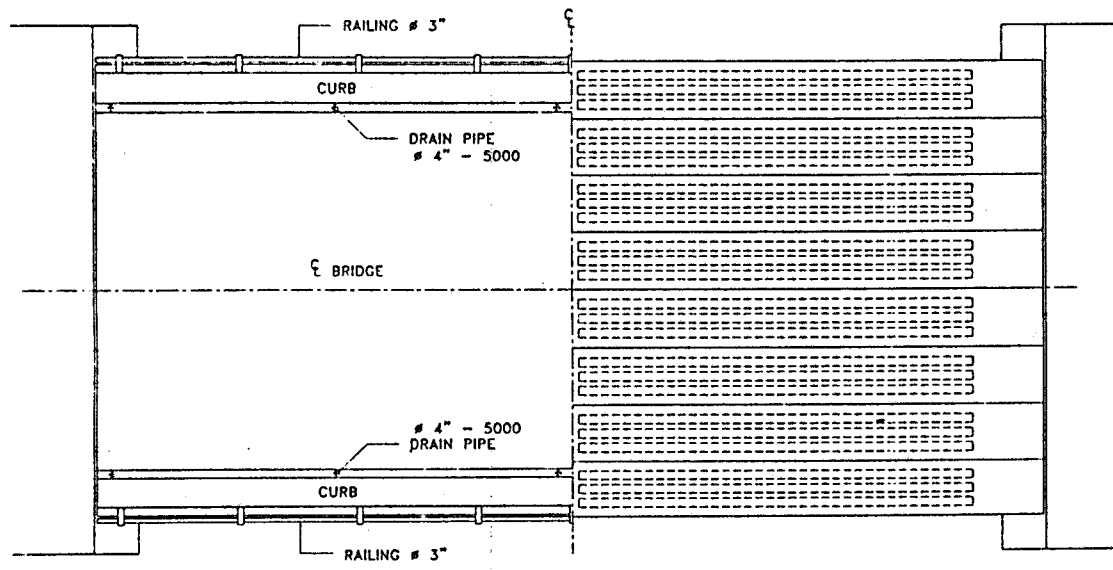
CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 4.3.
TITLE : WORK VOLUME				REVISION : 2004	



ELEVATION



CROSS SECTION CLASS 'B'



PLAN

NOTE :

1. DRAWING ARE NOT TO SCALE.
2. ALL DIMENSION ARE IN MM, UNLESS OTHERWISE SHOWN.
3. SPAN 5 TO 16 METERS CLASS 'B' GIRDER 310 MM TO 740 MM CLASS 'B' GIRDER 280 MM TO 710 MM

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 4.4.
TITLE : VIODED SLAB BRIDGES CLASS 'B'					REVISION : 2004

FLAT SLAB

BRIDGE DRAWINGS

**I. GENERAL STANDARD EXPLANATION
POST TENSIONED PRECAST CONCRETE BRIDGE
FLAT SLAB FOR 100 B.M. LOAD CLASS
(100 % B. M. LOAD)**

A. BRIDGE SPAN

Construction Standard for these post tensioned precast concrete flat slab type of bridge is made for spans :

5.00 m	9.00 m
6.00 m	10.00 m
7.00 m	11.00 m
8.00 m	12.00 m

B. BRIDGE WIDTH

Road width	: 7.00 m
Trottoar width	: 2 x 1.0 m
Total width	: 9.92 m

C. NUMBER OF FLAT SLAB

Number of flat slabs for each post tensioned concrete type of 100 B.M. loads class bridge is 8 units.

D. BEARING TYPES

This bearing is made of specific sintetic rubber (known as neoprene, biprene, elastomere) laminatedly slice of steel plates.
The use of this bearings should be indicated in company strength material specification or laboratory test result with Engineer permission.

E. EXPANSION JOINT

According to used material type, there are 2 type :

1. Steel type
This type of expansion joint is used with the rule as stated in attached design drawings.
2. Rubber type
The use of this rubber expansion joint type should be indicated the company strength material specification or laboratory test result with Engineer permission.

F. RAILING

Railling material is pipe \varnothing 3"

G. THE USE OF STANDARD

1. The use of standard should be under permission of Directorate of Engineering, Directorate General of highways or an expert.
2. The standard is prohibited to be copied without any permission of Directorate of Engineering, Directorate of Highways.

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 5.1.
TITLE : GENERAL STANDARD EXPLANATION					REVISION : 2004

II. ENGINEERING EXPLANATION

A. LOAD UTILITED TO

Load utilited to the calculation of this upper contrution standard type is 100 B.M. load class, 100% load of D and 100% load of T of revised load regulation for highway bridge no.12/1970 Bina Marga.

B. MATERIAL QUALITY AND PERMISSIBLE TEASION

No.	Notes	Material quality	Permissible stress (Kg/cm ²) for calculation	
			Tension / stress timber moment	Transversal streses
			[kg]	[kg]
1.	- Unit Flat Slab	K.350	115.5/8.98	8.0
	- Railing pole	K.225	75/0	6.5
2.	Concrete iron	U.24	1400/1400	1120
	Trotair	B(1)100	35/0	3.0
3.	Railing pipe	Sl.37	1400/1400	1120

Notes : Concrete quality and steel reinforcing refer to P.B.I. 1971

C. BEARING REACTION

Here under is mentioned the result of total bearing reaction calculation for each bridge span, effect of dead load, life load without traction and life load with traction for 100 B.M. load class of post tensioned precast concrete type.

Span	Bearing reaction due to dead load	Bearing reaction due to life load		Total bearing reaction (dead+ life) with traction
		Without traction coefficient	With traction coefficient	
[m]	[Ton]	[Ton]	[Ton]	[Ton]
5.00	26.15	42.27	52.19	78.34
6.00	31.44	45.27	55.01	86.45
7.00	40.85	48.27	57.84	98.69
8.00	47.12	51.27	60.68	107.80
9.00	58.48	54.27	63.52	122.00
10.00	65.79	57.27	66.36	132.15
11.00	81.99	60.27	69.22	151.21
12.00	103.95	63.27	72.07	176.02

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 5.2
TITLE : ENGINEERING EXPLANATION					REVISION : 2004

D. WORK VOLUME

Span	Concrete		Reinforcing	CABLE		Anchor		Railing pipe bridge length	Pavement layer area
	Quality K.350	Quality B(1) 100		Plan	Cross	Fixed	Moveable		
[m]	[m3]	[m3]	[kg]	[kg]	[kg]	[kg]	[kg]	[m2]	[m]
5.00	17.805	2.90	26.31	140	10	24	26	23.20	40.60
6.00	21.564	3.40	29.57	218	10	32	34	27.20	47.60
7.00	28.528	3.90	44.78	250	10	32	34	31.20	54.60
8.00	33.065	4.40	51.70	352	10	40	42	35.20	61.60
9.00	41.591	4.90	62.03	392	30	-	86	39.20	68.60
10.00	46.876	5.40	68.39	519	30	-	102	43.20	75.60
11.00	59.267	5.90	82.24	567	30	-	102	47.20	82.60
12.00	74.273	6.40	94.42	615	30	-	102	51.20	89.60

CONTRACT ALL	PROJECT ALL	PROVINCE ALL	PROJECT CODE/YEAR	TOTAL SHEET	SHEET NO. 5.3.
TITLE :				WORK VOLUME	
					REVISION : 2004