

**DESIGN CALCULATION AND DRAWING FOR
LONGITUDINAL GUIDED BEARING**

(Ch. 500+578)

PROJECT: FOUR LANING OF JHANJHI TO DEMOW SECTION OF NH-37 FROM EXISTING CH. K 491+050 TO KM 535+250
(DESIGN CH. KM 4900+800 TO KM 534+800) IN THE STATE
OF ASSAM UNDER EPC MOD

CLIENT: *NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT
CORPORATION LTD. (NHIDCL)*

CONTRACTOR : *M/S KAMAC-SHIVA HARLALKA (JV)*

MANUFACTURER:



M/S KARMA ENTERPRISE, GUWAHATI, ASSAM

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

TYPE OF BEARING : LG
REVISION : 00

TYPE: B3
CH: 500+578

Conc. Grade for Pedestal M 45
Conc. Grade for Superstructure M 50

DESIGN DATA FOR BEARING DESIGN (LOADS)

LOADING PARAMETERS	SLS		ULS	
	MT	kN	MT	kN
VERTICAL MAXIMUM LOAD	269.30	2641.00	458.56	4497.00
VERTICAL MINIMUM LOAD	141.23	1385.00	213.63	2095.00
VERTICAL PERMANENT LOAD	156.83	1538.00		
HORIZONTAL LOADS				
ACTING IN LONGITUDINAL DIRECTION	0.00	0.00	0.00	0.00
ACTING IN TRANSVERSE DIRECTION	0.00	0.00	0.00	0.00
RESULTANT HORIZONTAL LOADS		0.00		0.00
DISPLACEMENT				
LONGITUDINAL (MM)	+ 32.00	-32.00	64.00	
TRANSVERSE (MM)	0.00	0.00		0.00
ROTATION (RADIAN)	0.0038	+ 0	=	0.0038

Assume Permanent Rotation	q p	=	0.52	x	0.004	=	0.002
Assume Variable Rotation	q v	=	0.48	x	0.004	=	0.002

MATERIALS

Steel Stress (Working) for Design Use 340 MPa (Grade-340-570W) AS PER IS - 1030

HT Bolts shall conform to Grade 8.8 of IS : 1364

Elastomer shall be of hardness 50 + / - 5 conforming to IRC : 83 (Part III) - 2018 Table - 4.3

DIMENSION DETAILS OF BEARING COMPONENTS

ELASTOMERIC PAD			
PAD DIAMETER	=	di	450 mm
PAD THICKNESS	=	hc	32 mm
PTFE			
PTFE DIAMETER	=	Dptfe	450 mm
PTFE THICKNESS	=	Tptfe	5 mm
CYLINDER			
CYLINDER CONCRETE CONTACT DIAMETER	=	Do	540 mm
CYLINDER BASE THICKNESS	=	kb	35 mm
CYLINDER INNER DIAMETER	=	Di = di	450 mm
CYLINDER OUTER DIAMETER	=	do	500 mm
HEIGHT OF CYLINDER	=	hc	44 mm
WALL THICKNESS	=	Tcw	25.0 mm
INTERMEDIATE COMPONENT			
LENGTH	=	Lic	490 mm
WIDTH	=	Wic	490 mm
INTERMEDIATE COMPONENT ABOVE THICKNESS	=	Tp	14 mm
INTERMEDIATE COMPONENT PROJECTION	=	hp	23 mm
VERTICAL FACE	=	w	6 mm
TOP PLATE			
EFFECTIVE CONCRETE CONTACT DIAMETER	=	Dtpeff	515 mm
LENGTH	=	Lt	585 mm
WIDTH	=	Bt	535 mm
THICKNESS	=	Tt	30 mm
S/S SHEET LENGTH	=	Lss	575 mm
S/S SHEET WIDTH	=	Bss	495 mm
S/S SHEET THICKNESS	=	Tss	3 mm
GUIDE BAR LENGTH	=	Lgb	585 mm
GUIDE BAR WIDTH	=	ku	15 mm
GUIDE BAR HEIGHT	=	Hgb	20 mm

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

ANCHORAGE

BOLTS DIAMETER	=	Dbolt	20 mm
BOLTS LENGTH	=	Lbolt	45 mm
BOLTS PER COMPONENT	=	Nbolt	4 NOS.
GRADE OF BOLTS	=	GR.bolt	8.8
ANCHORAGE COLLOR LENGTH	=	CL	70 mm
ANCHORAGE COLLOR THICKNESS	=	C thk	14 mm
SLEEVE LENGTH (Superstructure)	=	Ls	110 mm
SLEEVE DIAMETER (Superstructure)	=	Ds	50 mm
SLEEVE LENGTH (Pedestal)	=	Lp	120 mm
SLEEVE DIAMETER (Pedestal)	=	Dp	50 mm

GENERAL

NO. OF BRASS SEALING RINGS	=	Nbr	2 NOS.
TOTAL THICKNESS OF RINGS	=	Tbr	4.0 mm
GAP BETWEEN CYLINDER & TOP COMPONENT	=	h4	11 mm
TOTAL BEARING ASSEMBLY HEIGHT	=	HT	139.2 mm

Calculation for Permissible Stresses in Pedestal Concrete

Bottom

Cylinder Concrete Contact Diameter =	540	mm
Loaded area ($A_{co} = p \times D_o \wedge 2/4$) =	229022.11	mm ²
Required Pedestal Size for Dispersion =	1080.00	x 1080 mm
Dispersed area ($A_{cl} = p \times d \wedge 2/4$) =	916088.42	mm ²

Top

Top Component Contact Diameter =	515	mm
Loaded area ($A_2 = p \times D_{teff} \wedge 2/4$) =	208307.23	mm ²
Required Superstructure Size for Dispersion =	1030.00	x 1030 mm
Dispersed area ($A_{cl} = p \times d \wedge 2/4$) =	833228.92	mm ²

DESIGN CALCULATIONS :-

REF. CODE : IRC:83 (Part-III)-2018

Design of Pad (Clause - 5.2.3.2)

Effective diameter of Pad	Dpad	450 mm
Area of pad = $p \times d \wedge 2/4$	a	159107.143 mm ²
Vertical Load	Nsd	4497.00 kN
Direct Pressure Nsd / a	pa	28.27 N/mm ²
(Nsd / a) x Ym		36.75 N/mm ²
fe,k		60.00 N/mm ²
	OK	

Check Compression at edge of Neoprene Pad (Clause - 5.2.3.4)

Max. Permitted = 15 % of he	4.80	mm
Desired Rotation	0.00380	radians
Available Rotation in Radius due to Compression of Pad	0.02133	radians
		OK
Diameter / Thickness Ratio	14.06	Maximum (Dpad/he) 15
		OK

Check for Min. average Stress (Clause - 5.2.3.3)

Min. average stress = (Nsd min. / a)	8.70	N/mm ²
Permissible Min. average stress =	2.00	N/mm ²
	OK	

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

Pressure on PTFE

Diameter of PTFE	L	450.00	mm
Area of PTFE	Aco	159043.13	mm ²
Average pressure on PTFE = $N_{max} ULS / A_p$	σ_p	28.28	N/mm ²
Protrusion of PTFE			
$h = 1.75 + L / 1200$		2.13	mm
h provided		2.20	mm
Thickness of PTFE = 2.2h		4.84	mm
Thickness of PTFE provided		5.00	mm
		OK	
Characteristic compressive strength of PTFE	f _{ck}	90.00	N/mm ²
The Characteristic compressive strength is reduced due to exceeding the category temperature above 30°C.			
Max. ambient temperate		43.00	°C
Reduction		26.00	%
Reduction factor	k	0.74	
$\mu_{max} = 1.2 / (10 + \sigma_p)$		0.031	
	0.03	≤	0.031 ≤ 0.08
$e1 = \mu_{max} \times R$		7.05	mm
$e3 = \sigma_d \times L/2$		0.86	mm
$e = e1 + e3$		7.91	mm
	L/8	56.25	mm
		OK	
$\lambda = (1 - 0.75 \times \pi \times e / L)$	λ	0.96	
Reduced contact area	$A_r = A_{co} \times \lambda$	152456.80	mm ²
$max, N_{sd} = A_r \times k \times f_{ck} / \gamma_m$	$\gamma_m = 1.4$	7252.59	kN
N _{sd} , ULS		4497.00	kN
		OK	

Stress in bottom concrete

Bottom dispersion width		Do	540
Thickness of Bottom Plate		kb	35
Area of Bottom Dispersion = $p \times d^{2/4}$	a	229114.286	mm ²
Section Modulus = $p \times d^{3/32}$	Z	15465214.286	mm ³
Vertical Load	N _{sd}	4497.00	kN
Horizontal force	V _{sd}	0.00	kN
Moment of resistance due to rotation:			
Rotation due to dead load	θ_p	0.00199	radians
Live Load	θ_v	0.00181	radians
Ratio = d_i / h_e		14.06	
For induced moment	k ₁	2.05	
	k ₂	85.18	
Induced moment due to rotation $M_{e,d}$			
$d_i^3 \times (k_1 \times q_p + K_2 \times q_v) / 1000$	$M_{e,d}$	14398.94	kN-mm
Moment of resistance due to HF:			
Horizontal distance	C	225.00	mm
Resultant HF	V _{sd}	0.00	kN
Moment of resistance due to HF:	$M_{r,d}$	0.00	kN-mm
$0.2 \times C \times V_{sd}$			
Total Movement = $M_{e,d} + M_{r,d} =$	M_t	14398.94	kN-mm
Direct Pressure N_{sd} / a	p_a	19.63	N/mm ²
Permissible Stress $(0.67 \times f_{ck}) / 1.5$	f_{cd}	20.10	N/mm ²
		OK	
Bending Stress M_t / Z	p_b	0.93	N/mm ²
Permissible bending stress		14.85	N/mm ²
		OK	
Area on Pedestal	A_{c1}	916088.42	mm ²
$F_{rdu} = A_{co} \times f_{cd} \times (\sqrt{A_{c1} / A_{c0}})$		9206.69	kN
$3 \times f_{cd} \times A_{co}$		13810.03	kN
$F_{rdu} \leq 3 \times f_{cd} \times A_{co}$		OK	

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

Stress in top concrete

Top dispersion width			Dtpeff	515
Thickness of Top Plate			Tt	30
Area of Top Dispersion = $p \times d^{2/4}$	a		208391.071	mm ²
Section Modulus = $p \times d^{3/32}$	Z		13415175.223	mm ³
Vertical Load	Nsd	4497.00		kN
Horizontal force	Vsd	0.00		kN
Moment of resistance due to rotation:				
Rotation due to dead load	θ_p	0.00199		radians
Live Load	θ_v	0.00181		radians
Ratio = d_i / h_e		14.06		
For induced moment	k1	2.05		
	k2	85.18		
Induced moment due to rotation	Me.d			
$d_i^3 \times (k1 \times qp + K2 \times qv) / 1000$		14398.94		kN-mm
Moment of resistance due to HF:				
Horizontal distance	C	225.00		mm
Resultant HF	Vsd	0.00		kN
Moment of resistance due to HF:	Mr.d	0.00		kN-mm
$0.2 \times C \times Vsd$				
Total Movement = $Me.d + Mr.d =$	Mt	14398.94		kN-mm
Direct Pressure Nsd / a	pa	21.58		N/mm ²
Permissible Stress $(0.67 \times f_{ek}) / 1.5$	fcd	22.33		N/mm ²
		OK		
Bending Stress Mt / Z	pb	1.07		N/mm ²
Permissible bending stress		16.50		N/mm ²
		OK		
Area on Superstructure	Ac1	833228.92		mm ²
$F_{rd} = A_{co} \times f_{cd} \times (\sqrt{Ac1 / Ac0})$		9304.39		kN
$3 \times f_{cd} \times A_{co}$		13956.58		kN
$F_{rd} \leq 3 \times f_{cd} \times A_{co}$		OK		
Pot walls subjected to tensile force (Clause 5.3.1.2.3)				
$AR = (d_o - d_i) \times h_c$	AR	2200.00		mm ²
$V_{e,sd} = 4 \times Nsd \times h_e / \pi \times d_i$	$V_{e,sd}$	407.37		kN
$V_{fx,sd}$		0.00		kN
$V_{sd} = V_{e,sd} + V_{fx,sd}$		407.37		kN
$V_{rd} = f_y \times AR / Y_m$	Ym =	1.1	680.00	kN
			OK	
Pot walls subjected to shear force (Clause 5.3.1.2.4)				
$V_{sd} \leq V_{k,sd}$				
$V_{sd} = V_{e,sd} + 1.5 \times V_{fx,sd} / d_i$		0.91		kN
$V_{rd} = (f_y \times (d_o - d_i)) / (2 \times Y_m \times (\sqrt{3}))$	Ym = 1.1	5.15		kN
		OK		
Pot base subjected to tensile force (Clause 5.3.1.2.5)				
$V_{sd} \leq V_{Rd}$				
$A_p = d_o \times k_b$		17500.00		mm ²
$V_{sd} = V_{e,sd} + V_{fx,sd}$		407.37		kN
$V_{Rd} = f_y \times A_p / Y_m$	Ym =	1.1	5409.09	kN
		OK		
Design resistance for integral guides				
Shear resistance				
Thickness of guide	ku	15.00		mm
Height of guide	Hgb	20.00		mm
Length of guide	Lgb	585.00		mm
Length of side sliding	L	490.00		mm
Height of application	ha	11.50		mm
Effective length of guide	Left	513.00		mm
$V_{sd} \leq V_{Rd}$	Ym =	1.1		
$V_{Rd} = k_u \times Left \times f_y / \sqrt{3} \times Y_m$		1373.20		kN
V_{sd}		0.00		kN
		OK		

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

Bending resistance in combination with shear resistance

$P = ((2 \times V_{sd} / V_{Rd}) - 1)^2$	1.00	
$f^*y = (1 - P) \times f_y$	0.00	
$M_{Rd} = k_u^2 \times L_{eff} \times f^*y / (4 \times Y_m)$	0.00	kN-mm
$M_{sd} = V_{sd} \times h_a$	0.00	kN-mm
	OK	

Movement Capacity

Size of Top Plate	Lt	=	585.00	mm
	Bt	=	535.00	mm
Effective contact Concrete Diameter	Dtpeff	=	515.00	mm
Preset (If Any)		=	0.00	mm
Long. Movement Capacity (Lt - Dtpeff)		=	70.00	mm
Movement in One Direction		=	35.00	mm
Permissible Movement		=	32.00	mm
			OK	
Movement in Other Direction		=	35.00	mm
Permissible Movement		=	32.00	mm
			OK	

Anchor Bolts

Max Horizontal Force		0.00	kN
Min. Vertical Load		2095.00	kN
Frictional Force		0.00	kN
Diameter of Bolt		20.00	mm
Length of Bolt		45.00	mm
Number of Bolts	n	4.00	Nos.
Thickness of Collar	Ct	14.00	mm
Factor for Net Area	kn	0.78	
Effec. Area of Bolt ($p \times d^2 \times \pi / 4$)	Abolt	245.14	mm ²
σ_v		0.50	
f_{ub}		1040.00	N/mm ²
Y_m^2		1.25	
f_u		570.00	N/mm ²
k2		0.90	
Shear resistance $F_{v,Rd} = \sigma_v \times f_{ub} \times A / Y_m^2$	$F_{v,Rd}$	101.98	kN
Resultant horizontal force / bolt $V_{fy,sd} / n$	$F_{v,sd}$	0.00	kN
		OK	
Bearing resistance $F_{b,Rd} = 1.25 \times f_u \times d \times t / Y_m^2$	$F_{b,Rd}$	159.60	kN
Resultant horizontal force / bolt $V_{fy,sd} / n$		0.00	kN
		OK	
Tension resistance $F_{t,Rd} = k2 \times f_{ub} \times A_s / Y_m^2$	$F_{t,Rd}$	183.56	kN
Design tension resistance	$F_{t,sd}$	0.00	kN
Combined shear and tension $= F_{v,sd} / F_{v,Rd} + F_{t,sd} / (1.4 \times F_{t,Rd})$		0.00	
		OK	

Anchor Sleeves (Clause - 5.3.6.4.2)

Top Plate			
Length of Sleeve		110.00	mm
Diameter of Sleeve		50.00	mm
Number of Sleeves		4.00	Nos.
Resistance offered by concrete $F_{Rdu} = 1.33 D \times L \times f_{cd} / \sqrt{3}$		94.32	kN
Design resistance in shear		0.00	kN
		OK	
Bottom Plate			
Length of Sleeve		120.00	mm
Diameter of Sleeve		50.00	mm
Number of Sleeves		4.00	Nos.
Resistance offered by concrete $F_{Rdu} = 1.33 D \times L \times f_{cd} / \sqrt{3}$		92.61	kN
Design resistance in shear		0.00	kN
		OK	

Design Calculation of SLS- 2641 KN, ULS- 4497 KN Longitudinal Guided Bearing

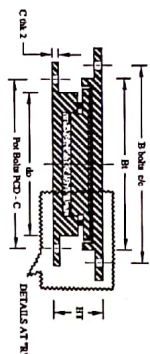
Requirement of clearance

$\delta = 0.01 \times D_i$	min. = 3	4.50	<	10	mm
$h_c - h_e - (w - w_e) \times 0.5 - (\theta \times 0.5 \times D_i)$		8.15			mm
δ		4.50			mm
		OK			
$h_p - (h_c - h_e) - (\theta \times 0.5 \times D_p)$		10.07			mm
δ		4.50			mm
		OK			

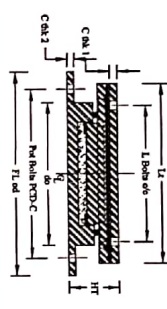
Curved Contact Surface (Clause - 5.3.1.4.2)

$V_{sd} \leq V_{rd}$	R	=	225.00	mm
	f_u	=	570.00	N/mm ²
	θ	=	0.004	Radian
	Y_m	=	1.10	
$V_{rd} = 15 \times f_u^2 \times R \times D_i / E_s \times Y_m^2$		=	2039.0	kN
V_{sd}		=	0.00	kN
		=	OK	
$w_e = 3.04 \times (\text{sqrt}(1.5 \times V_{sd} \times R / E_s \times D_i))$		=	0.00	mm
$w_e + \theta \times D_i$		=	1.71	mm
Provided	w	=	6.00	mm
		=	OK	

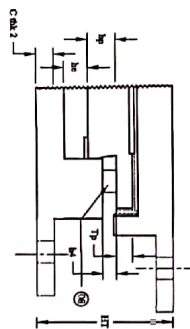




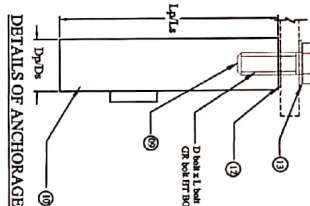
SECTIONAL TRANSVERSE ELEVATION OF BEARING ASSEMBLY AT 'R-R'



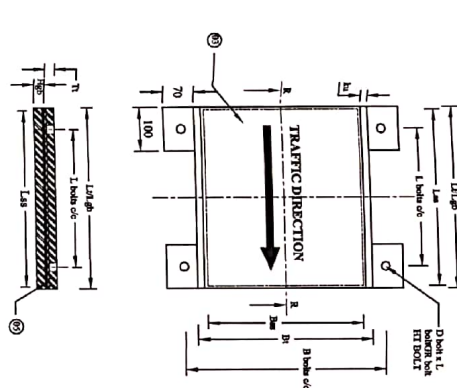
SECTIONAL LONGITUDINAL ELEVATION OF BEARING ASSEMBLY AT 'R-R'



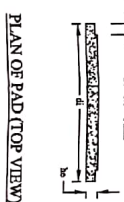
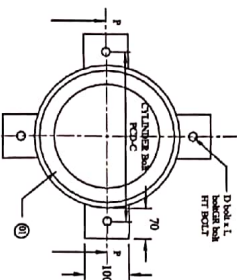
DETAILS OF BEARING ASSEMBLY AT 'R-R'



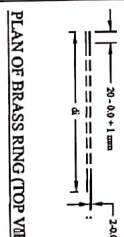
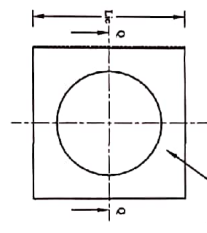
DETAILS OF ANCHORAGE



SECTIONAL ELEVATION OF TOP PLATE AT 'R-R'



PLAN OF PAD (TOP VIEW)



PLAN OF BRASS RING (TOP VIEW)

SECTIONAL ELEVATION OF BOTTOM CYLINDER AT 'P-P'

SECTIONAL ELEVATION OF INTERMEDIATE COMPONENT AT 'Q-Q'

CAPACITY	4497 KN-LG		540	35	450	500	44	25	600	680	14	585	535	30	575	495	03	485	595	14	585	15	20	490	490	14	23	06	450	5	450	32	50	120	50	110	20	45	04/04	8.8	11	139.2																	
	Do		lb	Di	do	hc	lrcw	PCD	FL	od	Chk 2	Lt	Bt	Tt	Lss	Bst	Tst	Ldc	Bdc	Chk 1	Lgb	ku	Hgb	Llc	Wlc	TP	bp	w	Dpde	TPde	di	he	Dp	Lp	Ds	Ls	Dbolt	Lbolt	Nbolt	GRbolt	hd	HT																	
	DIMENSION DETAIL OF CYLINDER										DIMENSION DETAIL OF TOP PLATE										GUIDE BAR										INTERMEDIATE COMPONENT DIM.										PAD										ANCHORAGE & SLEEVE								

TYPE :- LONGITUDINAL GUIDED BEARING
TYPE :- B3
CH. :- 500+578



Sl. No.	DESCRIPTION	MATERIAL	QTY	SPECIFICATION
11.	FLAT WASHER	STEEL	08	STD
12.	NON-RODRE WASHER	STEEL	08	ELASTOMER
13.	WATER SEAL	NON-RODRE	08	ELASTOMER
14.	POWER SEAL	WILD STEEL	08	IS : 2062 / IS : 226
15.	BOLT 1/20	Gr. 8.8 HT	08	IS : 1967
16.	DRIFT SEAL	FLEXIBLE FOAM	08	IS : 1967
17.	BRASS RING	BRASS	2	BUTTERWORTH
18.	NON-RODRE PAD	NON-RODRE	1	IS : 1967
19.	STAINLESS STEEL PLATE 1/20	STAINLESS STEEL	1	ASTM : 316 L
20.	STAINLESS STEEL PLATE 1/20	STAINLESS STEEL	1	IS : 2062 / IS : 226
21.	SLIDE PLATE	MILD STEEL	1	IS : 1000 / IS : 1000 W
22.	PISTON	CAST STEEL	1	IS : 1000 / IS : 1000 W
23.	POT	CAST STEEL	1	IS : 1000 / IS : 1000 W

Bearing Type	Case	Vertical Load (KN)	Hor. Load (KN)	Movement
Longitudinal Guided Bearing	SLS	2641.0	1385.0	0.0
	ULS	4497.0	2095.0	0.0

NOTES:
1. CONFIRMED ELASTOMER INSIDE POT WILL HAVE FOLLOWING PROPERTIES
a) HARDNESS : IRHD IS-3400 (PART ID) 5045
b) MIN. TENSILE STRENGTH : MPa IS-3400 (PART ID) 15.5
c) MAX. ELONGATION AT BREAK : MAX. COMPRESSION SET & ACCELERATED AGING WILL BE AS PER TABLE 1 - PROPERTIES OF ELASTOMER IN IS-3400 (PART ID)
2. ACCESSORIES : HT BOLTS OF Gr. 8.8 & SLEEVE MATERIAL AS PER IS 2062.
3. ANCHORS : TO IS 226 / 2062.
4. CONFINED PTFE WILL BE OF UNFILED QUALITY AND WILL HAVE REQUIRED PROPERTIES REGARDING TENSILE STRENGTH ETC. AS PER IS-3400 SEC. 9.2.
5. BS 779 & BS 6564 THE THICKNESS SHALL BE - 0.7 OR - 0.5 MM.
6. THE STAINLESS STEEL SHALL BE STITCH WELDED / SCREWED ON THE BACKING PLATE.
7. CONCRETE GRADE FOR SUPERSTRUCTURE IS M40.
8. PRESET IN LENGTH FROM THE CENTER - 100.00 mm

WELDING:
ALL WELDING WILL BE MANUAL METAL ARC PROCESS CONFORMING TO IS 814:PRE HEATING & POST WELD STRESS RELIEVING TO BE DONE IF REQUIRED.
FINISHING:
a) ALL NON-WORKING SURFACES WILL BE COATED WITH 2 COATS OF EPOXY PRIMER & ONE OR MORE COATS EACH OF EPOXY INTERMEDIATE AND FINISH PAINT. TOTAL DRY FILM THICKNESS > 160 MICRONS.
b) ANCHOR SLEEVES WILL BE CEMENT COATED AT SITE (IF REQUIRED).
GREASING:
SILICON GREASE WILL BE APPLIED AT PTFE STAINLESS STEEL INTER FACE.

TESTS:
a) TESTS ON CASTING : TESTS SPECIFIED IN IS : 1030 WILL BE PERFORMED. CASTINGS SHALL BE ULTRASONICALLY TESTED & CERTIFICATES SUBMITTED. QUALITY LEVEL 3 AS PER IS : 9465.
b) ACCEPTANCE TEST ON BEARINGS.
c) ALL TESTS ON BEARINGS WILL BE CARRIED OUT IN PRESENCE OF REPRESENTATIVE OF DPT/P&C. NECESSARY TEST CERTIFICATES FOR RAW MATERIALS SHALL BE FURNISHED AT THE TIME OF SUPPLY.
d) TEST ON WELDING : WELDING WILL BE TESTED BY DYE PENETRATION METHOD. BUT WELDING WILL BE TESTED BY ULTRASONIC METHOD. SOUNDNESS OF WELDING SHALL BE CERTIFIED BY THE MANUFACTURER.

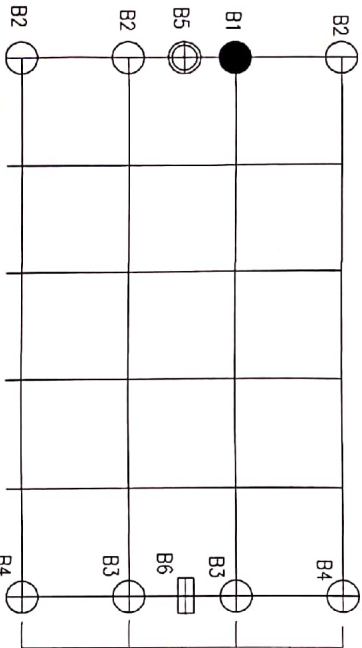
1) ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED.
2) PCD - PITCH CIRCLE DIAMETER
3) TOLERANCES
a) ALL DIMENSIONS : - 0 TO + 0.5 mm
b) OVERALL HEIGHT : - 0 TO + 0.5 mm
c) HEIGHT OF ELASTOMER : - 0.7 - 5%
d) HEIGHT OF ANY STEEL COMPONENT : - 0 TO + 1 mm
e) MACHINED : CLASS 2 OF IS : 1897
f) UNMACHINED : CLASS 2 OF IS : 1897

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Project	Longitudinal Guided Bearing, Mumbai, India, 4497+578
Client	State of Maharashtra, Mumbai, India, 4497+578
Engineer	State of Maharashtra, Mumbai, India, 4497+578
Manufacturer	K. P. K. Enterprises, Mumbai, India, 4497+578
Contract No.	4497+578
Date	4497+578

BEARING TYPE & LOAD DETAILS		FIXED BEARING	LONG FIXED BEARING	TRANS FIXED BEARING	FREE BEARING	PIN BEARING	METALLIC GUIDED BEARING
BEARING MARK		B1	B2	B3	B4	B5	B6
TOTAL QUANTITY (NO)		1	3	1	3	1	1
GRADE OF CONCRETE	UPPER SURFACE	M50	M50	M50	M50	M50	M50
	ULS	M50	M50	M50	M50	M50	M50
	SLS	M45	M45	M45	M45	M45	M45
	LOWER SURFACE	M45	M45	M45	M45	M45	M45
DESIGN LOAD (KN)	SLS	VERTICAL	2641	2641	2641	-	-
		PERMANENT	1638	1638	1638	-	-
		LONGITUDINAL	1385	1385	1385	-	-
		TRANSVERSE	87	0	0	-	-
	ULS	VERTICAL	4497	4497	4497	-	-
		PERMANENT	2095	2095	2095	-	-
		LONGITUDINAL	-24	-24	-24	-	-
		TRANSVERSE	131	131	0	10579	0
TRANSLATION (MM)	SLS	IRREVERSABLE	0	0	0	5256	5256
		LONG	-	-	-	-	-
		TRAN	-	-	-	-	-
		REVERSABLE	-	-	-	-	-
ROTATION (RED)	SLS	IRREVERSABLE	-	-	-	-	-
		LONG	-	-	-	-	-
		TRAN	-	-	-	-	-
		REVERSABLE	-	-	-	-	-
	ULS	IRREVERSABLE	-	-	-	-	-
		LONG	-	-	-	-	-
		TRAN	-	-	-	-	-
		REVERSABLE	-	-	-	-	-
	SLS	IRREVERSABLE	0.00253	0.00253	0.00253	-	-
		LONG	-	-	-	-	-
		TRAN	-	-	-	-	-
		REVERSABLE	0.00253	0.00253	0.00253	-	-
	ULS	IRREVERSABLE	0.00380	0.00380	0.00380	0.00380	0.00380
		LONG	-	-	-	-	-
		TRAN	-	-	-	-	-
		REVERSABLE	0.00380	0.00380	0.00380	0.00380	0.00380



KEY PLAN SHOWING ARRANGEMENT OF BEARING LOCATIONS FOR POT cum PTFE BEARINGS

- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES, LEVELS ARE IN METRES AND UNLESS OTHERWISE SPECIFIED, ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 2. THE CONTRACTOR SHALL SUBMIT DESIGN/ DRAWING OF MONITOR BEARING TO THE ENGINEER FOR APPROVAL AS GIVEN IN THIS DRAWING FOR APPROVAL OF THE ENGINEER.
 3. BEARINGS SHALL BE PROVIDED FROM THE LIST OF APPROVED MANUFACTURERS BY MATERIAL.
 4. ALL BEARINGS SHALL CONFORM TO THE LATEST MATERIAL SPECIFICATION, IRIS-3 (PART B)-2018 AND TENDER SPECIFICATION, IF ANY.
 5. THE TESTING OF RAW MATERIALS, METAL COMPONENTS, ELASTOMER & FITTE AND ACCEPTANCE TESTS ON BEARINGS SHALL CONFORM TO LATEST SPECIFICATION/ TENDER SPECIFICATION.
 6. MANUFACTURER SHALL SUBMIT THE CERTIFICATES FOR LOAD TESTING AND DIMENSIONS OF BEARING.
 7. SUITABLE EJECTION CLAMPS FOR SAFE TRANSPORTATION AND HANDLING ALONG WITH TEMPALTE FOR ALIGNMENT SHALL BE PROVIDED BY THE MANUFACTURER.
 8. THE PLAN SIZE AND HEIGHT OF PRECAST SHALL BE ADJUSTED TO SUIT THE PROVIDED SIZE OF BEARINGS AT THE TIME OF EXECUTION.
 9. THE DRAUGHT/BEARING MARKER SHALL BE OF HIGH STRENGTH FREE FLOWING NON-SHINK TYPE.



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