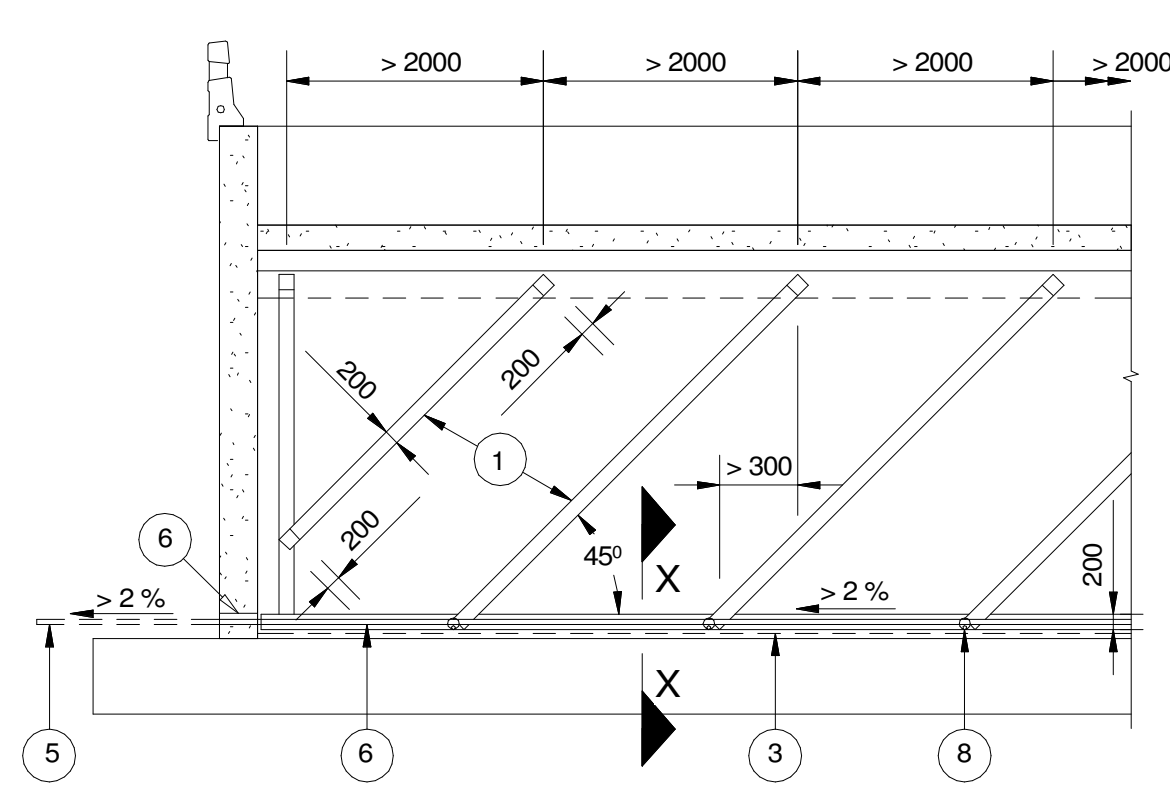
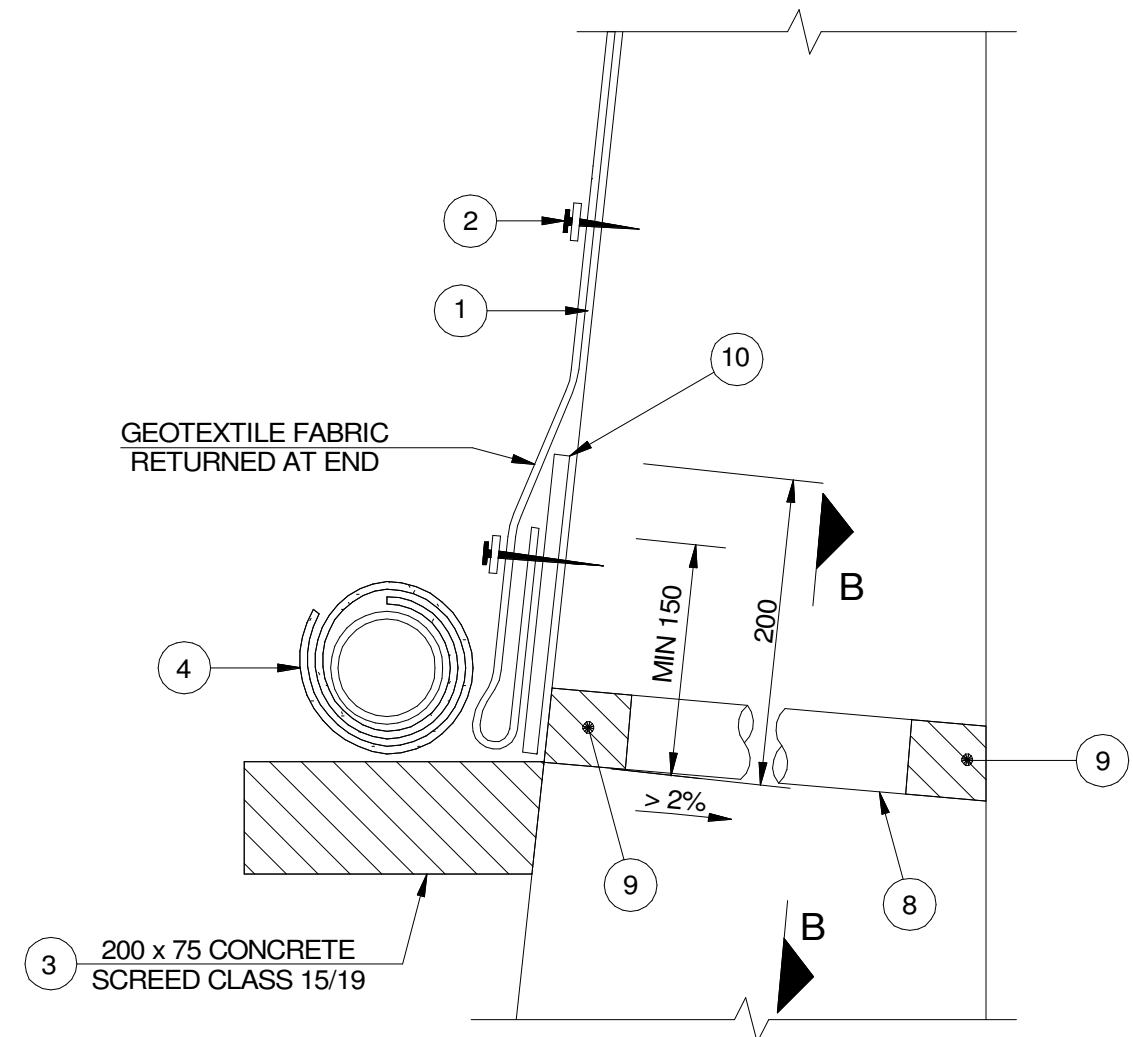


**TYPICAL DETAIL AT ABUTMENT  
NORMAL GROUNDWATER CONDITIONS**



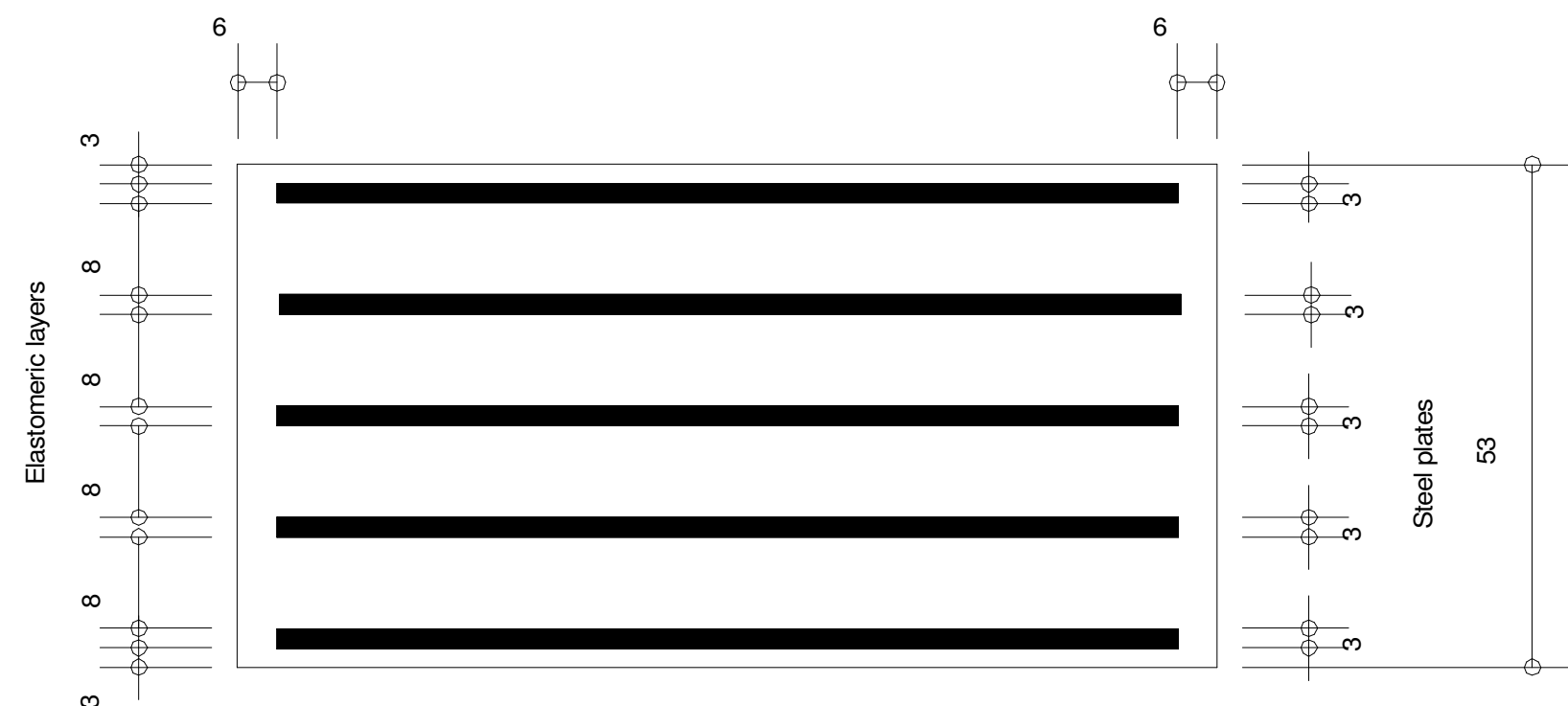
**PART ELEVATION A-A  
TYPICAL ARRANGEMENT OF FILTER  
ELEMENTS AND DRAINAGE PIPES**



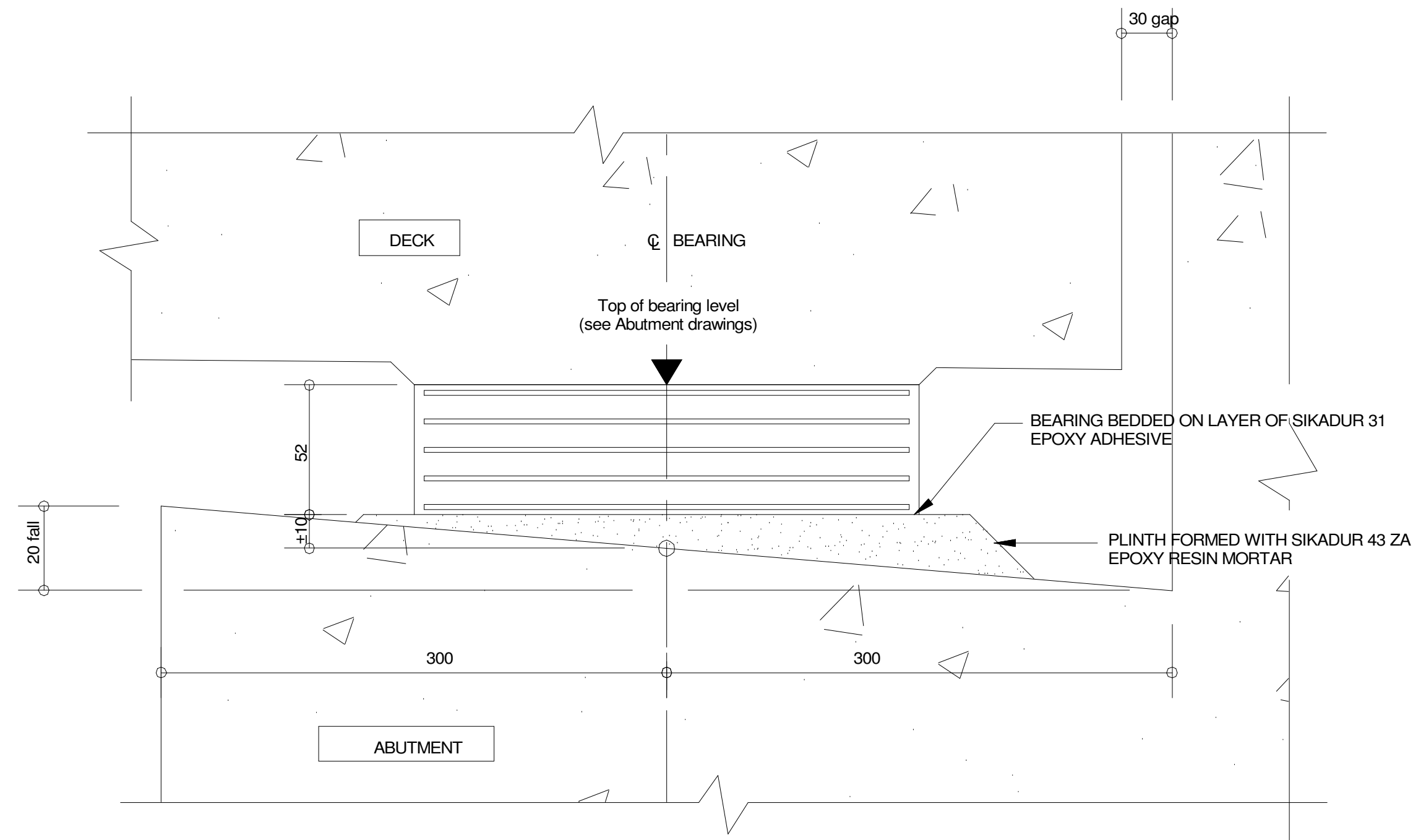
**SECTION X-X  
NORMAL GROUNDWATER CONDITIONS**

NOTES				
ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT CLAUSES OF THE STANDARD SPECIFICATION, THE PROJECT SPECIFICATION, AND SHALL INCLUDE THE FOLLOWING:				
1.	NORMAL GROUNDWATER CONDITIONS			
1.1.	FILTER ELEMENTS			
1.1.1.	THE FILTER ELEMENTS SHALL CONSIST OF A DRAINAGE FLOWNET CORE COMPLETELY ENVELOPED IN A GEOTEXTILE JACKET.			
1.1.2.	THE GEOTEXTILE JACKET SHALL:			
1.1.2.1.	BE UV RESISTANT			
1.1.2.2.	RESIST THE PASSAGE OF 100 MICRONS OR LARGER SOIL PARTICLES			
1.1.2.3.	WHERE APPLICABLE, BE RESISTANT TO MINE AND INDUSTRIAL ACIDS ENCOUNTERED IN BACKFILLS OF MINE SANDS OR SLIMES.			
1.1.2.4.	THE GEOTEXTILE SHALL BE SIZED AS TO ACCOMMODATE THE ANTICIPATED IN PLANE FLOW.			
1.1.3.	THE GEOTEXTILE JACKET SHALL BE OVERLAPPED NOT LESS THAN 100mm AT THE SEAM AND ZIG-ZAG STITCHED FOR THE FULL LENGTH OF THE SEAM. (NOT LESS THAN 3 STITCHES PER CENTIMETRE)			
1.1.4.	THE GEOTEXTILE FABRIC SHALL BE RETURNED AT THE END OF EACH FILTER ELEMENT IN ORDER TO PREVENT INGRESS OF BACKFILL MATERIALS.			
1.1.5.	THE CONTRACTOR SHALL ENSURE THAT THE FILTER ELEMENTS ARE NOT DAMAGED DURING INSTALLATION OR BACKFILLING BEHIND THE STRUCTURE AND THE USE OF TEMPORARY PROTECTIVE BOARDS RAISED PROGRESSIVELY WITH THE BACKFILL IS RECOMMENDED.			
1.2.	DRAINAGE PIPES			
1.2.1.	PERFORATED DRAINAGE PIPES SHALL BE HDPE PIPES TO BS2782 OR CLASS 1 PITCH FIBRE PIPES TO SANS 921. THE GEOTEXTILE SHALL BE AS SPECIFIED IN 2.2. THE DIAMETER OF THE PERFORATED DRAINAGE SHALL BE:			
	65mm Dia. FOR THE TOTAL LENGTH OF FILTER ELEMENTS (ITEM 1) LESS THAN 100 METRES.			
	100mm Dia. FOR THE TOTAL LENGTH OF FILTER ELEMENTS (ITEM 1) GRATER THAN 100 METRES.			
1.2.2.	THE DISCHARGE PIPE (ITEM 5) SHALL BE 110mm Dia. uPVC CLASS 34 PIPES TO SANS 791 OR 100 Dia. 'SANTAR' CLASS 1 PITCH FIBRE PIPES TO SANS 921.			
1.2.3.	THE WEEPHOLES SHALL BE:			
1.2.3.1.	50mm Dia. uPVC PIPES TO SANS 967 COMPLETE WITH STAINLESS STEEL BARRIER ALL AS DETAILED (WALL THICKNESS OF PIPE NOT LESS THAN 3.2mm).			
	OR			
1.2.3.2.	20mm Dia. CLASS 16 uPVC PIPES TO SANS 966 AT CENTRES NOT EXCEEDING 600mm. (WALL THICKNESS NOT LESS THAN 1.5mm AND INTERNAL Dia. NOT TO EXCEED 17mm).			
1.2.4.	THE CONTRACTOR SHALL ENSURE THAT:			
1.2.4.1.	ALL WEEPHOLES ARE POSITIVELY SECURED IN ORDER TO PREVENT DISPLACEMENT DURING THE PLACING OF THE CONCRETE AND			
1.2.4.2.	ALL WEEPHOLES ARE CLEAR OVER THEIR FULL LENGTHS AND APPROVED BY THE ENGINEER BEFORE THE FILTER ELEMENTS ARE INSTALLED.			
2.	MEASUREMENT AND PAYMENT SHALL BE IN ACCORDANCE WITH THE STANDARD AND PROJECT SPECIFICATION.			

LEGEND				
1 -	200mm/300mm WIDE FILTER ELEMENTS SECURED TO BACK FACE OF STRUCTURE AT 45° SLOPE.			
2-	CONCRETE NAILS WITH 25 x 25mm HOOP IRON WASHERS TO SECURE FILTER ELEMENTS TO STRUCTURE AT +/- 1000mm CENTRES.			
3-	CONCRETE SCORED TO GRADE AND LEVEL OF DRAINAGE PIPES PRIOR TO PLACING OF DRAINAGE PIPES.			
4-	65mm Dia. PERFORATED DRAINAGE PIPES WRAPPED IN GEOTEXTILE. THE GEOTEXTILE SHALL HAVE AN OVERLAP OF NOT LESS THAN 150mm AND BE TIED AT CENTRES NOT GREATER THAN 200mm.			
5-	EXTENSION TO PERFORATED DRAINAGE PIPE DISCHARGING AT TOE OF ROAD EMBANKMENT OR INTO ROAD DRAINAGE. (ALTERNATIVE FOR 50mm Dia. WEEPHOLES - ITEM 8)			
6-	+/- 150mm Dia. OPENING FORMED IN STRUCTURE FOR ALTERNATIVE ITEM 5.			
7-				
8-	50mm Dia. PVC WEEPHOLES AT CENTRES NOT GREATER THAN 5.0m. THE CONTRACTOR SHALL ENSURE THAT THE WEEPHOLES ARE CLEAR AND APPROVED BY THE ENGINEER BEFORE THE FILTER ELEMENTS ARE INSTALLED.			
9-	TEMPORARY POLYSTYRENE PLUG TO PREVENT INGRESS OF GROUT DURING PLACING OF THE CONCRETE.			
10-	200mm WIDE FILTER ELEMENT SECURED TO BACK FACE OF STRUCTURE AT SAME GRADE AS WEEPHOLES (ITEM 8)			



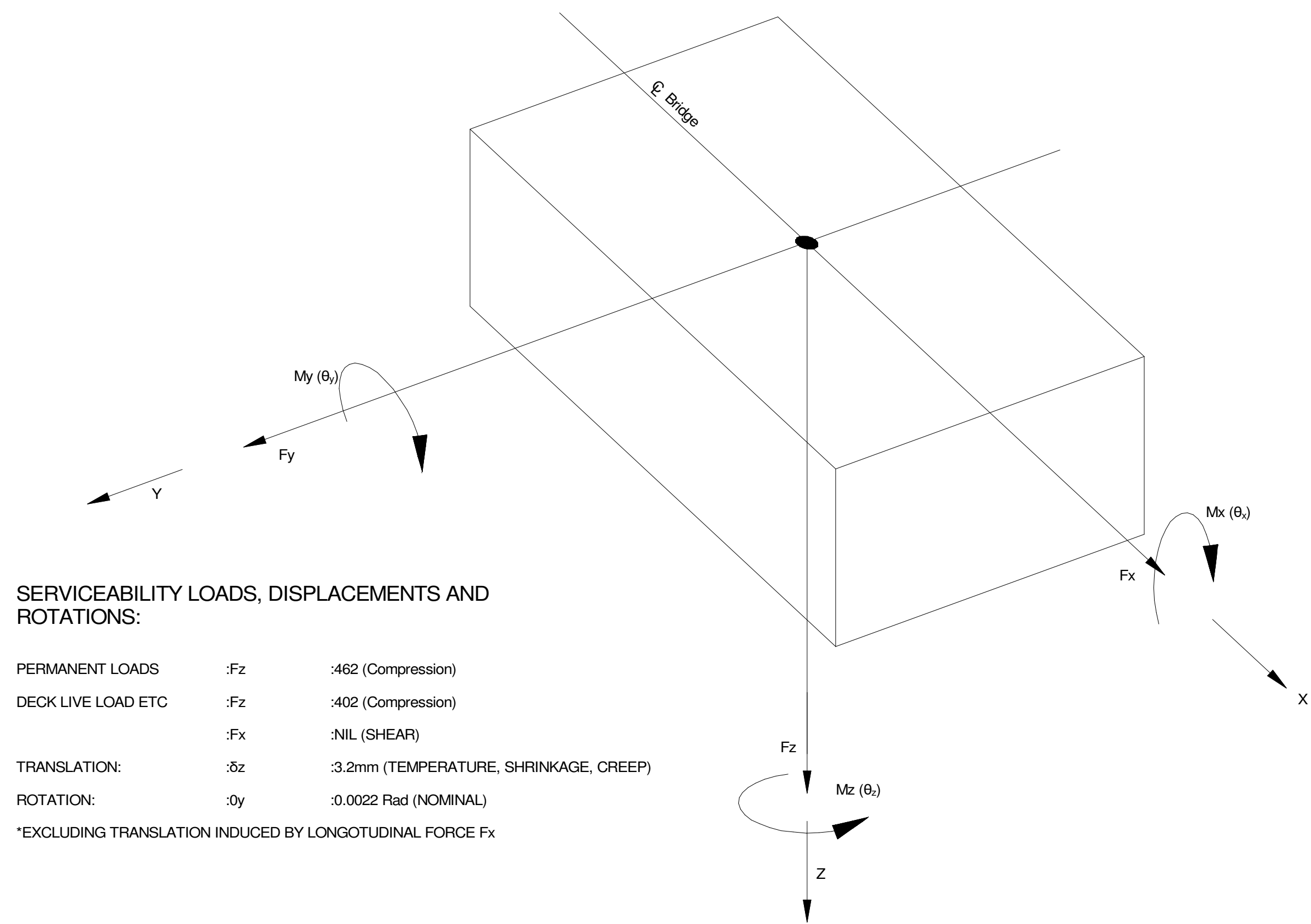
**400X250X53 BEARINGS  
(RUBBER HARDNESS = 60 IRHD)  
180 NO. REQUIRED  
N.T.S**



**BEARING INSTALLATION**

NOTES:  
BEARING SHALL BE BEDDED TRULY HORIZONTAL TO THE CORRECT LEVELS ON A LAYER OF SIKADUR 31 EPOXY ADHESIVE ON PLINTHS FORMED WITH SIKADUR 43 ZA EPOXY RESIN MORTAR AS PER SUPPLIER'S INSTRUCTIONS.

**LAMINATED ELASTOMERIC BEARING DETAILS**



SERVICEABILITY LOADS, DISPLACEMENTS AND ROTATIONS:			
PERMANENT LOADS	:Fz	:462 (Compression)	
DECK LIVE LOAD ETC	:Fz	:402 (Compression)	
	:Fx	:NIL (SHEAR)	
TRANSLATION:	:δx	:3.2mm (TEMPERATURE, SHRINKAGE, CREEP)	
ROTATION:	:δy	:0.0022 Rad (NOMINAL)	
*EXCLUDING TRANSLATION INDUCED BY LONGITUDINAL FORCE Fx			

				AS BUILT		Continued from :		Designed by : T. Mkhize		 <div>transport Department: Province of KwaZulu-Natal</div>	Designed by :  <div>71 Fifth Avenue Morningside Durban 4001 Tel: (031) 324 2200 Fax: (031) 324 2222 email: info@ibhongo.co.za</div>		Structural Design: Chief Engineer		PROVINCIAL ROAD P52/3 - NONGOMA TO PONGOLA S 27 39 47.18 E 31 43 12.14				Staked km distance 27.400		Sheet : 48 of : 51	
A		28-09-2023		ISSUED FOR APPROVAL		BM		Supervising Engineer			Date				Scale :		Ibhongo Dwg No: 2203-SL-003					
Rev		Date		Description		Checked		Signed														
				AMMENDMENTS				Supervising Authority							As indicated		DOT Dwg No: 3801-48					