

DESIGN DATA

POSITION OF OUTLET PIPE INVERT. (SEE SECTION)

(Y)  $\frac{1}{5}$  DAM VOLUME

(X)  $\frac{4}{5}$  DAM VOLUME

DIMENSIONS (X) & (Y) ARE BASED ON THE S.G. RATIOS OF WATER AND TRANSFORMER OIL WITH A 20% VOLUME SAFETY MARGIN TO EACH.

THEREFORE  
INVERT LEVEL OF OUTLET PIPE = (X) = 120% OF THE OIL VOLUME.

THUS  
66,66% OF THE TOTAL VOLUME OF THE DAM IS THE TRANSFORMER  
OIL HOLDING CAPACITY.

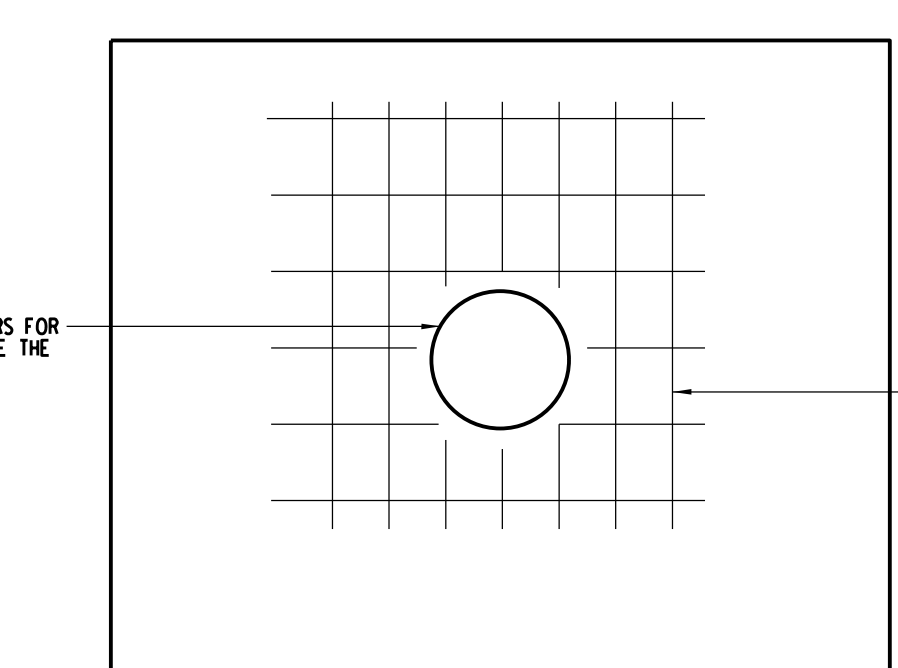
e.g. HOLDING DAM FOR 80m<sup>3</sup> OF OIL

### DAM DETAILS

TOP = 9,276 x 9,276m  
BASE = 4,276 x 4,276m  
DEPTH = 2,50m

120m<sup>3</sup> x 66,66% = 80m<sup>3</sup> TRFR OIL  
TOTAL HOLDING CAPACITY  
VOLUME

WALL = 45°




11 REINFORCEMENT AROUND PIPES

TYPE	OIL HOLDING CAPACITY	A LENGTH EACH SIDE	B LENGTH EACH SIDE	H	X	Y	AREA 100% MSW
5	50 <sup>3</sup>	7,184	7,184	2,500	2,250	0,250	252 <sup>2</sup>
6	60 <sup>3</sup>	8,324	3,324	2,500	2,250	0,270	278 <sup>2</sup>
8	80 <sup>3</sup>	9,726	4,726	2,500	2,210	0,290	342 <sup>2</sup>
10	100 <sup>3</sup>	10,110	5,110	2,500	2,190	0,310	388 <sup>2</sup>
12	120 <sup>3</sup>	10,862	5,862	2,500	2,180	0,320	445 <sup>2</sup>
15	150 <sup>3</sup>	11,876	6,876	2,500	2,170	0,330	525 <sup>2</sup>
16	160 <sup>3</sup>	12,191	7,191	2,500	2,160	0,340	549 <sup>2</sup>
18	180 <sup>3</sup>	12,732	7,732	2,500	2,150	0,350	603 <sup>2</sup>
20	200 <sup>3</sup>	13,359	8,359	2,500	2,150	0,350	656 <sup>2</sup>
23	230 <sup>3</sup>	14,244	9,244	2,500	2,150	0,350	739 <sup>2</sup>

BOLT SCHEDULE		
STRENGTH GRADE 4.8		
TYPE	LENGTH	NO. OFF
M12	40mm LONG	20
M12	ANCHOR BOLT	11

CONCRETE MIX DESIGN:

	CONSISTENCE CLASS:	S3
	MAXIMUM WATER CEMENT RATIO:	0,50
	MINIMUM CEMENT CONTENT:	300kg/m <sup>3</sup>
	MAXIMUM CEMENT CONTENT:	400kg/m <sup>3</sup> FOR CEM I (OPC) 450kg/m <sup>3</sup> FOR CEM II-B-V OR III/A (GBS/FA)
	CONCRETE STRENGTH CLASS:	C30/37

WATER PRESSURE RELEASE VALVE:

VALVES TO BE INSTALLED ONLY WHEN INSTRUCTED BY ESKOM  
FOR AREAS WITH HIGH WATER TABLE.



INSTALL FOUR VALVES IN FLOOR EQUALLY SPACED AS SHOWN ON PLAN IN CENTRE OF PANEL

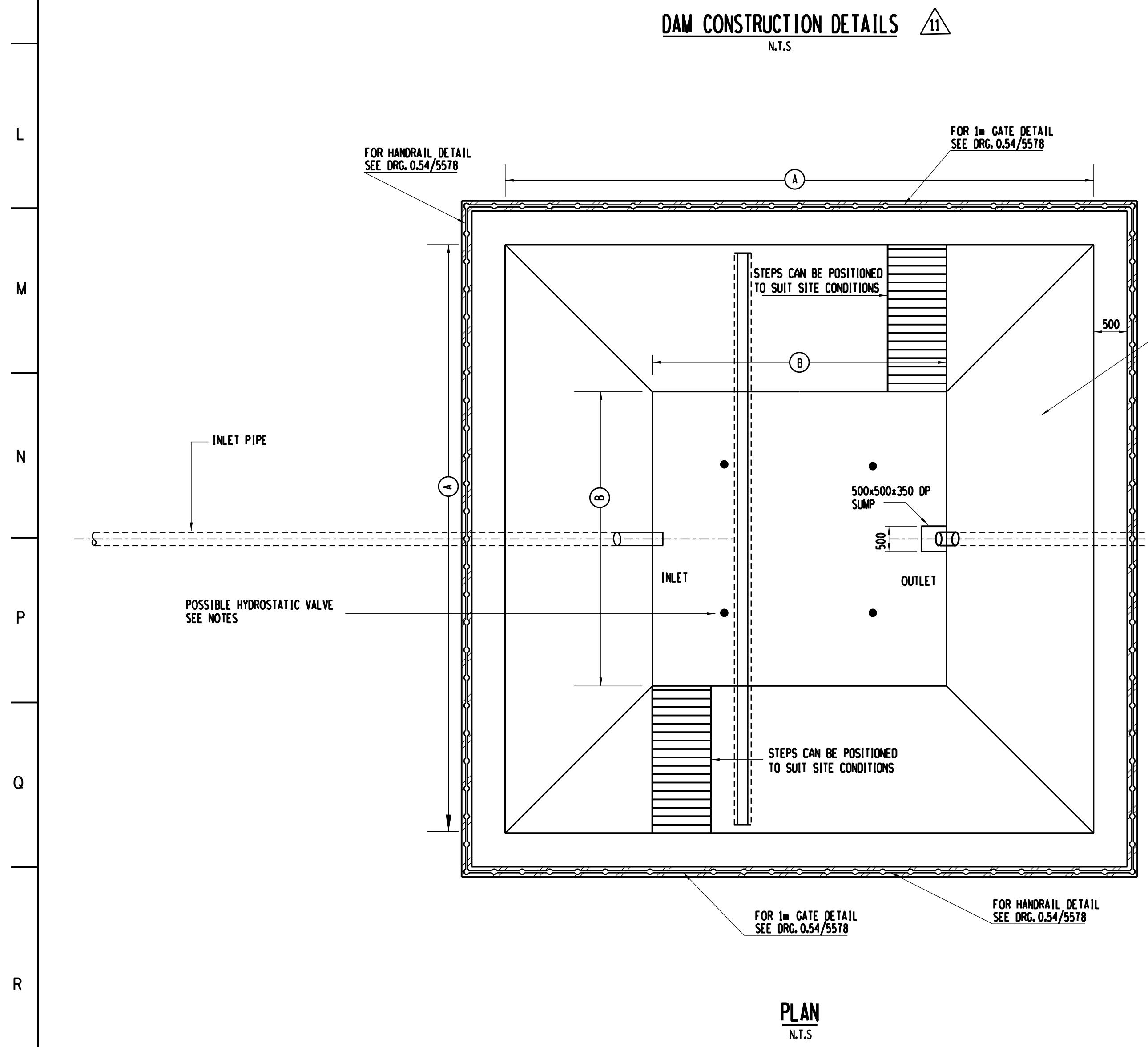
VALVES TO BE UNDERDRAIN COMPLETE WITH HYDROSTATIC  
VALVE SUPPLIED BY "WATERLINES" AND INSTALLED TO MANUFACTURERS SPECIFICATION  
OR SIMILAR APPROVED.

NOTES:

1. 250mm THICK CONCRETE WITH MESH REF. 100S PLACED CENTRALLY SEE BUILDING DETAIL, AND FLOOR DETAIL.
2. CONCRETE STRENGTH AT 28 DAYS, (STONE SIZE: BLINDING - 20/19)
3. CONCRETE TO HAVE WOOD FLOAT FINISH
4. ALL BUILDING AND CIVIL WORKS TO COMPLY WITH S.A.B.S. 1200 SPECS.
5. FOR STANDARD CIVIL DETAILS (SD1) REFER TO 0.54/290.
6. THE DAM MUST BE COMPLETELY WATERPROOF.
7. FOR I.L.T. SEE DRAINAGE LAYOUT DRAWING.
8. ALL STEELWORK TO BE GRADE 300M
9. ALL STEELWORK TO BE HOT DIPPED GALVANIZED TO SABS 763.
10. WELDING SYMBOLS IN ACCORDANCE WITH SABS 0.44
11. ALL WELDS TO BE REAL WELDED
12. ALL HOLES TO BE Ø4mm UNLESS OTHERWISE SHOWN. (MG CUTTER BOLT)

11	MESH REINFORCEMENT, THICKNESS INCREASE & LINING ADDED	PL	QJS	05/2008	2009/20	
10	GRAVELLED STEEL HANDRAIL TO BE BUILT ON BURGSTALL	CF	QJS	BW	03/2010	
9	COMPARTMENT WALL & STAIRS ADDED	SM	QJS	05/2001		
8	ALTERNATIVE FIXING ADDED DMS RYD	OJA	QJS	05/2000		
7	MESH WIRE THICKNESS CHANGED	OBW	QJS	05/2000		
6	VALVE ADDED & JOINT OIL-REMOVED	OBW	QJS	05/2000	398	BOUNDARY FENCE
5	REDRAIN ON CAD TRAPDOOR ADDED				02/1998	5644 JOINT DETAILS
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	0.54/ REFERENCE DRAWINGS

DESIGN APPROVED L. RYAN	 <b>Eskom</b> Transmission		<div>TRANSFORMER OIL HOLDING DAM</div> <div>DETAILS</div>	
DATE: 03/02/1998				
DESIGN CHECKED G.A.C.				
DATE: 26/02/1998				
DRAWN BY D.B. NAUDE				
DATE: 02/09/1998		0.54/3754		
SCALE AS SHOWN				
		SHEET NUMBER	REVISION	
			11	

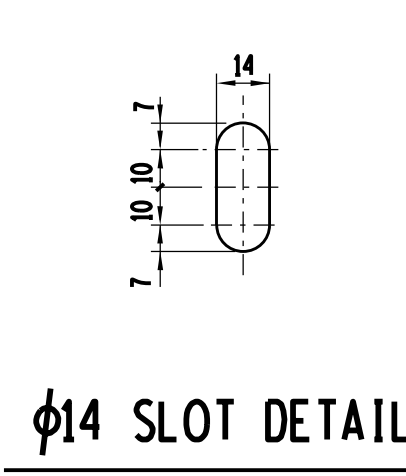


APPLY 3 COATS OF SEALMAC WATER TIGHT LINGING,UV RESISTANT AND WITH A MINIMUM OF 20 YEARS GUARANTEE OR SIMILAR APPROVED LINING OVER THE FINISHED SURFACE OF THE CONTAINMENT AREA. APPLICATION OF LINING TO BE DONE AS PER THE MANUFACTURES SPEC.

HEADWALL  
SEE DRG. 0.54/390 SHT. 13A  
OUTLET PIPE TO BE CLOSED  
WITH 25 x 25 x 3,15mm MESH

— SEE DRAINAGE LAYOUT

DRAWING FOR OPEN  
DRAIN TYPE AND  
POSITION.



MK (A) 1 OFF  
 AS DRAWN  


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 1:10  
 MK (A) 1 OFF  
 OPP. HAND

MK (B) 1 OFF  
AS DRAW  
1:10  
MK (B) 1 OFF  
OPP. HAND

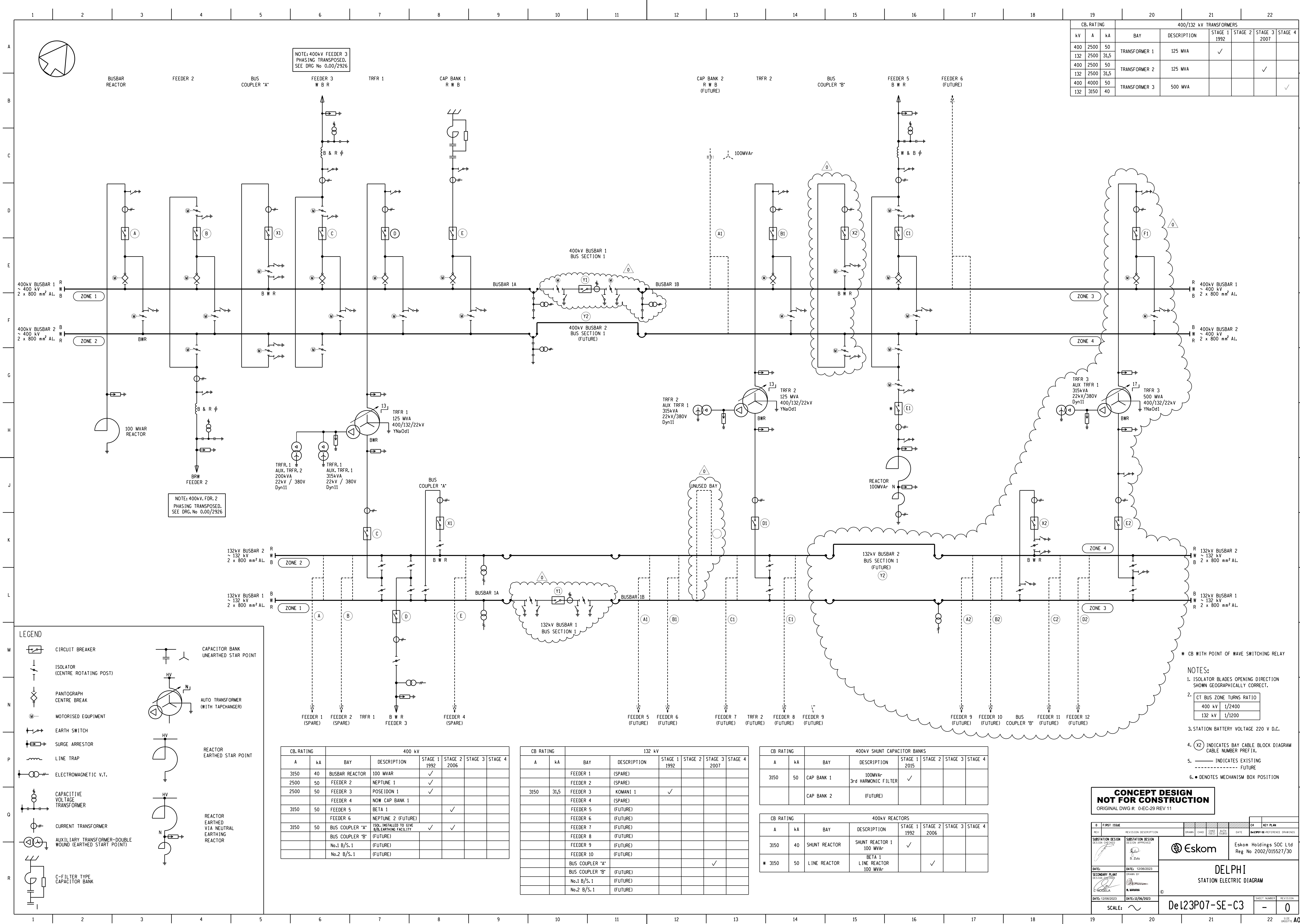
MK (C) 1 OFF  
 AS DRAWN  
 1:10  
 MK (C) 1 OFF  
 OPP. HAND

MK (D) 1 OFF  
 AS DRAWN  
 1:10  
 MK (D) 1 OFF  
 OPP. HAND









CB RATING			400/132 kV TRANSFORMERS					
kV	A	kA	BAY	DESCRIPTION	STAGE 1 1992	STAGE 2 2006	STAGE 3 2007	STAGE 4
400	2500	50	TRANSFORMER 1	125 MVA	✓			
132	2500	31,5						
400	2500	50	TRANSFORMER 2	125 MVA			✓	
132	2500	31,5						
400	4000	50	TRANSFORMER 3	500 MVA				✓
132	3150	40						

CB RATING		400 kV						
A	kA	BAY	DESCRIPTION	STAGE 1 1992	STAGE 2 2006	STAGE 3	STAGE 4	
3150	40	BUSBAR REACTOR	100 MVAR	✓				
2500	50	FEEDER 2	NEPTUNE 1	✓				
2500	50	FEEDER 3	POSEIDON 1	✓				
3150	50	FEEDER 4	NOW CAP BANK 1					
3150	50	FEEDER 5	BETA 1		✓			
3150	50	FEEDER 6	NEPTUNE 2 (FUTURE)					
3150	50	BUS COUPLER 'A'	ISOL. INSTALLED TO GIVE B/S EARTHING FACILITY	✓	✓			
		BUS COUPLER 'B'	(FUTURE)					
		No.1 B/S.1	(FUTURE)					
		No.2 B/S.1	(FUTURE)					

CB RATING		132 kV						
A	kA	BAY	DESCRIPTION	STAGE 1 1992	STAGE 2	STAGE 3 2007	STAGE 4	
		FEEDER 1	(SPARE)					
		FEEDER 2	(SPARE)					
3150	31,5	FEEDER 3	KOMANI 1	✓				
		FEEDER 4	(SPARE)					
		FEEDER 5	(FUTURE)					
		FEEDER 6	(FUTURE)					
		FEEDER 7	(FUTURE)					
		FEEDER 8	(FUTURE)					
		FEEDER 9	(FUTURE)					
		FEEDER 10	(FUTURE)					
		BUS COUPLER 'A'	(FUTURE)			✓		
		BUS COUPLER 'B'	(FUTURE)					
		No.1 B/S.1	(FUTURE)					
		No.2 B/S.1	(FUTURE)					

CB RATING		400kV SHUNT CAPACITOR BANKS					
A	kA	BAY	DESCRIPTION	STAGE 1 2015	STAGE 2	STAGE 3	STAGE 4
3150	50	CAP BANK 1	100MVar 3rd HARMONIC FILTER	✓			
		CAP BANK 2	(FUTURE)				

CB RATING		400kV REACTORS					
A	kA	BAY	DESCRIPTION	STAGE 1 1992	STAGE 2 2006	STAGE 3	STAGE 4
3150	40	SHUNT REACTOR	SHUNT REACTOR 1 100 MVar	✓			
* 3150	50	LINE REACTOR	BETA 1 LINE REACTOR 100 MVar		✓		

- NOTES:
- ISOLATOR BLADES OPENING DIRECTION SHOWN GEOGRAPHICALLY CORRECT.
  - CT BUS ZONE TURNS RATIO  
400 kV 1/2400  
132 kV 1/1200
  - STATION BATTERY VOLTAGE 220 V D.C.
  - (X2) INDICATES BAY CABLE BLOCK DIAGRAM CABLE NUMBER PREFIX.
  - INDICATES EXISTING  
--- FUTURE
  - DENOTES MECHANISM BOX POSITION

CONCEPT DESIGN  
NOT FOR CONSTRUCTION  
ORIGINAL DWG #: 04-EC-29 REV 11

0	FIRST ISSUE	DATE: 12/06/2023	SCALE: ~	DELPHI STATION ELECTRIC DIAGRAM De123P07-SE-C3
1	REVISION DESCRIPTION	DATE: 12/06/2023		
2	REVISION DESCRIPTION	DATE: 12/06/2023		
3	REVISION DESCRIPTION	DATE: 12/06/2023		
4	REVISION DESCRIPTION	DATE: 12/06/2023		
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20	REVISION DESCRIPTION	DATE: 12/06/2023		
21	REVISION DESCRIPTION	DATE: 12/06/2023		
22	REVISION DESCRIPTION	DATE: 12/06/2023		

