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GENERAL
1. ALL WRITTEN DIMENSIONS TO TAKE PREFERENCE OVER SCALED DIMENSIONS
2. ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK COMMENCES

No.	DATE	INIT.	REVISIONS
0	27/02/07	AN	ISSUED FOR CONSTRUCTION
1	19/06/08	AN	RETICULATION REVISED TO SUIT PLAN
2	30/03/09	AN	ISSUED FOR RECORDS

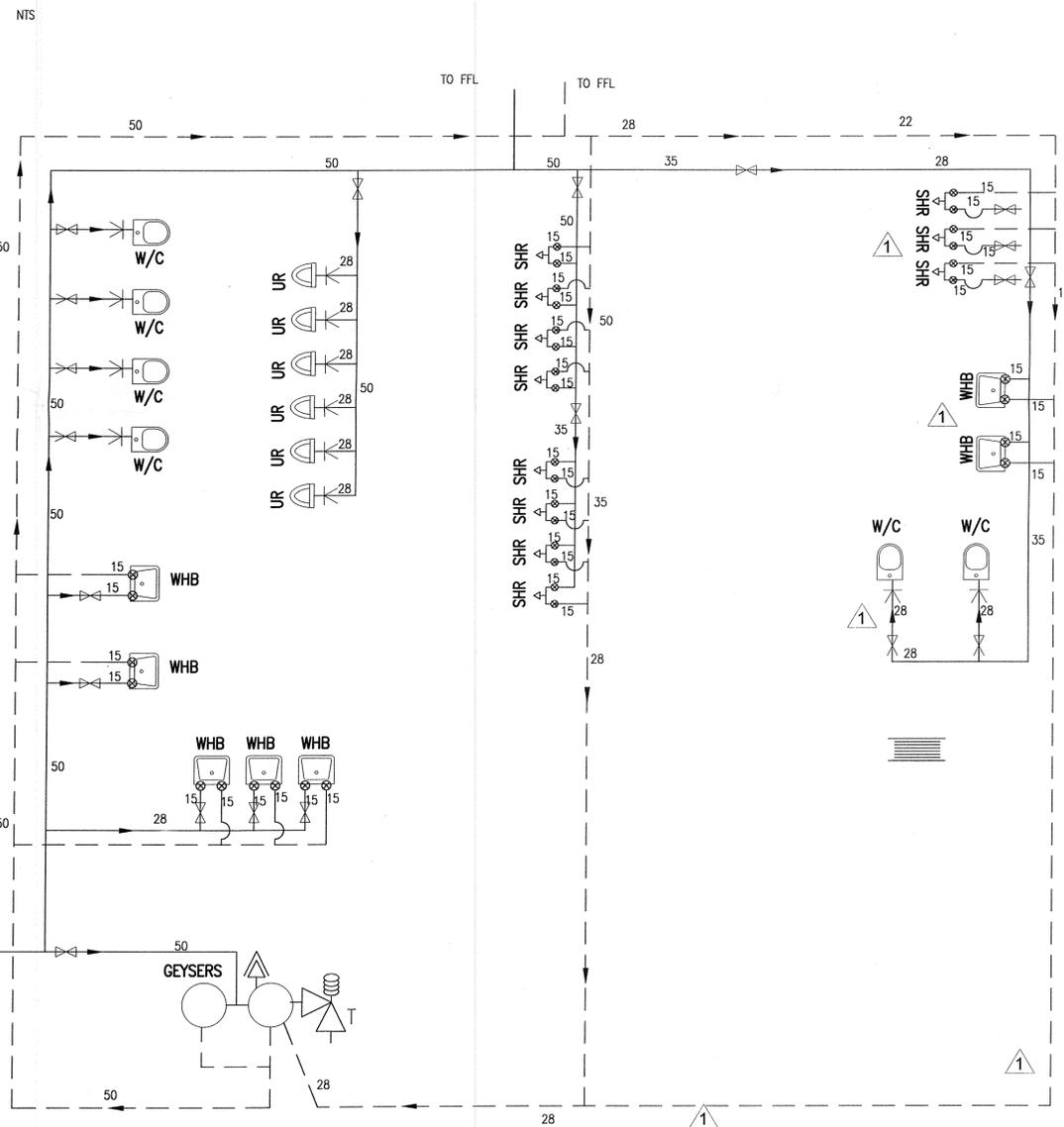
NOTES ON PLUMBING :

- GEYSERS TO BE "KWIKOT" litre WITH ALL NECESSARY DRAINS SAFETY VALVES, ETC.
PROVIDE ALL NECESSARY ELECTRICAL POINTS, ISOLATION BOXES AND FITTINGS etc.
- WATER PRESSURE TO BE TESTED PRIOR TO ORDERING OF FLUSHMASTERS
- ALL VALVES TO BE FULLY ACCESSIBLE FOR MAINTENANCE PURPOSES
- COLD WATER TAPS TO BE ON THE RIGHT HND SIDE & HOT WATER TAPS ON THE LEFT WHEN FACING FITTING
- ALL HOT WATER PIPES, EXCEPT WHERE BUILT INTO WALLS TO BE LAGGED
- SAFETY & EXPANSION VALVE PIPES NOT TO BE INTER-CONNECTED OR REDUCED AND TO EXIT WITH A SLIGHT FALL
- PRESSURE REDUCING/RELIEF/EMERG. SAFETY VALVES & GEYSER TO BE COMPATIBLE COLOUR CODED I.E. SAME COLOUR = SAME kPa
- ALL PIPES TO BE COPPER AND FLUSHED BEFORE CONNECTING ANY VALVES
- ALL PIPES TO BE CHASED INTO WALLS WHERE POSSIBLE (EXCEPT IN STORES & GEYSER ROOMS)
- ALL BRASSWARE TO CONFORM WITH S.A.B.S. 226/87 CLASS 1
- ALL FITTINGS & VALVES TO BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S SPEC.
- PROVIDE ALL NECESSARY STOPCOCKS, VALVES, ETC.
- ANY CHANGE TO THE LAYOUT, FITTINGS, ETC TO BE APPROVED BY THE ARCH
- HYDROBOIL OVERFLOW TO BE CHASED INTO WALLS & DISCHARGE OVER SINK
- ANY CHANGE IN THE LAYOUT TO BE APPROVED BY ARCHITECT PRYOR TO INSTALLATION
- ALL MIXERS TO BE FITTED WITH APPROVED NON RETURN VALVES
- GEYSERS TO BE FITTED WITH APPROVED PRESSURE REDUCING VALVES
- BALANCED WATER PRESSURE TO BE ACHIEVED TO ALL FITTINGS
- ALL WATER PIPES IN CONCRETE TO BE WRAPPED WITH DENZO TAPE AS PER MANUFACTURERS INSTRUCTION

LEGEND :

- ⊗ PILLARCOCK (BASIN)
- BIBCOCK (SINK)
- ⊕ SHOWER HEAD WITH UNDERWALL STOPCOCKS
- BIBCOCK WITH HOSE CONNECTION (REFUSE)
- ⊗ STOPCOCK
- FLUSHVALVE WITH BALL-O-STOP (WC, URINAL)
- COLD WATER
- - - HOT WATER

FIRST FLOOR
WATER RETICULATION



FROM MAIN WATER SUPPLY PIPE
SEE CIVIL ENGINEERS SITE PLAN

GROUND FLOOR
WATER RETICULATION

FOR FIRE WATER SUPPLY SEE CIVIL ENGINEERS
DRAWINGS

THIS DRAWING IS TO BE READ IN CONJUNCTION
WITH CIVIL ENGINEERS DRAWINGS AND SITE PLAN



ARCHITECTS
ENGINEERS
PROJECT MANAGERS
QUANTITY SURVEYORS

TRANSNET LTD (TRADING AS PROTEKON) : REG. NO. 1990/000900/06
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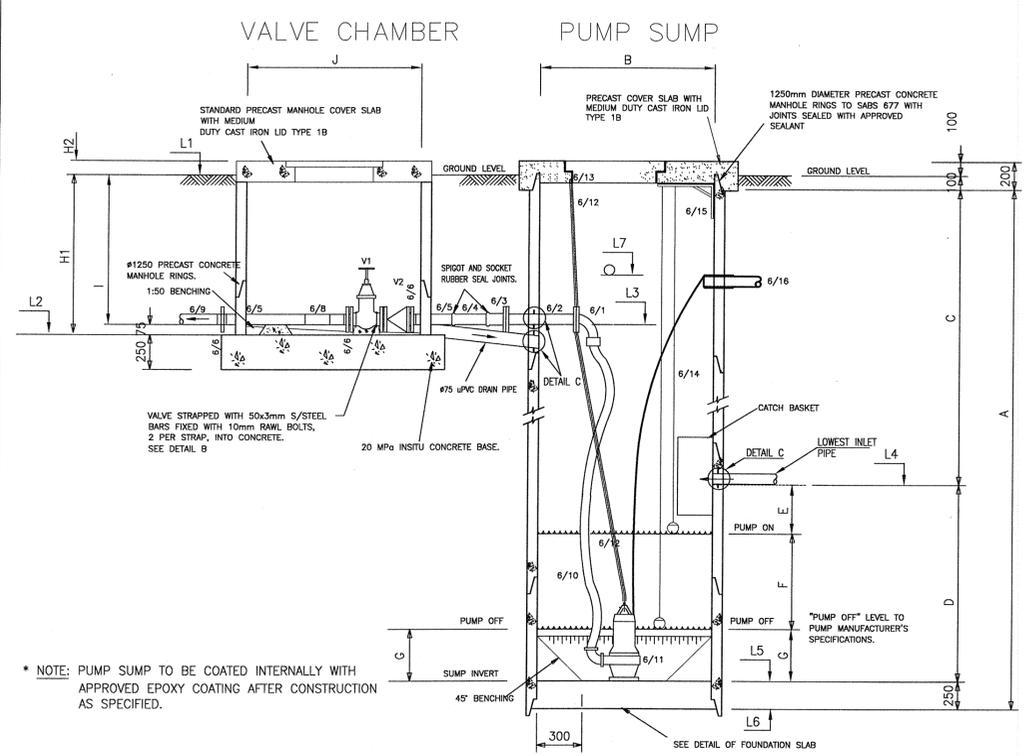
PROJECT
PORT OF DURBAN
PIER 1
BERTH 203

PROPOSED NEW WORKERS FACILITY
AT BERTH 203

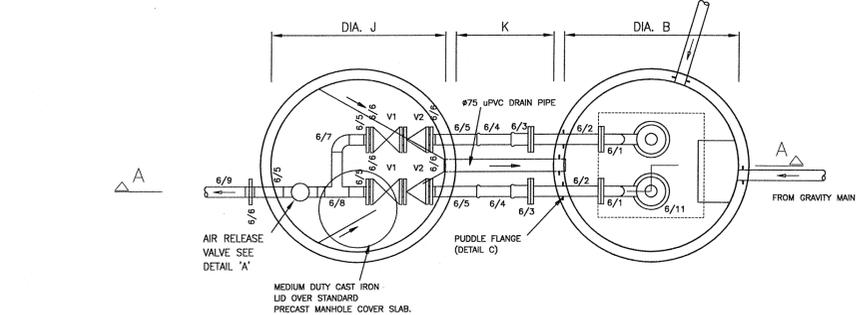
DRAWING
AS BUILT
WATER RETICULATION

CLIENT		NPA	
NAME	SIGN.	DESIGNATION	DATE
DESIGNED	RR	CHECKED	NM
DRAWN	AN	CHECKED	ZV
PROJ LEADER			

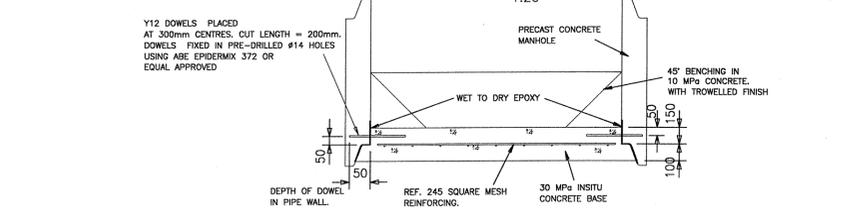
REF.	DATE	SEGMENT	DWG TYPE	SHEET	REV.
2220352-A-W005	30/03/2009	A	W	011	2



TYPICAL SECTION A-A THROUGH PUMP SUMP
NOT TO SCALE



PLAN VIEW
1:20



FOUNDATION DETAIL FOR PUMP SUMP
NOT TO SCALE
ALTERNATIVE 'A' FOR CONSTRUCTION
AS A CAISSON

LEGEND

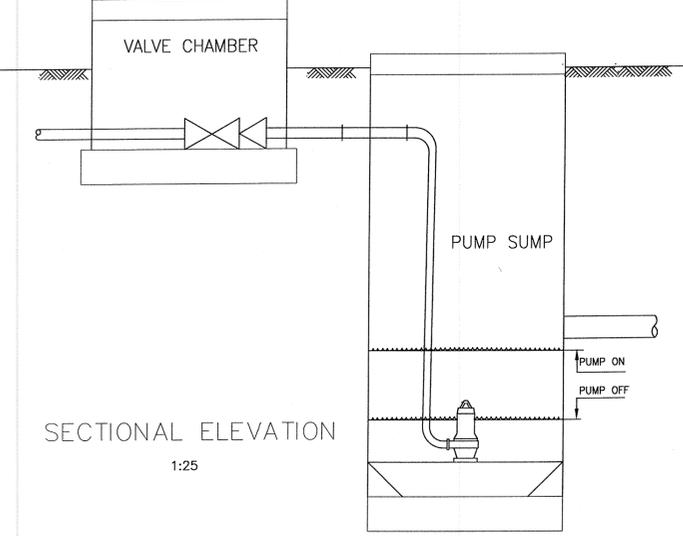
COMPONENT	NUMBER	DESCRIPTION	DIAMETER
6/1	2	MILD STEEL GALVANISED ELBOW AND QUICK RELEASE COUPLING.	80
6/2	2	CAST IRON PIPE 500mm LONG, FLANGED BOTH ENDS WITH PUDDLE FLANGE.	80
6/3	2	CAST IRON FLANGE ADAPTOR FOR uPVC PIPE.	75
6/4	2	uPVC CLASS 6 PIPE 300mm LONG WITH RUBBER SEAL JOINT ON ONE END.	75
6/5	5	uPVC CLASS 6 PIPE PLAIN ENDED, VARIABLE LENGTH.	75
6/6	5	uPVC STUB AND FLANGE, SOLVENT WELDED FITTING.	75
6/7	1	90° uPVC ELBOW, SOLVENT WELDED FITTING.	75
6/8	1	uPVC EQUAL TEE, SOLVENT WELDED FITTING.	75
6/9	-	HDPE CLASS 10 RISING MAIN WITH PLASSON COMPRESSION FITTINGS.	75
6/10	2	FLEXIBLE RUBBER HOSE.	TO MATCH PUMP DISCHARGE FLANGE
6/11	2	SUBMERSIBLE, FREE STANDING, SOLIDS HANDLING CENTRIFUGAL PUMP.	
6/12	2	LONG-LINK GALVANISED IRON LIFTING CHAIN.	
6/13	2	STAINLESS STEEL SHACKLE AND 8mm I-BOLT SECURED IN COVER SLAB WITH STAINLESS STEEL WEDGE ANCHOR.	
6/14	2	MERCURY FLOAT SWITCH.	
6/15	1	SUPPORT BRACKET FOR FLOAT SWITCHES IN GRADE 304 STAINLESS STEEL, TO FLOAT SWITCH SUPPLIER'S DETAIL.	
6/16	1	uPVC CABLE DUCT.	50
6/17	1	STAINLESS STEEL VENT PIPE.	50
6/18	1	INLET PIPE WITH PUDDLE FLANGE.	160
6/19	1	uPVC 75 X 90 DIA REDUCER.	
V1	2	CAST IRON FLANGED GATE VALVE.	80
V2	2	CAST IRON FLANGED NON-RETURN VALVE.	80

LEVELS

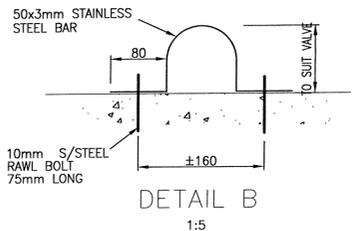
ITEM	DESCRIPTION	LEVELS
L1	GROUND LEVEL	3.040
L2	INVERT OF VALVE CHAMBER	2.415
L3	INVERT OF DELIVERY PIPE	2.490
L4	INVERT OF INLET PIPE	1.900
L5	INVERT OF PUMP SUMP	0.890
L6	FOUNDING LEVEL OF PUMP SUMP	0.640
L7	INVERT OF INLET PIPE 2	2.300

PUMP SUMP DIMENSIONS

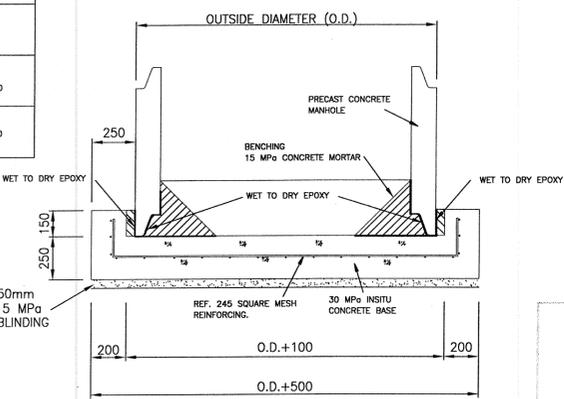
A	2300
B	1500
C	1040
D	1010
E	±200
F	500
G	±300
H1	625
H2	100
I	550
J	1500
K	1100



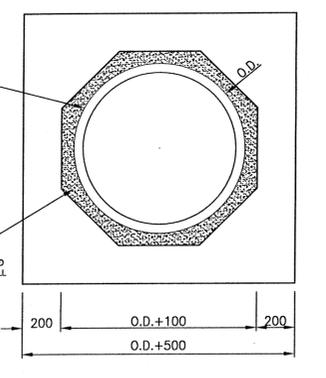
SECTIONAL ELEVATION
1:25



DETAIL B
1:5



FOUNDATION DETAIL FOR PUMP SUMP
NOT TO SCALE



FOUNDATION PLAN
NOT TO SCALE

ALTERNATIVE 'B' FOR CONSTRUCTION
IN OPEN EXCAVATION

REFERENCE DRAWINGS

DRAWING NO.	REFERENCE
2220352-1-00-C-LA-0101-3-TD	SITE PLAN
2220352-1-00-C-DE-0501-2-TD	SEWER LAYOUT AND LONG SECTIONS
2220352-1-00-C-DE-0401-1-TD	STORMWATER OUTFALL FROM ROOF DOWN PIPES
2220352-1-00-C-DE-0301-1-TD	SEWER OUTFALL LAYOUT AND STILLING CHAMBER DETAILS
2220352-1-00-C-DE-0201-1-TD	WET SERVICES DETAILS

Transnet Projects
DESIGN KZN
CIVILS

100 EEL ROAD
BAYHEAD
BOX 1073, DURBAN
TEL 031 250 9700
FAX 031 250 9705

CLIENT NAME: _____ DESIGNATION: _____ DATE: _____

CLIENT SIGN: _____

DRAWN BY: _____ CHECKED: _____ ENG. _____

DRAWING NO. _____ SEGMENT _____ SHEET _____

REVISIONS / ISSUE AUTHORIZATION

NO.	DESCRIPTION	BY	CHKD	APPD	DATE
Z	ISSUED FOR RECORDS	ON	RN		16/03/09

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TITLE	NAME	DATE	TITLE	NAME	DATE
LEAD DES. ENG.			DRAWN	SN	
ENG. COORD			CHECKED	DH	
ENG. MGR.			ENG. COORD		20 03 09
AREA MGR.			DISCIP. ENG.		
PROJ. MGR.			ENG. MGR.		

BUSINESS UNITS

TITLE	NAME	DATE	AREA MGR.	PROJ. MGR.

PR.ENG. / PR. TECH.

NAME	DATE

REG. NUMBER _____ DATE _____

SCALE: NOTED

TRANSNET

DCT ENGINEERING

PORT OF DURBAN

PIER 1, BERTH 203

SEWER PUMP SUMP DETAILS

PROJECT NUMBER	BU	FBS	DIS	TYPE	DRG. NO.	SHT.	REV.	ID
2220352	1	0	0	C-DE	06	01	Z	TD

SIZE: A1 DATE: 2007/08/08

BAY OF NATAL

SEWER CO-ORDINATES SETTING OUT DATA (SYSTEM LO31)

POINT	Y CO-ORD	X CO-ORD
RE	-1 335.324	3 306 513.476
SM1	-1 317.186	3 306 517.559
SM2	-1 312.862	3 306 498.896
SM3	-1 335.261	3 306 493.853
P.S.	-1 338.401	3 308 493.150
V.C.	-1 339.682	3 306 492.858
P1	-1 340.434	3 306 493.859
P2	-1 343.149	3 306 505.642
P3	-1 344.174	3 306 515.167
P4	-1 354.666	3 306 562.156

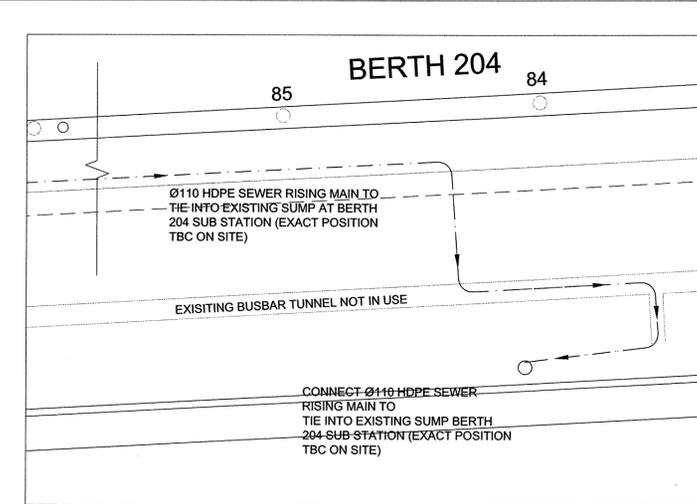
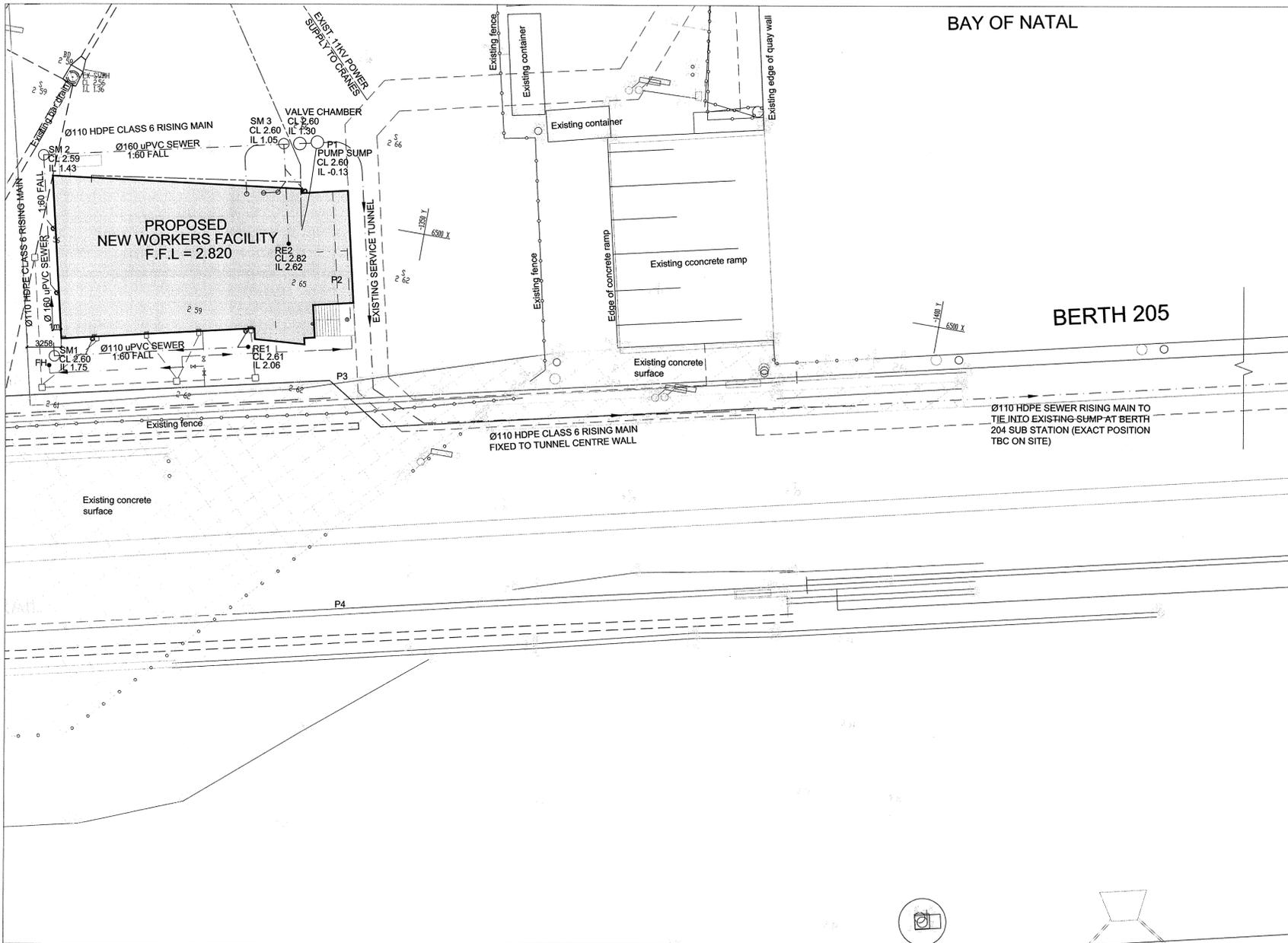
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No.	DATE	INIT.	REVISIONS
A	06/11/06	S.N.	FOR NPA SUBMISSION
B	15/11/06	S.N.	FOR TENDER
0	25/07/07	A.M.	ON HOLD
1	03/11/07	S.N.	SEWER ROUTE REVISED
2	14/12/07	S.N.	SEWER RETICULATION RE-ALIGNED, PUMP SUMP RE-POSITIONED TO ACCOMMODATE REVISED FOUNDATION POSITION
3	03/11/07	S.N.	SEWER CO-ORDINATES PROVIDED
4	15/02/08	G.S.	RISING MAIN PIPE SIZE AND ENCASING ALTERED
5	13/08/08	R.N.	RISING MAIN ROUTE REVISED
6	05/11/08	O.N.	ISSUED FOR RECORDS

NOTE:
FOR LOCALITY PLAN REFER TO DRAWING No:
22 20 350c0101



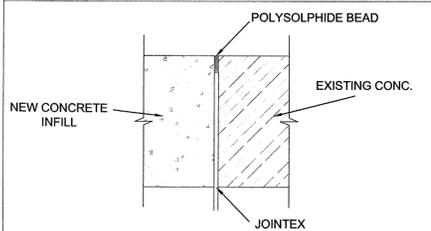
SCHEDULE OF DRAWINGS

NO.	DRAWINGS
22 20 350c 0101	SITE PLAN
22 20 350c 0102	SEWER LAYOUT AND DETAILS
22 20 350c 0103	FIRE, VALVES & KERB DETAILS
22 20 350c 0104	SEWER PUMP SUMP DETAILS
22 20 350c 0105	COMBINED SERVICES LAYOUT
22 20 350c 0106	SEWER LONGITUDINAL SECTIONS
22 20 350c 0107	STORMWATER MANHOLE DETAILS
22 20 350c 0108	TYPICAL JOINT DETAILS
22 20 350c 0109	BERTH 204 - SITE PLAN
22 20 350c 0110	ULTRA HEAVY DUTY COVER TYPE P3 FOR PUMP SUMP
22 20 350c 0111	VALVE CHAMBER DETAILS AND ULTRA HEAVY DUTY COVER TYPE P2 AT BERTH 204
22 20 350c 0112	BERTH 205 - SITE PLAN
22 20 350c 0113	COVER SLAB FOR ELECTRICAL TUNNEL
22 20 350c 0114	BERTH 203 - SITE PLAN
22 20 350c 0115	ULTRA HEAVY DUTY COVER DETAILS FOR TYPE P2 MH
22 20 350c 0116	BERTH 205 - PUMP SUMP
22 20 350c 0117	TYPICAL CHAMBER FOR ELECT/COMMS
22 20 350c 0201	OVERALL SEWER CONCEPT

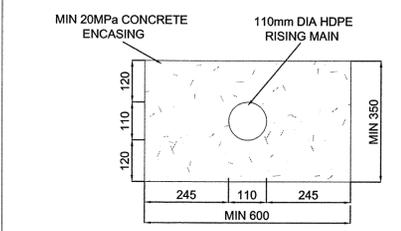
SEWER LAYOUT
1:250

NOTE:

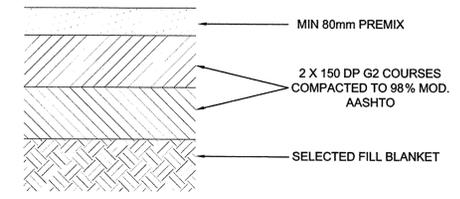
- CONTRACTOR TO VERIFY AND PROVE THE INVERT AND THE SIZE OF THE EXISTING SEWER RISING MAIN AT BERTH 205 SUB STATION PRIOR CONSTRUCTION
- CONTRACTOR TO MAKE SUITABLE PIPE CONNECTION ONCE THE EXISTING SEWER MAIN IS DISCOVERED



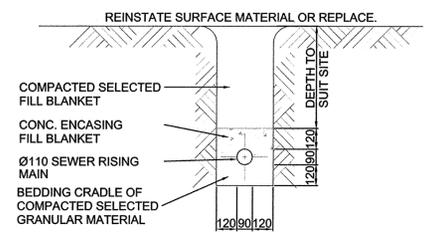
JOINT DETAIL
LENGTH (± 215 m)
1:10



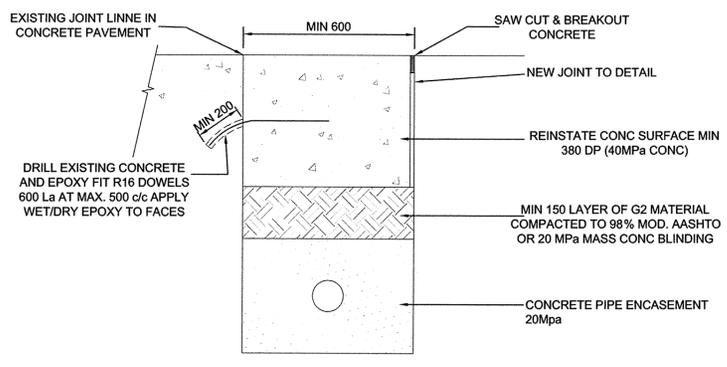
TYPICAL ENCASING DETAILS (SEWER RISING MAIN)
1:10



REINSTATE PAVEMENT IN PREMIX AREAS (SEWER RISING MAIN)
SCALE 1:10



CROSS SECTION OF TYPICAL PIPE BEDDING DETAILS
N.T.S.



REINSTATE PAVEMENT IN CONCRETE AREAS (SEWER RISING MAIN)
SCALE 1:10

ARCHITECTS ENGINEERS PROJECT MANAGERS QUANTITY SURVEYORS

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PROJECT
PORT OF DURBAN-PIER 1
DURBAN CONTAINER TERMINAL
BERTH 200 TO 205 - NEW
WORKERS FACILITY, DEMOLITION OF
BUILDINGS & ASSOCIATED WORKS

SEWER LAYOUT AND DETAILS

CLIENT	N.P.A.		
NAME	SIGN.		
DESIGNATION	DATE		
DESIGNED	F.S.	CHECKED	K.C.
DRAWN	S.N.	CHECKED	D.H.
PROJ LEADER	F.S.	MANAGER	M.T.JDL K.C.

REF.	401.P.77-302	DATE	19/09/2006
CIVIL DRAWING No.	PPS: 22 20 350c0102	REV.	6

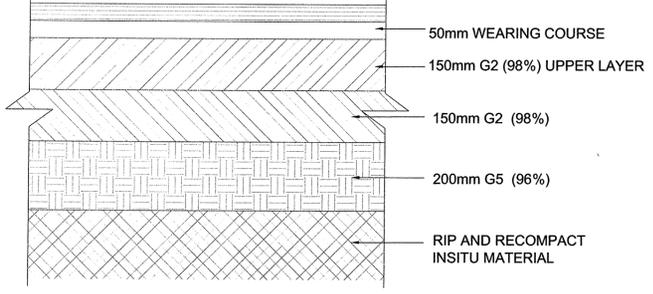
ISSUED FOR CONSTRUCTION

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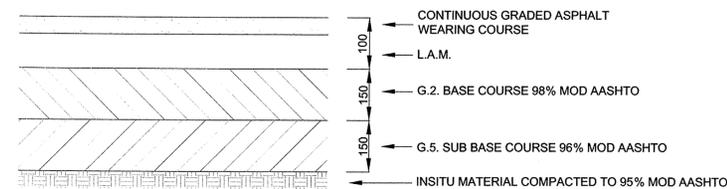
No.	DATE	INIT.	REVISIONS
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B	15/11/06	S.N.	FOR TENDER
0	25/07/07	A.M.	ISSUED FOR CONSTRUCTION
1	15/02/08	G.S.	EX PAVEMENT NOTES ADDED
2	05/11/08	O.N.	ISSUED FOR RECORDS

SCHEDULE OF DRAWINGS

NO.	DRAWINGS
	SITE PLAN
22 20 350c 0101	SEWER LAYOUT AND DETAILS
22 20 350c 0102	FIRE, VALVES & KERB DETAILS
22 20 350c 0103	SEWER PUMP SUMP DETAILS
22 20 350c 0105	COMBINED SERVICES LAYOUT
22 20 350c 0106	SEWER LONGITUDINAL SECTIONS
22 20 350c 0107	STORMWATER MANHOLE DETAILS
22 20 350c 0108	TYPICAL JOINT DETAILS
22 20 350c 0109	BERTH 204 - SITE PLAN
22 20 350c 0110	ULTRA HEAVY DUTY COVER TYPE P3 FOR PUMP SUMP
22 20 350c 0111	VALVE CHAMBER DETAILS AND ULTRA HEAVY DUTY COVER TYPE P2 AT BERTH 204
22 20 350c 0112	BERTH 205 - SITE PLAN
22 20 350c 0113	COVER SLAB FOR ELECTRICAL TUNNEL
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22 20 350c 0201	OVERALL SEWER CONCEPT



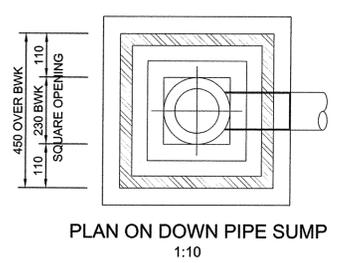
EXIST PREMIX AREAS TYPICAL LAYERWORKS DETAIL (MEDIUM TRAFFIC)
SCALE 1:10



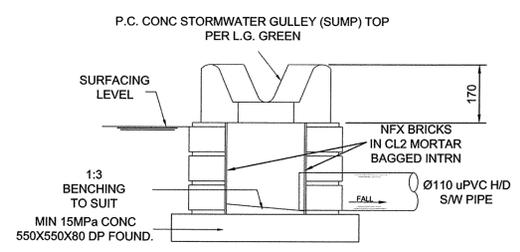
EX PREMIX AREAS TYPICAL PAVEMENT DESIGN (HEAVY TRAFFIC)
SCALE 1:10

THRUST BLOCK SIZES (in mm) in normal earth for heads of 120 mm

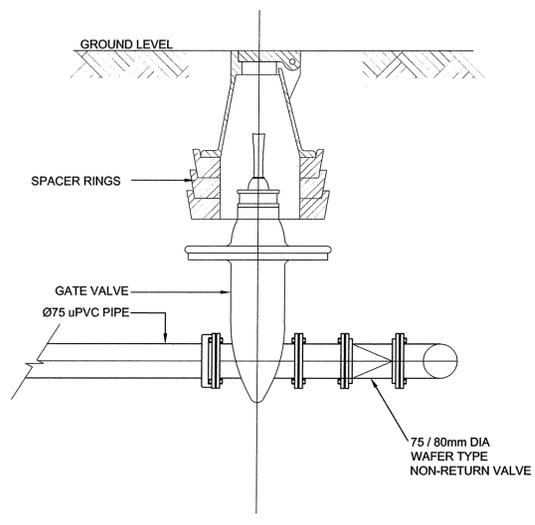
PIPE SIZE	CAP	TEE(BRANCH)	90° 1/4 BEND	45° 1/8 BEND	22.5° 1/16 BEND	11.25° 1/32 BEND
75mm	200 x 200	200 x 200	250 x 300	200 x 250	200 x 200	200 x 200
100mm	200 x 400	200 x 400	300 x 500	250 x 300	200 x 200	200 x 200



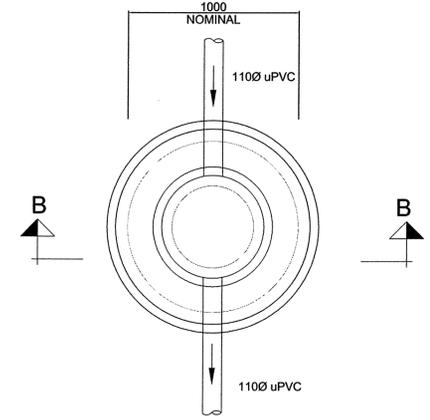
PLAN ON DOWN PIPE SUMP
1:10



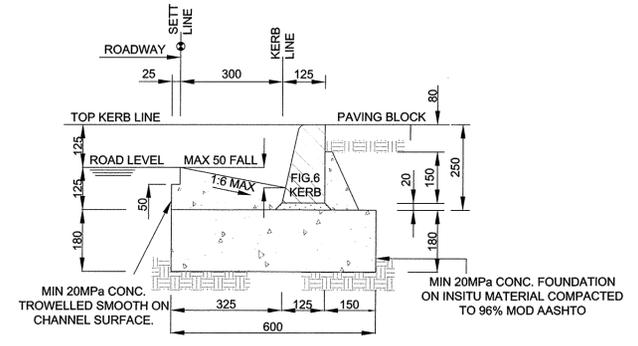
TYPICAL SECTION ON DOWN PIPE SUMP (4N°)
1:10



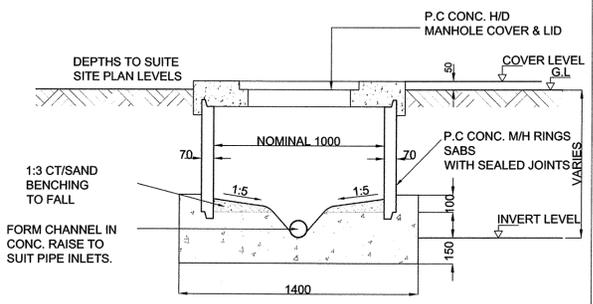
WATER VALVE & NR VALVE
1:10



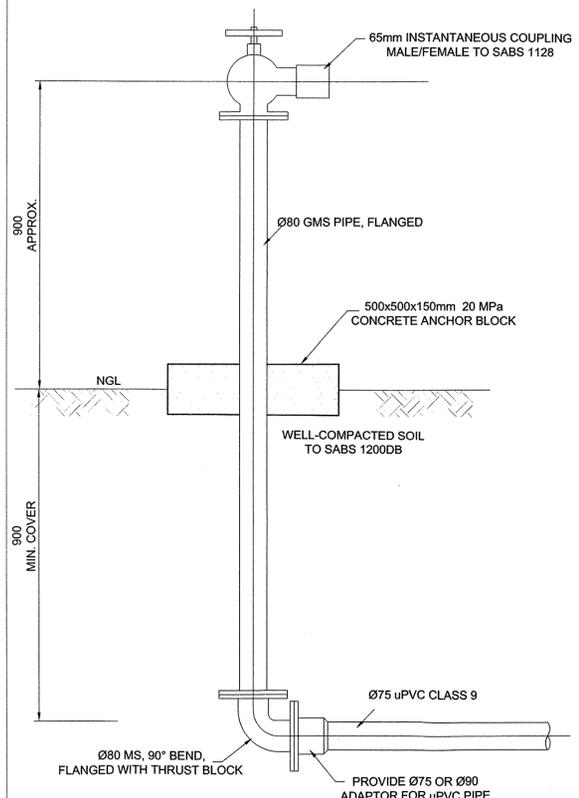
PLAN SEWER MANHOLE (3 N°)
1:20



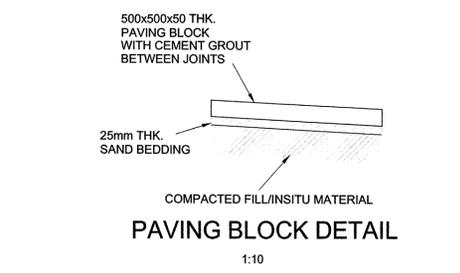
STANDARD KERB & CHANNEL DETAIL
SCALE 1:10



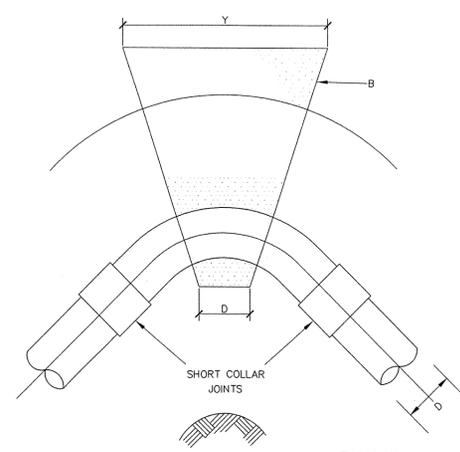
SECTION B-B SEWER MANHOLE
1:20



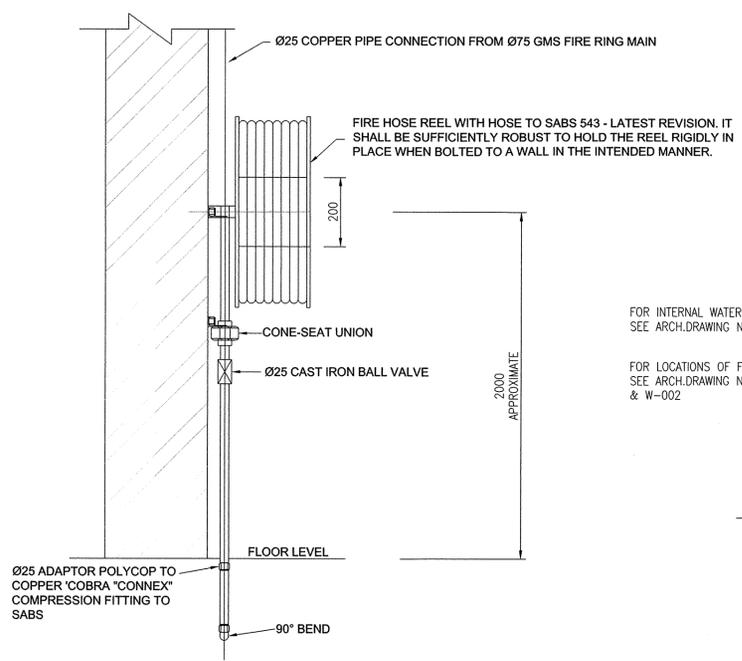
FIRE HYDRANT DETAIL (1N° OFF)
1:10



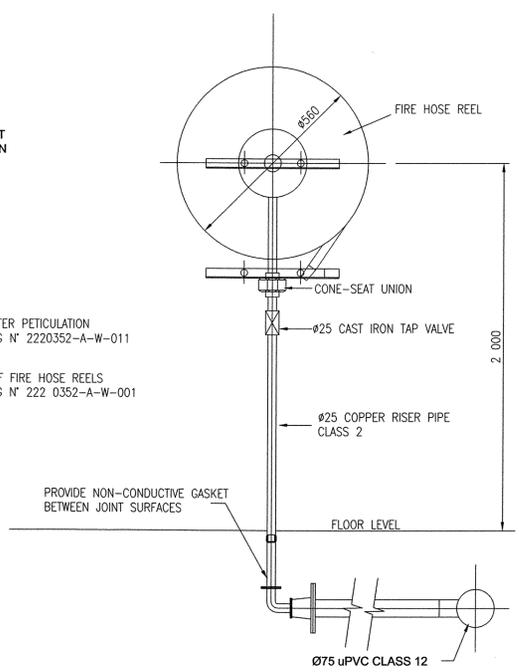
PAVING BLOCK DETAIL
1:10



BEND
SCALE 1:10



FIRE HOSE REEL DETAIL (2N° OFF)
SCALE 1:10



FIRE HOSE REEL DETAIL
SCALE 1:10

TRANSNET
Architects
Engineers
Project Managers
Quantity Surveyors

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PROJECT
PORT OF DURBAN-PIER 1
DURBAN CONTAINER TERMINAL
BERTH 200 TO 205 - NEW WORKERS FACILITY, DEMOLITION OF BUILDINGS & ASSOCIATED WORKS

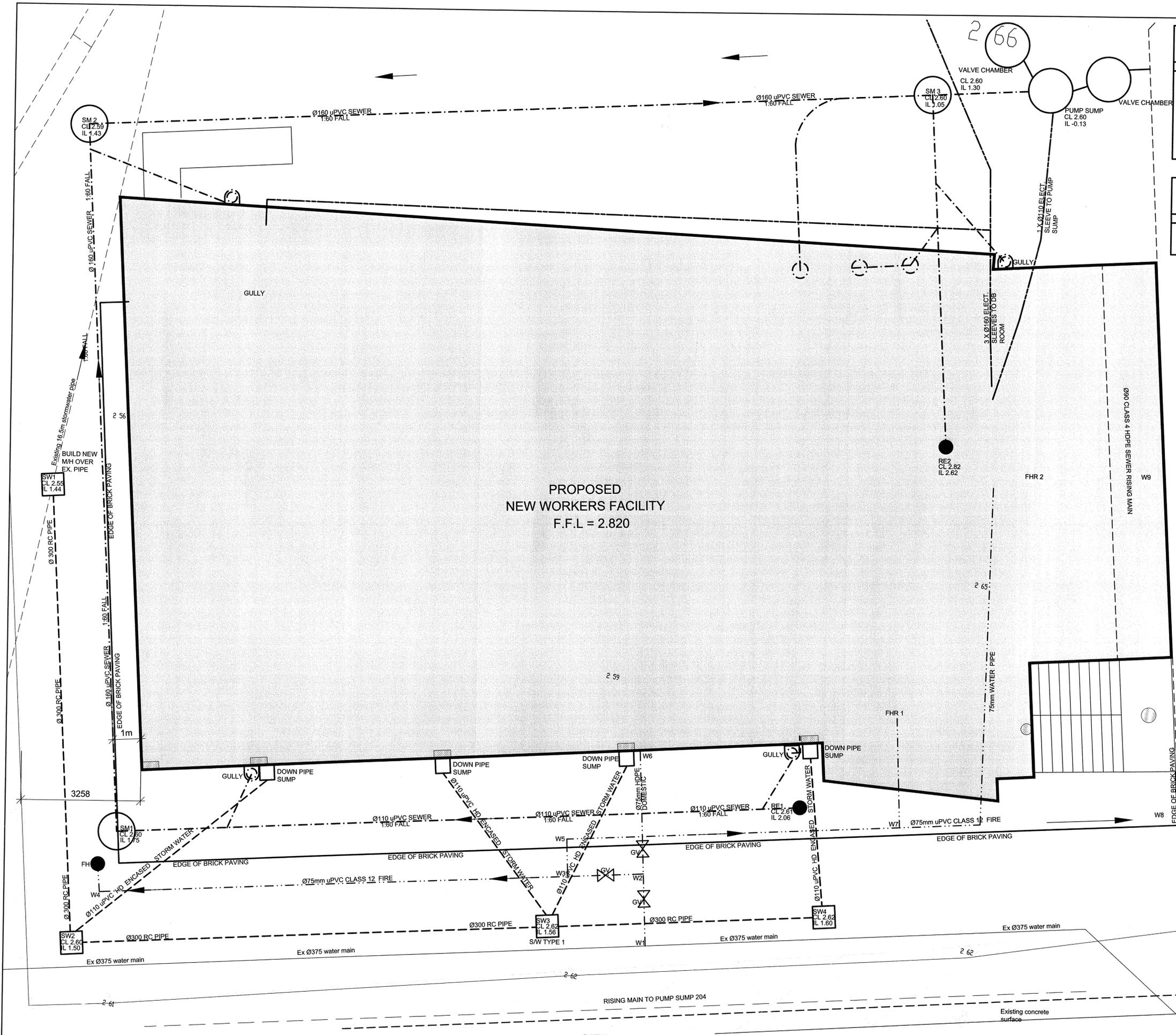
DRAWING
SEWER/ DOWN PIPE CHAMBERS, FIRE, VALVE & KERB DETAILS

CLIENT			
N.P.A.			
NAME	SIGN.	DESIGNATION	DATE
DESIGNED	F.S.	CHECKED	K.C.
DRAWN	S.N.	CHECKED	D.H.
PROJ. LEADER	F.S.	MANAGER	K.C.

REF.	401.P.77-302	DATE	23/06/2006
CIVIL DRAWING No.	PPS: 22 20 350c0103	REV.	2

ISSUED FOR CONSTRUCTION

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**DOMESTIC & FIRE WATER
SETTING OUT DATA
(SYSTEM LO31)**

POINT	Y CO-ORD	X CO-ORD
W1	-1 331.890	3 306 517.922
W2	-1 331.478	3 306 516.021
W3	-1 329.467	3 306 516.470
W4	-1 317.030	3 306 519.247
FH	-1 316.847	3 306 518.517
W5	-1 329.254	3 306 515.481
W6	-1 330.778	3 306 512.792
W7	-1 338.087	3 306 513.505
FHR 1	-1 337.472	3 306 510.614
W8	-1 345.146	3 306 511.927
W9	-1 343.045	3 306 502.817
FHR 2	-1 340.184	3 306 503.456

**STORM WATER
SETTING OUT DATA
(SYSTEM LO31)**

POINT	Y CO-ORD	X CO-ORD
SW1	-1 313.716	3 306 508.649
SW2	-1 316.543	3 306 520.739
SW3	-1 329.173	3 306 517.891
SW4	-1 336.523	3 306 516.260

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COPYRIGHT PATENTS AND ALL INDUSTRIAL RIGHTS RESERVED

GENERAL
ALL WRITTEN DIMENSIONS TO TAKE PREFERENCE OVER
SCALED DIMENSIONS
ALL LEVELS AND DIMENSIONS TO BE CHECKED ON SITE
BEFORE ANY WORK COMMENCES

No.	DATE	INIT.	REVISIONS
A		S.N.	FOR NPA SUBMISSION
B	15/11/06	S.N.	FOR TENDER
0	25/07/07	A.M.	ISSUED FOR CONSTRUCTION
1	04/11/07	A.M.	ISSUED FOR CONSTRUCTION
2	05/12/07	S.N.	SEWER ROUTE REVISED
3	14/12/07	S.N.	SEWER RETICULATION RE-ALIGNED, PUMP SUMP RE-POSITIONED TO ACCOMMODATE REVISED FOUNDATION POSITION
4	18/01/08	S.N.	DOMESTIC WATER AND STORMWATER SETTING OUT DATA PROVIDED
5	15/02/08	G.S	SEWER RISING MAIN AND SHOWER GULLIES REPOSITIONED
6	05/11/08	O.N.	ISSUED FOR RECORDS

NOTE:
FOR LOCALITY PLAN REFER TO DRAWING No:
22 20 350c0101

SCHEDULE OF DRAWINGS

NO.	DRAWINGS
22 20 350c 0101	SITE PLAN
22 20 350c 0102	SEWER LAYOUT AND DETAILS
22 20 350c 0103	FIRE, VALVES & KERB DETAILS
22 20 350c 0104	SEWER PUMP SUMP DETAILS
22 20 350c 0105	COMBINED SERVICES LAYOUT
22 20 350c 0106	SEWER LONGITUDINAL SECTIONS
22 20 350c 0107	STORMWATER MANHOLE DETAILS
22 20 350c 0108	TYPICAL JOINT DETAILS
22 20 350c 0109	BERTH 204 - SITE PLAN
22 20 350c 0110	ULTRA HEAVY DUTY COVER TYPE P3 FOR PUMP SUMP
22 20 350c 0111	VALVE CHAMBER DETAILS AND ULTRA HEAVY DUTY COVER TYPE P2 AT BERTH 204
22 20 350c 0112	BERTH 205 - SITE PLAN
22 20 350c 0113	COVER SLAB FOR ELECTRICAL TUNNEL
22 20 350c 0114	BERTH 203 - SITE PLAN
22 20 350c 0115	ULTRA HEAVY DUTY COVER DETAILS FOR TYPE P2 MH
22 20 350c 0116	BERTH 205 - PUMP SUMP
22 20 350c 0117	TYPICAL CHAMBER FOR ELECT/COMMS
22 20 350c 0201	OVERALL SEWER CONCEPT

**ARCHITECTS
ENGINEERS
PROJECT MANAGERS
QUANTITY SURVEYORS**

TRANSNET
Transnet Projects

TRANSNET LTD (TRADING AS TRANSNET PROJECTS) : REG. NO. 1990/00090/06
EEL ROAD, BAYHEAD : TEL. 031 250 9700
BOX 1073, DURBAN : FAX. 031 250 9705
WEB SITE : www.protekon.co.za

PROJECT
**PORT OF DURBAN-PIER 2
DURBAN CONTAINER TERMINAL
BERTH 200 TO 205 - NEW
WORKERS FACILITY, DEMOLITION OF
BUILDINGS & ASSOCIATED WORKS**

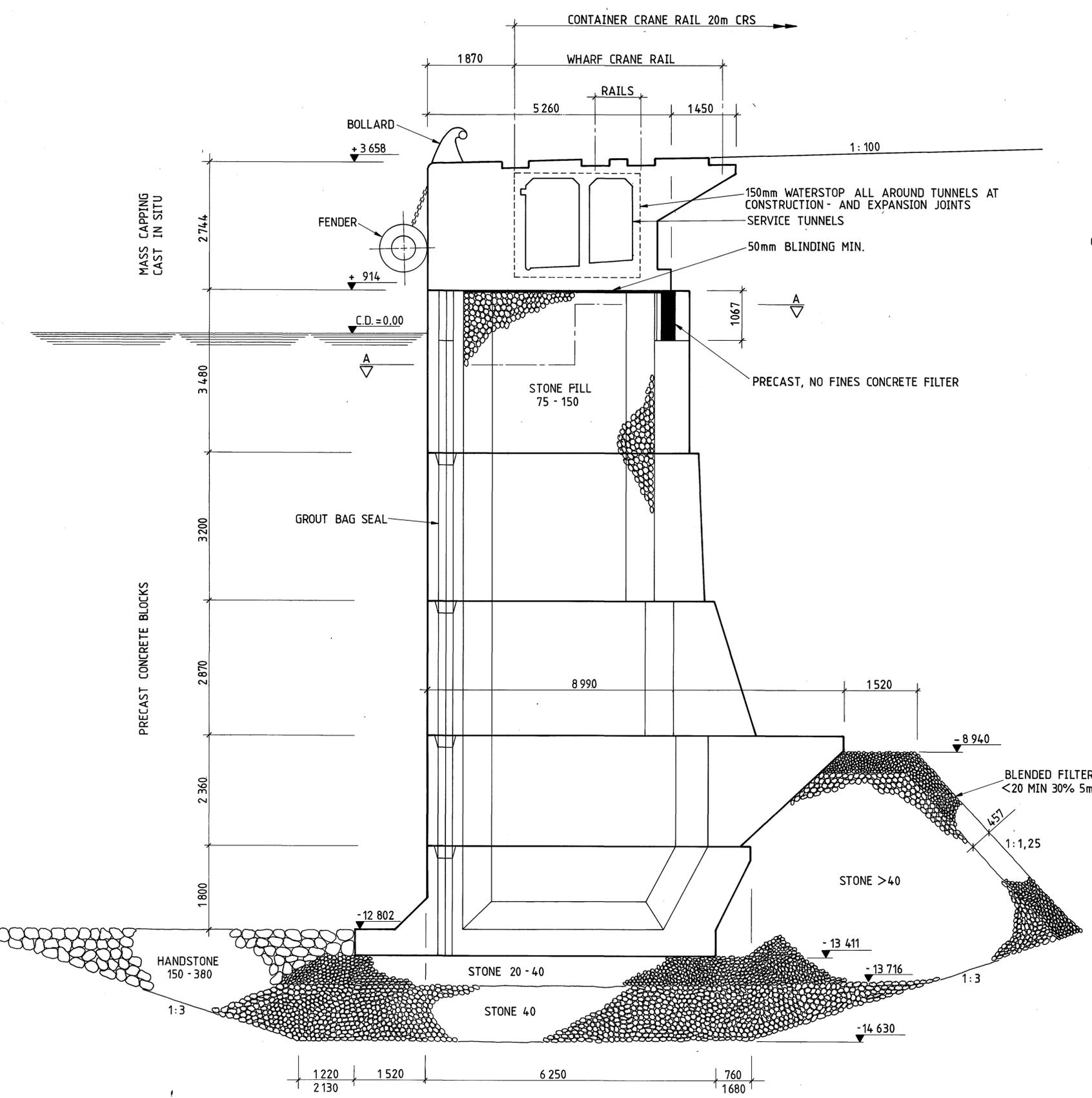
DRAWING
COMBINED SERVICES LAYOUT

CLIENT	N.P.A.		
NAME	SIGN.		
DESIGNATION	DATE		
DESIGNED	F.S.	CHECKED	K.C.
DRAWN	S.N.	CHECKED	D.H.
PROJ LEADER	F.S.	MANAGER	K.C.

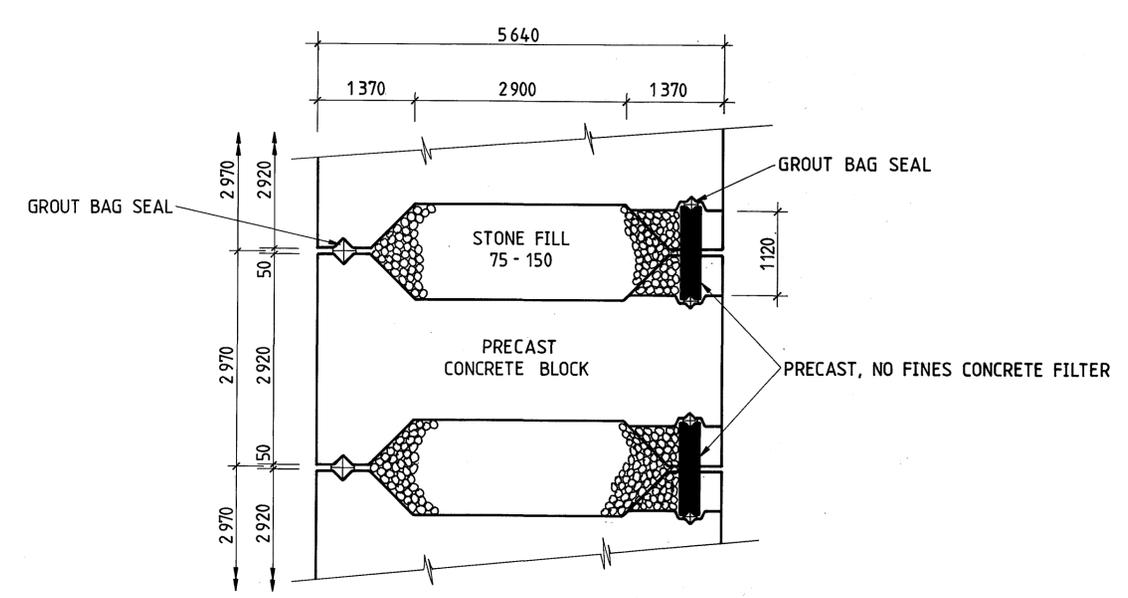
REF.	401.P.77-302	DATE	19/09/2006	
CIVIL DRAWING No.	PPS: 22 20 350c0105		REV.	6

SITE PLAN
1:50

ISSUED FOR CONSTRUCTION



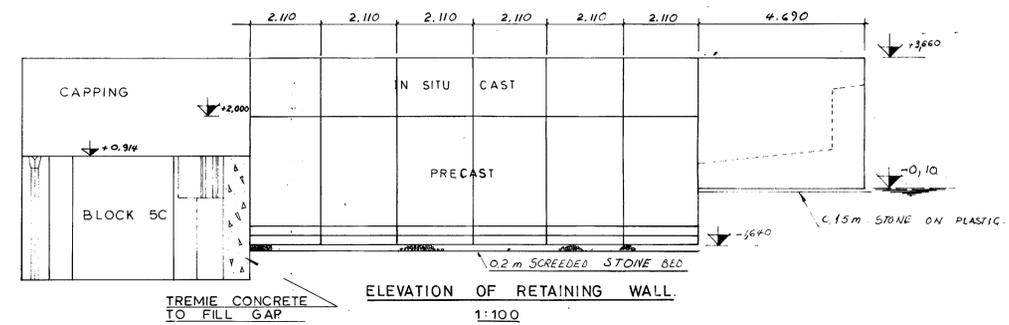
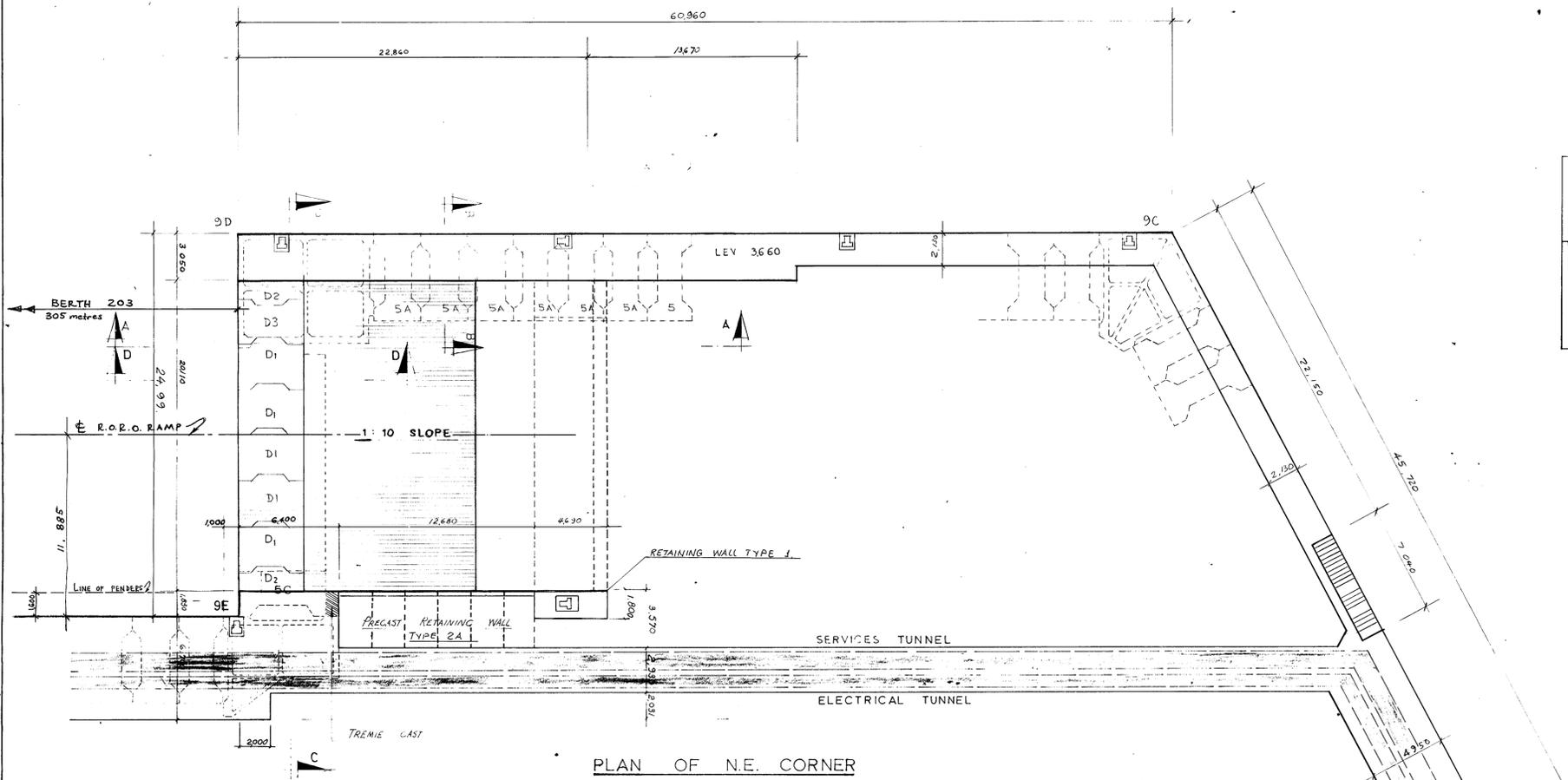
TYPICAL SECTION THROUGH PIER
1:50



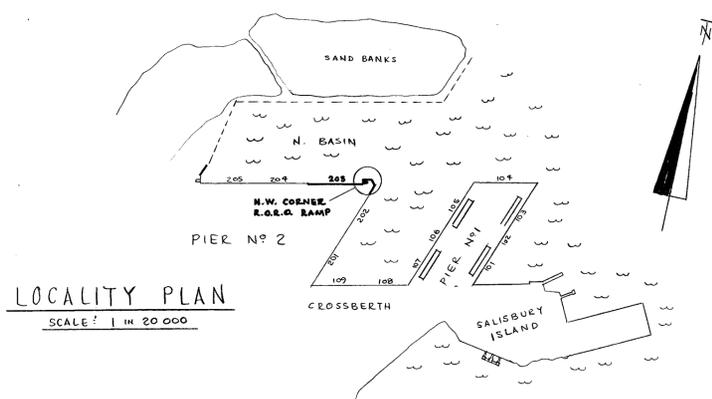
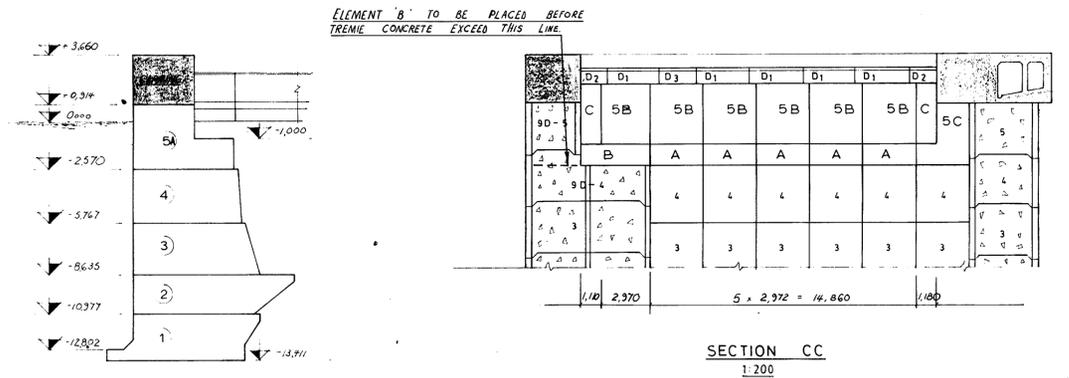
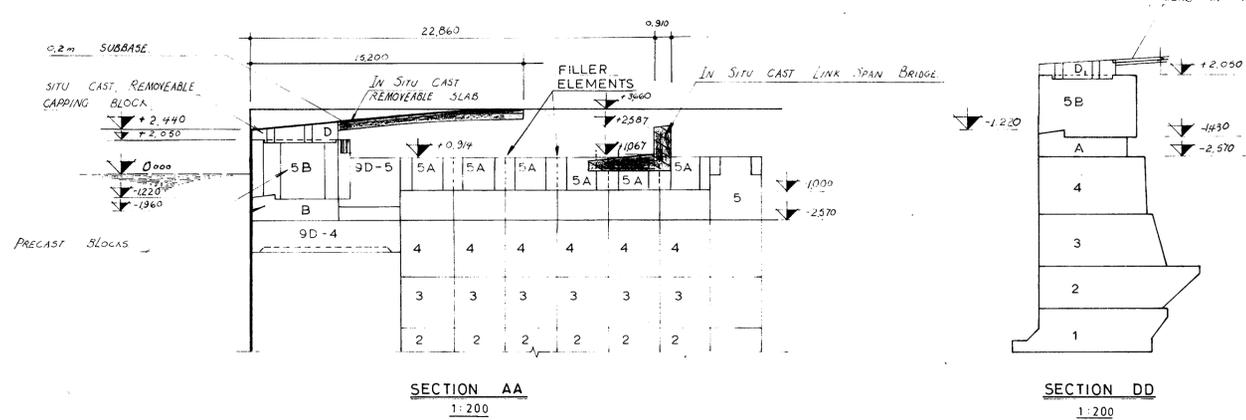
SECTION A-A
1:50

DESIGN LOADS
 CRANE: 249kN WHEEL CRS 1,37 EITHER RAIL, OTHER RAIL 20%
 TRAIN: 199kN AXLE CRS 1,30
 IMPACT: 785kN/m OVER 6,10m AT LEVEL +1,83
 LIVE LOAD: 38kPa AREA BEHIND QUAY
 BOLLARD: 712kN PULL AT LEVEL + 3,96 OVER
 a) HORIZONTAL ±30° b) AT RT. ANGLES TO COPE ±90°

DRAWN GETEKEN		CG	FILE REF LEER VERW	PORT OF DURBAN	
TRACED NAGETREK		CG	SCALE SKAAL	PIER 2	
CHECKED NAGESIEN			DATE DATUM	TYPICAL SECTION THROUGH PIER	
			DATE	PORT ENGINEER	
				SHEET	2
				AMENDMENTS	
				0	DH 69
				B	18



- DESIGN LOADINGS - STD. QUAY**
- CRANE:- 240KN WHEEL % 1,371 EITHER RAIL
OTHER RAIL 20% OF ABOVE.
 - TRAIN:- 190 KN AXLE LOAD % 1,295m.
 - SHIP'S IMPACT:- 705KN/m. OVER 6,095 m LENGTH
AT LEVEL + 1,830.
 - BOLLARD PULL:- 712KN. PULL AT LEVEL + 3,960m
LIMITS:- HORIZONTAL ± 30°
AT RT. ANGLES TO COPE ± 90°
 - LIVE LOAD (SURCHARGE):- 30KPa FROM COPE TO
CARGO SHED.
- DESIGN LOADINGS - LINK SPAN BRIDGE + RAMP.**
- LINK SPAN BRIDGE:- 4 x 620KN. (SEE DWG. 3-34)
 - RAMP:- MINISTRY OF TRANSPORT LOADING
OR LIVE LOAD 30KPa.
- DESIGN LOADINGS - SERVICE + ELECTRICAL TUNNELS**
- TOP SLAB:- MINISTRY OF TRANSPORT LOADING
OR LIVE LOAD 30KPa.

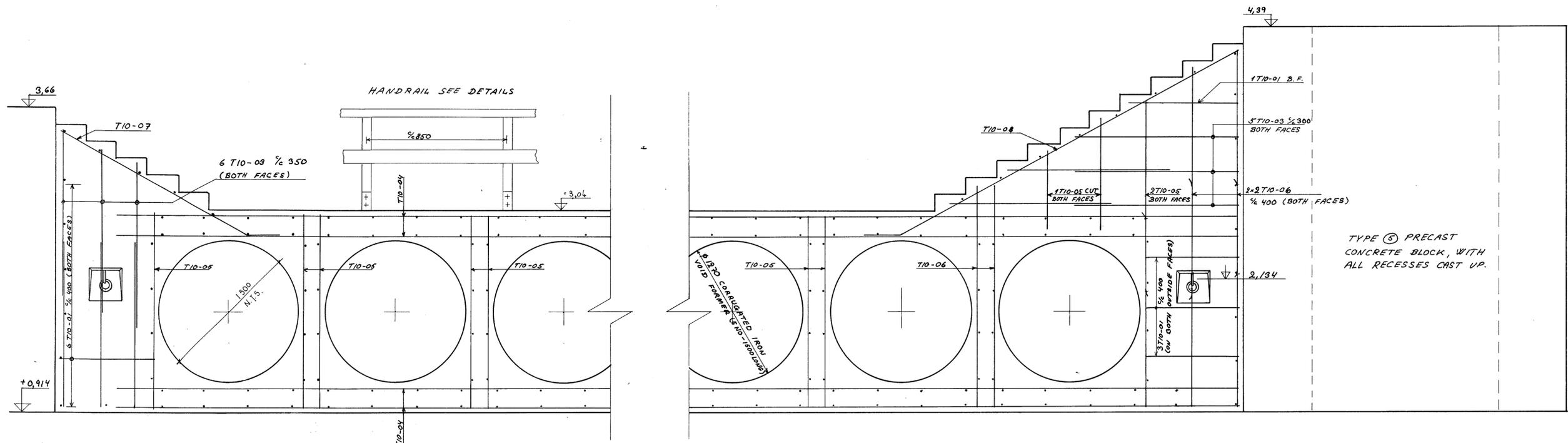


NOTES

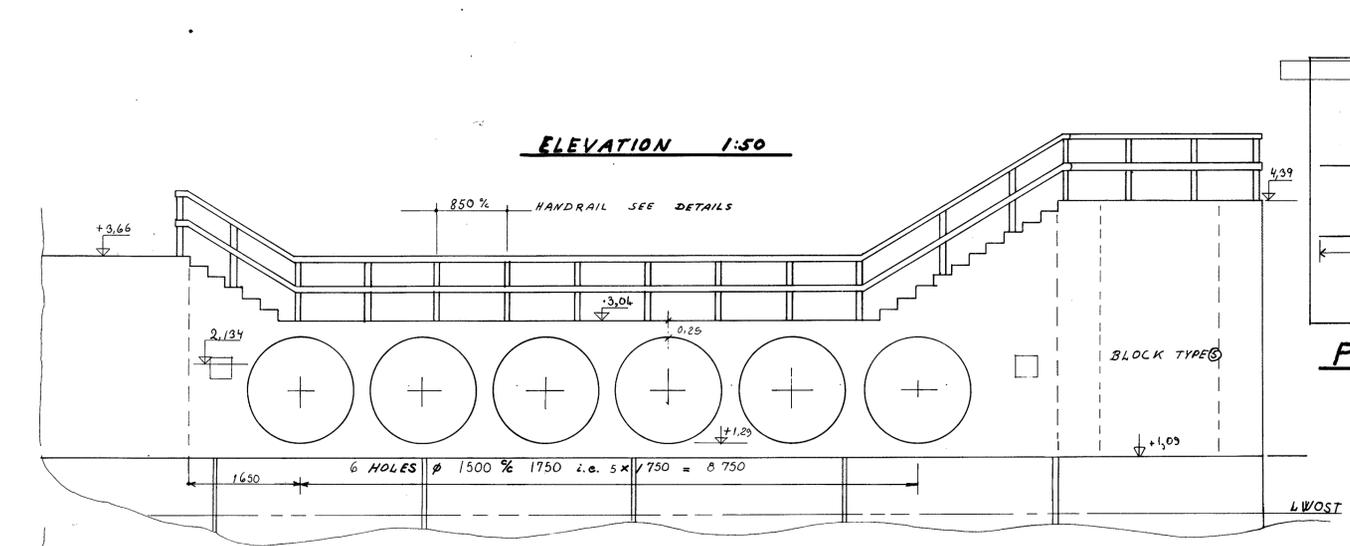
- FOR DETAILS SEE DRAWINGS 3-32, 3-33, 3-34 & 3-37, 3-38, 3-39, 3-40
- A FILTER COURSE BETWEEN ROCKFILL AND TOP OF REAR PORTION OF BLOCKS 5A IS TO BE PLACED.

~~DHNW 901-B-51sh/4~~
AS BUILT. DH-69-B-88 Sh.1

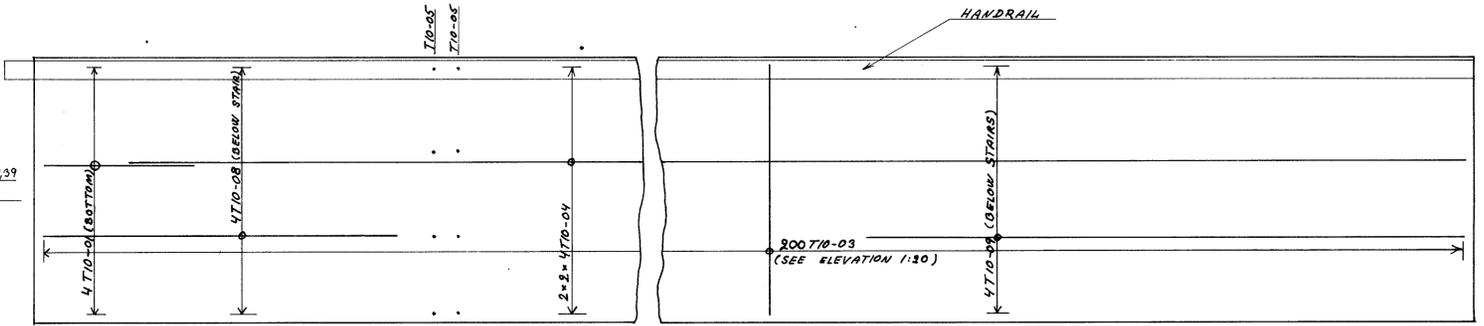
REVISIONS				CHRISTIANI & NIELSEN <small>(PROPRIETARY) LIMITED</small>	
Checked: _____				Client SOUTH AFRICAN RAILWAYS	
Approved: Harbour Engineer (New Works)				Contract PIER No. 2 - DURBAN HARBOUR	
				Title RO-RO FACILITIES AT N.E. CORNER LAYOUT	
				Dwg No. 3-34	
				Date 1.8.72	
				Date Rev.	



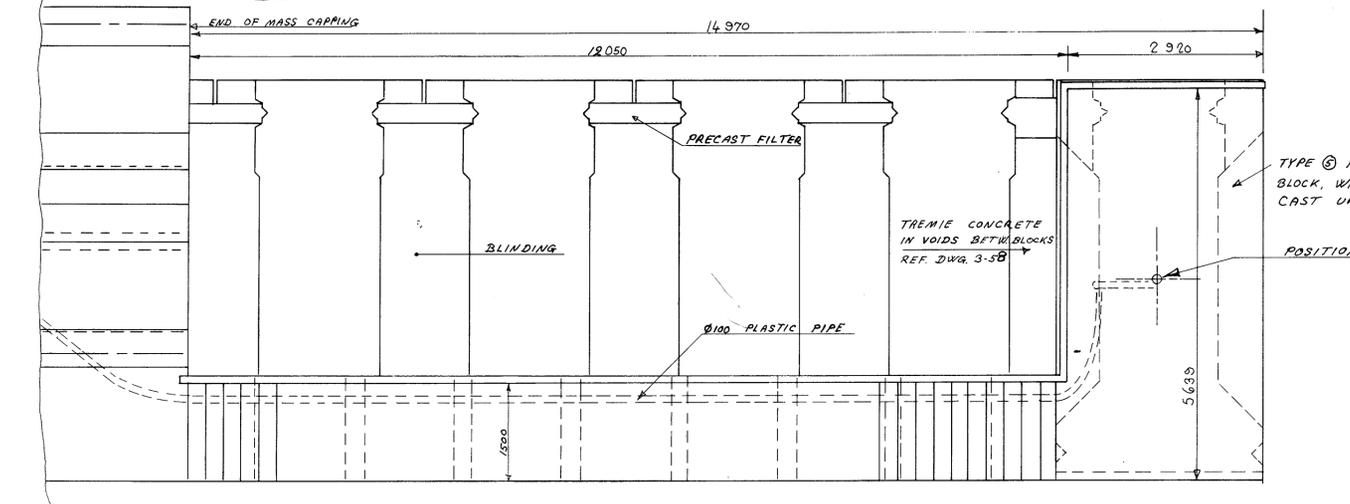
ELEVATION, REINF. 1:20 UNMARKED REINF. TO BE T10-03, 200 NO. OF



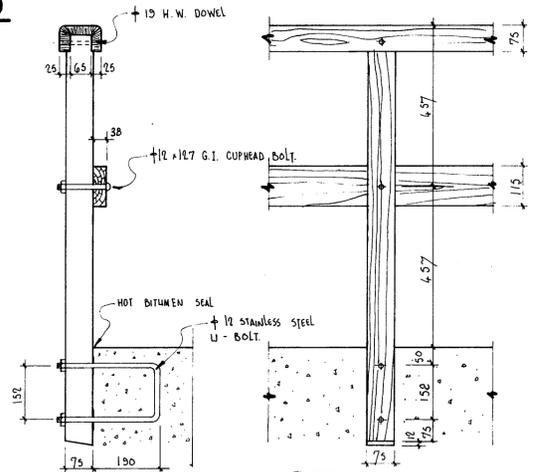
ELEVATION 1:50



PLAN, REINF. 1:20



PLAN VIEW 1:50



DETAILS OF HAND-RAIL SUPPORTS 1:10

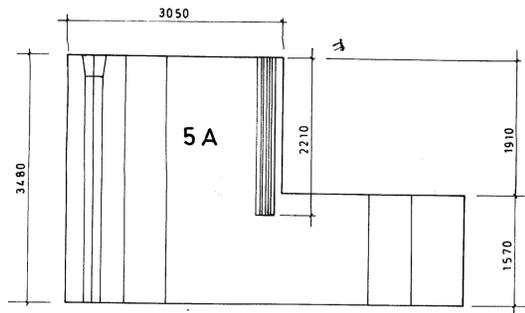
- NOTES:**
1. COVER TO REINFORCEMENT 50 MM
 2. CONCRETE CUBE STRENGTH 28 MPa IN 28 DAYS

- REFERENCE DWG.:**
1. DETAILS OF MOORING RINGS: DWG. 3-41
 2. POSITION OF CATWALK AND NAVIGATION LIGHT PLATFORM: SAR. DWG. 901-B-16
 3. NAVIGATION LIGHT: SAR. DWG. 200A-800

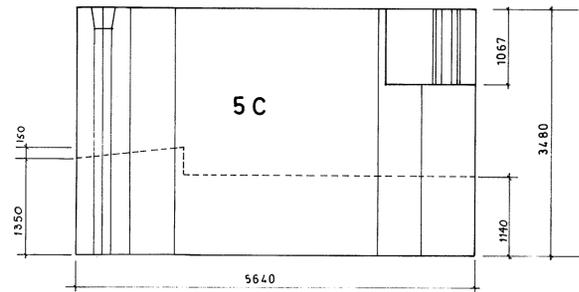
"As BUILT" BH-C9-B-908/1
~~DHW 901-B-80~~

ALL DIMENSIONS IN MILLIMETRE. LEVELS IN METRE

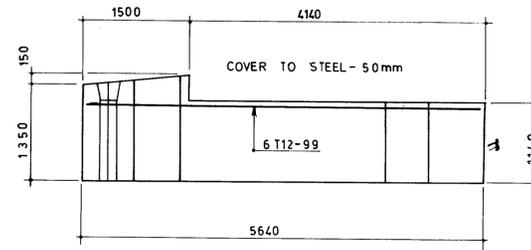
CHRISTIANI & NIELSEN (PROPRIETARY) LIMITED		Client SOUTH AFRICAN RAILWAYS & HARBOURS.	O.N. 47255		
		Contract PIER NO.2. DURBAN			
REVISIONS Checked: _____ Approved: Harbour Engineer (New Works)		Title WALK WAY AND LIGHT PLATFORM WEST RETURN, S.W. CORNER	Dwg. No. 3-59		
		Designed	Drawn O.S.	Checked	Appr.



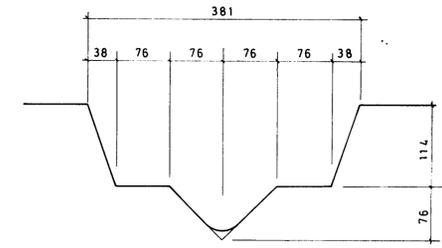
ELEVATION OF BLOCK 5A
SCALE 1:50



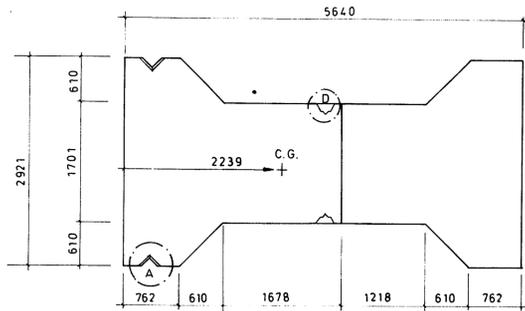
ELEVATION OF BLOCK 5C
SCALE 1:50



ELEVATION

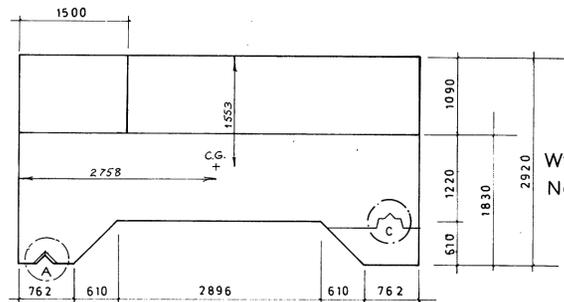


DETAIL 'C'
SCALE 1:5



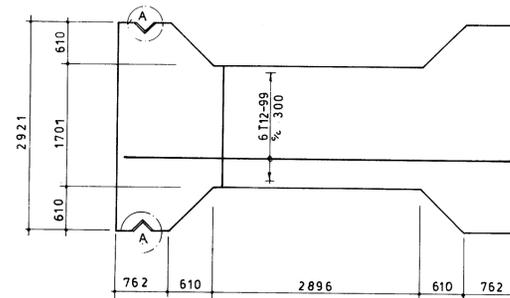
PLAN OF BLOCK 5A
SCALE 1:50

Wt = 70t
No. off = 6

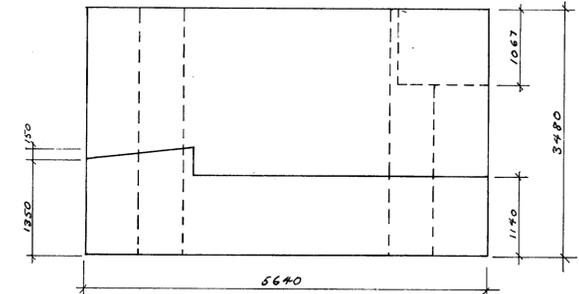


PLAN OF BLOCK 5C FOR N.E. & S.W. CORNERS
SCALE 1:50

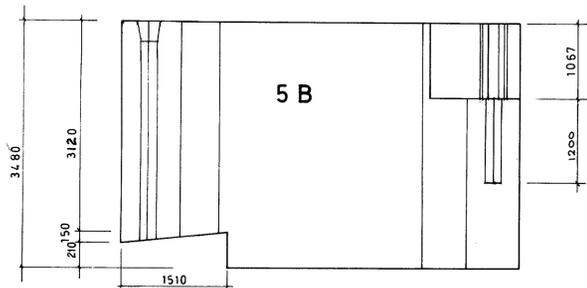
Wt = 89t
No. off = 2



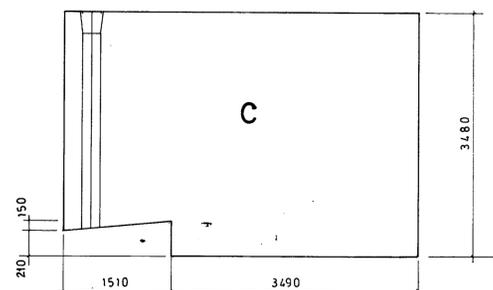
PLAN
(NO. OFF = 11. WT = 35t)
DIMENSIONS AND REINFORCEMENT OF
BLOCK A SCALE 1:50



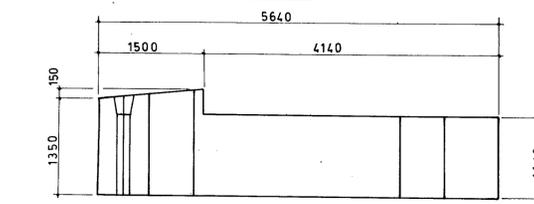
ELEVATION OF BLOCK 5C FOR S.W. CORNER
SCALE 1:50



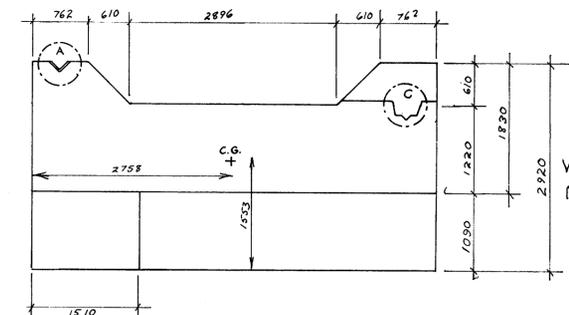
ELEVATION OF BLOCK 5B
SCALE 1:50



ELEVATION OF BLOCK C
SCALE 1:50

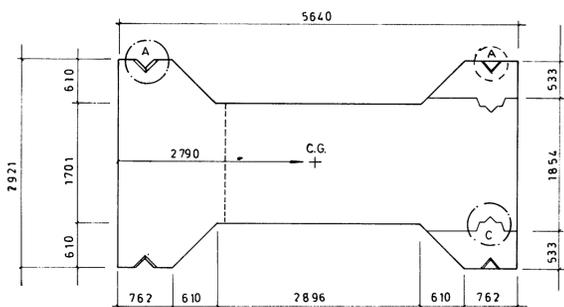


ELEVATION ON BLOCK 'B'
1:50



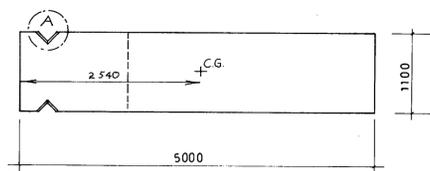
PLAN OF BLOCK 5C FOR S.W. CORNER
SCALE 1:50

Wt = 89t
No. off = 1



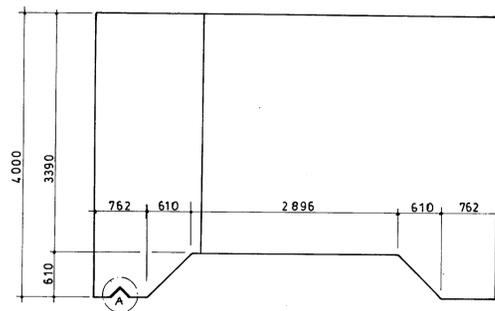
PLAN OF BLOCK 5B
SCALE 1:50

Wt = 101t
No. off = 12

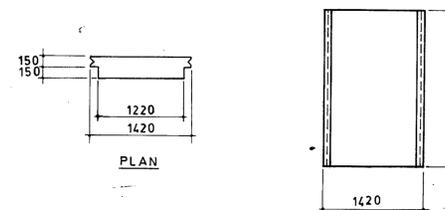


PLAN ON BLOCK C
SCALE 1:50

Wt = 47t
No. off = 4



PLAN ON BLOCK 'B' (NO. OFF = 1 WT = 61t)
1:50



PLAN

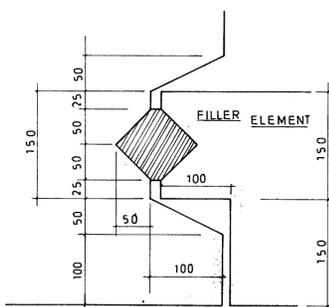
DETAIL 'A'
SCALE 1:5

NOTES

- LIFTING ARRANGEMENT FOR BLOCKS TO BE AS DECIDED ON SITE.
- STEEL REINFORCING TIES IN TOP OF BLOCK 5A SAME AS FOR BLOCK 5. NO REINFORCEMENT IN BLOCK 5B AND 5C.
- ALL CONCRETE: 21 N/mm² @ 28 DAYS.

FILLER ELEMENT (SEE DETAIL 'D') Wt = 2,2t
NO. off = 5
SCALE 1:50
EITHER PRECAST OR
IN SITU CAST.

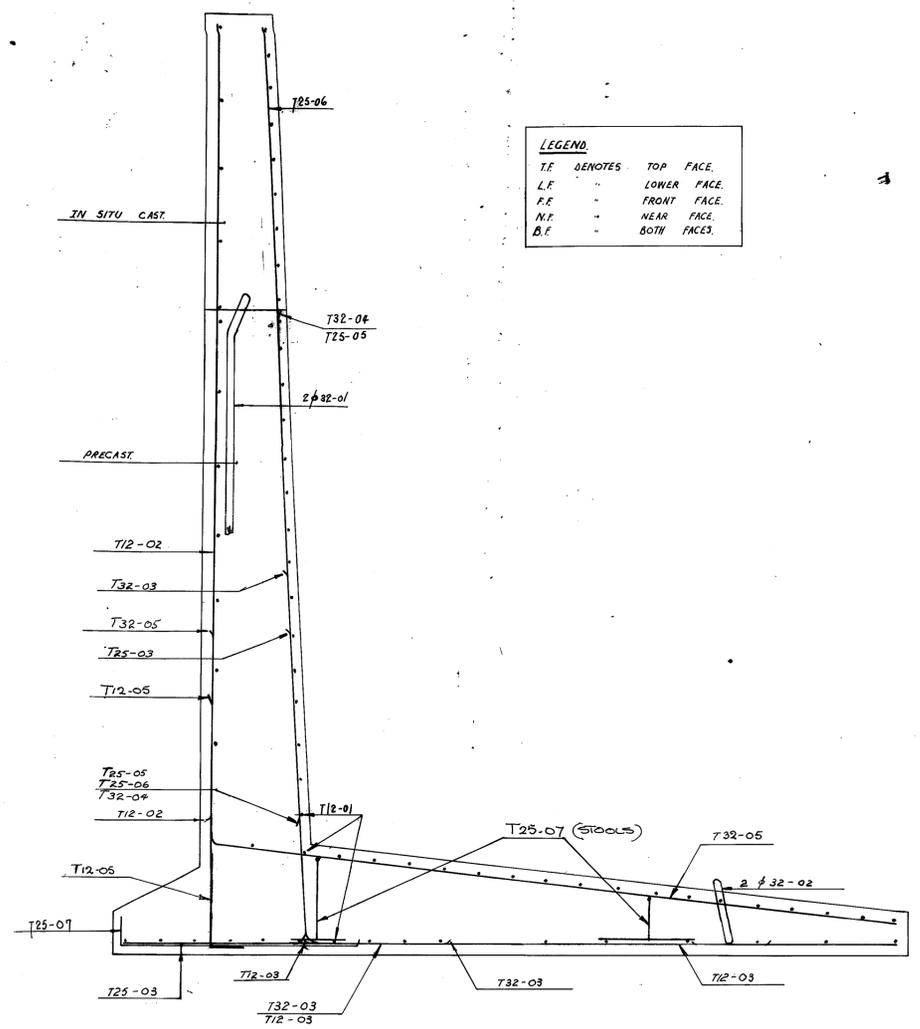
~~DHNW 901-B-51 Sh 2/5~~
AS BUILT DH-C9-B-92



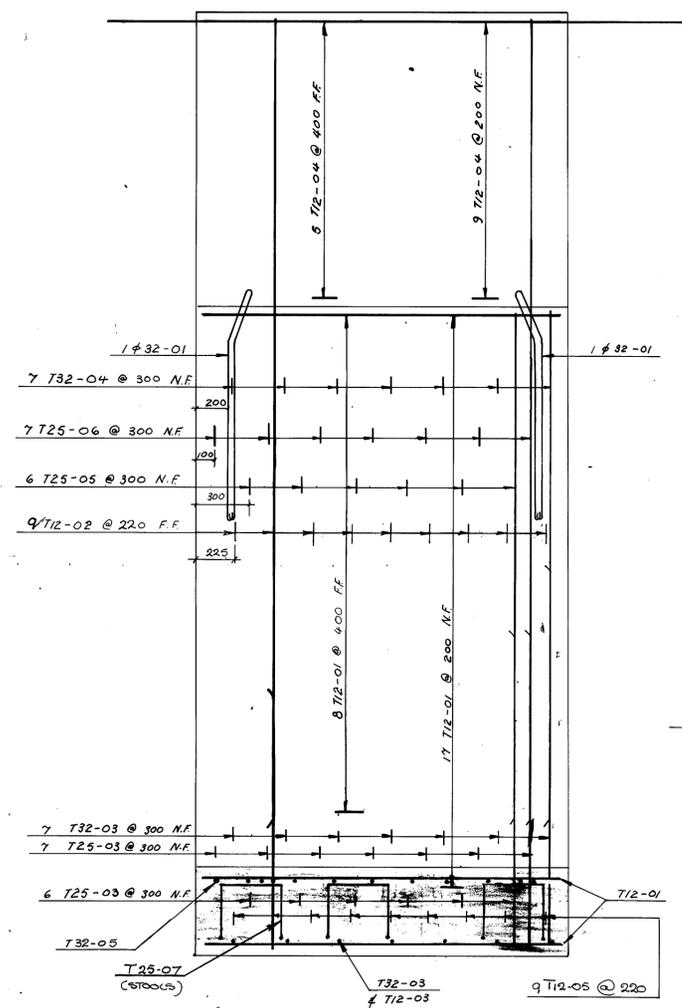
DETAIL 'D'
SCALE 1:5

REVISIONS				CHRISTIANI & NIELSEN <small>(PROPRIETARY) LIMITED</small>	
Checked: _____				Client SOUTH AFRICAN RAILWAYS	
Approved: _____ Harbour Engineer (New Works)				Contract DURBAN HARBOUR - PIER No. 2.	
Date _____				Title Ro/Ro FACILITIES AT N.E. CORNER & S.W. CORNER	
Date _____				O.N. 47255	
Date _____				Dwg No. 3-32	
Date _____				Revision	
Date _____				Date Orig. 31/7/72	
Date _____				Date Rev.	

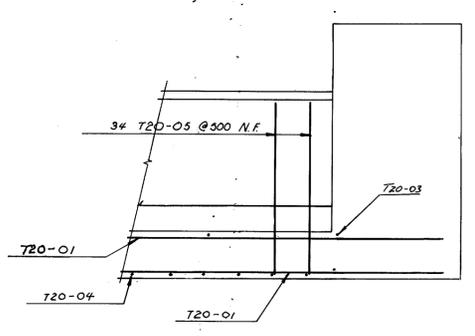
LEGEND
 T.F. DENOTES TOP FACE.
 L.F. " LOWER FACE.
 F.F. " FRONT FACE.
 N.F. " NEAR FACE.
 B.F. " BOTH FACES.



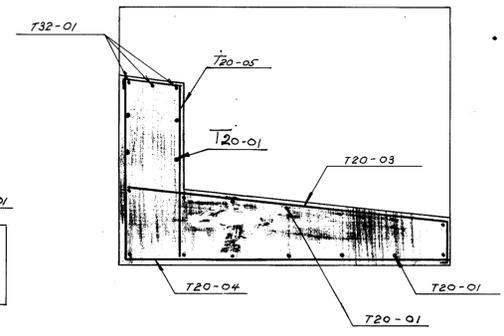
ELEVATION OF RETAINING WALL 2 (12 OFF AS SHOWN)
 1:20
 WALL 2A (6 OFF - SIMILAR & SAME BAR NOS.)



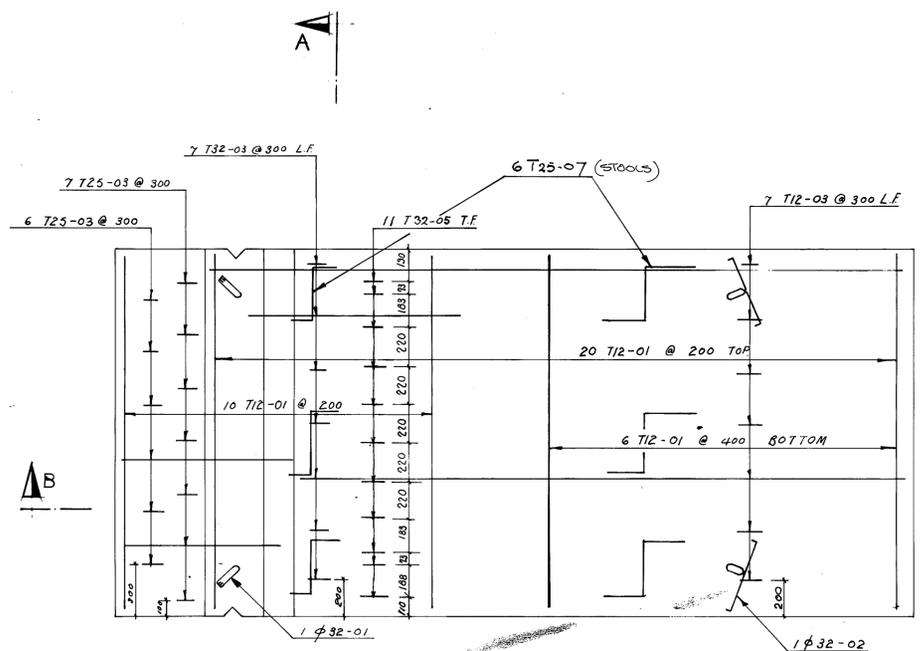
SECTION AA
 1:20



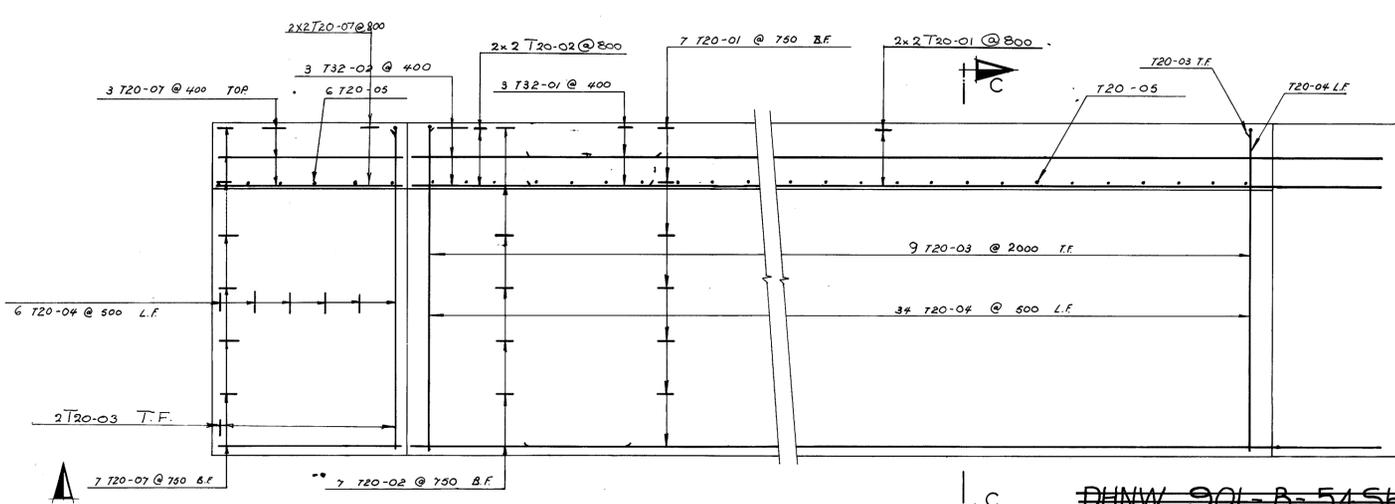
ELEVATION OF RETAINING WALL 1
 1:50



SECTION CC
 1:50



PLAN OF RETAINING WALL 2
 1:20



PLAN OF LINK SPAN BRIDGE
 1:50

DHW 901-B-54 SH 4 AS BUILT.
DH-C9-B-93 SH 2

- NOTES**
- FOR POSITIONING OF LIFTING ANCHORAGES SEE DETAILS ON DWG. NO. 3-34.
 - REINFORCEMENT COVER 60 mm.
 - FOR CONCRETE DIMENSIONS SEE DWG. NO. 3-34.
 - FOR TREMIE SECTION OF LINK SPAN BED, REINFORCEMENT COVER 150 mm.
 - FOR S.W. CORNER STEEL TO BE CUT TO SUIT SINGLE ELEMENT L/S BED.

CHRISTIANI & NIELSEN
 (PROPRIETARY) LIMITED DH-C9-B-21 SH B

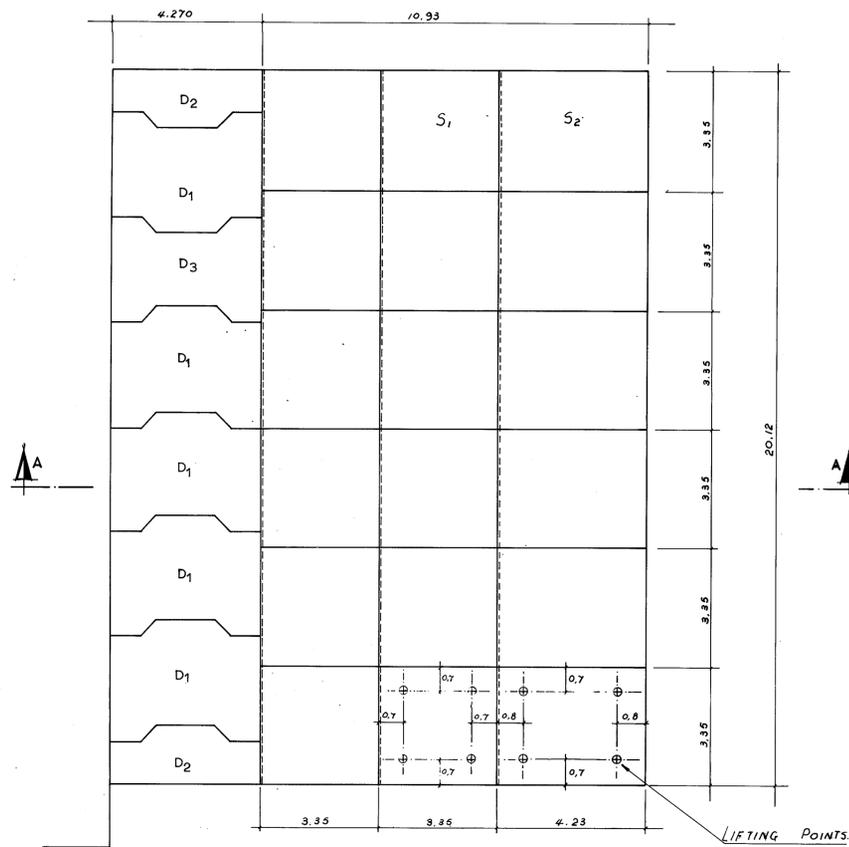
Client: SOUTH AFRICAN RAILWAYS
 Contract: PIER No. 2 - DURBAN HARBOUR
 Title: RO RO FACILITIES AT NE & S.W. CORNERS RETAINING WALL 1, RETAINING WALL 2 AND LINK SPAN BRIDGE - REINFORCEMENT.

O.N. 47255
 Dwg. No. 3-36
 Date: 1-8-72
 Date Rev.

Checked: _____
 Approved: Harbour Engineer (New Works)

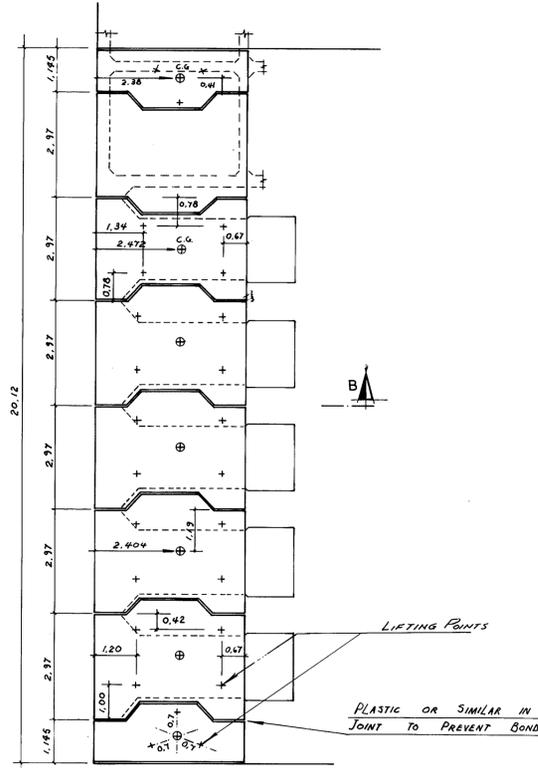
Designed: J.L. Drawn: JJW. Checked: [Signature] Appr: A. Mon-Mann

REVISIONS	



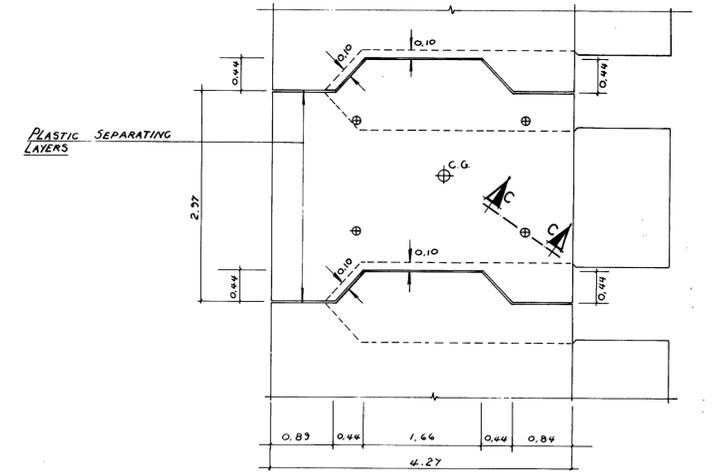
PLAN OF ROLL ON-ROLL OFF SLAB (IN SITU CAST)
1:100

Wt S₁ = 6,25 t. 12 off } FOR EACH RAMP, S.W. & N.E. CORNERS
Wt S₂ = 8,30 t. 6 off

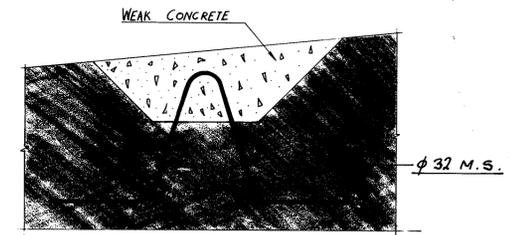


DETAILS OF BLOCKS D₁, D₂ & D₃.
1:100

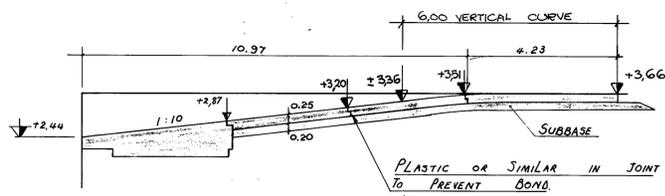
Wt D₁ = 20,36
Wt D₂ = 9,06
Wt D₃ = 16,66



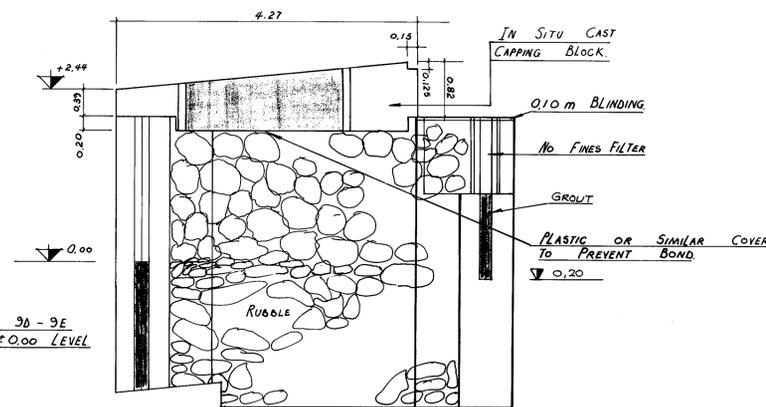
DIMENSIONS OF BLOCKS D₁, D₂ & D₃.
1:50



SECTION CC
Showing Lifting Recess
in Blocks D

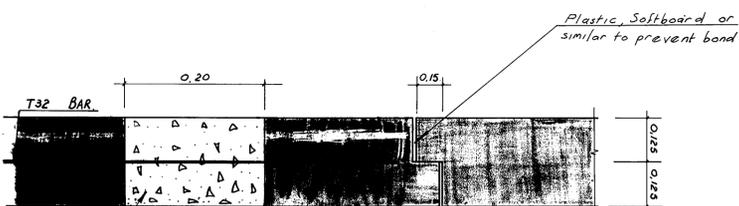


SECTION AA
1:100



SECTION BB
1:50

QUAY LENGTH 30-9E
GROUTED TO ±0.00 LEVEL



DETAIL SHOWING SHEAR KEY & LIFTING ARRANGMENT.
1:5 (ONLY IF REQUIRED BY S.A.R.)

- NOTES :-
- MEASUREMENTS AND LEVELS ARE IN METRES
 - FOR GENERAL LAYOUT SEE DWG N° 3-31
 - RO RO SLAB ELEMENTS TO BE REINFORCED WITH T10 @ 250 IN BOTH DIRECTIONS, TOP AND BOTTOM.
 - CONCRETE CUBE STRENGTH = 28 MPa @ 28 days
 - BLOCKS 'D' ARE TO BE IN SITU CAST WITH φ32 LIFTING HOOKS CAST INTO RECESSES WHICH ARE TO BE FILLED WITH WEAK CONCRETE AT THE INDICATED LIFTING POINTS
 - FOR S.W. CORNER, BLOCK D₃ MAY BE CAST IN ANY ONE OF THE POSITIONS
 - DESIGN LOADS SEE DWG 3-31 OR 3-40.

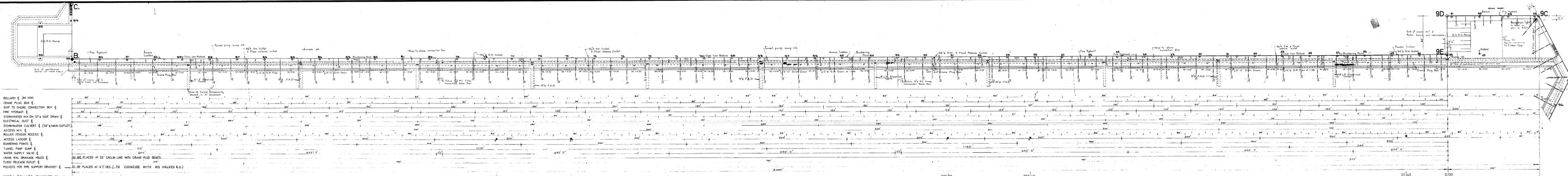
DH-C9-B-94

A5 BUILT. DHNW 901-B-55/2

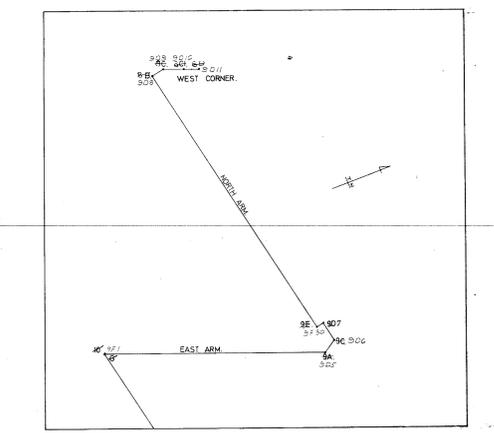
CHRISTIANI & NIELSEN
(PROPRIETARY) LIMITED

Client SOUTH AFRICAN RAILWAYS.		O.N. 47255	
Contract PIER No. 2 - DURBAN HARBOUR		Revision	
Title RO/RO FACILITIES AT N.E. & S.W. CORNERS		Dwg. No. 3-37	
CAPPING BLOCKS & SLAB ELEMENTS		Revision	
Designed J.L.	Drawn J.J.W.	Checked J.J.W.	Appr. A. Mon. Monis
Date	22:8:72	Date	Rev.

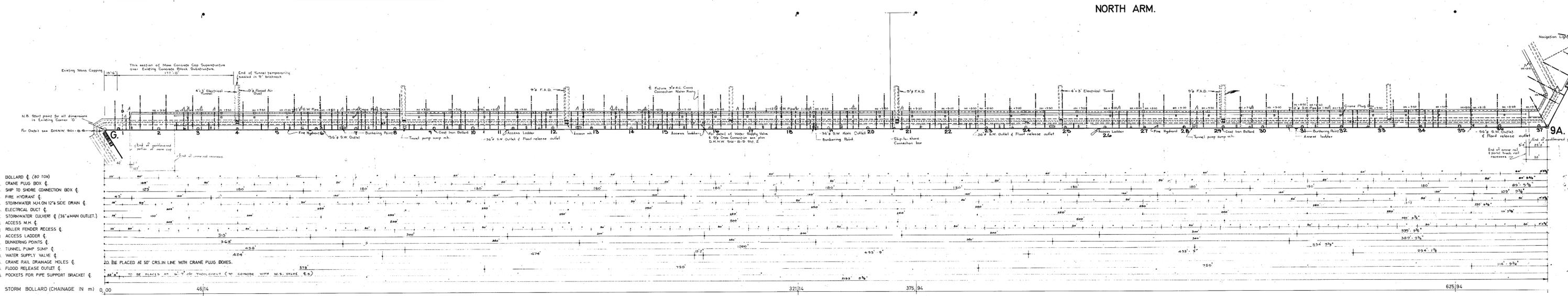
REVISIONS	
Checked:	
Approved:	Harbour Engineer (New Works)



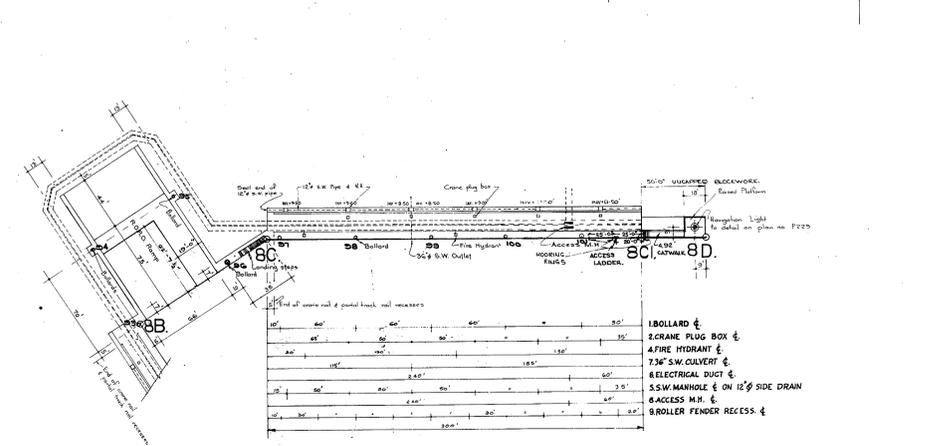
NORTH ARM.



LOCALITY PLAN.



EAST ARM.



WEST CORNER.

- LEGEND
- CRACK MASS CAPPING ONLY (Blue)
 - CRACK THROUGH SUPERSTRUCTURE (Purple)
 - CONSTRUCTION JOINT (Red)
 - EXPANSION JOINT (Orange)
 - 1/ ADDED UNDER AMEND 1
 - 2/ ADDED UNDER AMEND 2

Reference Drawings: Harbour, New Works, Durban, Newa, Haverdijns

AMEND 2 MORE JOINTS & CRACKS AS ON DW 20-8-74 ADDN
AMEND 1 MORE JOINTS & CRACKS AS ON DW 20-8-74 ADDN

QUAY WALL JOINTS AND CRACKS

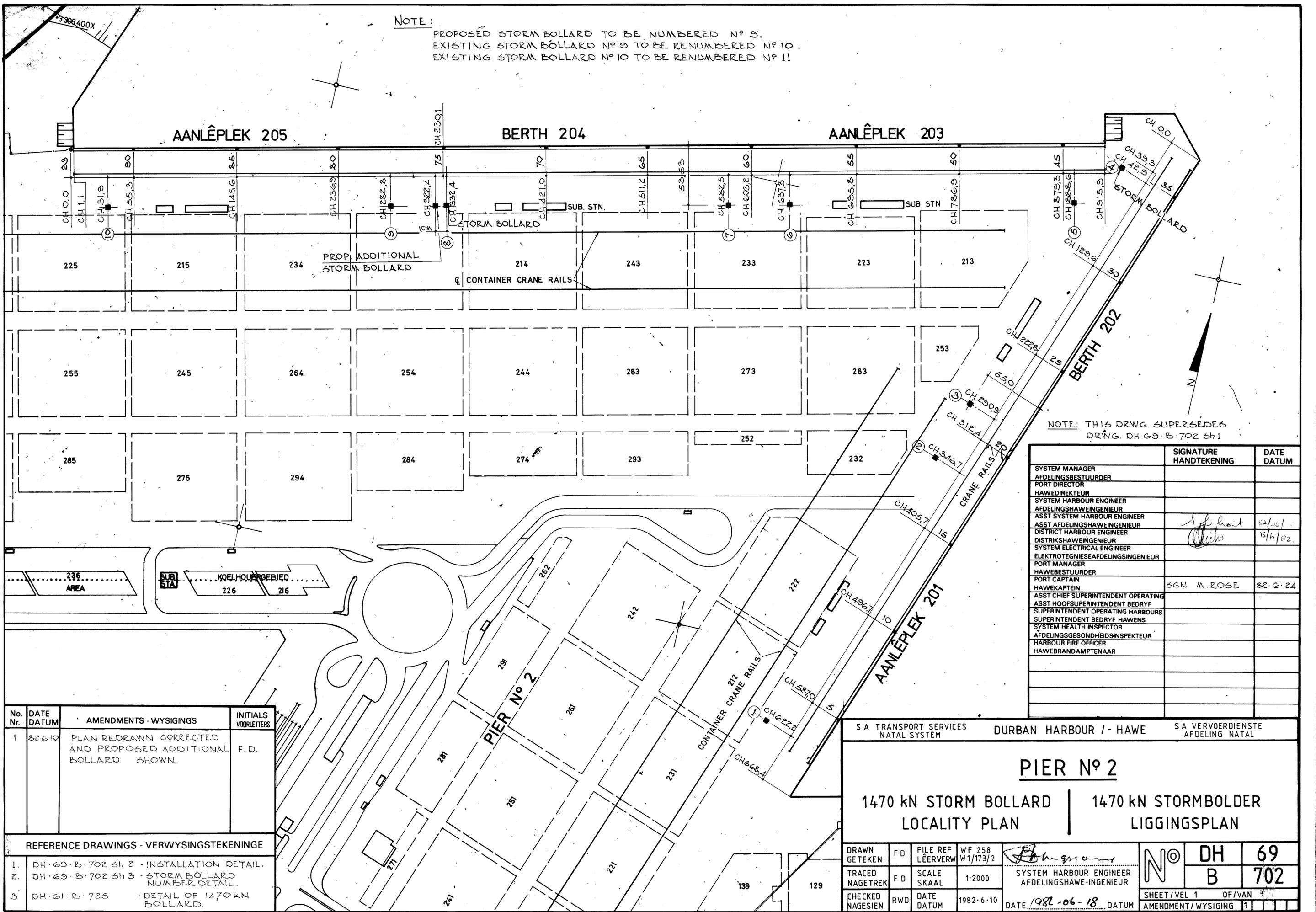
PIER NO 2

KAAIMOOR
LASSE EN KRÅKE
DH-69-8-27
DH-78-8-84

Drawn	Scale	1" = 40'-0"
Checked	File No	
Checked	Date	23-8-73
Checked	Date	

Author: Harbour Engineer
Checked: [Signature]
Date: 23-8-73

NOTE:
 PROPOSED STORM BOLLARD TO BE NUMBERED N° 9.
 EXISTING STORM BOLLARD N° 9 TO BE RENUMBERED N° 10.
 EXISTING STORM BOLLARD N° 10 TO BE RENUMBERED N° 11



NOTE: THIS DRWG. SUPERSEDES DRWG. DH 69-B-702 sh 1

	SIGNATURE HANDTEKENING	DATE DATUM
SYSTEM MANAGER		
ADELINGSBESTUURDER		
PORT DIRECTOR		
HAWEDIREKTEUR		
SYSTEM HARBOUR ENGINEER		
ADELINGSHAWENGINEUR		
ASST SYSTEM HARBOUR ENGINEER		
ASST ADELINGSHAWENGINEUR	<i>[Signature]</i>	82/01
DISTRICT HARBOUR ENGINEER	<i>[Signature]</i>	15/6/82
DISTRIKSHAWENGINEUR		
SYSTEM ELECTRICAL ENGINEER		
ELEKTROTEGNIESEAFDELINGSINGENIEUR		
PORT MANAGER		
HAWEBESTUURDER		
PORT CAPTAIN	SGN. M. ROSE	82.6.24
HAWEKAPTEIN		
ASST CHIEF SUPERINTENDENT OPERATING		
ASST HOOFDERSUPERINTENDENT BEDRYF		
SUPERINTENDENT OPERATING HARBOURS		
SUPERINTENDENT BEDRYF HAWENS		
SYSTEM HEALTH INSPECTOR		
AFDELINGSGESONDHEIDSPESKTEUR		
HARBOUR FIRE OFFICER		
HAWEBRANDAMPTENAAR		

No. Nr.	DATE DATUM	AMENDMENTS - WYSIGINGS	INITIALS VOORLETTERS
1	82-6-10	PLAN REDRAWN CORRECTED AND PROPOSED ADDITIONAL BOLLARD SHOWN.	F.D.

REFERENCE DRAWINGS - VERWYSINGSTEKENINGE

1.	DH-69-B-702 sh 2	INSTALLATION DETAIL.
2.	DH-69-B-702 sh 3	STORM BOLLARD NUMBER DETAIL.
3.	DH-61-B-725	DETAIL OF 1470KN BOLLARD.

S A TRANSPORT SERVICES NATAL SYSTEM DURBAN HARBOUR / - HAWE S A VERVOERDIENSTE AFDELING NATAL

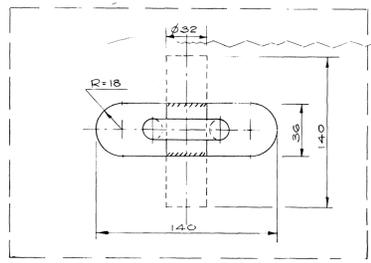
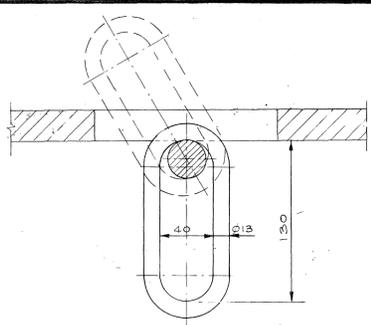
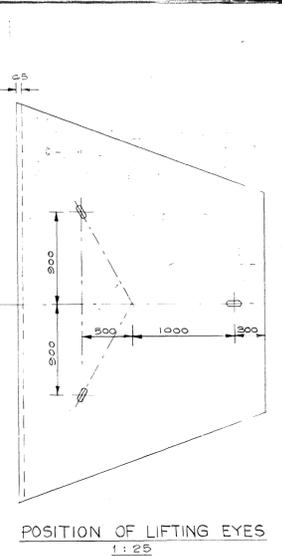
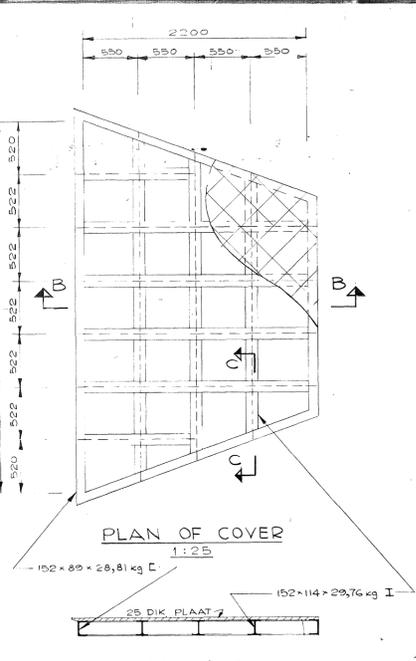
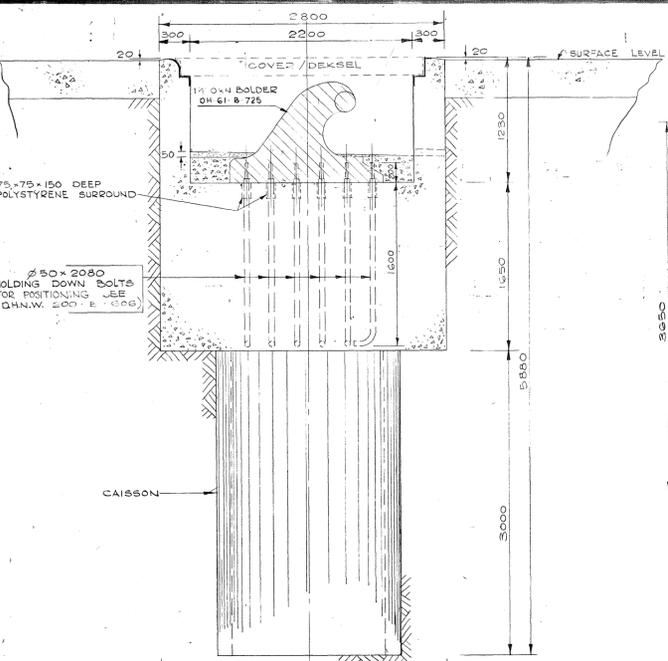
PIER N° 2

1470 KN STORM BOLLARD LOCALITY PLAN 1470 KN STORMBOLDER LIGGINGSPLAN

DRAWN GETEKEN	FD	FILE REF LEERVERW	WF 258 W1/173/2	<i>[Signature]</i> SYSTEM HARBOUR ENGINEER AFDELINGSHAWENGINEUR	N° DH 69 B 702
TRACED NAGETREK	FD	SCALE SKAAL	1:2000		
CHECKED NAGESIEN	RWD	DATE DATUM	1982-6-10		

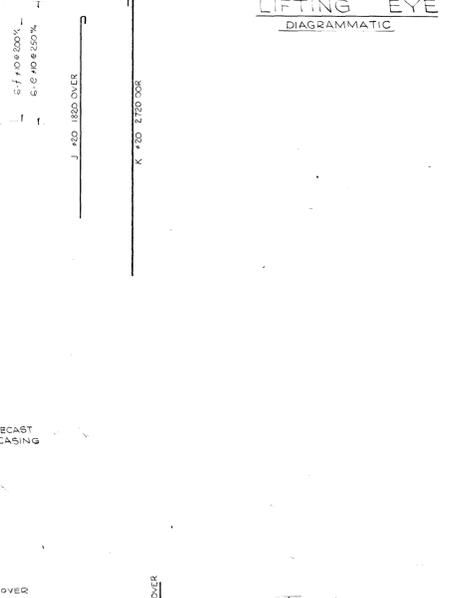
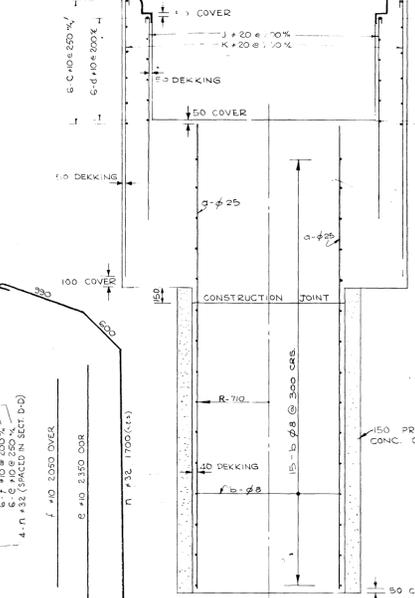
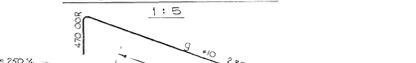
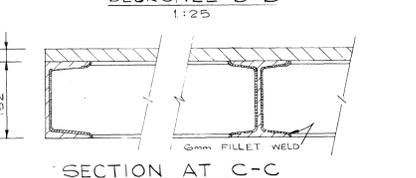
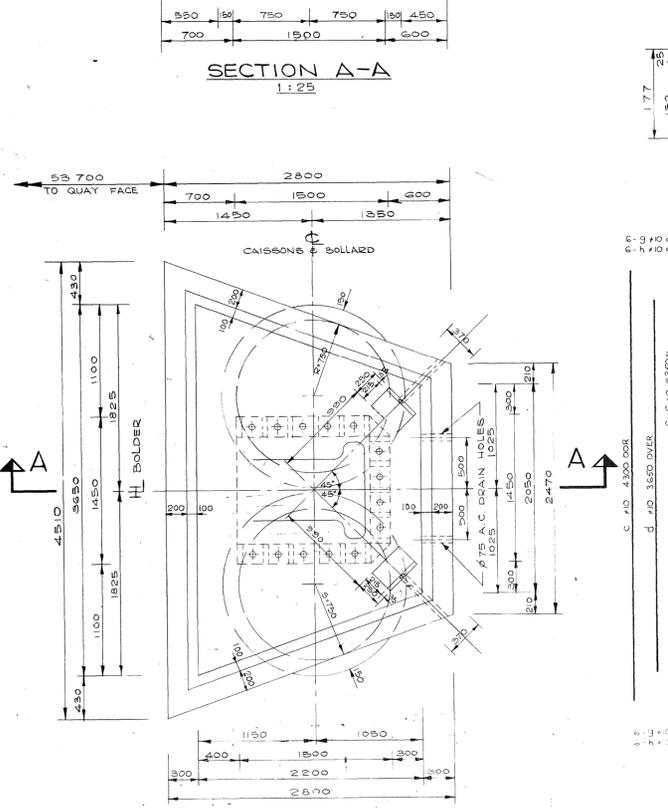
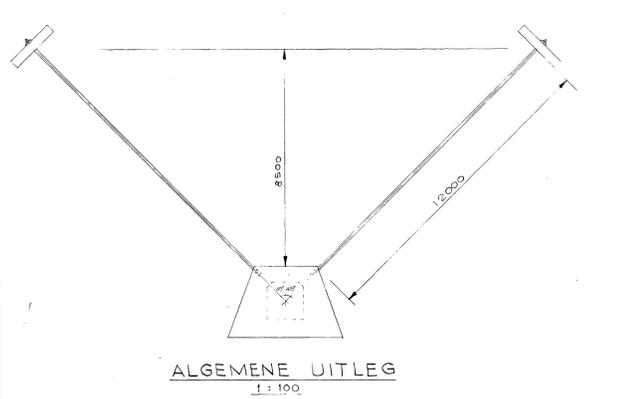
DATE 1982-06-18 DATUM

SHEET / VEL 1 OF / VAN 3
 AMENDMENT / WYSIGING 1



ROD LIST

MARK	#	NO OFF	CUT LENGTH	TOT LENGTH	TOT MASS (kg)
a	25	58	4 550	227 500	1016,02
b	8	30	4 800	144 000	56,86
c	10	6	4 300	25 800	15,89
d	10	6	3 650	21 900	13,49
e	10	6	2 350	14 100	7,69
f	10	6	2 050	12 300	7,38
g	10	12	3 750	45 000	27,72
h	10	12	3 400	40 800	25,13
j	20	54	2 000	108 000	266,74
k	20	52	2 900	170 800	444,11
l	32	8	1 850	14 800	58,39
m	16	36	2 150	77 400	292,29
n	32	4	5 650	21 800	137,56
					2235,51

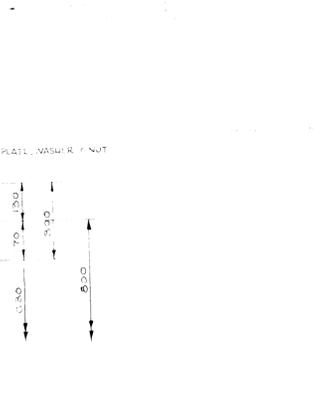
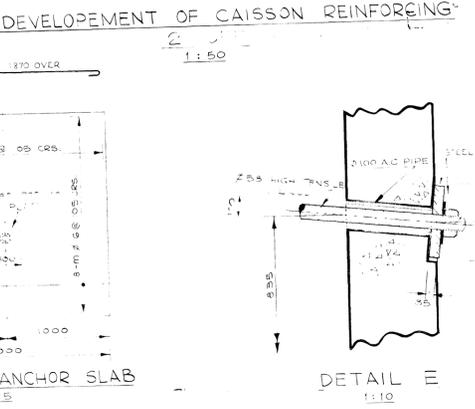
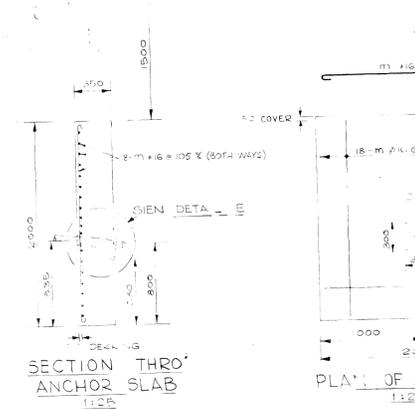
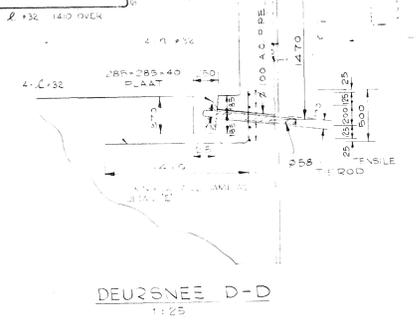
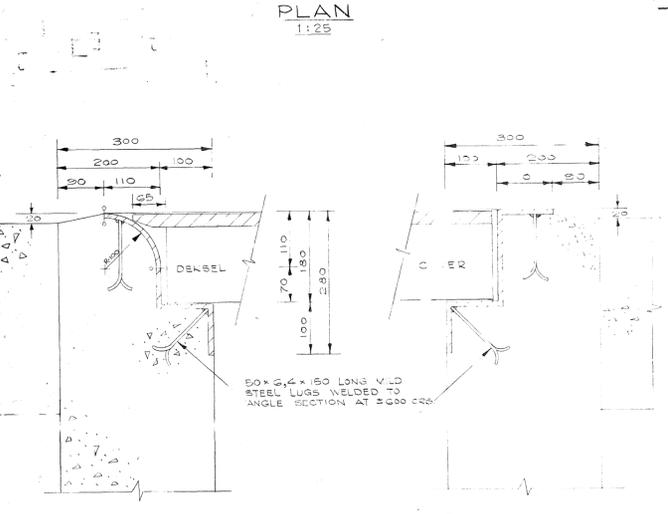


ROD LIST

MARK	#	NO OFF	CUT LENGTH	TOT LENGTH	TOT MASS (kg)
a	25	58	4 550	227 500	1016,02
b	8	30	4 800	144 000	56,86
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f	10	6	2 050	12 300	7,38
g	10	12	3 750	45 000	27,72
h	10	12	3 400	40 800	25,13
j	20	54	2 000	108 000	266,74
k	20	52	2 900	170 800	444,11
l	32	8	1 850	14 800	58,39
m	16	36	2 150	77 400	292,29
n	32	4	5 650	21 800	137,56
					2235,51

- NOTES / NOTAS
- PROTECTION OF RODS / BESKERMING VAN ANKERSTANGE
1. WIRE BRUSHING, ONE COAT OF ANTI-CORROSIVE PASTE AND WRAPPING WITH TAPE WOUND WITH 12mm OVERLAP (ON 25mm TIE RODS). APPLY 2 COATS OF EPIDERMIX 3552 TO ENDS OF TIE RODS.
 2. PROJECTING ENDS OF RODS, NUTS & WASHERS PROTECTED BY HOT BITUMEN ON GLASSFIBRE OPEN WEAVE FABRIC AFTER WIRE BRUSHING (BOTH CAPPING AND SLAB ENDS).
 3. STEEL BARS MARKED 'M' ARE RONDE DEFORMED HIGH TENSILE STEEL BARS TO SABS 320 TYPE C, CLASS 2, GRADE 2. ALL OTHERS ARE HOT ROLLED MILD STEEL BARS TO SABS 320.
 4. STEEL ANGLE AND PLATE SURROUNDS FOR OPENINGS TO BE STANDARD WITH TYPICAL SECTIONS.
1. DOORBOORSEL, EEN LAAG ROES-VERENDE PASTA EN DEKSEL MET RAND VAN EPIDERMIX 3552 AAN ENTE VAN STANGE.
2. UITSTEKENDE ENTE VAN STANGE, MOERTE EN WASTERS VOET MET GLASVESEL BEHANDEL WORD EN DAN MET WARM BITUMEN OP OOP-GEWEEFDE GLASVESEL MATERIAAL BESKERM WORD.
3. STAALSTAVEN MERK 'M' IS RONDE VERFORMDE HOG TENSIELE STAALSTAVEN SABS 320 TYP C, KLAS 2, GRAAD 2. ALLE ANDER S WARMGEROLDE RONDE SAGTEL STAALSTAVEN VOLGENS SABS 320.
4. WERKSTAAL EN PLAT OMBRANDING VIR OPENING VINDI STANDAARD STRUKTUUR-PROEFLIE WELLS.

	SIGNATURE	DATE
SYSTEM MANAGER		
AVONDINGSREKTOER		
PORT DIRECTOR		
AVONDINGSREKTOER		
SYSTEM HARBOUR ENGINEER		
AVONDINGSREKTOER		
ASSY SYSTEM HARBOUR ENGINEER		
ASSY AVONDINGSREKTOER		
DISTRIKSHAWENGINIEUR		
SYSTEM ELECTRICAL ENGINEER		
ELKTRONISIE-ENDEENGENIEUR		
PORT MANAGER		
HAWEBESTUURDER		
HAWEKAPTEIN		
ASSY CHIEF SUPERINTENDENT OPERATING		
ASSY HOOFDOPERANTOENT BEWY		
SUPERINTENDENT OPERATING HARBOUR		
SUPERINTENDENT BEWY HAWENS		
SYSTEM HEALTH INSPECTOR		
AVONDINGSREKTOER-ENGENIEUR		
HARBOUR FIRE OFFICER		
HAWEBRANDAMPTENAAR		



S.A. TRANSPORT SERVICES NATAL SYSTEM DURBAN HARBOUR / HAWE S.A. VERVOERDIENSTE AFDDELING NATAL

PIER NO 2

1470 KN STORM BOLLARD **1470 KN STORMBOLLER**

INSTALLATION DETAIL DETAIL VAN INSTALLERING

DRAWN	J.W.	SCALE	AS SHOWN	 SYSTEM HARBOUR ENGINEER AVONDINGSREKTOER-ENGENIEUR
TRACED	J.W.	FILE REF	WF 258	
WAGE TREK	J.W.	LEER VERW	WT/173/2	
CHECKED		DATE	82-06-10	
NAGESIEN	R.W.D.	DATUM	82-06-10	

DATE: 1982-06-18

SHEET / VEL 2 OF VAN 3



PLAN VIEW
SCALE 1:2500



BERTH	BOLLARDS No.	LENGTH OF BERTH
101-102	1-19	324m
102-103	19-36	306m
104	36-57	360m
105-106	57-76	324m
106-107	76-96	360m
108-109	96-124	500m
200-201	1-20	342m
201-202	20-37	306m
203	43-60	306m
204	60-77	306m
205	77-93	306m
TOTAL		3740m

NOTES

DATE	DESIGNATION	SIGNATURE

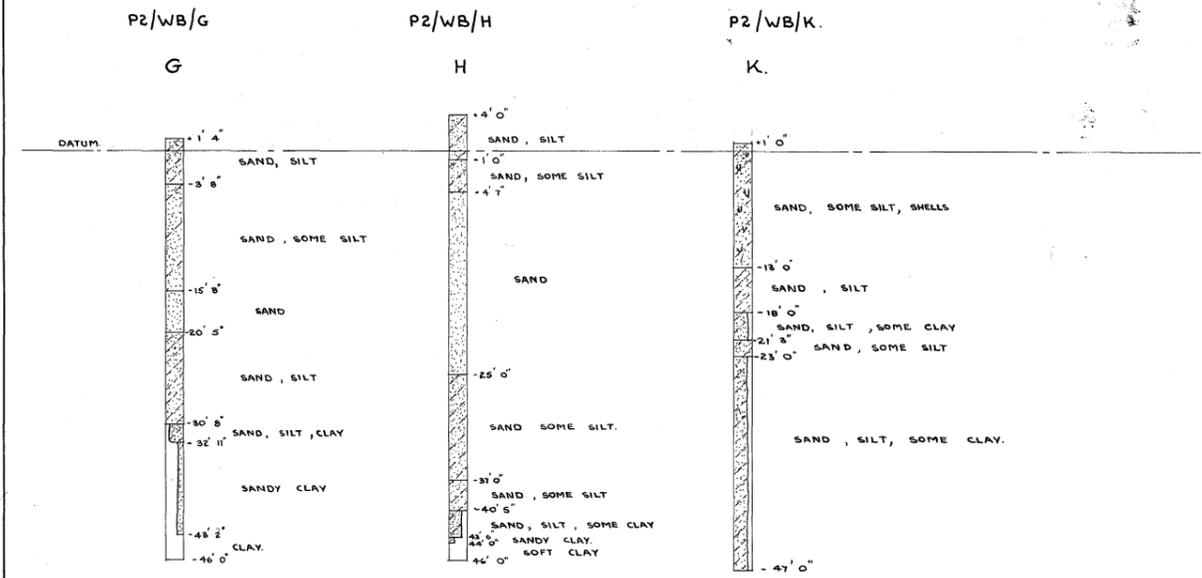
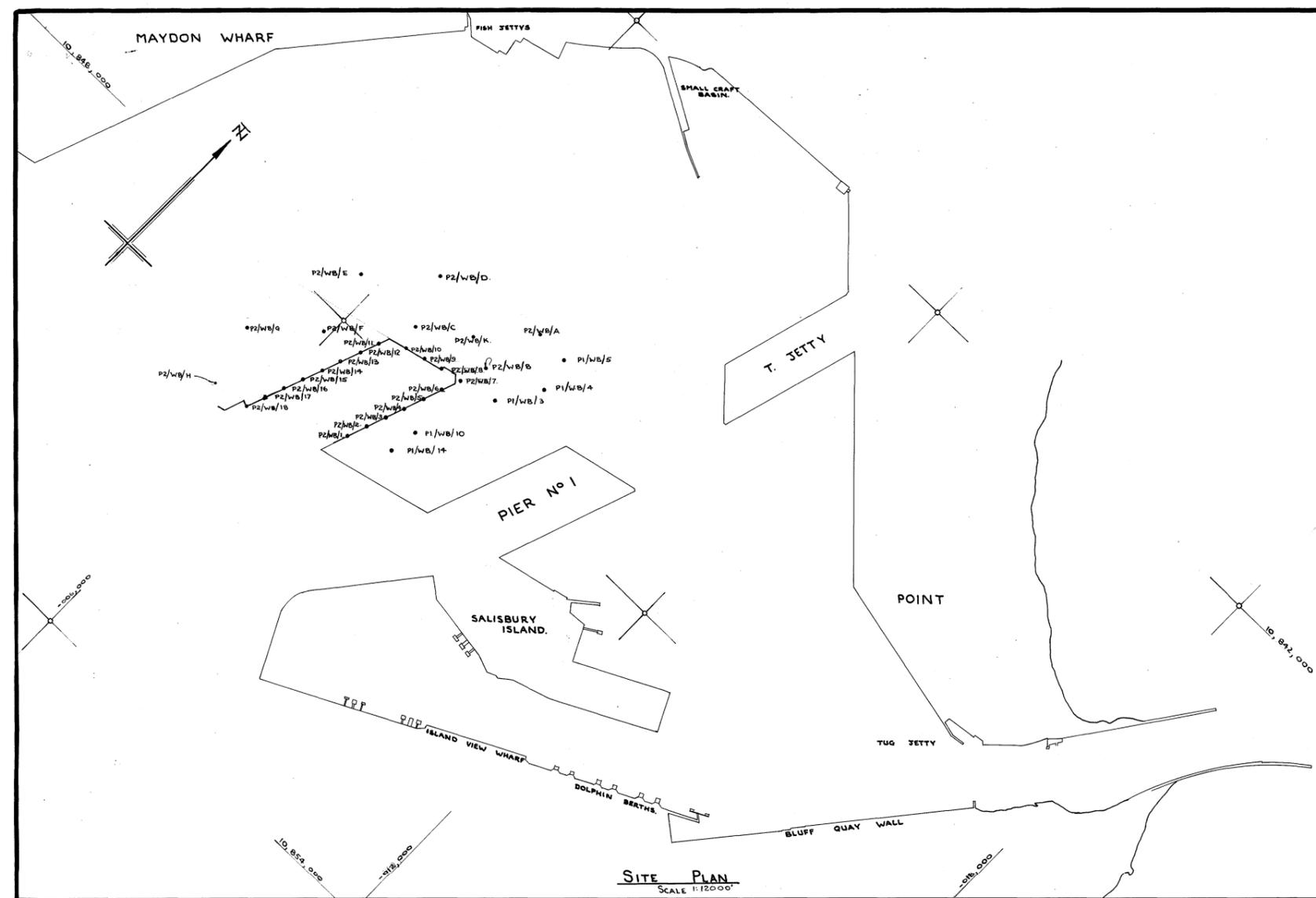
PAT RAW
PORT ENGINEER

TRANSNET
national ports authority
PORT ENGINEER DURBAN
SUITE 233
OCEAN TERMINAL 1, BERTY
PORT OF DURBAN
TEL: (031) 961-8709
FAX: (031) 961-8310

PORT OF DURBAN
PIER 1 & 2
SCOUR PROTECTION
BERTH LAYOUT AND ROCK STOCK PILE
AREA "A", CONTRACTOR'S SITE CAMP
& LAY DOWN AREA.

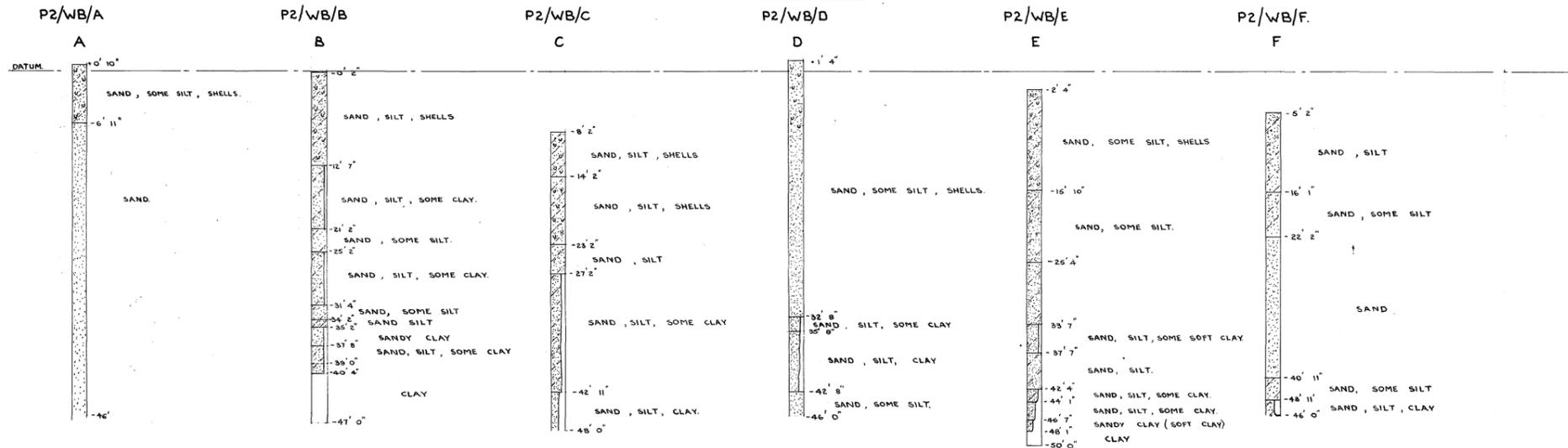
DRAWN: NOZIPHU HADEBE	CHECKED: RUSSEL VILBRO
SCALE: AS SHOWN	DATE: 2010-12-06

No	DH69-B-909
CAD. REF: 90909-008-00	SHEET No: 8
FILE REF:	AMENDMENT: 1



SECTIONS THROUGH WASH BORINGS.

SCALE 1 IN 10.



NOTE: BETWEEN -35' 0" AND -40' 4" SOME PIECES OF SANDSTONE.

~~CG/A/506 SH~~
~~20/1/1971~~
DHWW 301 G 400 SH

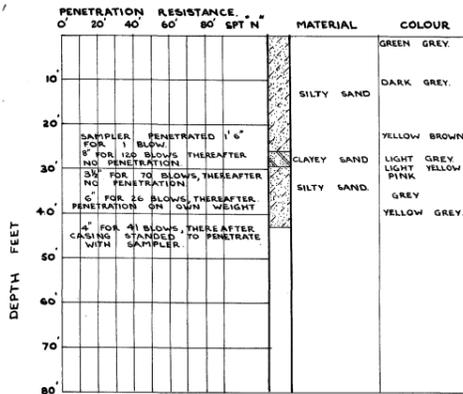
FURTHER FOR WASH BORING PROFILES SEE DWG. DHWW 301 A 500 SH 2.	
REFERENCE DRAWING	AMENDMENTS.
HARBOUR NEW WORKS DURBAN	NUWB HAWGWERKE
PIER No 2	
SITE PLAN FOR WASH BORING POSITIONS & WASH BORING PROFILES.	
SCALE: 1"=1000' & 1"=10.	
DRAWN	FILE No.
TRACED	
CHECKED	DATE 18-6-71
DATE 7.7.71	
AMENDMENT	

P 255

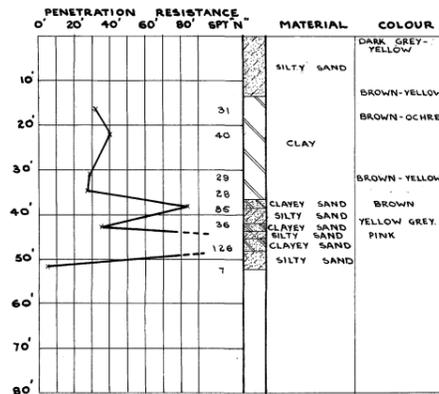
DH-G9-G-200 SH 1

No. 301
A 500 SH 2

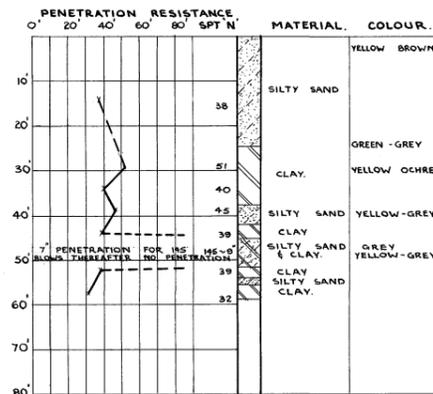
WASH BORING N° P2/WB/1
DATUM LEVEL -24'-10"



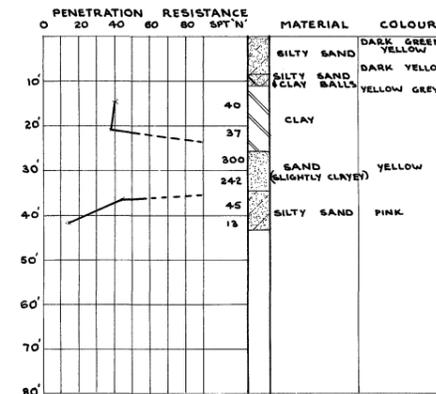
WASH BORING N° P2/WB/2
DATUM LEVEL -16'-0"



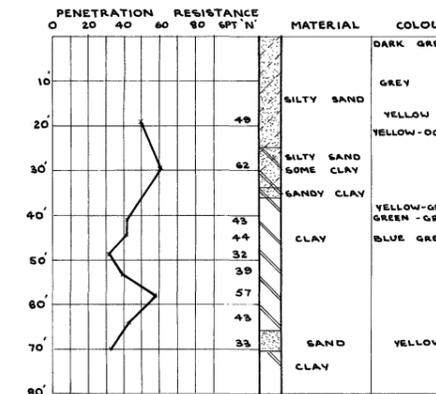
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DATUM LEVEL -10'-1"



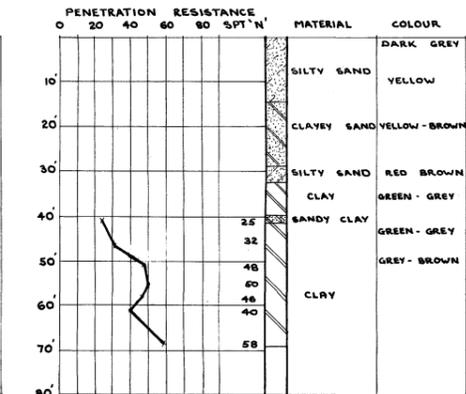
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DATUM LEVEL -28'-4"



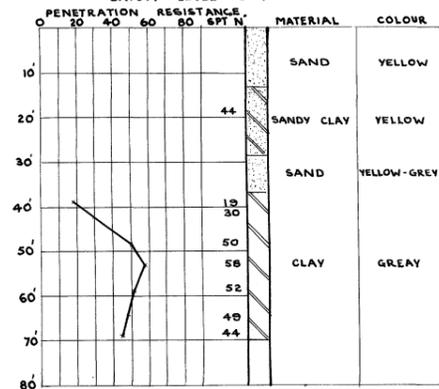
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DATUM LEVEL -0'-9"



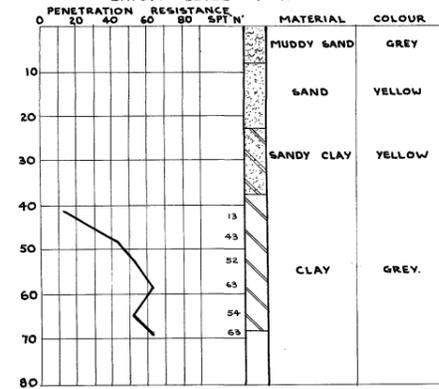
WASH BORING N° P2/WB/6
DATUM LEVEL -0'-4"



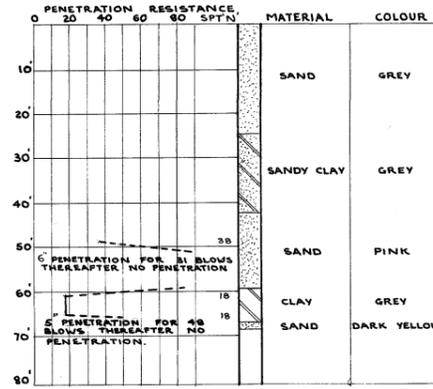
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DATUM LEVEL -0'-7"



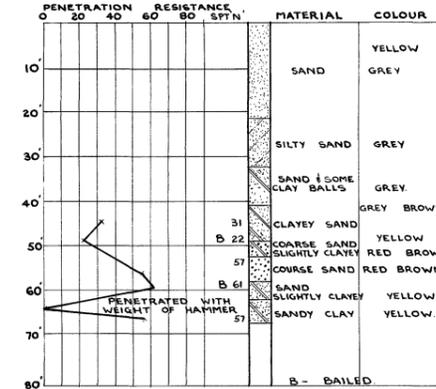
WASH BORING N° P2/WB/8
DATUM LEVEL -1'-11"



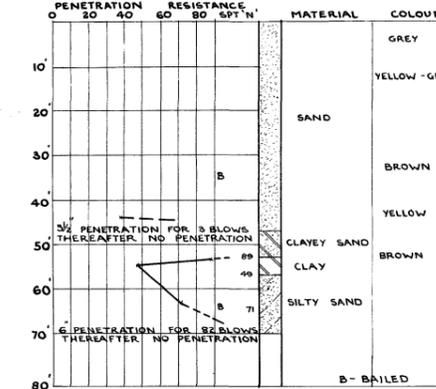
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DATUM LEVEL -2'-10"



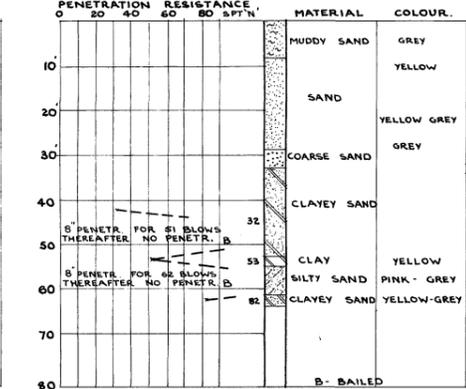
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DATUM LEVEL -3'-1"



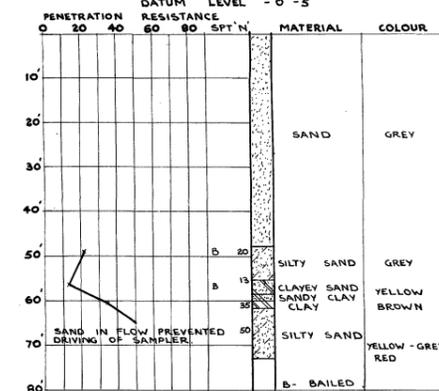
WASH BORING N° P2/WB/11
DATUM LEVEL -3'-0"



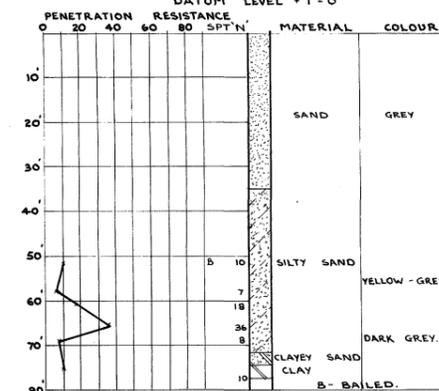
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DATUM LEVEL -3'-0"



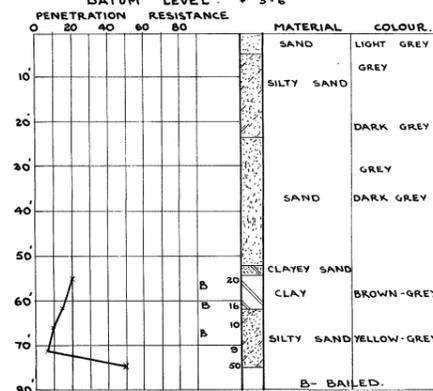
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DATUM LEVEL -0'-5"



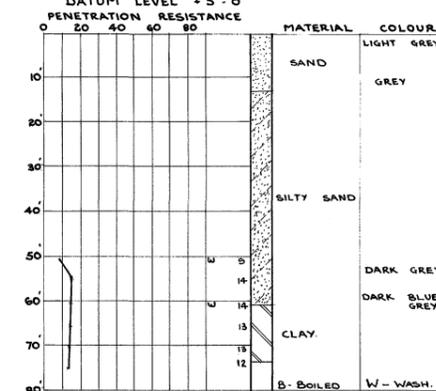
WASH BORING N° P2/WB/14
DATUM LEVEL +1'-0"



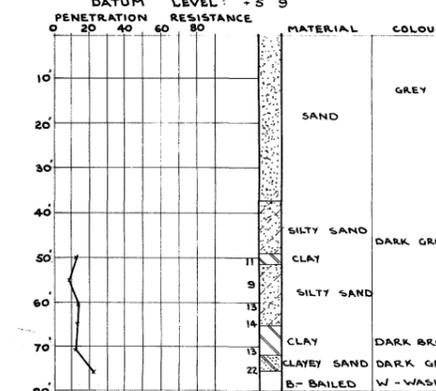
WASH BORING N° P2/WB/15
DATUM LEVEL +3'-6"



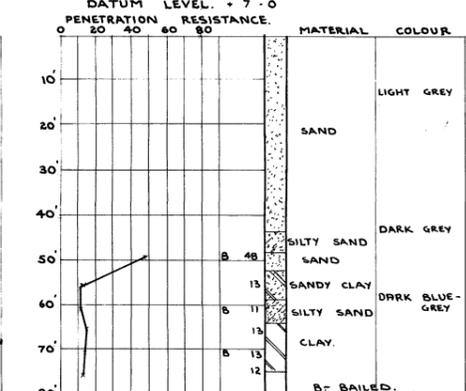
WASH BORING N° P2/WB/16
DATUM LEVEL +5'-0"



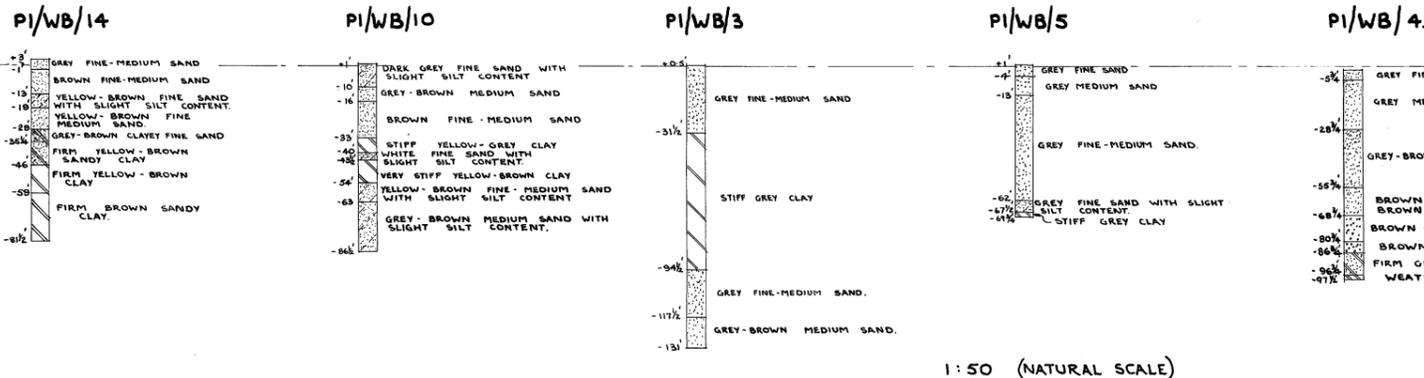
WASH BORING N° P2/WB/17
DATUM LEVEL +5'-9"



WASH BORING N° P2/WB/18
DATUM LEVEL +7'-0"



SCALES DEPTH OF WASH BORING 1"=20' PENETRATION RESISTANCE 1"=50 BLOWS



1:50 (NATURAL SCALE)

DNW 501-G-400 SH2

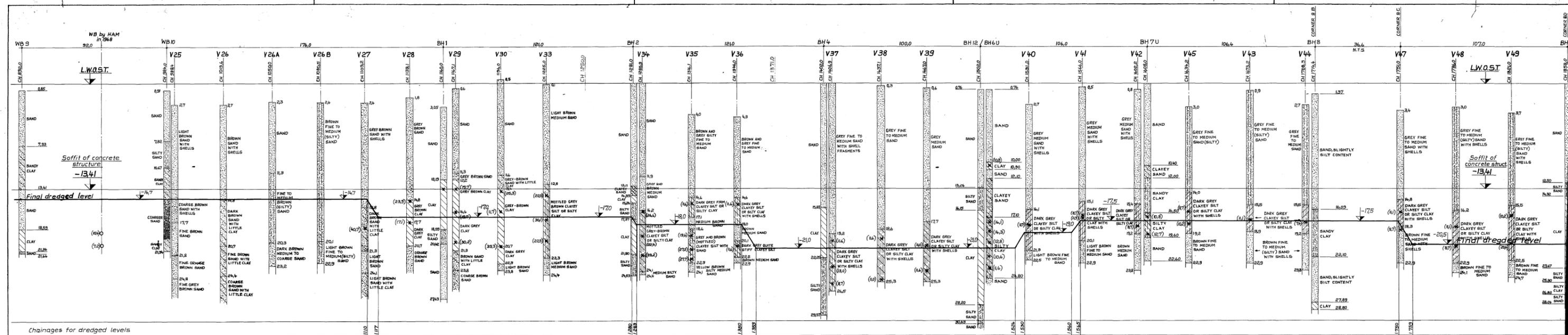
CG-A-506 SH2

FOR SITE PLAN SHOWING POSITION OF BOREHOLES SEE DWG DNW 501-A-500 Sheet 1

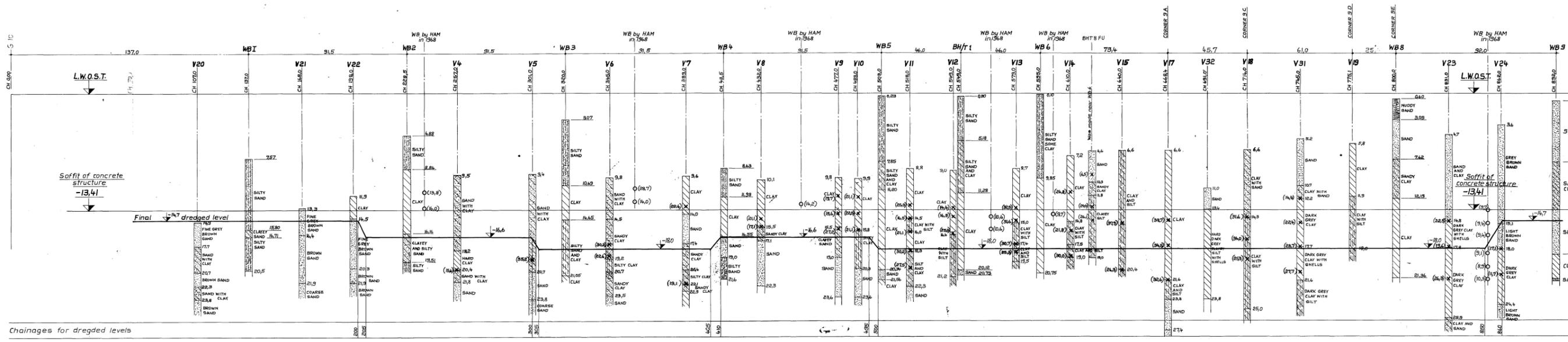
REFERENCE DRAWING AMENDMENTS

HARBOUR NEW WORKS DURBAN HAVEN NUWEWERKE
PIER N° 2
DETAILS OF WASH BORING PROFILES.
SCALE: AS SHOWN. DNW 501-G-200 SH2

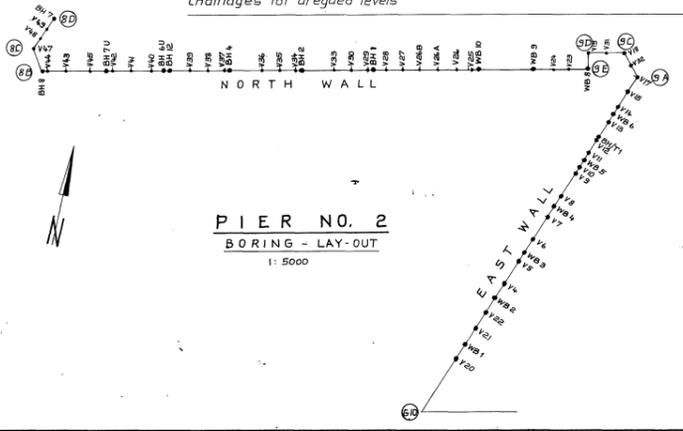
DRAWN	FILE N°		
TRACED			
CHECKED	DATE	19-6-71	DATE 7.7.71



Northern wall
Scale: Height 1:200, length 1:1000



Eastern wall
Scale: Height 1:200, length 1:1000

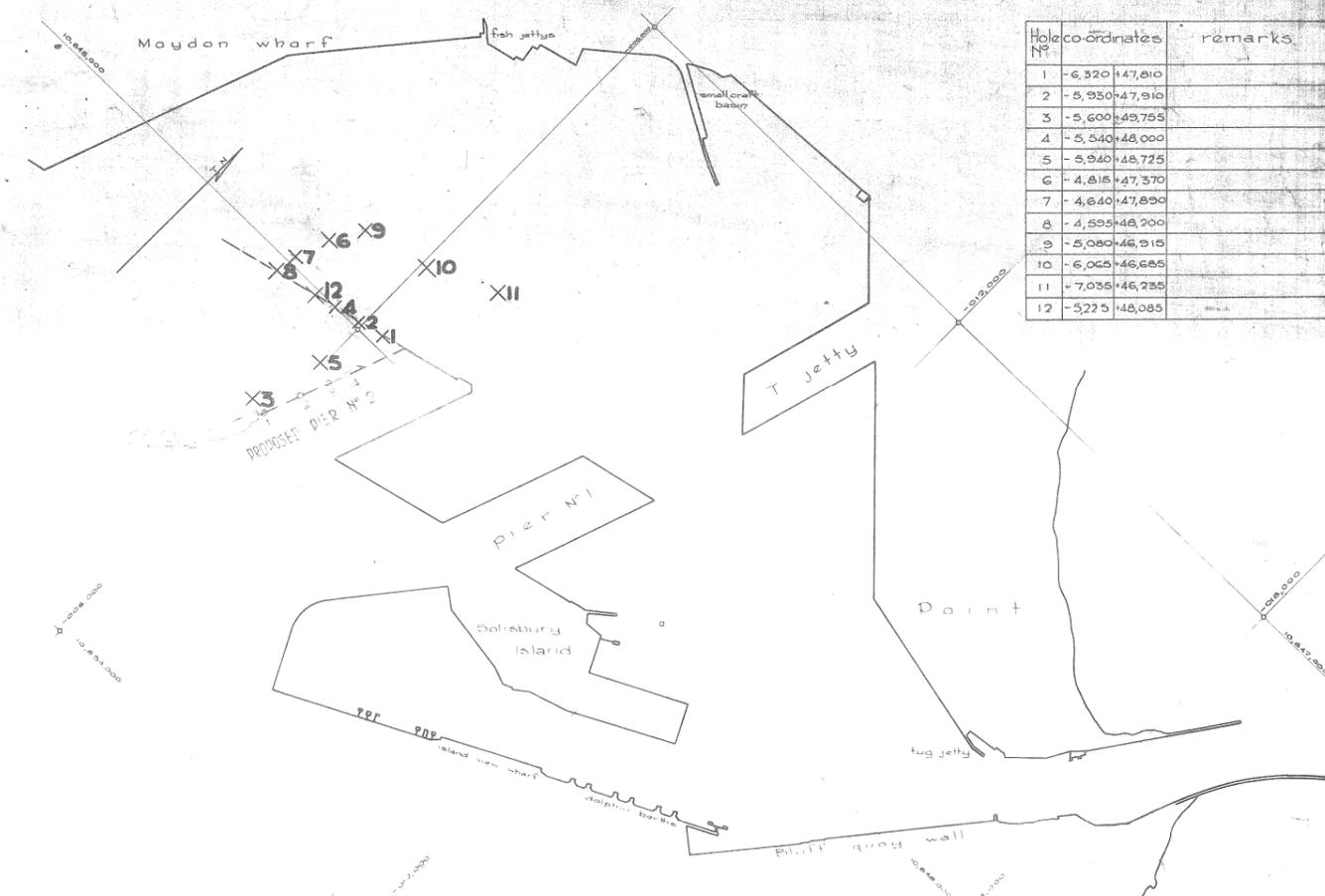
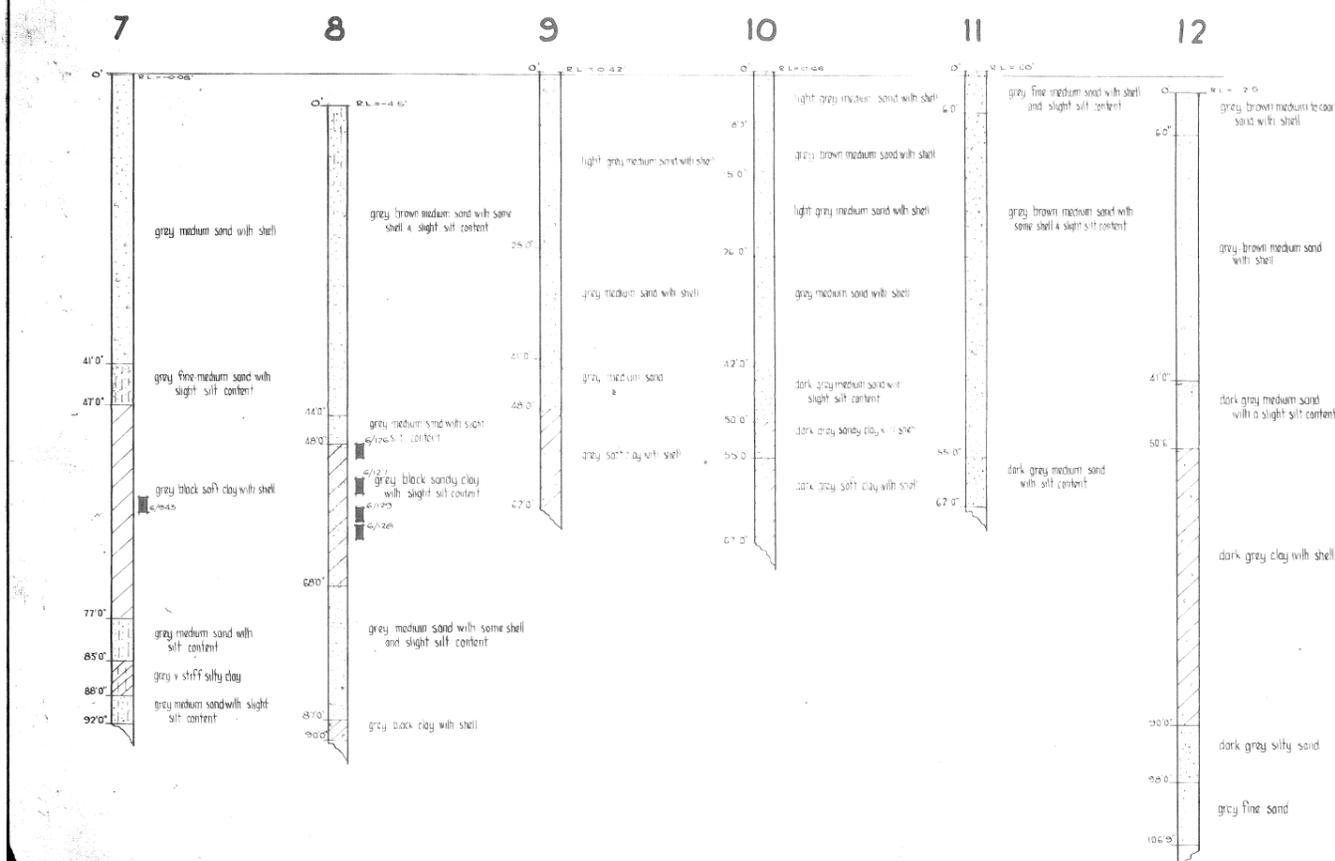
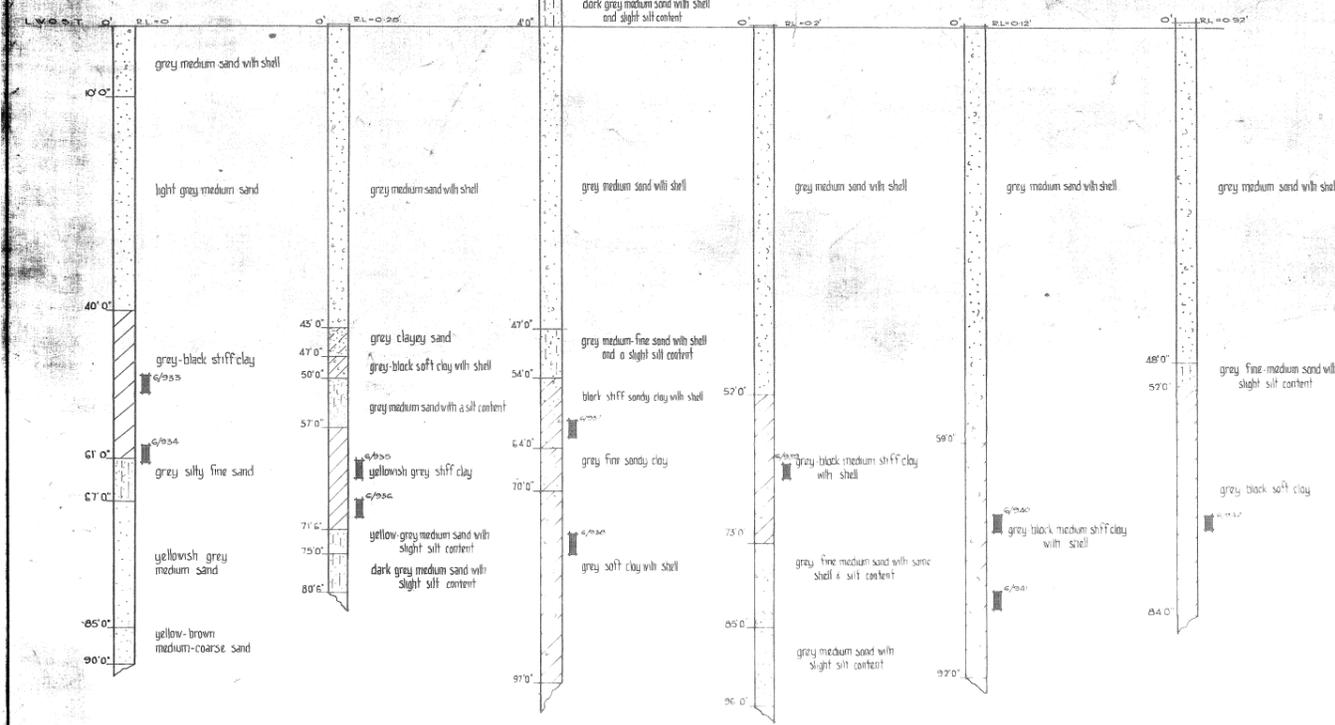


- Notes:
- 1) Washborings have to be made at all chainages given without results (except at CH)
 - 2) Dredged slopes are approx. 1:3
 - 3) For trench width see drg. 2-1
 - 4) All dimensions in metres
 - 5) O (t/m²) vane tests made in the laboratory
 - 6) X (t/m²) vane tests made in situ

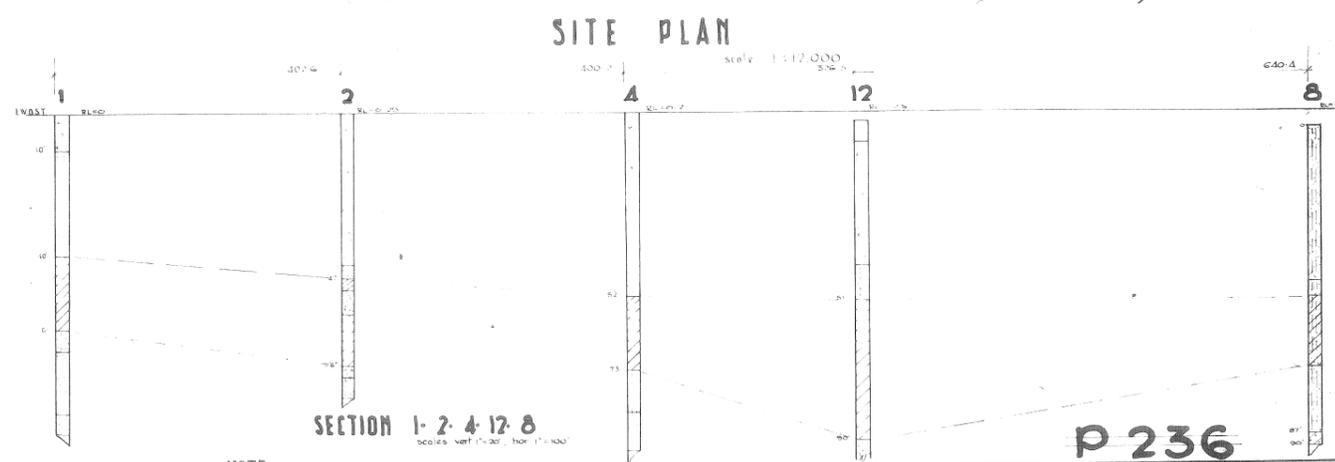
CHNHW 901 G 401/3
CHRISTIANI & NIELSEN
 (PROPRIETARY) LIMITED DH-69-G-2003/3

REVISIONS				Checked: _____		Approved: Harbour Engineer (New Works)	
Client	SOUTH AFRICAN RAILWAYS			O.N. 47 255		Dwg No. P-15	
Contract	PIER NO. 2 - DURBAN HARBOUR			Title		ELEVATION OF BORINGS AT QUAY FRONT	
Designed	W.K.	Checked	Appr.	Date		Date	

Hole No



Hole No	co-ordinates	remarks
1	-6,320+47,810	
2	-5,950+47,910	
3	-5,600+48,755	
4	-5,540+48,000	
5	-5,540+48,725	
6	-4,815+47,370	
7	-4,640+47,890	
8	-4,595+48,200	
9	-5,080+48,915	
10	-6,065+46,685	
11	-7,055+46,235	
12	-5,225+48,085	



- NOTE**
- 1 Dutch Probe results see plan No 51 & 52 sheets 10
 - 2 Lab Test results see No 51 & 52 sheets 10
 - 3 Previous results see No 51 & 52 sheets 10
 - 4 Also see No 51 & 52 sheets 10
 - 5 Drilling 4 Lab results by S&W (except holes 4 & 12 by Messrs. M. Loren & Eger)

DH 69/A/507

P 236

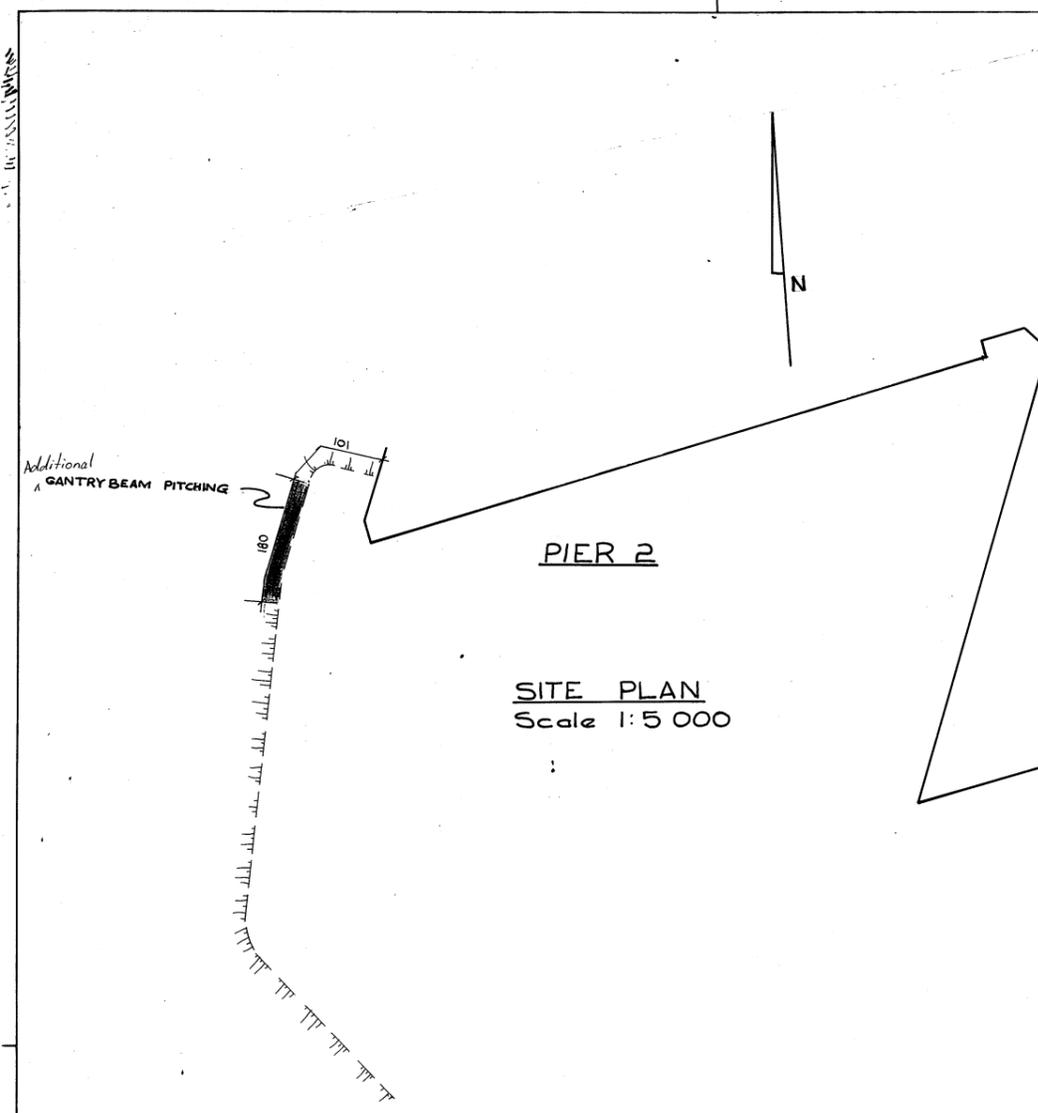
S A R Office of the C.E. - Soil Mechanics S A S

DURBAN HARBOUR
PIER NO 2, EXTENSIONS
CONTAINERISATION BERTHS
SOIL PROFILES AND BOREHOLE POSITIONS

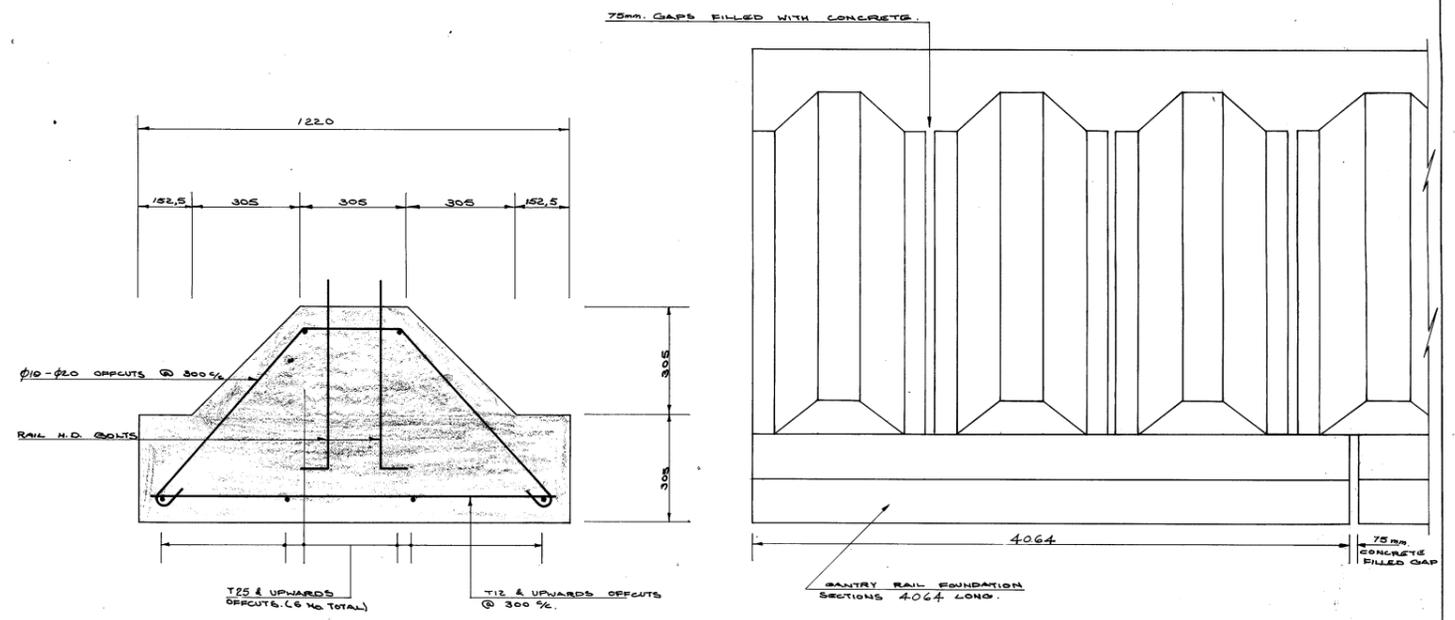
DH-69-G-200 sub 5

No **SL 6/200**

Scale 1" = 12,000
 Date 24-3-71
 District Engineer (Soil Mechanics)
 Date 26-3-1971
 ref file W(SM) 317/6/2

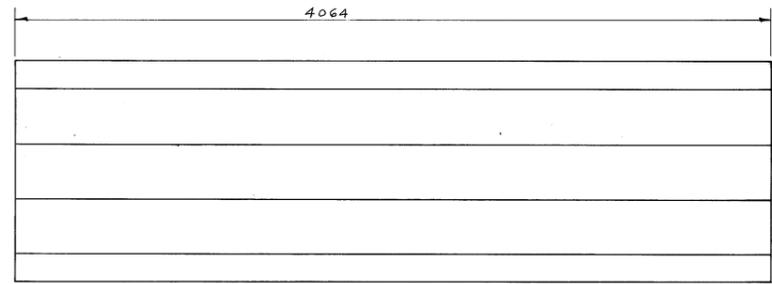


SITE PLAN
Scale 1:5 000

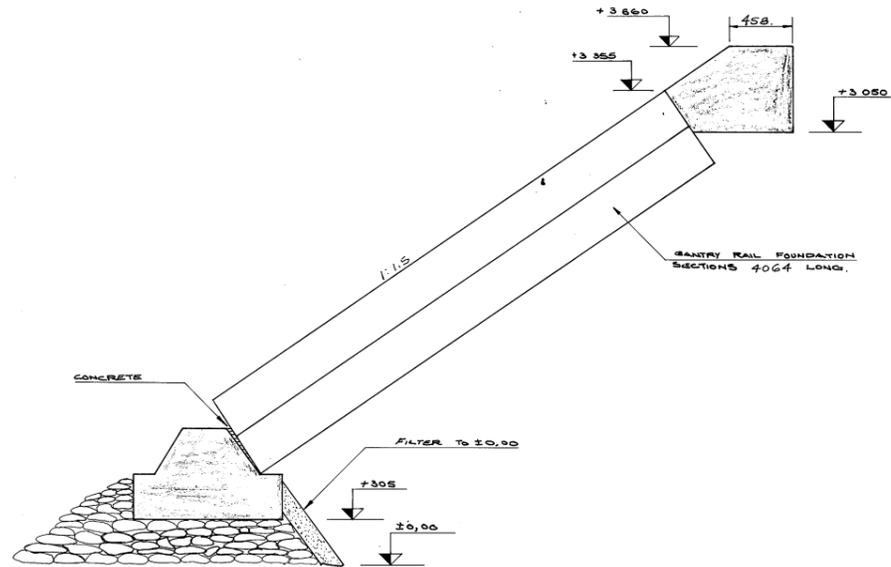


CROSS SECTION
SCALE 1:10

OUTSIDE ELEVATION
SCALE 1:25



PLAN
SCALE 1:20

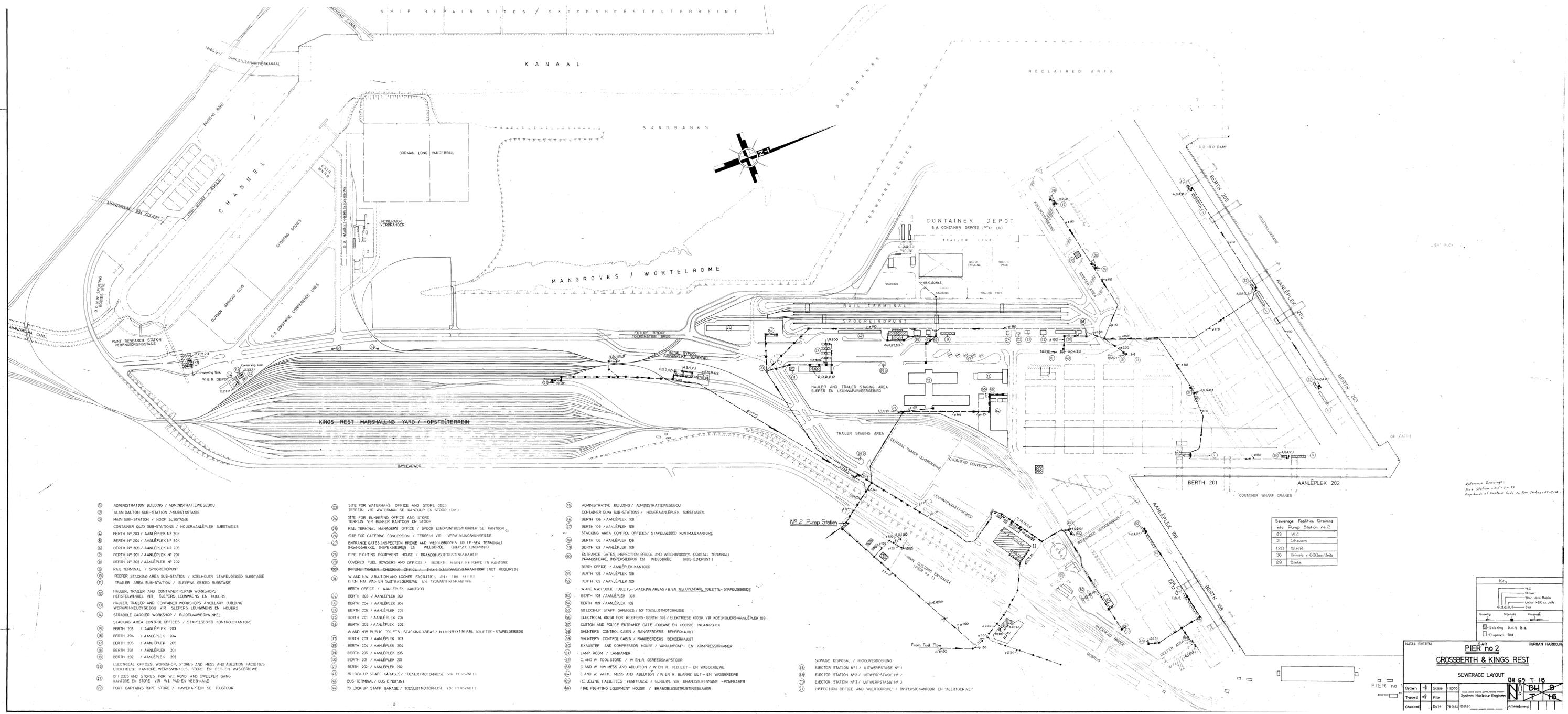


SECTION
SCALE 1:25

NOTES
COVER TO MAIN REINFORCEMENT 38mm.
CONCRETE MIX 1:2:4 NOMINAL.
FOR LAYOUT REFER AREA PLAN.

DH-C9-D-400
AS BUILT ~~DHW 901 B-201~~

<p>REVISIONS</p> <p>Checked: _____</p> <p>Approved: Harbour Engineer (New Works)</p>				<p>CHRISTIANI & NIELSEN (PROPRIETARY) LIMITED DH-C9-G-400</p> <p>Client SOUTH AFRICAN RAILWAYS Contract DURBAN HARBOUR - PIER No. 2 Title PITCHED BANK USING OLD GANTRY BEAMS.</p>		<p>O.N. 47255</p>	
						<p>Dwg. No. 3-60</p>	
Designed	Drawn	Checked	Appr.	Date	Date	<p>NAME DATE TYPE NO.</p>	
R.A.P.		P.K.		Orig. 25-11-74	Rev.	<p>A - AIR MAIL L - LINEN T - TRANSPARENT</p>	



- 1 ADMINISTRATION BUILDING / ADMINISTRATIEWEGBOU
- 2 ALAN DALTON SUB-STATION / SUBSTANSIE
- 3 MAIN SUB-STATION / MOOF SUBSTANSIE
- 4 CONTAINER QUAY SUB-STATIONS / HOUERAAANLEPLEK SUBSTANSIES
- 5 BERTH NO 203 / AANLEPLEK NO 203
- 6 BERTH NO 204 / AANLEPLEK NO 204
- 7 BERTH NO 205 / AANLEPLEK NO 205
- 8 BERTH NO 201 / AANLEPLEK NO 201
- 9 BERTH NO 202 / AANLEPLEK NO 202
- 10 RAIL TERMINAL / SPOORENSPUNT
- 11 REEFER STACKING AREA SUB-STATION / HOELHOUER STAPELGEBIED SUBSTANSIE
- 12 TRAILER AREA SUB-STATION / SLEEPA GEBIED SUBSTANSIE
- 13 HALLER, TRAILER AND CONTAINER REPAIR WORKSHOPS
- 14 HALLER, TRAILER VIR SLEPERS, LEUNMENS EN HOUERS
- 15 HALLER, TRAILER AND CONTAINER WORKSHOPS ANGLARY BUILDING
- 16 WERKWIJKEGEBOU VIR SLEPERS, LEUNMENS EN HOUERS
- 17 STRADOLE CARRIER WORKSHOP / BUIDELWAGWERKWIJKE
- 18 STACKING AREA CONTROL OFFICES / STAPELGEBIED MONTOLEKANTORE
- 19 BERTH 203 / AANLEPLEK 203
- 20 BERTH 204 / AANLEPLEK 204
- 21 BERTH 205 / AANLEPLEK 205
- 22 BERTH 201 / AANLEPLEK 201
- 23 BERTH 202 / AANLEPLEK 202
- 24 ELECTRICAL OFFICES, WORKSHOP, STORES AND MESS AND ABLUTION FACILITIES
- 25 ELEKTRESE KANTORE, WERKWIJKE, STOE, EN EET-EN WASSERGEWEE
- 26 OFFICES AND STORES FOR W.I. ROAD AND SWEEPER GANG
- 27 KANTORE EN STOE VIR W.I. PAD EN VELSANGE
- 28 PORT CAPTAINS ROPE STORE / HANEKAPTEIN SE TOEGROU

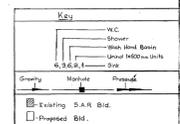
- 29 SITE FOR WATERMANS OFFICE AND STORE (DC)
- 30 TERREIN VIR WATERMAN SE KANTOOR EN STOE (DK)
- 31 SITE FOR BUNNERING OFFICE AND STORE
- 32 TERREIN VIR BUNNER KANTOOR EN STOE
- 33 RAIL TERMINAL MANAGERS OFFICE / SPOOR ENDPUNTBEHEERDER SE KANTOOR
- 34 SITE FOR CATERING CONCESSION / TERREIN VIR VERKONINGSKONSESSE
- 35 ENTRANCE GATES, INSPECTION BRIDGE AND WEIGHBRIDGES (OCEAN-SEA TERMINAL)
- 36 INGANGSGATE, INSPEKSIEBRUG EN WEEGBRUG (OCEAN-SEA ENDPUNT)
- 37 FIRE FIGHTING EQUIPMENT HOUSE / BRANDBLUSUITRUSTINGSKAMER
- 38 COVERED FUEL BUNKERS AND OFFICES / BEREINIGINGS- EN WASSERGEWEE (IN HANTOOR)
- 39 INWELKOMING- EN WASSERGEWEE (IN WASSERGEWEE)
- 40 W AND NW ABLUTION AND LOCKER FACILITIES, AND 1000000
- 41 B EN NB W AS EN SLEPERSGEWEE EN TOEGANGS KANTOOR
- 42 BERTH OFFICE / AANLEPLEK KANTOOR
- 43 BERTH 203 / AANLEPLEK 203
- 44 BERTH 204 / AANLEPLEK 204
- 45 BERTH 205 / AANLEPLEK 205
- 46 BERTH 201 / AANLEPLEK 201
- 47 BERTH 202 / AANLEPLEK 202
- 48 W AND NW PUBLIC TOILETS - STACKING AREAS / B EN NB OPENBARE TOILETTE - STAPELGEBIED
- 49 BERTH 203 / AANLEPLEK 203
- 50 BERTH 204 / AANLEPLEK 204
- 51 BERTH 205 / AANLEPLEK 205
- 52 BERTH 201 / AANLEPLEK 201
- 53 BERTH 202 / AANLEPLEK 202
- 54 35 LOCK-UP STAFF GARAGES / TOEGANGS TOEGANGS
- 55 BUS TERMINAL / BUS ENDPUNT
- 56 70 LOCK-UP STAFF GARAGE / TOEGANGS TOEGANGS

- 57 ADMINISTRATIVE BUILDING / ADMINISTRATIEWEGBOU
- 58 CONTAINER QUAY SUB-STATIONS / HOUERAAANLEPLEK SUBSTANSIES
- 59 BERTH 108 / AANLEPLEK 108
- 60 BERTH 109 / AANLEPLEK 109
- 61 STACKING AREA CONTROL OFFICES / STAPELGEBIED MONTOLEKANTORE
- 62 BERTH 108 / AANLEPLEK 108
- 63 BERTH 109 / AANLEPLEK 109
- 64 ENTRANCE GATES, INSPECTION BRIDGE AND WEIGHBRIDGES (LOCAL TERMINAL)
- 65 INGANGSGATE, INSPEKSIEBRUG EN WEEGBRUG (BUS ENDPUNT)
- 66 BERTH OFFICE / AANLEPLEK KANTOOR
- 67 BERTH 108 / AANLEPLEK 108
- 68 BERTH 109 / AANLEPLEK 109
- 69 W AND NW PUBLIC TOILETS - STACKING AREAS / B EN NB OPENBARE TOILETTE - STAPELGEBIED
- 70 BERTH 108 / AANLEPLEK 108
- 71 BERTH 109 / AANLEPLEK 109
- 72 SO LOCK-UP STAFF GARAGES / 50 TOEGANGS TOEGANGS
- 73 ELECTRICAL KIOSK FOR REEFERS-BERTH 108 / ELEKTRESE KIOSK VIR HOELHOUER-AANLEPLEK 108
- 74 CUSTOM AND POLICE ENTRANCE GATE / DOOR EN POLISE INGANGSGATE
- 75 SHANTERS CONTROL CABIN / RANKEERDERS BEHEERKABIN
- 76 EXHAUSTOR AND COMPRESSOR HOUSE / WAGLOPOMP - EN KOMPRESSORKAMER
- 77 LAMP ROOM / LAMPKAMER
- 78 C AND W TOOL STORE / W EN R. GEREEDSKAPSTOE
- 79 C AND W NW MESS AND ABLUTION / W EN R. N.B. EET-EN WASSERGEWEE
- 80 C AND W WHITE MESS AND ABLUTION / W EN R. BLANKE EET-EN WASSERGEWEE
- 81 REFUELING FACILITIES - FUELHOUSE / GENIEWE VIR BRANSTOFINNAME - POMPKAMER
- 82 FIRE FIGHTING EQUIPMENT HOUSE / BRANDBLUSUITRUSTINGSKAMER

- 83 SEWAGE DISPOSAL / RIVOLWEGGOENING
- 84 EJECTOR STATION NO 1 / UITWERPSTASIE NO 1
- 85 EJECTOR STATION NO 2 / UITWERPSTASIE NO 2
- 86 EJECTOR STATION NO 3 / UITWERPSTASIE NO 3
- 87 INSPECTION OFFICE AND "ALERTORIVE" / INSPEKSIERANTOOR EN "ALERTORIVE"

Sewerage Facilities Drawing	
83	W.C.
31	Showers
120	W.H.B.
36	Urinals x 600mm Units
29	Sinks

Reference Drawing: PIER no 2 - 10 - 11
 Reproduce of Drawing No. 10 - 11 - 12



PIER no 2
CROSSBERTH & KINGS REST
 SEWERAGE LAYOUT
 DN 60 - T. 18
 Drawn: [Signature] Scale: 1:2000
 Traces: [Signature] Date: 19/11/10
 Checked: [Signature] Date: 19/11/10