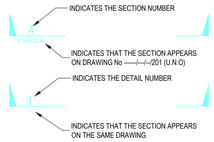
THE FOLLOWING DOCUMENTATION IS TO BE
READ IN CONJUNCTION WITH THE ZUTARI
SPECIFICATIONS FOR :
1. GENERAL
2. SETTING OUT OF WORKS
3. CONCRETE
4. VERTICAL STRUCTURE WATERPROOFING SYSTEMS USING BITUTHENE OR SIMILAR APPROVED

GENERAL :

G1. MAXIMUM DESIGN FOUNDATION BEARING PRESSURE :

a) 150 kPa

G2. LEGEND INDICATING SECTIONS AND DETAILS :



G3. ALL BASES AND COLUMNS ARE SYMMETRICAL ON GRIDLINES UNLESS OTHERWISE INDICATED.

G4. THE CONTRACTOR MUST ENSURE THAT ALL EMBEDDED ITEMS FOR SERVICES HAVE BEEN PROVIDED FOR AND POSITIONED, ACCORDING TO THE LATEST DRAWINGS OF ALL DISCIPLINES BEFORE CASTING CONCRETE

G5. ALL CONTRACTORS QA DOCUMENTATION TO BE FORWARDED TO THE ENGINEER FOR APPROVAL BEFORE COMMENCING WITH CONSTRUCTION OF ANY STRUCTURAL WORK.

G6. CONTRACTOR TO CHECK ALL DIMENSIONS AND LEVELS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER.

G7. DO NOT SCALE THIS DRAWING USE FIGURED DIMENSIONS ONLY.

G8. THE CONTRACTOR IS REFERRED TO CLAUSE 5.5.15 of SANS 1200 G AND MUST KEEP WRITTEN RECORDS OF:

a. WEATHER CONDITIONS INCLUDING MAXIMUM AND MINIMUM TEMPERATURES.
b. DATE OF CASTING.
c. TIME POUR STARTED.
d. TIME POUR FINISHED.
e. ANY DELAYS DUE TO BREAKDOWNS ETC.
f. POSITION OF ANY COLD JOINTS.

WHERE SANS CLAUSES ARE APPLICABLE IT WILL ALSO BE READ IN CONJUNCTION WITH THE RELEVANT COLTO SPECIFICATIONS.

G9. LEGEND FOR SLEEVES AND OPENINGS ON DRAWINGS:

FW	=	FIRE WATER
SP	=	SPRINKLERS
WW	=	WASTE WATER
W	=	WATER
E	=	ELECTRICAL
M	=	MECHANICAL
AC	=	AIR-CONDITIONING
SD	=	SUBSOIL DRAINAGE
SW	=	STORM WATER

PENETRATIONS/SLEEVES SMALLER THAN 110mmØ NOT SHOWN. REFER TO SERVICES DRAWINGS FOR ALL PENETRATIONS/SLEEVES.

SETTING OUT OF WORKS (WHERE APPLICABLE) :

SW1. THE CONTRACTOR SHALL REQUEST THE (PRINCIPAL AGENT) FOR THE INFORMATION RELATING TO THE BASIC REFERENCE PEGS OF THE SITE WITH COORDINATES AND BENCHMARKS FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS TO THE CONTRACTOR.

SW2. THE CONTRACTOR SHALL CONFIRM IN WRITING TO THE (PRINCIPAL AGENT) THAT ALL BOUNDARY PEGS AND BENCHMARKS HAVE BEEN IDENTIFIED, VERIFIED AND FOUND TO BE IN POSITION AND DELIVERY THERE OF IS ACCEPTED BY THE CONTRACTOR THE CONTRACTOR SHALL CONFIRM THIS CHECKING OF THE MENTIONED ITEMS THROUGH A REGISTERED LAND SURVEYOR. A LAND SURVEYOR'S CERTIFICATE MUST BE ISSUED TO THE (PRINCIPAL AGENT).

SW3. THE ARCHITECT (PRINCIPAL AGENT) IS RESPONSIBLE FOR THE PLACING OF THE BUILDING(S) ON THE SITE (VERTICALLY AND HORIZONTALLY).

SW4. THE CONTRACTOR IS RESPONSIBLE FOR THE TRUE AND PROPER SETTING OUT OF THE WORKS AND FOR THE CORRECTNESS OF THE POSITION, GRID SYSTEM, LEVELS, DIMENSIONS AND ALIGNMENT OF ALL PARTS OF THE WORKS. IT IS ADVISABLE THAT THE CONTRACTOR VERIFIES THIS THROUGH A REGISTERED LAND SURVEYOR.

CONCRETE :

C1. MATERIALS AND MIX PROPORTIONS :

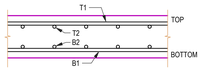
1.1 WHEN READY MIX CONCRETE IS USED TEST CUBES ARE TO BE TAKEN ON SITE WHILST CASTING.THE FOLLOWING SOUTH AFRICAN CODES APPLY TO THE TAKING,CURING AND TESTING OF CONCRETE CUBES : SANS 5860;SANS 5861 PART 1-3 AND SANS 5863. FOR EVERY DAY OF CASTING A MINIMUM OF 6 CUBES MUST BE TAKEN.3 CUBES TO BE TESTED AFTER 7 DAYS OF CURING AND THE REMAINING 3 CUBES MUST BE TESTED AFTER 28 DAYS OF CURING.

1.2 CONTRACTOR TO PROVIDE CONCRETE MIX FOR APPROVAL,ALSO SPECIFYING THE ORIGIN OF ALL MATERIALS TO BE USED.

1.5 PLACING OF REINFORCEMENT TO BE IN ACCORDANCE WITH SANS 10144.

1.6 BENDING UP REINFORCEMENT TO BE IN ACCORDANCE WITH SANS 282.

C2. SYMBOLS DENOTING LAYERS OF REINFORCEMENT IN SLABS :



C3. CASTING OF CONCRETE IN EXCESS OF 3,5m HIGH IS NOT PERMITTED WITHOUT PRIOR APPROVAL OF THE ENGINEER.

C4. REINFORCEMENT SHALL BE INSPECTED BY THE ENGINEER ONLY AFTER IT HAS BEEN COMPLETELY FIXED IN POSITION, FORMWORK IS CLEAN, SPACERS ARE PLACED IN POSITION, AND AFTER THE CONTRACTOR HAS INSPECTED IT HIMSELF AND COMPLIED WITH THE PROJECT SPECIFIC QUALITY PLAN.

C5. WELDING OF REINFORCEMENT IS NOT ALLOWED UNLESS IT HAS BEEN APPROVED BY THE ENGINEER IN WRITING.

C6. CONSTRUCTION JOINTS :

7.1 NO HORIZONTAL JOINTS SHALL BE ALLOWED IN BASES, OR OTHER DEEP ELEMENTS.
7.2 CONSTRUCTION JOINTS ARE TO BE FORMED ACCORDING TO SPECIFICATION.
7.3 ALL PIPES THROUGH JOINTS, SHALL BE PROVIDED WITH AN EXPANSION JOINT OR FLEXIBLE COUPLING - THIS INCLUDES ALL CABLE SLEEVES, CONDUITS AND PIPES.
7.4 NO VERTICAL CONSTRUCTION JOINTS SHALL BE MADE IN ELEMENTS DIRECTLY EXPOSED TO THE WEATHER EXCEPT WHERE INDICATED OTHERWISE.
7.5 THE TOP OF ALL VERTICAL CONCRETE ELEMENTS THAT SUPPORT HORIZONTAL CONCRETE ELEMENTS TO BE WELL SCABBLED AND CLEANED PRIOR TO CASTING CONCRETE.

C7. REFER TO PROJECT SPECIFICATION FOR DEGREE OF ACCURACY OR AS SPECIFIED ON DRAWINGS

C8. ALL LEVELS ON DRAWINGS REFER TO THE TOP OF CONCRETE UNLESS OTHERWISE INDICATED.

UNFINISHED CONCRETE LEVEL

FINISHED CONCRETE LEVEL (POWERFLOAT OR OTHER)

C9. DIMENSIONS OF BEAMS ARE SHOWN AS WIDTH x DEPTH.

C10. REFER TO ARCHITECTS DRAWINGS FOR CONCRETE FINISHES, GROOVES, CHAMFERS, ETC. UNLESS OTHERWISE SHOWN ALL SMOOTH SURFACE CONCRETE CORNERS ARE TO BE PROVIDED WITH 25x25mm CHAMFERS.

C11. STORAGE OF CEMENT :
CEMENT SHALL NOT BE STORED FOR PERIODS LONGER THAN 6 WEEKS, WITHOUT THE APPROVAL OF THE ENGINEER.

C12. ALL CONCRETE MIX DESIGNS, FORMWORK STRIPPING TIMES AND CURING PROCEDURES TO BE APPROVED BY THE ENGINEER BEFORE COMMENCING WITH CONSTRUCTION OF ANY CONCRETE WORK.

C13. COLUMNS AND WALLS OVER SHOWN THUS:

COLUMNS AND WALLS UNDER SHOWN THUS:

COLUMNS AND WALLS OVER AND UNDER SHOWN THUS:

INV: INDICATES INVERTED BEAM (INCLUDES SLAB DEPTH).
WB: INDICATES WALL BAND.

C14. ALL DOWEL BARS ARE TO BE 100% STRAIGHT, LEVEL AND AT RIGHT ANGLES TO THE JOINT DIRECTION. THE ENDS OF DOWEL BARS SHALL BE CUT AND NOT SHEARED AND BE SMOOTH.

FOUNDATIONS :

F1. 50mm BLINDING TO BE PROVIDED UNDER ALL COLUMN FOUNDATIONS FOR PAD FOOTINGS UNLESS OTHERWISE SHOWN.

F2. THE ENGINEER SHALL BE NOTIFIED IN GOOD TIME TO INSPECT ALL FOUNDATIONS PRIOR TO CASTING OF FOOTINGS.

F3. REFER TO GEOTECHNICAL INVESTIGATION REPORT FOR FOUNDATION PROPOSALS AND REPORT ANY DISCREPANCY WITH THE ENGINEER.

F4. ALL PAD AND STRIP FOUNDATIONS WILL HAVE THE FOLLOWING MINIMUM LAYERWORKS UNLESS SPECIFIED ELSEWHERE:
- EXCAVATE 0,15m EXTRA OVER BELOW FOUNDATION
- COMPACT BASE OF THE EXCAVATION TO AT LEAST 90% MOD. AASHTO DENSITY.
- BACKFILL IN LAYERS NOT EXCEEDING 150mm THICKNESS, USING G7 MATERIAL TO 93% MOD. AASHTO DENSITY.
- G7 MATERIAL SPECIFICATIONS:
  MINIMUM CBR AT 93% MOD. AASHTO DENSITY =15
  MAXIMUM PLASTICITY INDEX = 12%
  MINIMUM GRADING MODULUS = 1

F5. EXCAVATIONS IN WET CONDITIONS: REFER TO SABS 1200D EARTHWORKS.

F6. NO BASES ALLOWED ON BACKFILL - USE MASS CONCRETE BELOW BASES UNLESS OTHERWISE SPECIFIED.

F7. ENGINEER TO CONFIRM EXCAVATION LEVELS ON SITE. EXTRA EXCAVATION DOWN TO ACCEPTABLE MATERIAL SHALL BE BACKFILLED WITH MASS CONCRETE, UNLESS OTHERWISE SPECIFIED.

F8. ALL FOUNDATIONS, PILE CAPS AND BEAMS IN CONTACT WITH GROUND TO BE CAST WITH CONCRETE USING PC 25 (FA) CEMENT.

BACKFILL:

SOILCRETE:

BF1. SOILCRETE SHALL CONSIST OF AN APPROVED SOIL OR GRAVEL MIXED WITH 5% BY MASS OF PORTLAND CEMENT AND ONLY SUFFICIENT WATER TO GIVE IT A CONSISTENCY THAT WILL PERMIT THE SOILCRETE TO BE PLACED, USING VIBRATORS.

BF2. THE WATER AND CEMENT CONTENT SHALL BE CAREFULLY CONTROLLED TO GIVE A CONSISTENCY THAT WILL REQUIRE PLACEMENT BY A VIBRATOR.

BF3. THE MATERIAL USED FOR SOILCRETE SHALL BE SANDY GRANULAR MATERIAL OF THE FOLLOWING SPECIFICATIONS:

- MINIMUM GRADING MODULUS: 1.2
- MAXIMUM PLASTICITY INDEX: 10%
- MAXIMUM PARTICLE SIZE: 38mm
- DETRIMENTAL PERCENTAGE OF SILT & CLAY SHALL BE AVOIDED.

BF4. THE SOILCRETE SHALL BE MIXED ON SITE USING SUITABLE CONCRETE MIXERS AND THE WATER AND CEMENT CONTENTS SHALL BE CAREFULLY CONTROLLED.

BF5. SOILCRETE SHALL BE PLACED AND THOROUGHLY COMPACTED BY MEANS OF CONCRETE VIBRATORS SO THAT ALL VOIDS ARE FILLED.

LAYERWORKS:

BF6. REFER TO BULK EARTHWORKS DRAWINGS FOR LAYERWORKS UNDER ALL SURFACE BEDS.

BACKFILLING:

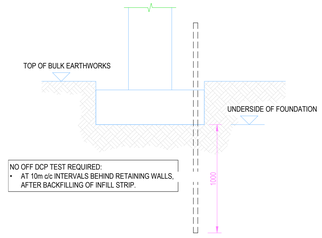
BF7. ALL BACKFILLING BEHIND RETAINING WALLS, BELOW SURFACE BEDS, UNDER STAIRS ON FILL SHALL BE G7 MATERIAL COMPACTED IN 150mm THICK LAYERS TO 95% MOD AASHTO DENSITY, UNLESS OTHERWISE SHOWN.

BF8. ALL MATERIAL USED FOR BACKFILLING IS TO BE TESTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER, UNLESS OTHERWISE SHOWN.

COMPACTION TEST:

BF9. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF ONE DENSITY TEST FOR EVERY 100 sq.m. BACKFILL LAYER COMPLETED.

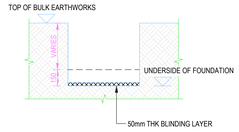
BF10. FOR EVERY BACKFILL LAYER TESTED BY MEANS OF A NUCLEAR GAUGE AT LEAST ONE SAND REPLACEMENT TEST MUST BE PROVIDED FOR THIS LAYER.



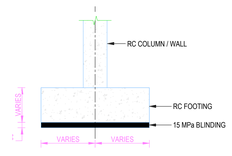
DCP TEST REQUIREMENT
1 : 20

SCENARIO 1: EXCAVATING BY HAND
1. EXCAVATE BY HAND AND CAST BLINDING LATER ON UNDISTURBED MATERIAL

SCENARIO 2: EXCAVATING USING MACHINERY
1 EXCAVATE WITH MACHINERY (FOR EXAMPLE EXCAVATOR) USING A BLADE (NO TEETH) TO 150mm ABOVE SOFFIT OF BLINDING LAYER
2 EXCAVATE THE BOTTOM 150mm THK LATER BY HAND
3 BLINDING LATER TO BE CAST ON UNDISTURBED MATERIAL



FOUNDATION EXCAVATION SPECIFICATION
1 : 20



TYPICAL SECTION THROUGH RC FOOTINGS
1 : 20

NOTES

1. DO NOT SCALE DRAWING - ONLY DIMENSIONS SHOWN TO BE USED.
2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS, DIMENSIONS AND LEVELS ON THE SITE AND NOTIFY THE NEC SUPERVISOR OF ANY VARIATIONS BEFORE CONSTRUCTION.
3. ALL LEVELS ARE IN METERS TO MEAN SEA LEVEL.
4. DRAWINGS MUST BE READ IN CONJUNCTION WITH PROJECT SPECIFICATIONS AND GENERAL NOTES DRAWINGS.
5. IF APPLICABLE, DRAWINGS SHALL BE READ IN CONJUNCTION WITH ARCHITECT'S DRAWINGS AND ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.

LOCALITY



LEGEND

SYMBOL	DESCRIPTION

NO.	DESCRIPTION	BY	CHKD	APPD	DATE
E1	FOR TENDER	RR	HVDM	HVDM	26 06 25

REVISIONS

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ZUTARI
IMPACT. ENGINEERED.

CONTRACTOR / CONSULTANT

TITLE	NAME	SIGN	DATE
DRAWN	W.BOTES		18 07 25
CHECKED	H. VAN DER MERWE		18 07 25
DESIGNED	R. RANGE		18 07 25
CHECKED	H. VAN DER MERWE		18 07 25

PR.ENG. / PR.TECH./PR. ARCH

NAME	H. VAN DER MERWE	DATE
SIGNATURE		18 07 25
REG. NUMBER	201270225	
TITLE	Pr. TechENG	

TRANSNET NATIONAL PORTS AUTHORITY

TITLE	NAME	SIGN	DATE
DRAWN			
CHECKED			
DESIGNED			
CHECKED			

PR.ENG. / PR.TECH./PR. ARCH

NAME		DATE
SIGNATURE		
REG. NUMBER		
SCALE	N.T.S.	

TRANSNET

Transnet National Ports Authority

TRANSNET SOC Ltd : REG No. 1990/000900/30
NEWARK ROAD
RICHARDS BAY TEL: 035 788 0067
PO BOX 181, RICHARDS BAY 3900, SOUTH AFIRCA

PROJECT / AREA / ASSET / SUBJECT/DRAWING TITLE

PORT OF RICHARDS BAY

PORT ROADS REHABILITATION & UPGRADE
(REPAIRS TO PORT ROADS)
CONCRETE STRUCTURAL NOTES

PAPER SIZE	TRANSNET DRW. NO.	REV.
A0	TBC	E1
	PROJECT DRG. NO.	REV.
	1006614-DRG-00-VT-CC-D004	T1