

STANDARD SPECIFICATIONS FOR CIVIL WORKS

THE FOLLOWING STANDARD SPECIFICATIONS ARE APPLICABLE. ALL WORK MUST COMPLY WITH THE RELEVANT SPECIFICATION.

THE LATEST PUBLISHED EDITION OF EACH SECTION SHALL APPLY.

SABS STANDARDIZED SPECIFICATION FOR CIVIL ENGINEERING WORKS

SABS 1200 A : GENERAL
SABS 1200 C : SITE CLEARANCE
SABS 1200 D : EARTHWORKS
SABS 1200 DB : EARTHWORKS (PIPE TRENCHES)
SABS 1200 DK : GABIONS AND PITCHING
SABS 1200 DM : EARTHWORKS (ROADS, SUBGRADE)
SABS 1200 GA : CONCRETE (SMALL WORKS)
SABS 1200 HA : STRUCTURAL STEELWORK
SABS 1200 HC : CORROSION PROTECTION STRUCTURAL STEELWORK
SABS 1200 L : MEDIUM PRESSURE PIPELINES
SABS 1200 LB : BEDDING (PIPES)
SABS 1200 LD : SEWERS
SABS 1200 LE : STORMWATER DRAINAGE
SABS 1200 LF : ERTF CONNECTIONS (WATER)
SABS 1200 M : ROADS GENERAL
SABS 1200 ME : SUBBASE
SABS 1200 MF : BASE
SABS 1200 MJ : SEGMENTED PAVING
SABS 1200 MM : ANCILLARY ROADWORKS

NOTES FOR EARTHWORKS

- E1 - TOPSOIL TO BE REMOVED, STOCK PILED AND USED AS DIRECTED ON THE DRAWINGS OR DISPOSED TO AN APPROVED SITE LOCATED BY THE CONTRACTOR
- E2 - CONTRACTOR TO OBTAIN A SOURCE OF SUITABLE MATERIAL THAT IS REQUIRED FOR ANY FILL MATERIAL. LABORATORY TEST RESULTS ARE REQUIRED FOR EACH TYPE OF FILL MATERIAL TO BE USED. APPROVAL FOR USE OF SUCH MATERIAL BY THE ENGINEER IS REQUIRED PRIOR TO THE WORK COMMENCING
- E3 - THE CONTRACTOR IS TO ARRANGE FOR THE PROCESS CONTROL TESTS FOR FILL AND IN-SITU WORK AS FOLLOWS:
- RELATIVE COMPACTION ON PLATFORM: 4 TESTS/1000m2 PER 150mm THICKNESS
 - RELATIVE COMPACTION ON ROAD FILL : 4 TESTS/100m PER LAYER
 - INDICATOR TEST : 1 FOR EACH TYPE OF MATERIAL
 - CBR/UCS : 1 FOR EACH TYPE OF MATERIAL
- E4 - PERMISSIBLE DEVIATION AS PER SABS 1200 D FOR A DEGREE OF ACCURACY I
- E5 - WATER SHALL NOT BE ALLOWED TO POND ON FINISHED LEVELS
- E6 - ALL CUT AND FILL SLOPES TO BE 1 VERTICAL : 3 VERTICAL UNLESS SPECIFIED OTHERWISE

NOTES FOR SEWER

- S1 - THE SEWER PIPES TO BE AS FOLLOWS (UNLESS SPECIFIED OTHERWISE):
- PVC : SOLID WALL CLASS 34 (HEAVY DUTY) TO SABS 791 IN YARDS OR CLASS 400 TO SABS 1601 FOR OUTFALL AND PIPES IN ROAD RESERVES
 - CAST IRON : SUPERCAST CAST IRON PIPES WITH MAGE NOMIC (OR APPROVED SIMILAR) STAINLESS STEEL COUPLINGS
- S2 - PIPE BELOW A CONCRETE SURFACE BED SHALL BE AS FOLLOWS:
- TYPE 1 (PREFERRED) : CAST IRON PIPE ENCASED IN CLASS 15/19 CONCRETE WITH MINIMUM THICKNESS OF 150mm WITH FLEXIBLE JOINTS (SOFTBOARD) AT EACH COUPLING
 - TYPE 2 (SECOND OPTION) : PVC PIPE IN A FLEXIBLE BEDDING AS PER SABS 1200 LB WITH A 100mm THICK CLASS 20/19 CONCRETE SLAB CAST OVER THE TRENCH (WITH 150mm EXTENSION PAST SIDE OF TRENCH WALL EACH SIDE) WITH AT LEAST 150mm COVER OVER PIPE SOFFIT
 - TYPE 3 (LEAST PREFERRED OPTION) : PVC PIPE ENCASED IN CLASS 15/19 CONCRETE WITH MINIMUM THICKNESS OF 150mm
- S3 - PIPE BEDDING TO BE ACCORDING TO SABS 1200 LB AS FOLLOWS:
- PVC : BEDDING FOR A FLEXIBLE PIPE
 - CAST IRON PIPE : BEDDING CLASS B (FOR RIGID PIPE)
- S4 - SEWER PIPE TO FALL AT A SLOPE OF AT LEAST 1:60 (UNLESS SPECIFIED OTHERWISE)
- S5 - SEWER PIPE DIAMETER TO BE 160mm UNLESS SPECIFIED OTHERWISE
- S6 - AIR PRESSURE TEST PIPE SYSTEM AS PER SABS 1200 LD
- S7 - TYPE OF COMPONENTS FOR THIS CONTRACT :
- MANHOLES : PRE-CAST CONCRETE RING MANHOLES 1 000MM DIA (UNLESS SPECIFIED OTHERWISE)
 - MANHOLE COVERS : PRE-CAST CONCRETE TYPE WITH STEEL BAND

NOTES FOR ROADS

- R1 - CUT MATERIAL TO BE REMOVED, STOCK PILED AND USED AS DIRECTED ON THE DRAWINGS OR DISPOSED TO AN APPROVED SITE LOCATED BY THE CONTRACTOR
- R2 - CONTRACTOR TO OBTAIN A SOURCE OF SUITABLE MATERIAL THAT IS REQUIRED FOR THE LAYERWORKS AS SPECIFIED. LABORATORY TEST RESULTS ARE REQUIRED FOR EACH TYPE OF LAYERWORK MATERIAL TO BE USED. APPROVAL FOR USE OF SUCH MATERIAL BY THE ENGINEER IS REQUIRED PRIOR TO THE WORK COMMENCING
- R3 - THE CONTRACTOR IS TO ARRANGE FOR THE PROCESS CONTROL TESTS FOR LAYERWORKS AS FOLLOWS:
- RELATIVE COMPACTION ON PARKING AREA : 4 TESTS/1000m2 PER EACH LAYER SEPARATELY
 - RELATIVE COMPACTION ON ROAD : 4 TESTS/100m PER EACH LAYER SEPARATELY
 - INDICATOR TEST : 1 FOR EACH TYPE OF MATERIAL
 - CBR/UCS : 1 FOR EACH TYPE OF MATERIAL
- R4 - WATER SHALL NOT BE ALLOWED TO POND ON FINISHED LEVELS
- R5 - ROAD SIGNS AND MARKINGS SHALL BE IN ACCORDANCE WITH THE SOUTH AFRICAN ROAD SIGNS MANUAL. THE FOLLOWING SPECIFIC CONDITIONS SHALL APPLY:
- SIZES FOR MARKINGS AND SIGNS TO BE BASED ON A DESIGN SPEED OF 40 km/h
 - SIGN BOARDS SHALL BE SHEET METAL CHROMADEK 1.6mm THICK WITH ENGINEERING GRADE CLASS 1 RETRO-REFLECTIVE MATERIAL
 - ROADMARKINGS TO BE WITH REFLECTORISED PAINT 100mm WIDE UNLESS SPECIFIED OTHERWISE

GENERAL

- G1 - THE ORDER OF PRECEDENCE OF THE DOCUMENTATION FOR THE WORKS IS:
- DRAWINGS
 - REVISIONS OR ADDITIONS TO THE STANDARD SPECIFICATIONS
 - STANDARD SPECIFICATIONS
 - SCHEDULE OF QUANTITIES
- G2 - STATUS OF EXISTING SERVICES:
- UNDERGROUND KNOWN SERVICE IF IT IS SHOWN ON A DRAWING
 - UNDERGROUND UNKNOWN SERVICE IF NOT REFLECTED ON DRAWINGS, BUT LOCATED ON SITE
 - ALL SERVICES ABOVE GROUND ARE DEEMED TO BE KNOWN SERVICES, IRRESPECTIVE WEATHER IT IS REFLECTED ON A DRAWING OR NOT
- G3 - EXISTANCE AND EXACT POSITION OF KNOWN SERVICES ARE TO BE CHECKED BY THE CONTRACTOR PRIOR TO ANY WORK BEING DONE IN THAT AREA
- G4 - CONTRACTOR TO INFORM THE ENGINEER OF ANY UNKNOWN SERVICE AS SOON AS IT IS LOCATED
- G5 - CONTRACTOR TO VERIFY ALL DETAILS PERTAINING TO THE CONNECTION TO ANY EXISTING SERVICE PRIOR TO THE WORK BEING DONE. ANY DISCREPANCIES WITH THE DRAWINGS SHALL BE REPORTED TO THE ENGINEER
- G6 - CONTRACTOR TO OBTAIN THE REQUIRED APPROVAL FROM THE AUTHORITY PROVIDING THE SERVICE FOR CONNECTING INTO SUCH A SERVICE

NOTES FOR DOMESTIC WATER

- W1 - THE WATER PIPES TO BE AS FOLLOWS (UNLESS SPECIFIED OTHERWISE):
- PVC : CLASS 16 TO SABS 966 OR SABS 946 PART 1 (mPVC NOT ALLOWED) WITH CAST IRON FITTINGS (ALUMINIUM AND COATED STEEL NOT ALLOWED) HIGH DENSITY POLY-ETHELYNE
 - HDPE: CLASS 16 TYPE IV TO SABS 533 PART 2 WITH COMPRESSION FITTINGS
 - STEEL PIPES <150mm : GALVANISED (TO SABS 763) MEDIUM DUTY SCREWED FOR TAPER THREAD JOINING TO SABS 62. USE TAPER MALLEABLE CAST IRON FITTINGS TO SABS 509 GALVANIZED TO SABS 763
 - STEEL PIPES >150mm : STEEL PIPES WITH WELDED ON FLANGES GRADE B (4,5mm THICKNESS UP TO 400mm PIPE) TO SABS 719 AND PROTECTED FROM CORROSION WITH AN EPOXY SYSTEM COMPRISING OF A PRIMER AND EPOXY RESIN PAINT (COPON EP 2300) WITH MINIMUM DRY THICKNESS OF 250 MICRON EPOXY SYSTEM TO BE APPLIED IN THE WORKSHOP
- W2 - FLEXIBLE PIPE SHALL BE uPVC FOR 63mm AND LARGER AND HDPE FOR 50mm AND SMALLER
- W3 - PIPE BEDDING TO BE ACCORDING TO SABS 1200 LB AS FOLLOWS:
- uPVC AND HDPE : BEDING FOR A FLEXIBLE PIPE
 - STEEL PIPE : BEDDING CLASS B (FOR RIGID PIPE)
- W4 - COVER OVER PIPE TO BE AT LEAST:
- 1 000mm AT ROAD CROSSINGS
 - 750mm ALL OTHER PLACES
- W5 - SHUT OFF VALVES TO BE GATE VALVE TO SABS 664 RIGHT HAND CLOSING AS FOLLOWS:
- 50mm AND LARGER : EPOXY COATED RSV GATE VALVE CLASS 16 NON RISING SPINDLE
 - 40mm AND SMALLER : BRONZE GATE VALVE PN25 WITH CAST IRON HAND WHEEL (NOT PRESSED STEEL) SCREWED FOR BSP
- W6 - ALL FLANGES TO BE FOR THE PIPE CLASS AND DRILLED TO SABS 1123
- W7 - STEEL PIPES BURIED UNDERGROUND SHALL BE WRAPPED IN A DENSO TAPE AND PVC PROTECTIVE WRAP SYSTEM
- W8 - PRESSURE TEST WHOLE SYSTEM FOR 1.25 TIMES THE CLASS OF THE PIPE

NOTES FOR STORMWATER

- SW1 - THE STORMWATER PIPES SHALL BE CONCRETE PIPES CLASS 75D ACCORDING TO SABS 677 WITH INTERLOCKING JOINTS
- SW2 - STORMWATER PIPES BELOW SURFACE BED UNDER BUILDINGS SHALL BE SPIGOT AND SOCKET JOINTS (WITH RUBBER RINGS) CONCRETE PIPES CLASS 75D ACCORDING TO SABS 677. PIPES TO BE ENCASED IN CLASS 15/19 CONCRETE WITH MINIMUM COVER OF 200mm WITH FLEXIBLE JOINTS (12mm SOFTBOARD) AT EACH JOINT
- SW3 - PIPE BEDDING TO BE ACCORDING TO SABS 1200 LB FOR CLASS B
- SW4 - STORMWATER PIPE TO FALL AT AN EVEN SLOPE BETWEEN CHAMBERS AS SPECIFIED ON THE DRAWINGS. THE MINIMUM SLOPE IS 1:100 UNLESS SPECIFIED OTHERWISE

NOTES FOR SERVICE DUCTS

- D1 - SERVICE DUCTS AND SLEEVES SHALL BE 160mm (OR DIAMETER AS SPECIFIED) CLASS 34 HEAVY DUTY SOLID WALL PVC (OR AS SPECIFIED IN DRAWINGS) SOCKETED PIPE
- D2 - ALL SLEEVES AND DUCTS TO BE SUPPLIED WITH A 2mm THICK DRAW WIRE WHICH IS TIED TO A MARKER BLOCK. THE CONCRETE MARKER BLOCK MUST REFLECT THE NUMBER OF SLEEVES, THE SERVICE AND DIRECTION
- D3 - SLEEVES UNDER ROADS SHALL HAVE A COVER OF AT LEAST 1000mm

GENERAL NOTES

- FIGURED DIMENSIONS ONLY TO BE USED.
- COORDINATES BASED ON WGS84
- LEVELS BASED ON MSL DATUM
- DISCREPANCIES, ERRORS AND OMISSIONS ARE TO BE REPORTED TO ENGINEER IMMEDIATELY THEY BECOME EVIDENT.
- SHOP DRAWINGS TO BE SUBMITTED FOR APPROVAL PRIOR TO MANUFACTURE OR INSTALLATION.
- COPYRIGHT AND RIGHT OF REPRODUCTION OF THIS DRAWINGS OR ANY PORTION THEREOF IS RESERVED.

Legend

Roof Line	
Section cut	
Proposed Walls	
Concrete Work	
Fittings on Proposed uPVC Water Pipeline (Class 16)	
Fittings on Proposed Sewer Line	
Overland Stormwater Drainage	

NOTES

1. Excavations for foundations and all reinforcing must be approved by the engineer before any concrete is cast.
2. All basss are symmetrical about the center lines unless otherwise shown.
3. Specifications:
- | | |
|--------------------------|------------|
| Reinforced concrete work | SABS 1200g |
| Structural steel work | SABS 1200h |
| Paintwork on steel | SABS 1200h |
4. Concrete work: all brickwork are load bearing and must be completed before commencing with the construction of the concrete slab
5. Minimum concrete cover:
- | | |
|---------|-------------|
| Bases | 75mm |
| Columns | 40mm |
| Beams | 25mm |
| Slabs | 12mm or dia |
6. Concrete: all ready mixed concrete will only be approved if a mix design and cement grading by SABS is submitted to the engineer.
7. Test cubes minimum must be tested by an independent soil laboratory.
8. All imported cement approved by the SABS must be approved by the engineer on the basis of:
- All cement must be bought in one batch and treated to SABS 1200g.
- A mix design must be submitted.
- 4 sets of 3 test cubes must be submitted with age of testing as follows:
- | |
|-------------------|
| 3 cubes @ 7 days |
| 3 cubes @ 14 days |
| 3 cubes @ 21 days |
| 3 cubes @ 28 days |
9. Concrete cube strength at 28 days:
- | | |
|------------------------|--------|
| Blinding | 15 MPa |
| Reinforced Foundations | 30 MPa |
| Columns | 40 MPa |
| Beams | 30 MPa |
| Slabs and Staircases | 30 MPa |

Rev	Date	Issued for	Approved
		Preliminary	
		Information	
00	26/11/2017	Tender Contract	
		Measurement	
		Construction	
		Approval	

Client:

THE INNOVATION HUB
AN INDEPENDENT ORGANISATION SERVING THE REGION

A subsidiary of the Economic Development and Employment Agency

Discipline	Signature	Pr Number	Date
Architecture			
Civil/Structural			

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Project Title:

Construction of BioPark Phase 1C
Extension to Phase with a Second Floor and Lift

Drawing Title: Standard Civils & Structural Notes PHG-NOTES	Designed by: Koketso Moraba, Civil & Structural Engineer
Date November 2017	Drawn by: Koketso Moraba, Civil & Structural Engineer
Scale NTS	Checked by: TS Wankwanyiri, PrEng

