

## FOR TENDER

### A: STEELWORK NOTES:

THE FOLLOWING MUST BE ADHERED TO UNLESS OTHERWISE STATED:
1.1 ALL MATERIAL, FABRICATION AND ERECTION OF STRUCTURAL STEEL TO COMPLY WITH SANS 10162-1:2005/SANS 2001-CS1.
1.2 HOT ROLLED STEELWORK SHALL BE GRADE 350W OR S355J.
1.3 COLD FORMED SECTIONS CAN BE COMMERCIAL GRADE STEEL.
1.4 HOLLOW SECTIONS TO HAVE A MINIMUM YIELD STRESS FY=250 MPa.
1.5 ALL BOLTS TO BE GRADE 8.8.
1.6 BOLTS SHALL NOT HAVE THREADS WITHIN THEIR SHEAR PLANES.
1.7 HOLDING DOWN BOLT SHANKS TO BE DEGRADED BEFORE EMBEDDING IN CONCRETE
1.7 ALL WELDS TO E70XX, U.O.N.
1.8 WELDS SHALL CONFIRM TO SANS 0167- 1984,SANS 10044 AND SPECIFICATIONS.
1.9 ALL WELDS TO BE EITHER CONTINUOUS FULL PENETRATION GROOVE WELDS OR 6mm CONTINUOUS FILLET WELDS, U.O.N.
1.10 ALL WELDS TO BE MACHINED TO FORM A SMOOTH SURFACE.
1.11 NO SITE FLAME-CUTTING OR WELDING IS PERMITTED.
1.12 ALL FILLET WELDS TO HAVE A MINIMUM WELD THROAT THICKNESS OF 5mm OR AT LEAST THE THICKNESS OF THE THINNER SECTION AFTER SURFACE TREATMENT.
1.13 FOR EXPLANATION OF WELDING SYMBOLS, REFERENCE SHOULD BE MADE TO SANS 10044-2:2004.
1.14 HOLES MUST BE PUNCHED OR DRILLED AT STANDARD GAUGES AND BACK MARKS BASED ON THE REQUIREMENTS OF SANS 10162-1:2005, CLAUSE 22.6.
1.11 THE CONTRACTOR MUST SUBMIT DETAILED WORKSHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO MANUFACTURE. ONLY SIZES OF STRUCTURAL MEMBERS, CONNECTIONS AND SPLICES WILL BE CHECKED. FINAL DIMENSIONS AND THE CORRECT FITTING OF MEMBERS SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR.
1.12 THE ENGINEER MUST INSPECT THE STRUCTURAL STEEL IN THE WORKSHOP PRIOR TO GALVANIZING OR PAINTING. ENGINEER TO BE NOTIFIED AT LEAST 24 HOURS BEFORE PAINTING OR SENDING OFF TO GALVANIZER.
1.13 WHERE THE TEMPORARY BRACING IS NECESSARY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, ERECTION, MAINTENANCE AND REMOVAL (WHERE NECESSARY) OF SUCH SUPPORTS.
1.14 IF SPLICES IN TRUSSES ARE REQUIRED BECAUSE OF TRANSPORT, THE CONTRACTOR MUST SUBMIT A PROPOSAL TO THE ENGINEER TIMEOUSLY FOR WRITTEN APPROVAL.
1.15 ALL DIMENSIONS SHALL BE CHECKED ON SITE BEFORE SHOP DRAWINGS COMMENCE. ANY DISCREPANCIES SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER.
1.16 ALL STEELWORK MUST BE COMPLETELY MANUFACTURED BEFORE TRANSPORTATION TO THE SITE. THIS WILL INCLUDE CLEANING AND PRIMING AS PER THE RELEVANT PAINT SPECIFICATION.
1.17 WHERE APPLICABLE, GROUT SHALL BE PROVIDED UNDER BASE PLATES BEFORE ANY PRIMARY LOADS ARE APPLIED TO THE STRUCTURE.
1.18 THE CONTRACTOR IS RESPONSIBLE FOR STABILIZING THE STRUCTURE AND MAINTAINING IT IN THE CORRECT POSITION DURING ERECTION.
1.19 THE ENGINEER SHALL BE RESPONSIBLE FOR THE PRODUCTION OF ALL DESIGN DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PRODUCTION OF ALL FABRICATION AND ERECTION DRAWINGS. AN A3 SIZE HARD COPY OF ALL FABRICATION AND ERECTION DRAWINGS ARE REQUIRED BY THE ENGINEER FOR REVIEW PRIOR TO FABRICATION COMMENCING. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBLE.
1.20 DIMENSION ON THE DRAWINGS DO NOT ALLOW FOR ERECTION CLEARANCE. FABRICATION DRAWINGS MUST ALLOW FOR SUFFICIENT CLEARANCE FOR ERECTION PURPOSES.
1.21 AS-BUILT ON SITE DIMENSION TO BE TAKEN BY THE CONTRACTOR PRIOR TO FABRICATION TO ENSURE BUILT STRUCTURAL FRAME IS WITHIN TOLERANCE TO ENABLE EASE OF ERECTION OF STEEL MEMBERS.
1.22 ALL CONNECTION THAT ARE NOT FULLY DETAILED ON THE ENGINEER'S DRAWING ARE TO BE DESIGNED AND DETAILED BY THE CONTRACTOR'S DESIGNER FOR THE FORCES AND/OR SPECIFIED ON THE ENGINEER'S DRAWINGS. IF THESE ARE NOT SPECIFIED ON THE ENGINEER'S DRAWINGS THE FOLLOWING APPLIES:
A. BEAMS: CONNECTIONS TO BE AS SHOW IN THE SAISC HANDBOOK FOR STANDARD END CONNECTIONS FOR STRUCTURAL STEEL BEAMS, BUT ALSO ABLE TO TRANSMIT A SHEAR FORCE OF HALF THE SHEAR CAPACITY OF THE BEAM SECTION.
B. COLUMNS: SPLICE CONNECTIONS TO TRANSMIT THE COMPRESSIVE CAPACITY OF THE COLUMN SECTION.
C. CROSS-BRACING: CONNECTION TO TRANSMIT THE FULL TENSION CAPACITY OF THE BRACING SECTION.
D. COMPRESSIVE BRACING: CONNECTIONS TO TRANSMIT THE COMPRESSIVE CAPACITY OF THE BRACING MEMBER FOR ITS SPECIFIED LENGTH.
E. THE CONTRACTOR'S DESIGN CALCULATIONS FOR ALL THE CONNECTIONS TO BE SUBMITTED WITH THE FABRICATION DRAWINGS.
1.23 ALL BOLTED CONNECTIONS TO HAVE MINIMUM OF TWO M16 GRADE 8.8 UNLESS NOTED OTHERWISE.
1.24 MINIMUM EDGE DISTANCE AND SPACING OF BOLTS AS PER SANS 106212 UNLESS OTHERWISE NOTED. MECHANICAL AND CHEMICAL ANCHORS TO HAVE MINIMUM EDGE DISTANCES AND SPACING AS REQUIRED BY THE MANUFACTURER FOR SPECIFIED LOADS.
1.25 SLOTTED HOLES TO ALLOW FOR 12.5MM ADDITIONAL SPACE EITHER SIDE WITH TOTAL OF 25MM UNLESS NOTED OTHERWISE.
1.26 FABRICATOR TO SUPPLY ALL BOLTS SITE BOLTS TO BE SUITABLY BAGGED AND LABELLED.
1.27 WHERE HIGH STRENGTH FRICTION GRIP BOLTS ARE SPECIFIED ON DRAWINGS THEY ARE TO BE GRADE 8.8S AND ARE TO BE TENSIONED IN ACCORDANCE WITH THE 'TURN OF THE NUT' METHOD DESCRIBED IN SANS 10094.
1.28 THE CONNECTING OR FAYING SURFACES OF HSFG BOLTED CONNECTION ARE TO BE PREPARED IN ACCORDANCE WITH SANS 10094 FOR A FRICTION COEFFICIENT OF 0.35 (BLAST CLEANED, PAINTED WITH INORGANIC ZINC RICH PAINT WITH DFT GREATER THAN 0.1MM).
1.29 WELDING TO COMPLY WITH AWS D1-1:90 SPECIFICATION AND TO BE CARRIED OUT BY CERTIFIED WELDERS. ON SITE FILLET WELDING PERMITTED BUT LIMITED AS MUCH AS POSSIBLE.
1.30 ALL BUTT WELDS TO DEVELOP THE FULL STRENGTH OF THE SECTIONS BEING JOINED UNLESS NOTED OTHERWISE.
1.31 TESTING OF WELDS TO NON-PROCEDURES, TECHNIQUES AND ACCEPTANCE CRITERIA AS PER REQUIREMENTS OF AWS D1.1
1.32 ALL GUSSET PLATES TO BE 8MM THICK MINIMUM.
1.33 ALL ARCHITECTURALLY EXPOSED STEELWORK TO HAVE MARKINGS GROUND OFF AND SMOOTHED.
2. CORROSION PROTECTION & PAINTING.
2.1 PAINTING.
2.1.1 CLEAN ALL STEELWORK PRIOR TO PAINTING BY SANDBLASTING.
2.1.2 ALL PAINTING AND CORROSION PROTECTION MUST BE APPLIED AS PER SPECIFICATIONS.
2.1.3 DAMAGED AREAS OF PAINT SHALL BE MADE GOOD ON SITE IN ACCORDANCE WITH SANS 1200.
2.1.4 STRUCTURAL STEEL BELOW GROUND LEVEL SHOULD BE PAINTED TWO COATS OF EPOXY COAL TAR BEFORE BACKFILLING.
2.1.5 CLEAN DOWN WITH GALVANIZED IRON CLEANER. APPLY WITH 3M SCOTCHBRITE PAD, LEAVE ON FOR 5 MINUTES AND WASH OFF WITH FRESH WATER AND ALLOW TO DRY.
2.1.6 PRIMER - BEFORE TRANSPORTING STEEL TO SITE, APPLY TWO COATS ZINC BASED PRIMER (E.G. RED OXIDE) IN THE WORKSHOP WITH A MINIMUM DRY FILM THICKNESS OF 25 MICRON.
2.1.6 PATCH DAMAGED AREAS OF PRIMER ON SITE WITH ZINK-BASED COATING ON SITE PRIOR TO ERECTION.
2.1.7 FINAL COATS - APPLY TWO COATS OF ENAMEL PAINT (COLOUR TO ARCHITECT'S SPEC.).
2.2 GALVANIZING.
2.2.1 ALL BOLTS, PURLINS, PLATES AND STRUCTURAL ELEMENTS TO BE HOT DIP GALVANISED IN ACCORDANCE WITH SANS 121(ISO 1461:2009).

### B: GENERAL CONSTRUCTION:

1. STRUCTURAL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE CONTRACT SPECIFICATION. RELEVANT SANS 1200 SPECIFICATION SANS 10400 NATIONAL BUILDING REGULATIONS, DBI CONSULTING ENGINEERS SPECIFICATION AND NOTES ON THIS DRAWING.
2. THE CONTRACTOR IS RESPONSIBLE FOR CORRECT SETTING OUT ON PLAN AND LEVEL OF THE BUILDINGS ON SITE TO THE ISSUED SETTING OUT PLAN OF THE ARCHITECTS. ANY DISCREPANCY FOUND BETWEEN THIS AND THE SITE CONDITION ARE TO BE BROUGHT TO THE PROJECT TEAMS ATTENTION.
3. THE CONSTRUCTION WORK SHOULD BE TO DEGREE OF ACCURACY II OF THE RELEVANT SECTION OF SANS 1200 UNLESS NOTED OTHERWISE FOR SPECIFIC ITEMS.
4. FOR INSPECTIONS REQUIRED ON STRUCTURAL ITEMS TWO DAYS NOTICE IS REQUIRED BY THE ENGINEER.
5. ALL TEMPORARY PROPPING IS THE RESPONSIBILITY OF THE CONTRACTOR AND IS TO BE DESIGNED AND SIGNED-OFF BY AN APPROVED TEMPORARY WORKS DESIGNER.
6. THE CONTRACTOR IS TO IDENTIFY AND EXPOSE, WHERE RELEVANT, ALL UNDERGROUND SERVICES ONSITE.
7. THE FIRE RATING OF THE STRUCTURE IS AS PER THE FIRE DESIGN OF THE FIRE ENGINEER.
8. STRUCTURAL DESIGN AND SUPPLY ITEMS ARE TO HAVE DESIGNS BY A PROFESSION REGISTERED ENGINEER WITH VALID PROFESSIONAL INDEMNITY. THESE DESIGNS ARE TO BE SUBMITTED TO THE ENGINEER FOR REVIEW ALONG WITH SUITABLE WORKS DRAWINGS.
9. THE CONTRACTOR IS TO SUBMIT FABRICATION DRAWINGS FOR ALL DESIGN AND SUPPLY ITEMS TO THE ENGINEER FOR REVIEW PRIOR TO START OF CONSTRUCTION OF THESE ITEMS. THE CONTRACTOR IS TO ALLOW WORKING DAYS REVIEW OF FABRICATION DRAWINGS.
10. THE CONTRACTOR IS RESPONSIBLE TO DRAFT AND AGREE THE CONSTRUCTION PROGRAMME AND ASSOCIATED INFORMATION REQUIRED SCHEDULE WITH THE PROJECT TEAM AT APPOINTMENT OR SOON THEREAFTER. UNTIL SUCH TIME AS THIS IS AGREED THE ENGINEER CANNOT BE HELD RESPONSIBLE FOR LATE INFORMATION.
11. WHERE MANUFACTURE'S PRODUCTS ARE SPECIED AN EQUIVALENT PRODUCT MAY BE USED AFTER PRIOR WRITTEN APPROVAL BY THE ENGINEER. FOR THE APPROVAL A FULL SPECIFICATION DOCUMENT OF THE ALTERNATIVE.

### C: DRAWINGS:

1. THE CONTRACTOR IS TO KEEP A FULL SET OF DRAWINGS ON SITE IS TO BE KEPT UP TO DATE AS PER THE CURRENT DBI CONSULTING ENGINEERS DRAWINGS ISSUE REGISTER.
2. DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.
3. ALL LEVELS ON STRUCTURAL DRAWING ARE STRUCTURAL LEVELS AND NOT NECESSARILY FINISHED LEVELS.
4. ALL ELEMENTS CENTERED ON GRIDS IF NOT DIMENSION OTHERWISE. IF DIMENSIONS ARE MISSING ON THE DRAWING THE CONTRACTOR IS TO NOTIFY THE ENGINEER FOR CLARITY.
5. STRUCTURAL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, CIVIL, SERVICE ENGINEERING AND OTHER PROJECT SPECIFIC DRAWINGS. IF DISCREPANCIES ARE FOUND THIS IS TO BE HIGHLIGHTED TO THE RELEVANT PROJECT MEMBERS PRIOR TO CONSTRUCTION.
6. ONLY PENETRATION LARGER THAN 300X300MM ARE SHOWN ON STRUCTURAL DRAWINGS. SMALLER PENETRATION AND SLEEVE LOCATION TO BE APPROVED BY THE ENGINEER BY SET OUT OF APPROVED ARCHITECTURAL OR SERVICE ENGINEERING DRAWINGS

### D: PARTICULAR SPECIFICATION

1. REFER TO BRICKWORK DETAILS DRAWINGS FOR GENERAL DETAILS AND NOTES

### E: DEMOLITION

1. REFER TO ARCHITECTURAL DRAWINGS FOR ALL EXISTING BUILDING DEMOLITIONS TO OCCUR.
2. THE DEMOLITION CONTRACTOR IS TO DO ALL NECESSARY HEALTH AND SAFETY ASSESSMENTS PRIOR TO AND DURING DEMOLITION INCLUDING HAZARDOUS MATERIAL CHECKS INCLUDING ASBESTOS.
3. DURING DEMOLITION ALL EXISTING FOUNDATION TO BELOW GROUND IN THE FOOTPRINT OF AN NEW ADDITION IS TO BE EXPOSED AND REMOVED
4. A QUALIFIED ASBESTOS SPECIALIST SHOULD BE APPOINTED AS PER THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO. 85 OF 1993); ASBESTOS ABATEMENT REGULATIONS 2020 (GOVERNMENT NOTICE R1196 IN GG 43893 OF 10 NOVEMBER 2020)

### F: BRICKWORK & BLOCKWORK NOTES:

1. ALL BRICKWORK / BLOCKWORK SHOWN ON ENGINEER'S DRAWINGS ARE LOAD BEARING U.O.N. OR SHOWN FOR CLARITY PURPOSES.
2. ALL LOADBEARING, HOLLOW BLOCK WORK TO BE FILLED WITH GRADE 15 MPa/19MM MASS CONCRETE.
3. ALL SETTING OUT OF BRICKWORK / BLOCKWORK TO BE DONE FROM ARCHITECT'S DRAWINGS.
4. REFER TO THE ARCHITECTS DRAWINGS FOR GENERAL LAYOUT OF BRICKWORK OR BLOCKWORK AND CONTROL JOINTS IN BRICKWORK OR BLOCKWORK.
5. THE MINIMUM CRUSHING STRENGTH OF ALL LOADBEARING BRICKWORK SHALL BE 14MPa U.O.N. AND LOAD BEARING BLOCK WORK 7MPa U.O.N.
6. THE MINIMUM CRUSHING STRENGTH OF MORTAR SHALL BE AS FOR CLASS II MORTAR IN ACCORDANCE WITH TABLE 1 SABS 0164 UNLESS INDICATED OTHERWISE ON DRAWINGS.
7. BRICKFORCE:
- 7.1 ALL BRICKFORCE SHALL BE GALVANISED.
- 7.2 LOAD BEARING BRICKWORK SHALL BE REINFORCED WITH AN APPROVED BRICKFORCE EVERY SECOND LAYER AND NON-LOADBEARING BRICKWORK EVERY FOURTH LAYER U.O.N.
- 7.3 LOAD BEARING BLOCKWORK SHALL BE REINFORCED WITH APPROVED BRICKFORCE EVERY LAYER AND NON-LOAD BEARING BLOCKWORK EVERY SECOND LAYER U.O.N.
- 7.4 IN ADDITION, CONTINUOUS BRICKFORCE IS REQUIRED IN EVERY LAYER FOR THE FIRST FOUR LAYERS ABOVE AND BELOW THE TOP OF FOUNDATIONS & SLABS, OVER WINDOWS AND DOOR OPENINGS, EXTENDING AT LEAST 1m BEYOND BOTH SIDES OF THE OPENING. MINIMUM LAPS TO BE 300mm. OUTSIDE WIRE OF BRICKFORCE TO BE CONTINUOUS AT CORNERS.
8. NON-LOAD BEARING BRICKWORK/BLOCKWORK MAY NOT BE BUILT CLOSER THAN 10mm FROM THE SOFFITS AND SIDES OF BEAMS AND SLABS U.O.N AND ONLY AFTER ALL PROPS HAVE BEEN REMOVED. REFER TO STANDARD DETAILS.
9. WHERE BRICKWORK/BLOCKWORK AND CONCRETE JOIN, V-JOINTS ARE TO BE MADE THROUGH THE TOTAL THICKNESS OF THE PLASTERWORK.
10. LOADBEARING BRICKWORK OVER SLABS IS TO BE COMPLETED BEFORE THE NON-LOADBEARING BRICKWORK UNDER SLABS.
11. PLACE 2 LAYERS OF DPC BETWEEN SLAB SOFFITS AND LOAD BEARING BRICKWORK OR BLOCKWORK.
12. ALL BRICKWORK SHALL BE FIXED TO CONCRETE & STEEL COLUMNS BY MEANS OF HOOP IRON EVERY FOURTH COURSE AND BLOCKWORK EVERY SECOND COURSE.
13. IN CAVITY WALLS, WALL TIES SHALL JOIN THE LEAVES AND SHALL BE EMBEDDED IN MASONRY JOINTS AT RIGHT ANGLES TO THE LEAVES AS THE WORK PROGRESSES.
14. THE NUMBER OF WALL TIES PER m<sup>2</sup> OF WALLING SHALL BE:
- 14.1 75mm > CAVITY - 3.7 TIES/m<sup>2</sup>
- 14.2 75mm < CAVITY < 100mm - 3.0 TIES/m<sup>2</sup>
- 14.3 100mm < CAVITY < 150mm - 5.0 TIES/m<sup>2</sup>
15. ENSURE THAT EACH TIE IS EMBEDDED TO A DEPTH OF AT LEAST 50mm IN THE MORTAR JOINT OF EACH LEAF.
16. CLAY BRICKS TO BE WETTED BEFORE BEING USED BUT CONCRETE BRICKS AND BLOCKS TO BE KEPT DRY BEFORE BEING USED.
17. ALL CHASES SHALL BE VERTICAL AND SHALL NOT BE GREATER THAN 25mm DEEP BY 40mm WIDE. A MAXIMUM OF 750mm LONG HORIZONTAL CHASE WILL BE ACCEPTED. NO DIAGONAL CHASES WILL BE ACCEPTED.

### G: CONCRETE NOTES:

1. ALL CONCRETE WORKS TO BE TO SANS 2001-CC1 (PREVIOUSLY SABS 1200G) CONSTRUCTION WORKS. CONCRETE WORKS (STRUCTURAL), THE CONTRACTOR IS TO HAVE A CODE AVAILABLE AT ALL TIMES ON SITE AND IS TO BE AWARE OF THE REQUIREMENTS LAID OUT IN THIS CODE.
2. CONCRETE STRENGTH AT 28 DAYS SHALL BE:  
BLINDING - 15 MPa / 19mm  
FOUNDATIONS - 30 MPa / 19mm  
SURFACE BEDS - 25 MPa / 19mm  
COLUMNS - 30 MPa / 19mm  
BEAMS - 30 MPa / 19mm  
SLABS - 30 MPa / 19mm
3. NO CONCRETE SHALL BE POURED UNTIL THE EXCAVATION, BLINDING, FORMWORK AND/OR REINFORCEMENT ETC. HAS BEEN INSPECTED AND APPROVED IN WRITING BY THE ENGINEER. ENGINEER TO BE GIVEN A MINIMUM OF 48-HOURS NOTICE OF SUCH AN INSPECTION.
4. THE CONTRACTOR MUST CO-ORDINATE ALL SERVICES DRAWINGS FOR DETAILS AND POSITIONS OF OPENINGS AND SLEEVES REQUIRED FOR STORMWATER, SEWERAGE, DRAINAGE, ELECTRICAL, MECHANICAL AND OTHER SERVICES. DISCREPANCIES TO BE BROUGHT TO THE ATTENTION OF ENGINEER AND OTHER RELEVANT PARTIES.
5. THE CONTRACTOR MUST OBTAIN PERMISSION FROM THE ENGINEER BEFORE ANY OPENINGS OR SERVICES, WHICH ARE NOT INDICATED ON THE DRAWINGS, MAY BE INTRODUCED THROUGH ANY STRUCTURAL ELEMENT OR CLOSE TO ANY COLUMN.
6. CURING OF CONCRETE SHALL BE CARRIED OUT STRICTLY IN ACCORDANCE WITH SABS 1200 G CLAUSE 5.6. THE CONTRACTOR TO PROVIDE A METHOD STATEMENT, TO BE APPROVED BY ENGINEER, FOR THE CURING PROCEDURES OF THE VARIOUS ELEMENTS CONCERNED BUT ALL SURFACES TO BE KEPT CONTINUOUSLY DAMP FOR AT LEAST 7 DAYS AFTER CASTING. CONCRETE SLABS TO BE COVERED WITH MOIST SAND OR COVERED WITH PLASTIC MEMBRANE DURING THIS PERIOD. CONCRETE COLUMNS TO BE WRAPPED IN A PLASTIC MEMBRANE DURING THIS PERIOD.
7. STRIPPING TIMES OF SHUTTERING AND PROPPING SHALL BE IN ACCORDANCE WITH SABS 1200 G CLAUSES 5.2.5 AND TABLE 2 AS REPRODUCED IN THE STRUCTURAL NOTES AND SPECIFICATIONS.
8. PROPPING MAY ONLY BE REMOVED ONCE SUSPENDED SLABS OR BEAMS HAVE OBTAINED THEIR 28 DAY STRENGTH, U.O.N. ALL SUSPENDED SLABS AND BEAMS TO BE BACK-PROPPED FOR TWO (2) COMPLETED LEVELS BELOW THE PROPPED LEVEL OF THE RELEVANT BEAM OR SLAB.
9. DOWNSTAND AND UPSTAND BEAM DIMENSIONS ARE GIVEN AS  
B x A WHERE  
A = TOTAL DEPTH OF BEAM INCLUDING SLAB THICKNESS  
B = WIDTH OF BEAM
10. CONCRETE POURED IN EXCESS OF THREE METERS HIGH WILL NOT BE ACCEPTED WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
11. ALL COLUMNS ARE PLACED SYMMETRICALLY ON GRID LINES U.O.N.
12. 100mm KICKERS FOR COLUMNS AND WALLS HAVE BEEN ALLOWED FOR IN THE REINFORCING LENGTHS. THEY SHALL BE CAST WITH THE SAME STRENGTH AS THE CONCRETE ELEMENTS BELOW THEM AND THOROUGHLY COMPACTED AND CURED.
13. CONCRETE MIX DESIGNS ARE TO BE PROVIDED BY THE CONTRACTOR FROM THEIR PREFERRED SUPPLIERS TO THE ENGINEER FOR APPROVAL. IF WATERPROOFING ADDITIVES ARE CALLED FOR, SUCH AS "PENETRON" THESE ARE TO BE INCLUDED IN THE APPROPRIATE MIX DESIGN TO THE MANUFACTURER'S.
14. THE CONCRETE STRENGTHS SHALL BE AS LISTED BELOW AND MINIMUM COVER.

ELEMENT	CONCRETE GRADE	AT DAY	AGGREGATE SIZE(MAX)	COVER TO SOIL FACE	COVER ELSEWHERE
BLINDING	10 MPa	28	19mm	N/A	N/A
CAVITY WALL INFILL	25 MPa	28	19mm	N/A	N/A
FOUNDATIONS	30 MPa	28	19mm	75 mm	50 mm
ALL OTHER RC ELEMENTS	30 MPa	28	19mm	50 mm	30 mm

15. THE SURFACE BED MIX IS TO BE A LOW SHRINKAGE MIX DESIGN.
16. CONCRETE FINISHES TO BE THE FOLLOWING AS PER TABLE 1 OF SANS 2001-CC1:  
A. ROUGH-BLINDING BELOW FOUNDATIONS.  
B. SMOOTH-ALL CONCEALED/COVERED CONCRETE SURFACE.  
C. SMOOTH-SPECIAL-ALL EXPOSE ARCHITECTURAL CONCRETE SURFACE TO FINISH AND EXTENT AS SPECIFIED BY THE ARCHITECT
17. ALL EXPOSED CONCRETE CORNERS TO HAVE A 25X25MM CHAMFER, UNLESS NOTED OTHERWISE ON DRAWINGS BY THE ARCHITECT.
18. ALL CONCRETE FORMWORK AND PROPPING SHALL BE PROVIDED BY CONTRACTOR IN ACCORDANCE WITH SANS 2001-CC1, AND THE CONTRACTOR SHALL APPOINT A TEMPORARY TO CARRY OUT THE DESIGN OF SUCH FORMWORK AND PROPPING.
19. ALL CONCRETE SHALL BE STRIPPED IN ACCORDANCE WITH SANS 2001-CC1 UNLESS NOTED OTHERWISE
20. ALL CONCRETE WORK TO BE ADEQUATELY CURED AND PROTECTED DURING CURING IN ACCORDANCE WITH SANS 2001-CC1 UNLESS NOTED OTHERWISE.
21. TESTING OF CONCRETE AND FREQUENCY, THEREOF SHALL BE AS PER 2001-CC1:  
A. SAMPLE SHALL BE TWO SETS OF THREE CUBES, EACH SET FOR TEST AT 7 AND 28.  
B. ONE SET OF CUBES SHALL BE TAKEN FOR EACH DAYS CASTING PER CONCRETE GRADE/MIX AS A MINIMUM, OR ONE SET PER 50M<sup>3</sup> OF A PARTICULAR CONCRETE GRADE/MIX USED EACH DAY FOR HIGHER VOLUMES.  
C. THE TESTS ARE TO BE CARRIED OUT BY A CERTIFIED INDEPENDENT TESTING LABORATORY AND TEST RESULTS ARE TO BE SUBMITTED TO THE ENGINEER BY THE CONTRACTOR FOR APPROVAL.  
D. EACH RESULT SHALL CLEARLY SPECIFY THE SAMPLE BEING TESTED AND WHERE THIS BATCH OF CONCRETE WAS USED ON THE PROJECT INCLUDING SPECIFIC ITEM REFERENCE NUMBERS. NO TEST RESULT SHALL BE ACCEPTED BY THE ENGINEER IF THIS INFORMATION IS NOT SUPPLIED.  
E. THE CONTRACTOR IS TO MONITOR THE EARLY TEST RESULTS AS AN INDICATION OF STRENGTH GAIN RELATING TO STRIPPING TIMES.

### H: REINFORCEMENT AND MESH

1. THE REINFORCEMENT SHALL BE IN ACCORDANCE WITH SANS 920 WITH HIGH TENSILE AND TENSILE YIELD STRESS 450MPa AND 250MPa RESPECTIVELY.
2. BARS TO BE CUT AND BENT TO SANS 282 UNLESS SPECIFIED OTHERWISE.
3. MINIMUM COVER AS SPECIFIED IN CONCRETE SPECIFICATION ABOVE IS TO BE ENSURED WITH APPROPRIATE PLASTIC OR CONCRETE SPACERS (OF SAME OR BETTER STRENGTH), NO BRICKS OR STEEL BARS TO BE USED AS SPACERS.
4. ALL WELDED FABRIC MESH TO BE IN ACCORDANCE WITH SANS 1024 WITH MINIMUM YIELD STRESS OF 485MPa WITH LAPS AS LISTED BELOW UNLESS NOTED OTHERWISE. MESH REFERENCES AS PER TABLE BELOW.

MESH REF	NOMINAL WIRE SIZE (mm)	PITCH (mm)	AREA (mm <sup>2</sup> /2m)	MASS (KG/m2)	LAPS (mm)
617	10	200	393	6.16	300
385	8	200	251	3.95	300
311	7.1	200	198	3.11	300
245	6.3	200	156	2.45	200
193( OR 195)	5.6	200	123	1.93	200

### I: SURFACE BED NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. CONCRETE STRENGTH AT 28 DAYS SHALL BE 25 MPa / 19mm U.O.N
3. DAMPROOFING MEMBRANE TO BE INSTALLED UNDER SURFACE BEDS U.O.N
4. FINISHES: MECHANICAL POWERLOADED
5. ABBREVIATIONS:  
IJ - ISOLATION JOINTS  
SCJ - SAW CUT JOINT  
EJ - EXPANSION JOINT  
CJ - CONSTRUCTION JOINT
6. PROVIDE 19mm IJ AROUND ALL CONCRETE COLUMNS, STEEL COLUMNS AND AGAINST BRICK AND CONCRETE WALLS. AFTER CONCRETE HAS SET, JOINTEX TO BE RAKED OUT 19mm DEEP AND SEALED WITH APPROVED JOINT SEALANT. JOINTS TO BE TAKEN THROUGH FINISHES TO ARCHITECT'S DETAILS.
7. REFER TO STANDARD DETAILS FOR IJ, SCJ, EJ AND CJ.
8. METHOD STATEMENT FOR POURING OF SURFACE BED PANELS TO BE APPROVED BY THE ENGINEER.
9. SAW-CUT JOINTS SHALL BE DONE AS SOON AS CONCRETE IS FIRM ENOUGH NOT TO DAMAGE THE EDGES, USUALLY BETWEEN 6-16 HOURS, BUT NOT LATER THAN 48 HOURS. JOINTS TO BE REPEATED IN FINISHED SURFACES.
10. SURFACE-BEDS TO BE MESH REF 245 REINFORCED AS INDICATED ON THE TYPICAL DETAILS WITH A DAMP-PROOF MEMBRANE (DPM) BELOW AS REQUIRED BUT A MINIMUM OF 250 MICRON THICK.
11. LAYER WORKS UNDER SURFACE-BED TO BE AS PER DETAILS PROVIDED BUT MINIMU OF TWO 150mm LAYER OF G6 MATERIAL OR BETTER COMPACTED TO 95% MOD AASHTO AT +/- 1% OPTIMUM MOISTURE CONTENT.
12. SOIL POISON APPLICATION TO ARCHITECT'S SPECIFICATIONS.
13. SURFACE-BED CONCRETE MIX TO BE LOW SHRINK MIX AND CONCRETE FINISH TO BE AS PER ARCHITECT'S REQUIREMENTS. CONCRETE TO BE CURED FOR A MINIMUM OF 7 DAYS BY SUITABLE METHOD SUCH AS PLASTIC COVERING.
14. SAW-CUT JOINTS TO BE MADE WHEN CONCRETE HARDNESS IS SUCH AS NOT TO BE TORN OR DAMAGED THE CUTTING BLADE (TYPICALLY BETWEEN 12 TO 24 HOURS AFTER CASTING), JOINTS NOT TO EXCEED 30X SLAB THICKNESS.
15. ARCHITECTURAL NON-LOAD BEARING WALLS CAN BE BUILT OFF SURFACE-BED TO A MINIMUM HEIGHT GIVEN BELOW BY APPROVAL OF THE ENGINEER.

SURFACE BED THICKNESS(mm)	SINGLE SKIN 115mm WALL MAXIMUM HEIGHT(m)	DOUBLE SKIN 230mm WALL MAXIMUM HEIGHT(m)
125	3.0	NOT ALLOWED
150	3.0	NOT ALLOWED
170	3.0	NOT ALLOWED

### J: STRUCTURAL TIMBER

1. ALL STRUCTURAL TIMBER SHALL BE IN ACCORDANCE WITH SANS 1245, LAMINATED TIMBER TO SANS 1460.
2. ALL STRUCTURAL TIMBER TO BE A MINIMUM GRADE OF S5 OR AS SPECIFIED.
3. ALL STRUCTURAL TIMBER DELIVERED TO SITE WITH SHOULD BE MARKED WITH THE RELEVANT TIMBER GRADE.
4. ALL EXPOSED TIMBER SHALL BE SEALED WITH AN EXTERIOR GRADE WOOD SEALANT.
5. ALL DESIGN AND SUPPLY TIMBER TRUSSES TO BE DESIGNED BY A PROFESSIONAL REGISTERED ENGINEER WITH VALID PROFESSIONAL INDEMNITY INSURANCE. TIMBER TRUSS DRAWINGS AND CALCULATION TO BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION COMMENCING. UNFACTORED LOADS TO BE USED FOR THE TIMBER ROOFS WITH SHEETING SHALL BE THE FOLLOWING UNLESS NOTED OTHERWISE ON DRAWINGS:  
A.IMPOSED DEAD (EXCLUDING TRUSS/RAFTER) = 75 KG/SMQ  
B.IMPOSED LIVE = AS PER SANS 10160-2 BUT MINIMUM OF 30 KG/SMQ  
C.WIND LOADING = AS PER SANS 10160-3

### K: WATER PROOFING

1. ALL VERTICAL BEHIND RETAINING STRUCTURES TO BE AS PER DETAILS SUPPLIED BY THE ENGINEER OR WATERPROOFING SPECIALIST. WATERPROOFING MEMBRANE TO BE APPROVED BY THE ENGINEER AND APPLICATOR TO BE REGISTERED WITH THE PROFESSION WATERPROOFING ASSOCIATION OF SOUTH AFRICA AND PROVIDE THE NECESSARY WARRANTY SPECIFIED IN THE CONTRACT DOCUMENTS.
2. ALL HORIZONTAL WATERPROOFING SPECIFICATION AND DETAILS AS PER ARCHITECTS DRAWINGS AND SPECIFICATIONS.
3. REFER TO PARTICULAR DRAWINGS AND SPECIFICATION FOR FULL EARTHWORKS AND LAYERWORKS REQUIREMENTS BUT AS A MINIMUM THE FOLLOWING NOTES APPLY
2. SELECTED FILL MATERIAL TO COMPLY WITH THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE (G7 MATERIAL):  
A.LIQUID LIMIT LESS 30%  
B.PLASTICITY INDEX LESS THAN 10%  
C.LINEAR SHRINKAGE LESS THAN 5%  
D MAXIMUM PARTICLE SIZE OF 100MM  
E CBR NOT LESS THAN 15 AT 95% MOD. AASHTO  
F MINIMUM GRADE MODULUS OF 6.72

3. AT BASE OF EXCAVATIONS ALL LOOSE MATERIAL TO BE REMOVED AND BOTTOM TO BE COMPACTED TO 93% MOD. AASHTO
4. UNLESS OTHERWISE STATE FILL TO BE PLACED IN 150MM LAYER WITH MOISTURE CONTENT WITH 1% OF OPTIMUM MOISTURE CONTENT COMPACTED TO 93% MOD. AASHTO FOR LOWER LAYERS AND 95% MOD. AASHTO FOR TOP TWO LAYERS.
5. TESTING OF COMPACTION BELLOW SURFACE BEDS AS PER CIVIL ENGINEER'S REQUIREMENTS BUT A MINIMUM OF:  
A.FIELD DENSITY TESTS AT A RATE OF ONE TEST PER 150SQM PER LAYER.  
B.A SAND REPLACEMENT TEST PER 10 TROXLER TESTS IS REQUIRED, EVENLY SPREAD OVER THE LAYER.  
C.POSITIONS OF THE TEST TO BE SHOWN ON A PLAN ISSUED TO THE ENGINEER WITH TEST RESULTS FOR APPROVAL.
6. ALL TOPSOIL IS TO BE STORED ON SITE FOR REUSE IN STOCKPILES NOT HIGHER THAN 1.5M HIGH IN A POSITION AGREED WITH THE CLIENT, UNLESS NOTED OTHERWISE.
7. TOLERANCE OF TOP OF PLATFORM BELLOW SURFACE BEDS TO BE +/- 15MM.

No.	DATE	AMENDMENT	NAME
A	15/02/2022	Issued for Tender	V.C

end user client



engineering agent



principal consultant



discipline
STRUCTURAL

### REPLACEMENT OF STRUCTURES BUILT WITH INAPPROPRIATE MATERIALS ON CLUSTER 1 SCHOOLS

district	Mothoeng Municipality
EMIS number	440304241
project number	RFP 019/2020
drawing title	DR. BLOK SECONDARY SCHOOL
	NOTES
designed	V. CHIYA (Pr. Tech Eng. No.: 201830015)
drawn	D. MASHAVHA (Pr. Techn. Eng. (Cand) No.: 2019701775)
checked	M. DITIBANE (Pr. Tech No.: 2018300061)
date	FEBRUARY 2022
scale	1 : 100
sheet size	A0
revision	A
drawing number	DBI-SE-2101-001