UNIVERSITY OF JOHANNESBURG

PROGRAM : NATIONAL DIPLOMA: BUILDING

SUBJECT : **QAUNTITY SURVEYING 3**

CODE : **QSG 331**

DATE : 11 JANUARY 2017- SSA EXAMINATION

DURATION : 08:00 - 12:00 (240 minutes)

WEIGHT : 50 : 50

TOTAL MARKS : 200

EXAMINER : MR N. ANSARY

MODERATOR : MRS K. CLOETE

NUMBER OF PAGES: 4 PAGES INCLUDING THE COVER PAGE AND 4 MARKING RUBRICS & 3 DRAWINGS

INSTRUCTIONS : STUDENTS MAY RETAIN THE QUESTION PAPER BUT HAND IN THE DRAWINGS.

PLEASE READ THE INSTRUCTIONS OVERLEAF

REQUIREMENTS : 16 SHEETS OF DIMENSION PAPER.

INSTRUCTIONS TO CANDIDATES:

CANDIDATES ARE STRONGLY ADVISED TO READ THESE INSTRUCTIONS

1. SIGN AND DETACH ALL DRAWINGS, SCHEDULES AND HAND IN WITH ANSWER BOOKS
2. ***Answer all the questions. Read the question carefully before making any enquiries into this paper.***
3. ***ALL work is to be measured strictly in accordance with the relevant and latest Standard System of Measurement.***
4. Scaling will not be allowed, unless dimensions are not given and could not be calculated
5. Where dimensions are not given they should be calculated or measured from the drawings.
6. Candidates are to assume their own specifications where workmanship and/or materials that are not mentioned.
7. In marking papers, 5 % of the marks will be given for systematic and orderly method of "taking off", well referenced and accurate dimensions and clear descriptions of work.
8. **Work to be measured strictly in construction sequence or as per the rubric**

QUESTION 1

Demonstrate your ability by measuring/taking off quantities for the **Garden Wall** as per attached Drawing No. QUSU 3/0 BK 12(N). Use the dimension paper provided.

(73)

Notes & Specifications:

- *Specifications on the drawing shall apply*

QUESTION 2

Demonstrate your ability by measuring/taking off quantities for the **SUBSTRUCTURE** ***to the Steel framed structure*** complete as per attached Drawing No. 1988/3/4.Use the dimension paper provided. **(27)**

Notes & Specifications:

- *Clear site 1500 mm beyond the entire building*
- *All excavation in pickable material and substructure is*

measured up to NGL

- *Measure the working space, 1500 mm away from base*
- *Backfill with selected excavated material to 90% Mod AASHTO*
- *Surplus material to be carted off site*
- *75 mm thick concrete blinding under all bases being 15 Mpa 19 mm stone*
- *All reinforced concrete in bases is 30 Mpa 19 mm stone*
- *All formwork is F1 (rough) quality in foundations*

QUESTION 3

Demonstrate your ability by measuring/taking off quantities for the **STEEL FRAMED STRUCTURE** complete as per attached Drawing No's. 1988/3/4. Use the dimension paper provided. **(57)**

Notes & Specifications:

- *Structural roof truss components all joints are fillet welded*
- *Bolted joints as indicated on drawing*
- *Grouting 20 mm thick 1:2 cement & sand*
- *20mm Ø rag bolts cast in concrete*
- *The column is fixed to the truss with the aid of tow 12mm thk plates and four 20mm Ø bolts*
- *The bottom plate (cap plate) is fillet welded to the top or head of the column whilst the top plate (foot plate) is welded to the foot of the rafter and tiebeam of the truss.*
- *The base plate is fillet welded to the bottom of the column*
- *The mass of the 12mm thk plate is 94 kg and the 20mm plate is 157 kg per m²*
- *The purlins are bolted to the cleats with 10mm Ø bolts(2 per cleat)*

4/...

QUESTION 4

Demonstrate your ability by measuring/taking off quantities for the **SUPER-STRUCTURE** complete as per attached Drawing No. QUSU 3/0 RCS 12 (N). Use the dimension paper provided. **(43)**

Notes & Specifications:

- *All reinforced concrete in bases, beams and slabs are 20 Mpa 19 mm stone except where indicated on the drawing.*
- *The super structure is measured from the NGL and columns to u/s of beams and not to u/s of slab as per principles*
- *Smooth formwork to all exposed surfaces*
- *Measure clause 11 and 12 from horizontal from top to bottom as 12000 mm overall and from left to right at 5.500 mm*

Total Marks [200]

Please note that some items in the rubric/s have to be measured separately as they are lumped together in the rubric.

Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.

Student Name:.....

Student No.:.....

Assessment scheme/Marking Rubric/Assessment criteria

Measurement of a Garden Wall		
QUESTION 1	Score	Achieved
Collections to the Garden Wall (20 x ½)	10	
Descriptions & Dimensions:- Excvt for trenches & B/fill, Eo excavation (10 x ½)	5	
Descriptions & Dimensions:- Excavate for holes, B/fill, Eo for SR (10X½)	5	
Descriptions & Dimensions:- ROC to sides of excavations, Kefow (10X½)	5	
Descriptions & Dimensions:- Mass concrete 15 Mpa, to ftgs, B/fill etc (8 x ½)	4	
Descriptions & Dimensions: Mass concrete to bases (8 x ½)	4	
Descriptions & Dimensions:- 1 bRk wall and c.o.p bwk, Mass bwk to piers, Ddt b/fill and Add Spread level surplus material & level (22 x ½)	11	
Descriptions & Dimensions:- 1bk wall b/sides fce. C.o.p EOOB for fcgs, Fair cutting fce brks to squint quoin or birdsmouth angle (28 x ½)	14	
Descriptions & Dimensions:- Precast elements- precast coping. C.o.p etc (20 x ½)	10	
Good taking off principles:- page no's, sign posting & following instructions	5	
Total Marks	73	

Students to please note that marks will be allocated strictly as above.

Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.

Student Name:.....

Student No.:.....

Assessment scheme/Marking Rubric/Assessment criteria

Measurement of Substructure to Steel Structure		
QUESTION 2	Score	Achieved
Descriptions & Dimensions:- Clear site (4 x ½)	2	
Descriptions & Dimensions:- Excvt for holes (6X ½)	3	
Descriptions & Dimensions:- Roc & working space, kefow (16X ½)	8	
Descriptions & Dimensions:- Rough formwork to bases (4X ½)	2	
Descriptions & Dimensions:- RC blinding to bases, B/fill & ca (8 X ½)	4	
Descriptions & Dimensions:- RC to bases, B/fill & ca (8 X ½)	4	
Good taking off principles:- page no's, sign posting and referencing & following instructions	4	
Total tonnage (16 x ½)		
Total Marks	27	

Students to please note that marks will be allocated strictly as above.

Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.

Student Name:.....

Student No.:.....

Assessment scheme/Marking Rubric/Assessment criteria

Measurement of Steel Framed Configuration		
QUESTION 3	Score	Achieved
Descriptions & Dimensions:- 400 x 500 x 20mm base plate (8 x ½)	4	
Descriptions & Dimensions:- Universal I section (8 x ½)	4	
Descriptions & Dimensions:- 300 x 400 x 12mm footplate & cap plate (10 x ½)	5	
Descriptions & Dimensions:-20mm Ø Anchor ragbolts (6 x ½)	3	
Descriptions & Dimensions:- Trusses and components- 89 x 89 x 8.5kg mild steel angle sections all in roof trusses- to tie beams, rafters, struts etc (42 x ½)	21	
Descriptions & Dimensions: 102 x 76 x10.6 kg/ Unequal angle purlins, purlin cleats etc (16 x ½)	8	
Descriptions & Dimensions: Mild steel bolts 10& 20mm (12 x ½)	6	
Descriptions & Dimensions:- cement grouting (4 x ½)	2	
Good taking off principles:- page no's, sign posting & following instructions	4	
Total Marks	57	

Students to please note that marks will be allocated strictly as above.

Please note: Neatly detach the marking rubric and attach it to the front of your dimension paper (take off). That is to the front of every question, to be handed in for evaluation.

Student Name:.....

Student No.:.....

Assessment scheme/Marking Rubric/Assessment criteria

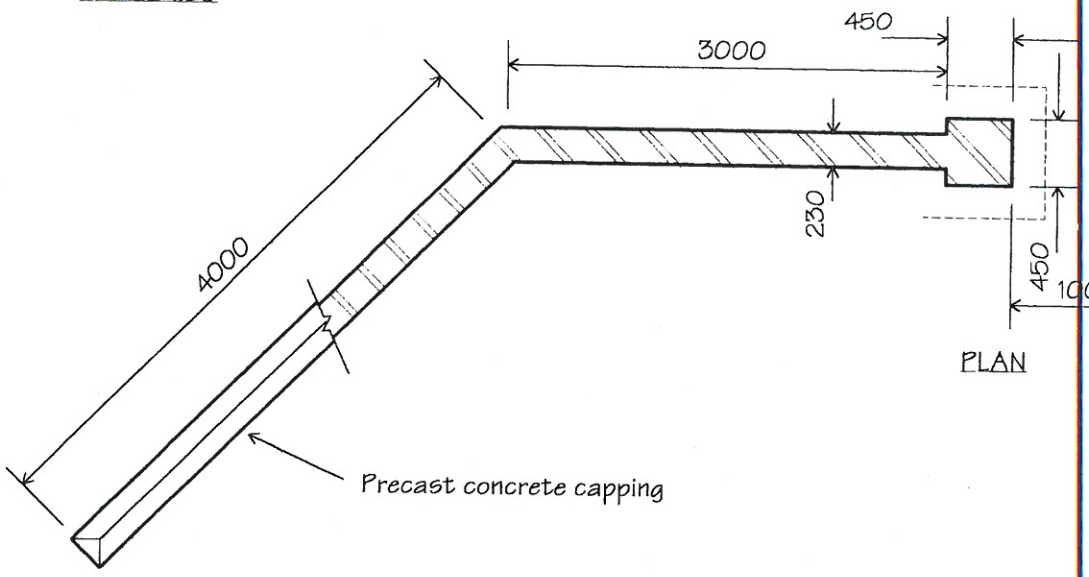
Measurement of RCF building:- Superstructure		
QUESTION 4	Score	Achieved
Descriptions & Dimensions:- Smooth formwork to cols (14 x 1/2)	7	
Descriptions & Dimensions:- RC to cols (8 x 1/2)	4	
Descriptions & Dimensions:- RC to slabs inclusive of beams (12 x 1/2) Clause 2 - 6th edition SSM	6	
Descriptions & Dimensions:- Smth frmwrk to soffit of slabs (6 x 1/2)	3	
Descriptions & Dimensions:- Smooth formwork to soffits and sides of beams **(Clause 11)** (16 x 1/2)	6	
Descriptions & Dimensions:- Smooth formwork to soffits and sides of beams **(Clause 12)** (10 x 1/2)	5	
Collections for beams (16 x 1/2)	8	
Good taking off principles:- page no's, sign posting, referencing & following instructions	4	
Total Marks	43	

Students to please note that marks will be allocated strictly as above.

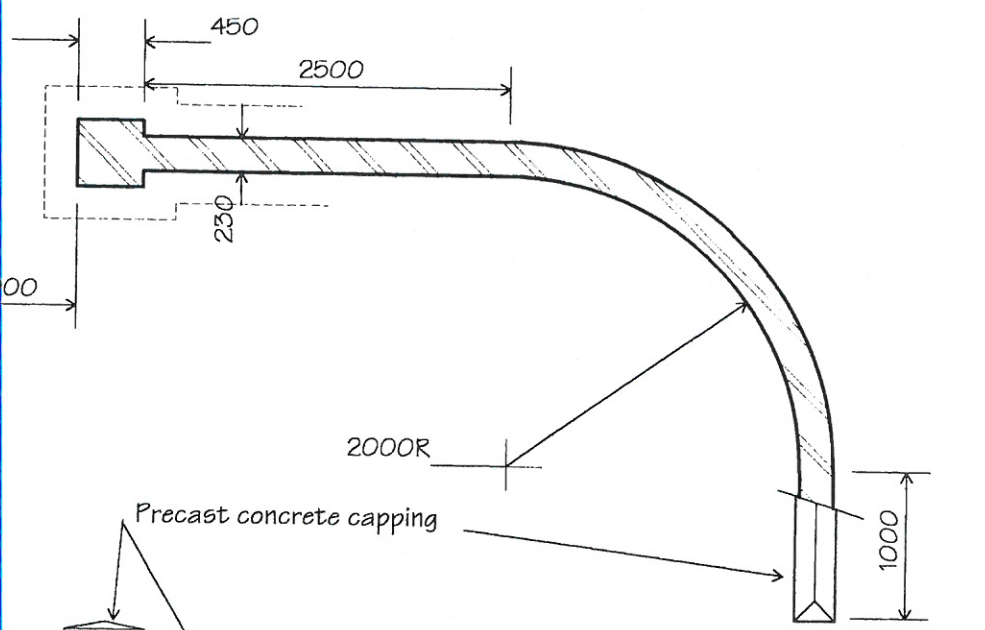
GARDEN WALL AND GATE

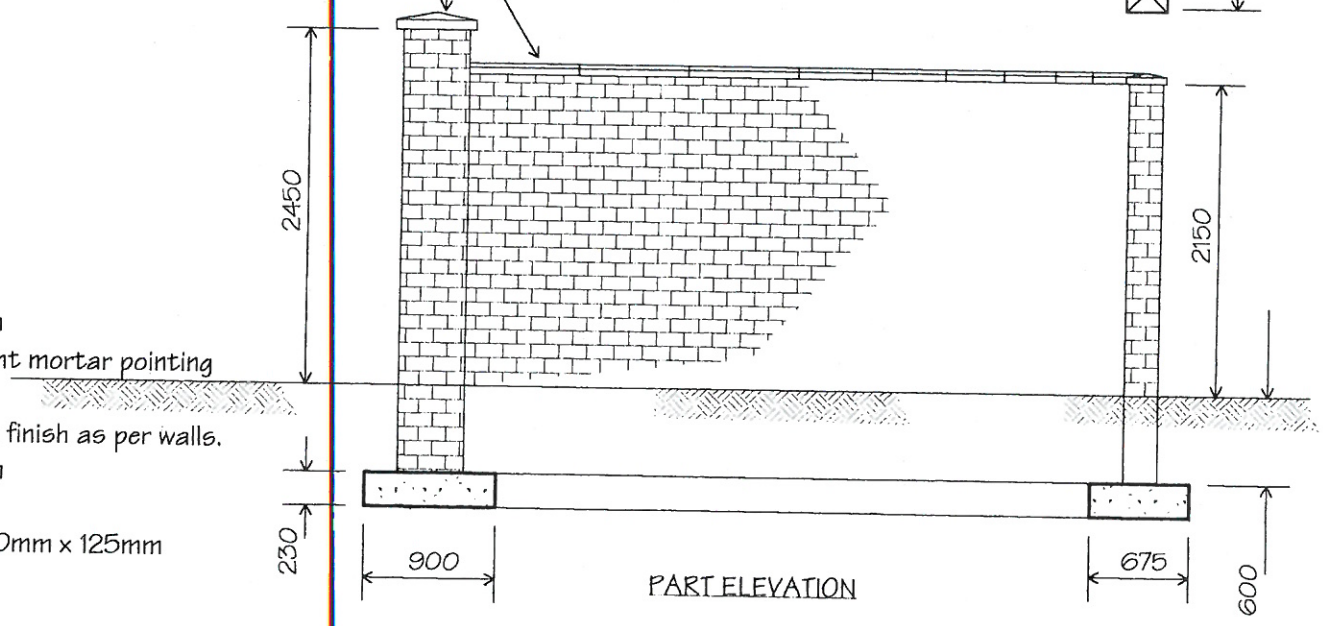
DRAWING No. QUSU 3/0 BK 12(N)

SCALE 1:50



PLAN



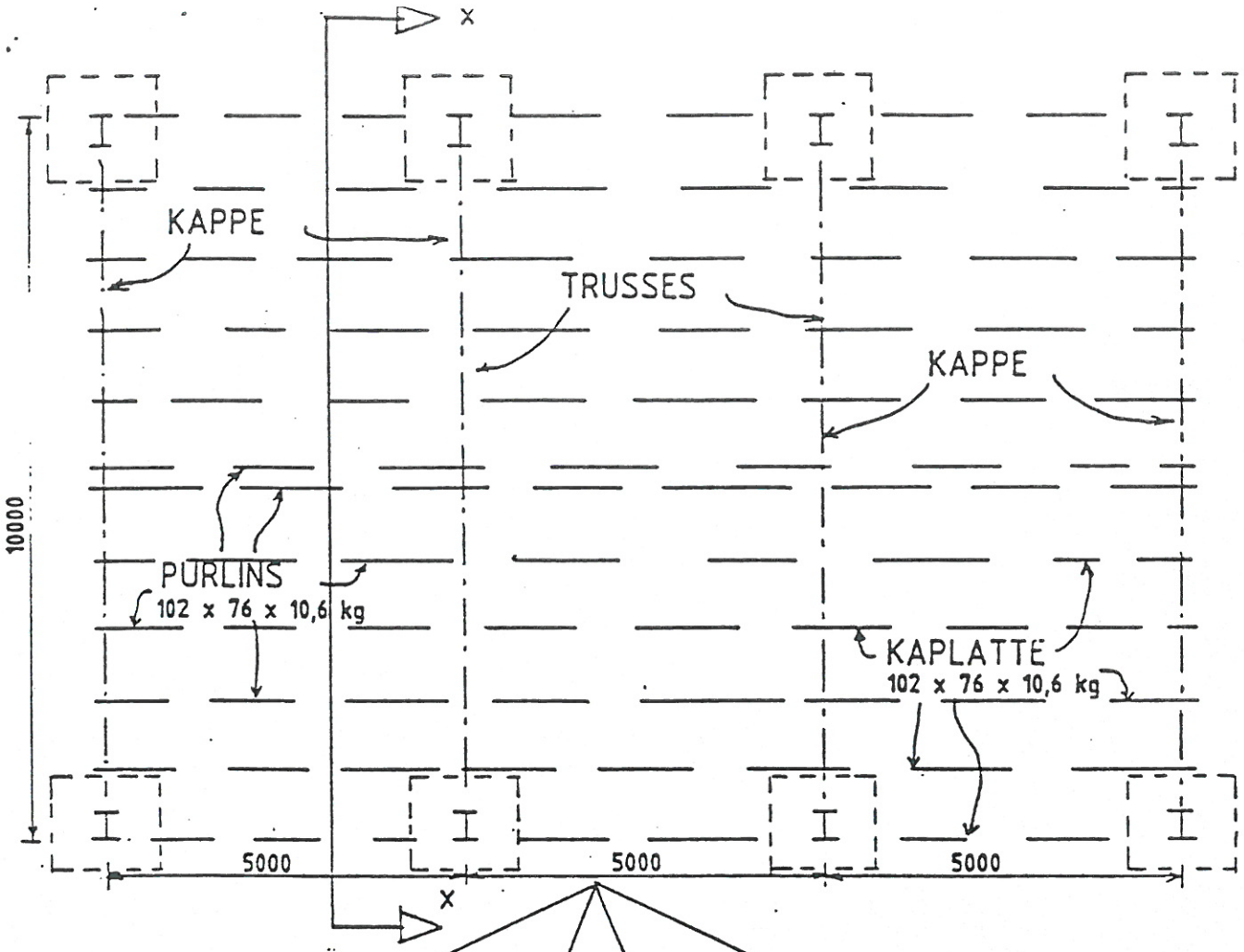


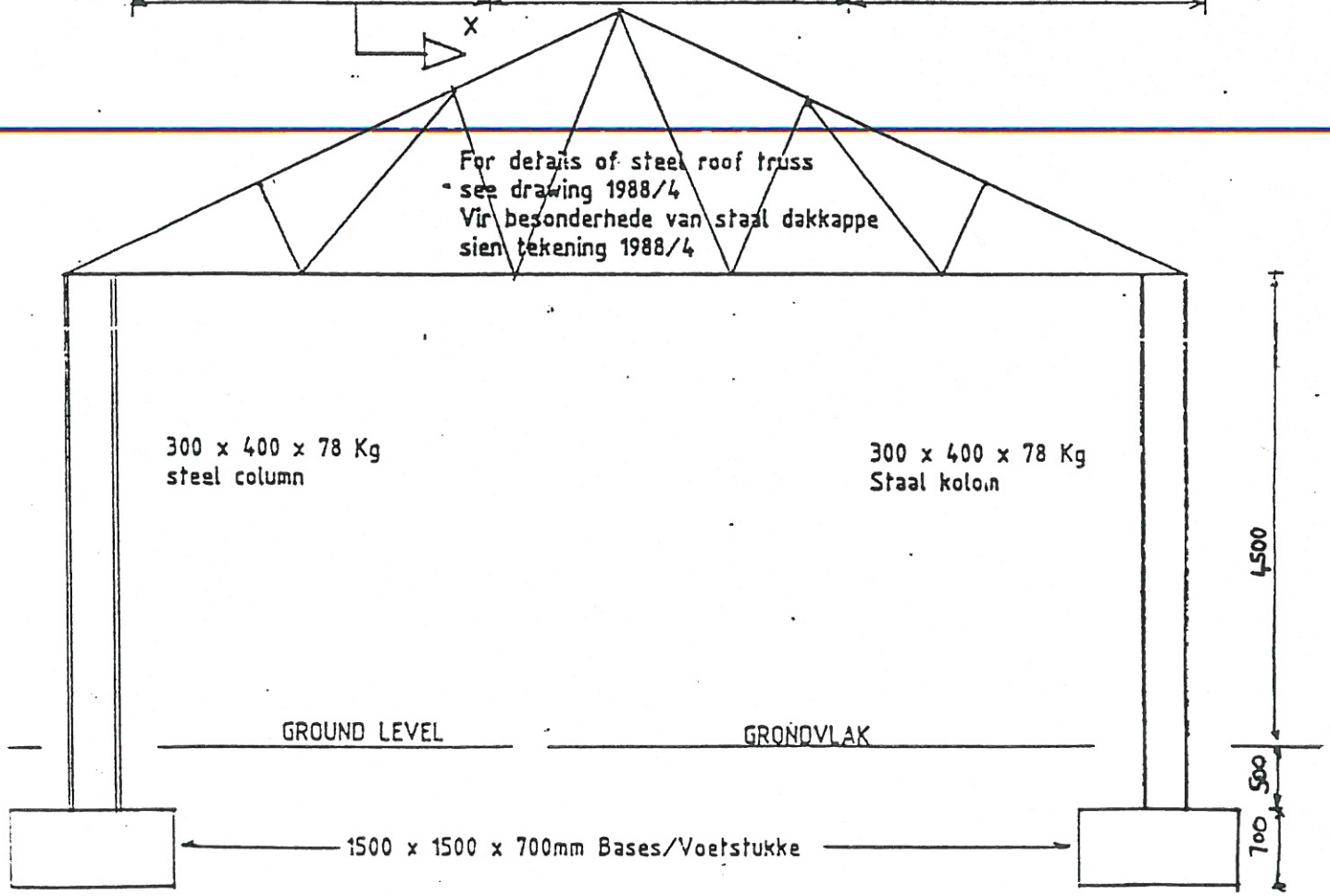
PART ELEVATION

Specification

Backfill with selected excavated material in 150mm layers to 80% Mod AASHTO.
Surplus excavated material spread and levelled on site.
Allow 15% for soft rock.
15 MPa (13mm stone) in concrete footings.
All brick walls in concrete stock bricks in 1:4 cement mortar in English bond with Inca Rockface Kay facebricks with 1:3 cement mortar pointing and square recessed joints.
Brick piers in concrete stock bricks in 1:4 cement mortar with finish as per walls.
Precast concrete capping to top of one brick wall size 275mm wide x 75mm high with top double weathered.
Precast concrete capping to top of brick piers size 550 x 550mm x 125mm high with top weathered on all sides.

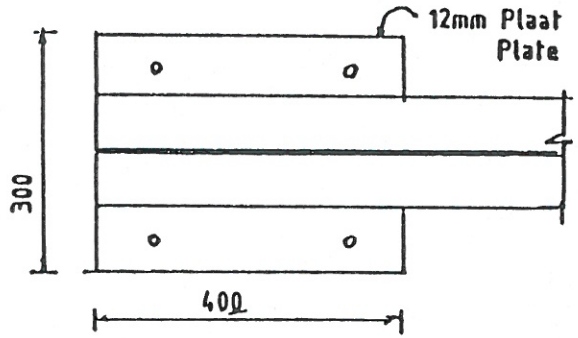
Gate elsewhere detailed.



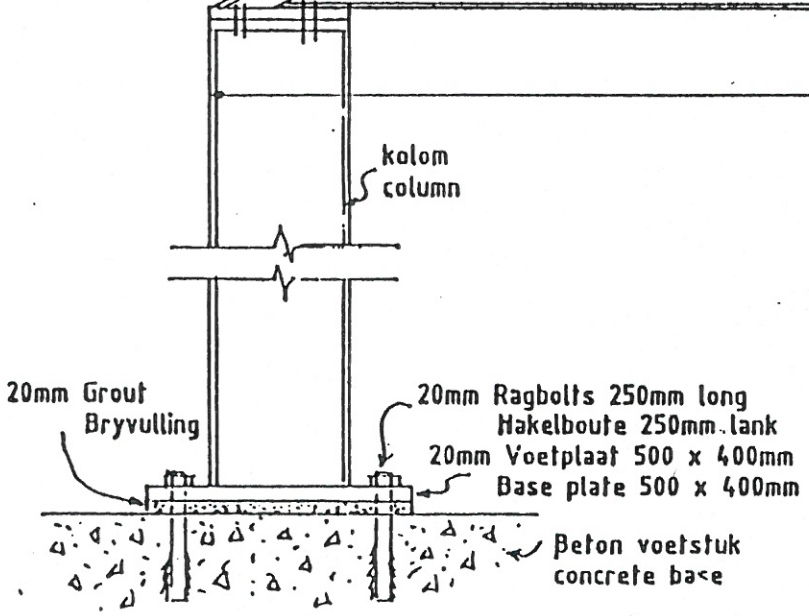


SECTION X-X SNIT

DRAWING No. 1988/3
TEKENING Nr. 1988/3

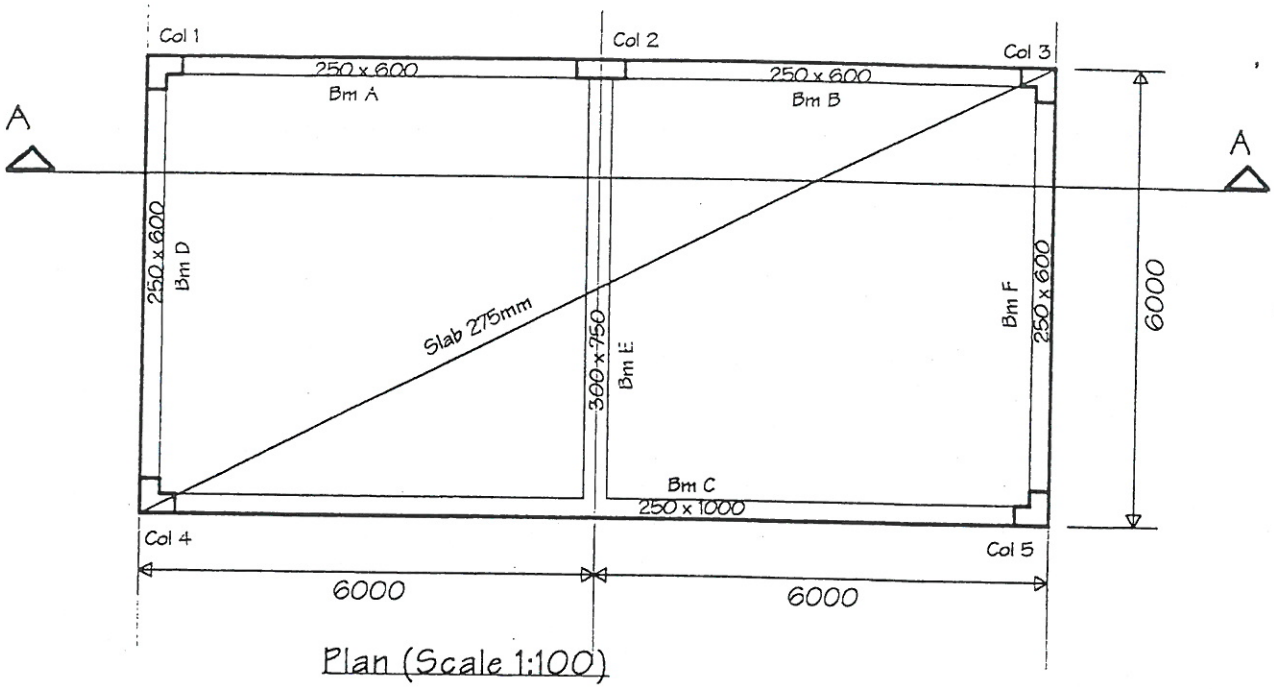


PLAN DETAIL OF PLATE AT FOOT OF TRUSS
PLAN DETAIL VAN KAP SE VOETPLAAT

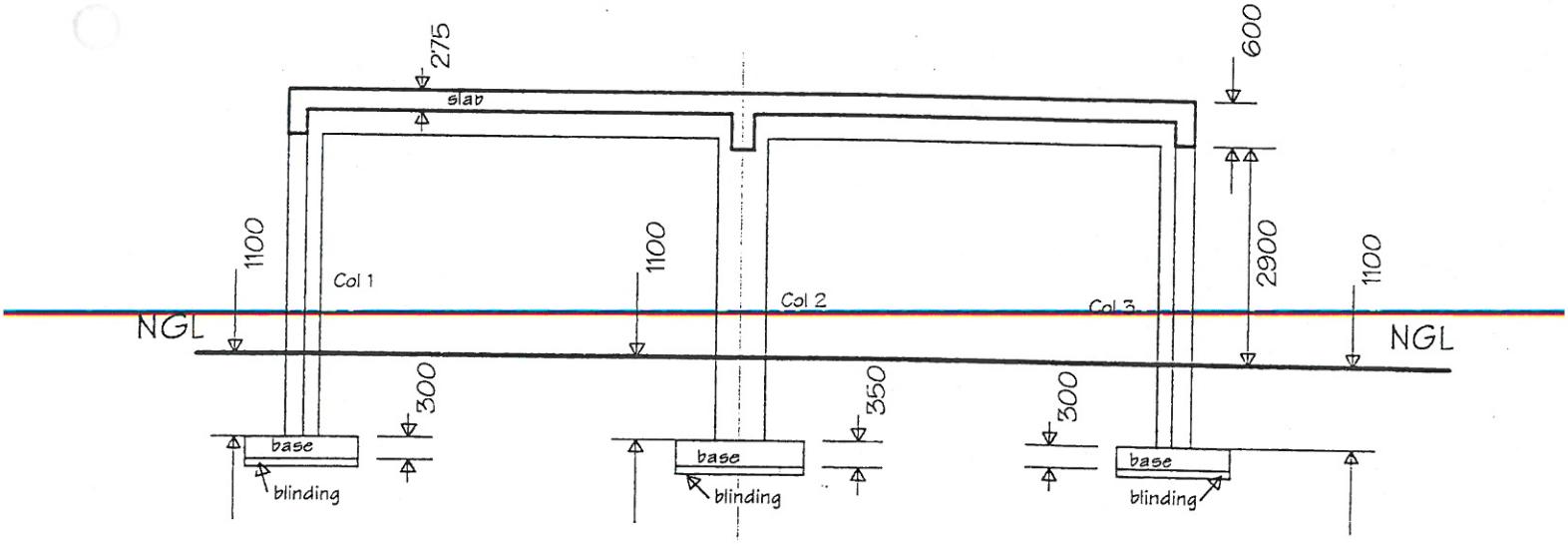


TRUSS AND COLUMN DETAILS
KAP EN KOLOM DETAILS
Scale/Skaal 1-25

TEKENING Nr. 1988/4
DRAWING No, 1988/4



Plan (Scale 1:100)



Section A - A (Scale 1:100)

SCHEDULE				
Col No	Base Size	Column	Col concr mix	Specification
1, 3, 4, 5	1500 x 1500, 300	450 x 450, 250 x 250	25 MPa	All excavation in pickable material Allow 300mm deep of Soft Rock excavation Backfill with selected excavated material Surplus material to be carted off site 100mm thick mass concrete blinding under all bases 10 MPa. All columns are central on bases All Reinforced concrete in bases, beams and slabs are 20 MPa All Formwork is F1 (rough) quality Allow the Provisional Sum of R 50 000,00 for all bar reinforcement
2	1700 x 1300, 350	650 x 250	25 MPa	

PROPOSED NEW OFFICE BLOCK

DWG No. QUSU 3/0 RCS Jb

UNIVERSITY OF JOHANNESBURG

Dimension paper

Student Name and No.....