

STAPLE



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
FEBRUARY/MARCH 2017

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

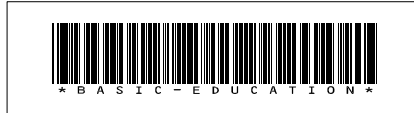
INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL orthographic drawings are in first-angle projection, unless otherwise stated.
4. ALL drawings must be completed using instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER as instructed.
7. ALL the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the TOP LEFT-HAND CORNER ONLY.
8. Proper planning is essential in order to complete all the questions.
9. Print your examination number in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

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QUESTION	MARKS OBTAINED			$\frac{1}{2}$	SIGN	MODERATED			$\frac{1}{2}$	SIGN	RE-MARKING			$\frac{1}{2}$	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER





QUESTION 2: DEVELOPMENT

Given:

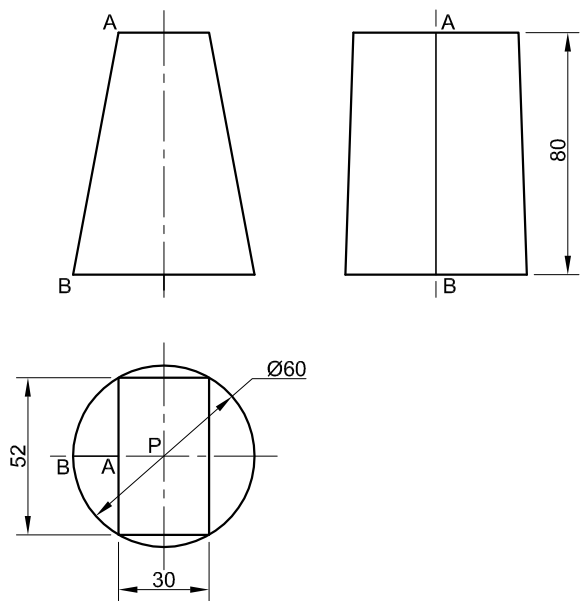
- The front view, top view and left view of a rectangular to round transition piece with seam AB
- The position of point P on the drawing sheet

Instructions:

Draw, to scale 1 : 1, the following views of the transition piece:

- 2.1 The given front view and top view
- 2.2 The development of the transition piece

- Make AB the seam.
- Show ALL construction. **[36]**



P

ASSESSMENT CRITERIA			
1	TOP VIEW	4 ½	
2	FRONT VIEW	2 ½	
3	TL CONSTRUCTION	6	
4	DEVELOPMENT	23	
PENALTIES (-)			
TOTAL		36	
EXAMINATION NUMBER			
EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: PERSPECTIVE

Given:

Two views of a stage for a play and the information needed to draw a two-point perspective drawing

PP – Picture plane

HL – Horizon line

GL – Ground line

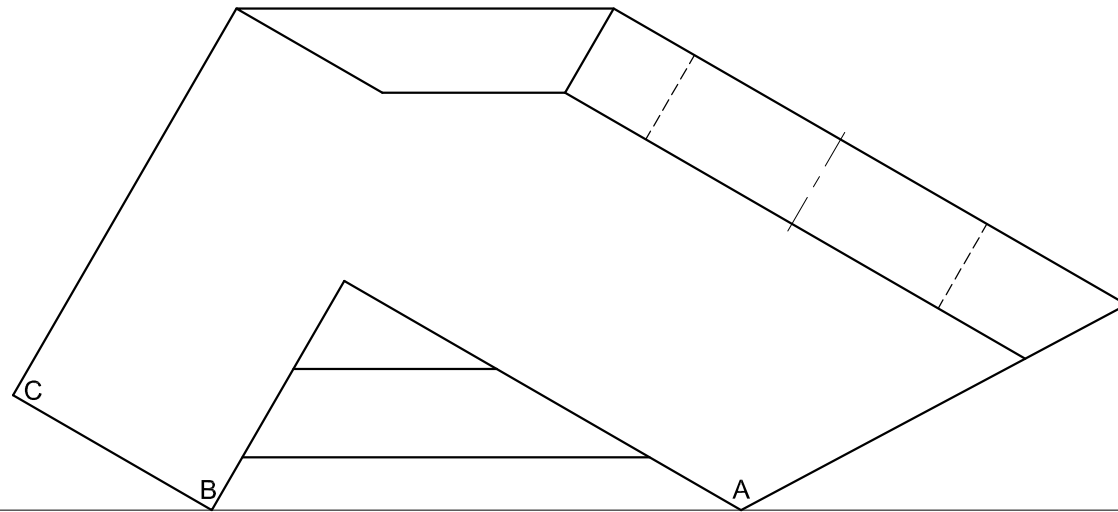
SP – Station point

Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- NO hidden detail is required.

[37]

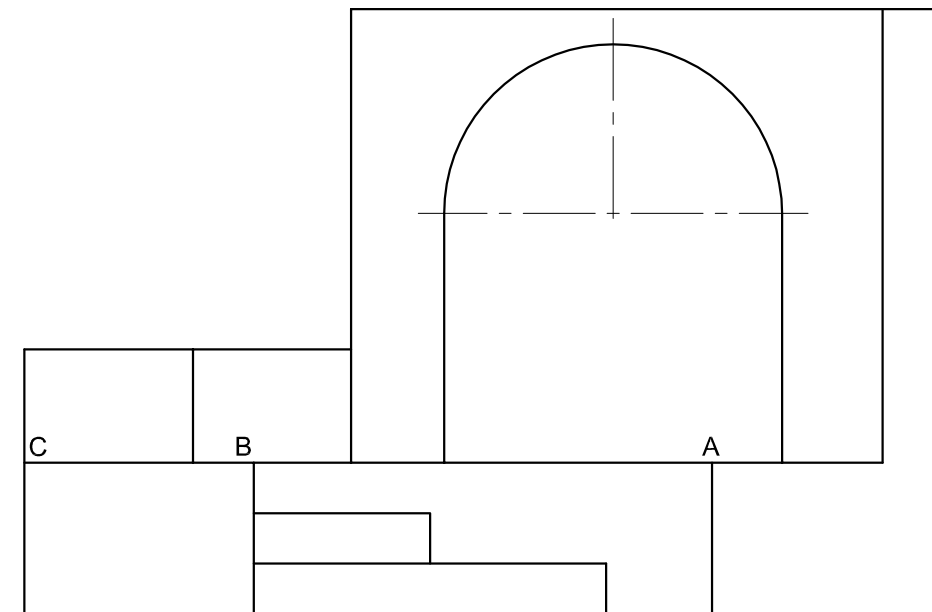


PP

HL

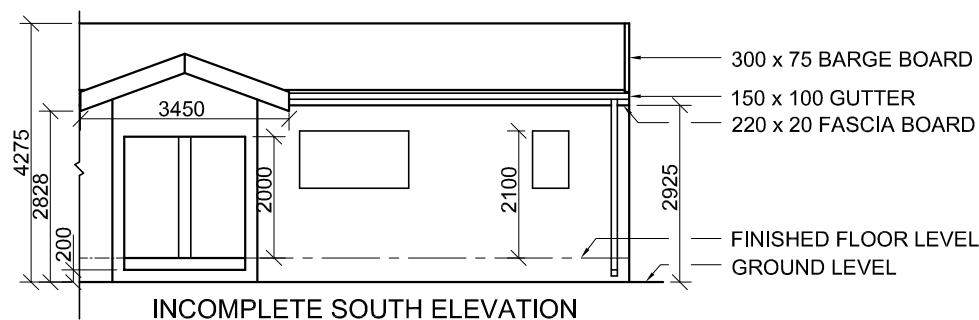
SP

GL

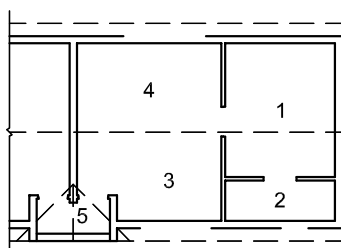


ASSESSMENT CRITERIA			
1	CONSTRUCTION + VPs	7	
2	STEPS + FLOOR + WALLS	23	
3	CIRCULAR ARC	7	
PENALTIES (-)			
TOTAL		37	
EXAMINATION NUMBER			
EXAMINATION NUMBER			
EXAMINATION NUMBER			4





INCOMPLETE SOUTH ELEVATION



ROOM DESIGNATIONS

FLOOR FINISHES

- 1 BEDROOM: CARPET
- 2 BATHROOM: TILE
- 3 KITCHEN: TILE
- 4 LOUNGE: TILE
- 5 ENTRANCE: TILE

FEATURES

- D1 DOOR
- W1 WINDOW
- W2 WINDOW
- W3 WINDOW

FIXTURES

- WC TOILET
- WB WASH BASIN
- SH SHOWER
- S SINK

ELECTRICAL FITTINGS

- 1 ONE-WAY SWITCH - DOUBLE-POLE
- 2 ONE-WAY SWITCH - THREE-POLE
- 3 FLUORESCENT LIGHT 2 x 40 W
- 4 CEILING LIGHT
- 5 SWITCHED SOCKET OUTLET
- 6 WALL-MOUNTED LIGHT

NOTE:
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

ELECTRICAL SYMBOLS		

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete south elevation of the eastern unit and entrance of a **new cluster house**, showing the walls, the door and window openings, the roof and notes
- The incomplete floor plan showing the walls, positions of the doors, windows, fixtures and electrical layout
- Roof notes, a table of roof components and a schematic diagram of a roof truss
- Room designations and floor finishes
- The incomplete wall and foundation detail
- The rainwater down-pipe
- A table of electrical symbols
- A door and window schedule
- A table of fixtures
- The incomplete floor plan of the eastern unit and entrance of the **new cluster house**, drawn to scale 1 : 50, and the incomplete external wall foundation and the break line of the detailed section, drawn to scale 1 : 20, on page 6

Instructions:

Answer this question on page 6.

4.1 Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the given eastern unit and entrance of the **new cluster house**:

4.1.1 THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

- ALL doors and windows
- ALL fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

4.1.2 THE COMPLETE SOUTH ELEVATION

Show the following features on the drawing:

- The outside walls, windows and door detail
- The roof detail, including the fascia board, barge boards, gutter and rainwater down-pipe
- The finished floor level

4.2 Using the incomplete foundation and break line on page 6, draw, to scale 1 : 20, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan.

Show the following features on the drawing:

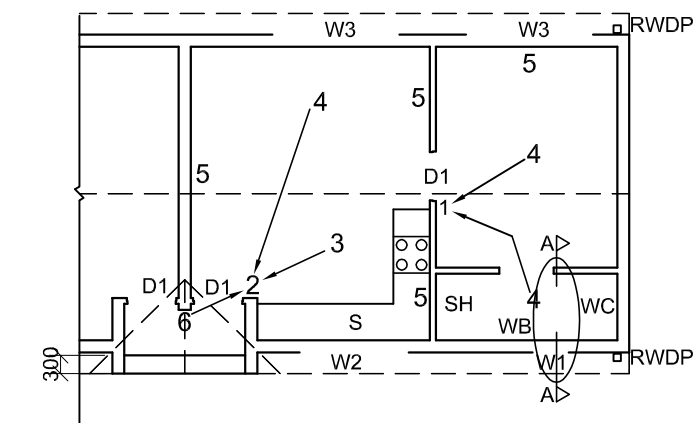
- The wall and foundation detail of the internal and external wall
- The window detail
- The roof detail, including the fascia board, gutter and rainwater down-pipe
- ALL features and fixtures to the right (east) of the ellipse
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

- The south elevation
- The room designations and floor finishes
- Ground level, finished floor level and damp-proof course (use the correct abbreviations and show it on ALL the relevant views)

NOTE:

ALL drawings must comply with the **guidelines** and **graphical symbols** contained in the SANS 10143. [97]



INCOMPLETE FLOOR PLAN

ROOF NOTES:
ROOF PITCH 20°

115 x 38 mm ROOF TRUSSES ON 115 x 38 mm WALL PLATES

ROOF OVERHANG 350 mm TO END OF ROOF TRUSSES

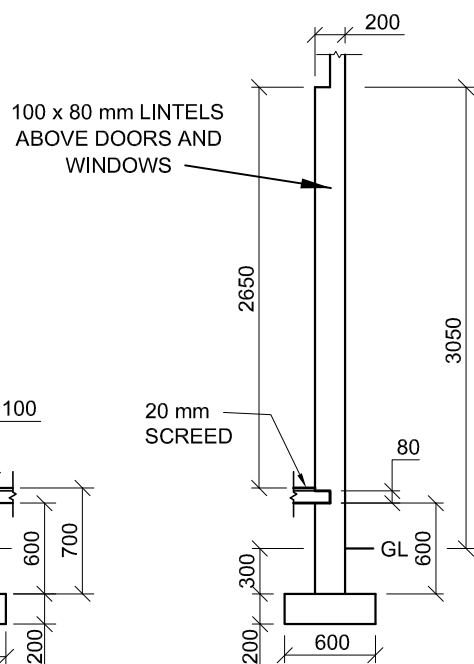
ROOF COVER 15 mm FIBRE CEMENT SHEETING ON 75 x 50 mm PURLINS @ 1000 mm c/c

220 x 20 mm FASCIA BOARD ON ALL SIDES AND 300 x 75 mm BARGE BOARD ON GABLED ENDS

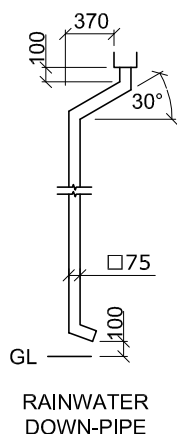
150 x 100 mm GUTTERS ON ALL SIDES

9 mm CEILING BOARD ON 38 x 38 mm BRANDING STRIPS @ 450 mm c/c

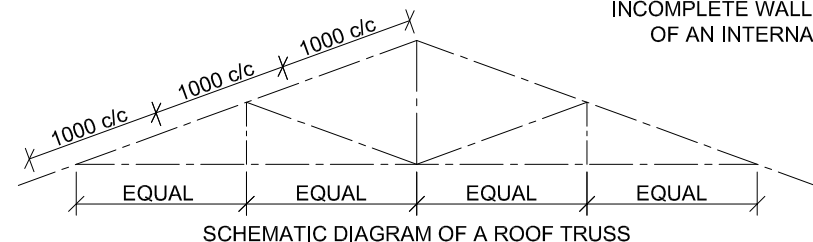
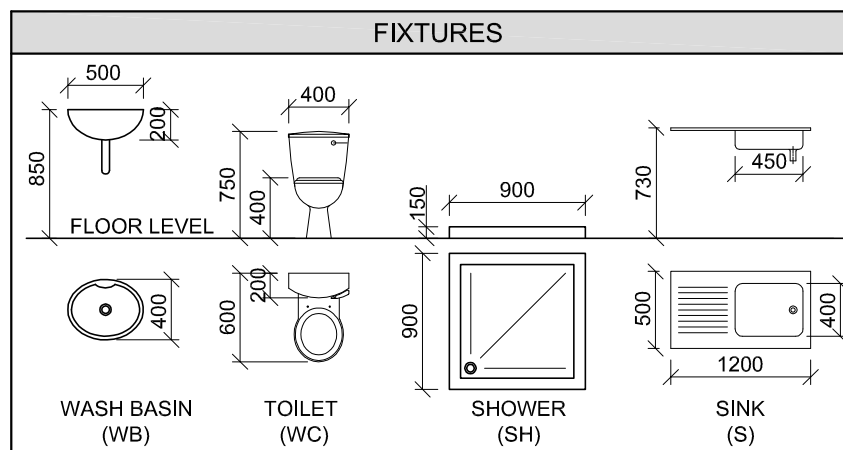
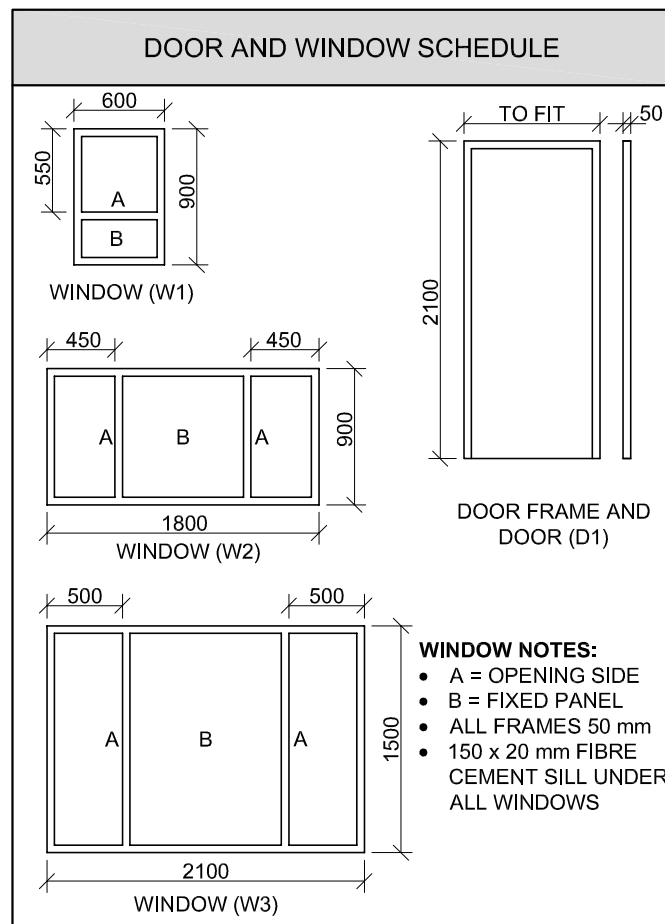
ROOF COMPONENTS	
	300 x 75 mm BARGE BOARD
	220 x 20 mm FASCIA BOARD



INCOMPLETE WALL AND FOUNDATION DETAIL OF AN INTERNAL AND EXTERNAL WALL



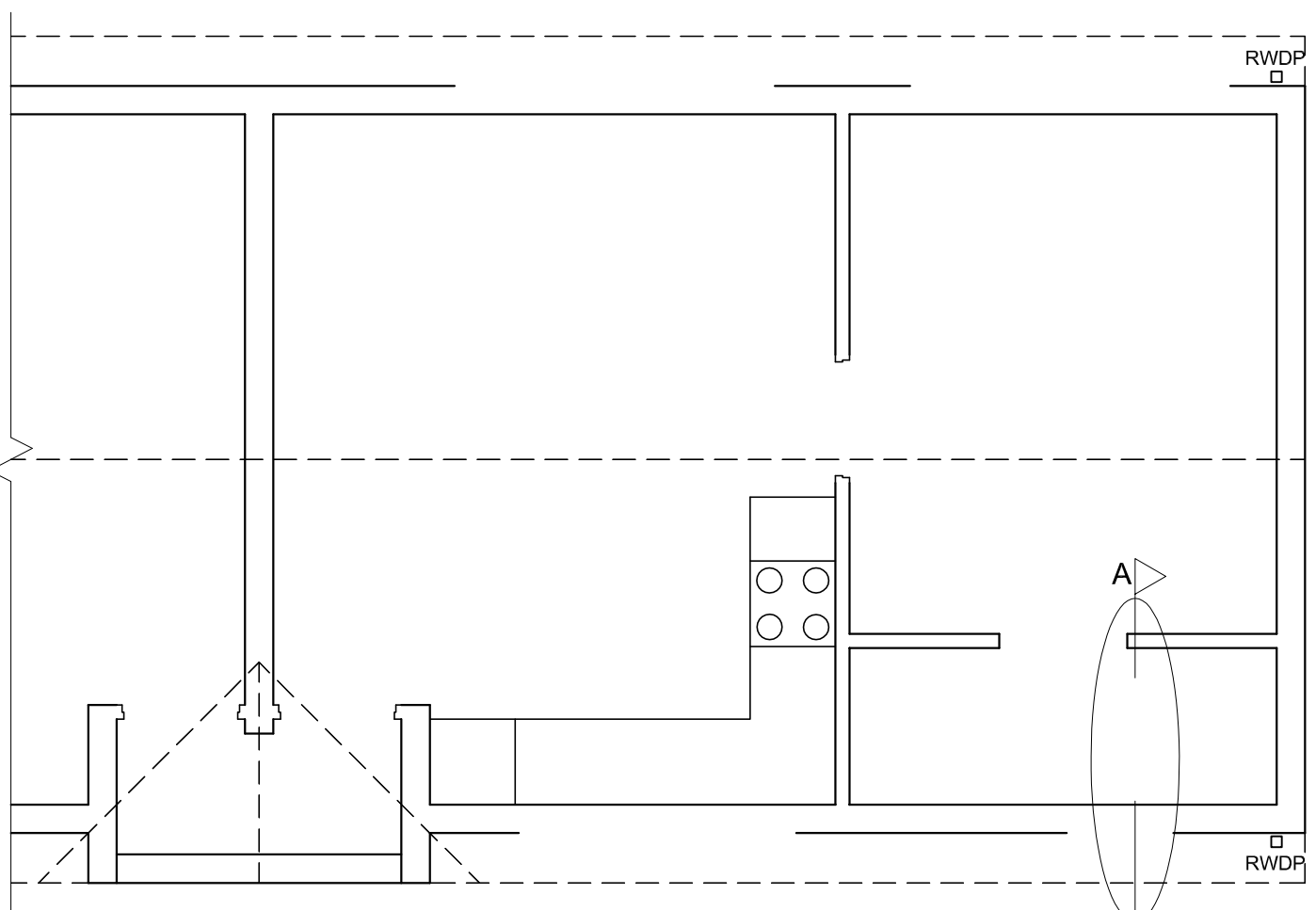
RAINWATER DOWN-PIPE



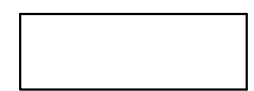
SCHEMATIC DIAGRAM OF A ROOF TRUSS



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FLOOR PLAN
SCALE 1 : 50



SECTION A-A
SCALE 1 : 20

1. MARK ALLOCATION FOR SECTION OF ROOF	
A (1)	
B (1)	
C (2)	
D (3)	
E (1)	
F (1)	
G (1)	
H (1)	
I (3)	
TOTAL	

FOR OFFICIAL USE ONLY	
INCORRECT SCALE	
INCORRECT POSITIONING OF VIEWS	
ROTATED VIEWS	
PRINTED CAPITAL LETTERS	
TOTAL	

ASSESSMENT CRITERIA			
FLOOR PLAN			
1	DOORS + WINDOWS	11	
2	ELECTRICAL	8 1/2	
3	FIXTURES	7 1/2	
4	HATCHING	4	
5	LABELS	4	
SUBTOTAL		35	
SOUTH ELEVATION			
1	ROOF	6 1/2	
2	WALLS + RWDP + FFL + GUTTER	7 1/2	
3	DOORS + WINDOWS	11 1/2	
4	LABELS	1	
SUBTOTAL		26 1/2	
DETAILED SECTION			
1	ROOF	14	
2	FOUNDATIONS + WALLS + SLAB	13 1/2	
3	WINDOW + LINTELS	3 1/2	
4	FIXTURE	3	
5	LABELS	1 1/2	
SUBTOTAL		35 1/2	
TOTAL		97	
PENALTIES (-)			
GRAND TOTAL			
EXAMINATION NUMBER			
EXAMINATION NUMBER			
			6

