

SULIT



**KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI**

**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN TINGGI**

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI II : 2024/2025

DCQ50244 : BUILDING WORKS MEASUREMENT 5

TARIKH : 20 MEI 2025

MASA : 2.30 PETANG - 4.30 PETANG (2 JAM)

Kertas ini mengandungi **LAPAN (8)** halaman bercetak.

Bahagian A: Subjektif (2 soalan)

Bahagian B: Subjektif (4 soalan)

Dokumen sokongan yang disertakan : Buku SMM 2, Kertas Dimensa, Kertas Billing, dan Lukisan

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A: 50 MARKS**BAHAGIAN A: 50 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** subjective questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **TWO (2)** soalan subjektif. Jawab **SEMUA** soalan.*

Notes:

1. Taking off refers to the rules in Standard Method of Measurement for Building Works Second Edition (SMM2).

Pengiraan hendaklah merujuk kepada Kaedah Pengukuran Kuantiti Piawai Edisi Kedua (SMM2).

2. Candidates are allowed to make any assumptions if the information given in the drawing is inadequate.

Pelajar boleh membuat andaian yang munasabah jika maklumat di dalam lukisan tidak memadai.

3. Marks will be given for the knowledge of the subject and systematic setting of dimensions, adequacy and accuracy of description and dimensions.

Markah akan diberikan berdasarkan pengetahuan tentang subjek dan dimensi yang sistematik, kecukupan dan ketepatan penerangan dan dimensi.

QUESTION 1**SOALAN 1**

CLO 1

- (a) Referring to SMM 2, explain the clause which refers to the fittings and connections in steelworks.

Merujuk kepada SMM 2, terangkan klausa yang mana merujuk kepada kelengkapan dan sambungan dalam kerja-kerja besi.

[5 marks]

[5 markah]

- CLO 1 (b) Referring to drawing number **DCQ50244/STEELWORK/AQ1/01**, complete Table: 1(a) in the preparation of the Bill of Quantities based on the provisions in SMM2.

*Merujuk kepada Lukisan No **DCQ50244/STEELWORK/AQ1/01**, lengkapkan Jadual: 1(a) dalam penyediaan Senarai Kuantiti dengan merujuk kepada peruntukan di dalam SMM2.*

Table: 1(a)

Jadual: 1(a)

No /Bil	Item/ Item	Unit/ Unit	Description /Keterangan Kerja
1	Top chord / <i>Kasau atas</i>		
2	Bottom chord / <i>Kasau bawah</i>		
3	Truss web / <i>Rasuk web</i>		
4	Purlin / <i>Kasau</i>		

[10 marks]

[10 markah]

- CLO 1 (c) Based on drawing number **DCQ50244/STEELWORK/AQ1/1**, calculate the quantity measurement for structural steelwork for top chord and strut of the roof structure for Truss 8.

*Merujuk kepada Lukisan No. **DCQ50244/STEELWORK/AQ1/1**, kirakan pengukuran kuantiti untuk kerja struktur besi untuk rasuk atas dan tupang bagi struktur bumbung bagi Kekuda 8.*

[10 marks]

[10 markah]

QUESTION 2**SOALAN 2**

- CLO 1 (a) Referring to SMM2, explain clause V.5.4 which describes pipe fittings measurement for pipe works.
- Merujuk kepada SMM2, terangkan klausa V.5.4 yang menerangkan pengukuran kelengkapan paip bagi kerja-kerja paip.*
- [5 marks]
[5 markah]
- CLO 1 (b) Referring to drawing number **DCQ50244/WATERRETICULATION /AQ2/1-2**, calculate the quantity measurement for scour valve and air valve.
- Merujuk kepada Lukisan No. DCQ50244/WATERRETICULATION/AQ2/1-2, kirakan pengukuran kuantiti bagi kerja sistem bekalan air untuk item injap 'scour' dan injap 'air'.*
- [10 marks]
[10 markah]
- CLO 1 (c) Based on drawing number **DCQ50244/WATERRETICULATION /AQ2/1-2**, calculate the quantity measurement for sluice valve and fire hydrant.
- Merujuk kepada Lukisan No. DCQ50244/WATERRETICULATION/AQ2/1-2, kirakan pengukuran kuantiti bagi kerja sistem bekalan air untuk item injap 'sluice' dan pili bomba.*
- [10 marks]
[10 markah]

SECTION B: 50 MARKS**BAHAGIAN B: 50 MARKAH****INSTRUCTION:**

This section consists of **FOUR (4)** subjective questions. Answer **TWO (2)** questions.

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan subjektif. Jawab DUA (2) soalan.

QUESTION 1**SOALAN 1**

- CLO 1 (a) Referring to drawing number **DCQ50244/LANDSCAPE/BQ1/1**, calculate the quantity measurement for tree excavation.

Merujuk kepada Lukisan No. DCQ50244/LANDSCAPE/BQ1/1, kirakan pengukuran kuantiti bagi item pengalian pokok.

[8 marks]

[8 markah]

- CLO 1 (b) Based on drawing number **DCQ50244/LANDSCAPE/BQ1/1**, conclude a bill of quantities complete with quantity measurement for the planting of Vallaris Solanacea, and Morinda Elliptica Ridl Tree only.

Merujuk kepada Lukisan No. DCQ50244/LANDSCAPE/BQ1/1, rumuskan kuantiti terukur sebagai senarai kuantiti lengkap beserta pengiraan kuantiti untuk penanaman pokok Vallaris Solanacea dan Morinda Elliptica Ridl sahaja.

[17 marks]

[17 markah]

QUESTION 2**SOALAN 2**

- CLO 1 (a) Referring to drawing number **DCQ50244/DRAINAGE/BQ2/1-2**, calculate the quantity measurement for rubbish trap and sump cover for DN-1 to DN-5 only.

Merujuk kepada Lukisan No. DCQ50244/DRAINAGE/BQ2/1-2, kirakan pengukuran kuantiti bagi perangkap sampah dan penutup 'sump' bagi DN-1 sehingga DN-5 sahaja.

[8 marks]

[8 markah]

- CLO 1 (b) Based on drawing number **DCQ50244/DRAINAGE/BQ2/1-2**, conclude a bill of quantities complete with quantity measurement for brick walls and concrete base for sump DN-1 and DN-2 only.

Merujuk kepada Lukisan No. DCQ50244/DRAINAGE/BQ2/1-2, rumuskan kuantiti terukur sebagai senarai kuantiti lengkap beserta pengiraan kuantiti untuk item dinding bata dan alas konkrit bagi 'sump' DN-1 dan DN-2 sahaja.

[17 marks]

[17 markah]

QUESTION 3**SOALAN 3**

CLO 1

- (a) Referring to drawing number **DCQ50244/SEWERAGE/BQ3/1-2**, calculate the quantity measurement for a 100mm diameter VCP pipe for MH1 to MH3 only.

Merujuk kepada Lukisan No. DCQ50244/SEWERAGE/BQ3/1-2, kirakan pengukuran kuantiti bagi paip 100mm diameter paip VCP untuk MH1 sehingga MH3 sahaja.

[8 marks]

[8 markah]

CLO 1

- (b) Based on drawing number **DCQ50244/SEWERAGE/BQ3/1-2**, conclude a bill of quantities complete with quantity measurement for sewerage works for the manhole concrete base and cover for MH4 and MH5.

Merujuk kepada Lukisan No. DCQ50244/SEWERAGE/BQ3/1-2, rumuskan kuantiti terukur sebagai senarai kuantiti lengkap berserta pengiraan kuantiti bagi kerja pembentungan untuk alas konkrit lurang dan penutup lurang bagi MH4 dan MH5.

[17 marks]

[17 markah]

QUESTION 4**SOALAN 4**

- CLO 1 (a) Based on drawing number **DCQ50244/FENCING/BQ4/1**, calculate the quantity measurement for the gate.

Merujuk kepada Lukisan No. DCQ50244/FENCING/BQ4/1, ukur kuantiti pintu pagar.

[8 marks]

[8 markah]

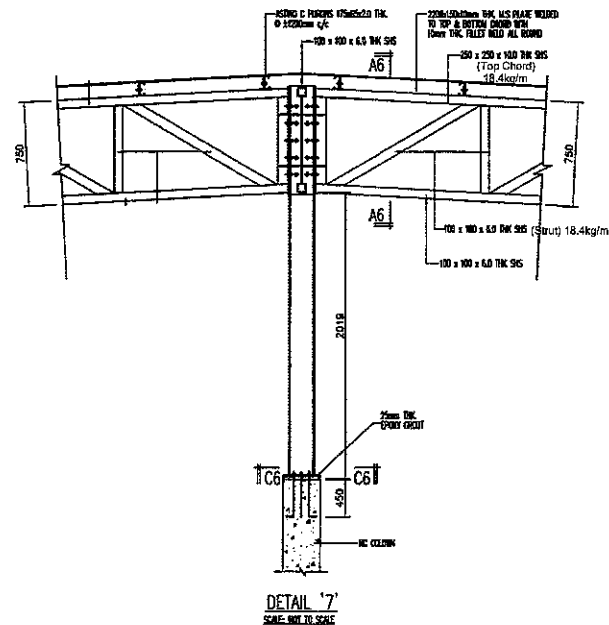
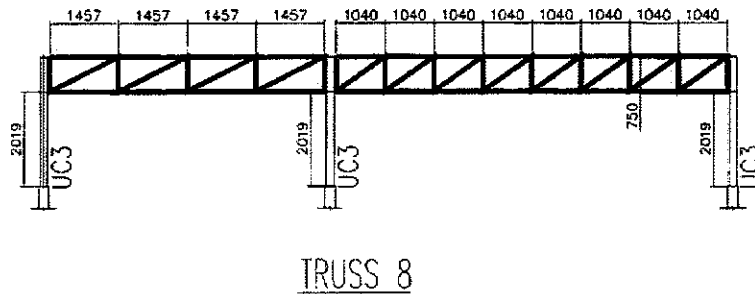
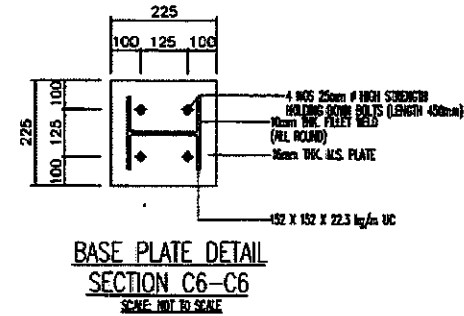
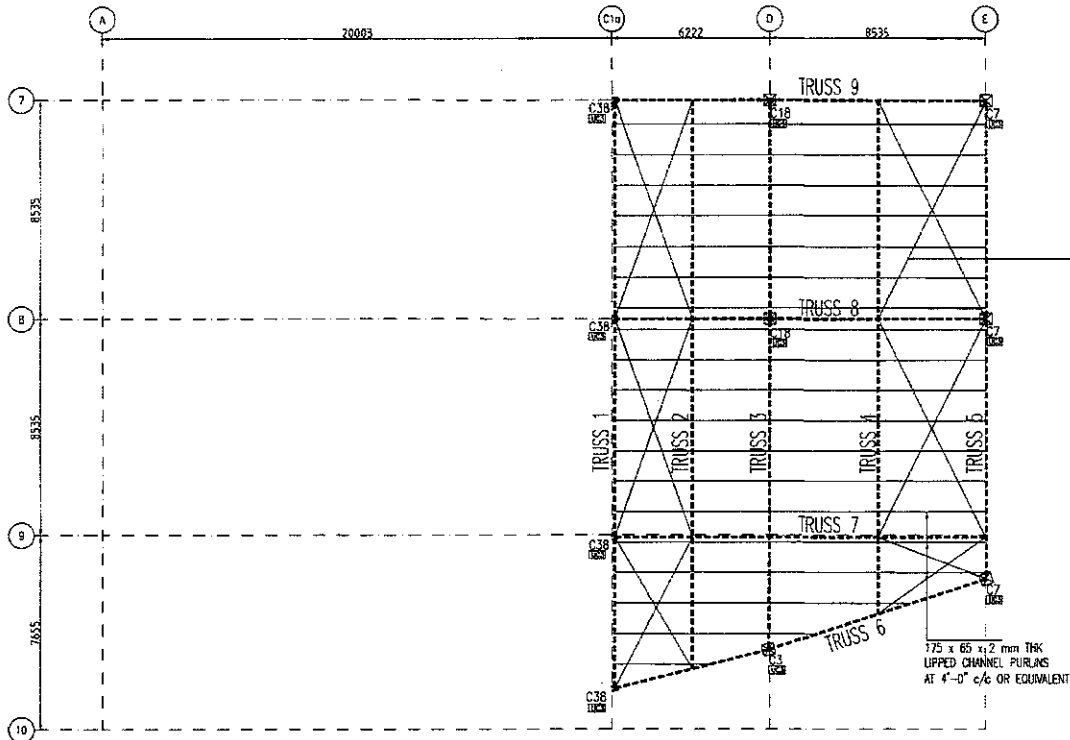
- CLO 1 (b) Based on the drawing number **DCQ50244/RENOVATION/BQ4/1**, conclude a bill of quantities complete with quantity measurement for renovation works.

Merujuk kepada Lukisan No. DCQ50244/RENOVATION/BQ4/1, rumuskan kuantiti terukur sebagai senarai kuantiti beserta pengiraan kuantiti lengkap bagi bagi kerja-kerja pengubahsuaian.

[17 marks]

[17 markah]

SOALAN TAMAT



PROJECT TITLE:

Cadangan Membina Ruang Penyimpanan
Barang di Kawasan Perindustrian
Cemerlang.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

- Contractor need to submit shop drawing for connection for engineer approval before commencement of work.
- All steel member are welding and the welding need to certified by the certifying engineer.

SCALE:

NOT TO SCALE

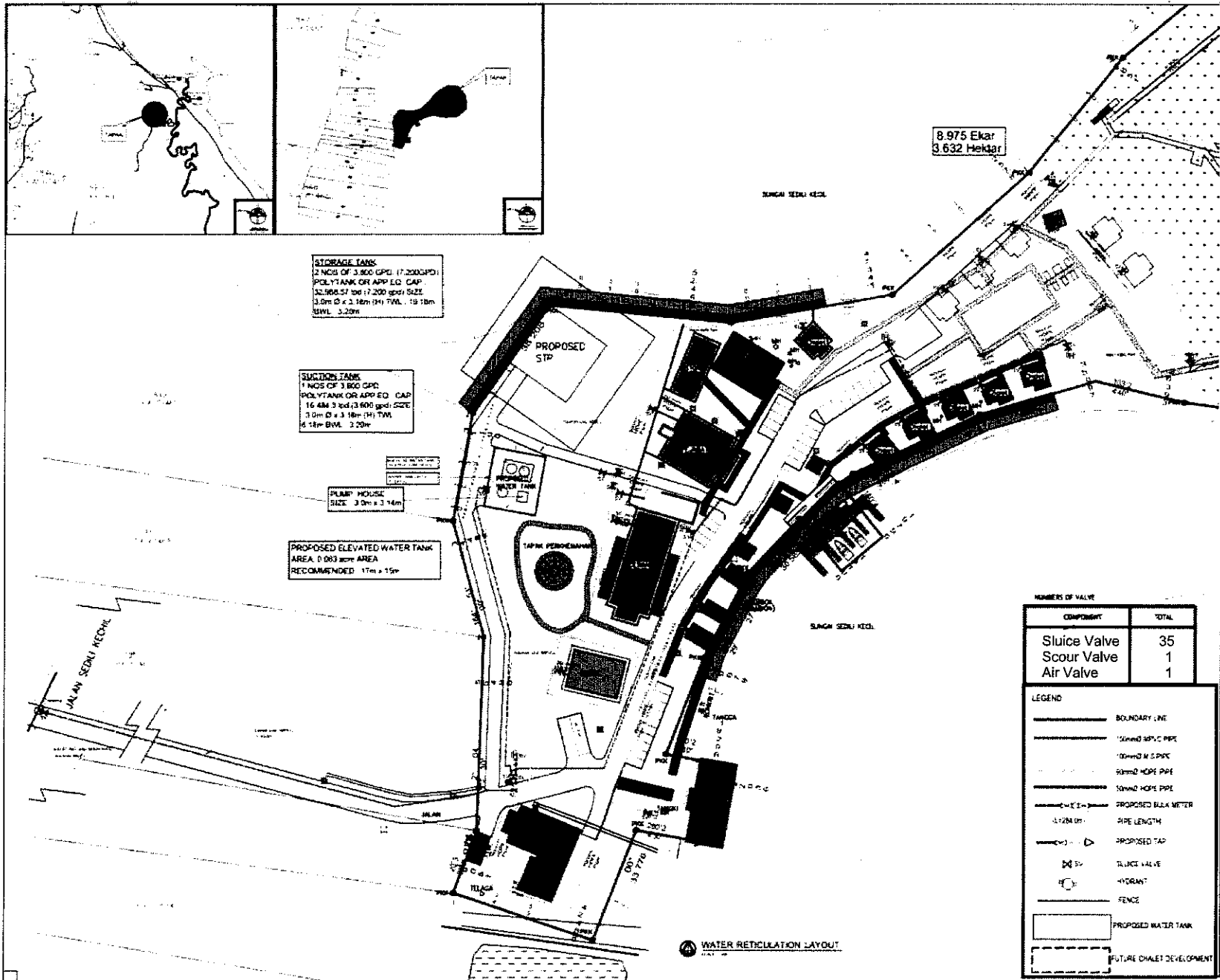
Section A / Question 1
Bahagian A / Soalan 1

DRAWING TITLE:

Roof Key Plan
Truss 8 Detail
Base Plate Detail

DRAWING NUM:

DCQ50244/STEELWORK/AQ1/1



PROJECT TITLE:

Cadangan Membina Ruang Penyimpanan
Barang di Kawasan Perindustrian
Cemerlang.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

SCALE:

NOT TO SCALE

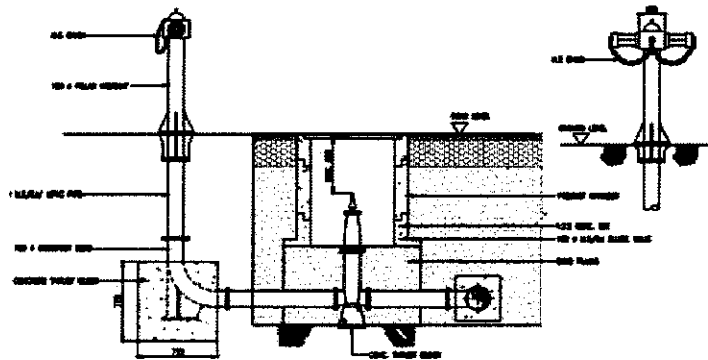
Section A / Question 2
Bahagian A / Soalan 2

DRAWING TITLE:

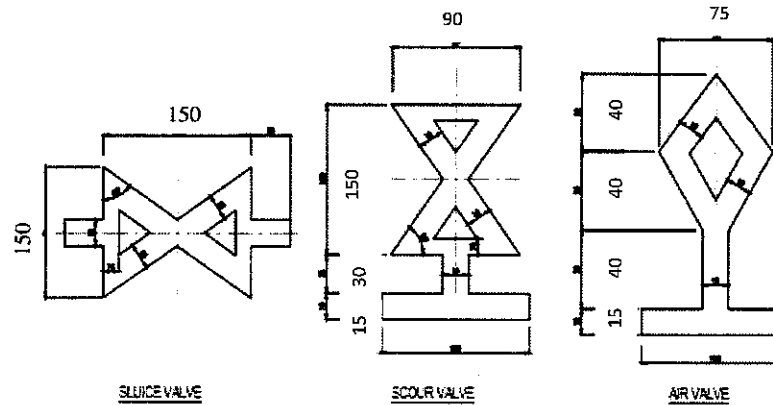
Water Reticulation Layout

DRAWING NUM:

DCQ50244/WATERRETICULATION/AQ2/1



FIRE HYDRANT TO MANUFACTURER'S DETAIL
NOTE : ALL VALVES, FITTINGS & SPECIALS SHALL BE SHOWN TO THE



PROJECT TITLE:

Cadangan Membina Ruang Penyimpanan
Barang di Kawasan Perindustrian
Cemerlang.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

Specification for hydrant

1. 150mm diameter cast iron fire hydrant approved double flange pillar stand post hydrant pipe.
2. 65mm diameter outlet complete with cap and chain.
3. Painting with 5mm thick strip around and top portion with approve yellow part.

SCALE:

NOT TO SCALE

Section A / Question 2
Bahagian A / Soalan 2

DRAWING TITLE:

Valve Details
Hydrant Details

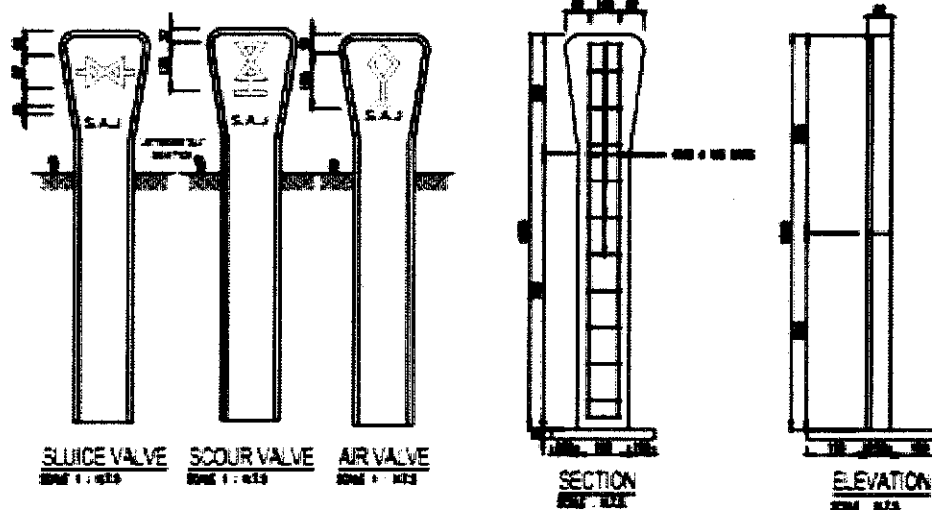
DRAWING NUM:

DCQ50244/WATERRETICULATION/AQ2/2

NOTE . SPECIFICATION FOR SLUICE/GATE VALVE

- A) ALL SLUICE/GATE VALVE SHALL BE OF THE RESILIENT SEAT TYPE, D1 BODY, DOUBLE FLANGE TYPE B, CAP OPERATION WITH NON-RISING STEM, PN 10 RATING DUCTILE IRON TYPE B GATE VALVE FOR WATERWORK PURPOSE OR BS 5163 : 1986
- B) VALVE SHALL BE CLOCKWISE CLOSING.
- C) VALVE FLANGES AND BOLTING SHALL COMPLY WITH TABLE 15/11 BS 4504
- D) ALL INTERNAL AND EXTERNAL PART OF THE DUCTILE IRON VALVE SHALL BE COATED WITH EITHER FUSION BONDED EPOXY POWDER (FIBER) OR POLYMADE 11 (RILSAN)

VALVE TYPE	PIPE NOMINAL DIAMETER (mm)	VALVE DIAMETER (mm)	INTERNAL DIMENSIONS (mm)	
SLUICE VALVE	150	150	1200	1200
	200	200	1200	1200
	250	250	1300	1200
	300	300	1500	1200
	400	400	1500	1200



PROJECT TITLE:

Cadangan Menyiapkan Landskap di Taman
Rekreasi Jaya.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

SCALE:

NOT TO SCALE

Section B / Question 1

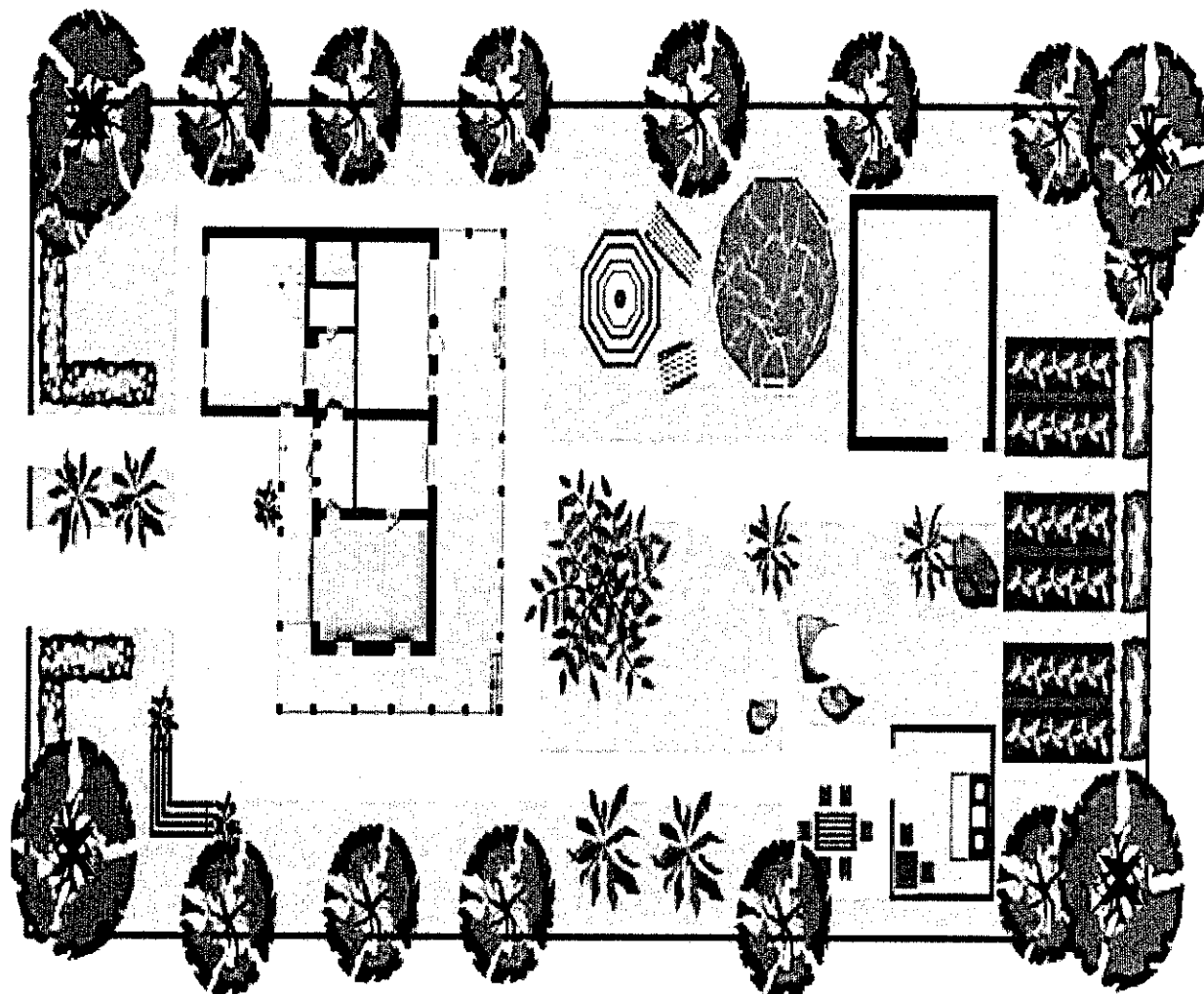
Bahagian B / Soalan 1

DRAWING TITLE:

Landscape Layout Plan

DRAWING NUM:

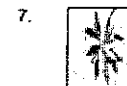
DCQ50244/LANDSCAPE/BQ1/1



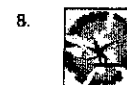
1. Pit size for tree planting 1.50m x 1.50m x 1.50m
2. Soil mixture shall be homogenous blended of soil consist of 5 part of imported soil, 3 part of sand, 1 part of well rooted farmyard, 1 part of fertilizer.
3. Mulching for tree planting shall be provided 75mm thick super shredded life mocha consist of cocoa peat, fresh, free from foreign matter.
4. Plant protection shall be nontoxic anti desiccant spray.
5. All plant watered thoroughly immediately after planting until acceptance period



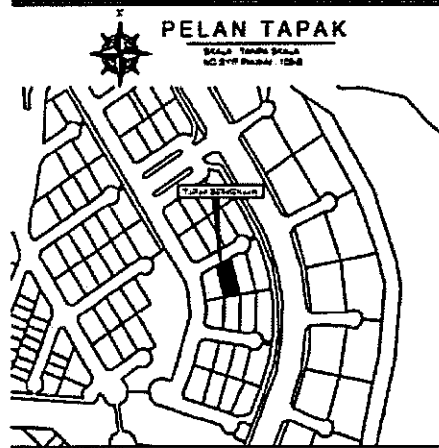
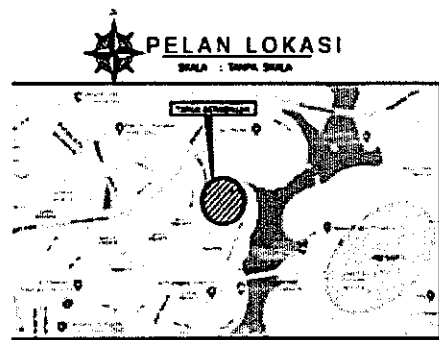
Vallis solanacea Tree overall height 5.00m, 0.80m size of subvention root system, 100mm girth, spaced 0.20m



Morinda elliptica ridl Tree overall height 1.00m, 0.30m size of subvention root system, 50mm girth, spaced 1.00m



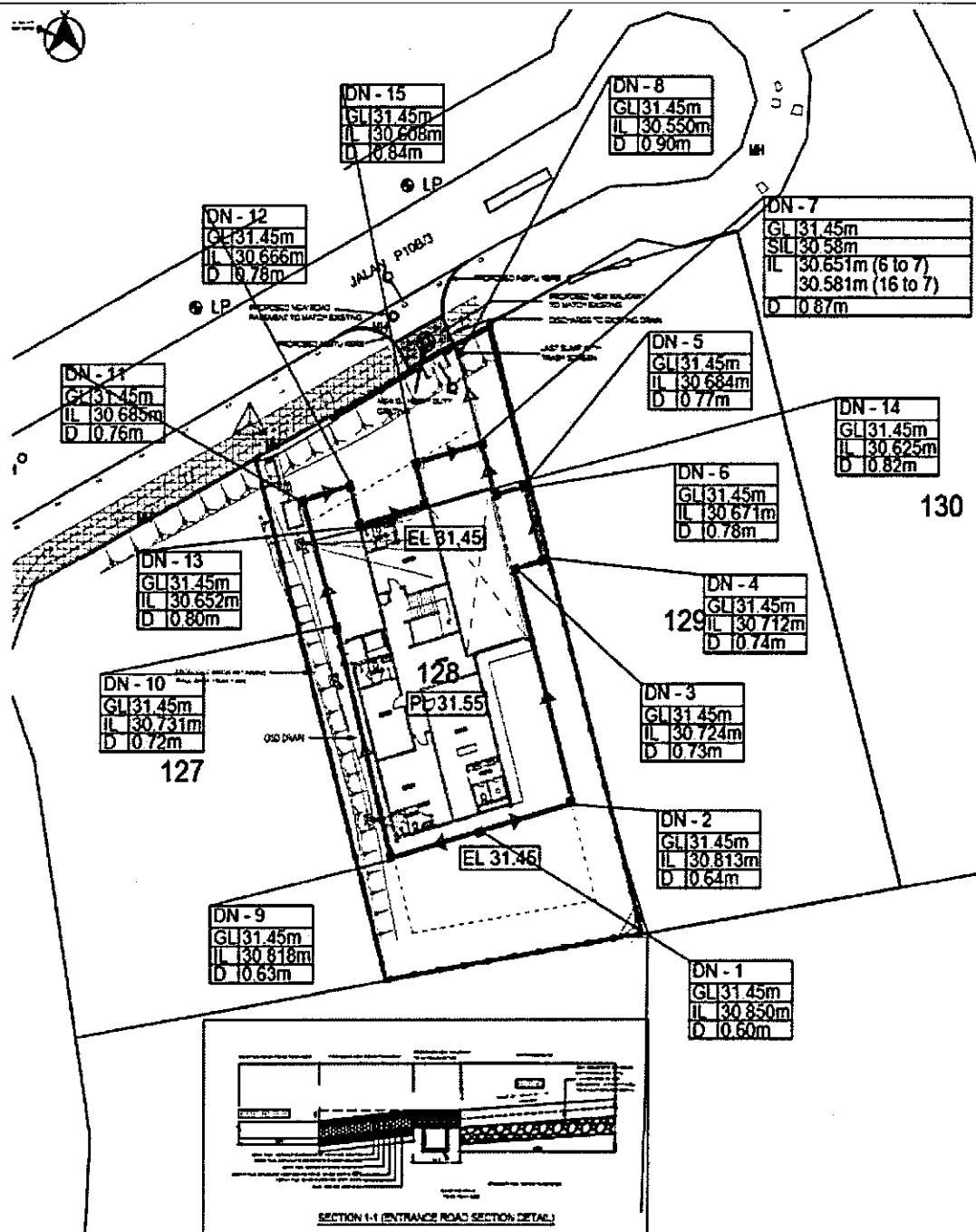
Swietenia macrophylla Tree overall height 3.00m, 1.00m size of subvention root system, 75mm girth, spaced 1.00m

**LEGEND:**

- EL PROPOSED BAY-AROUND LEVEL
- RL PROPOSED ROAD FINISH LEVEL
- 300mm Block Drain with Slab Cover & Brick Side
- BOUNDARY LINE
- SLAB
- PROPOSED NEW ROAD PAVEMENT TO MATCH EXISTING
- PROPOSED NEW PAVEMENT TO MATCH EXISTING
- EXISTING COVERED CONCRETE DRAIN

GENERAL NOTES:

1. EXISTING ROAD AND DRAINAGE SHALL BE MAINTAINED OTHERWISE STATED IN THE DRAWING
2. EXISTING ROAD AFFECTED BY EXCAVATION WORKS SHALL BE MAKE GOOD UPON COMPLETION OF UPGRADING WORK.
3. CONTRACTOR IS REQUIRE TO GET PERMIT FROM LOCAL AUTHORITIES TO CARRY OUT RELOCATION OF THE EXISTING SERVICES OR UTILITIES PRIOR TO COMMENCING CONSTRUCTION WORK.



PROJECT TITLE:

CADANGAN MEMBINA SEBUAH
RUMAH BANGLO 2 TINGKAT DI
BANDAR MAJUJAYA.

NOTES:

YOU CAN MAKE ALL THE
NECESSARY AND REASONABLE
ASSUMPTIONS WHERE
APPLICABLE.

SCALE:

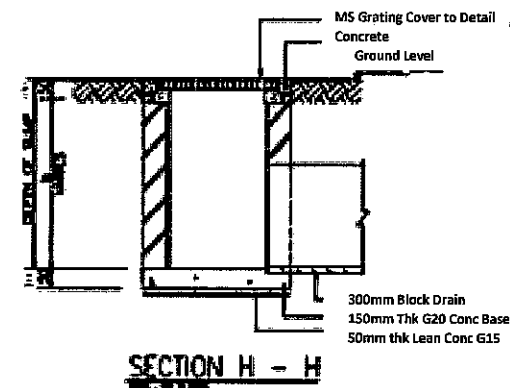
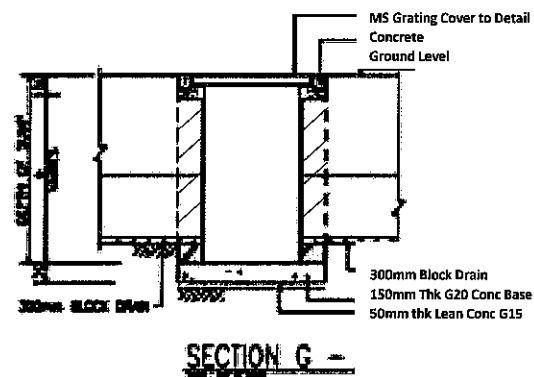
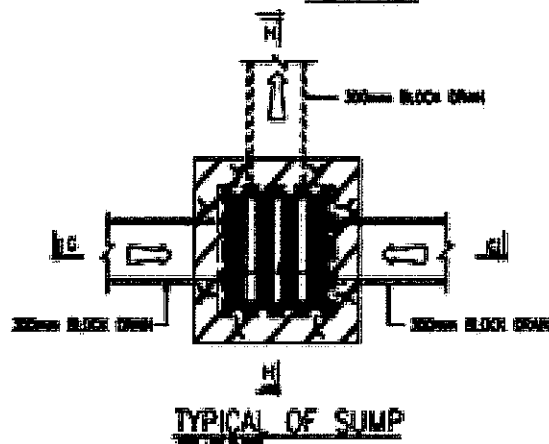
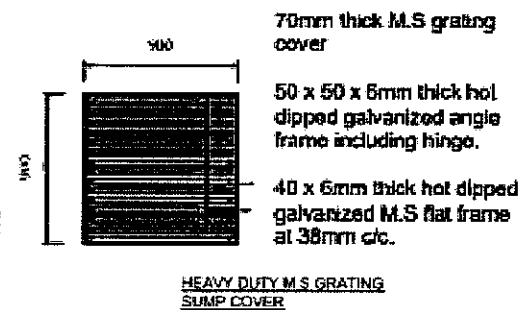
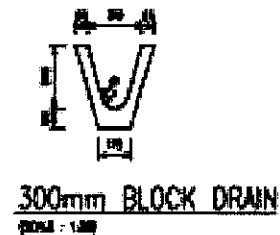
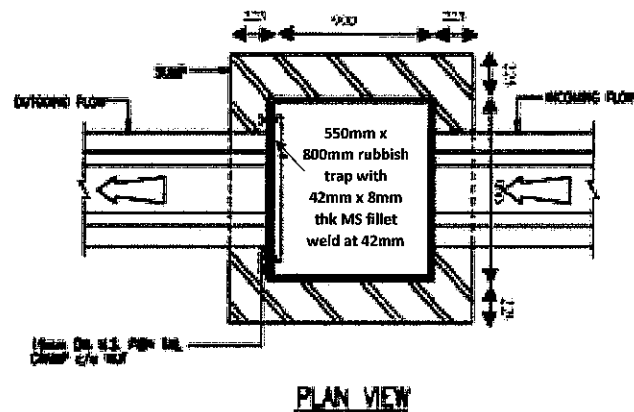
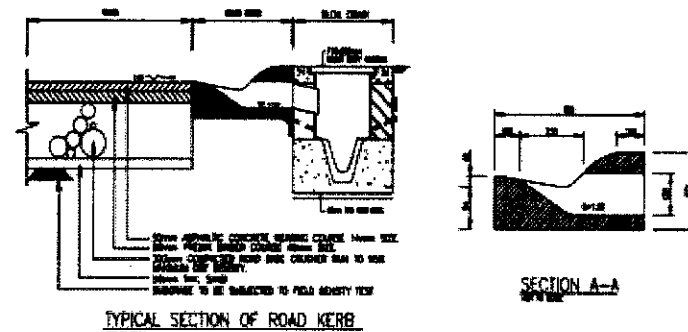
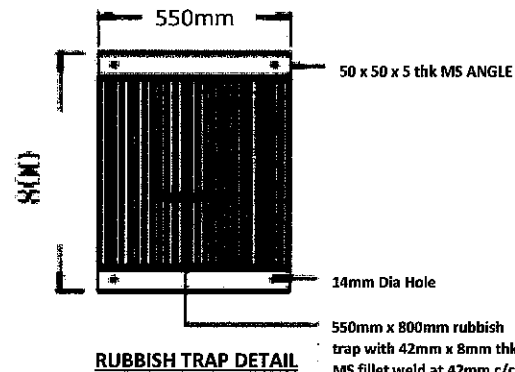
NOT TO SCALE

DRAWING TITLE:

LAYOUT PLAN

DRAWING NUM:

DCQ50244/DRAINAGE/BQ2/1



PROJECT TITLE:

**CADANGAN MEMBINA SEBUAH
RUMAH BANGLO 2 TINGKAT DI
BANDAR MAJUJAYA.**

NOTES:

**YOU CAN MAKE ALL THE
NECESSARY AND REASONABLE ASS
WHERE
APPLICABLE.**

SCALE:

NOT TO SCALE

DRAWING TITLE:

LAYOUT PLAN

DRAWING NUM:

DCQ50244/DRAINAGE/BQ2/2

PROJECT TITLE:

Cadangan Membina Tandas Awam di
Taman Rekreasi.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

SCALE:

NOT TO SCALE

Section B / Question 3

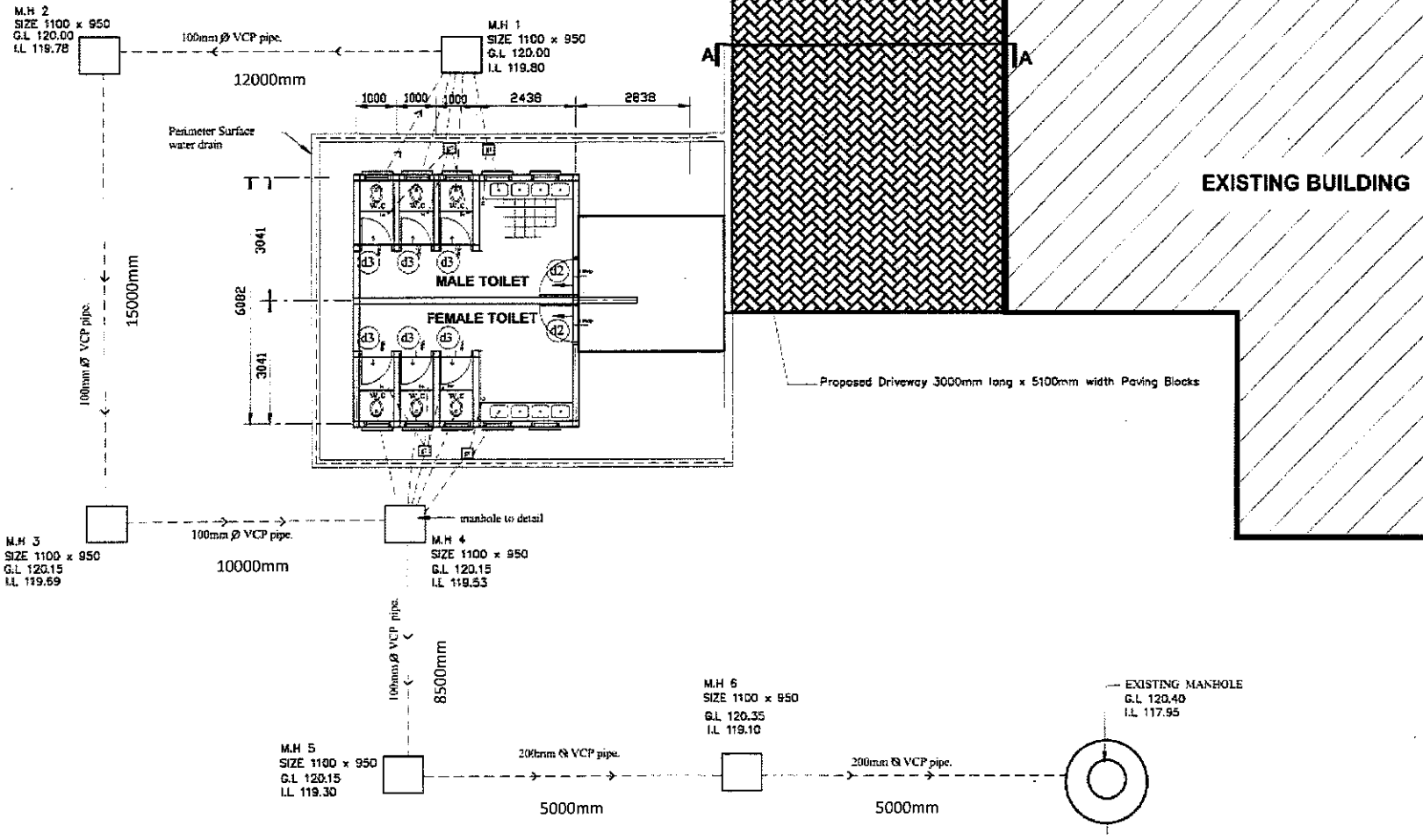
Bahagian B / Soalan 3

DRAWING TITLE:

Site Plan

DRAWING NUM:

DCQ50244/SEWERAGE/BQ3/1



PROJECT TITLE:

Cadangan Membina Tandas Awam di
Taman Rekreasi.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

Manholes :

Manhole wall shall be constructed of one brick thick Class "B"
Engineering brick or other equal, and approved and jointed in
waterproof cement and sand (1:2) mortar.

Concrete benching shall be concrete grade 15 and set to gradient
of 1:6 and finished with 19mm thick trowelled smooth waterproof
cement and sand (1:3) rendering.

Manhole internal wall shall be lined up with 20mm thick waterproof
cement and sand (1:2) and trowelled smooth surface with steel trowel.

Manhole channels shall be 100mm diameter half round vitrified pipe
(VCP) bedded and jointed in waterproof cement and sand (1:2) mortar.

Cover to all manholes shall be medium duty 600mm x 450mm
cast iron with oil-tight frame to B.S 457 at 1 grade C, weigh
85kg and bedded in 100mm thick precast concrete slab.

SCALE:

NOT TO SCALE

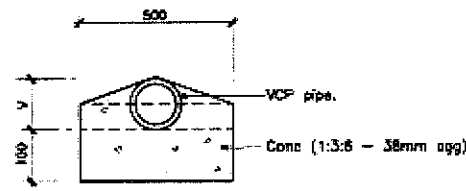
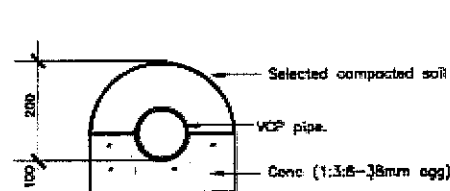
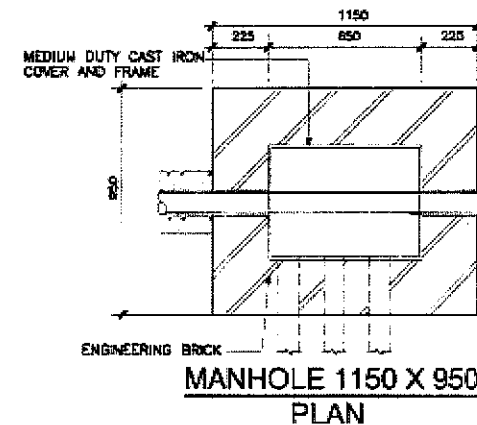
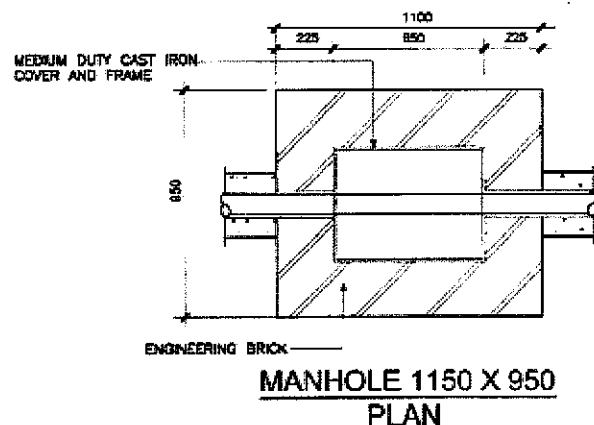
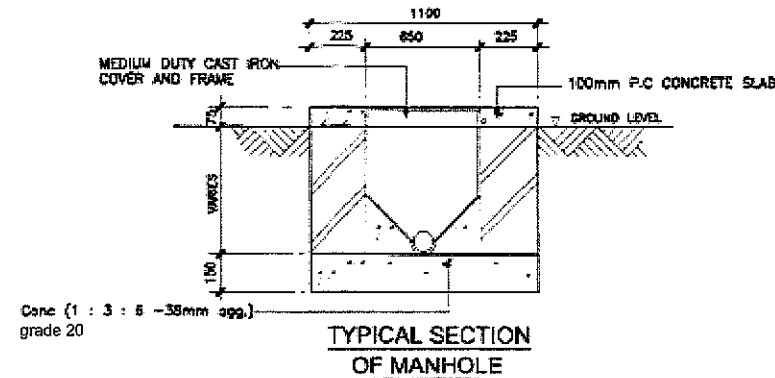
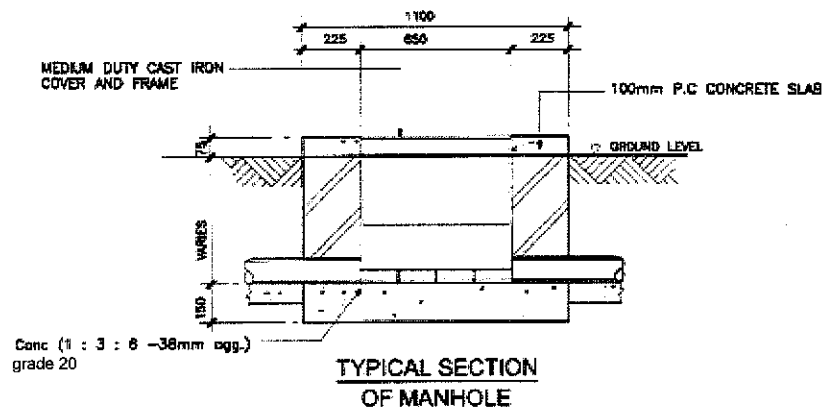
Section B / Question 3
Bahagian B / Soalan 3

DRAWING TITLE:

Manhole Details

DRAWING NUM:

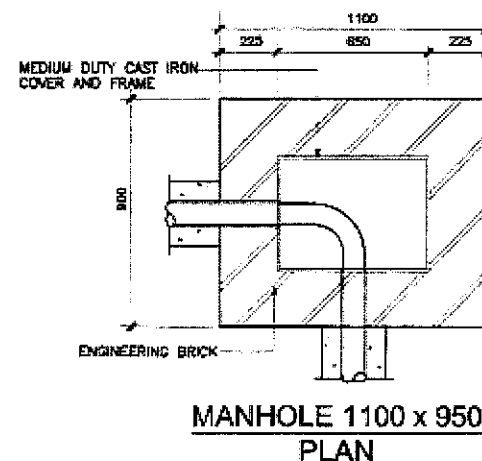
DCQ50244/SEWERAGE/BQ3/2



**DRAIN PIPE SURROUND
DETAIL**
(Not to Scale)

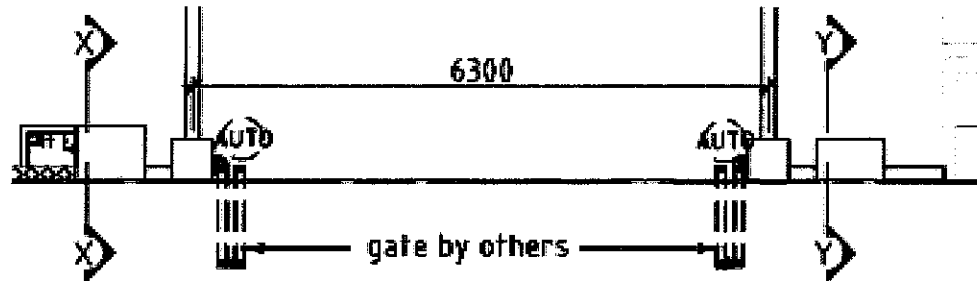
**DRAIN PIPE HAUNCHING
DETAIL**
(Not to Scale)

V = to suit drain pipe diameter

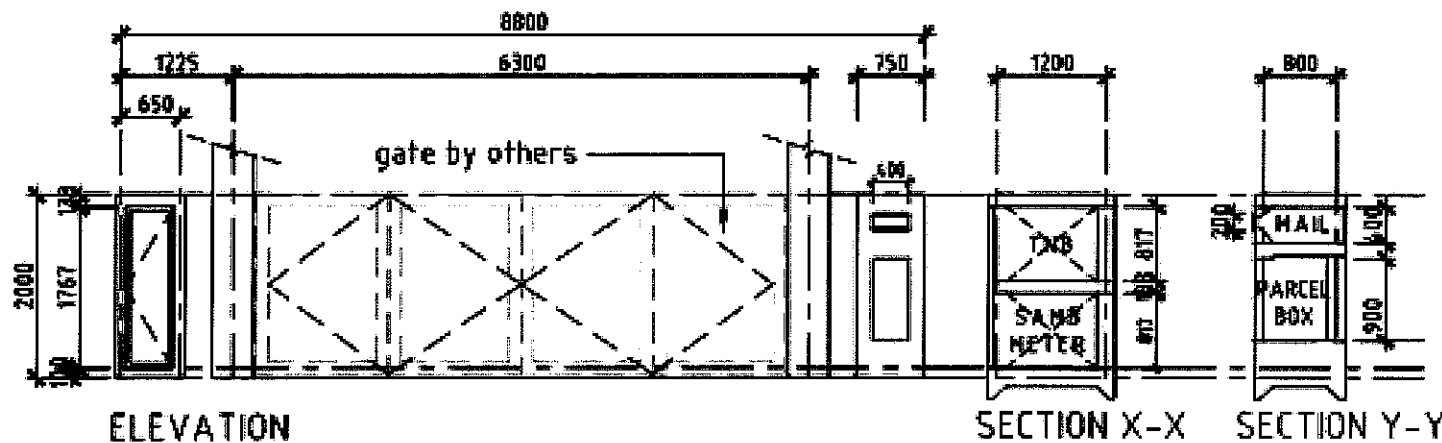


Notes :

1. Mild steel double leaf gate constructed to mild steel frame, all welded together and 2 nos of 16mm diameter stop bar 300mm x 300mm x 6mm mild steel hinges and 15mm diameter washer including painting.
2. 600mm x 600mm x 500mm depth concrete footing for gate post (1:3:5)



PLAN



ELEVATION

SECTION X-X

SECTION Y-Y

GATE DETAIL
NOT TO SCALE

PROJECT TITLE:

Cadangan Membina dan Menyiapkan
Banglo 2 Tingkat Di atas Lot 8875, Melaka.

NOTES:

YOU CAN MAKE ALL THE NECESSARY
AND REASONABLE ASSUMPTIONS
WHERE APPLICABLE.

SCALE:

NOT TO SCALE

Section B / Question 4

Bahagian B / Soalan 4

DRAWING TITLE:

Gate Detail

DRAWING NUM:

DCQ50244/FENCING/BQ4/1

PROJECT TITLE:

CADANGAN MEROBOKH DAN
MENGUBAHSUAI SEBUAH
BANGUNAN DI TASIK PERMAI.

NOTES.

YOU CAN MAKE ALL THE
NECESSARY AND REASONAB
ASSUMPTIONS WHERE
APPLICABLE.

SCALE.

NOT TO SCALE

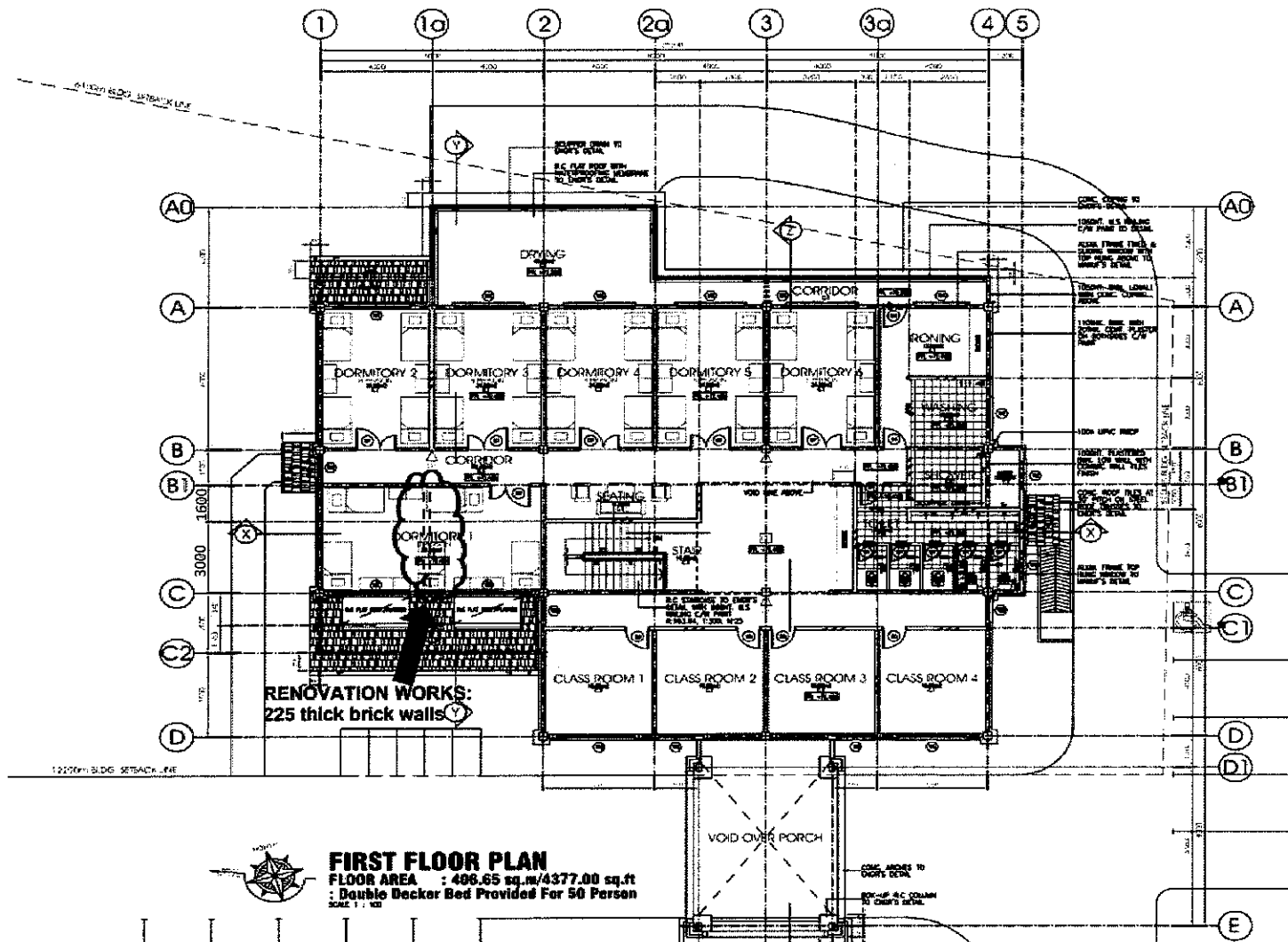
Section B / Question 4
Bahagian B / Soalan 4

DRAWING TITLE:

Layout Plan (New Work)

DRAWING NUM:

DCQ50244/RENOVATION/BQ4/1



NOTES.

1. All brickworks shall be 225mm thick common brick unless otherwise stated. 2 Height of wall 3000mm
3. 20mm thick cement and sand (1:6) plain face sponge wash plaster with on approved plasticier internally / externally finished with a steel trowel plaster on both sides.
4. One coat water and finished with two coats of emulsion paint or other equivalent.
5. Assumption shall be made if the information is not sufficient.