

TENDER DRAWING

26.6.2024

PROJEK :
 CADANGAN SKIM PERUMAHAN DI ATAS
 PT 265369 (HSD 229470) & PT 265370
 (HSD 229471), BANDAR IPOH (S),
 DAERAH KINTA, PERAK DARUL RIDZUAN,
 (LOKASI : BANDAR IPOH)
 UNTUK:
 TELUAN PERBADANAN SETIAUSAHA KERAMAM
 NEGERI PERAK (SSI)

JADUAL :
 PELAN SUSUNAN PERBETONGAN,
 PELAN KINCI DAN PELAN LOKASI

OMER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAMAM
 NEGERI PERAK (SSI)
 JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

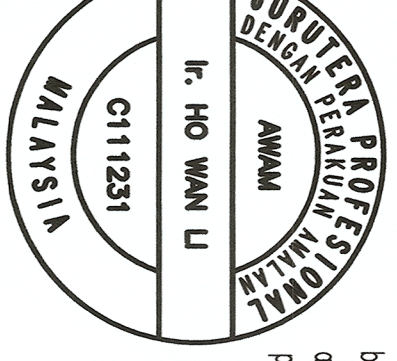
TUNJANGAN PERALIH :

MACORP HOLDINGS SDN BHD
 GAN VI KING (No. K/P/ : 70716-10-5171)
 PENGEHAH PERBETONGAN SDN BHD
 TIME SQUARE IPOH, B-4-30, JALAN SULTAN MAZRIEN SHAH,
 30250 IPOH, PERAK DARUL RIDZUAN.

TUNJANGAN LABURAN :

I hereby certify that these works have been design
 by me in accordance with sound engineering practice
 and that I take full responsibility for the design and
 performance of the same.

ZATIR PERBONDING SDN. BHD.



BERICUT, PERAK, MAL.

No. 8, Jalan Indah 1, Jalan Indah, 30000 Ipoh,
 Perak Darul Ridzuan, Malaysia.
 Tel: 05-559877 (6 Talian) Fax: 05-551090

DIREKA :

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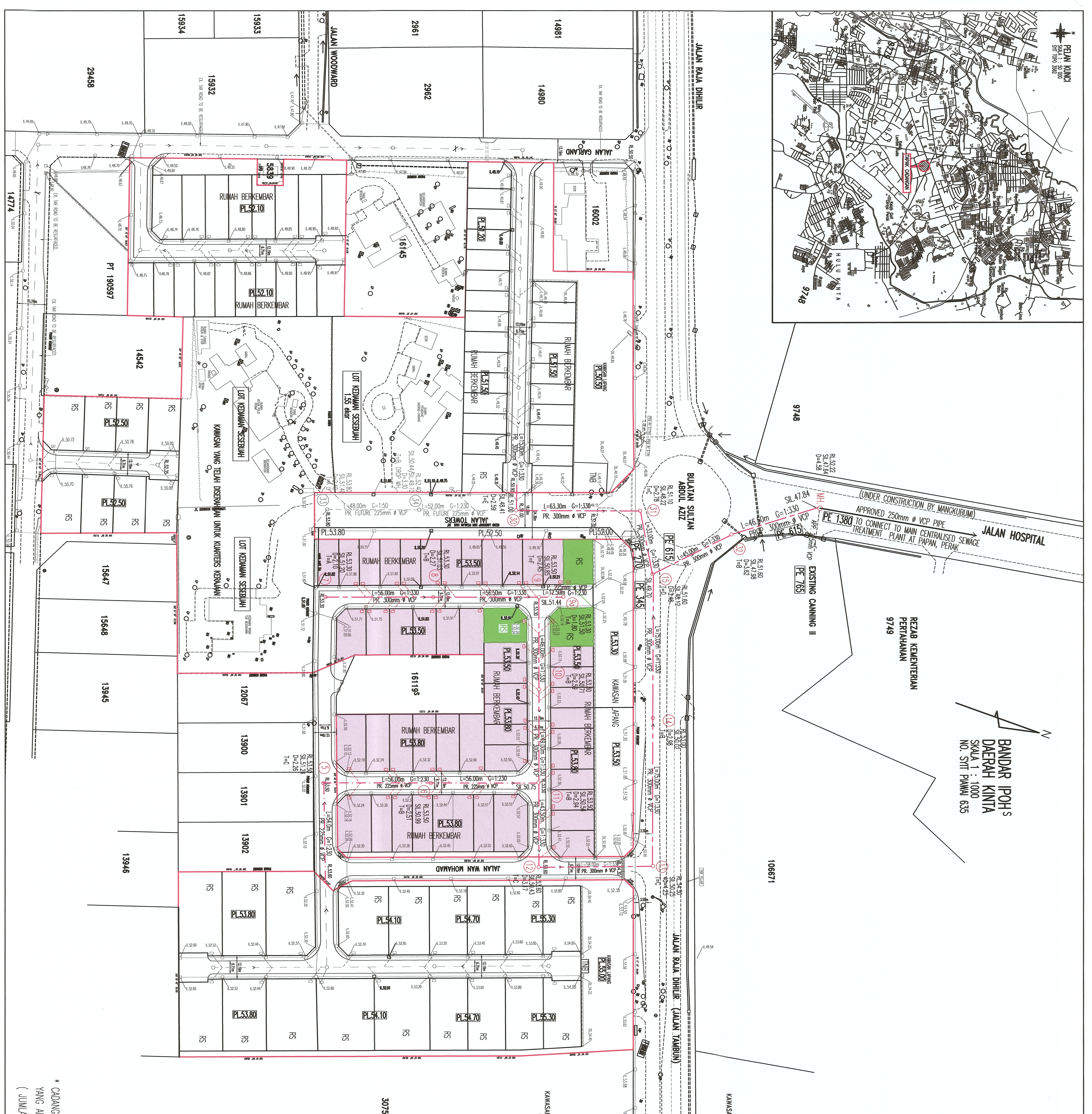
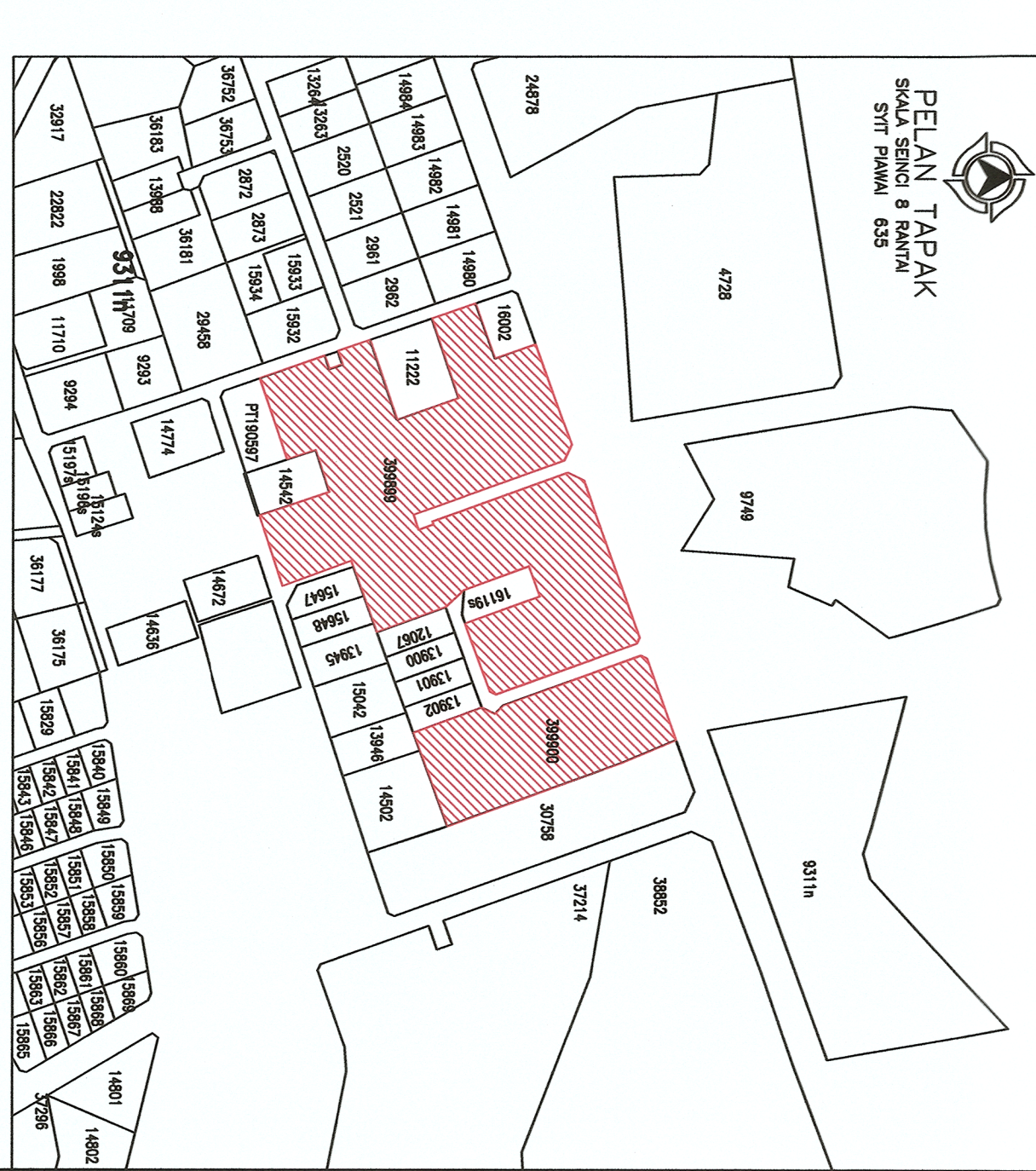
DIREKA :

DIREKA :

DIREKA :

DIREKA :

DIREKA :



BANDAR IPOH'S
 DAERAH KINTA
 SKALA 1 : 1000
 NO. SIT PAMM 635

LEGEND

- PROPOSED 225mm Ø V. C. PIPE
- PROPOSED 300mm Ø V. C. PIPE
- FUTURE MAIN SERVED TO CENTRALISED STP AT PAPAN, PERAK
- PROPOSED FUTURE 225mm Ø V. C. PIPE
- PROPOSED MANHOLE
- PROP. 150mm Ø V. C. P. HOUSE CONNECTION PERS
- PL 54.50 = PROP. PLATFORM LEVEL
- 54.50 = PROP. PLATFORM LEVEL
- SL = SENS. INVERT LEVEL
- T = TYPE OF MANHOLE
- RL = PROPOSED ROAD LEVEL
- G = GRADIENT
- L = LENGTH OF PIPE
- Ø = DPTH. OF MANHOLE

NOTE

EXACT POSITION OF HOUSE MANHOLES TO FOLLOW ARCHITECTURAL DRAWINGS.

NOTA :

1) SEMUA JARAK DALAM UKURAN METER.
 2) SEMUA KEMAMPUAN YANG DITUNJUKKAN ADALAH BERSEKSIAN
 NILAI BM 42934 RL = 55.500m

JADUAL PENGIRAAN PENDUDUK SETARA (PE)

JUMLAH UNIT	PE/UNIT	JUMLAH PE	COMPLETION YEAR
RS - RUMAH SESEBUAH	30	5/UNIT	150
RB - RUMAH BERKEMBAR	90	5/UNIT	450
JUMLAH KESELURUHAN	120		600

* CADANGAN PENAMBAHANGAN PAP-PAIP PERBETONGAN KE LURANG SEDAPA IWK DI JALAN RAYA DHIUR
 YANG AKAN DI SAMBUNGAN KE LOJI RAMATAN KUMBUHAN UTAMA DI PAPAN, PERAK.
 (JUMLAH PE YANG DISAMBUNGAN ADALAH 600)

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UNTUK:
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NEGERI PERAK (SSI)

TALUK :

PLAN VIEW OF TYPICAL MANHOLES

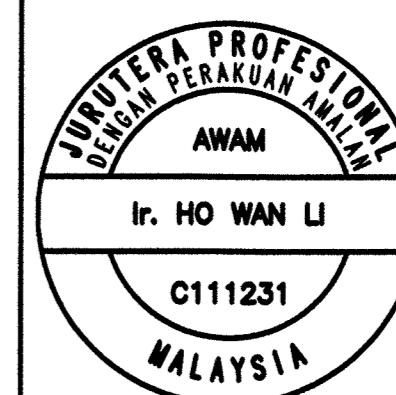
OWNER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)
No. E-10-2, MENARA SSI, SOHO IPOH 2,
JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN PEMAU :

MACORP HOLDINGS SDN BHD
GAN VI KING (No. K/P. : 710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH, B-G-20, JALAN SULTAN NAZRIN SHAH,
30250 IPOH, PERAK DARUL RIDZUAN.

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ZATH PERUNDING SDN. BHD.

Ir. Ho Wan Li
BEng(Civil), PEng., MEM.
Pengarah



No.8, Hala Detoh 1, Jalan Detoh, 30000 Ipoh,
Perak Darul Ridzuan, Malaysia.
Tel: 05-2558077 (5 Talian) Fax:05-2540980

DIREKA :

UKURAN : 1:30

DILUKIS :

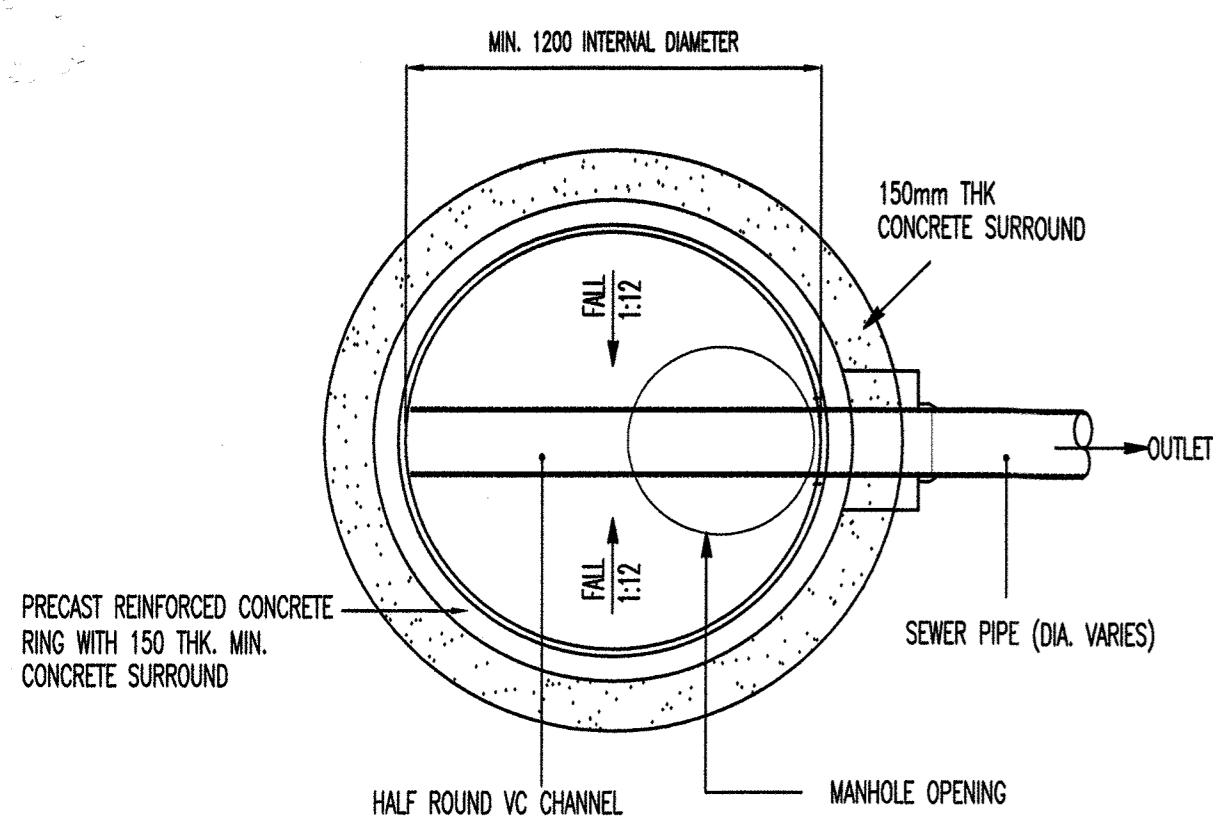
TARIKH : NOV. 2021

DISEMAK :

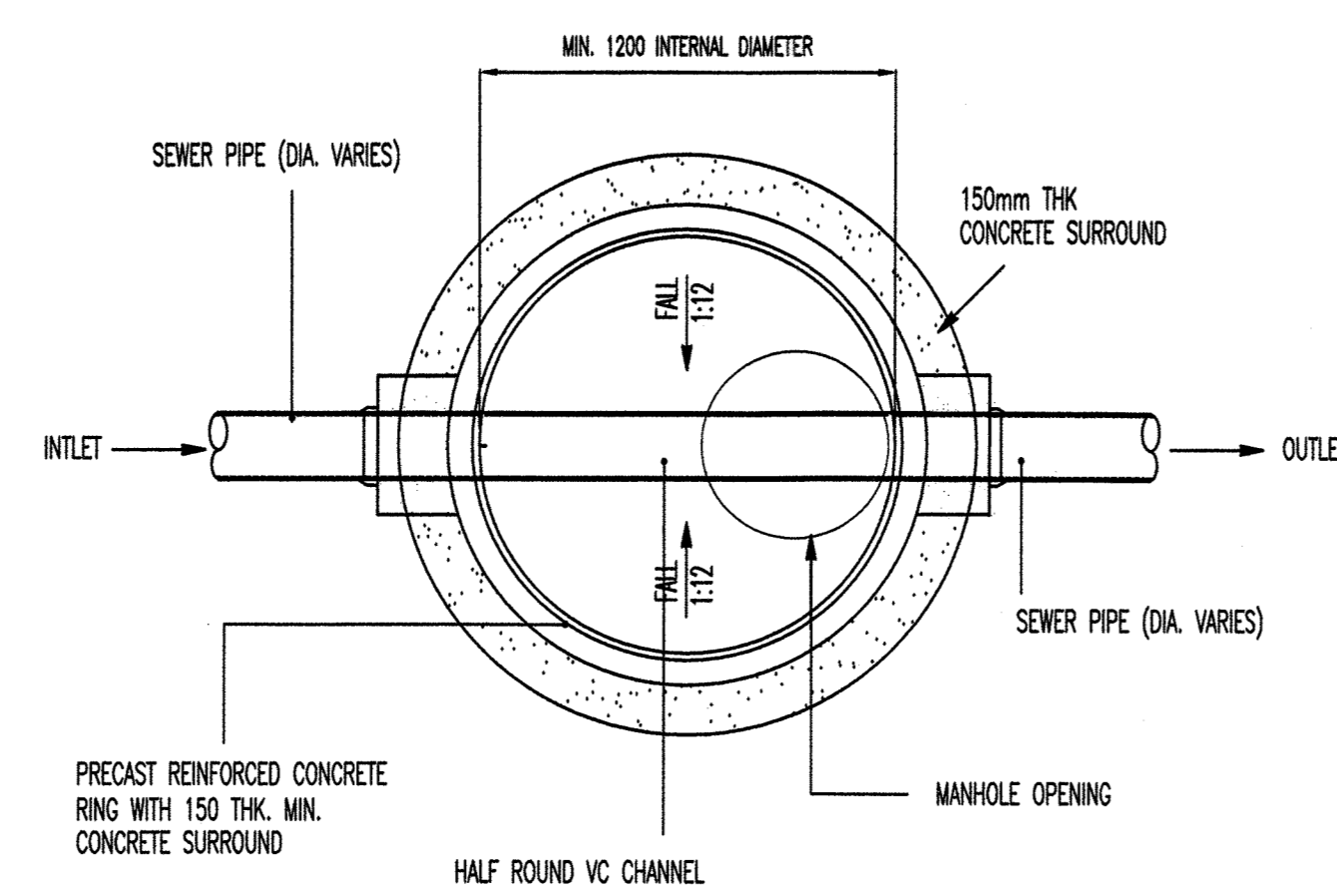
NO. LUKISAN :

DILUJUSKAN : Ir. HO WAN LI

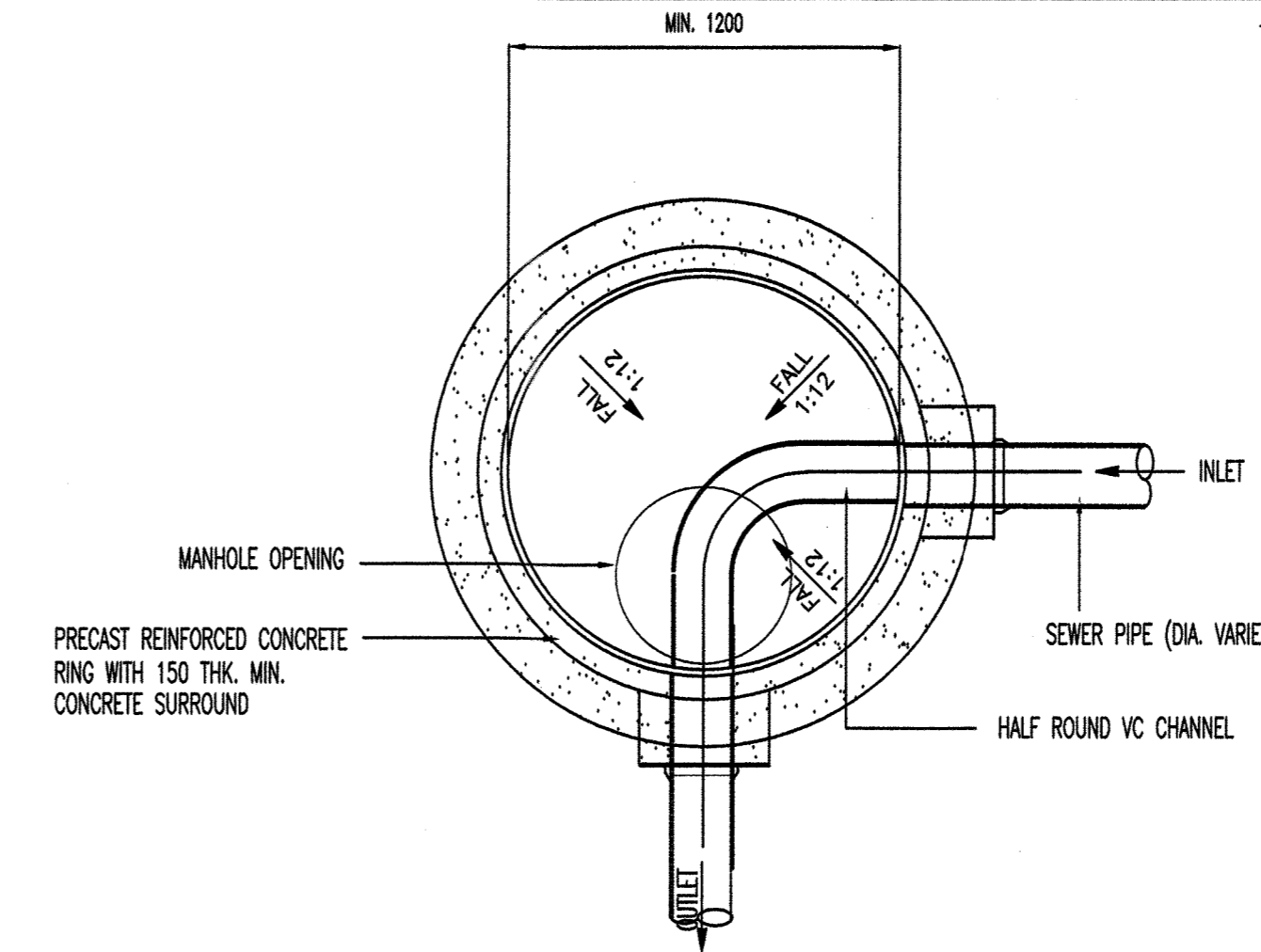
(PDC2) S/ZGH 6042/17/9/3



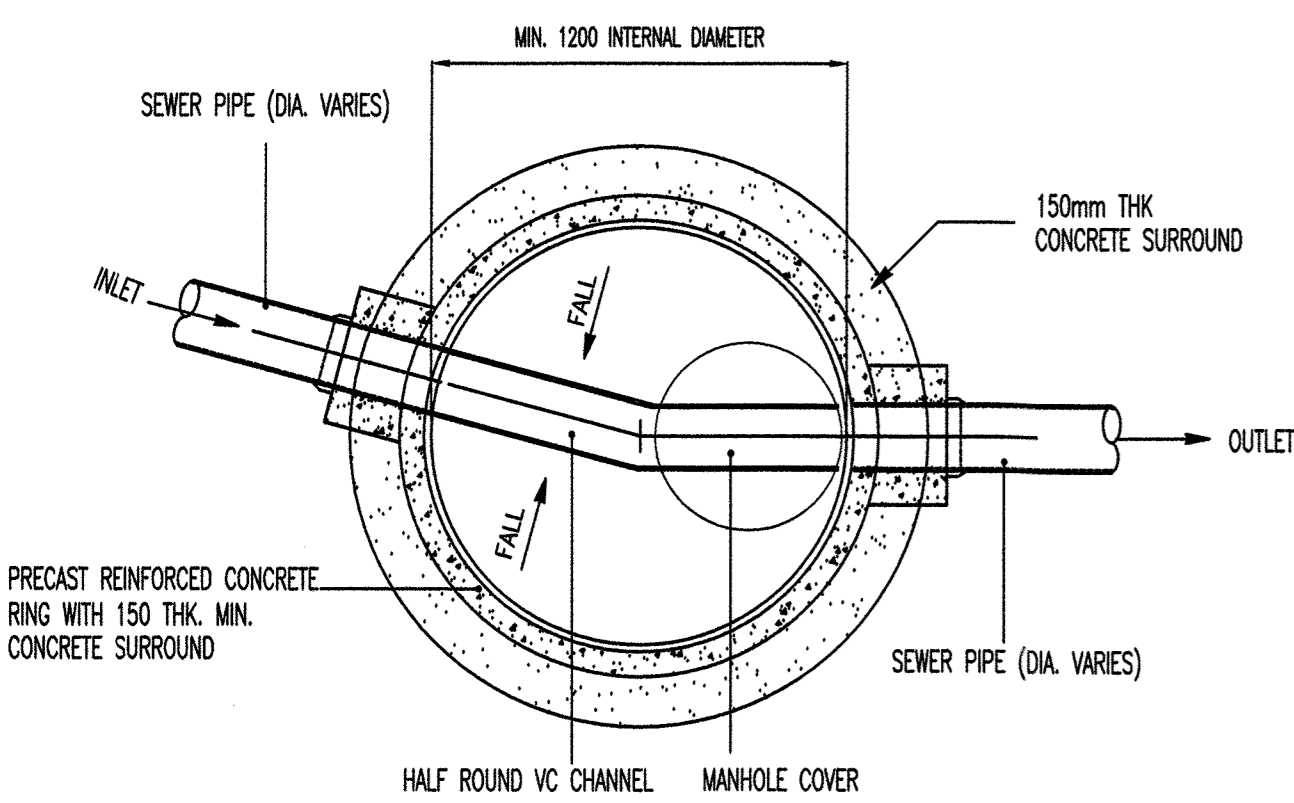
SECTIONAL PLAN VIEW
OF MANHOLE TYPE A
(FIRST MANHOLE)
NOTE : ONE OUTING PIPE



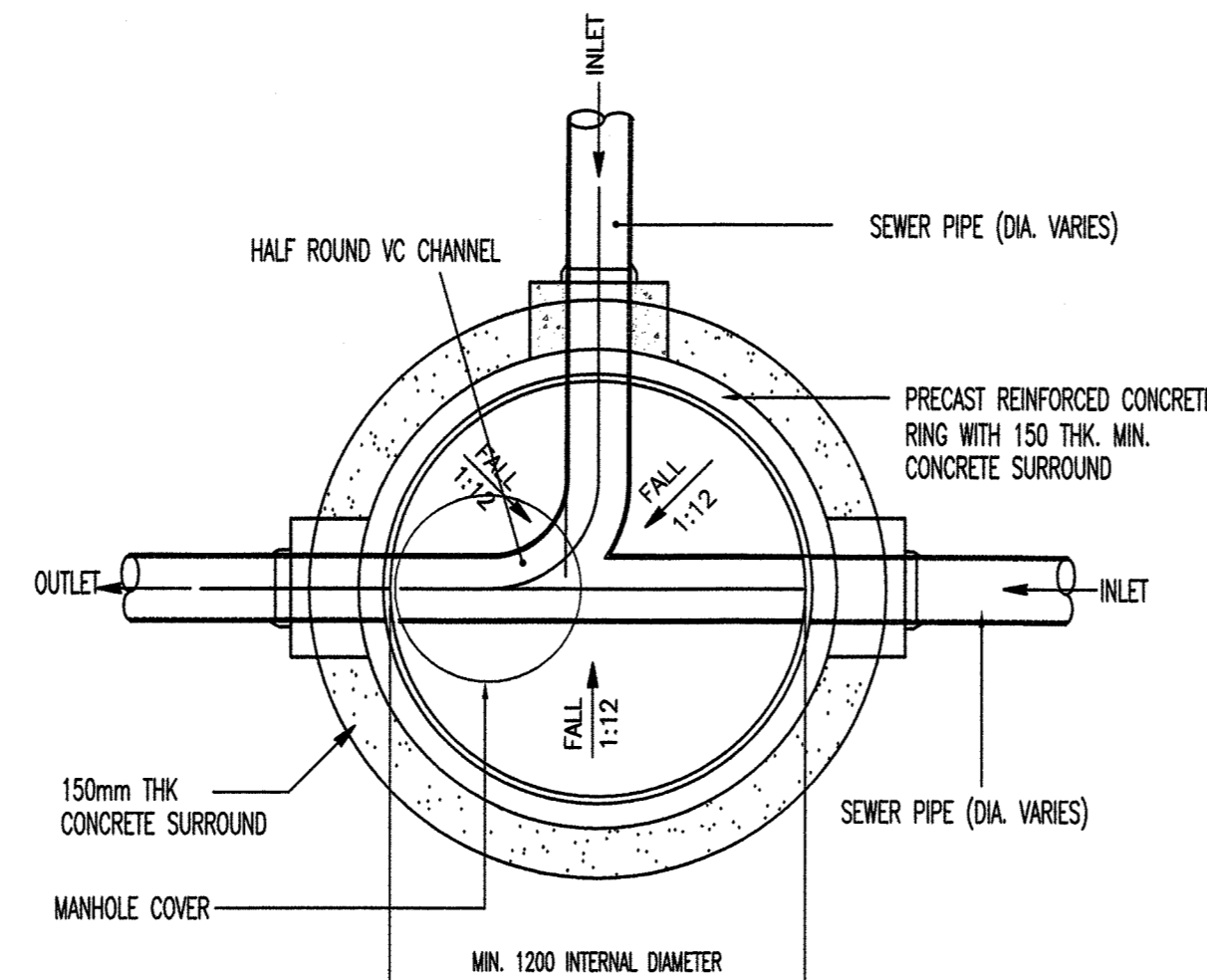
SECTIONAL PLAN VIEW
OF MANHOLE TYPE B
(STRAIGHT THROUGH)
NOTE : ONE INCOMING AND ONE OUTING PIPE



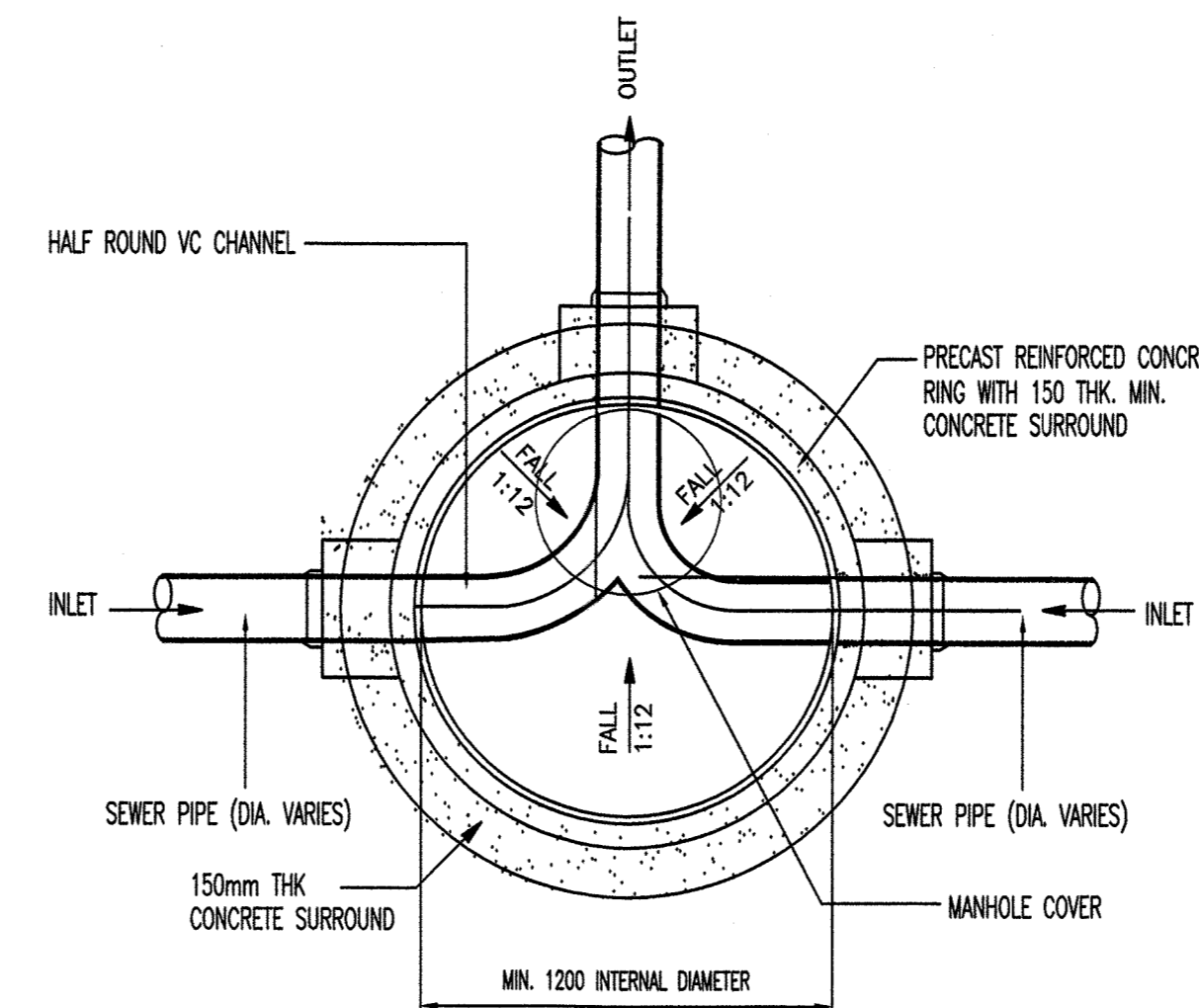
SECTIONAL PLAN VIEW
OF MANHOLE TYPE C
(CHANGE OF DIRECTION - 90°)
NOTE : ONE INCOMING AND ONE OUTING PIPE



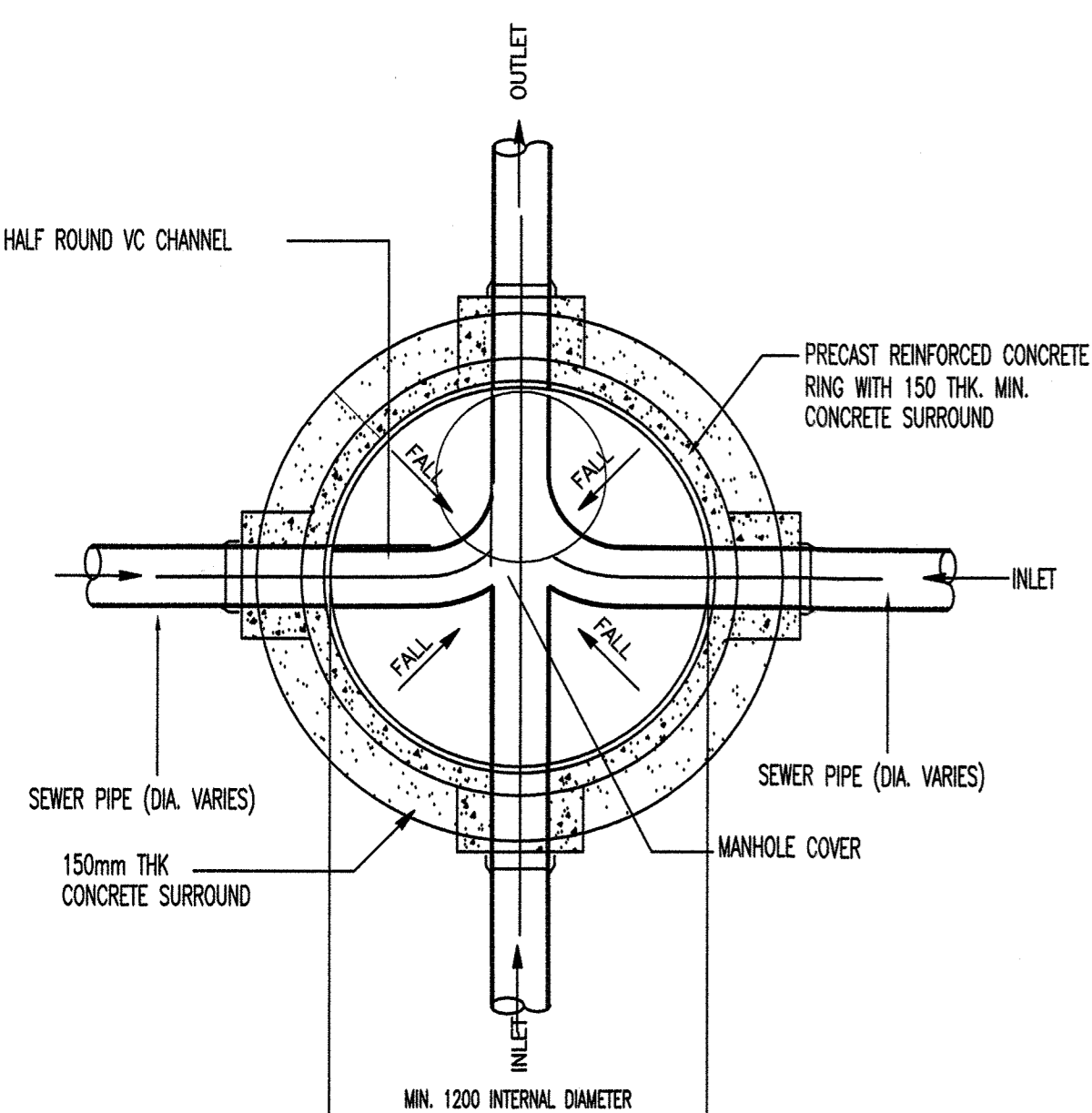
SECTIONAL PLAN VIEW
OF MANHOLE TYPE D
(CHANGE OF DIRECTION)
NOTE : ONE INCOMING AND ONE OUTING PIPE



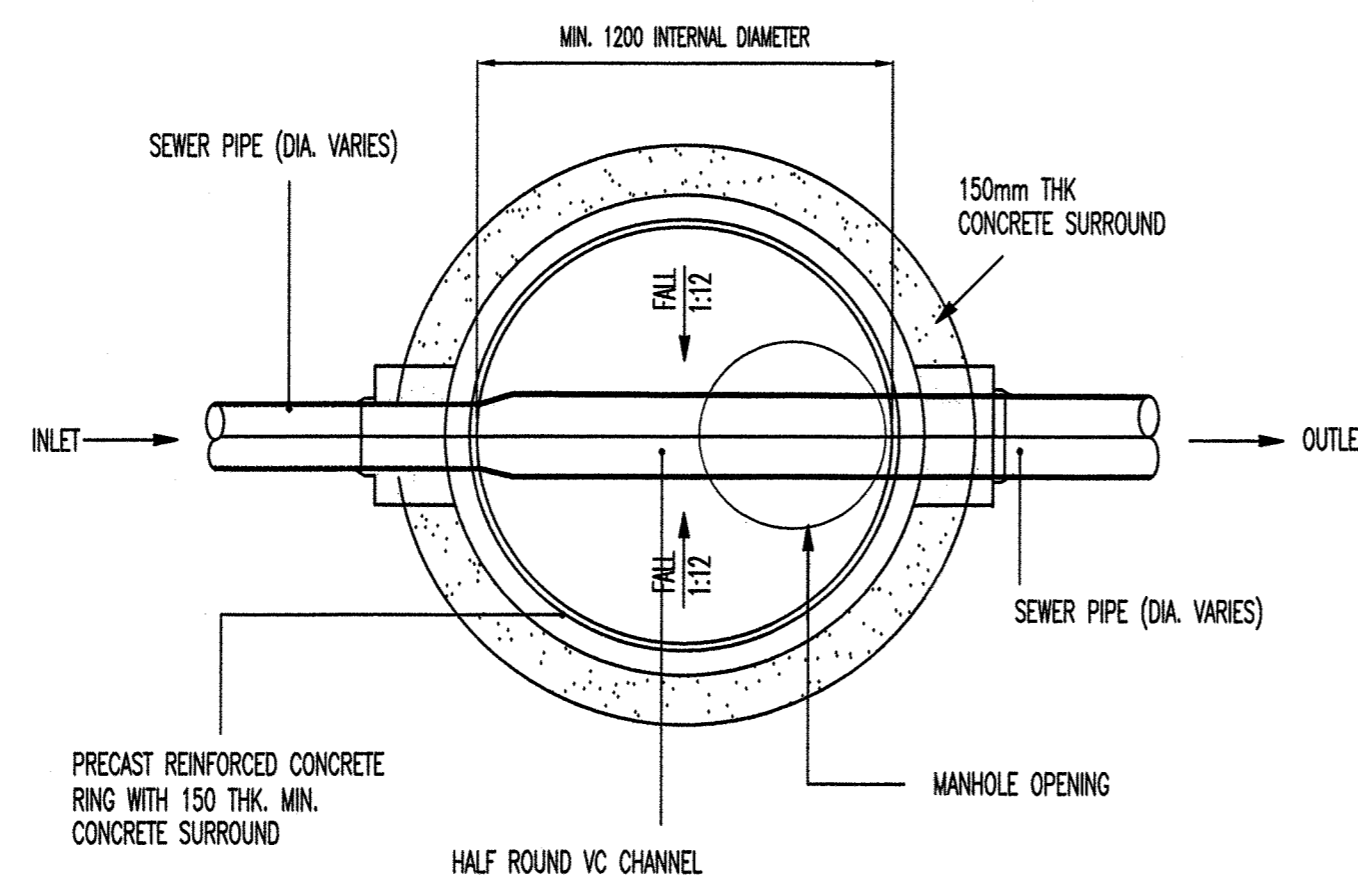
SECTIONAL PLAN VIEW
OF MANHOLE TYPE E
(MULTIPLE INCOMING)
NOTE : TWO INCOMING AND ONE OUTING PIPE



SECTIONAL PLAN VIEW
OF MANHOLE TYPE F
(TWO INCOMING SEWER)
NOTE : TWO INCOMING AND ONE OUTING PIPE



SECTIONAL PLAN VIEW
OF MANHOLE TYPE G
(THREE INCOMING SEWER)
NOTE : THREE INCOMING AND ONE OUTING PIPE



SECTIONAL PLAN VIEW
OF MANHOLE TYPE H
(DIAMETER CHANGE)
NOTE : ONE INCOMING AND ONE OUTING PIPE

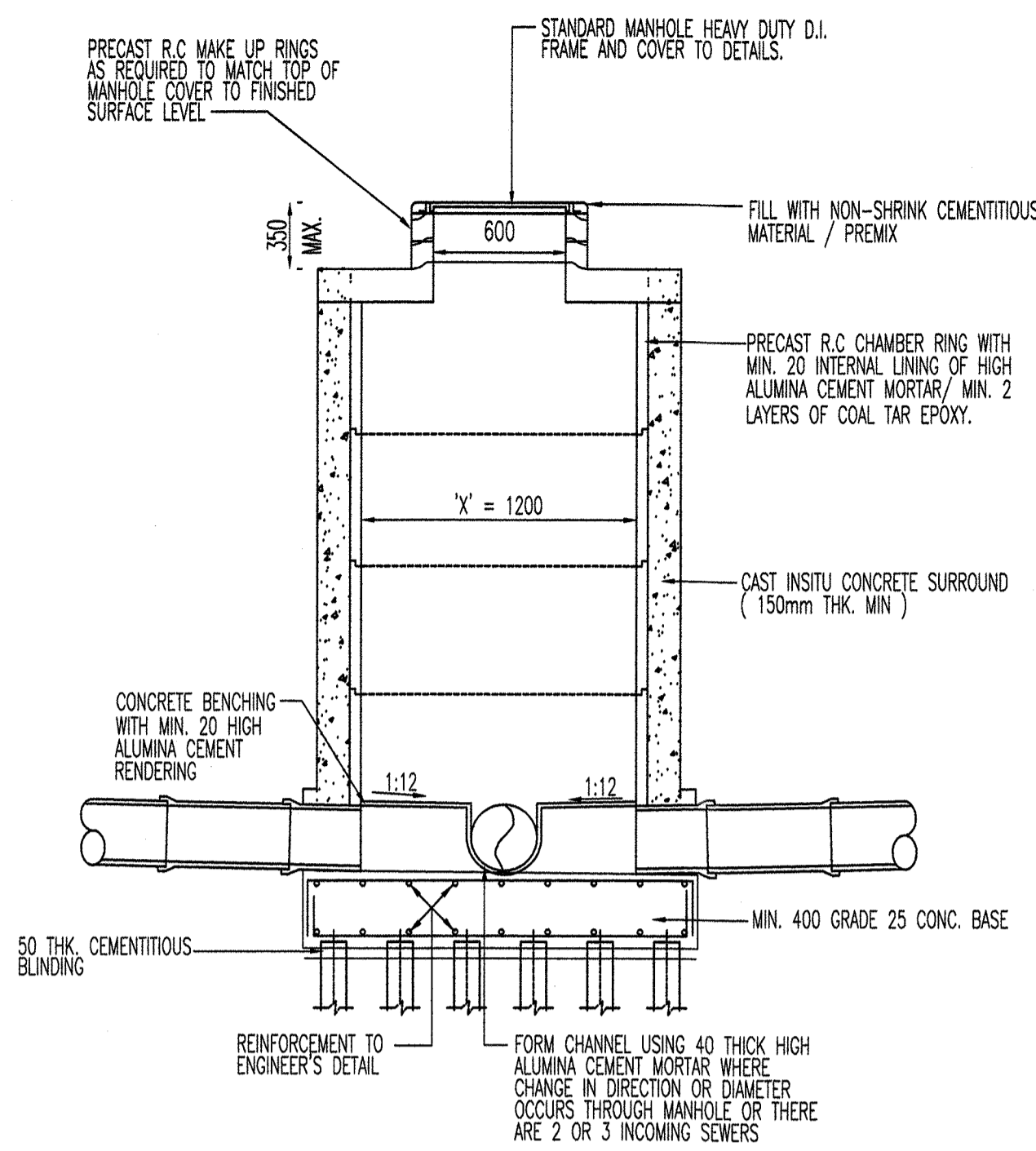
NOTE

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- DIAMETER OF PIPE INSIDE MANHOLE BASE TO BE IF EQUAL SIZE OR LARGER THAN THE INCOMING PIPE DIAMETER.
- PIPE CONNECTIONS TO ANY ONE MANHOLE SHALL BE MAXIMUM 4 NUMBERS. ADDITIONAL MANHOLE SHALL BE PROVIDED TO RECEIVE EXTRA PIPE CONNECTIONS.
- THE WALL OF MANHOLE THAT RECEIVES INCOMING PIPES SHALL BE CAST MONOLITHICALLY.
- ALL COATING DETAILS TO REFER TO SECTIONS OF MANHOLE DRAWINGS.
- FOR MANHOLE COVER WITH HINGE, OPENING OF COVER SHALL BE PERPENDICULAR TO THE DIRECTION OF FLOW AND IN ANYWAY SHOULD NOT OBSTRUCT THE ACCESS OF MANHOLE FOR MAINTENANCE WORKS.

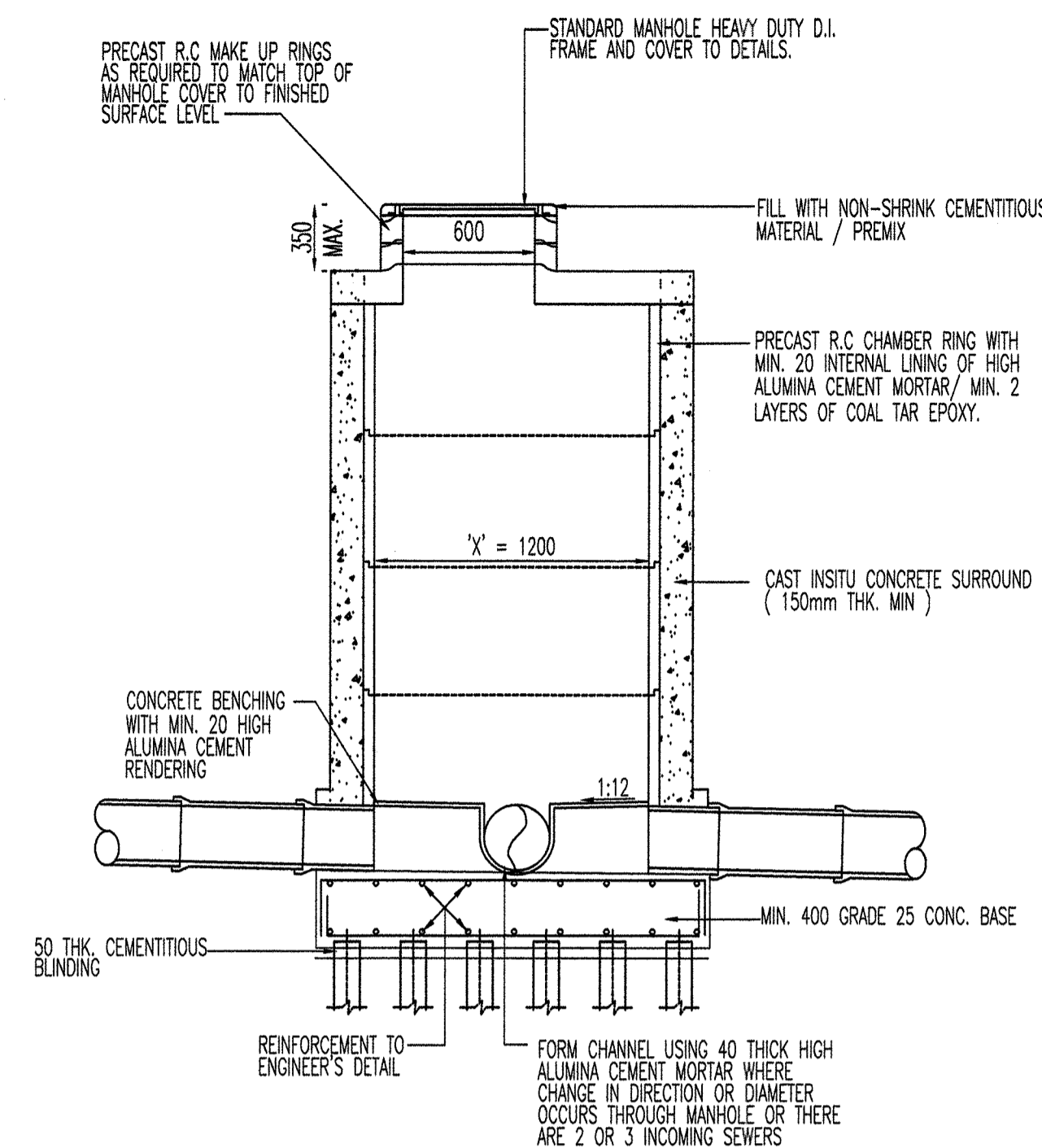
DEPTH TO SOFFIT FROM COVER LEVEL (m)	DN LARGEST PIPE IN MANHOLE (m)	MIN. INTERNAL DIMENSIONS (mm)
< 1.50	< 150	1000
	225 TO 300	1200
	375 TO 450	1350
	525 TO 710	1500
	820 TO 900	1800
> 1.50	> 900	SUBJECT TO DESIGNER'S REQUIREMENT BASED ON SITE CONDITION
	< 300	1200
	375 TO 450	1350
	525 TO 710	1500
	820 TO 900	1800
> 900	> 900	SUBJECT TO DESIGNER'S REQUIREMENT BASED ON SITE CONDITION

TENDER DRAWING

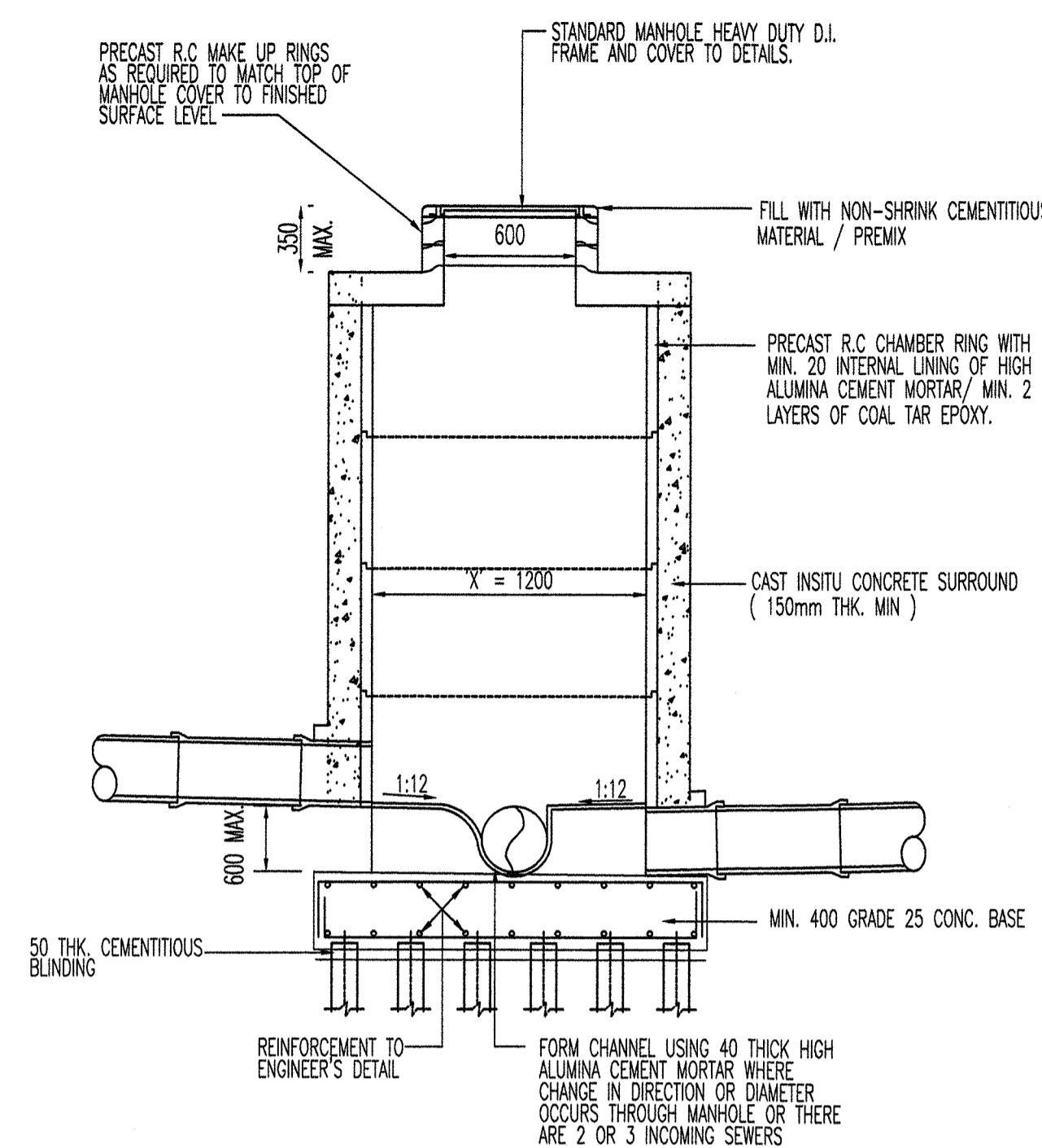
26.6.2024



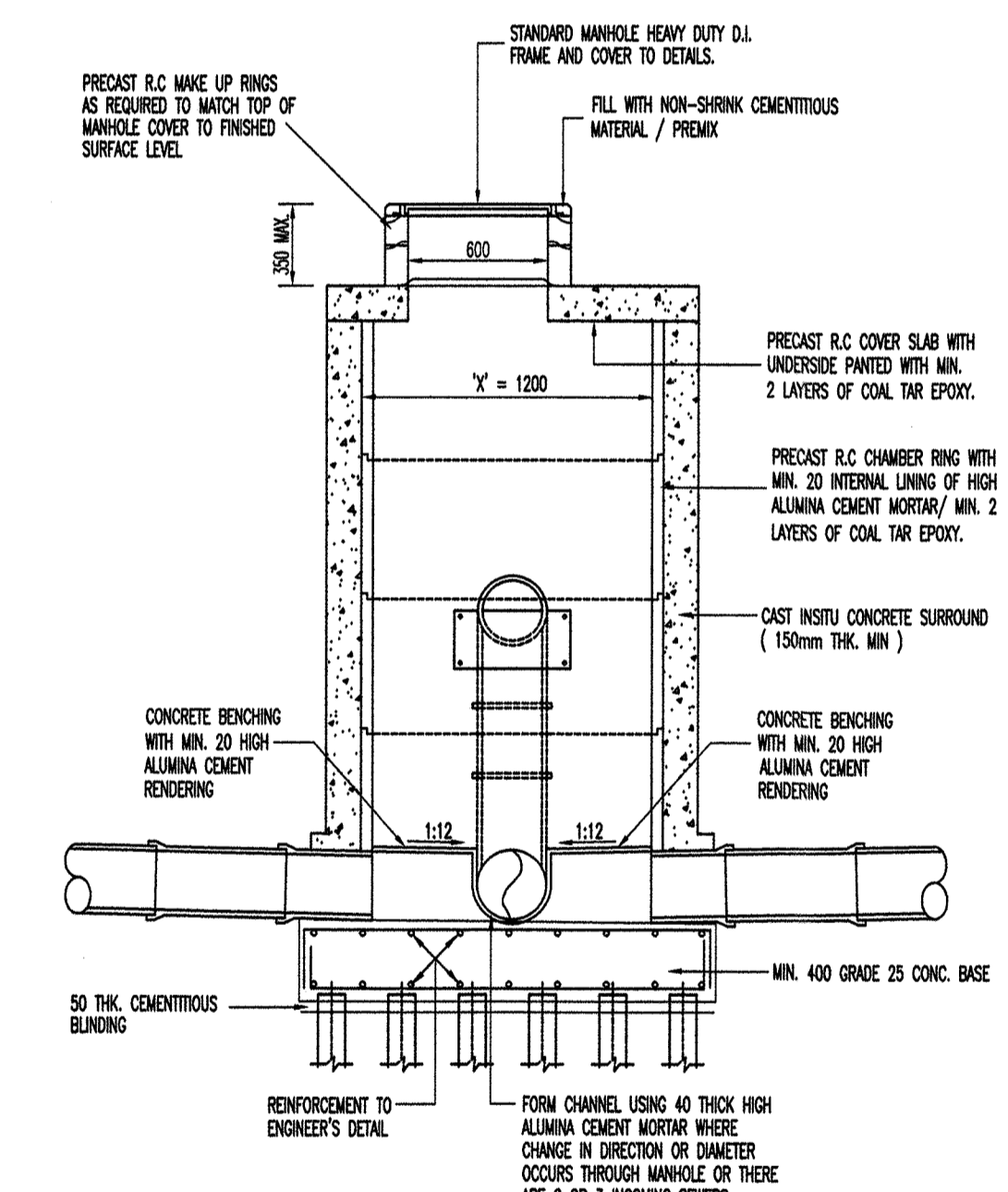
SECTION A - A
(GROUND LEVEL TO INVERT LEVEL OF PIPE 1.20 < D < 2.50 METRES)



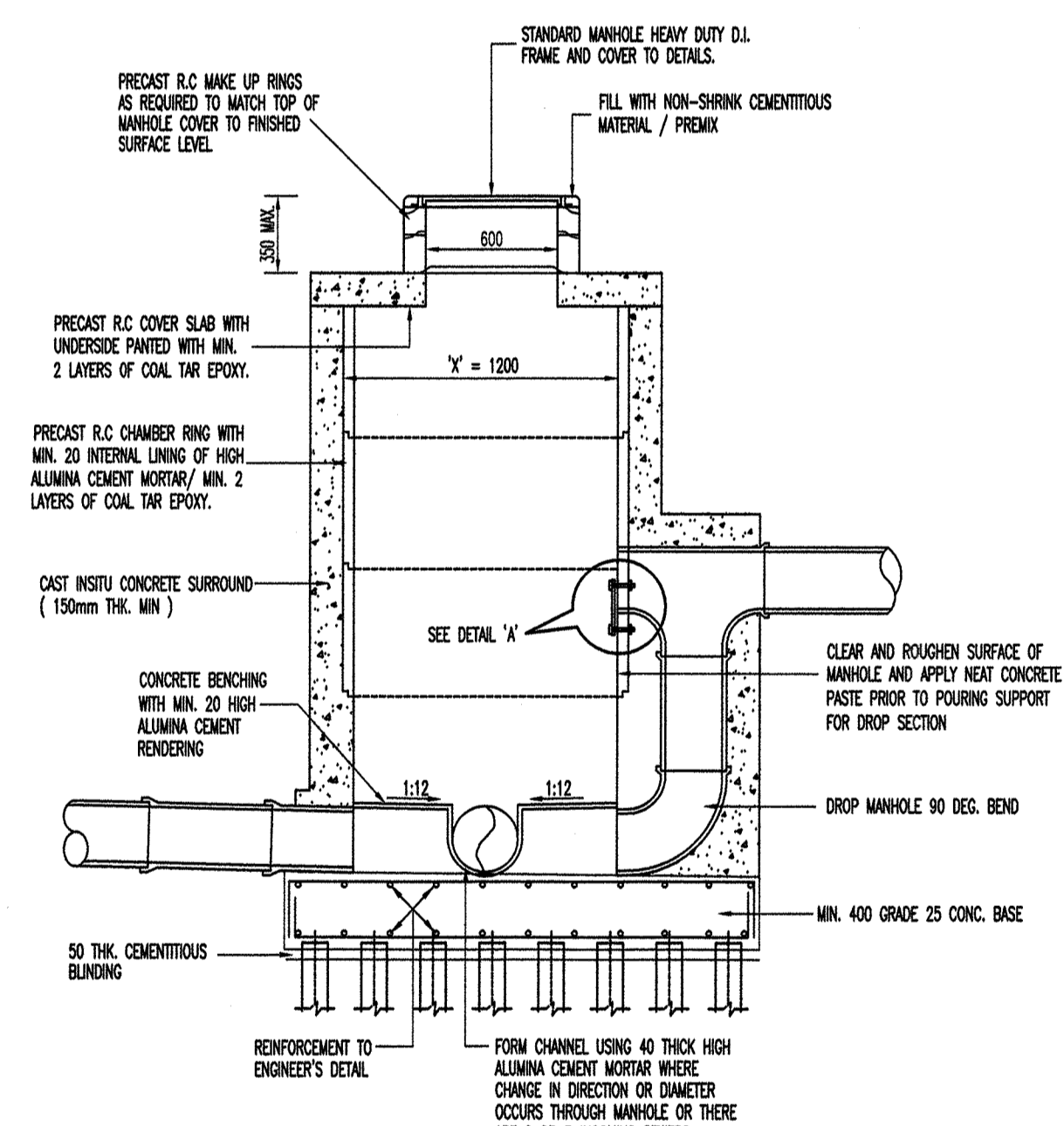
SECTION B - B
(GROUND LEVEL TO INVERT LEVEL OF PIPE 1.20 < D < 2.50 METRES)



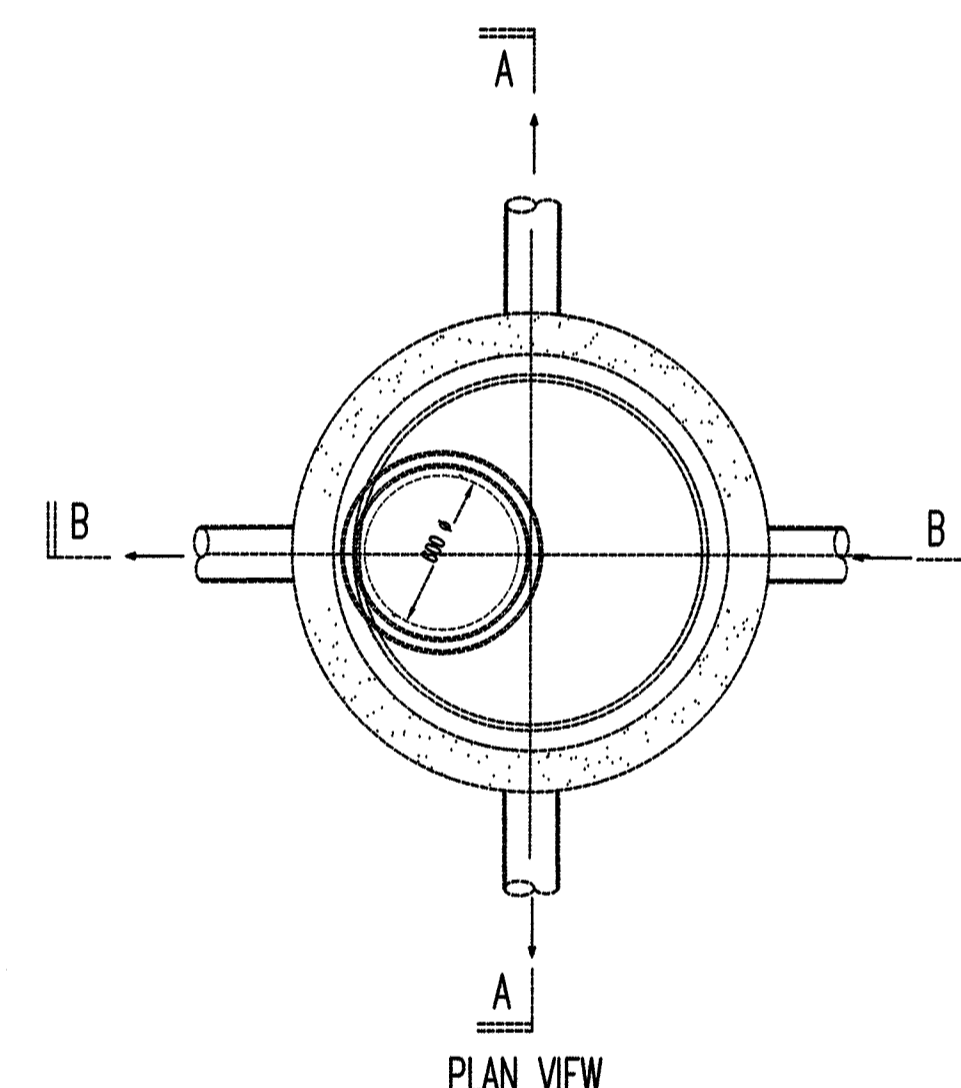
SECTION A - A (FREE DROP < 600)
(GROUND LEVEL TO INVERT LEVEL OF PIPE 1.20 < D < 2.50 METRES)



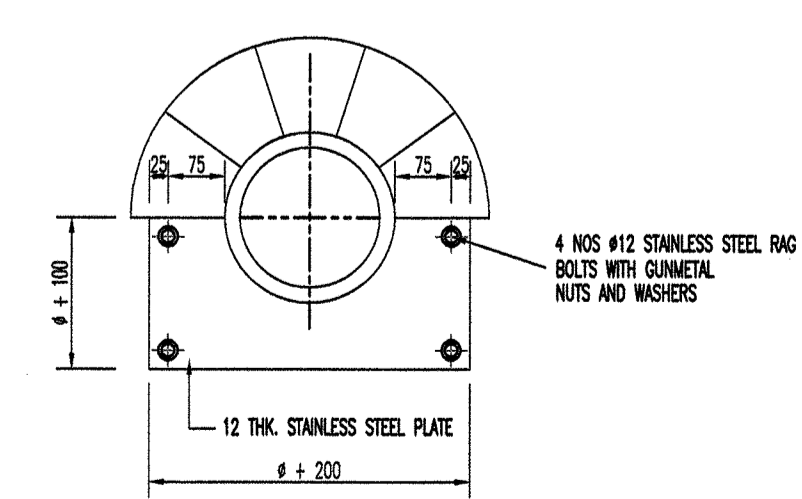
SECTION A - A (BACKDROP ≥ 600)
(GROUND LEVEL TO INVERT LEVEL OF PIPE 1.2 ≤ D < 2.5 METRES)



SECTION B - B (BACKDROP ≥ 600)
(GROUND LEVEL TO INVERT LEVEL OF PIPE 1.2 ≤ D < 2.5 METRES)

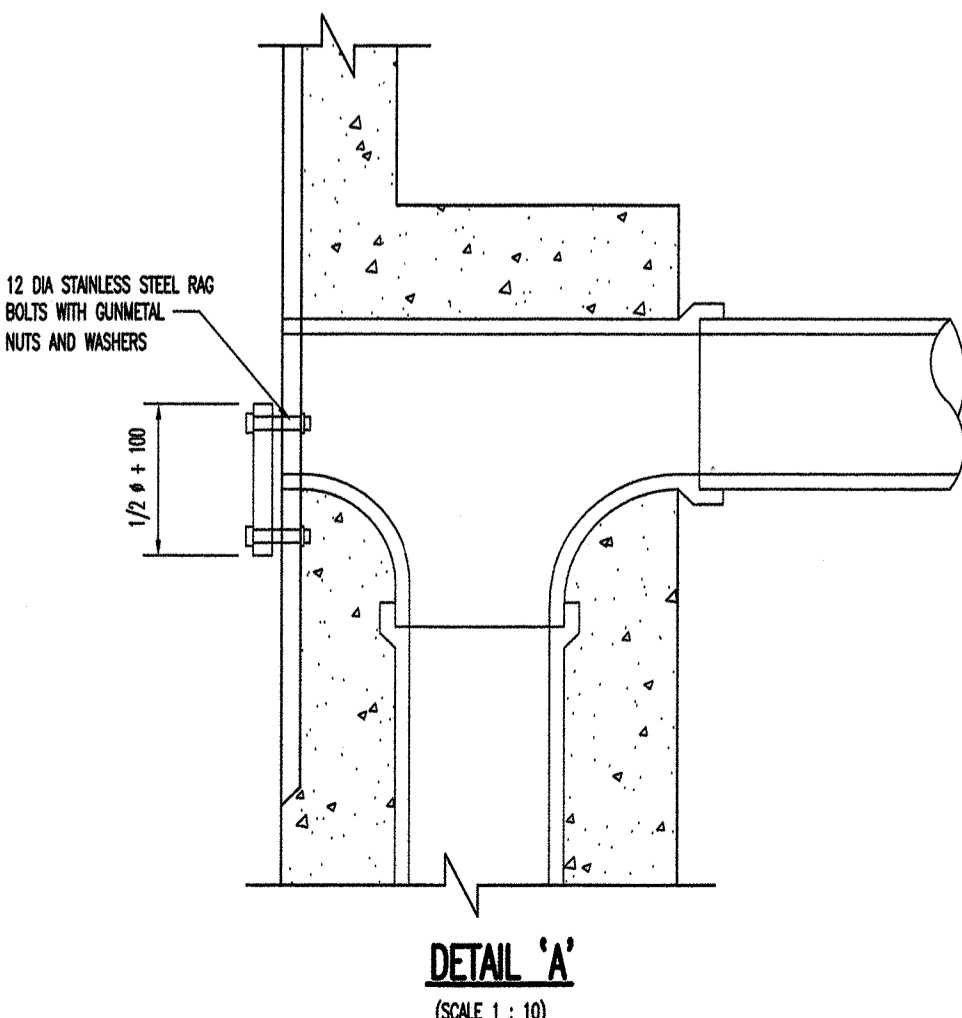


COVER PLATE DETAILS
(SCALE 1 : 10)



NOTE

- ROCKER PIPE SHALL BE 600 LONG FOR SEWERS UP TO 300 DIAMETER AND 900 LONG FOR LARGER DIAMETER SEWERS.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- S.I. IS REQUIRED TO DETERMINE SOIL CONDITION AND REQUIREMENT FOR PILING.
- ALL STRUCTURAL ELEMENTS REQUIREMENTS SUBJECT TO ENGINEER'S DETAIL.
- TOP OF MANHOLE COVER SHALL BE FLUSH WITH THE FINISHED ROAD LEVEL.
- TOP OF MANHOLE COVER TO GROUND FINISHED LEVEL TO BE 300 - 1000 FOR MANHOLE CONSTRUCTED OFF ROAD.
- THE WALL OF MANHOLE THAT RECEIVES INCOMING PIPES SHALL BE CAST MONOLITHICALLY.
- SEWER PIPES AND MANHOLE STRUCTURES SHOULD NOT BE CONSTRUCTED ON SLOPE OR WITHIN SLOPE FAILURE ENVELOPE. IN THE EVENT WHERE IT IS UNAVOIDABLE, THE SAID STRUCTURES MUST BE DESIGNED NOT TO ENCOUNTER SETTLEMENT OR THE SORTS AND AT ANY TIME AT RISK OF COLLAPSE DURING ITS OPERATING SPAN.
- FOR MANHOLE COVER WITH HINGE, OPENING OF COVER SHALL BE PERPENDICULAR TO THE DIRECTION OF FLOW AND IN ANYWAY SHOULD NOT OBSTRUCT THE ACCESS OF MANHOLE FOR MAINTENANCE WORKS.



DETAIL 'A'
(SCALE 1 : 10)

PROJEK :
CADANGAN SKIM PERUMAHAN DI ATAS PT 265369 (HSD 229470) & PT 265370 (HSD 229471), BANDAR IPOH (S), DAERAH KINTA, PERAK DARUL RIDZUAN. (LOKASI : BANDAR IPOH) UNTUK: TETUAN PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)

TAJUK :
SHALLOW MANHOLE DETAILS, MANHOLE DROP DETAILS

OWNER'S SIGNATURE:
PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2, JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN JURUTERA :
MACORP HOLDINGS SDN BHD
GAN VI KING (No. K/P. : 710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH, B-G-20, JALAN SULTAN NAZRIN SHAH, 30250 IPOH, PERAK DARUL RIDZUAN.

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ZATH PERUNDING SDN. BHD.
Ir. HO WAN LI
BB(Civil), Peng., MEM.
Pengerah

ZATH PERUNDING BERHAD
No. 8, Hala Detoh 1, Jalan Detoh, 30000 Ipoh, Perak Darul Ridzuan, Malaysia.
Tel: 05-2568077 (5 Talian) Fax: 05-2540980
No. SML 75827 - A

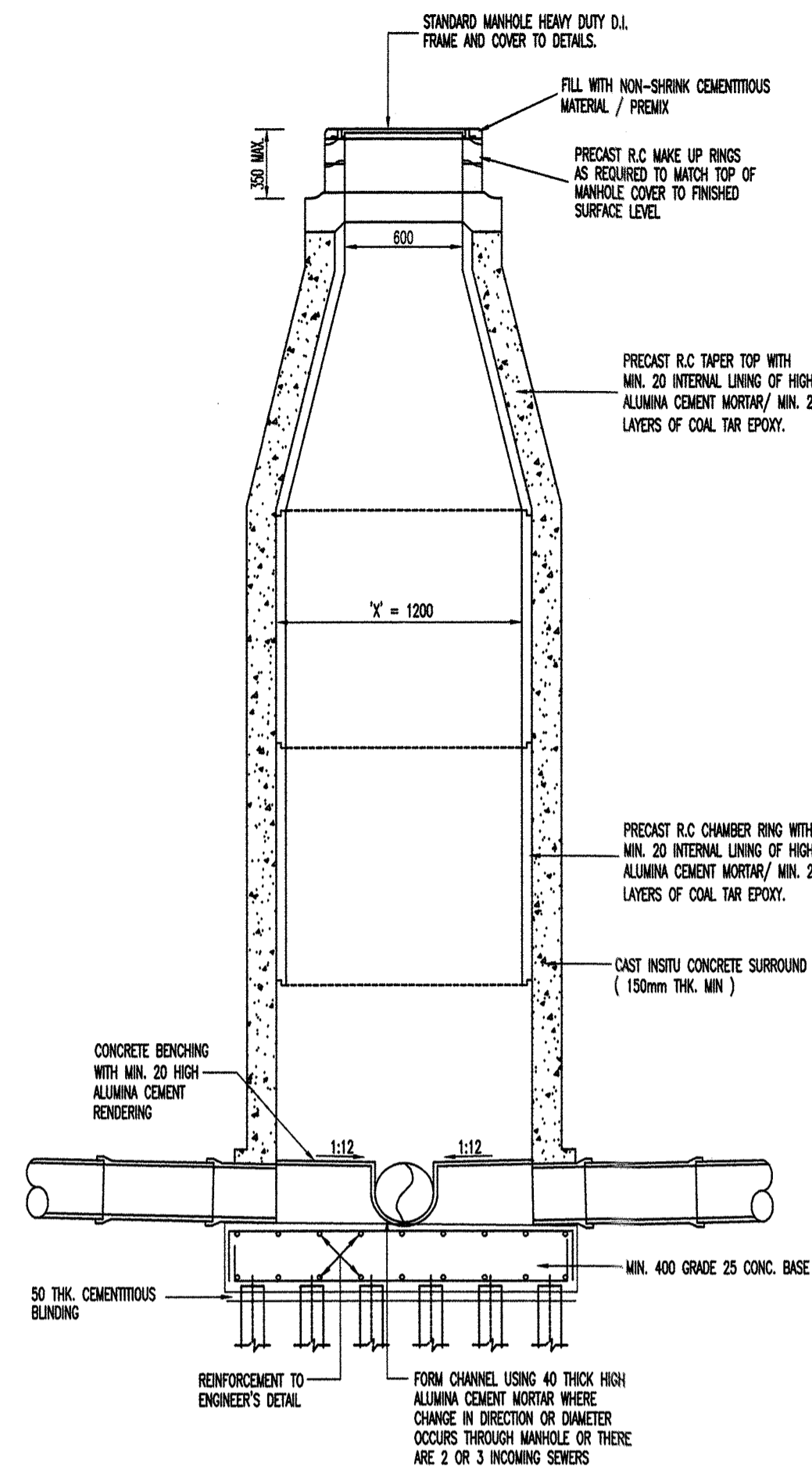
DIREKA :
DILUKIS : WONG
DISEMAK :
DILULUSKAN : Ir. HO WAN LI
UKURAN : 1:30
TARIKH : NOV. 2021
NO. LUKISAN :
(PC2) S/ZGH 6042/17/9/4

TENDER DRAWING

26.6.2024

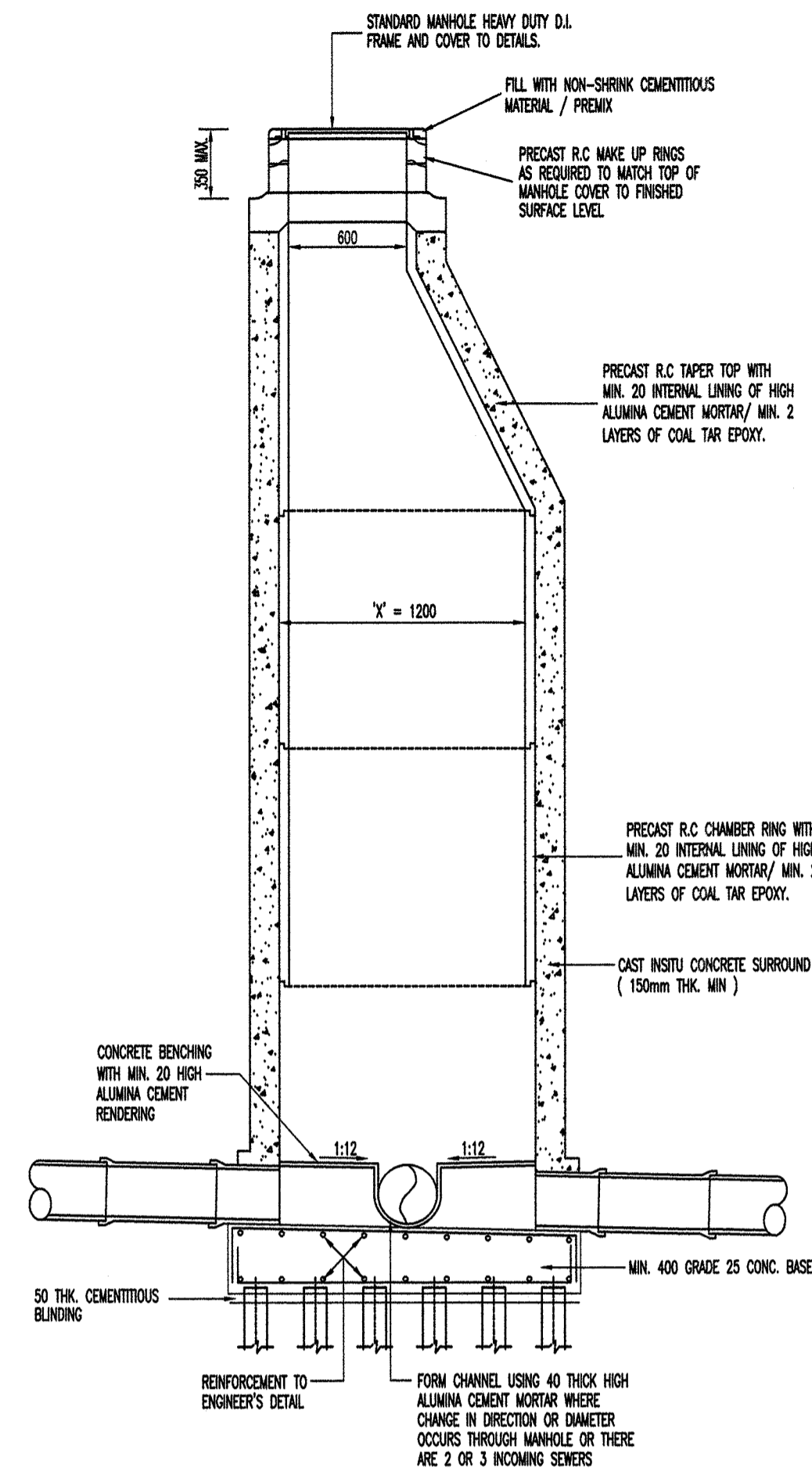
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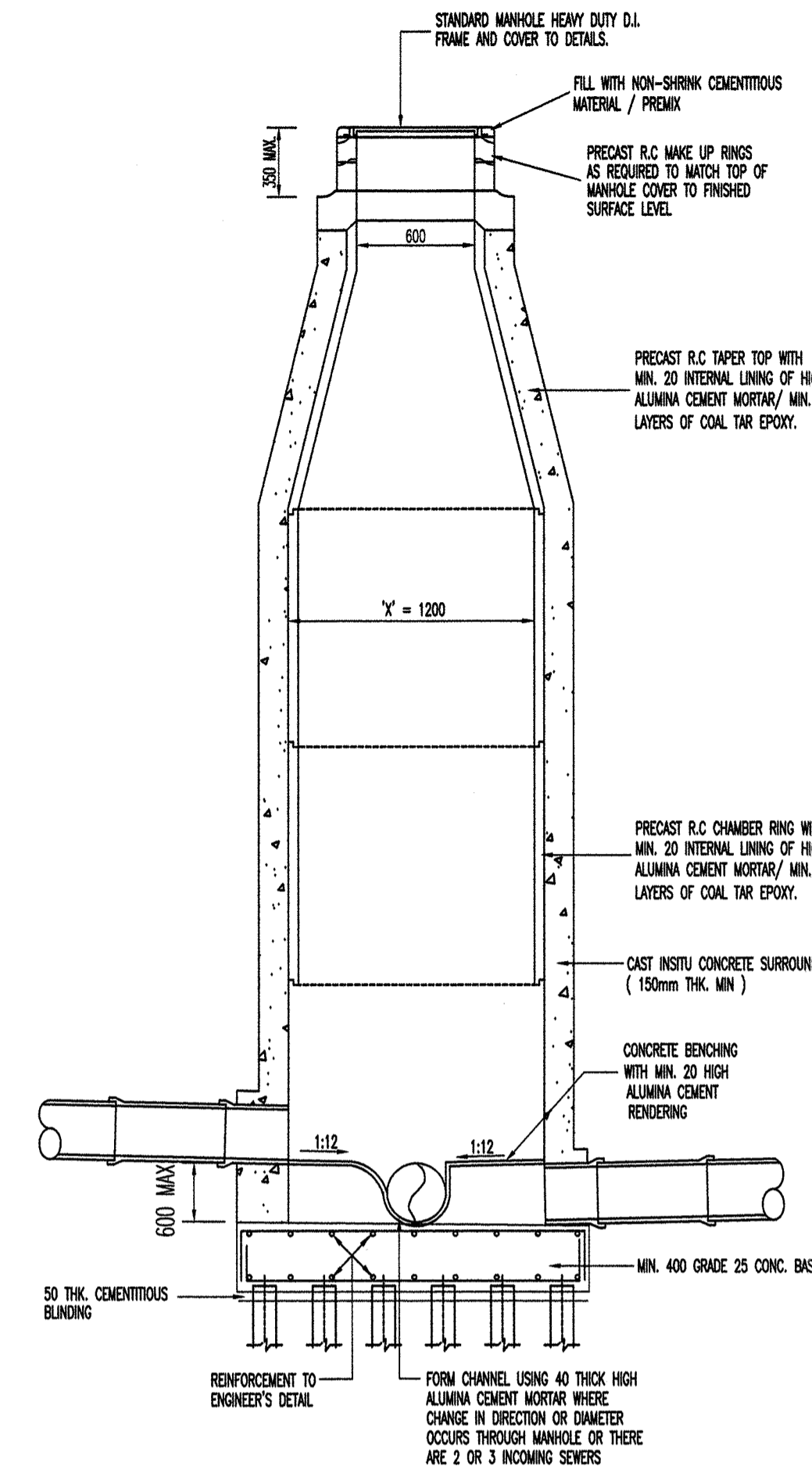
SECTION A - A

(MEDIUM: GROUND LEVEL TO INVERT LEVEL OF PIPE $2.5 \leq D < 5$ METRES)



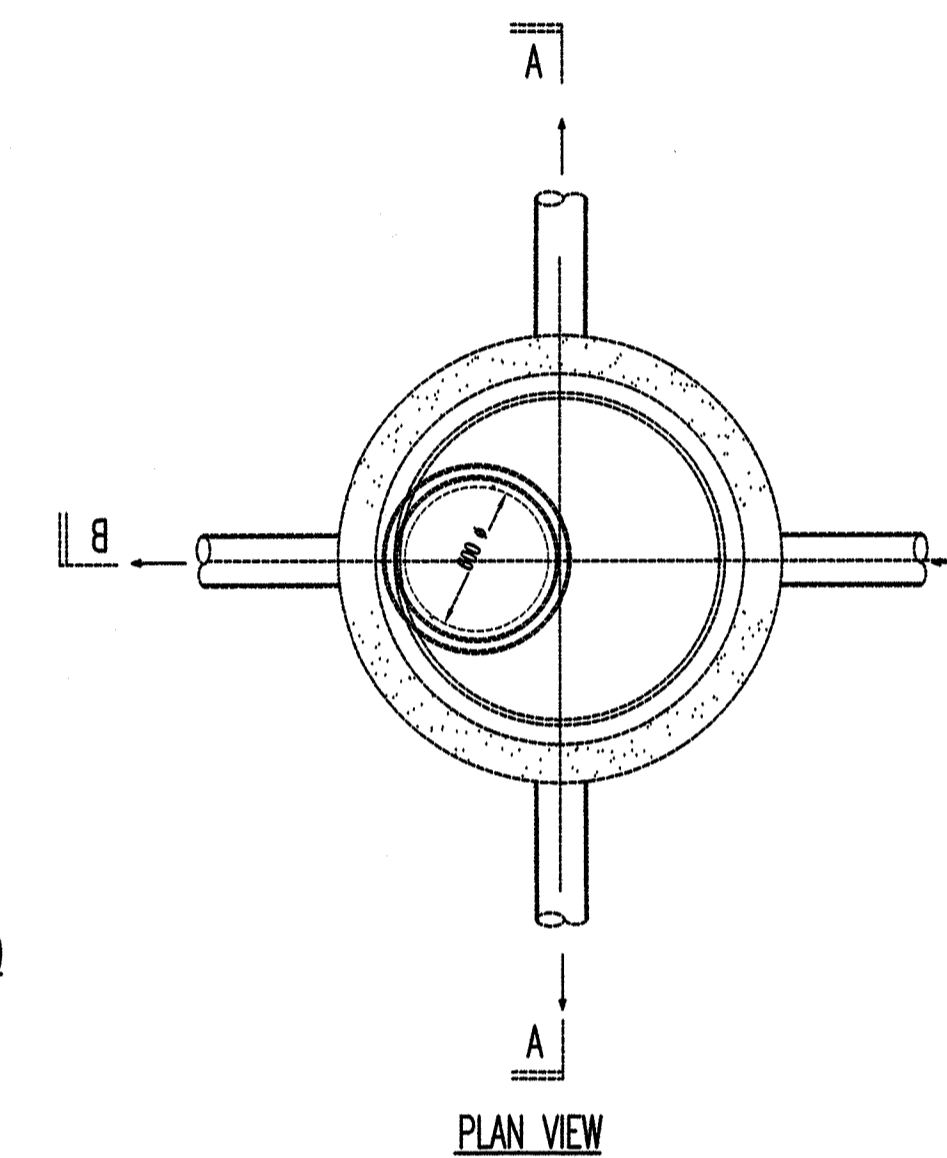
SECTION B - B

(MEDIUM: GROUND LEVEL TO INVERT LEVEL OF PIPE $2.5 \leq D < 5$ METRES)

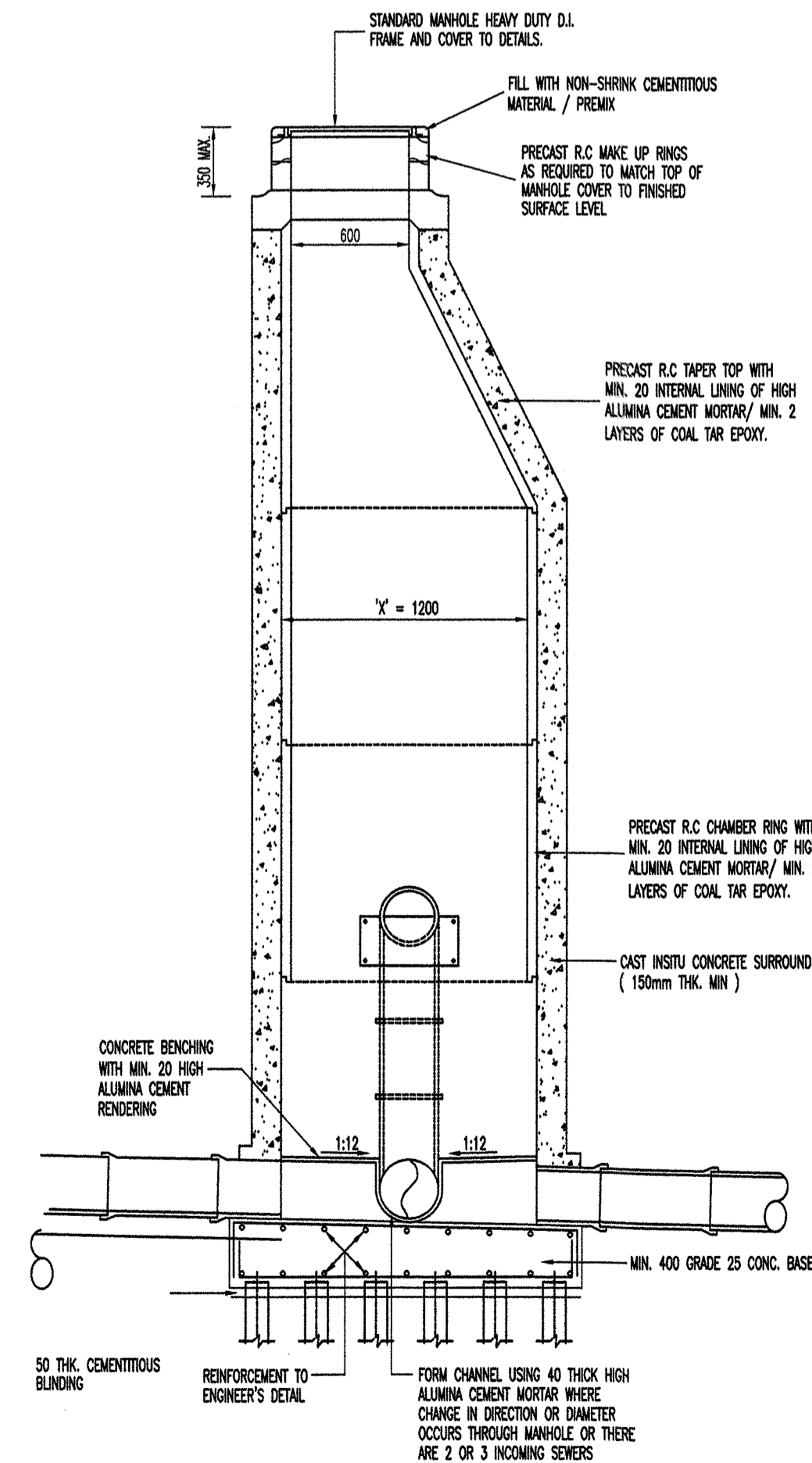


SECTION A - A (FREE DROP ≤ 600)

(MEDIUM: GROUND LEVEL TO INVERT LEVEL OF PIPE $2.5 \leq D < 5$ METRES)

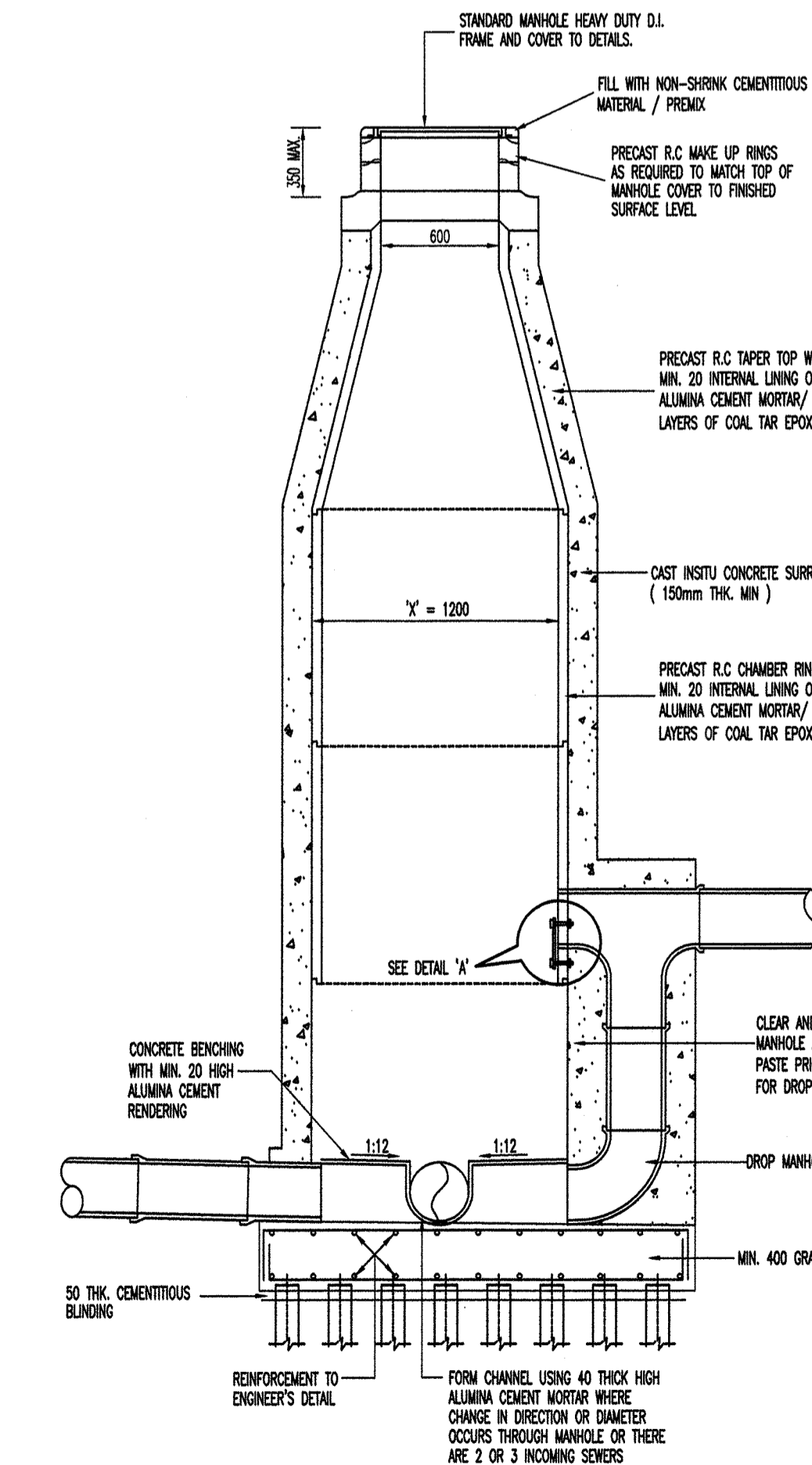


PLAN VIEW



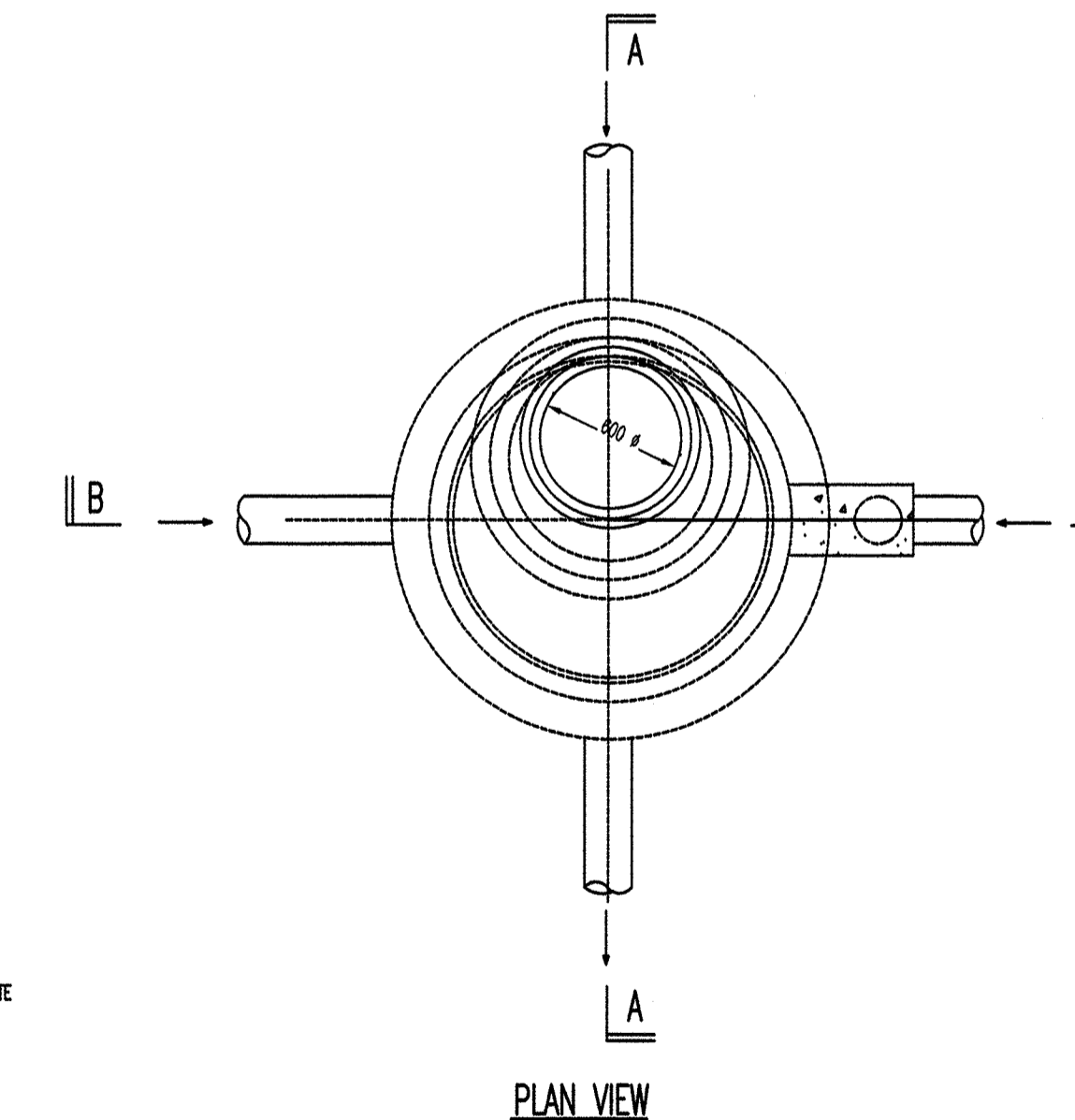
SECTION B - B

(MEDIUM: GROUND LEVEL TO INVERT LEVEL OF PIPE $2.5 \leq D < 5$ METRES)

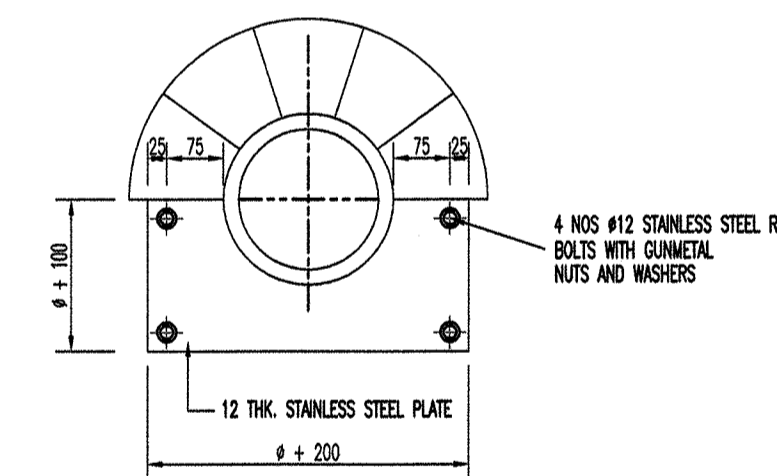


SECTION B - B (BACKDROP ≥ 600)

(MEDIUM: GROUND LEVEL TO INVERT LEVEL OF PIPE $2.5 \leq D < 5$ METRES)

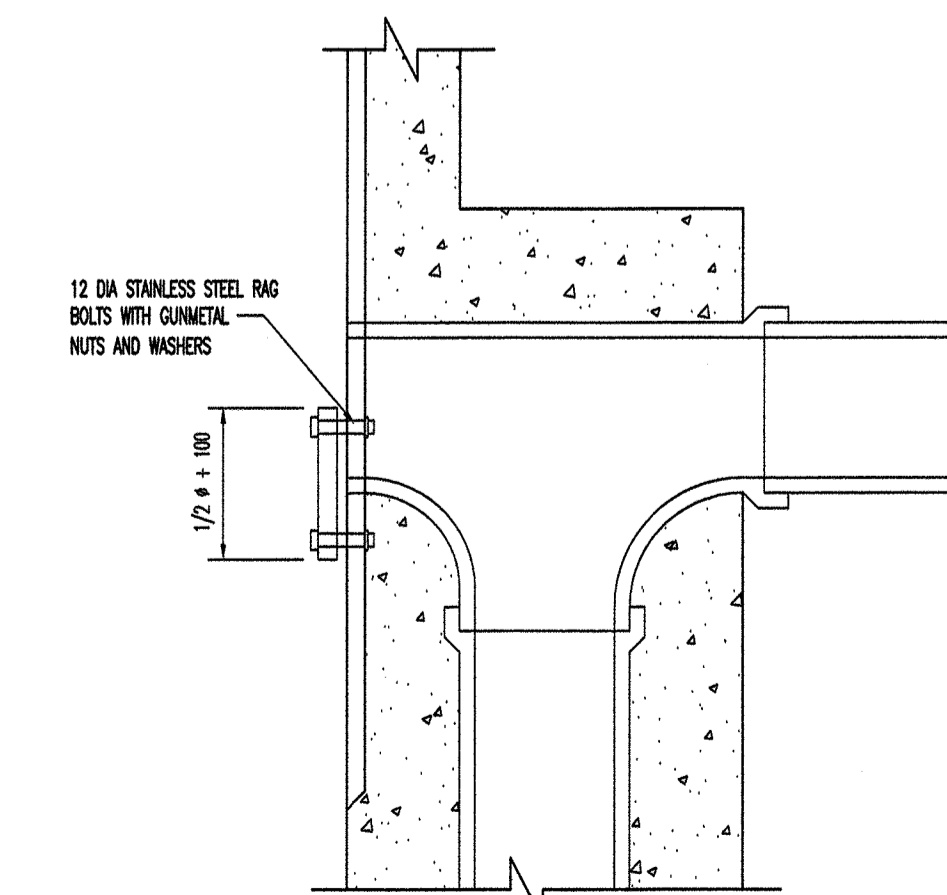


PLAN VIEW



COVER PLATE DETAILS

(SCALE 1:10)



DETAIL 'A'

(SCALE 1:10)

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(HSD 229471), BANDAR IPOH (S),
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(LOKASI : BANDAR IPOH)
UNTUK:
TETUAN PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)

TAJUK :

TYPICAL MEDIUM PRECAST CONCRETE MANHOLE WITH BACKDROP
(GROUND LEVEL TO INVERT OF PIPE 2.5 m < DEPTH < 5 m)

OWNER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2,
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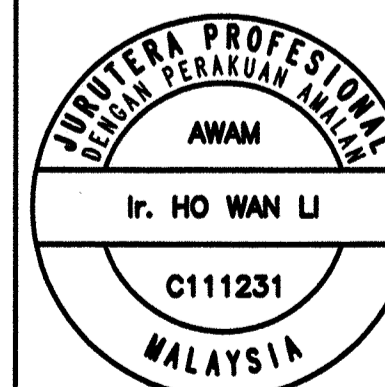
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Ir. Ho Wan Li
BB(civil), PEng., MREM.
Pengarah

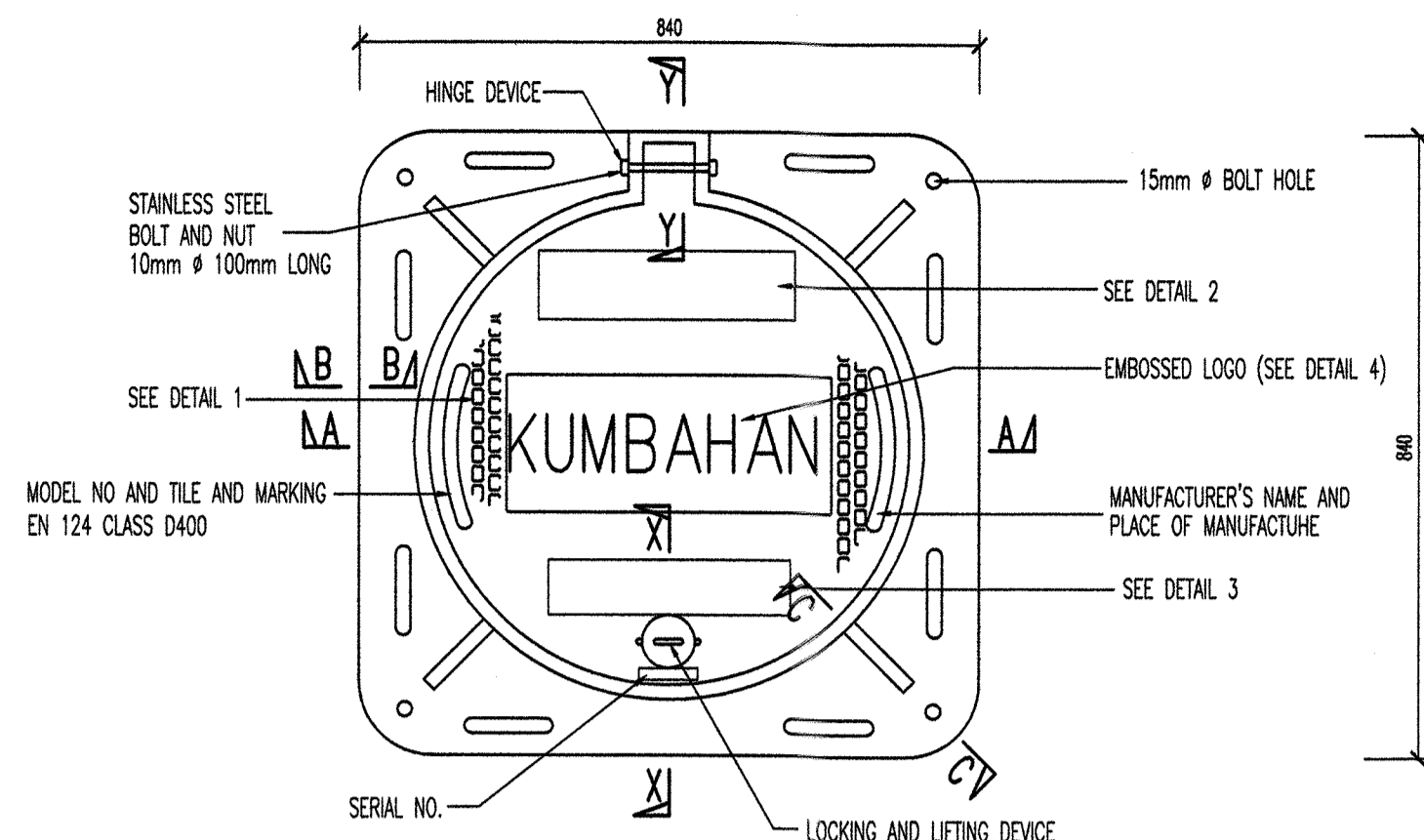


No.8, Hala Datoh 1, Jalan Datoh, 30000 Ipoh,
Perak Darul Ridzuan, Malaysia.
Tel: 05-2658077 (5 Talian) Fax: 05-2540980

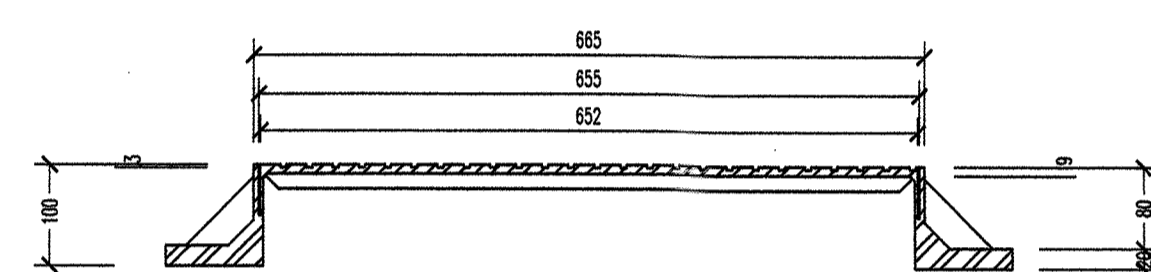
DIREKA :	UKURAN :	1:30	
DILUKIS :	WONG	TARIKH :	NOV. 2021
DISERMAK :	NO. LUKISAN :		
DILULUSKAN :	Ir. HO WAN LI	(PDC2) S/ZGH 6042/17/9/5	

TENDER DRAWING

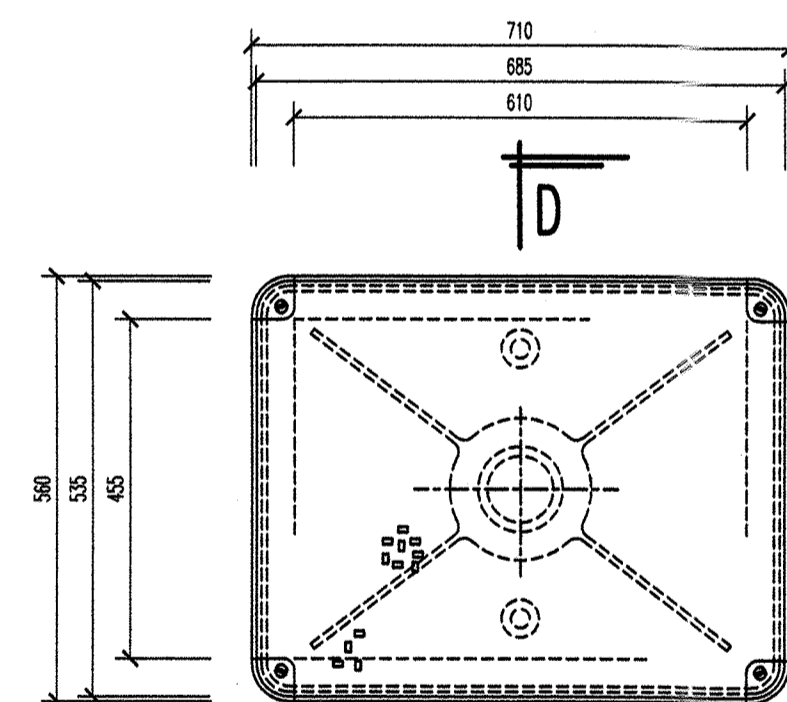
26.6.2024



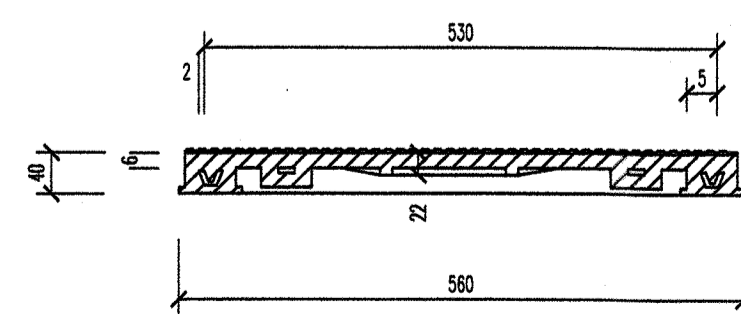
PLAN
TYPICAL DETAILS OF HEAVY DUTY
DUCTILE IRON MANHOLE COVER AND FRAME
SCALE 1 : 10



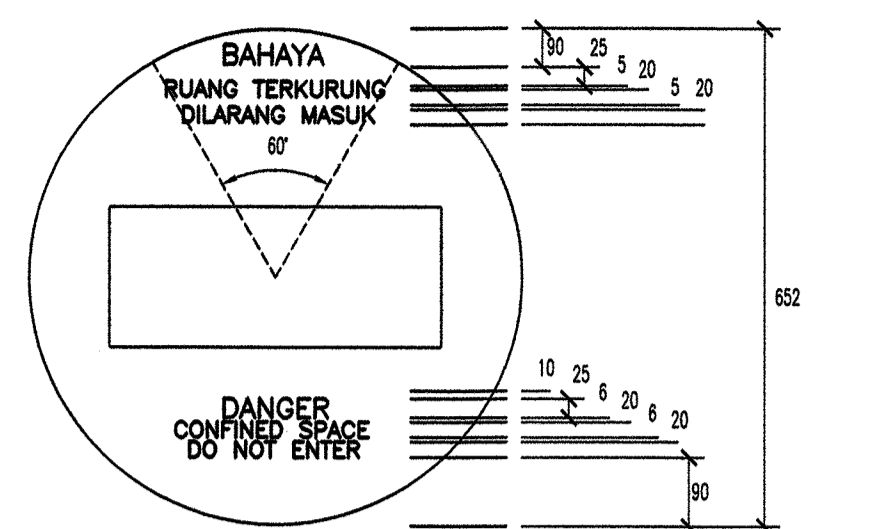
TYPICAL SECTION
DUCTILE IRON MANHOLE COVER & FRAME
SCALE 1 : 7.5 FULL SIZE



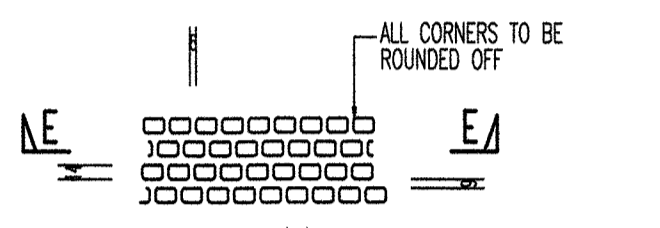
PLAN
LIGHT DUTY CAST IRON MANHOLE COVER
SCALE 1 : 10



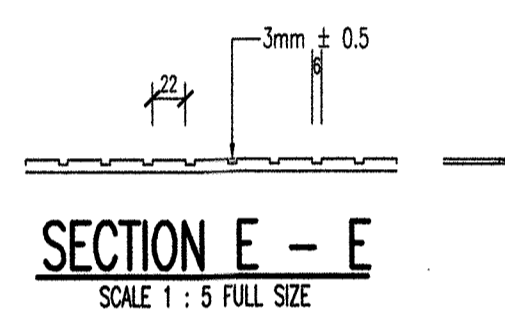
SECTION D - D
SCALE 1 : 7.5 FULL SIZE



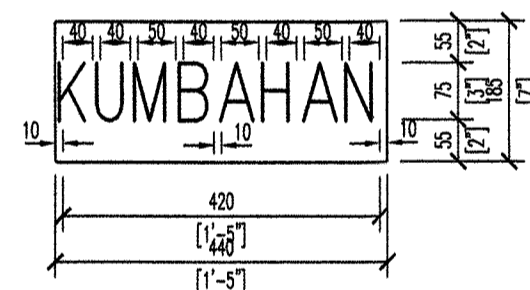
DETAIL '2' & '3' : EMBOSSED DESIGN
SCALE : NOT TO SCALE



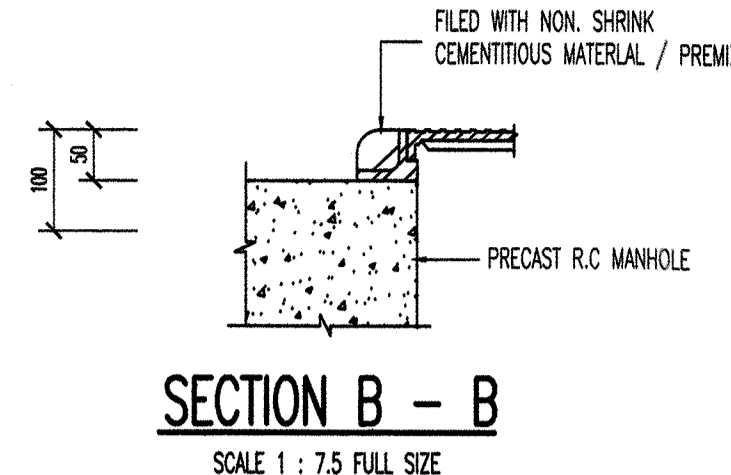
DETAIL 1 (TYPICAL SURFACE FINISH)
SCALE 1 : 7.5 FULL SIZE



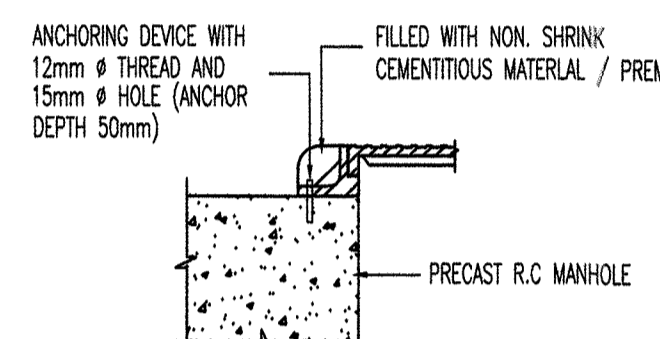
SECTION E - E
SCALE 1 : 5 FULL SIZE



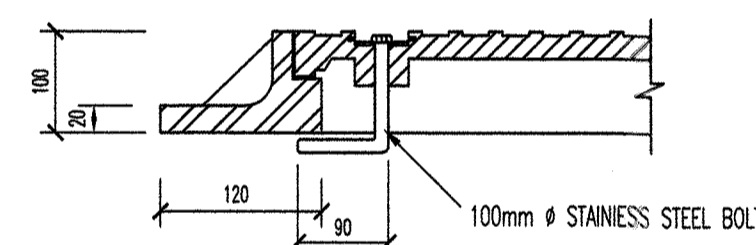
DETAIL '4' EMBOSSED LOGO
SCALE 1 : 10



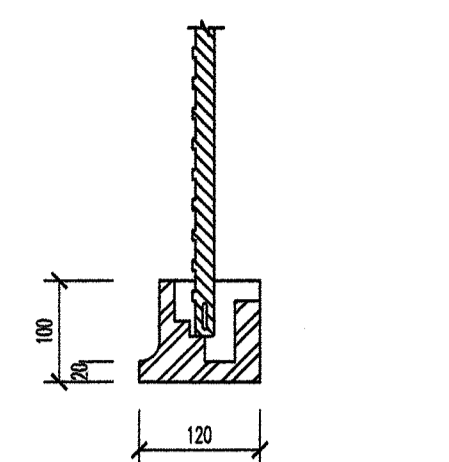
SECTION B - B
SCALE 1 : 7.5 FULL SIZE



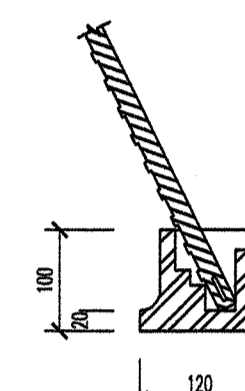
SECTION C - C
SCALE 1 : 7.5 FULL SIZE



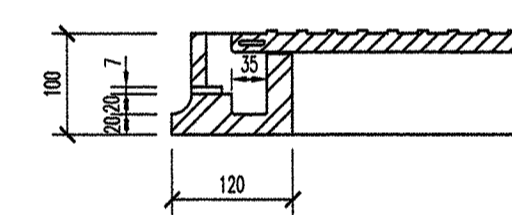
SECTION X - X
TYPICAL LOCKING DEVICE
SCALE 1 : 7.5 FULL SIZE



SECTION Y - Y
COVER HINGE OPEN AT 90°
SCALE 1 : 7.5 FULL SIZE



SECTION Y - Y
COVER HINGE OPEN AT MIN. 100°
SCALE 1 : 7.5 FULL SIZE



SECTION Y - Y
TYPICAL HINGE
SCALE 1 : 7.5 FULL SIZE

NOTES

- 1.) ALL MANHOLE COVERS FOR MANHOLES ON CARRIAGEWAY SHALL BE OF HEAVY DUTY DUCTILE IRON CIRCULAR TYPE.
- 2.) ALL HOUSEHOLD MANHOLE COVERS SHALL BE OF LIGHT DUTY C.I. RECTANGULAR TYPE
- 3.) MANHOLE COVERS AND FRAMES ARE TO BE OF DUCTILE IRON MANUFACTURE. ALL COVERS AND FRAMES ARE TO BE COATED WITH BITUMINOUS COMPOSITION (DR. ANGUS SMITHS SOLUTION) BEFORE DESPATCH.
- 4.) IN THE SEWERAGE SYSTEM OF HOUSING OF ESTATE WHERE THE SYSTEM ARE TO BE TAKEN OVER AND MAINTAINED BY JABATAN PERKHIDMATAN PEMBETUNGAN. ALL MANHOLE COVERS SHALL HAVE LETTERS JPP EMBOSSED ON IT.
- 5.) MANHOLE COVER AND FRAME SHALL BE CAPABLE OF BEARING WHEEL LOADS UP TO 400 KN.
- 6.) MANHOLE COVER OPENING Ø > 600mm.
- 7.) MANHOLE COVER FRAME SIZE 840 x 840 x 100 mm THK.
- 8.) MANHOLE COVER SHALL BE HINGED AND PROVIDED WITH A LOCKING DEVICE.
- 9.) ALL SURFACES OF MANHOLE COVER AND FRAME SHALL BE COATED WITH EITHER COLD OR HOT APPLIED BITUMINOUS MATERIAL.

PROJEK :
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PT 265369 (HSD 229470) & PT 265370
(HSD 229471), BANDAR IPOH (S),
DAERAH KINTA, PERAK DARUL RIDZUAN.
(LOKASI : BANDAR IPOH)
UNTUK:
TETUAN PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)

TAJUK :
STANDARD MANHOLE COVERS

OWNER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2,
JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN PEMAJU :

MACORP HOLDINGS SDN BHD
GAN VI KING (No. K/P. 710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH B-G-20, JALAN SULTAN NAZRIN SHAH,
30250 IPOH, PERAK DARUL RIDZUAN.

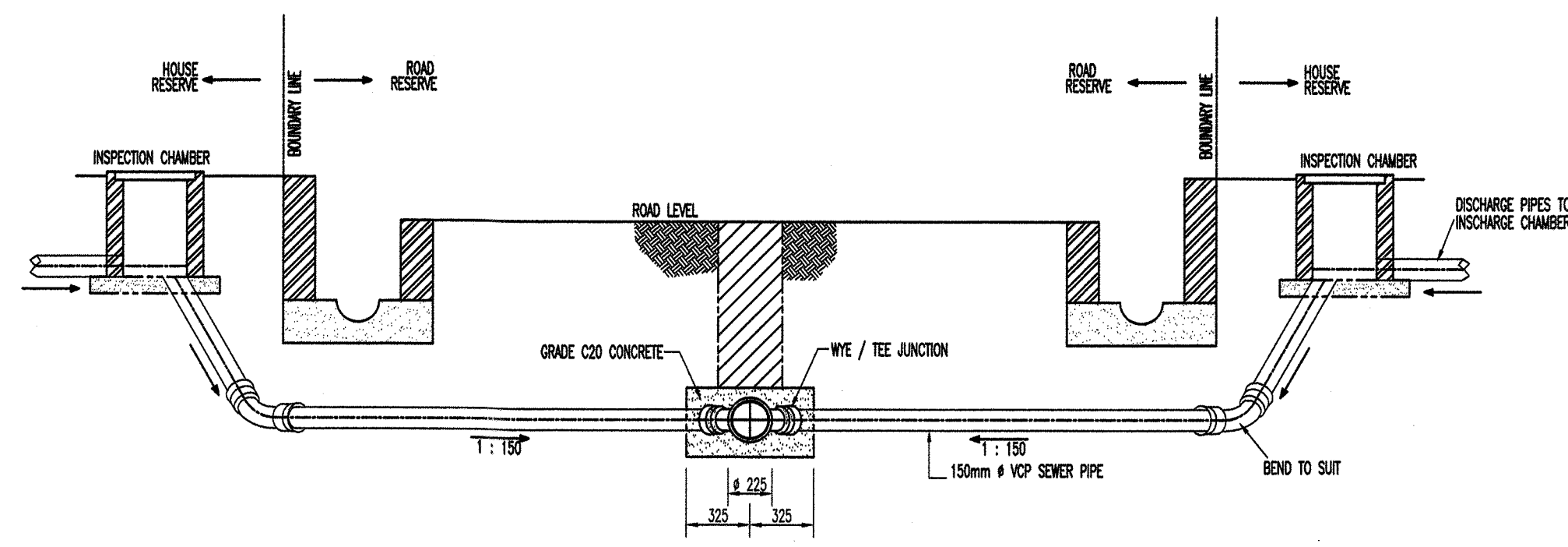
TANDATANGAN JURUTERA :
I hereby certify that these works have been design
by me in accordance with sound engineering practice
and that I take full responsibility for the design and
performance of the same.
ZATH PERUNDING SDN. BHD.
Ir. Ho Wan Li
BSc(Civil), PEng., MIEEM.
Pegawar

PERUNDING SENDIRIAN BERHAD
No. 8, Hala Detoh 1, Jalan Detoh, 30000 Ipoh,
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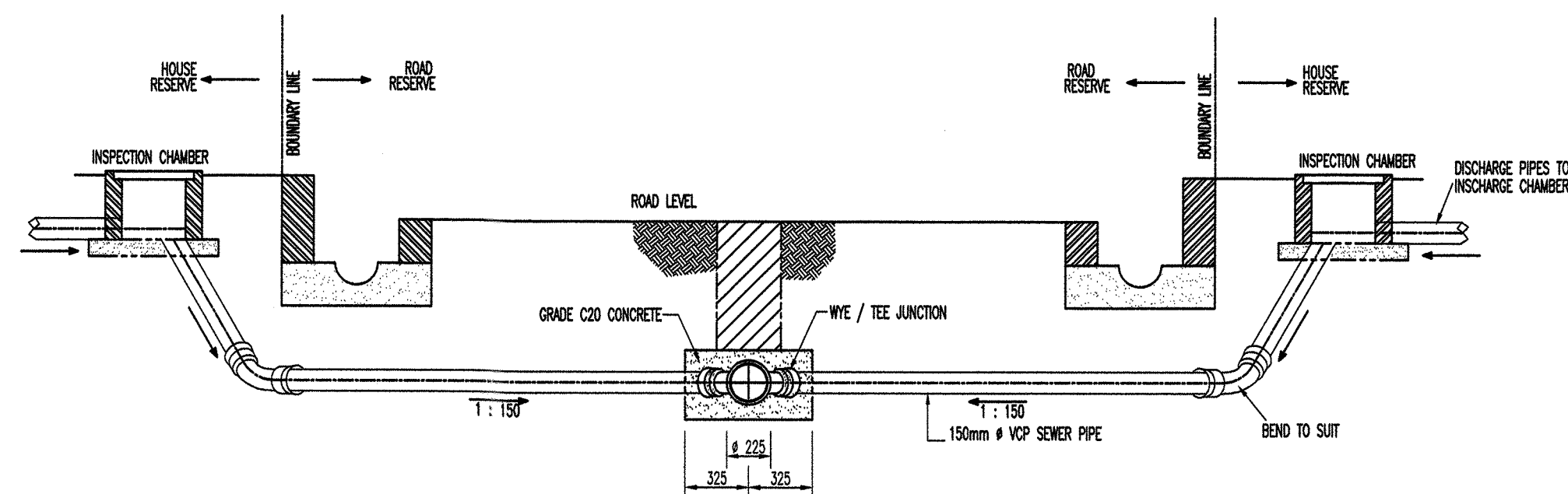
DIREKA :	UKURAN : 1:10
DILUKIS : WONG	TARIKH : NOV. 2021
DISEMAK :	NO. LUKISAN :
DILULUSKAN : Ir. HO WAN LI	(PDC2) S/ZGH 6042/17/9/6

TENDER DRAWING

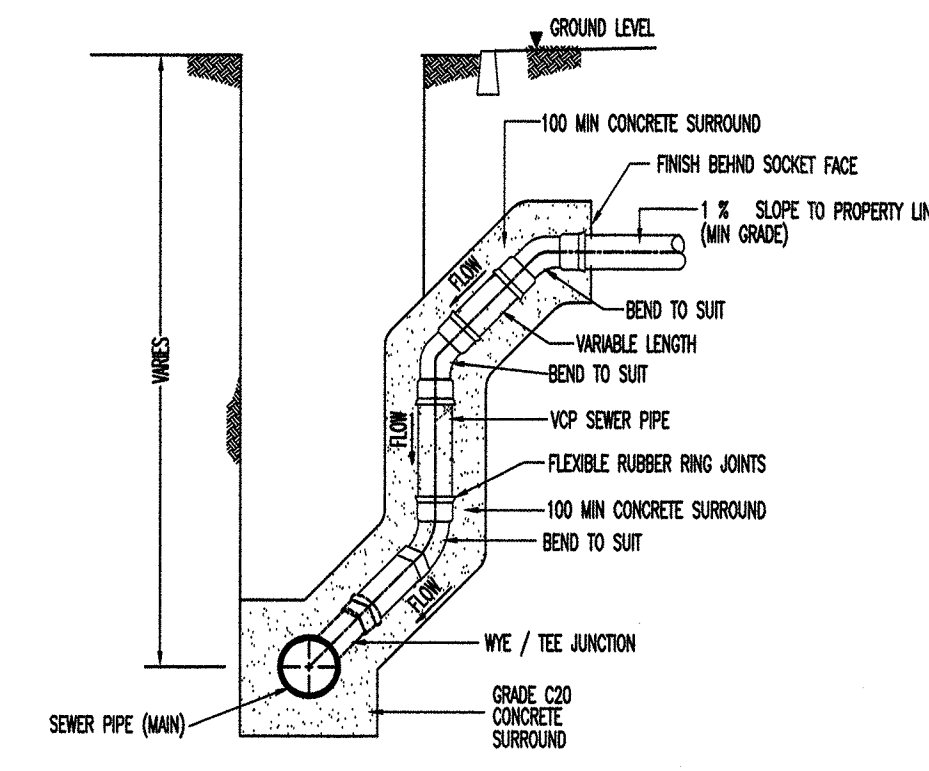
26.6.2024



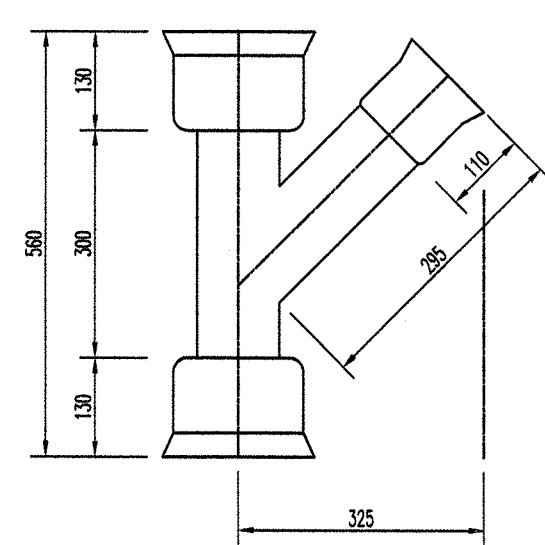
TYPICAL SECTION OF JUNCTION CONNECTION (FOR DEEPER DRAIN CROSSING)
(SCALE 1 : 30)



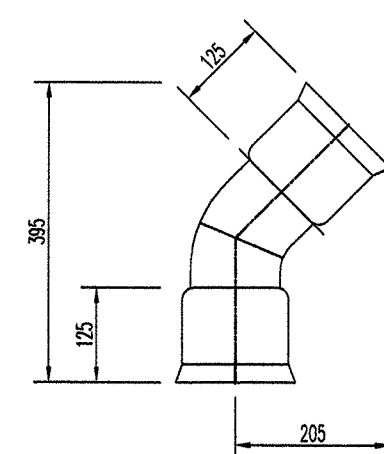
TYPICAL SECTION OF JUNCTION CONNECTION (FOR SHALLOW DRAIN CROSSING)
(SCALE 1 : 30)



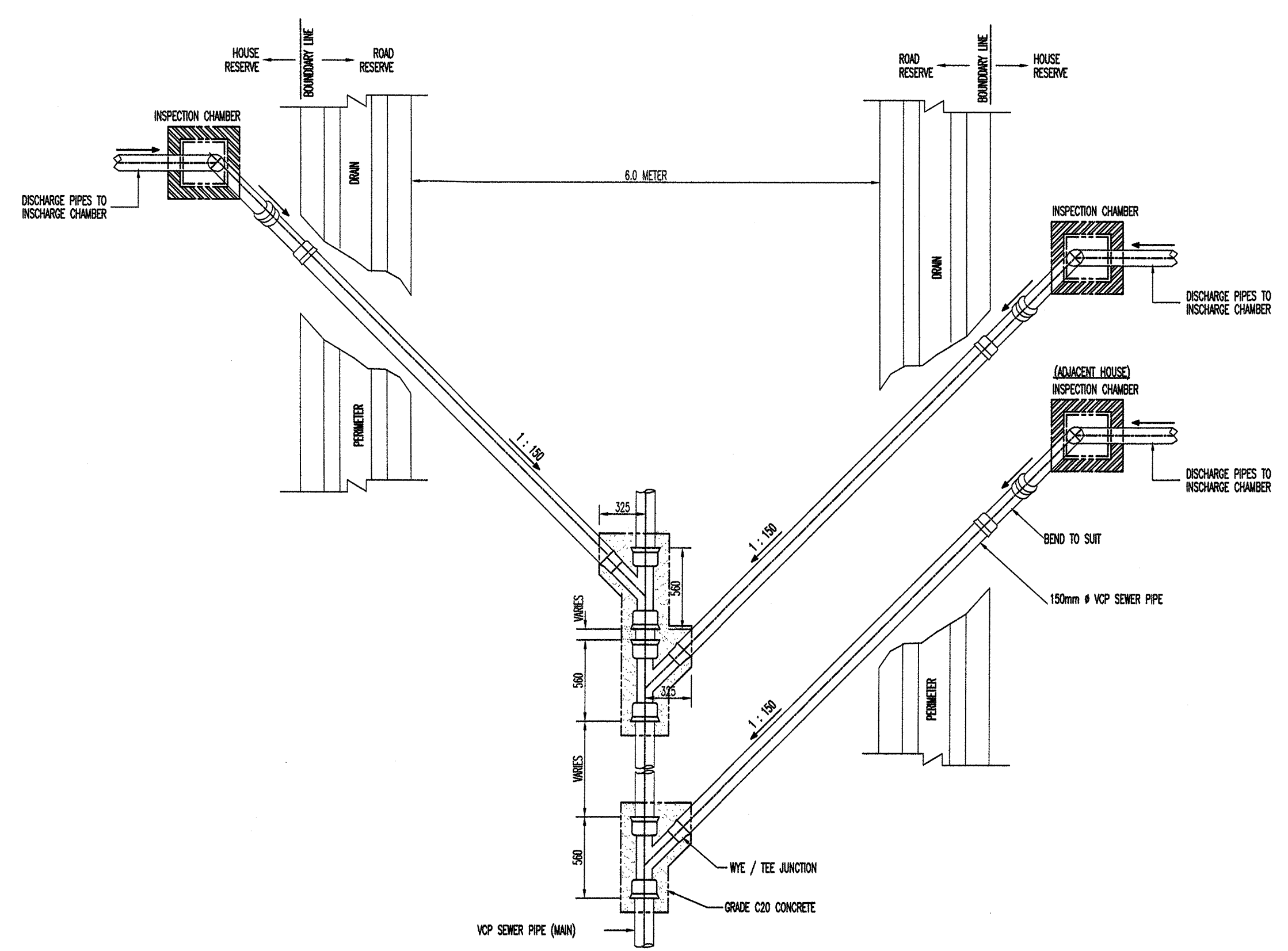
DEEP JUNCTION CONNECTION
(SCALE 1 : 30)



VC SEWER PIPE FITTING FOR 150/225 mm WYE
(SCALE 1 : 10)



VC SEWER PIPE FITTING FOR 150mm 45° BEND
(SCALE 1 : 10)



PLAN VIEW OF SEWER LATERAL CONNECTION
(SCALE 1 : 30)

PROJEK :
CADANGAN SKIM PERUMAHAN DI ATAS PT 265369 (HSD 229470) & PT 265370 (HSD 229471), BANDAR IPOH (S), DAERAH KINTA, PERAK DARUL RIDZUAN. (LOKASI : BANDAR IPOH) UNTUK: TETUAN PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)

TAJUK :
DETAILS OF HOUSEHOLD CONNECTION TO MAIN SEWER RETICULATION PIPE FOR V.C. PIPE

OWNER'S SIGNATURE:
PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2, JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN PEMAJU :
MACORP HOLDINGS SDN BHD
GAN VI KING (No. K/P. : 710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH, B-G-20, JALAN SULTAN NAZRIN SHAH, 30250 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN JURUTERA :
I hereby certify that these works have been design by me in accordance with sound engineering practice and that I take full responsibility for the design and performance of the same.
ZATH PERUNDING SDN. BHD.
Ir. Ho Wan Li
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DILUKIS : WONG	TARIKH : NOV. 2021
DISEMAK :	NO. LUKISAN :
DILULUSKAN : Ir. HO WAN LI	(PDC2) S/ZGH 6042/17/9/7

TENDER DRAWING

26.6.2024

NOTES:

- TYPICAL BEDDING IS TO BE USED FOR ALL PIPES UNDER NORMAL SITE CONDITION UNLESS DIRECTED OR SHOWN BY THE ENGINEER.
- UNDER CIRCUMSTANCES WHERE TYPICAL BEDDING IS NOT PERMISSIBLE AT SITE, THE BEDDING SHALL BE DESIGNED AND APPLIED ACCORDINGLY AS DIRECTED BY THE ENGINEER.
- FOR FILLING OF TRENCHES ALONG / ACROSS CARRIAGEWAY, BACKFILL MATERIAL SHALL BE SAND FROM AN APPROVED SOURCE AND TO BE COMPACTED BY FLOODING IN 300mm MAXIMUM LAYERS IN CONJUNCTION WITH THE ENGINEER'S REQUIREMENTS.
- FOR THE PURPOSE OF STRUCTURAL DESIGN THE NOMINAL WALL THICKNESS AND / OR NOMINAL OUTSIDE DIAMETER SHOULD BE DECLARED BY THE MANUFACTURER.
- FOR TESTING OF WATER TIGHTNESS, THE MAXIMUM ALLOWANCE INFILTRATION RATE IS 1 LITRE PER HOUR PER LINEAR METER INTERNAL DIAMETER OF PIPE.
- PLACE EMBEDMENT MATERIALS BY METHODS THAT WILL NOT DISTURB OR DAMAGE THE PIPE. WORK IN OR TAMP THE HAUNCHING MATERIAL IN THE AREA BETWEEN THE BEDDING AND THE UNDERSIDE OF THE PIPE BEFORE PLACING AND COMPACTING THE REMAINDER OF THE EMBEDMENT IN THE PIPE ZONE.
- WHERE HIGH WATER-TABLE IS ENCOUNTERED, ALLOWANCE FOR APPROPRIATE DEWATERING METHOD SHALL BE UTILISED IN ORDER THAT THE PIPE BEDDING CAN BE LAID IN THE DRY. APPROPRIATE METHOD OF CONSTRUCTION SHALL BE USED TO PREVENT DAMAGE OF THE LAID SEWER LINE PRIOR TO BACKFILLING.
- TYPE C BEDDING SHALL BE USED IN THE CASE WHERE SOFT GROUND IS ENCOUNTERED SUCH SOFT GROUND SHALL GENERALLY BE TAKEN TO BE THOSE SOIL HAVING A STRENGTH OF CU GREATER THAN 2.5kN/m². AS OBTAINED BY THE IN-SITU VANE SHEAR TEST. THE ENGINEER SHALL DETERMINE SUCH THE CLASSIFICATION AND EXTENT OF SUCH SOIL FOLLOWING FROM IN-SITU VANE SHEAR TEST CARRIED OUT BY THE CONTRACTOR.
- TYPE D BEDDING SHALL BE USED IN THE CASE WHERE VERY SOFT GROUND IS ENCOUNTERED. SUCH VERY SOFT GROUND SHALL GENERALLY BE TAKEN TO BE THOSE SOIL HAVING A STRENGTH OF CU EQUAL OR LESS THAN 2.5 kN/m², AS OBTAINED BY THE IN-SITU VANE SHEAR TEST. THE LENGTH OF PILES TO BE USED SHALL BE DETERMINED BY THE ENGINEER AFTER INVESTIGATION TO DETERMINE THE SOFT LAYER HAS BEEN CARRIED OUT BY THE CONTRACTOR.
- THE CONCRETE CAP OR CRADLE SHALL START AND TERMINATE AT THE FACE OF PIPE JOINTS TO AVOID SHEAR CRACK.
- DETECTABLE MARKER TAPE SHALL BE POSITIONED WITHIN THE DETECTABLE RANGE AND INSTALLATION PROCEDURE TO MANUFACTURER'S RECOMMENDATION.
- SEWER PIPES AND MANHOLE STRUCTURES SHOULD NOT BE CONSTRUCTED ON SLOPE OR WITHIN SLOPE FAILURE ENVELOPE. IN THE EVENT WHERE IT IS UNAVOIDABLE, THE SAID STRUCTURES MUST BE DESIGNED NOT TO ENCOUNTER SETTLEMENT OR THE SORTS AND AT ANY TIME AT RISK OF COLLAPSE DURING ITS OPERATING LIFESPAN.

PROJEK :

CADANGAN SKIM PERUMAHAN DI ATAS
PT 265369 (HSD 229470) & PT 265370
(HSD 229471), BANDAR IPOH (S),
DAERAH KINTA, PERAK DARUL RIDZUAN.
(LOKASI : BANDAR IPOH)
UNTUK:
TETUAN PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)

TAUK :

BEDDING DETAILS

OWNER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAJAAN
NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2,
JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN PEMAU :

MACORP HOLDINGS SDN BHD
GAN VI KING (No. K/P. : 710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH, B-G-20, JALAN SULTAN NAZRIN SHAH,
30250 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN JURUTERA :



I hereby certify that these works have been design by me in accordance with sound engineering practice and that I take full responsibility for the design and performance of the same.

ZATH PERUNDING SDN. BHD.



No.8, Hala Datoh 1, Jalan Datoh, 30000 Ipoh, Perak Darul Ridzuan, Malaysia.
Tel: 05-2568077 (5 Talian) Fax: 05-2540980

DIREKA :

UKURAN : 1:10

DILUKIS :

WONG

TARIKH : NOV. 2021

DISEMAK :

NO. LUKISAN :

DILAJUSKAN : Ir. HO WAN LI

(PDC2) S/ZGH 6042/17/9/8

PIPE SIZE	MAXIMUM TRENCH WIDTH, W
100mm DIA.	700mm DIA.
150mm DIA.	750mm DIA.
225mm DIA.	825mm DIA.
300mm DIA.	900mm DIA.
375mm DIA.	975mm DIA.
450mm DIA.	1050mm DIA.
525mm DIA.	1125mm DIA.
600mm DIA.	1500mm DIA.
675mm DIA.	1575mm DIA.
750mm DIA.	1650mm DIA.
900mm DIA.	1800mm DIA.
1050mm DIA.	1950mm DIA.
1200mm DIA.	2100mm DIA.
1350mm DIA.	2250mm DIA.
1500mm DIA.	2400mm DIA.
1650mm DIA.	2550mm DIA.
1800mm DIA.	2700mm DIA.
1950mm DIA.	2850mm DIA.

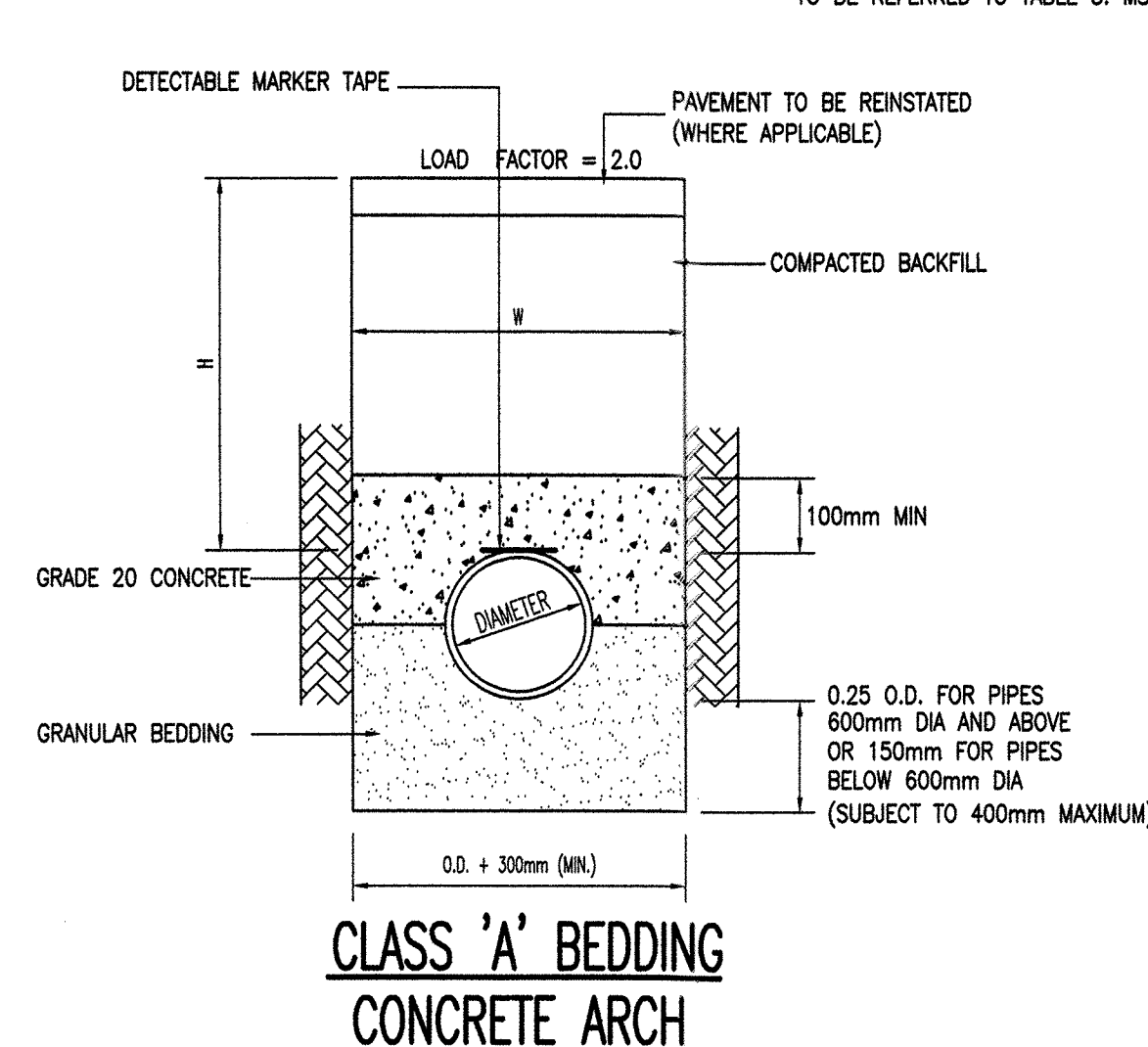
TABLE 1
MAXIMUM TRENCH WIDTH

DEPTH OF COVER, H (m)	VITRIFIED CLAY PIPE MINIMUM REQUIRED PIPE CRUSHING STRENGTH (kN/m)						
	100mm DIA.	150mm DIA.	200mm DIA.	225mm DIA.	300mm DIA.	375mm DIA.	450mm DIA.
≤ 1.0	28	28	32	28	36	45	43
≤ 1.5	28	28	32	28	36	45	43
≤ 2.0	28	28	32	28	36	45	43
≤ 2.5	28	28	32	36	36	45	43
≤ 3.0	28	28	32	36	36	45	43
≤ 3.5	28	28	32	36	36	45	43
≤ 4.0	28	28	32	36	36	45	43
≤ 4.5	28	28	32	36	36	45	43
≤ 5.0	28	28	32	36	36	45	43
≤ 5.5	28	28	32	36	36	45	43
≤ 6.0	28	28	32	36	36	45	43
≤ 6.5	28	28	32	36	36	45	43
≤ 7.0	28	28	32	36	36	45	43
≤ 7.5	28	28	32	36	36	45	43
≤ 8.0	28	28	32	36	36	45	43
≤ 8.5	28	28	32	36	36	45	43
≤ 9.0	28	28	32	36	36	45	43
≤ 9.5	28	28	32	36	36	45	43
≤ 10.0	28	28	32	36	36	45	43
≤ 10.5	28	28	32	36	36	45	43
TRAFFIC COVER	900	900	900	900	900	900	900
MIN. BED THICKNESS	100	100	150	150	150	150	150

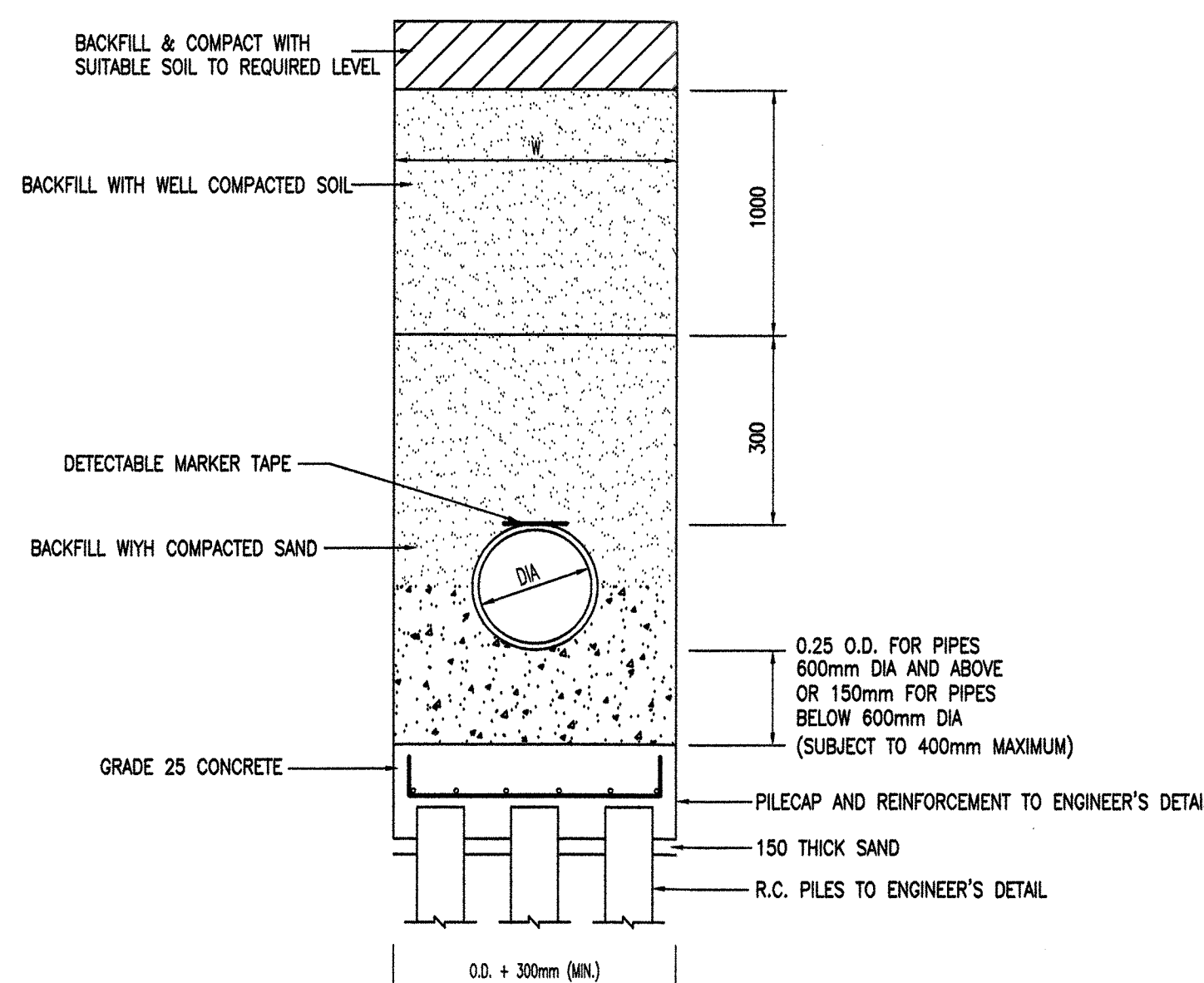
TABLE 2
STRENGTH OF VCP FOR VARIOUS DEPTH

USE CLASS 'A' BEDDING
USE CLASS 'B' BEDDING

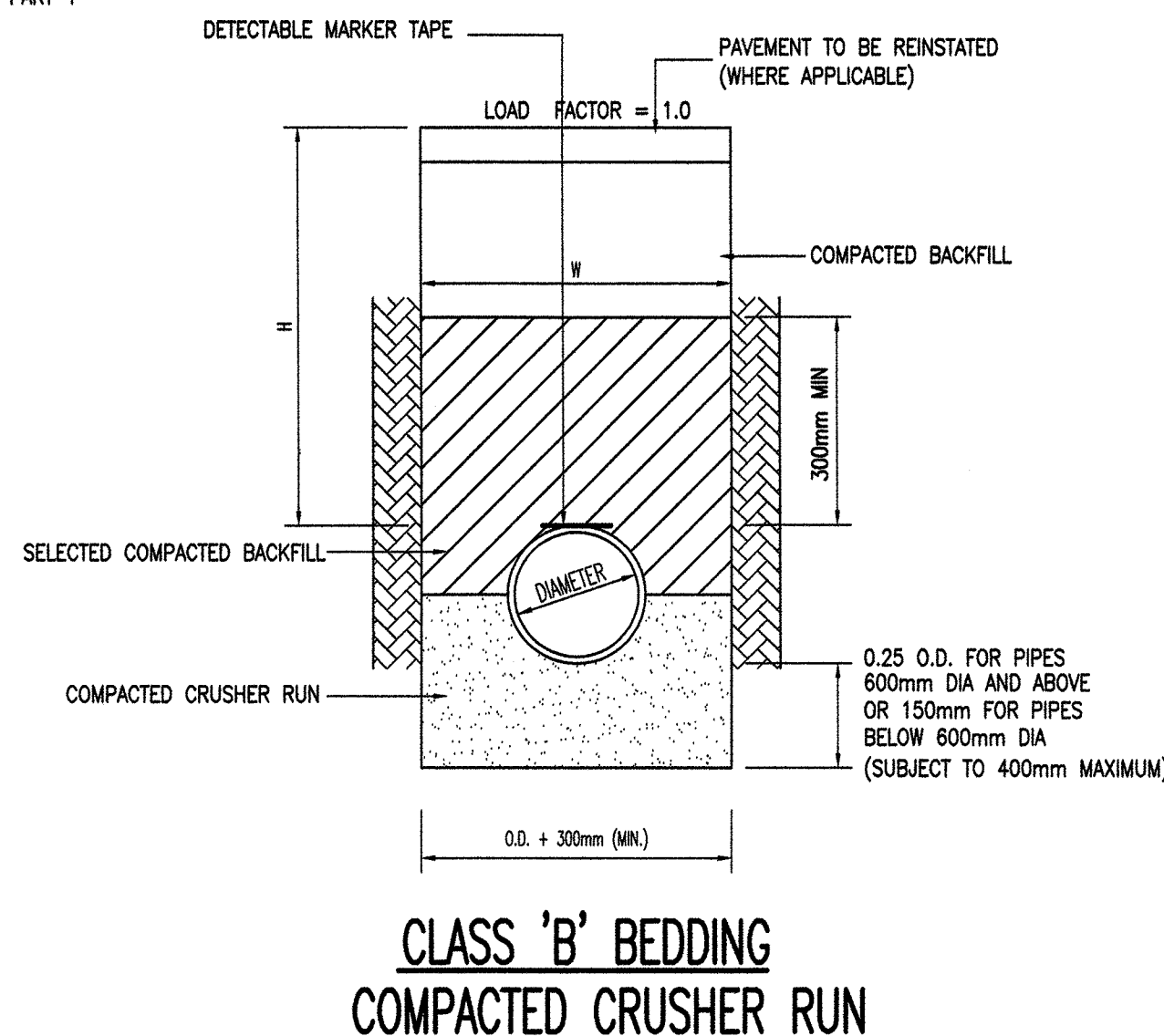
NOTE:
ALL VCP PIPES CRUSHING FN (kN/m) FOR VARIOUS DIMMETERS OF PIPE TO BE REFERRED TO TABLE 5. MS 1061: PART 1



PIPE EMBEDDED IN CAREFULLY COMPACTED CRUSHER RUN 5-20mm SIZE RANGE EXTENDING HALFWAY UP TO SIDES OF THE PIPE. THE REMAINDER SIDE FILLS AND TOP WITH MONOLITHIC PLAIN CONCRETE

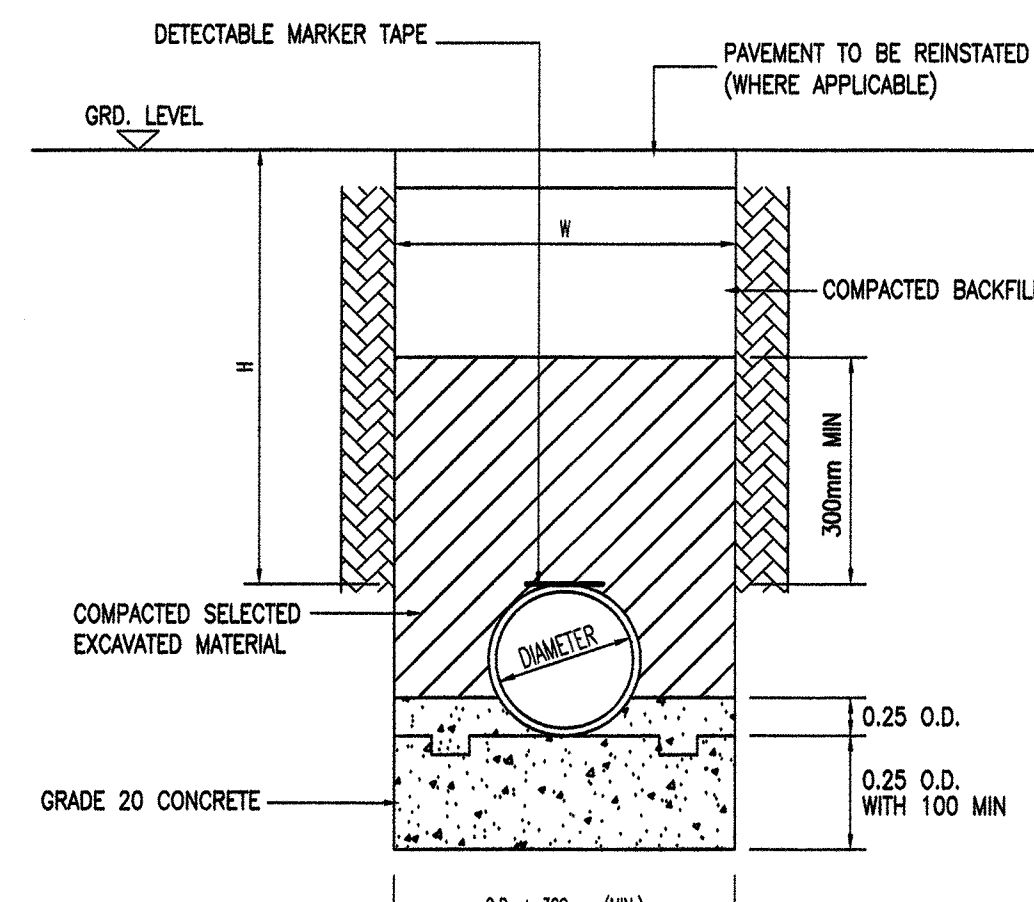


TYPE 'D' BEDDING
(VERY SOFT GROUND)

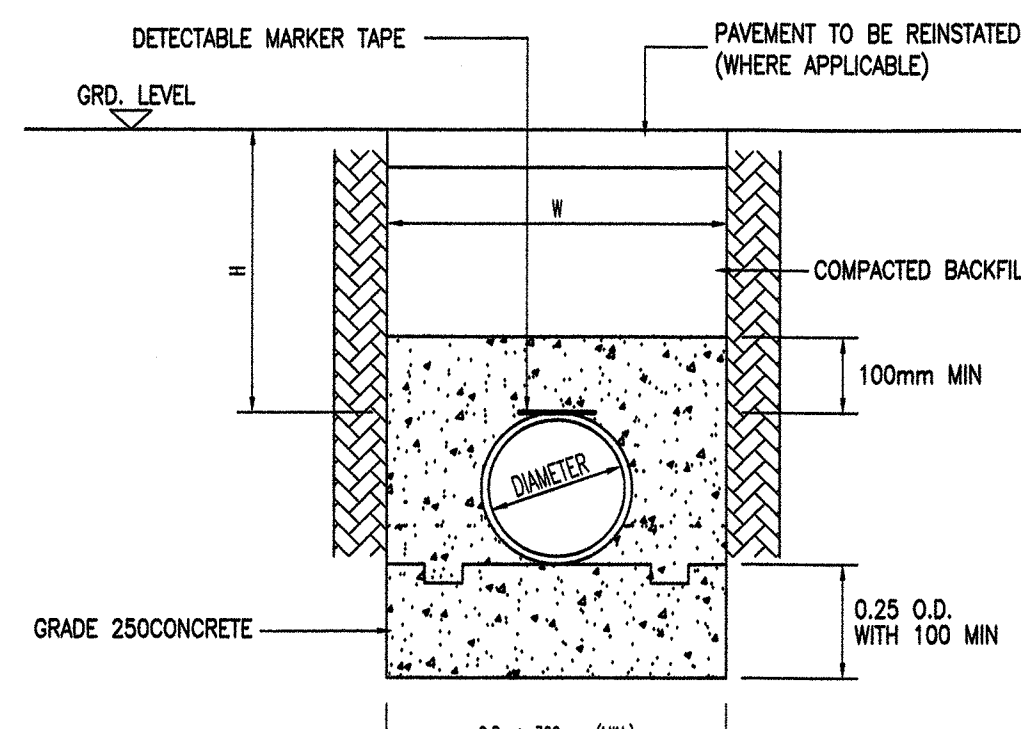
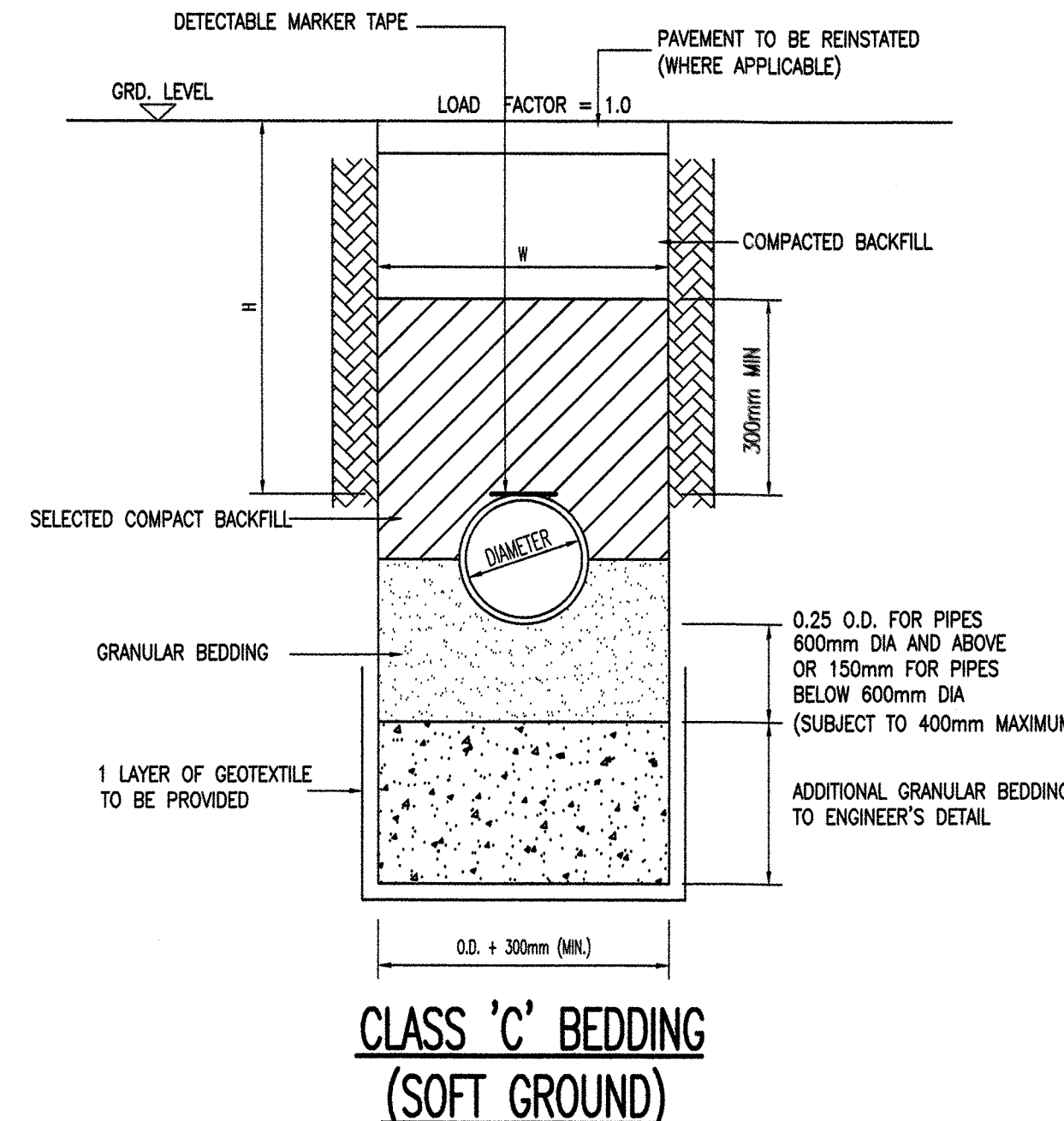


PIPE EMBEDDED IN CAREFULLY COMPACTED CRUSHER RUN 5-20mm SIZE RANGE EXTENDING HALFWAY UP TO SIDES OF THE PIPE. THE REMAINDER SIDE FILLS AND TOP TO BE COMPACTED CAREFULLY WITH BACKFILL

THE SELECTED COMPACTED BACKFILL FOR VITRIFIED CLAY PIPE SHALL BE COMPACTED DRY SOIL (FREE FROM VEGETABLE ORGANIC MATTERS & EXCAVATION/COMPACTED DRY RED EARTH/SAND/CHIPING/STONES NOT GREATER THAN 25.



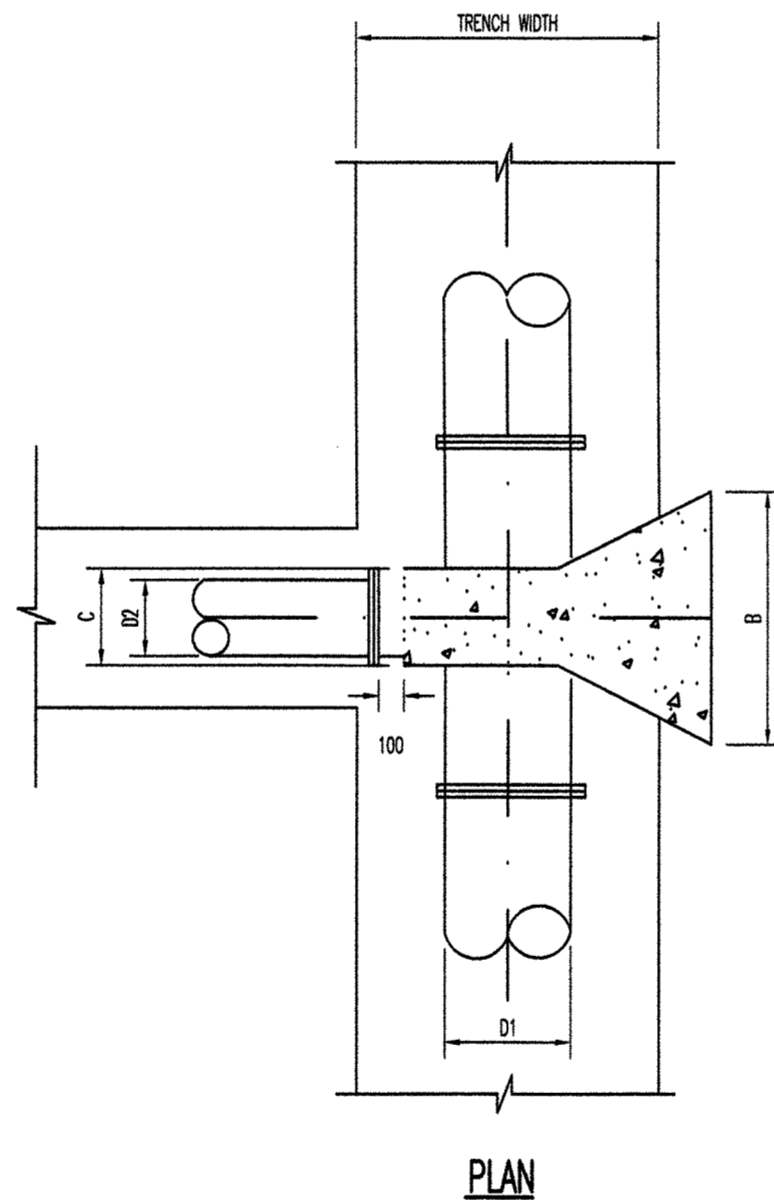
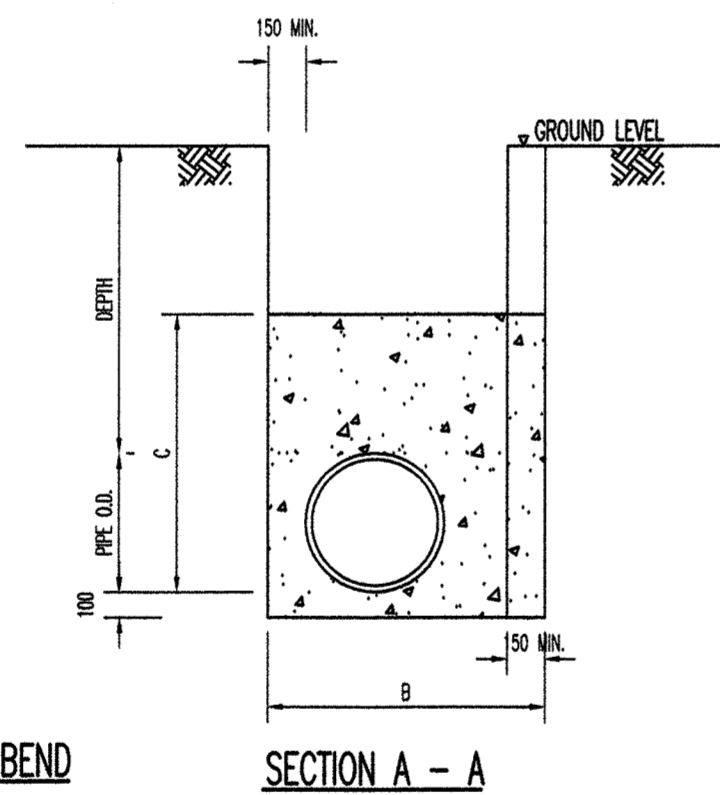
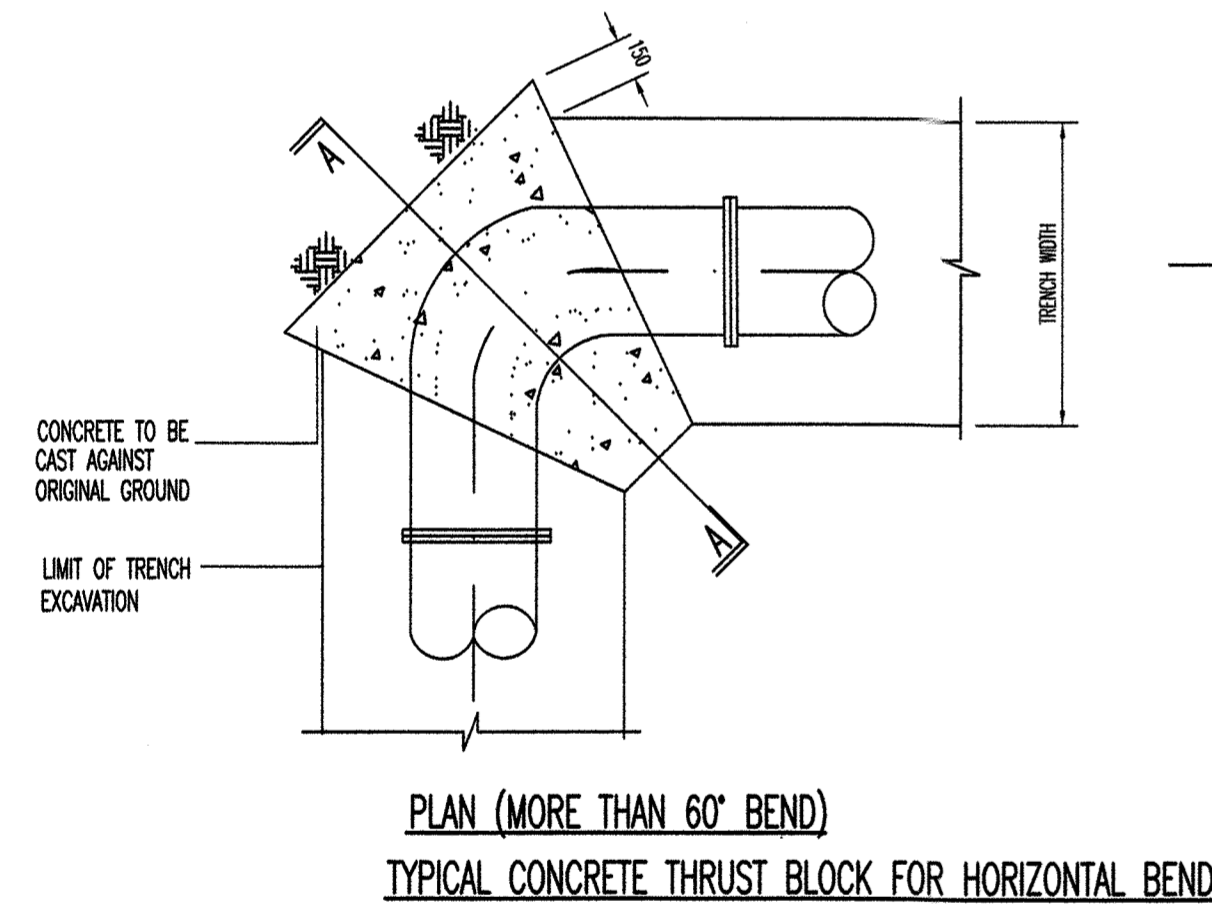
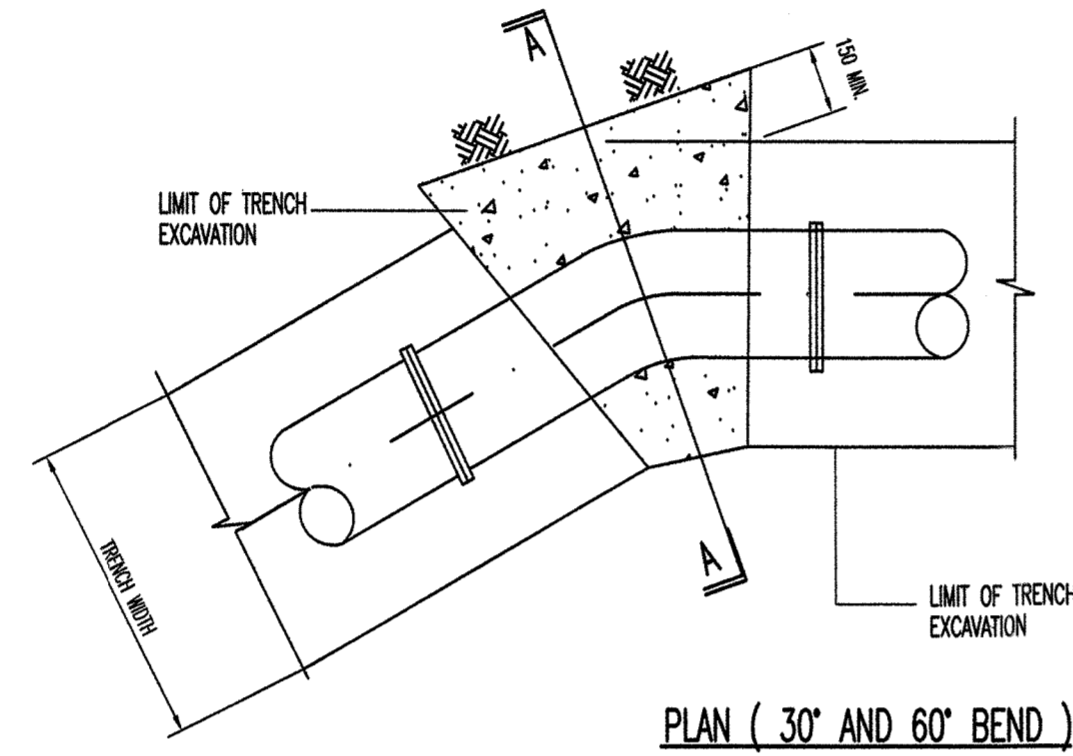
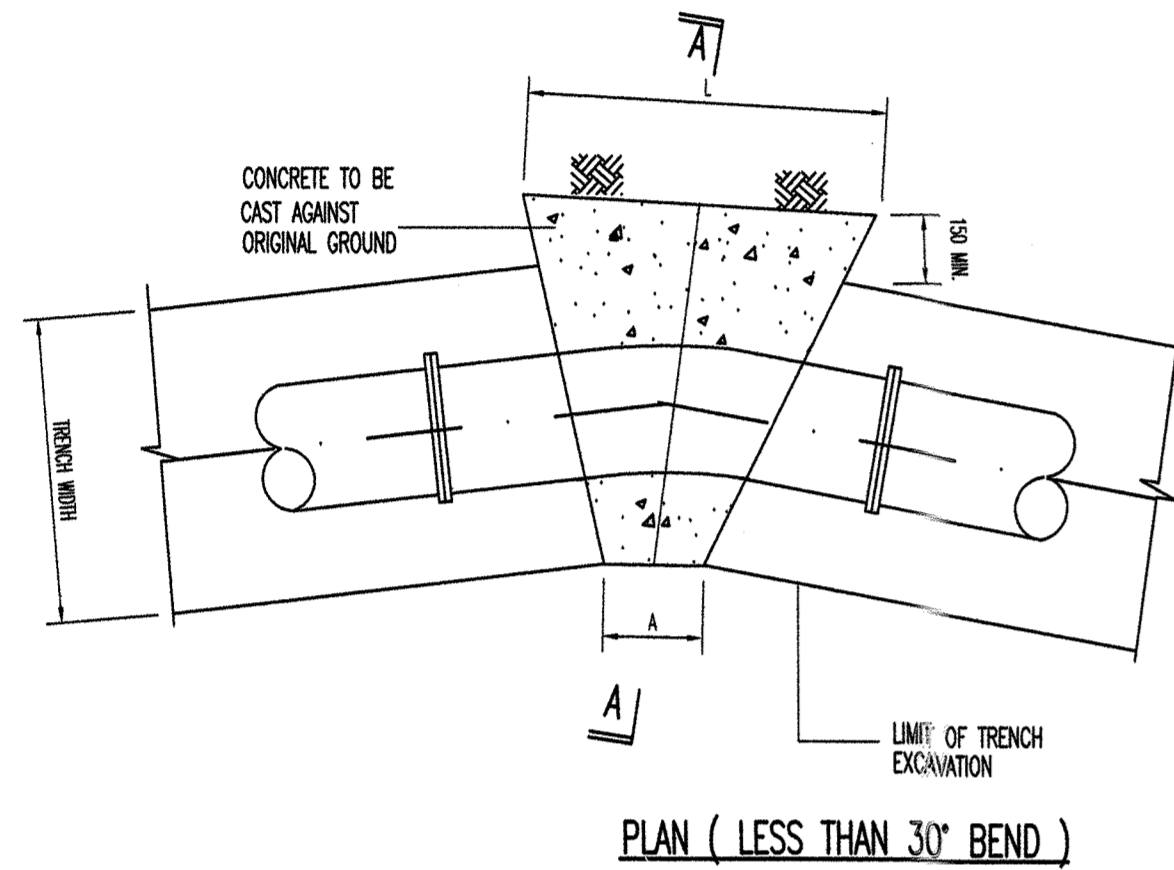
CONCRETE CRADLE
BEDDING FACTOR 2.6



CONCRETE SURROUND
BEDDING FACTOR 3.0

NOMINAL OF PIPE DIAMETER NO. (mm)	11 1/2" (TYPE 1)				22 1/2" (TYPE 1)				45" (TYPE 2)				90" (TYPE 2)			
	A (mm)	B (mm)	C (mm)	L (mm)	A (mm)	B (mm)	C (mm)	L (mm)	A (mm)	B (mm)	C (mm)	L (mm)	A (mm)	B (mm)	C (mm)	L (mm)
UP TO 150	150	880	880	160	200	880	880	200	310	880	880	450	460	880	880	800
200 TO 250	250	950	950	300	300	950	950	580	700	950	1100	1100	1250	950	950	2020
300	250	1100	1100	400	470	1100	1100	700	800	1100	1100	1400	1500	1100	1100	2500
350	300	1200	1200	450	500	1200	1200	900	650	1200	1200	1700	1550	1200	1200	2600
400	400	1800	1900	400	500	1900	1900	750	850	1800	1900	1400	1550	1800	1900	2600
450	350	1800	2100	420	500	1800	2100	850	900	1800	2100	1600	1700	1800	2100	2950
500	500	1400	1350	800	800	1400	1350	1800	1500	1400	1700	2500	1700	1600	1700	3000
610	600	1300	1200	1300	800	1300	1550	1800	1500	1300	1700	3000	2000	1500	2000	3000
780	600	1300	1200	1300	800	1300	1550	1800	1500	1300	1700	3000	2000	1600	2000	3000

SCHEDULE FOR HORIZONTAL BEND

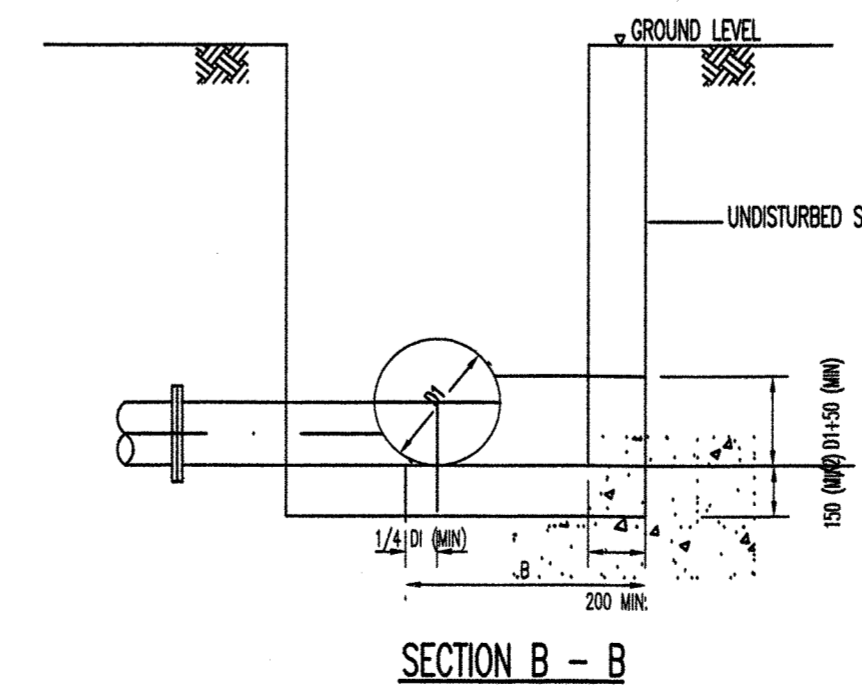
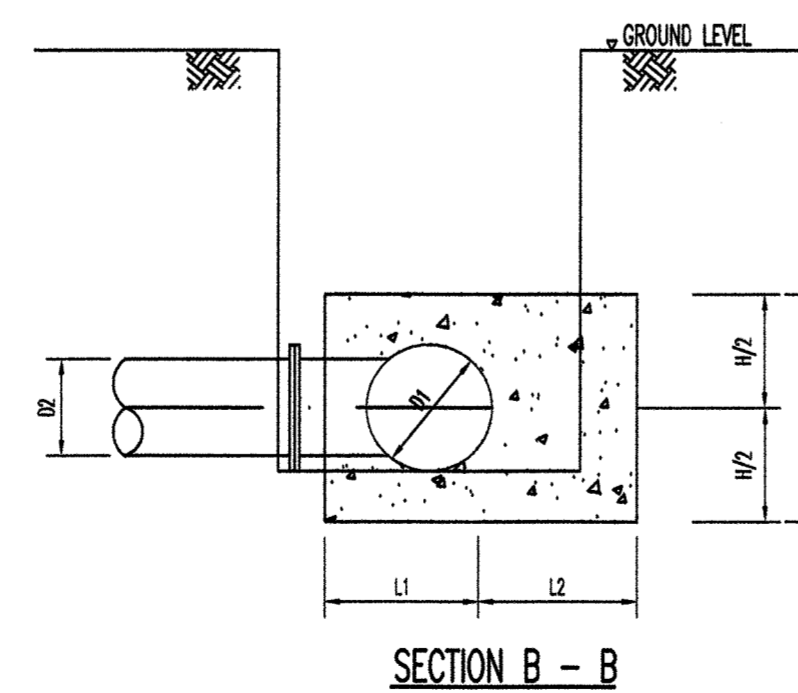
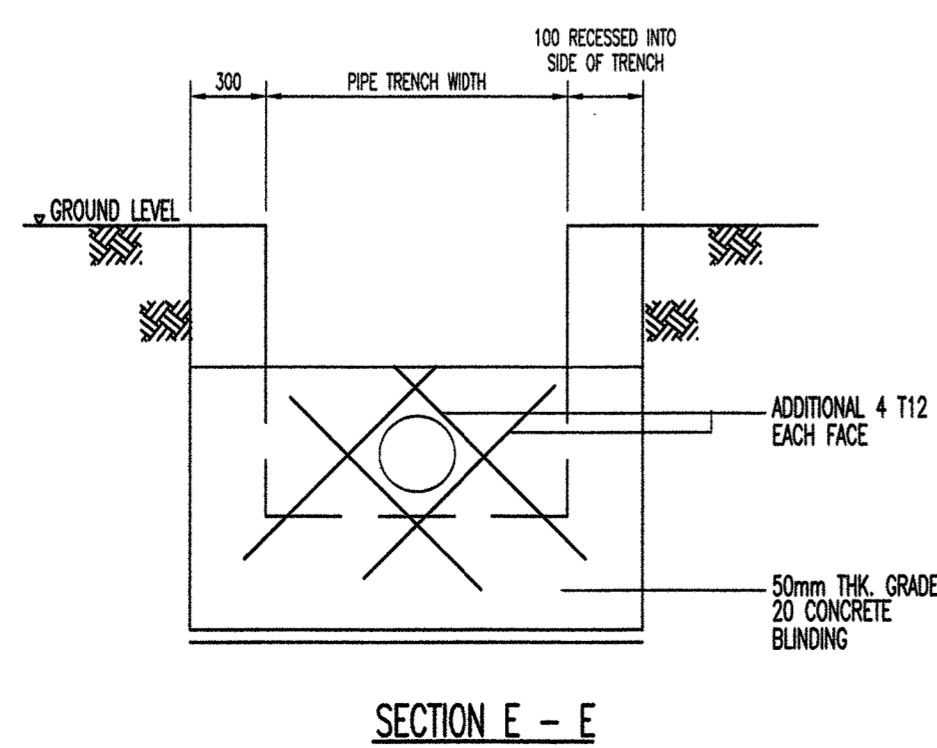
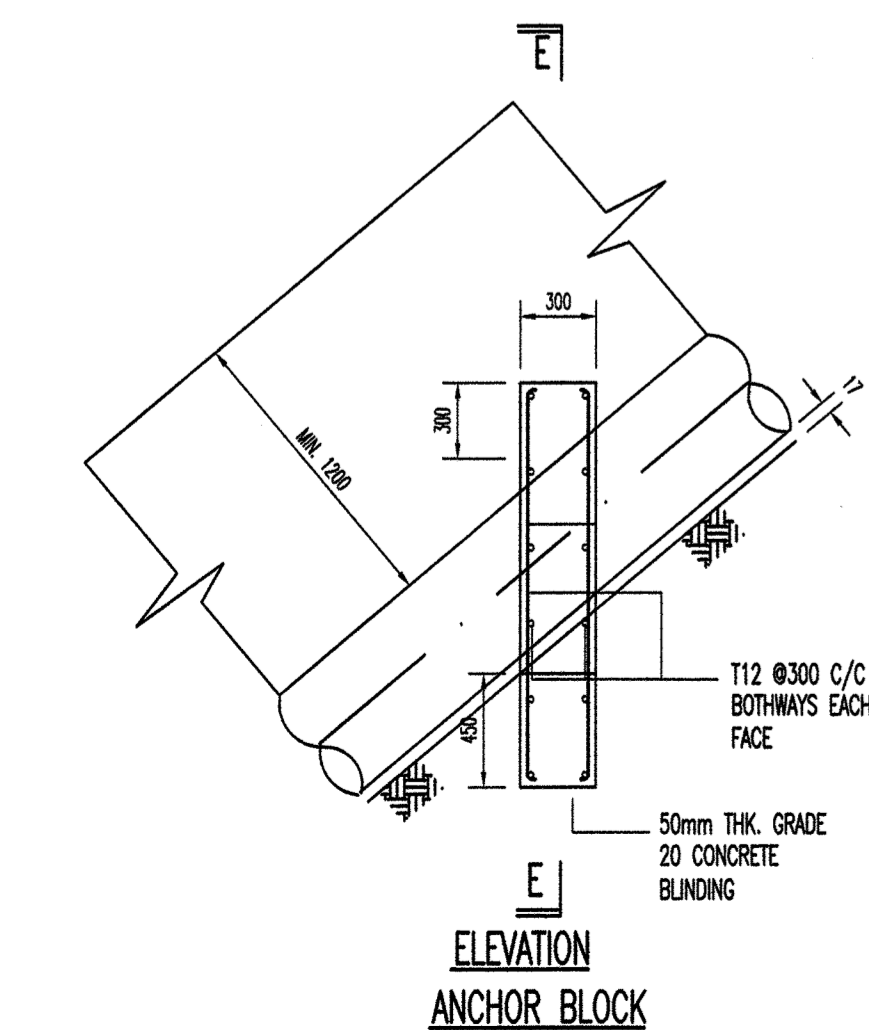
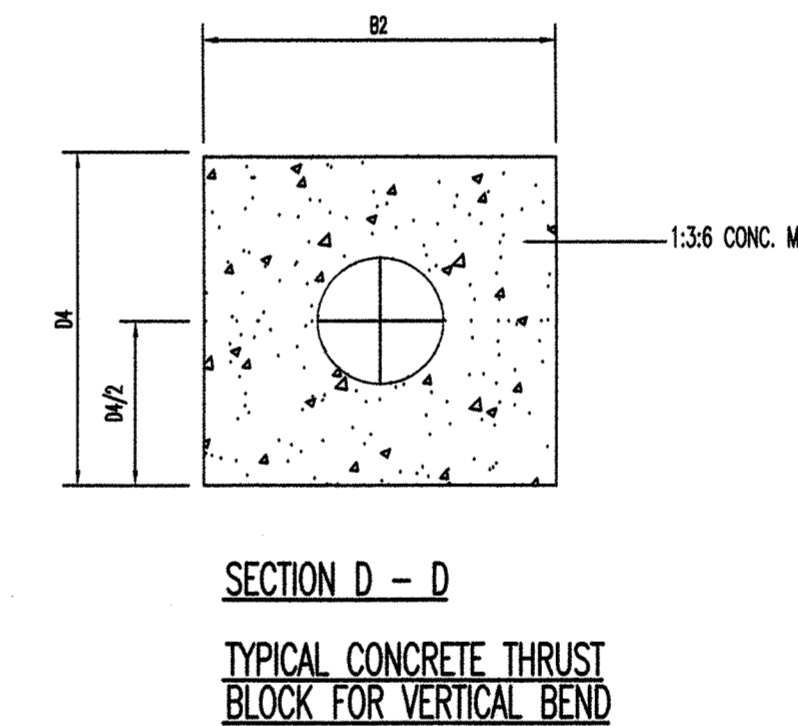
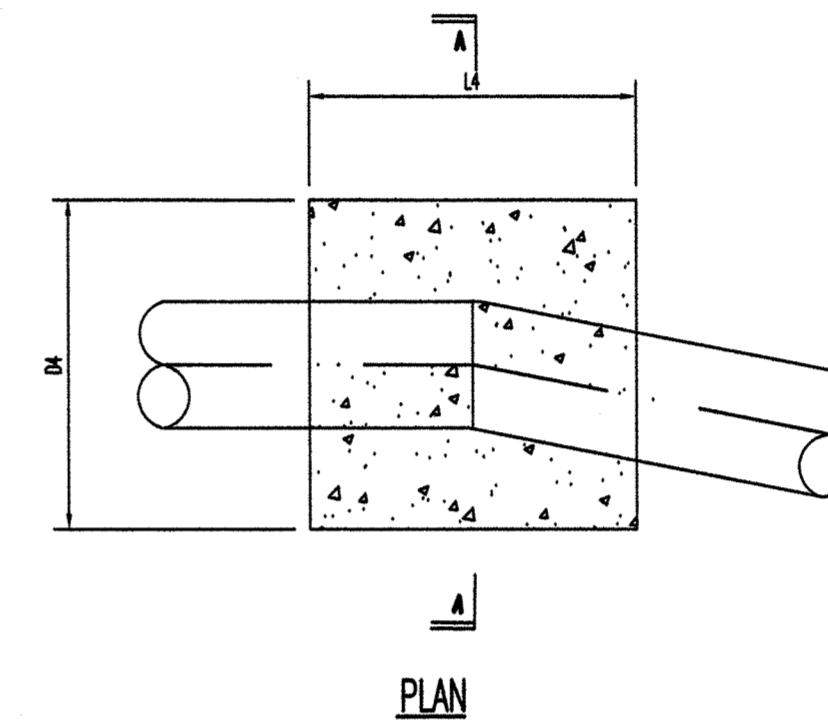


SCHEDULE FOR TEE JUNCTION

D1	D2	(mm)									
		150	200	260	305	360	400	450	500	510	610
80mm OFF TAKE TEE C=230mm	B	460	460	460	610	610	-	-	-	-	-
	L1	150	150	230	230	305	-	-	-	-	-
	L2	460	460	535	535	610	-	-	-	-	-
100mm OFF TAKE TEE C=305mm	B	535	535	535	535	535	535	535	535	535	535
	L1	150	230	305	305	305	305	380	460	610	-
	L2	460	460	535	535	610	610	685	685	685	685
150mm OFF TAKE TEE C=305mm	B	610	610	610	610	610	610	610	610	610	610
	L1	150	230	305	305	305	305	380	460	610	-
	L2	460	460	535	535	610	610	685	685	685	685
200mm OFF TAKE TEE C=380mm	B	-	760	760	760	685	685	685	760	840	-
	L1	-	230	230	305	305	380	380	380	460	-
	L2	-	460	535	610	610	685	685	685	685	-
305mm OFF TAKE TEE C=710mm	B	-	-	-	1410	1410	1410	1410	1410	1410	1530
	L1	-	-	-	410	410	530	530	610	610	710
	L2	-	-	-	610	610	610	610	610	610	710
500mm OFF TAKE TEE C=1220mm	B	-	-	-	-	-	-	-	1530	1530	1530
	L1	-	-	-	-	-	-	-	760	760	760
	L2	-	-	-	-	-	-	-	900	900	900
600mm OFF TAKE TEE C=1220mm	B	-	-	-	-	-	-	-	-	1880	1880
	L1	-	-	-	-	-	-	-	-	910	910
	L2	-	-	-	-	-	-	-	-	910	910
762mm OFF TAKE TEE C=1980mm	B	-	-	-	-	-	-	-	-	-	2740
	L1	-	-	-	-	-	-	-	-	-	1070
	L2	-	-	-	-	-	-	-	-	-	1070
H	-	-	-	-	-	-	-	-	-	-	1030

DIA. OF PIPE BEND	UP TO	(mm)									
		150	200	250	305	360	400	450	500	510	610
11 1/2" (TYPE 1)	L4	450	400	650	920	1000	1100	1200	1300	1400	1500
	D4	800	900	1000	1050	1200	1300	1400	1500	1500	1500
11 1/2" (TYPE 1)	L4	600	750	800	950	1100	1200	1300	1400	1600	
	D4	900	950	1050	1100	1200	1350	1400	1600	1600	
11 1/2" (TYPE 1)	L4	800	820	950	1150	1300	1400	1500	1600	1800	
	D4	900	1000	1200	1300	1400	1550	1700	1800	2000	
11 1/2" (TYPE 1)	L4	650	820	1000	1300	1500	1600	1700	1800	2000	
	D4	950	1150	1300	1400	1500	1600	1750	1900	2250	
11 1/2" (TYPE 1)	L4	880	1070	1300	1500	1550	1650	1800	2100	2300	
	D4	1050	1300	1400	1600	1800	2000	2100	2500	2500	

TYPICAL CONCRETE THRUST BLOCK FOR VERTICAL BEND



NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. THRUST BLOCK AS DESIGNED FOR A PRESSURE OF 140m HEAD.
3. EARTH PASSIVE RESISTANCE IS TAKEN AS 50 kN/m².
4. BEARINGS RESISTANCE IS TAKEN AS 100 kN/m².
5. ALL CONCRETE USED TO BE GRADE 20 UNLESS OTHERWISE SPECIFIED BY THE ENGINEER.

RUJUKAN TUAN : IWK/C/PK.01/17/201

TENDER DRAWING

26.6.2024

PROJEK :

CADANGAN SKIM PERUMAHAN DI ATAS PT 265369 (HSD 229470) & PT 265370 (HSD 229471), BANDAR IPOH (S), DAERAH KINTA, PERAK DARUL RIDZUAN. (LOKASI : BANDAR IPOH) UNTUK: TETUAN PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)

TAJUK :

TYPICAL DETAILS OF CONCRETE THRUST AND ANCHOR BLOCK

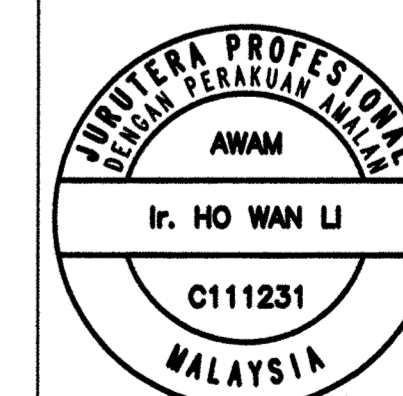
OWNER'S SIGNATURE:

PERBADANAN SETIAUSAHA KERAJAAN NEGERI PERAK (SSI)
NO. E-10-2, MENARA SSI, SOHO IPOH 2, JALAN SULTAN IDRIS SHAH, 30000 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN PEMAJU :

MACORP HOLDINGS SDN BHD
GAN YI KING (No. K/P. 1710716-10-5171)
PENGARAH
MACORP HOLDINGS SDN BHD
TIME SQUARE IPOH, B-G-20, JALAN SULTAN NAZRIN SHAH, 30250 IPOH, PERAK DARUL RIDZUAN.

TANDATANGAN JURUTERA :



I hereby certify that these works have been design by me in accordance with sound engineering practice and that I take full responsibility for the design and performance of the same.

ZATH PERUNDING SDN. BHD.

Ir. Ho Wan Li
BE(Civil), PRG., MEM.
Pengerah



No.8, Hala Datoh 1, Jalan Datoh, 30000 Ipoh, Perak Darul Ridzuan, Malaysia.
Tel: 05-2560077 (5 Talian) Fax:05-2540980

DIREKA :	UKURAN :	1:10
DILUKIS : WONG	TARIKH :	NOV. 2021
DISEMAK :	NO. LUKISAN :	
DILULUSKAN : Ir. HO WAN LI		(PDC2) S/ZGH 6042/17/9/9