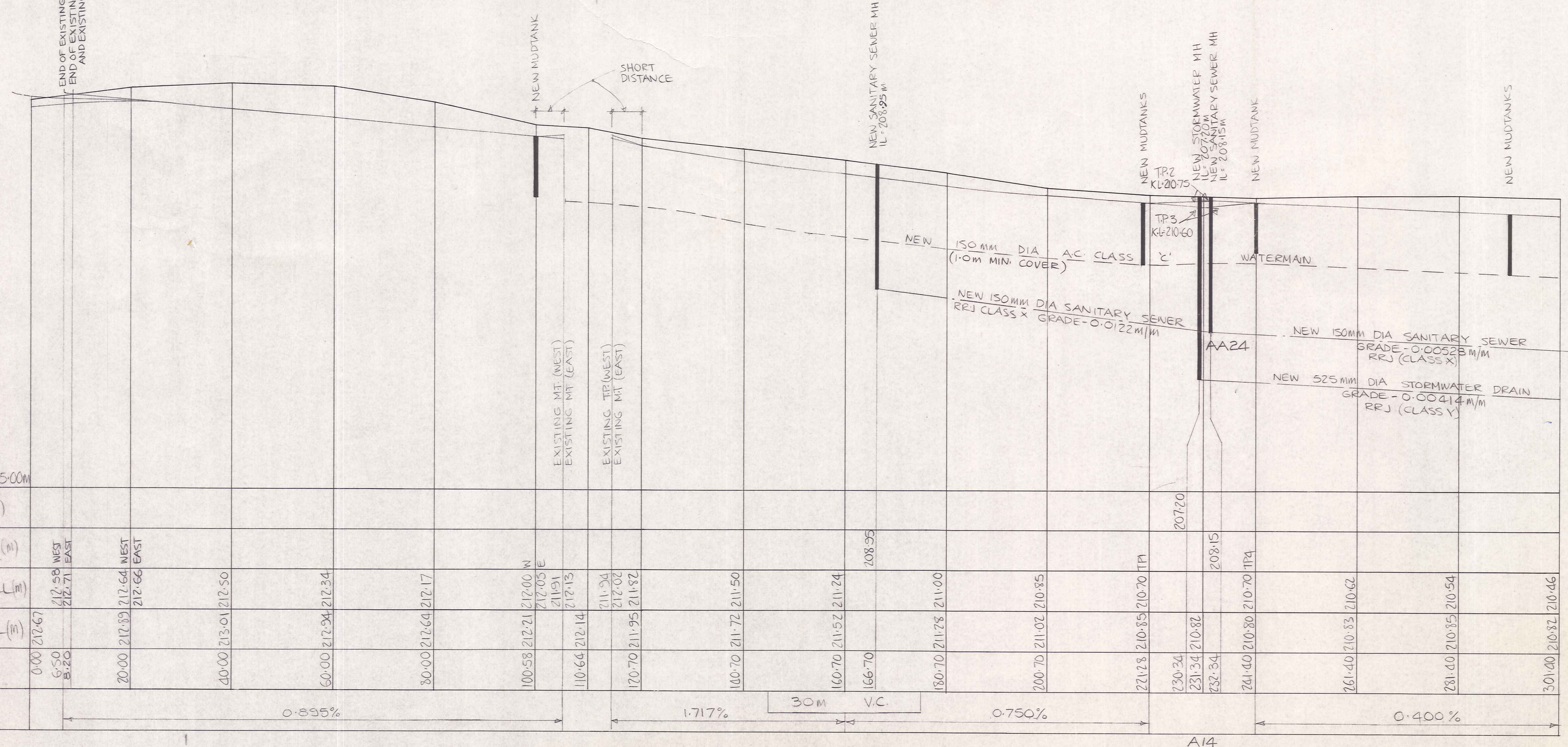


PLAN 1:500



LONGITUDINAL SECTION HORIZ - 1:500
VERT - 1:50

HEIGHT ABOVE DATUM = 205.00M	INVERT LEVEL STORMWATER (M)		INVERT LEVEL SANITARY SEWER (M)		TOP OF KERB LEVEL (M)	TRAVERSE LEVEL (M)	DISTANCE (M)	GRADES (%)
0.00	212.67	212.67	212.58 WEST	212.71 EAST	212.64	212.67	0.00	
6.50	212.71	212.71	212.64 WEST	212.66 EAST	212.64	212.64	6.50	0.895%
20.00	212.83	212.83	212.64 WEST	212.66 EAST	212.64	212.83	20.00	
40.00	213.01	213.01	212.50		212.50	213.01	40.00	
60.00	212.94	212.94	212.34		212.34	212.94	60.00	
80.00	212.64	212.64	212.17		212.17	212.64	80.00	
100.58	212.21	212.21	212.00		212.00	212.21	100.58	
110.64	212.14	212.14	211.91		211.91	212.14	110.64	
120.70	211.95	211.95	211.82		211.82	211.95	120.70	
140.70	211.72	211.72	211.50		211.50	211.72	140.70	
160.70	211.52	211.52	211.24		211.24	211.52	160.70	
166.70	211.28	211.28	208.95		208.95	211.28	166.70	
180.70	211.02	211.02	211.00		211.00	211.02	180.70	
200.70	211.02	211.02	210.85		210.85	211.02	200.70	
221.28	210.85	210.70	210.70		210.70	210.85	221.28	
230.34	210.82	210.82	207.20		207.20	210.82	230.34	
231.34	210.82	210.82	208.15		208.15	210.82	231.34	
232.34	210.80	210.70	210.70		210.70	210.80	232.34	
241.40	210.83	210.62	210.62		210.62	210.83	241.40	
261.40	210.53	210.54	210.54		210.54	210.53	261.40	
281.40	210.53	210.46	210.46		210.46	210.53	281.40	
301.00	210.52	210.46	210.46		210.46	210.52	301.00	

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CROMWELL BOROUGH COUNCIL

NEIGHBOURHOOD 1 DEVELOPMENT

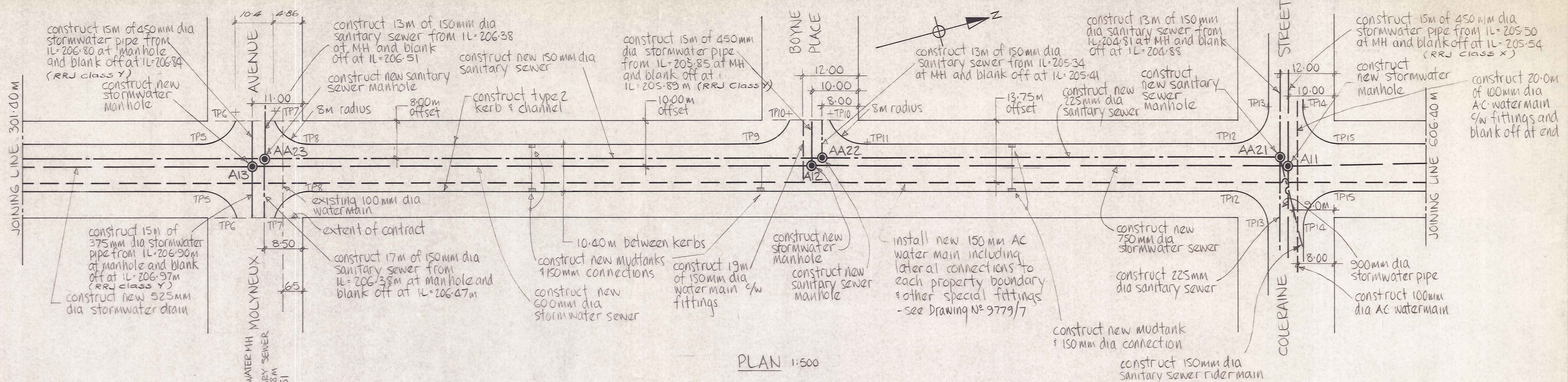
CONTRACT 55/1/2
CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES

ANTRIM STREET
(MELMORE TCE - KERRY CT)

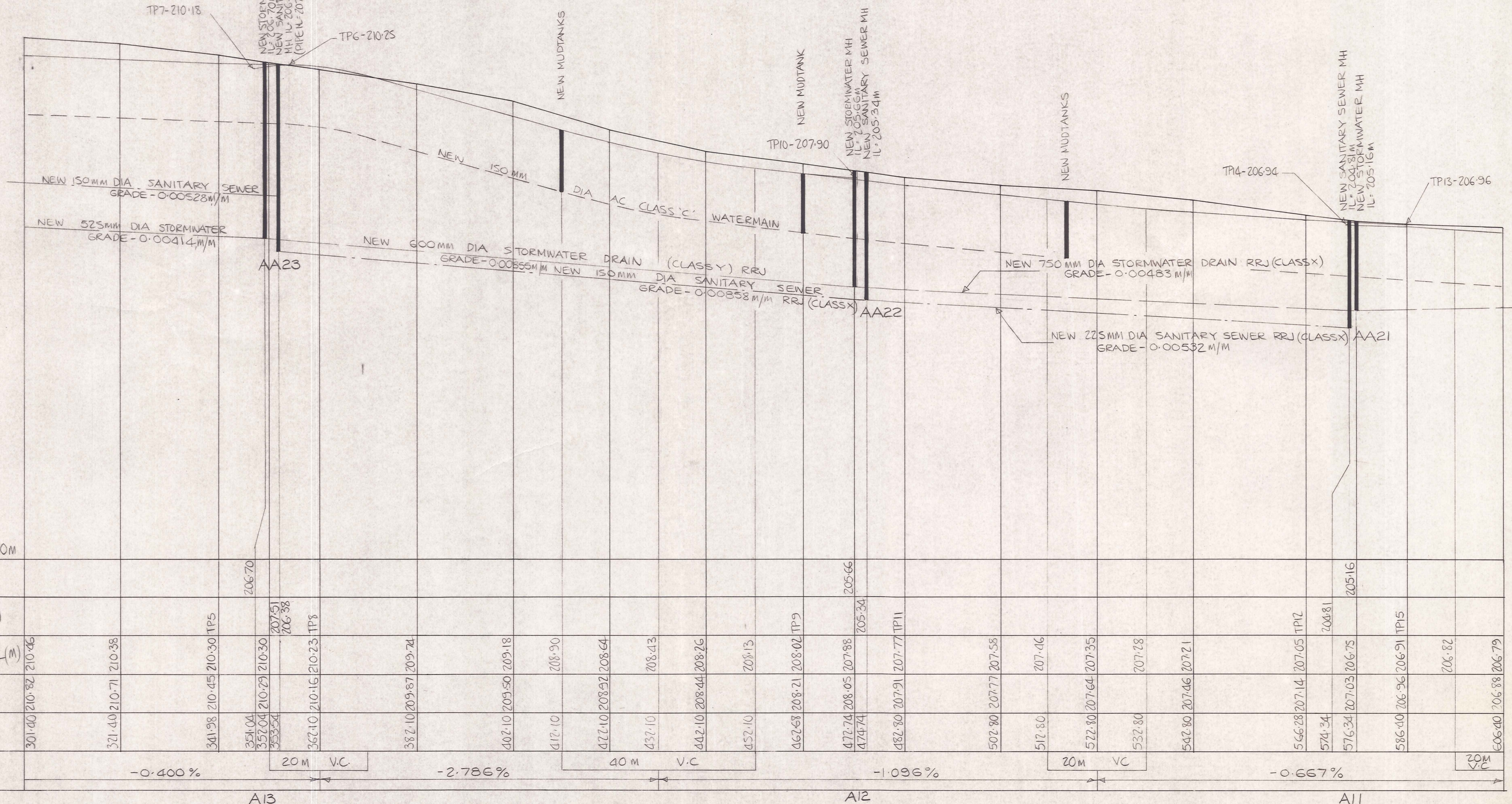
AMENDMENTS			NAME DATE	
NO.	BY	DATE	NAME	DATE
			P. Caldwell	Jan '81
			P.C. N.J.	May '81
			I. Knox	June '81
			D. Wilson	10/8/81
				2/8/81

JOB NO. **9779** Sheet No. **1**
of 11 sheets
File 55/1/2 L.B. R.B.

CONTRACT 55/1/2



PLAN 1:500



LONGITUDINAL SECTION HORIZ - 1:500 VERT - 1:50

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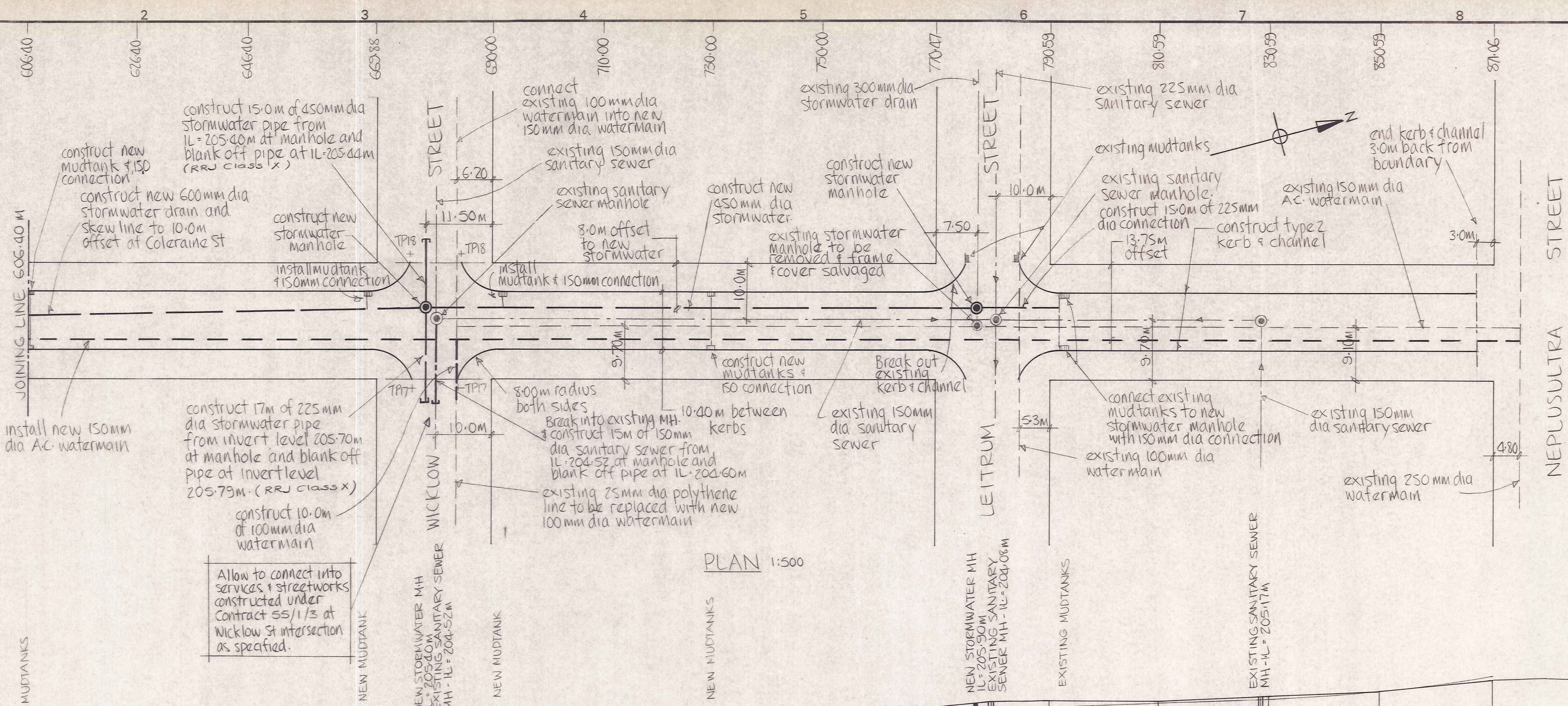
NEIGHBOURHOOD 1 DEVELOPMENT

CONTRACT 55/1/2
CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES

ANTRIM STREET
(KERRY CT - COLERAINE ST)

AMENDMENTS			NAME		DATE
NO.	BY	DATE	Appvd.	Surveyed	
				P Coldicott	Jan '81
				P.C. N.J.	May '81
				J. Knox	June '81
				Checked	10/8/81
				Approved	

JOB NO. **9779**
Sheet No. **2** of 11 sheets
File 9/0/2 L.B. F.B.



NOTE: PIPES & FITTINGS SALVAGED FROM EXISTING 150MM DIA WATERMAIN BETWEEN NEPLUSULTRA STREET & WICKLOW STREET, ARE TO BE STORED IN CROMWELL BOROUGH COUNCILS YARD

FOR NEW WATERMAIN DETAILS SEE DRAWING N° 9779/7

LONGITUDINAL SECTION

HEIGHT ABOVE DATUM: 200.00M

HEIGHT ABOVE DATUM: 200.00M	606.40	626.40	646.40	663.88	690.00	710.00	730.00	750.00	770.47	777.97	780.53	790.59	810.59	830.59	850.59	871.06
INVERT LEVEL STORMWATER (M)				205.40					205.90							
INVERT LEVEL SANITARY SEWER (M)				204.52					204.08					205.17		
TOP OF KERB LEVEL (M)	206.79	206.87	206.98	207.09	207.20	207.31	207.42	207.53	207.63	207.84	207.89	207.91	208.02	208.05	208.20	208.30
TRAVERSE LEVEL (M)	206.88	207.05	207.33	207.51	207.55	207.55	207.62	207.72	207.76	207.84	207.89	207.97	208.05	208.05	208.17	208.30
DISTANCE (M)	606.40	626.40	646.40	663.88	678.50	679.94	690.00	710.00	730.00	777.97	780.53	790.59	810.59	830.59	850.59	871.06
GRADES (%)	20m V.C.						+0.541%						+0.400%	20m VC		+1.529%

NEW 600MM DIA STORMWATER DRAIN GRADE - 0.0024M/M RRJ (CLASSY)

NEW 150MM DIA AC CLASS 'E' WATERMAIN (1.0M MINIMUM COVER)

NEW 450MM DIA STORMWATER DRAIN RRJ (CLASSY) GRADE - 0.005M/M

EXISTING 150MM DIA SANITARY SEWER

EXISTING 150MM DIA SANITARY SEWER

NEW MUDTANK

NEW STORMWATER MH IL=205.40M SANITARY SEWER MH - IL=204.52M

NEW MUDTANK

NEW MUDTANK

NEW MUDTANK

NEW STORMWATER MH IL=205.90M EXISTING SANITARY SEWER MH - IL=204.08M

EXISTING MUDTANKS

EXISTING SANITARY SEWER MH - IL=205.17M

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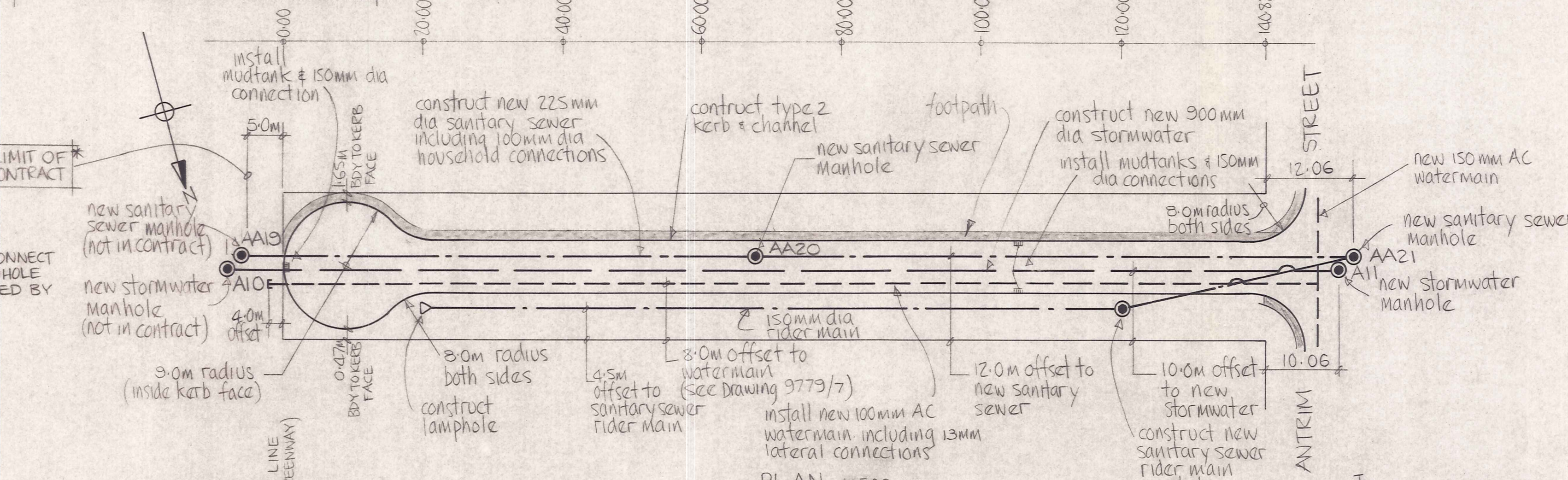
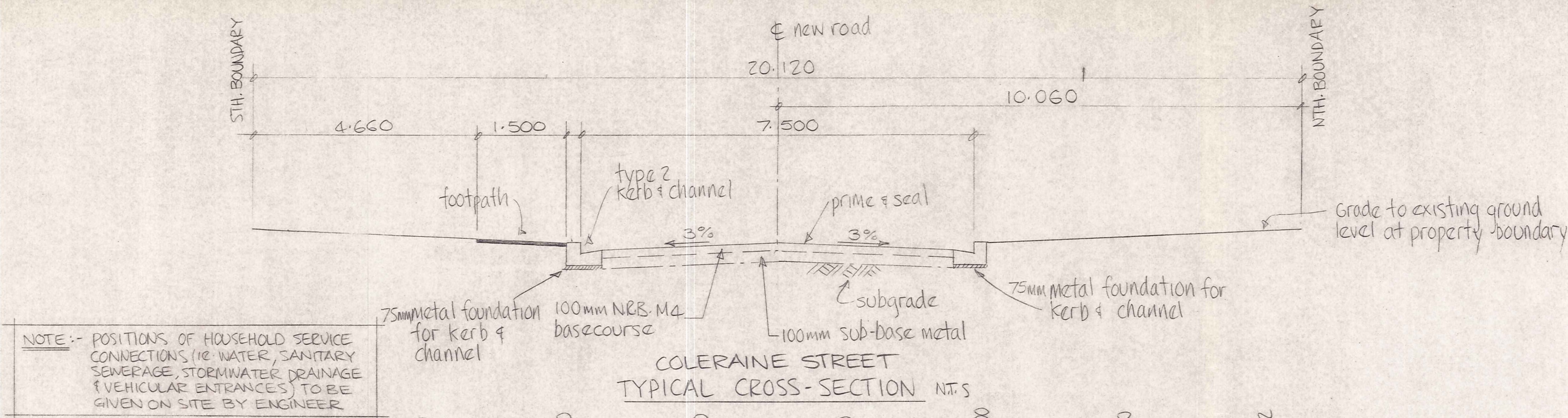
NEIGHBOURHOOD 1 DEVELOPMENT

CONTRACT 55/1/2
CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES

ANTRIM STREET
(COLERAINE ST. - NEPLUSULTRA ST.)

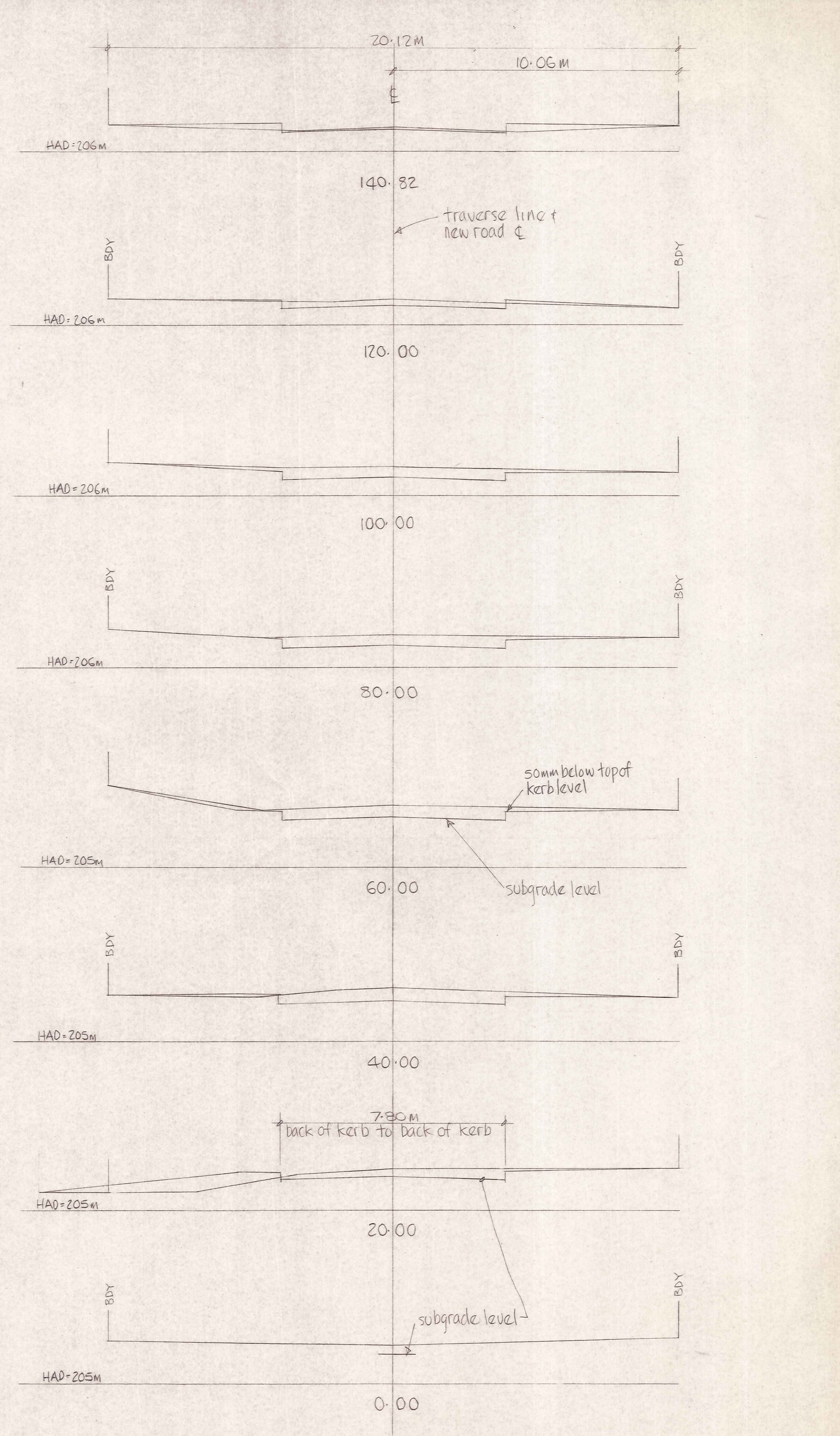
AMENDMENTS			NAME		DATE	
NO.	BY	DATE	Appvd.	Surveyed	NAME	DATE
				Drawn	P. Caldwell	Jan '81
				Calculations	P.C. N.J.	May '81
				Traced	J. Knox	June '81
				Checked		
				Approved		

JOB NO. 9779
Sheet No. 3 of 11 sheets
L.B. F.B.



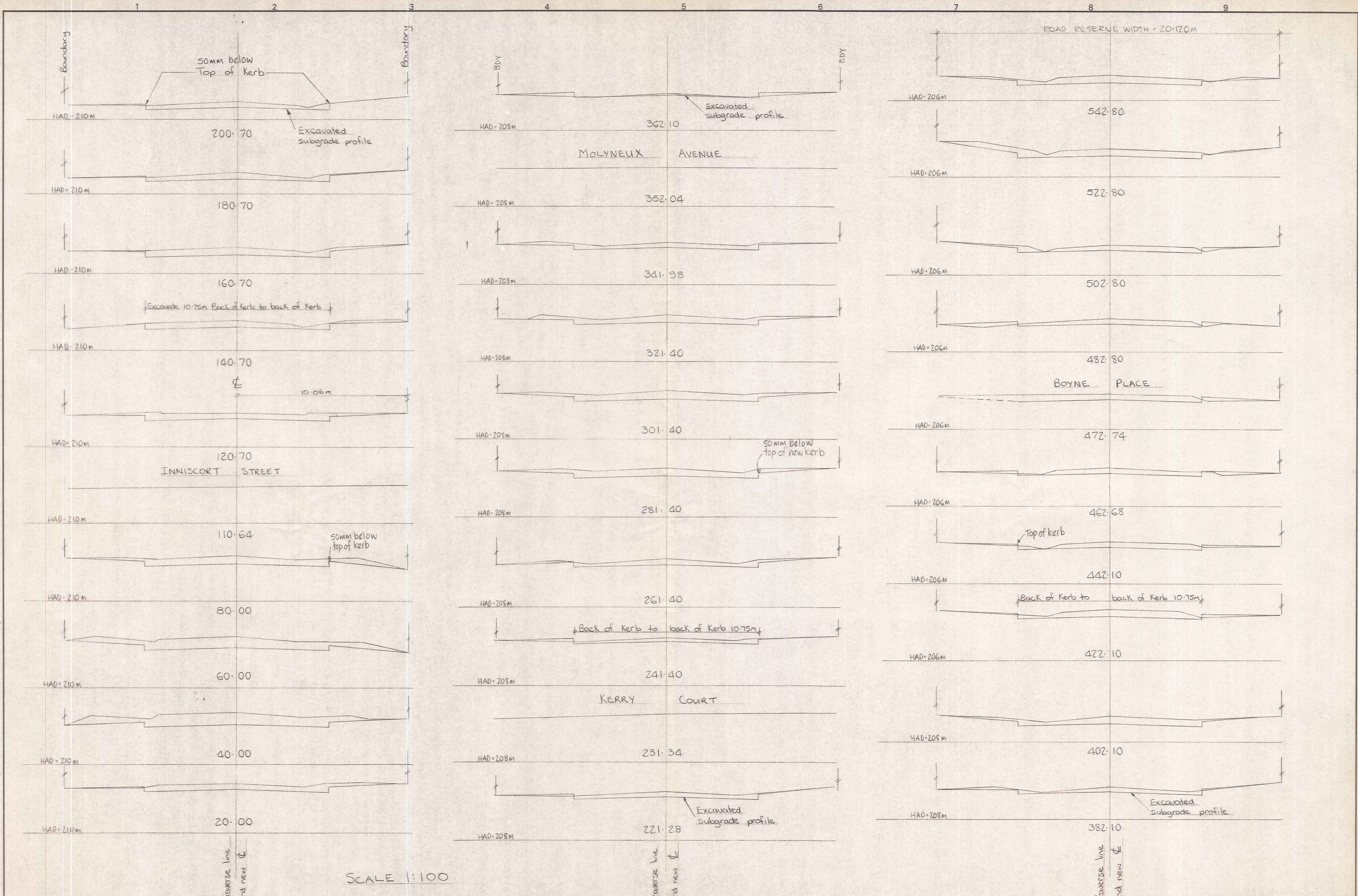
LONGITUDINAL SECTION HORIZ - 1:500 VERT - 1:50

INVERT LEVEL STORMWATER (M)	INVERT LEVEL SANITARY SEWER (M)	TOP OF KERB LEVEL (M)	TRAVERSE LEVEL (M)	DISTANCE (M)	GRADES
205.16	204.47	206.10	206.34	0.00	ALONG KERB LINE AROUND CUL-DE-SAC 0.667%
			206.45	20.00	1.600%
			206.54	35.00	
			206.83	40.00	
			207.16	60.00	20m VC
			207.00	67.50	0.650%
			206.96	80.00	10m V.C
			206.83	100.00	
			206.81	105.00	
			206.82	110.00	
			206.87	120.00	0.532%
			206.94	137.50	
			206.94	137.50	TP (NH 206.94)
			206.96	137.50	TP (NH 206.96)
			206.98	140.82	TP (NH 206.98)
			207.03	150.88	TP (NH 207.03)
			204.81	150.88	TP (NH 204.81)
			204.81	150.88	TP (NH 204.81)



COLERAINE STREET CROSS-SECTIONS 1:100

DUFFILL WATTS & KING LTD CONSULTING CIVIL & STRUCTURAL ENGINEERS Dunedin PO Box 5269 Ph. 777-133 Invercargill PO Box 576 Ph. 83049 Cromwell PO Box 82 Ph. 50391	CROMWELL BOROUGH COUNCIL	NEIGHBOURHOOD 1 DEVELOPMENT	CONTRACT 55/1/2	COLERAINE STREET (DOWN ST - ANTRIM ST)	AMENDMENTS		NAME DATE	JOB NO.	Sheet No
			CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES		NO. BY DATE	Appvd. Surveyed	N. J. J. June '81 N. J. J. June '81 J. KNOX JUNE 1981	9779	4 of 11 sheets
							Checked Approved	File L.B.	



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**CROMWELL
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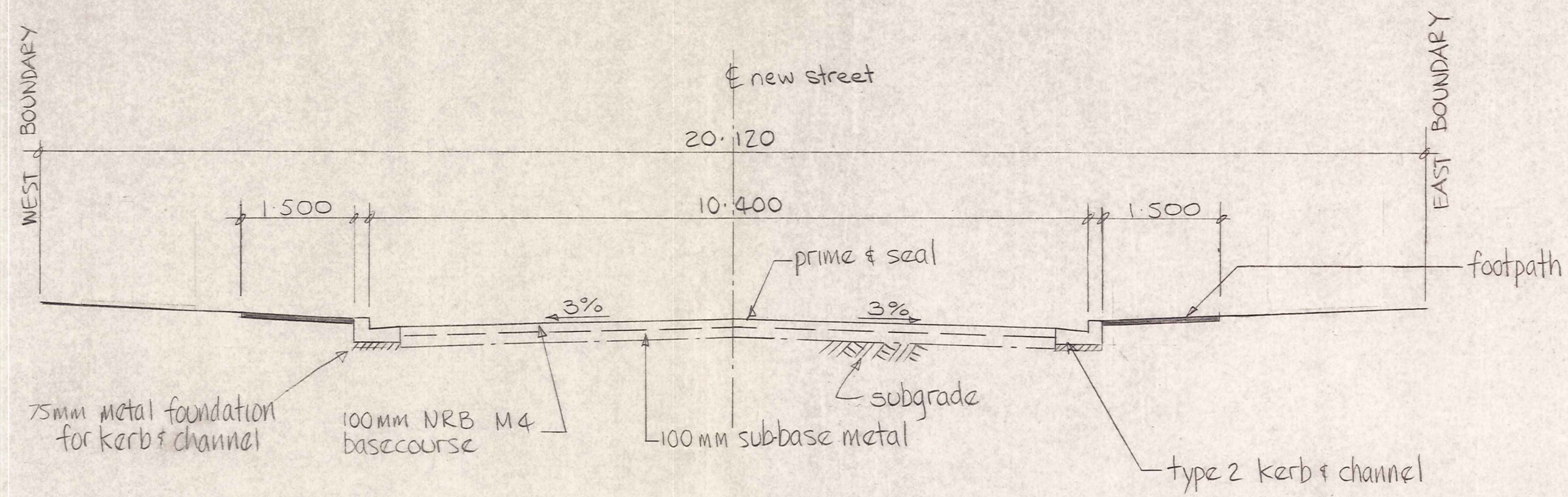
**NEIGHBOURHOOD 1
 DEVELOPMENT**

CONTRACT 55/1/2
 CONSTRUCTION OF
 STREETWORKS AND
 ENGINEERING SERVICES

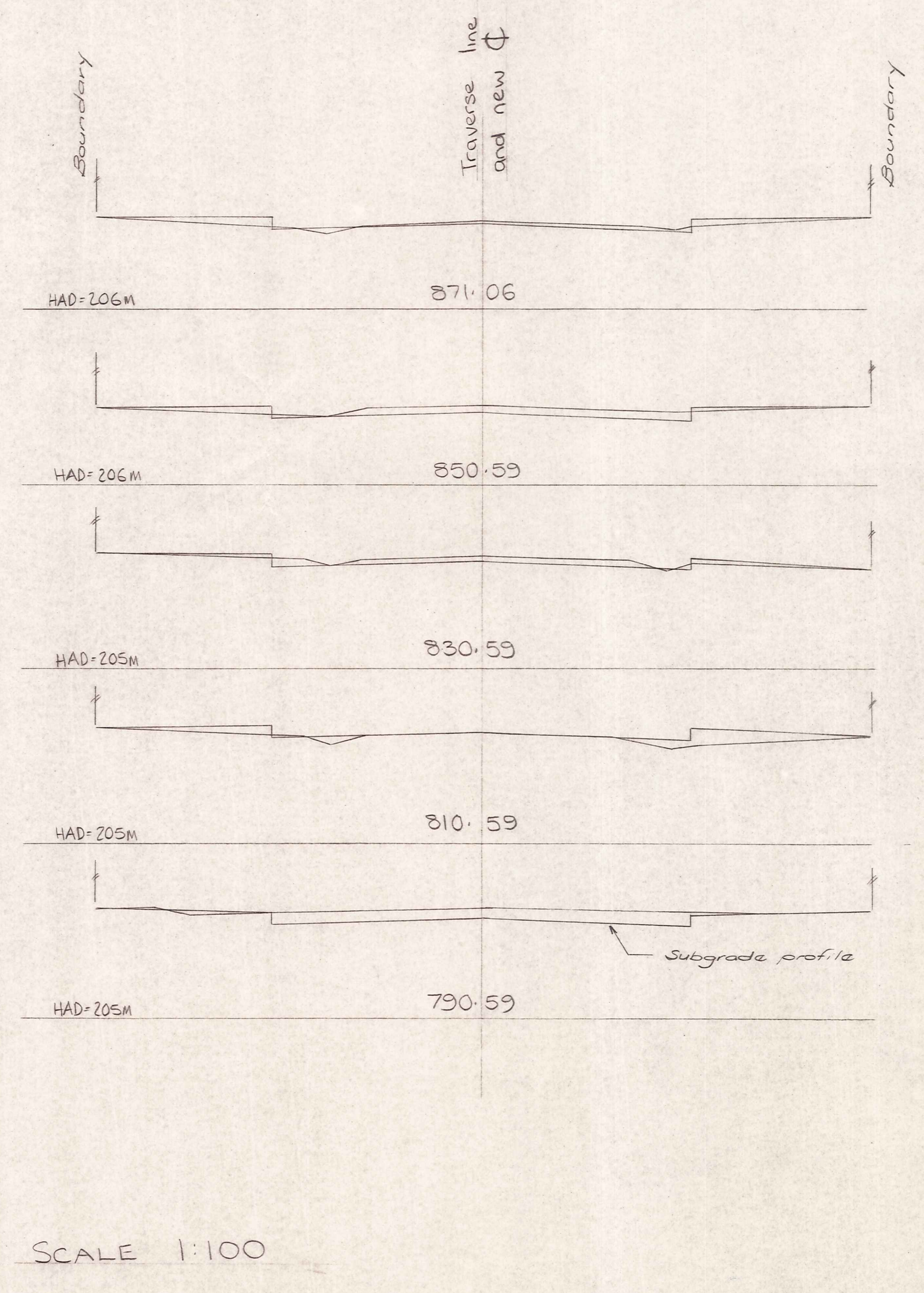
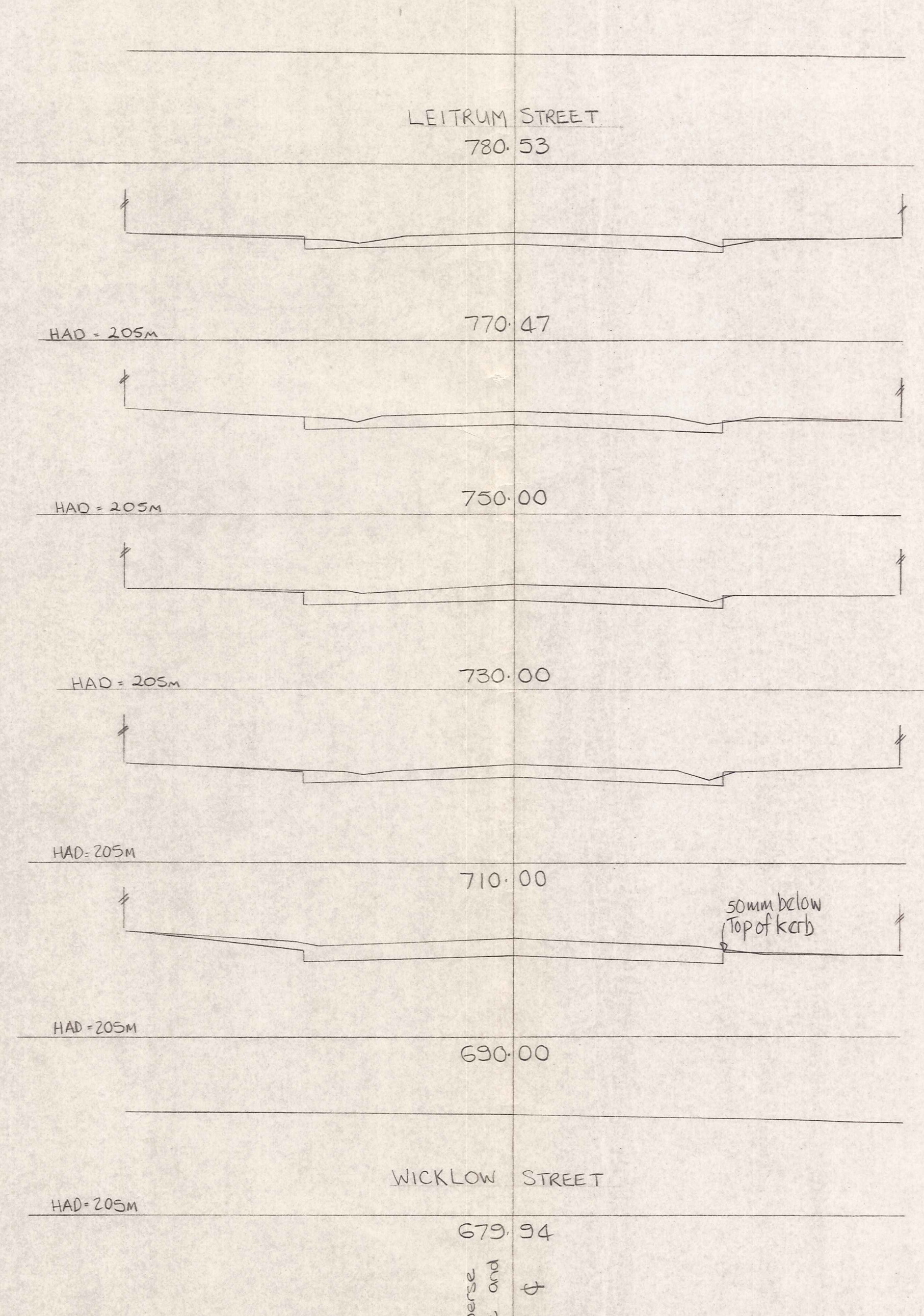
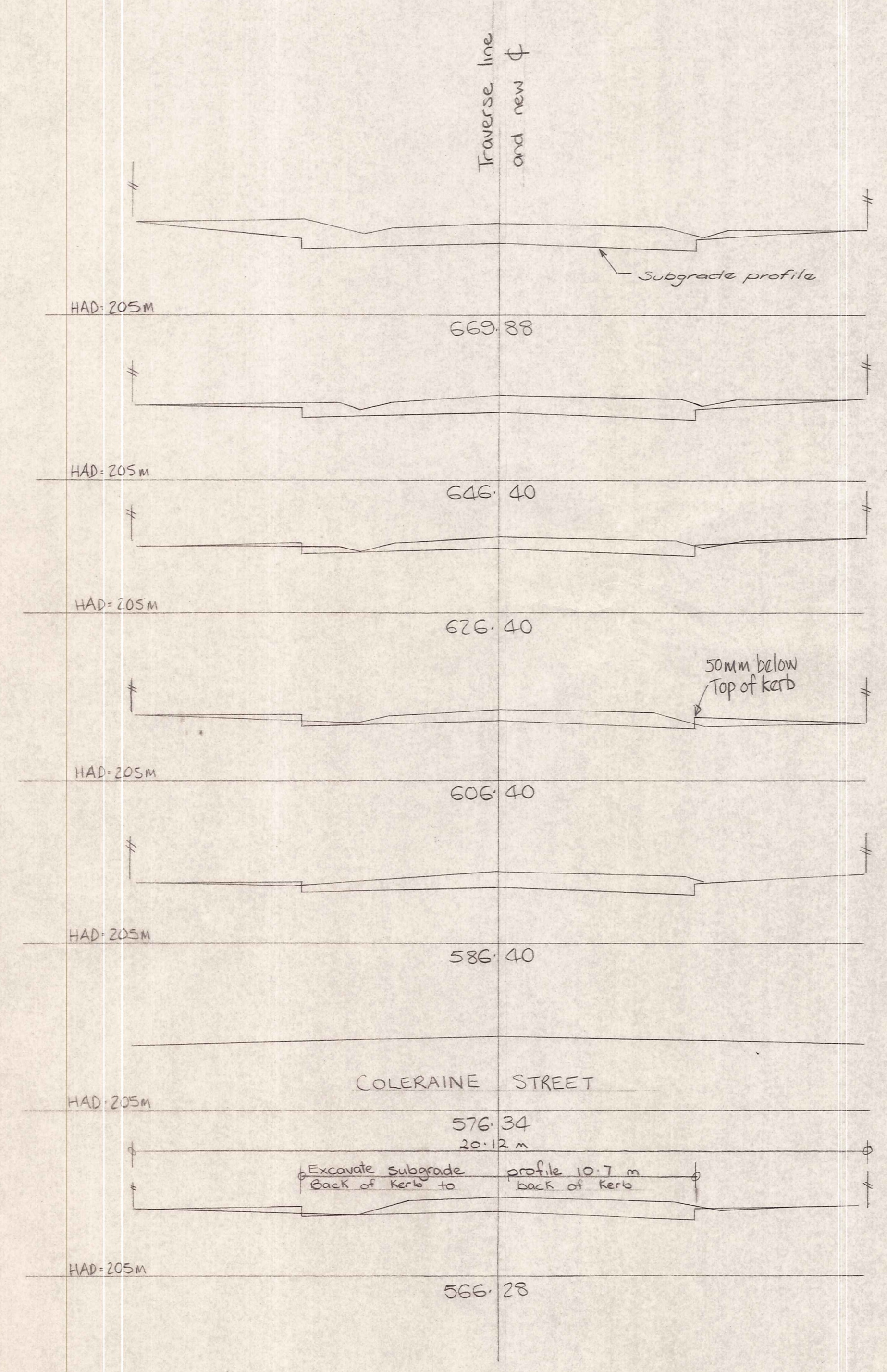
**ANTRIM STREET
 CROSS - SECTIONS**

AMENDMENTS			NAME		DATE	JOB NO. 9779	Sheet No 5 of 11 shts
NO.	BY	DATE	Appvd.	Surveyed	DATE		
				P Coldicott	Jan '81	L.B. <input type="checkbox"/> F.B. <input type="checkbox"/>	
				Drawn	Jan '81		
				Calculations	June '81		
				Traced	10/8/81		
				Checked			
				Approved			

[Handwritten signature]



TYPICAL CROSS-SECTION NT.S.
ANTRIM STREET



SCALE 1:100

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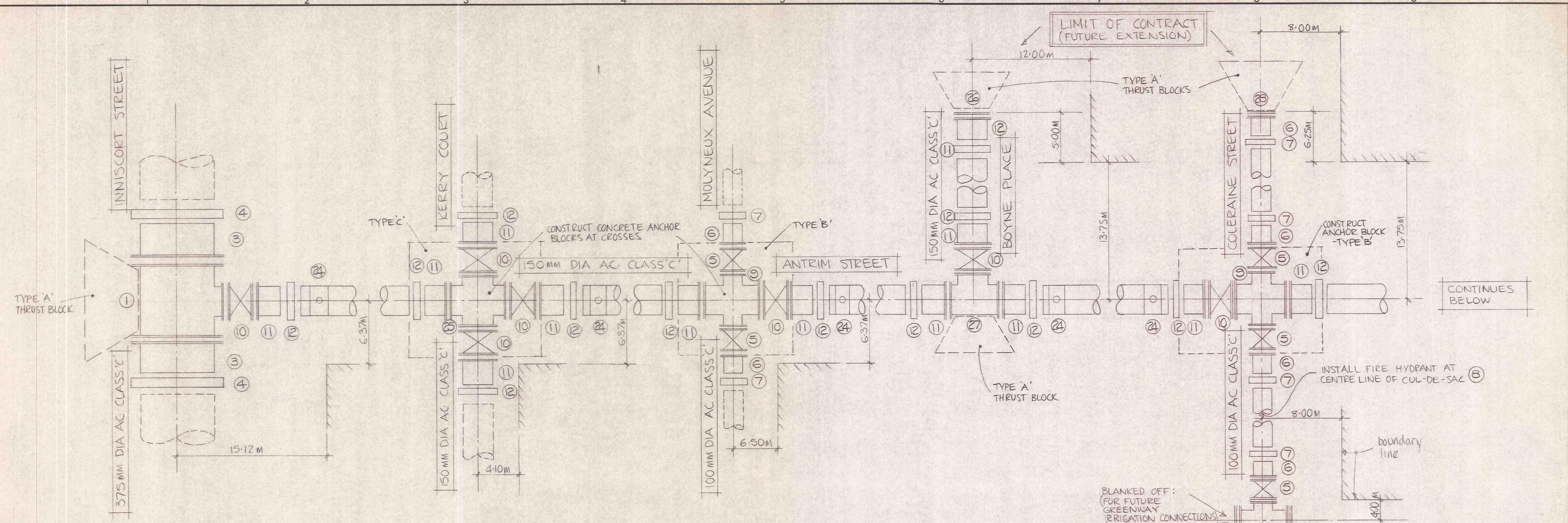
NEIGHBOURHOOD 1 DEVELOPMENT

CONTRACT 55/1/2
CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES

ANTRIM STREET CROSS - SECTIONS

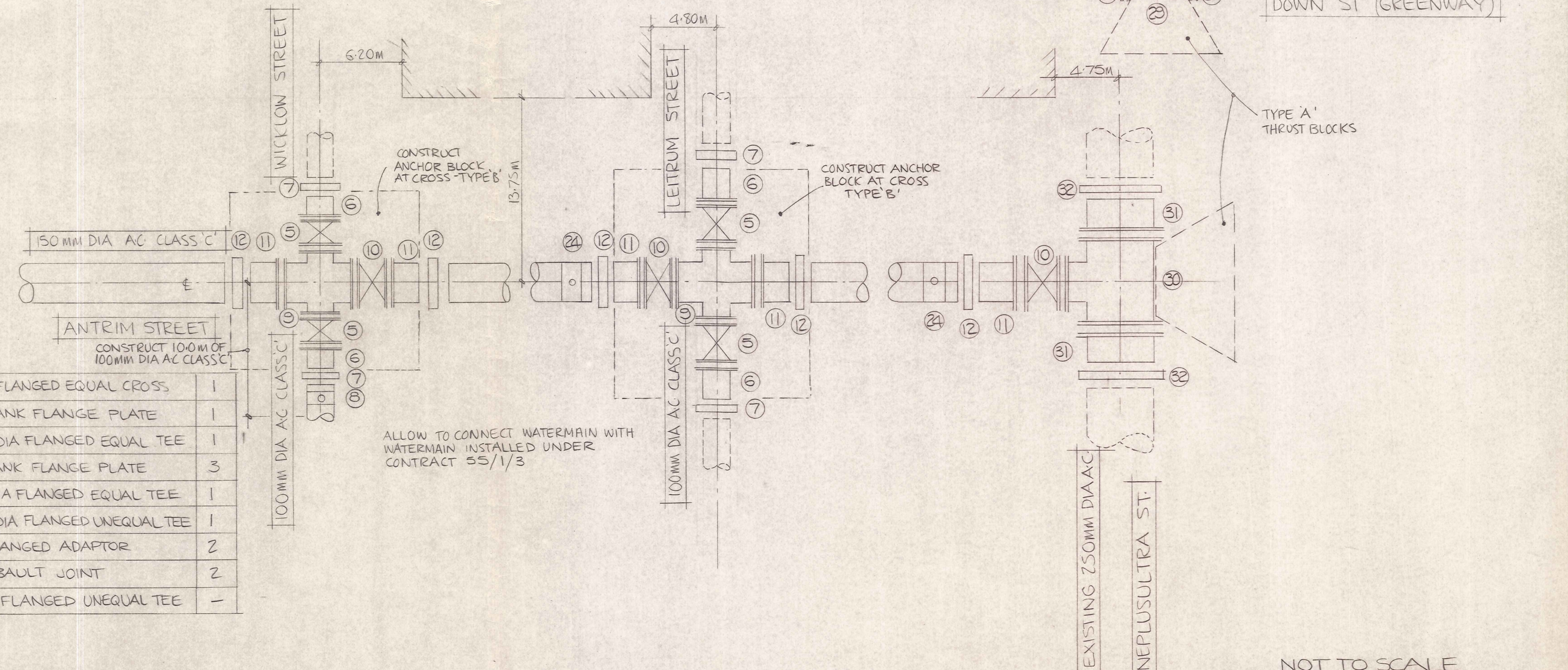
AMENDMENTS			NAME		DATE
NO.	BY	DATE	Appvd.	Surveyed	
				P Coldicott	Jan '81
				Calculations	
				J. Knox	June '81
				Checked	10/8/81
				Approved	

JOB NO. **9779**
Sheet No **6** of 11 sheets
F.B.



ITEM	DESCRIPTION	N ^o REQD
1	150 ON 375 DIA FLANGED UNEQUAL TEE	1
2	150-100 FLANGED REDUCER	-
3	375 DIA FLANGED ADAPTOR	2
4	375 DIA GIBALT JOINT	2
5	100 DIA FLANGED SLUICE VALVE	9
6	100 DIA FLANGED ADAPTOR	9
7	100 DIA GIBALT JOINT	10
8	100 DIA HYDRANT TEE	2
9	150x100 FLANGED UNEQUAL CROSS	4
10	150 DIA FLANGED SLUICE VALVE	10
11	150 DIA FLANGED ADAPTOR	18
12	150 DIA GIBALT JOINT	18
13	100x100 DIA FLANGED EQUAL CROSS	-
14	150 DIA FLANGED 90° BEND	-
15	150-75 FLANGED REDUCER	-
16	75 DIA FLANGED ADAPTOR	-
17	75 DIA GIBALT JOINT	-
18	100 ON 200 FLANGED UNEQUAL TEE	-
19	200 DIA FLANGED ADAPTOR	-
20	200 DIA GIBALT JOINT	-
21	200 DIA FLANGED SLUICE VALVE	-
22	150 DIA PLAINENDED 90° BEND	-
23	150 DIA PLAINENDED *FLANGED 90° BEND	-
24	150 DIA HYDRANT TEE	7

25	150x150 DIA FLANGED EQUAL CROSS	1
26	150 DIA BLANK FLANGE PLATE	1
27	150 ON 150 DIA FLANGED EQUAL TEE	1
28	100 DIA BLANK FLANGE PLATE	3
29	100 ON 100 DIA FLANGED EQUAL TEE	1
30	150 ON 250 DIA FLANGED UNEQUAL TEE	1
31	250 DIA FLANGED ADAPTOR	2
32	250 DIA GIBALT JOINT	2
33	150 ON 100 FLANGED UNEQUAL TEE	-



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CROMWELL BOROUGH COUNCIL

NEIGHBOURHOOD 1 DEVELOPMENT

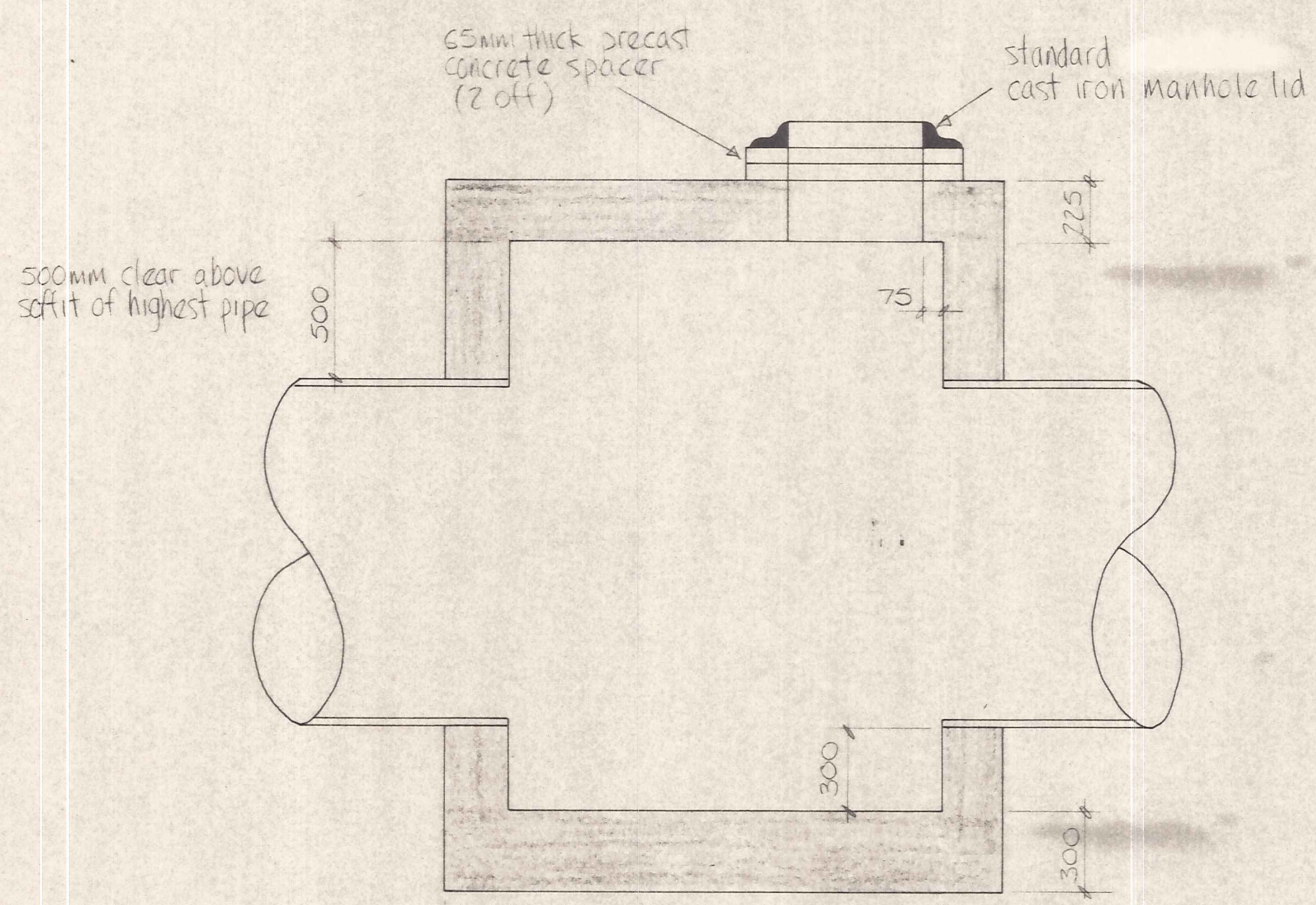
CONTRACT 55/1/2
CONSTRUCTION OF STREETWORKS AND ENGINEERING SERVICES

ANTRIM STREET WATERMAIN DETAILS

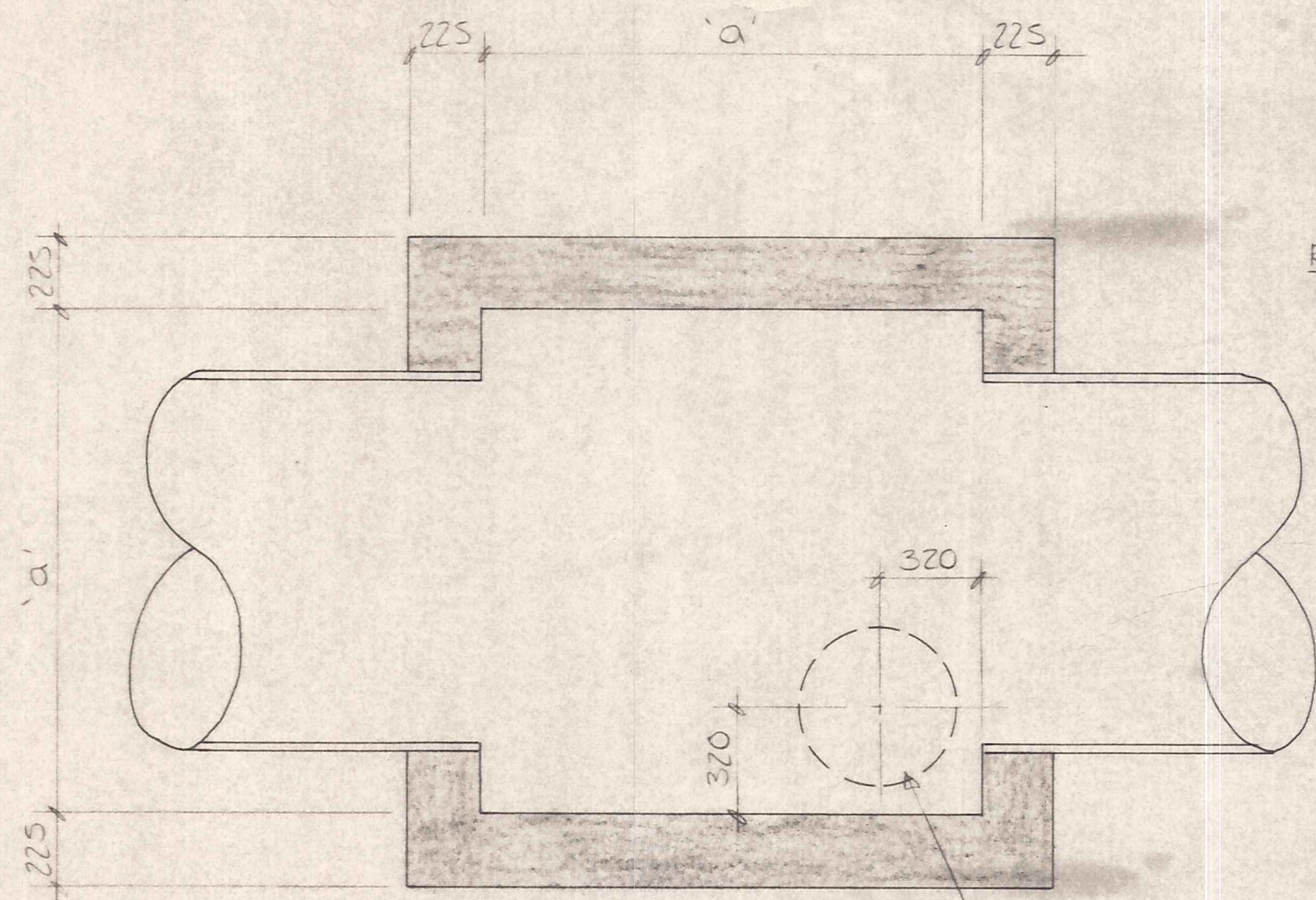
AMENDMENTS			NAME	DATE
NO.	BY	DATE		
			D. JACK	JUNE 1981
			J. KNOX	JUNE 1981
				10/8/81

JOB NO. **9779** Sheet No. **7**
of 11 sheets
L.B. F.B.

NOT TO SCALE



ELEVATION

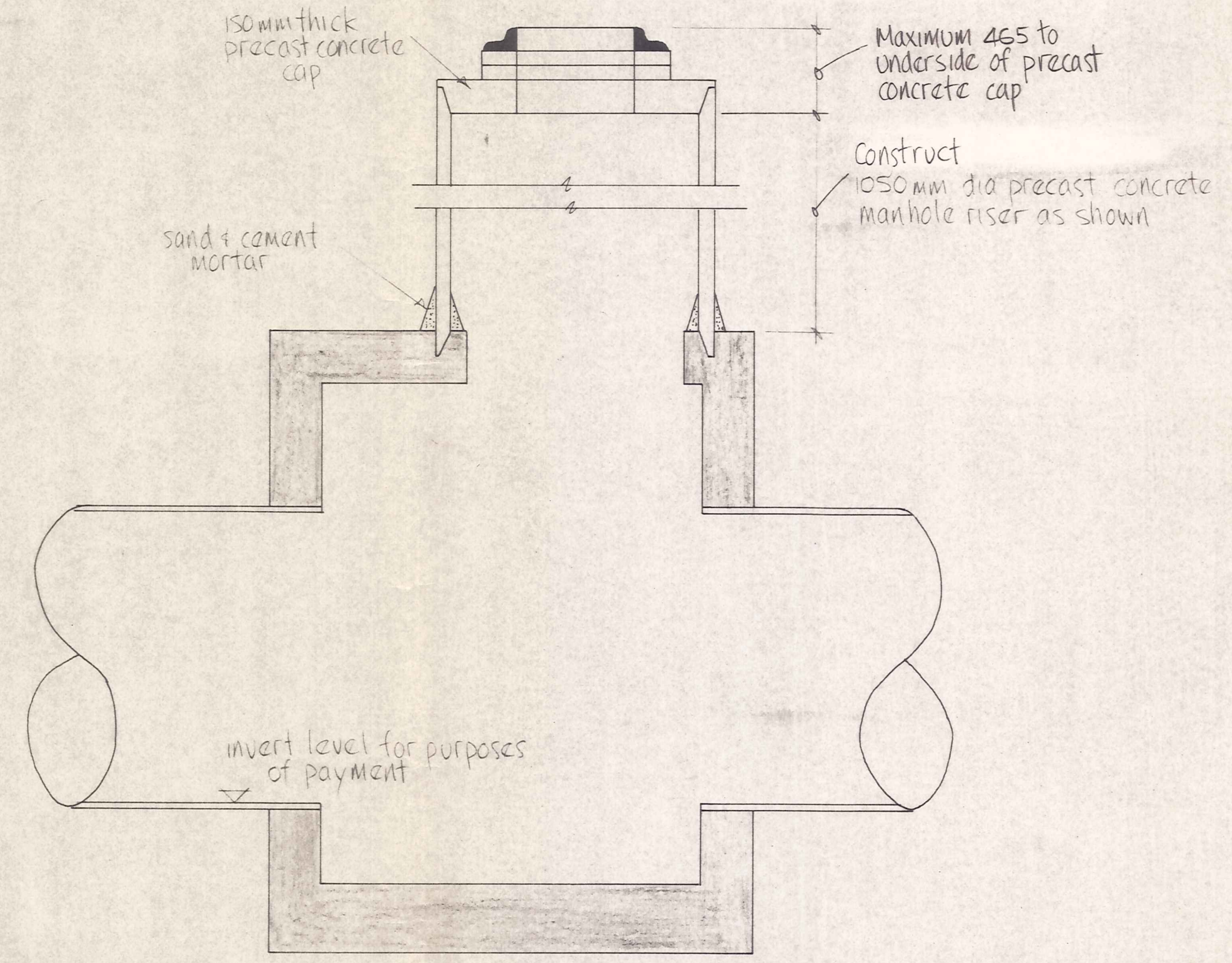


PLAN

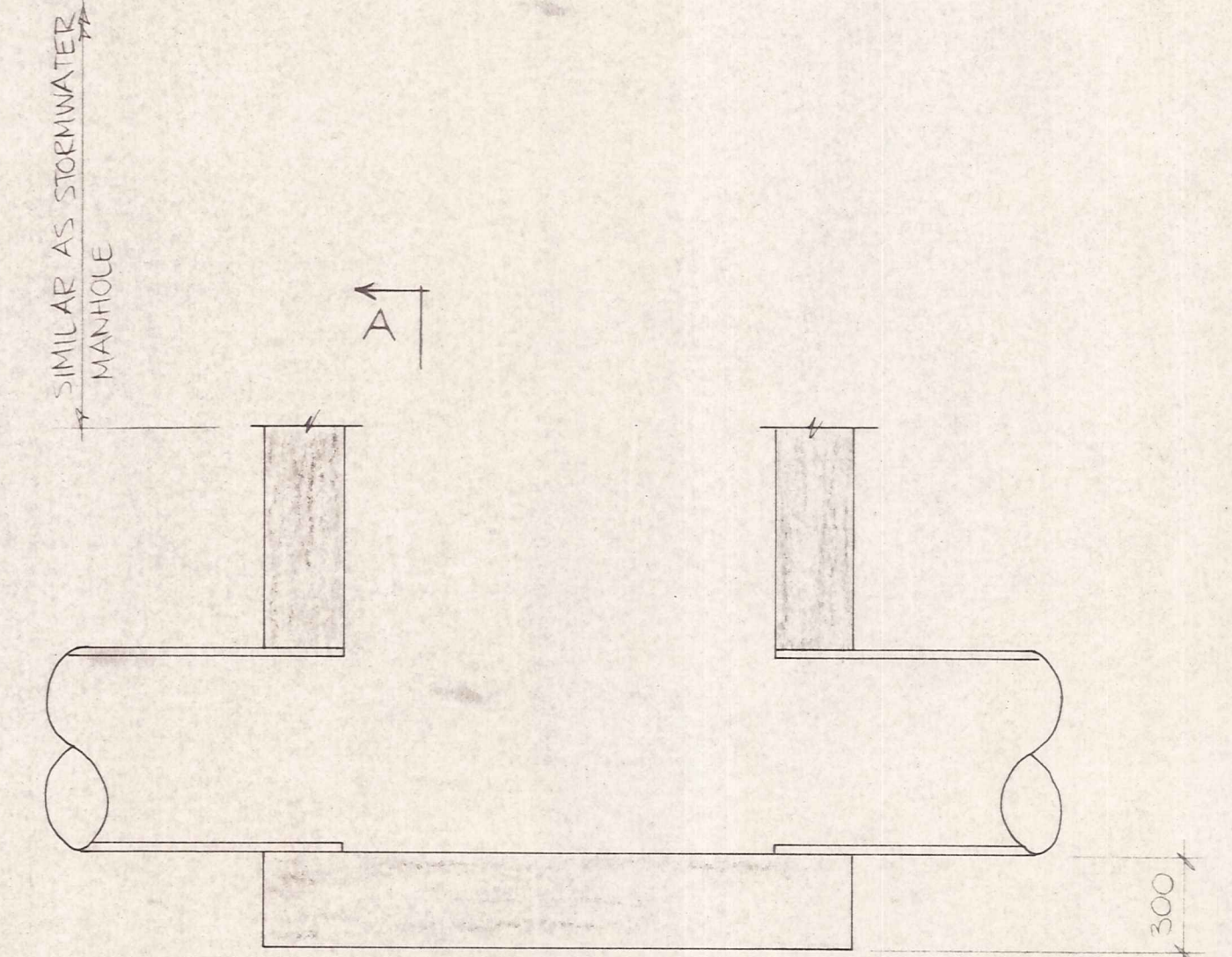
PIPE SIZES I.D. (mm)	'a'
1350	1750
1200	1600
1050	1600
900	1300
750	1200
600	1200

REINFORCING

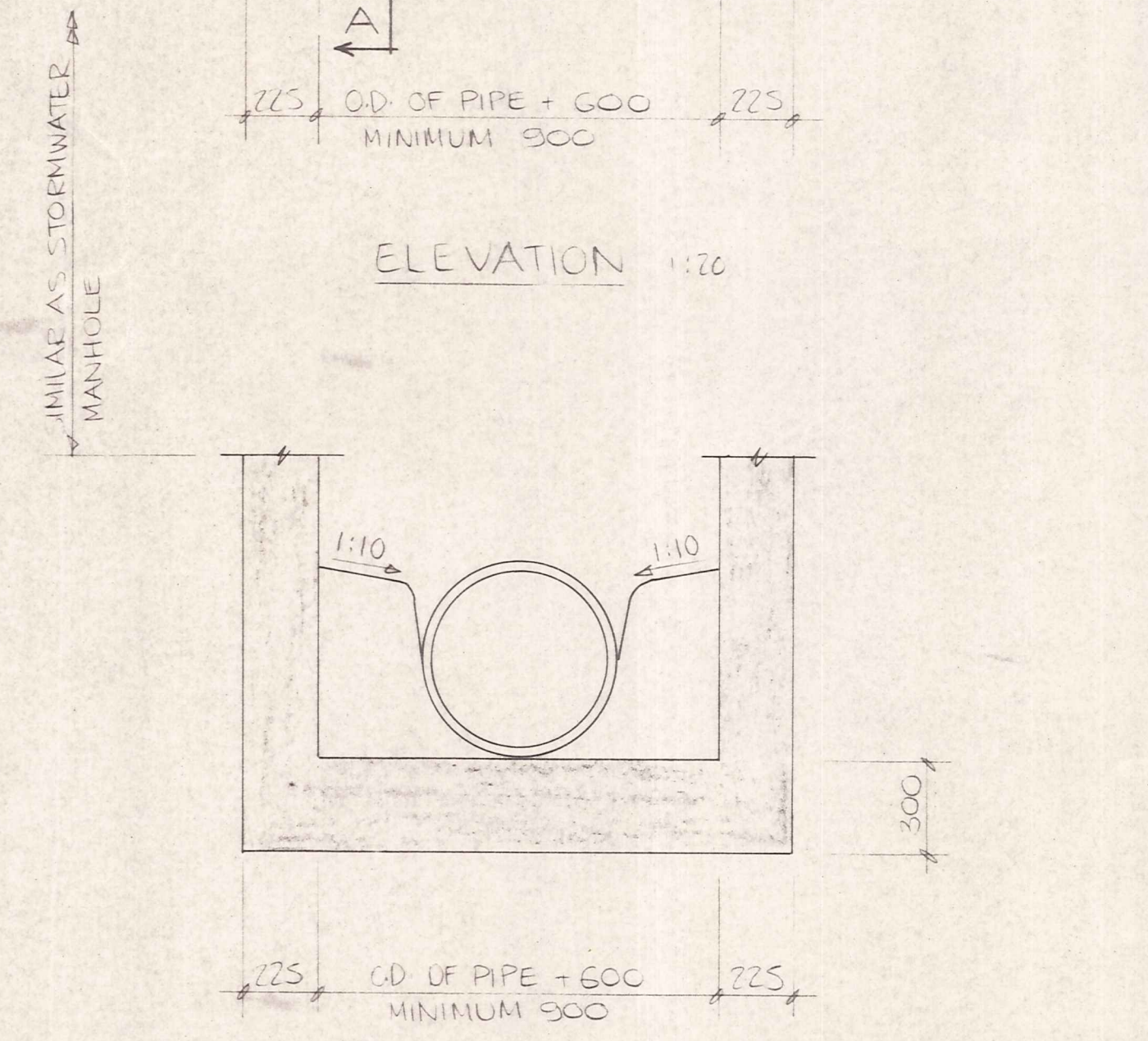
ROOF: D12 at 150 crs each way (50 cover)
 WALLS: D12 at 300 crs horizontal
 D12 at 450 crs vertical



NOTE:
 PRECAST RISER SHAFTS TO BE POSITIONED BEFORE INSITU CONCRETE AT BASE IS POURED.
 THE RISER IS TO BE SUPPORTED SUCH THAT A MINIMUM 75MM OF EMBEDMENT INTO CONCRETE IS OBTAINED.
 SAND & CEMENT TO BE PLACED COMPLETELY AROUND BASE OF RISER AS SHOWN



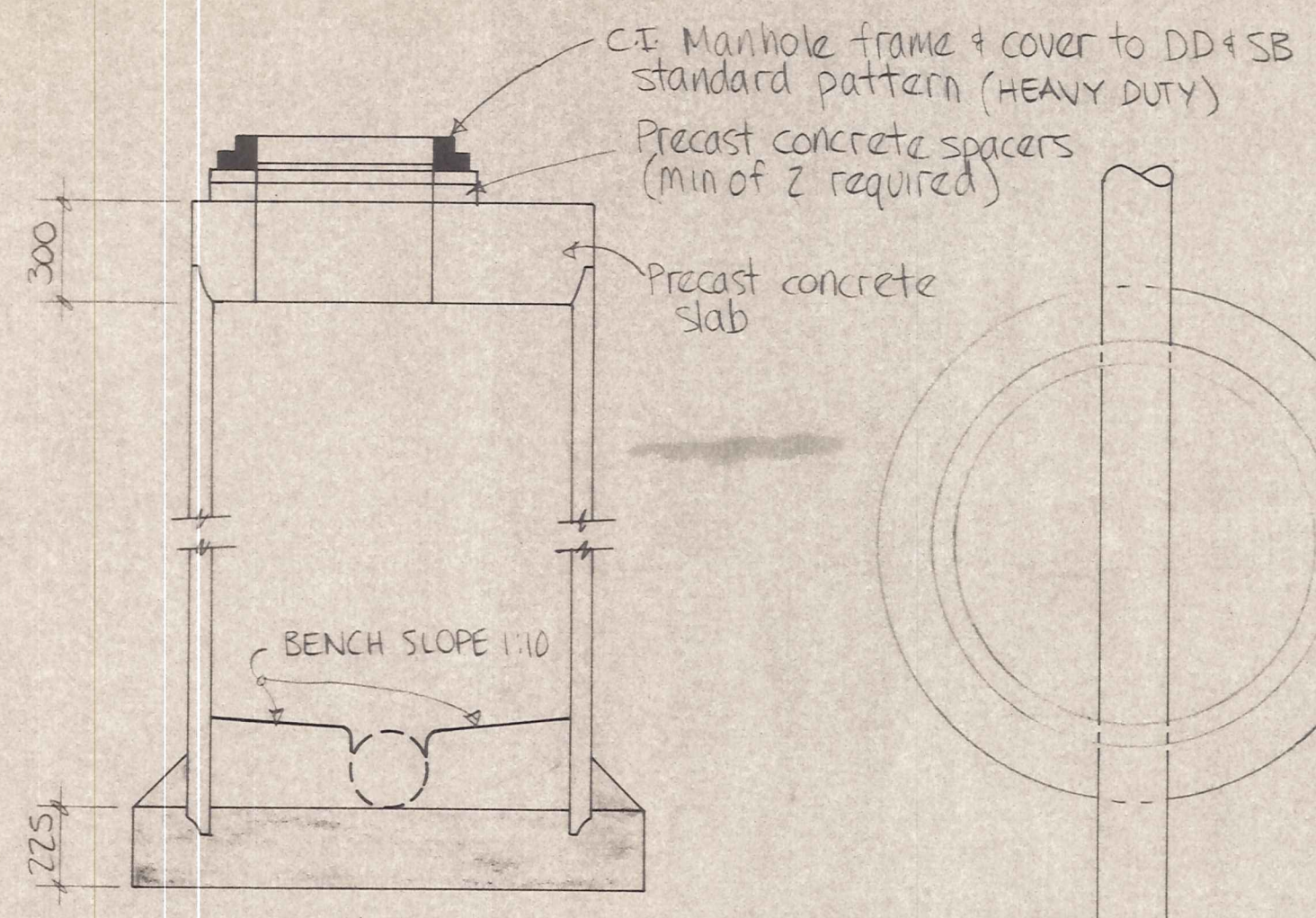
ELEVATION 1:20



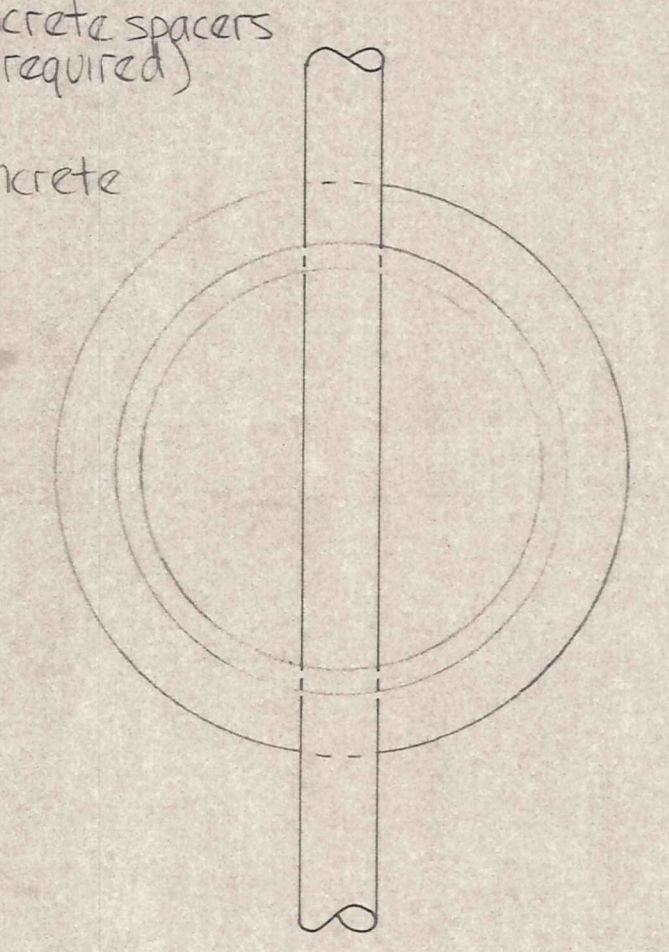
SECTION A-A 1:20

STANDARD STORMWATER DRAIN MANHOLE

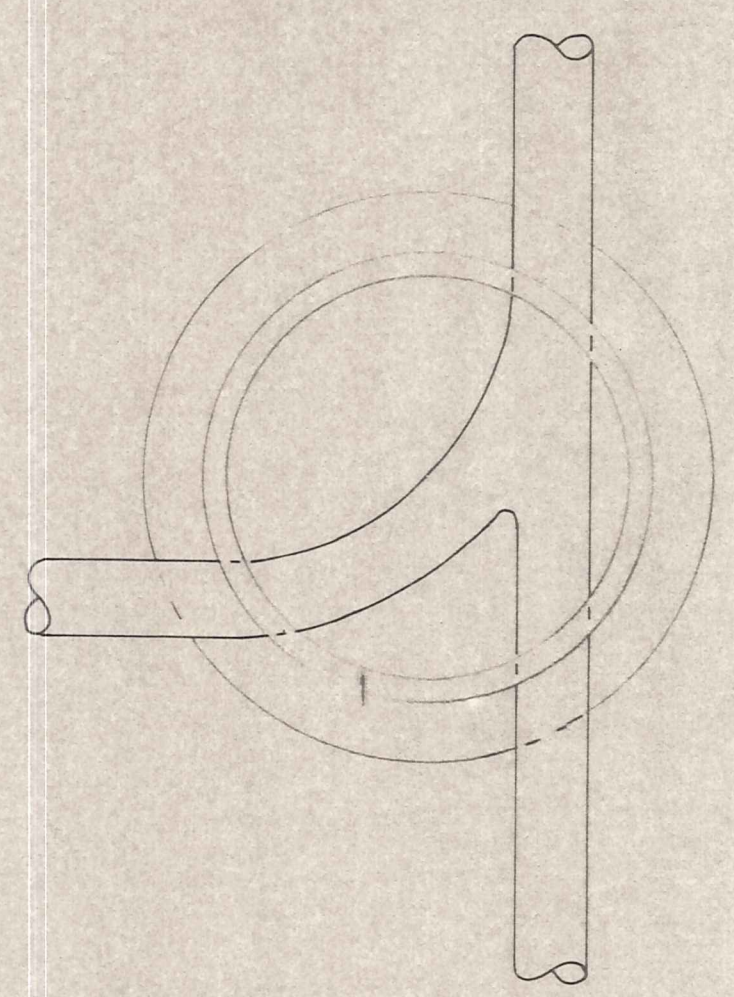
STANDARD SANITARY SEWER MANHOLE
 (FOR DIAMETERS GREATER THAN 225MM I.D.)



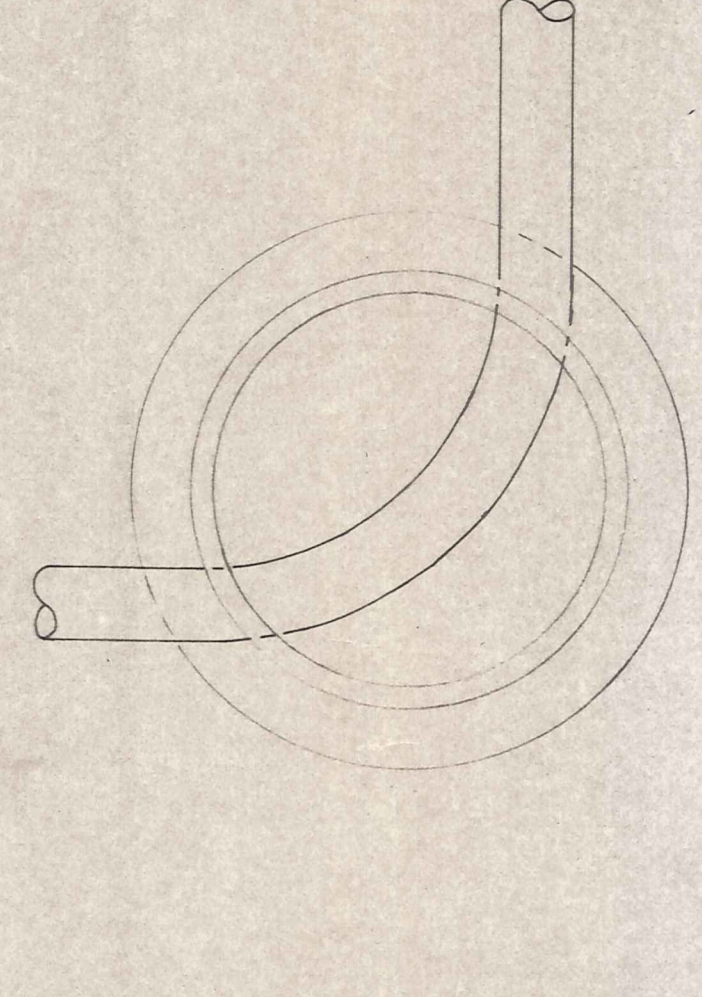
SECTION
PRECAST MANHOLE



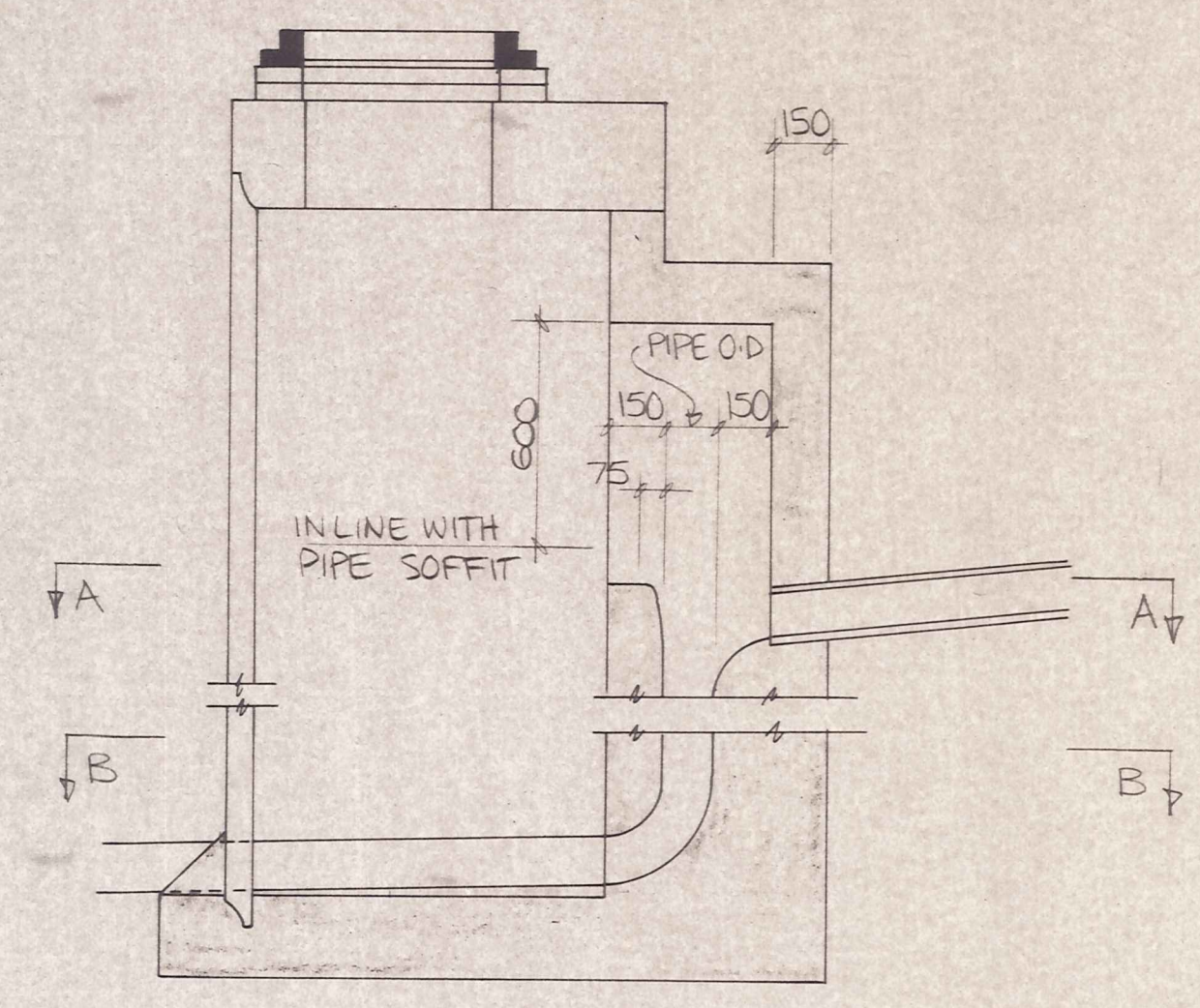
PRECAST
STRAIGHT THRU MANHOLES



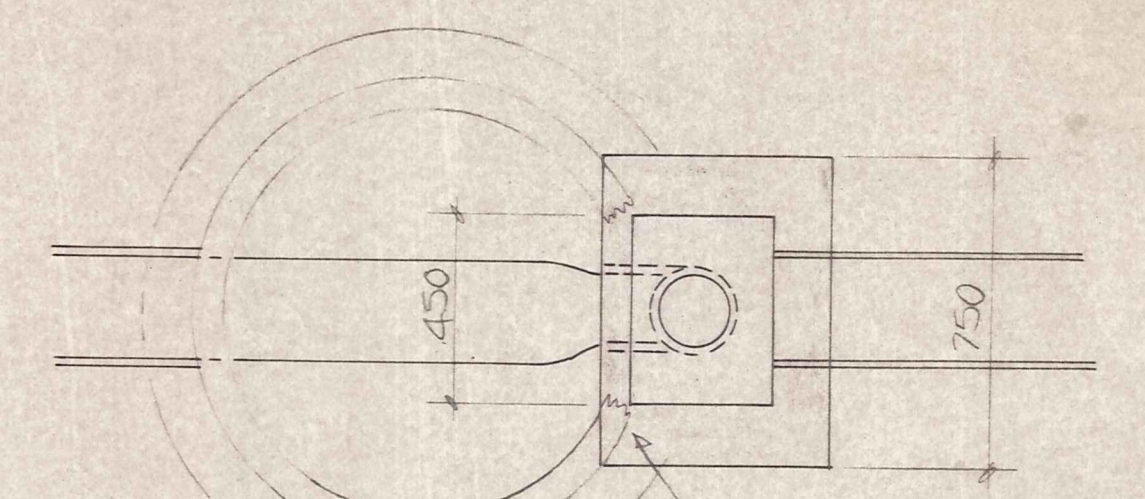
PRECAST
JUNCTION MANHOLES



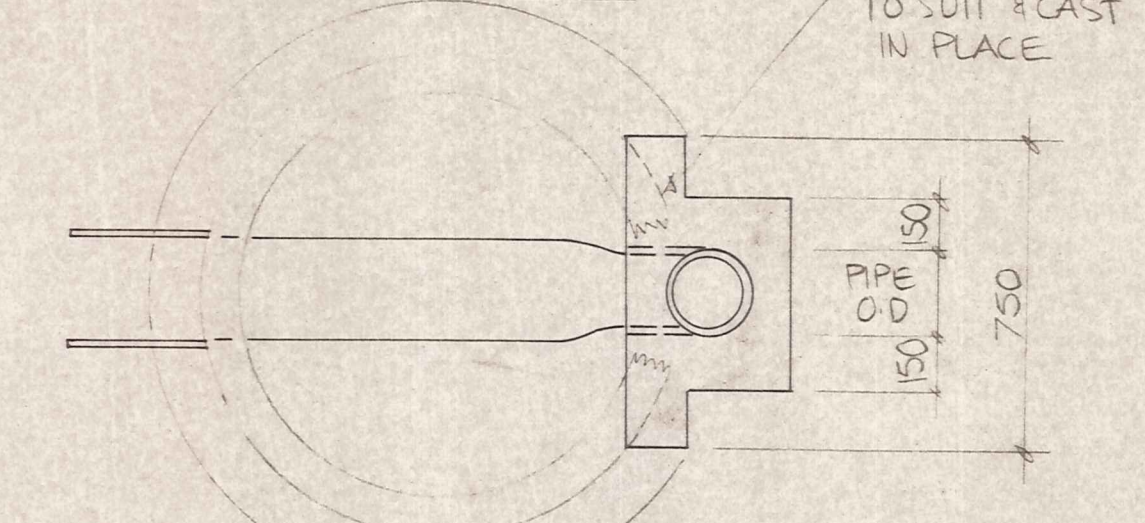
PRECAST
ANGLE MANHOLES



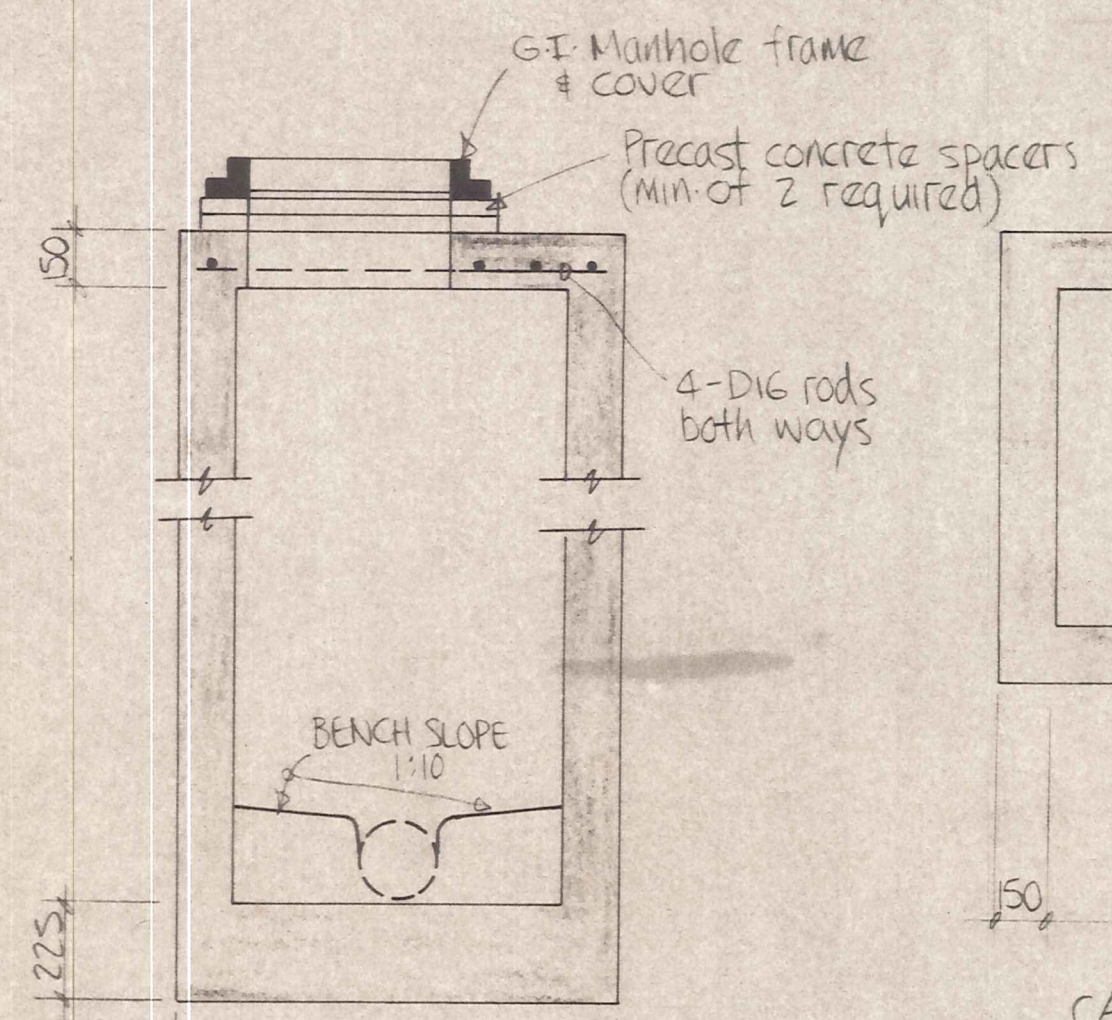
PRECAST
DROP MANHOLE



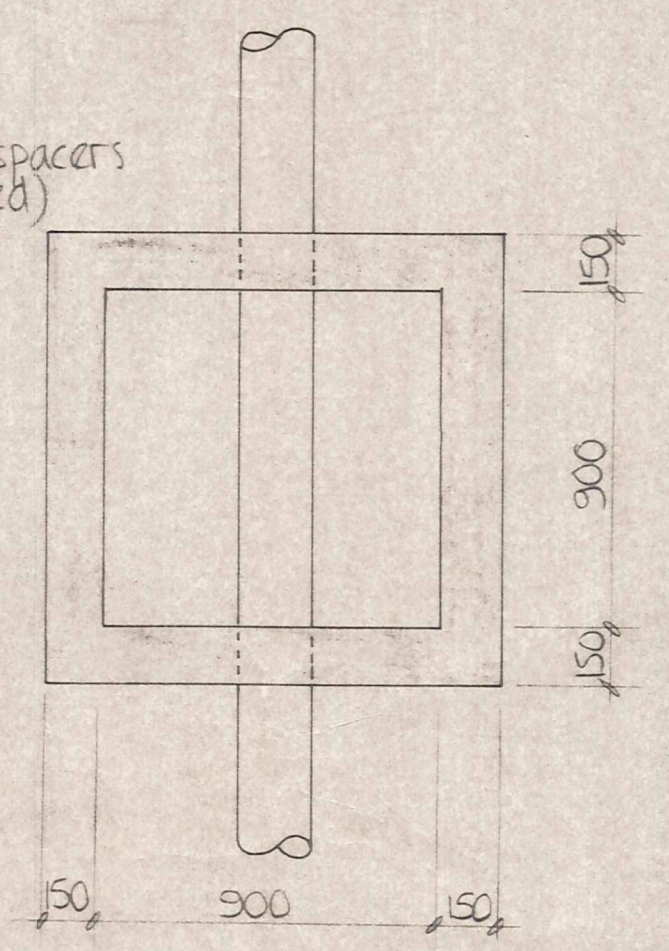
SECTION A-A
BREAK OUT PIPE TO SUIT & CAST IN PLACE



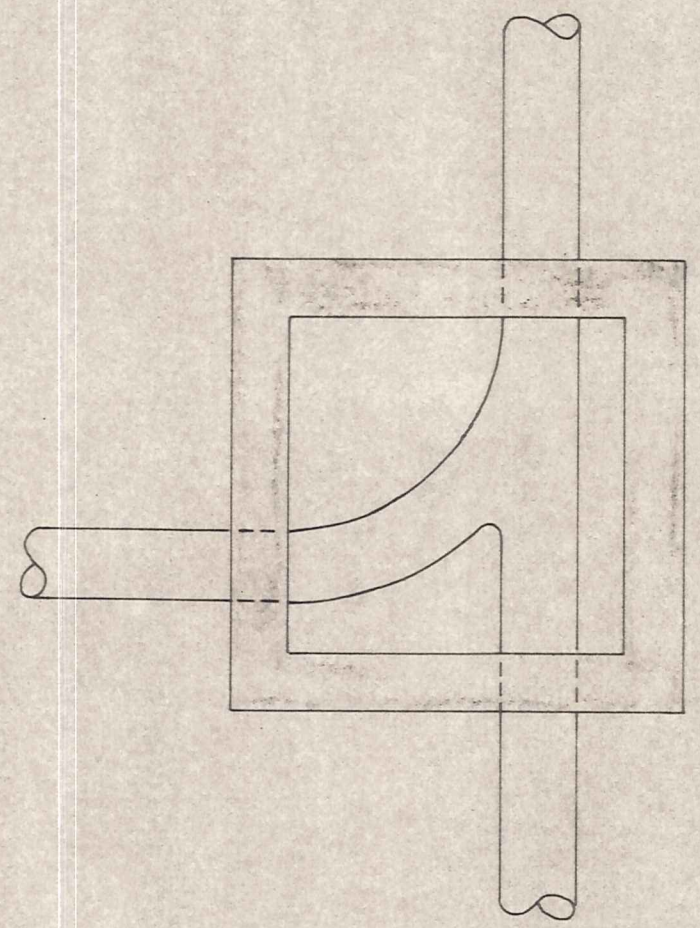
SECTION B-B



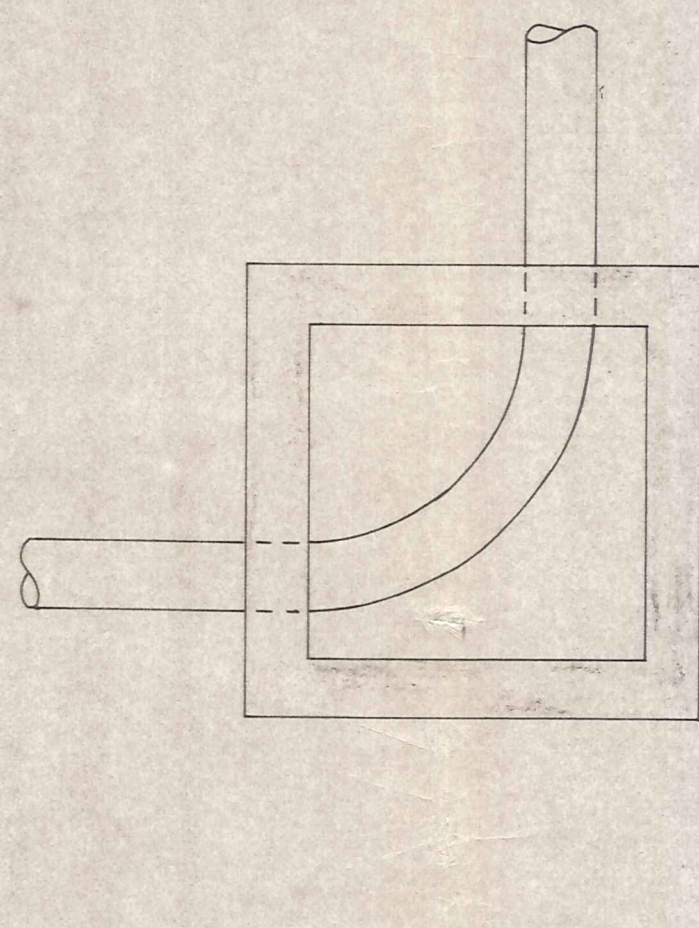
SECTION
CAST IN-SITU MANHOLE



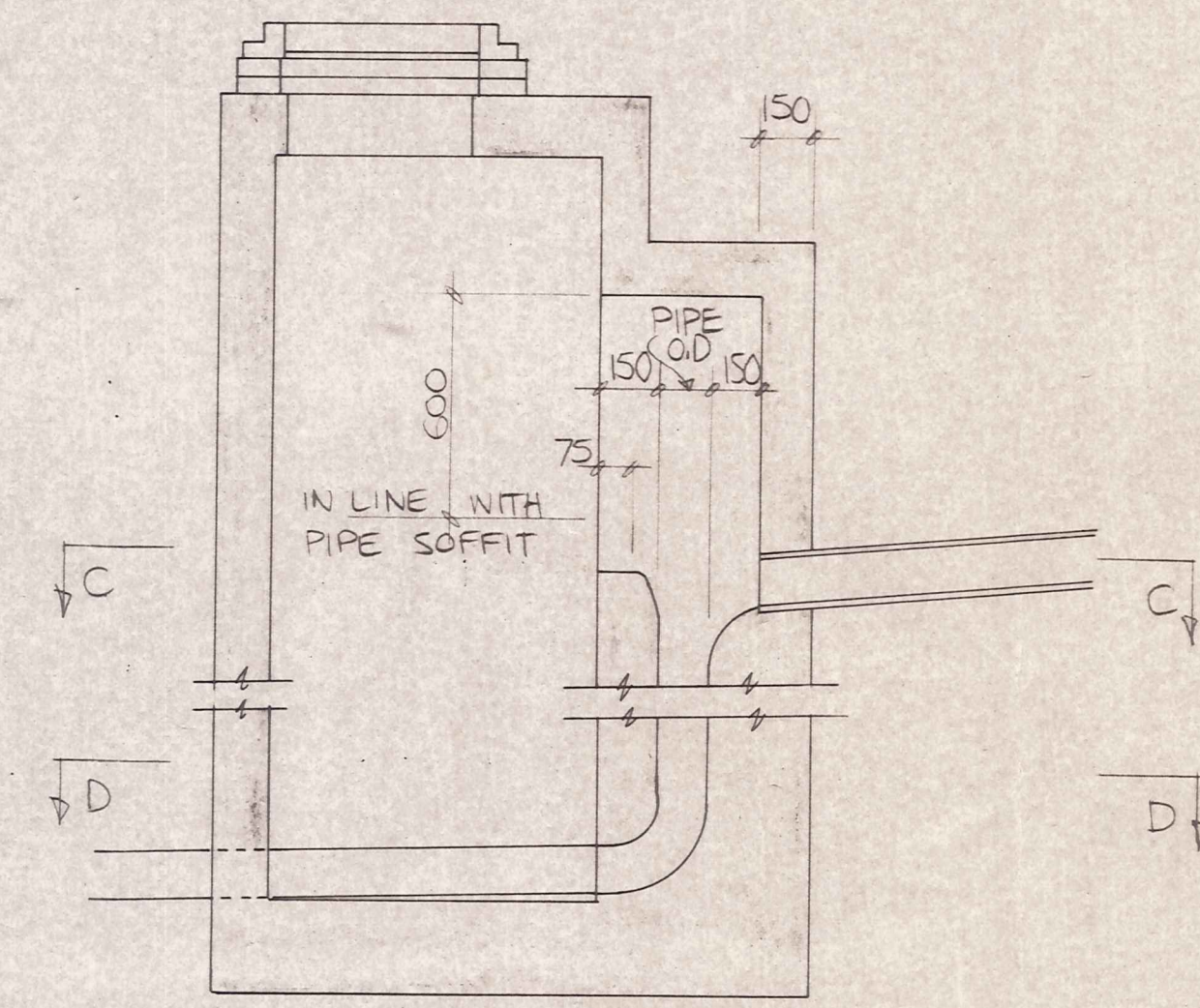
CAST IN-SITU
STRAIGHT THRU MANHOLES



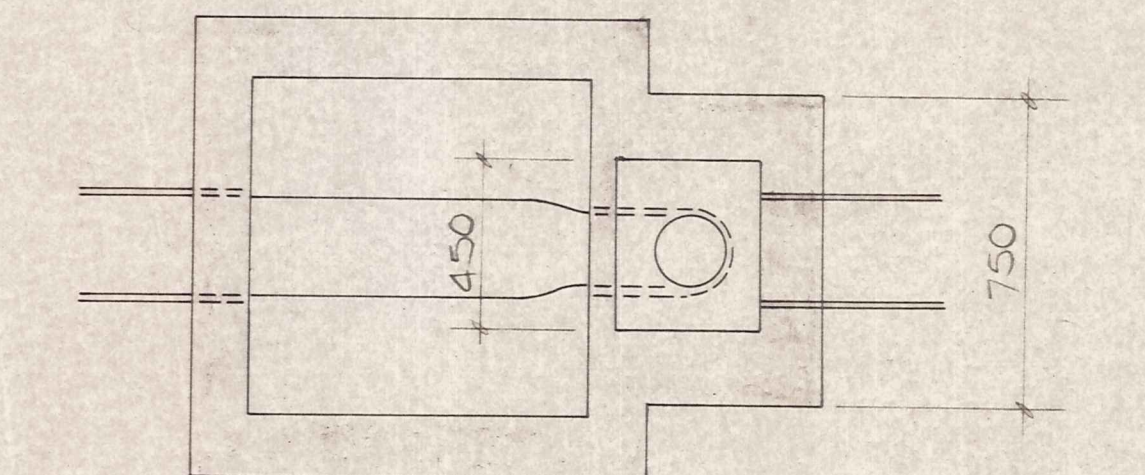
CAST IN-SITU
JUNCTION MANHOLES



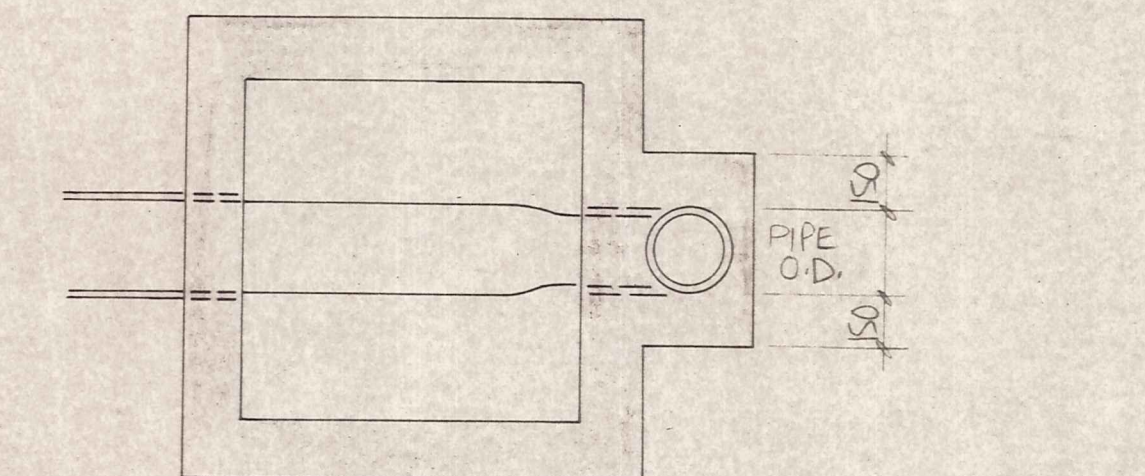
CAST IN-SITU
ANGLE MANHOLES



CAST IN-SITU
DROP MANHOLE



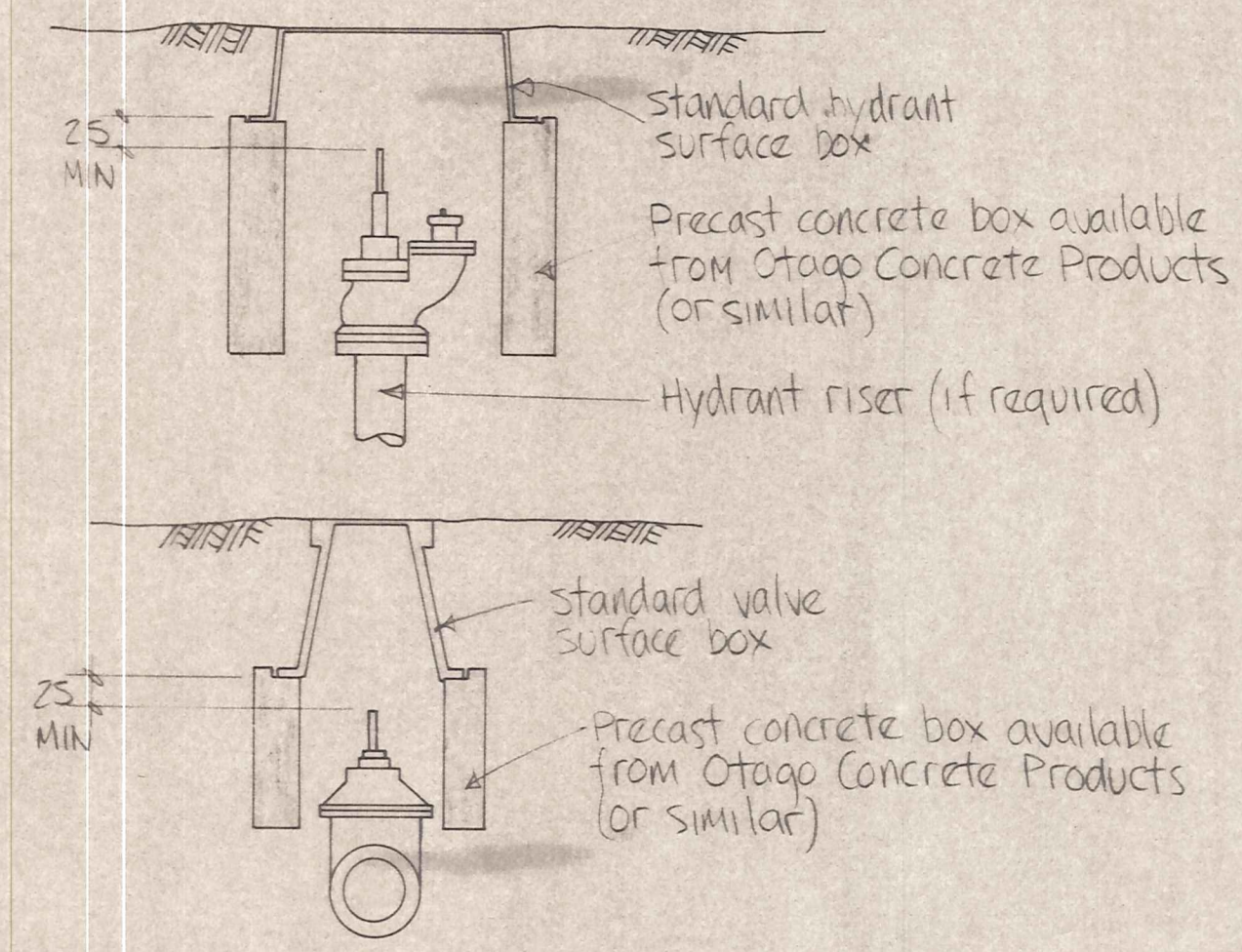
SECTION C-C



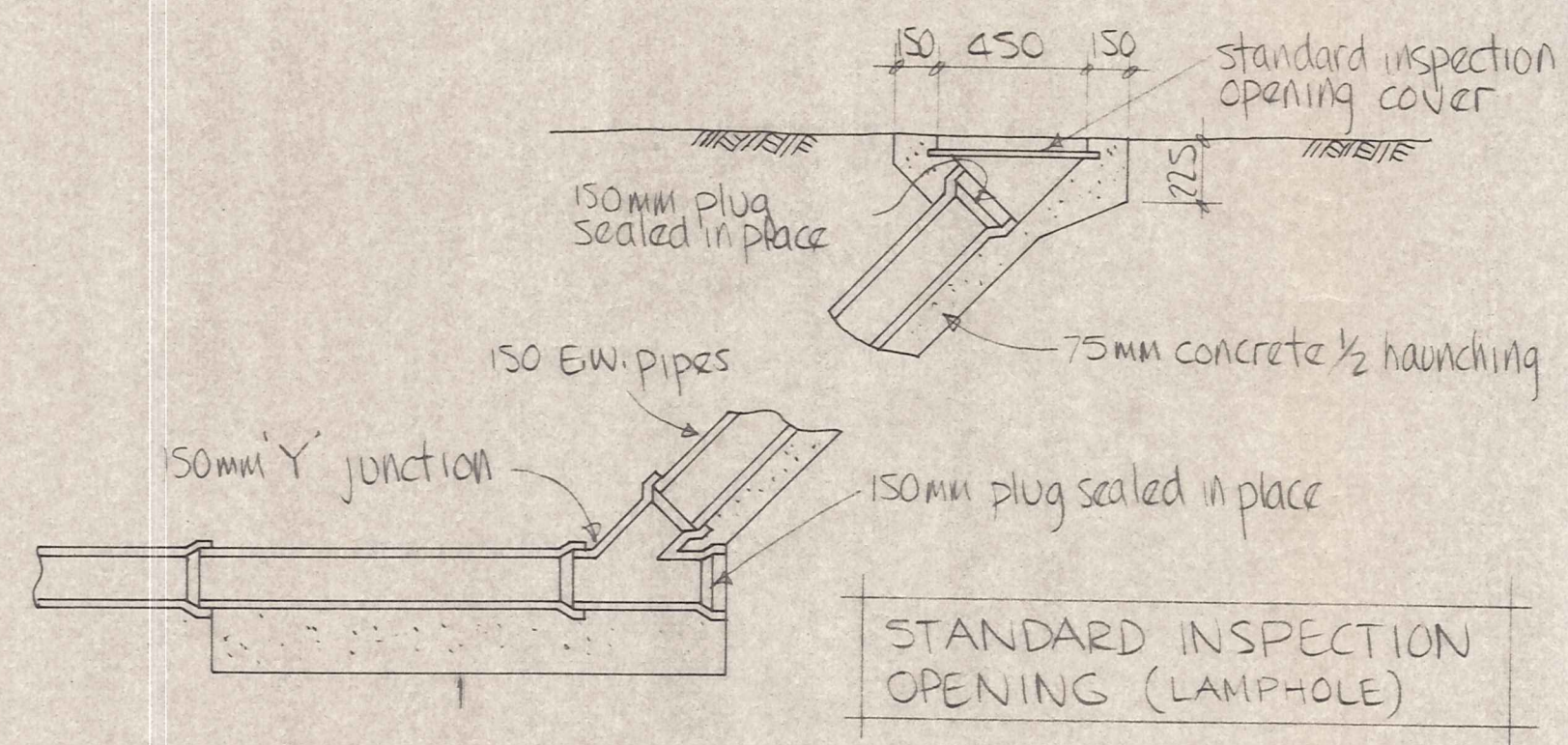
SECTION D-D

NOTE: WALL THICKNESS INCREASES TO 225MM FOR MANHOLES GREATER THAN 3000MM DEEP

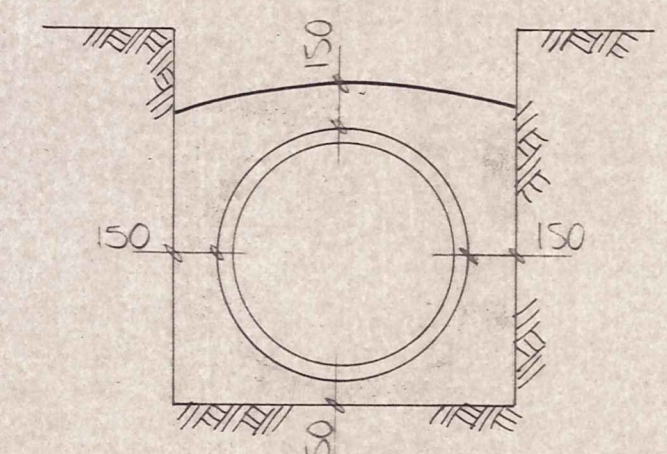
STANDARD MANHOLE DETAILS (FOR DIAMETERS LESS THAN 225MM I.D.)
SCALE: 1:20



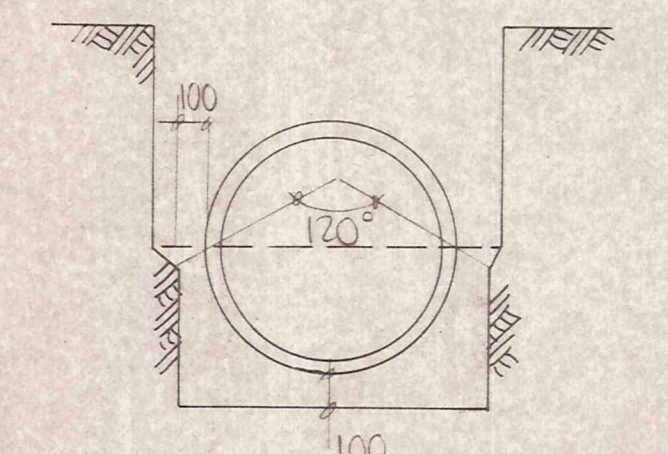
STANDARD VALVE AND HYDRANT BOXES



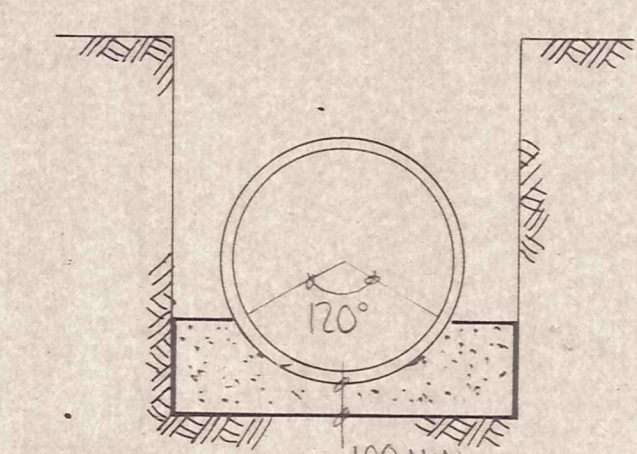
STANDARD INSPECTION
OPENING (LAMP HOLE)



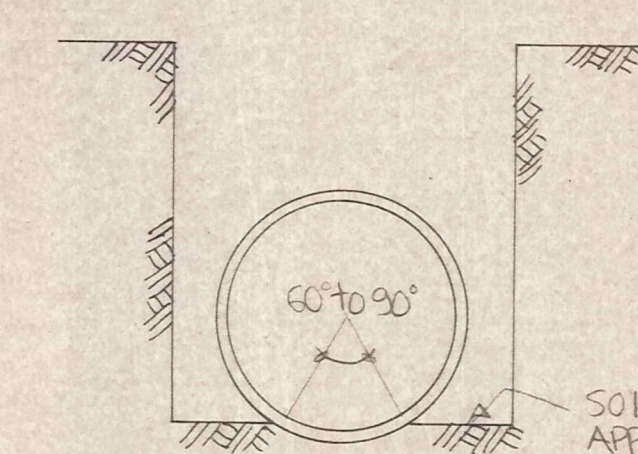
CONCRETE SURROUND



CONCRETE BEDDING



GRAVEL BEDDING



ORDINARY BEDDING

BEDDING OF SEWERS

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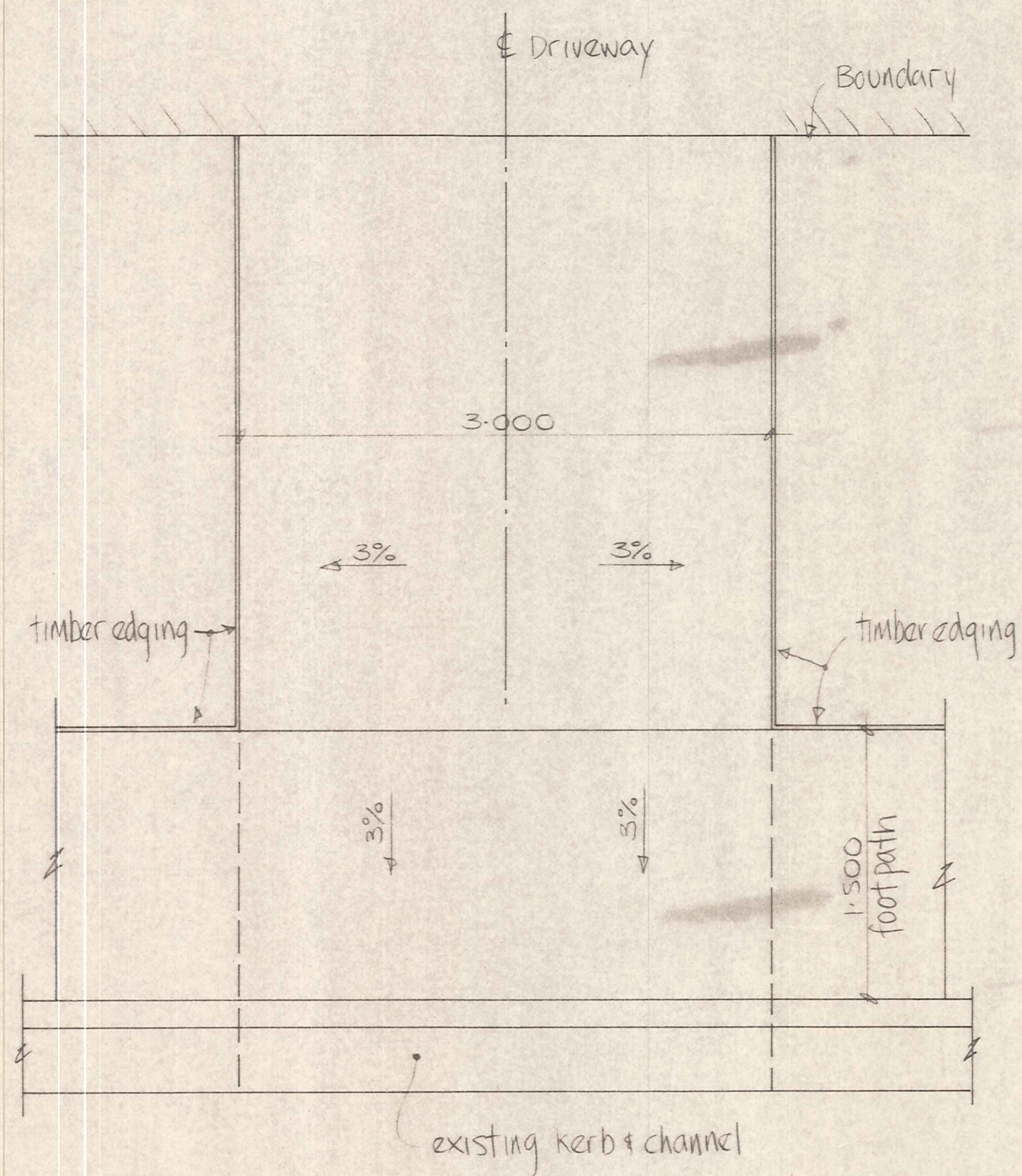
NEIGHBOURHOOD 1
DEVELOPMENT

CONTRACT 55/1/2
CONSTRUCTION OF
STREETWORKS AND
ENGINEERING SERVICES

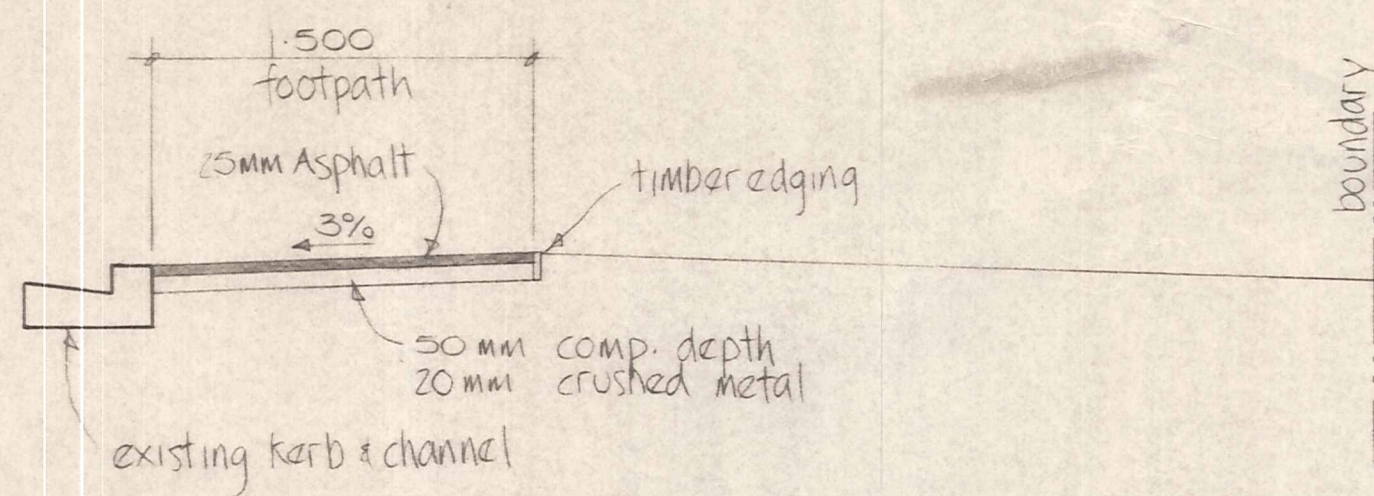
STANDARD DETAILS

AMENDMENTS			NAME	DATE	JOB NO.	Sheet No.
NO.	BY	DATE	Appvd.	Surveyed	9779	9
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				Checked		
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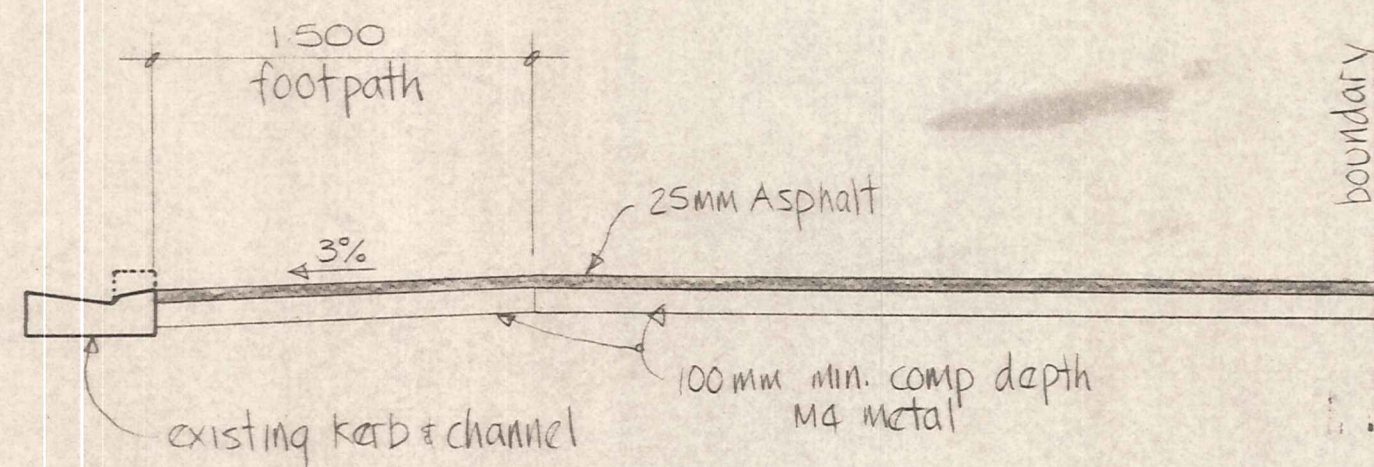
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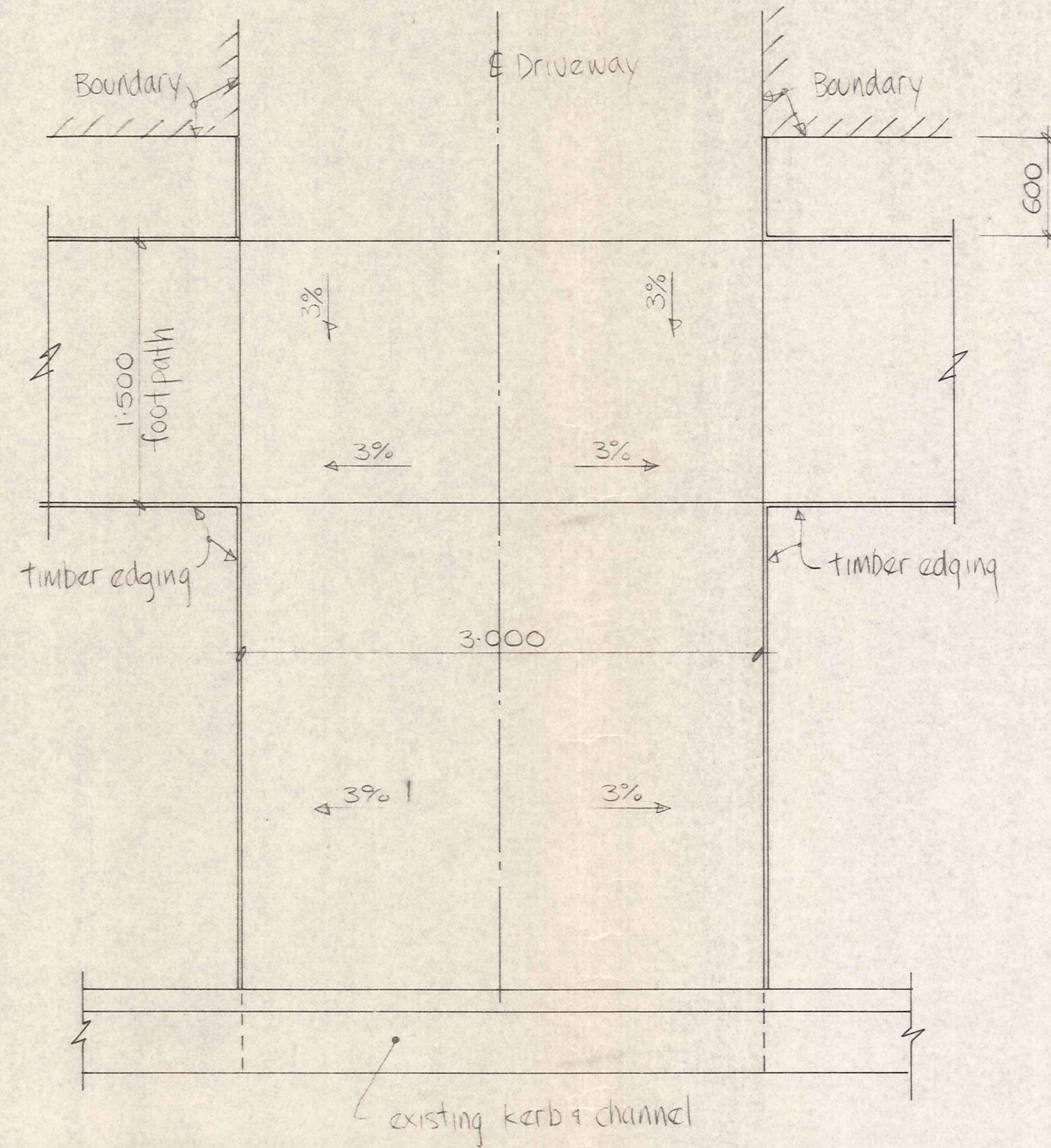
TYPICAL PLAN OF DRIVEWAY WITH FOOTPATH ADJACENT TO KERB NTS



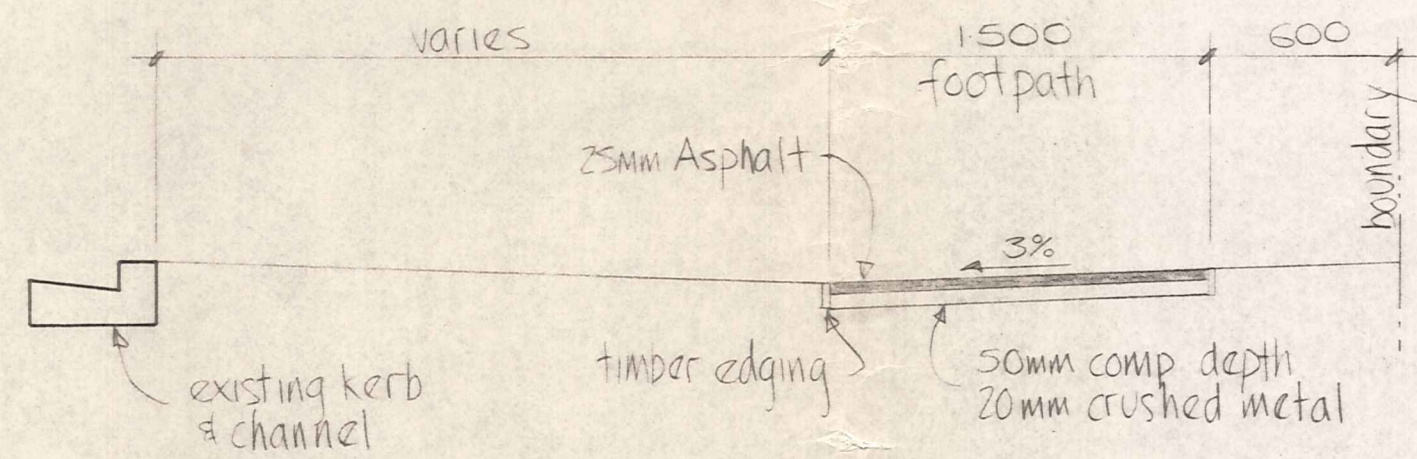
TYPICAL SECTION BETWEEN DRIVEWAYS



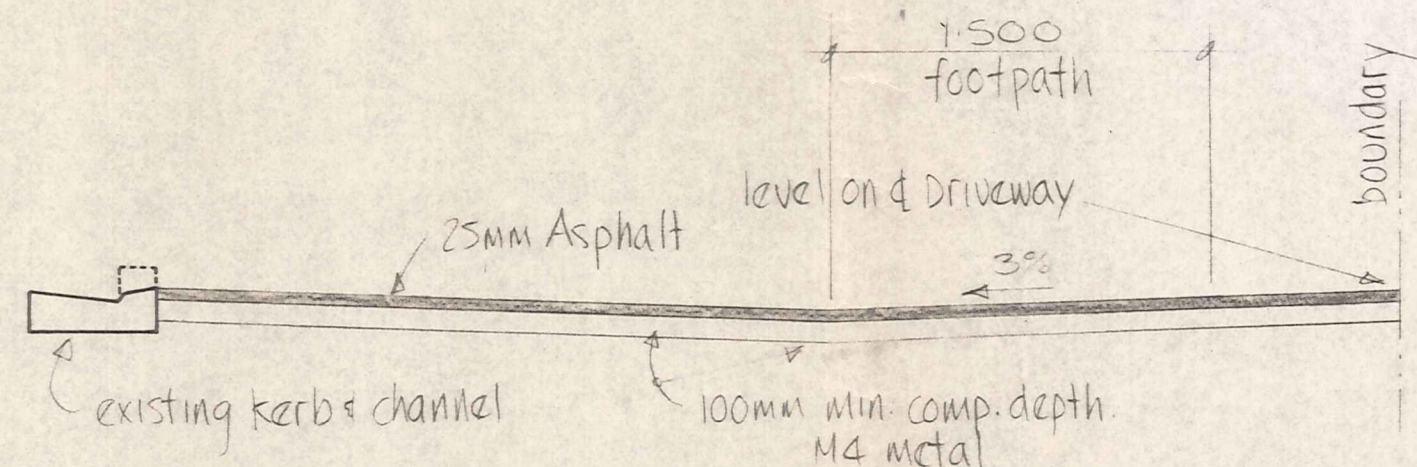
TYPICAL SECTION ALONG DRIVEWAYS



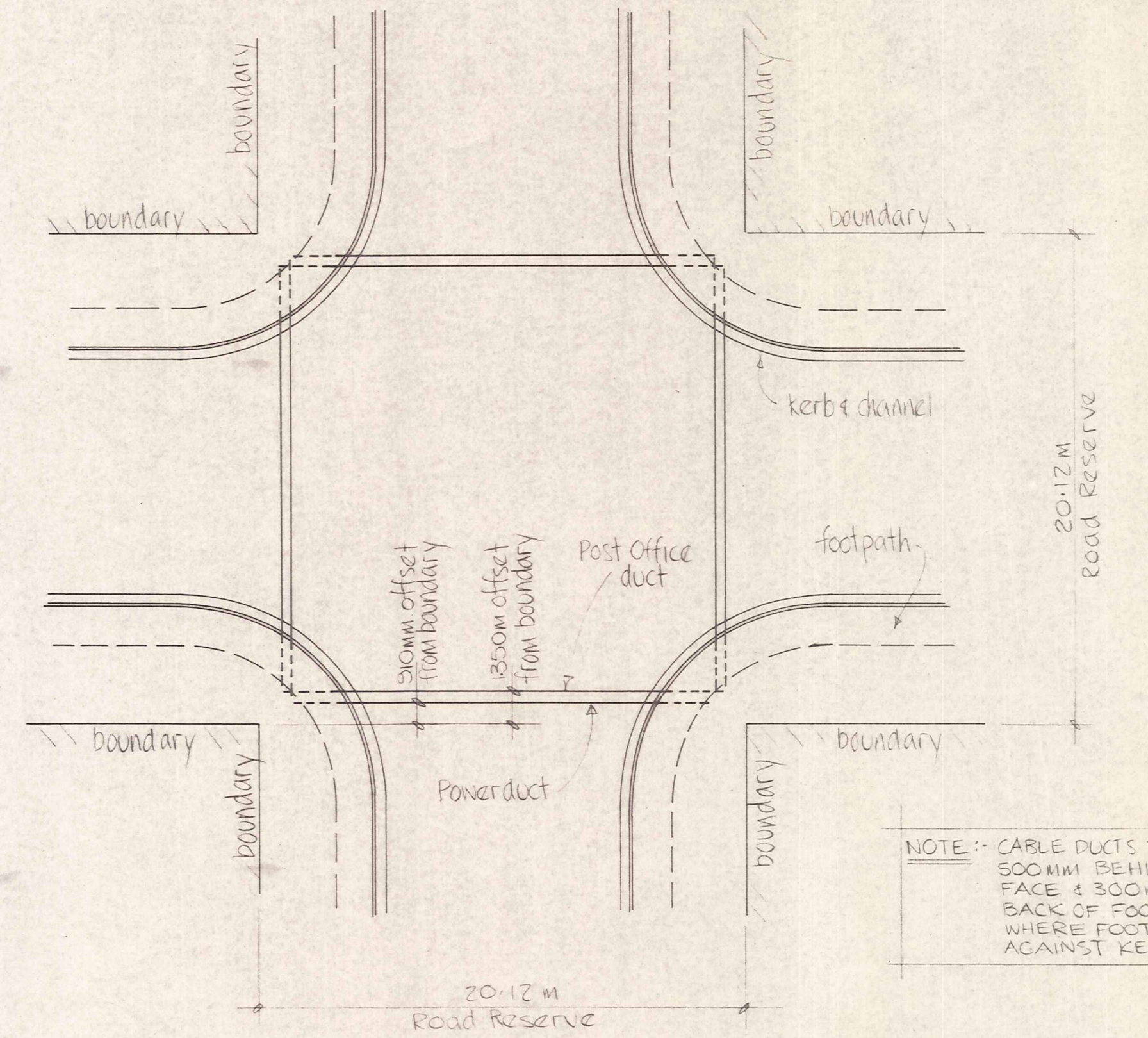
TYPICAL PLAN OF DRIVEWAY WITH FOOTPATH 600MM OUT FROM BOUNDARY NTS



TYPICAL SECTION BETWEEN DRIVEWAYS

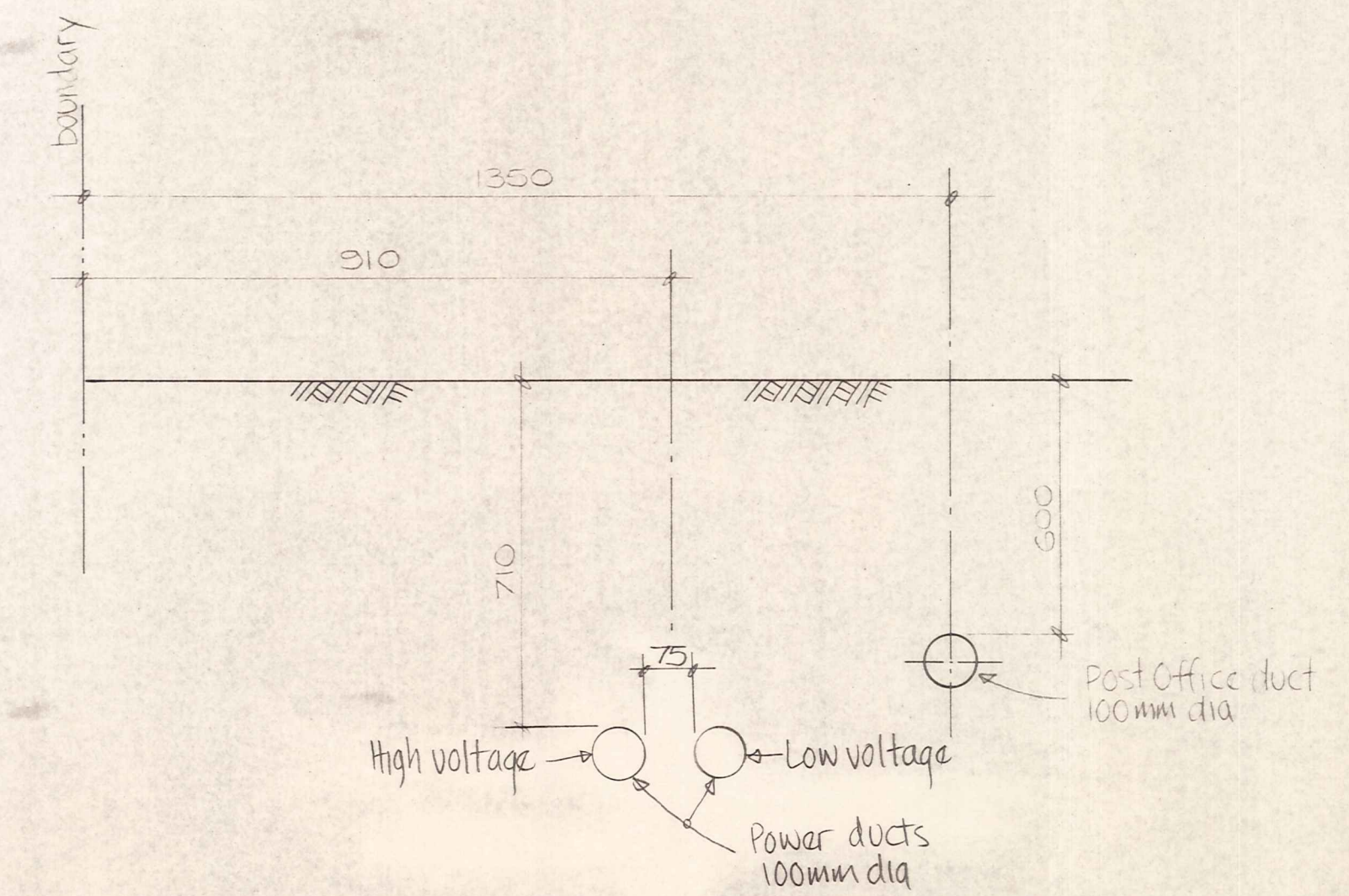


TYPICAL SECTION ALONG DRIVEWAYS



NOTE: CABLE DUCTS TO EXTEND 500MM BEHIND KERB FACE & 300MM FROM BACK OF FOOTPATH WHERE FOOTPATH IS AGAINST KERB

PLAN NTS

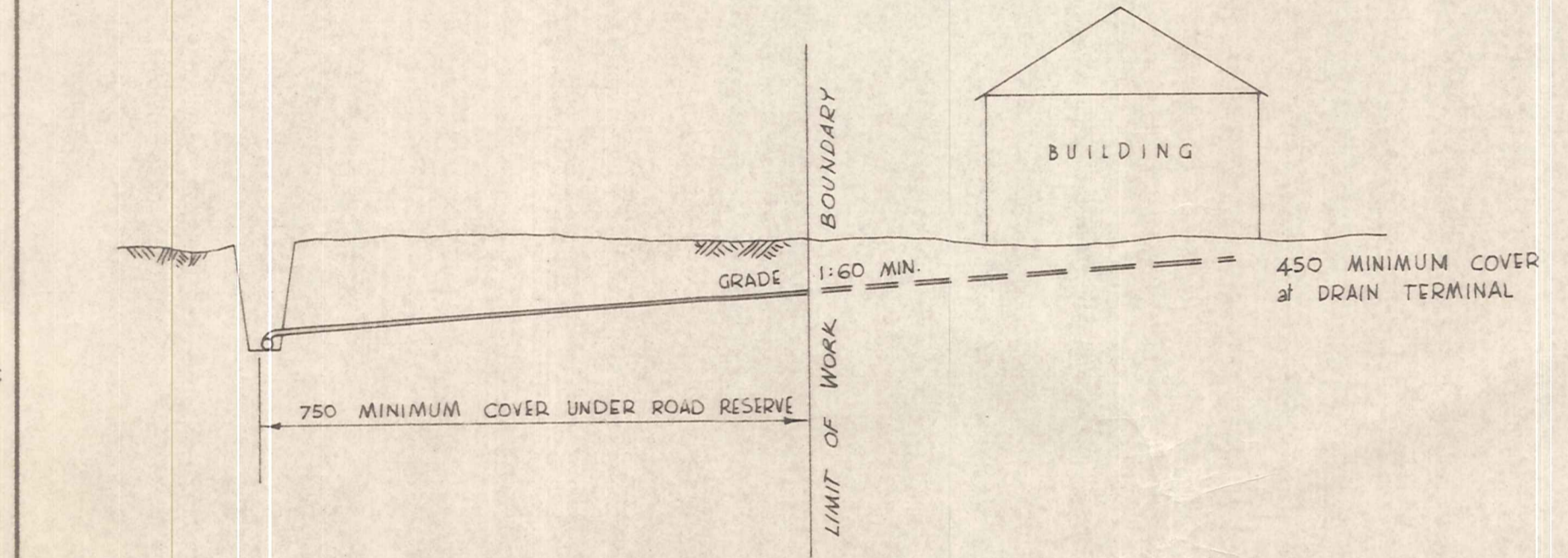
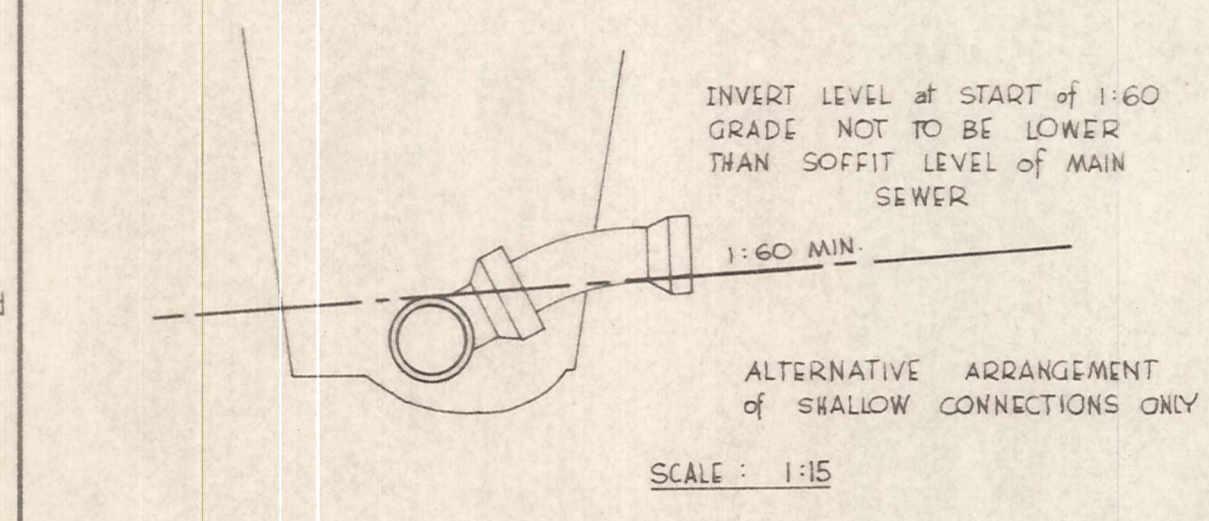
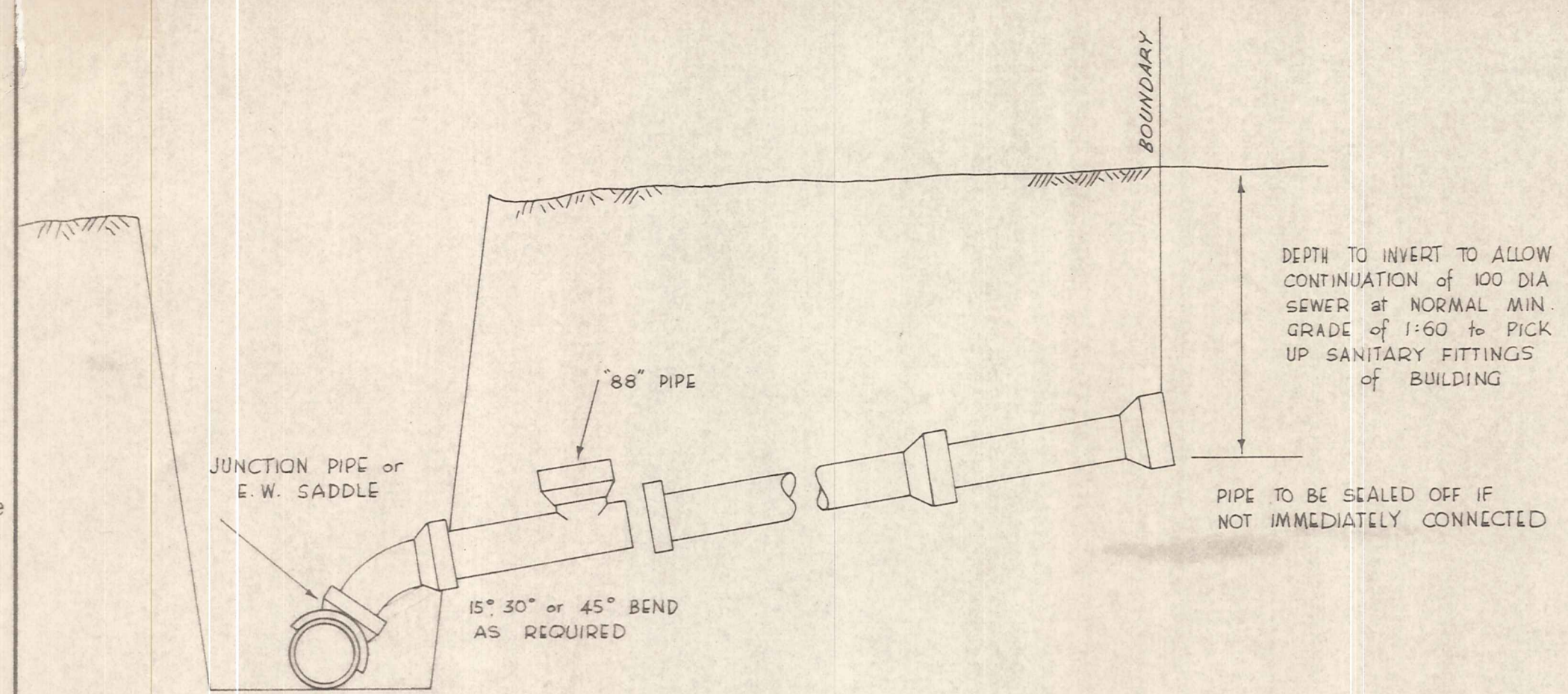


POWER & TELEPHONE CABLE DUCTS INTERSECTION DETAILS

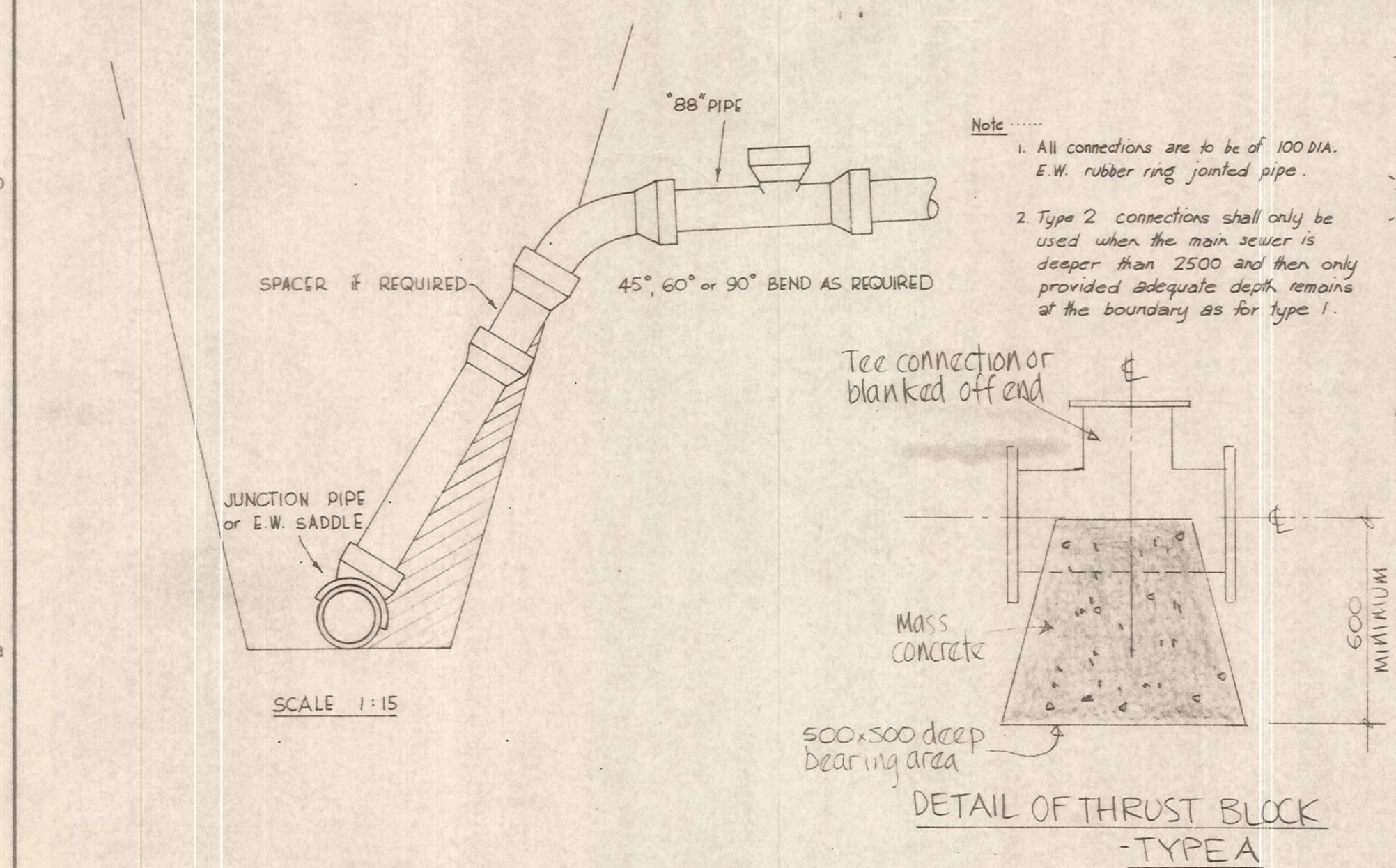
NOT TO SCALE

AMENDMENTS				NAME		DATE	JOB NO.	Sheet No
NO.	BY	DATE	Appvd.	Drawn	Checked	Traced		
				N. BLAKIE			9779	10
				J. KNOX				of 11 sheets

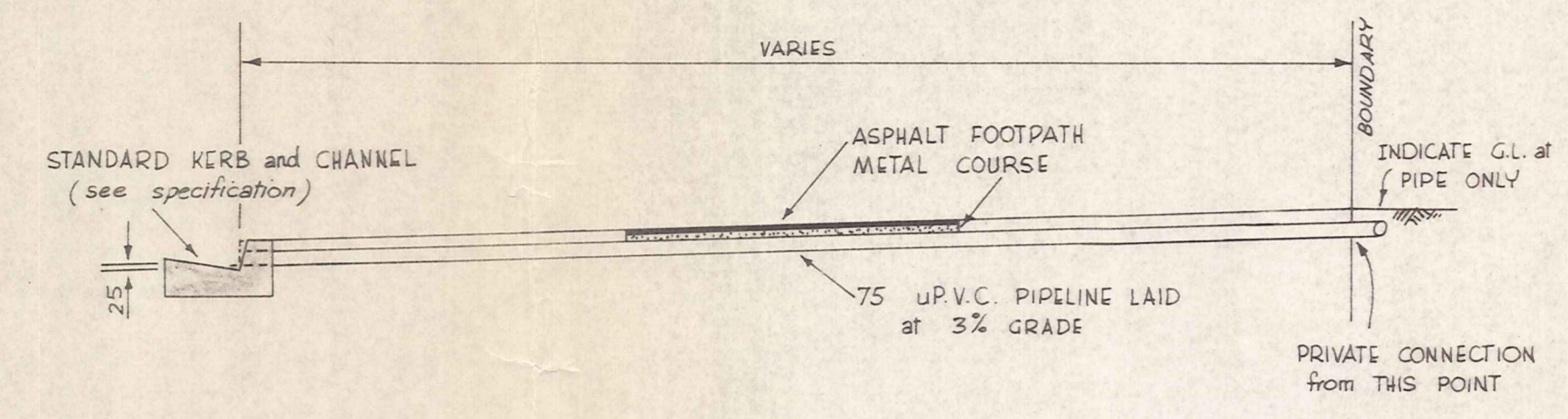
Handwritten signature



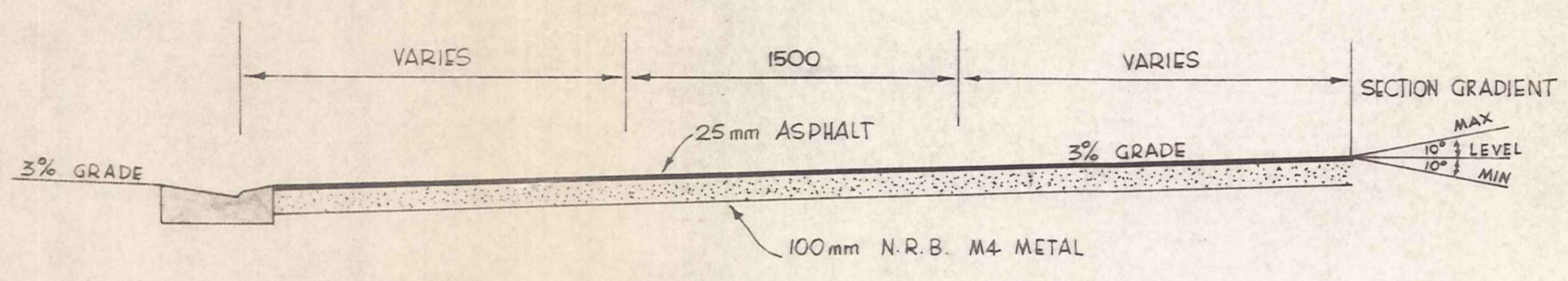
TYPE 1 - SHALLOW SEWER CONNECTIONS



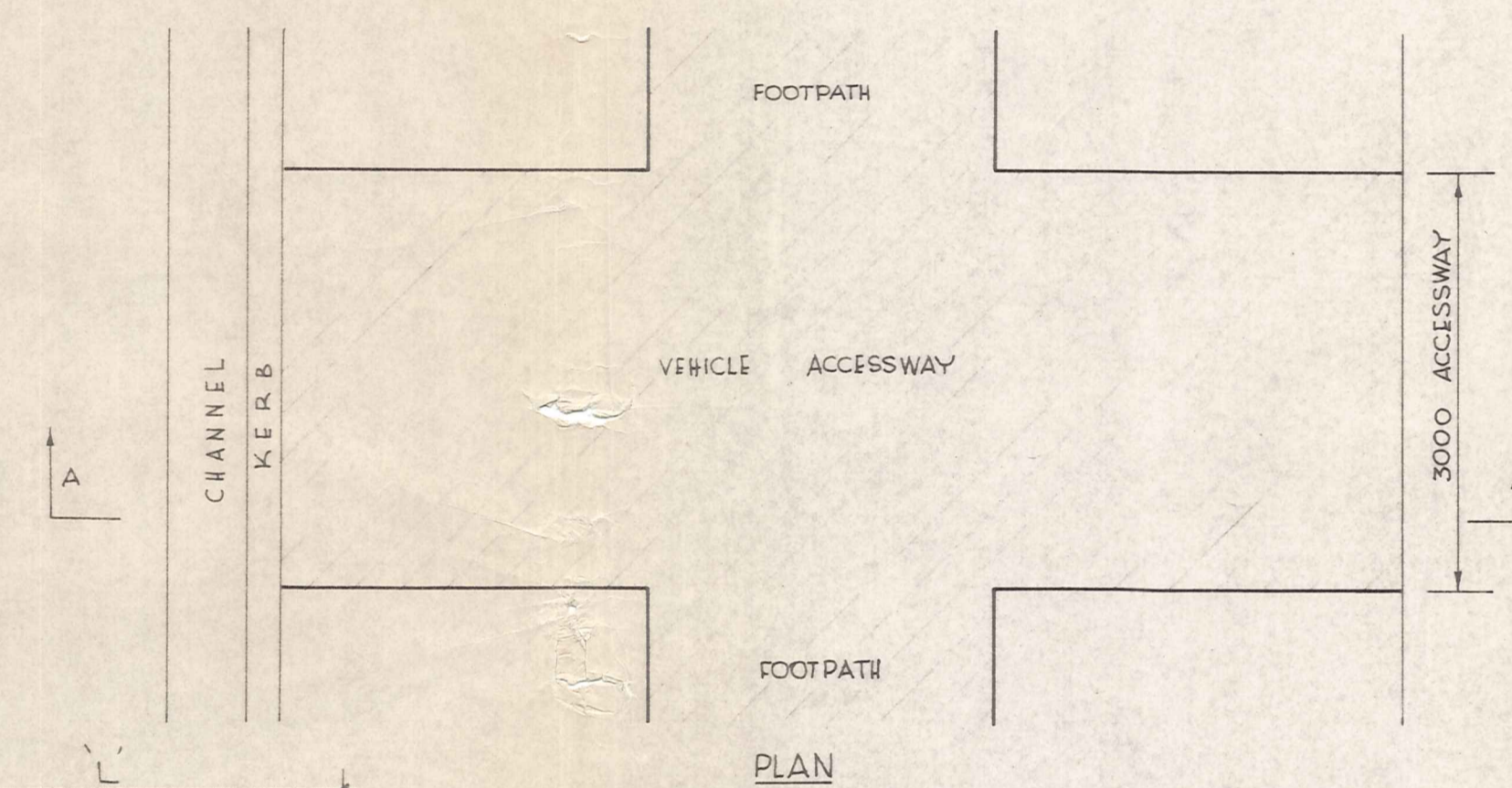
TYPE 2 - DEEP SEWER CONNECTIONS



HOUSEHOLD STORMWATER CONNECTION

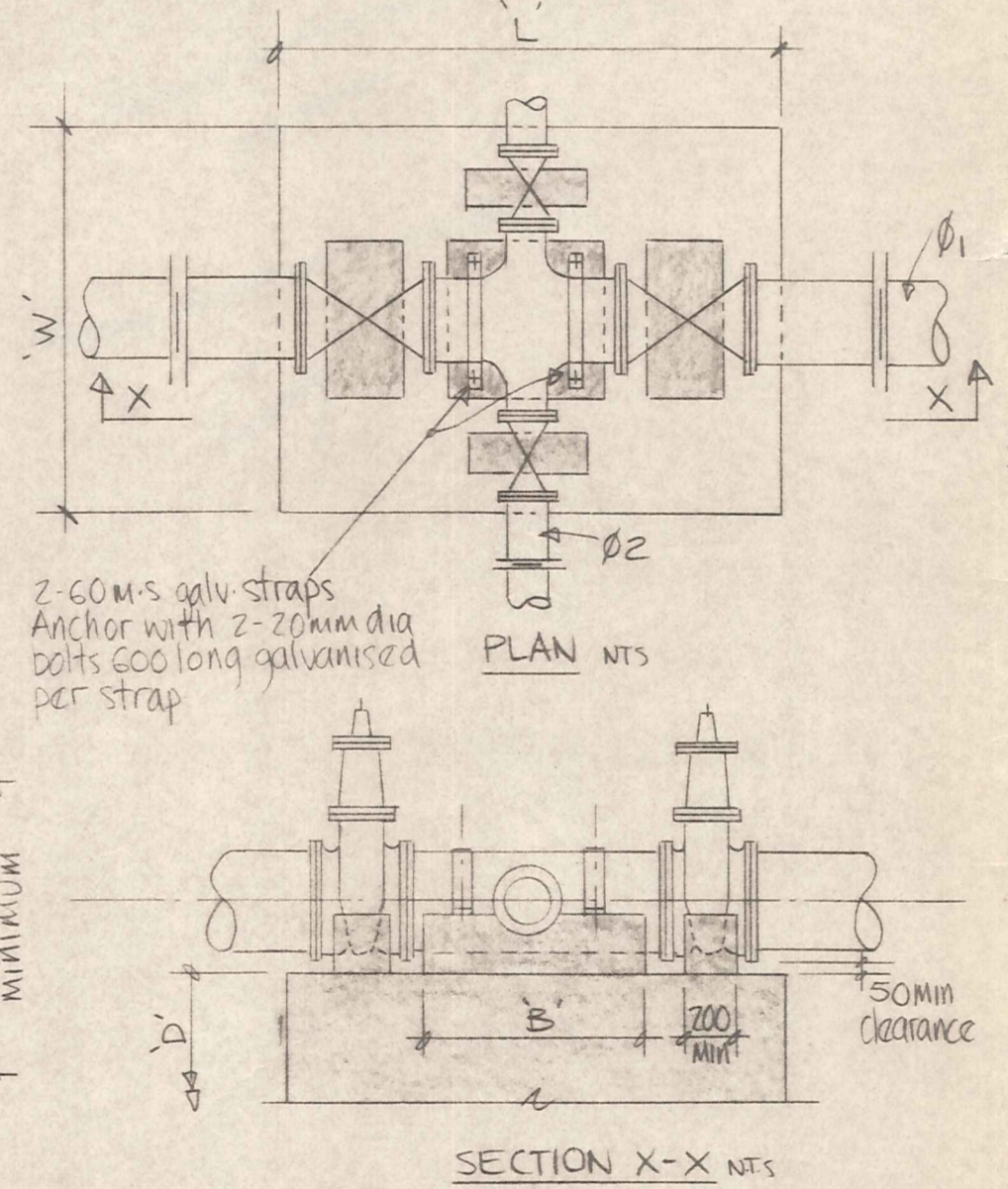


SECTION A-A



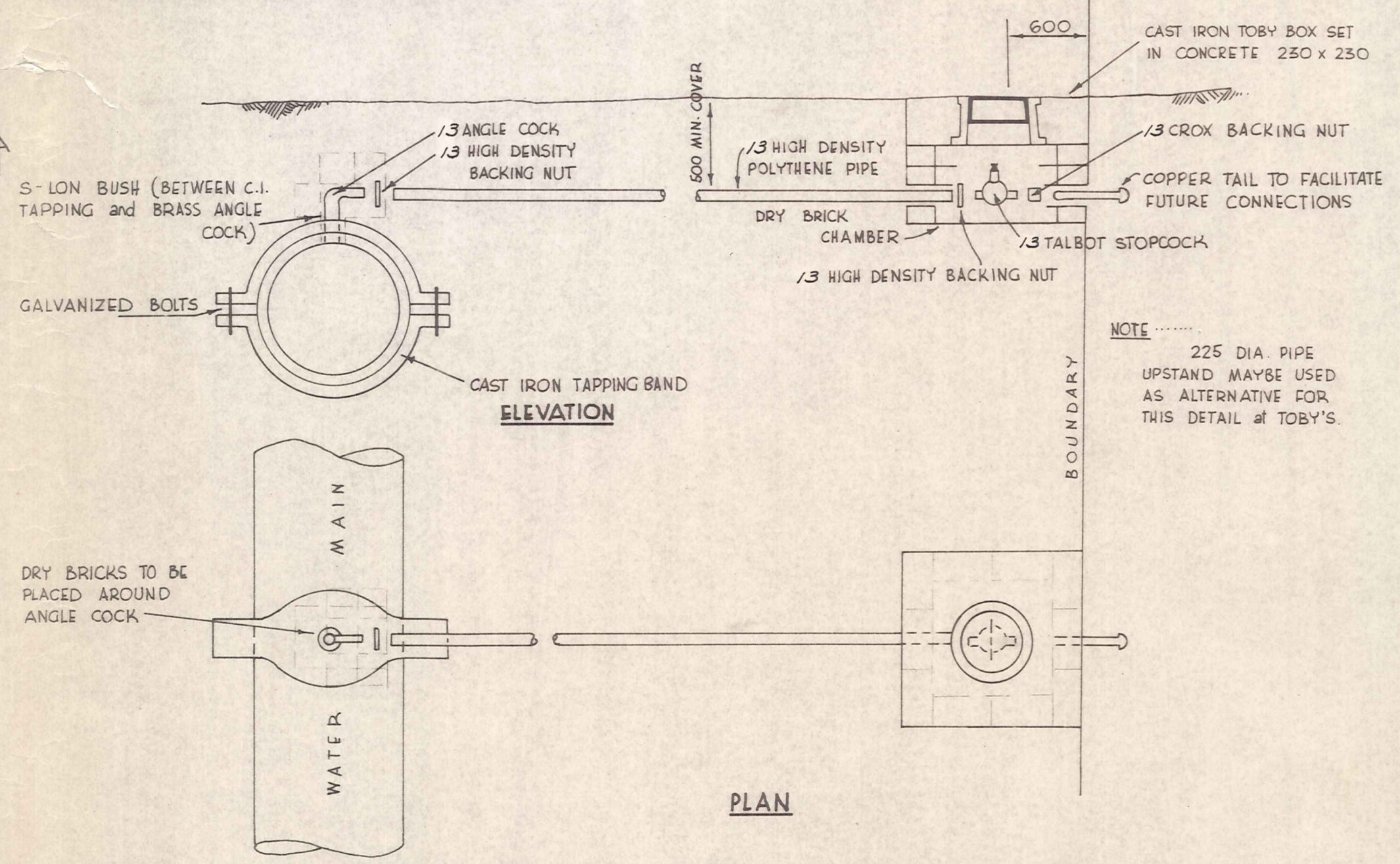
PLAN

DETAIL of VEHICLE ACCESSWAY

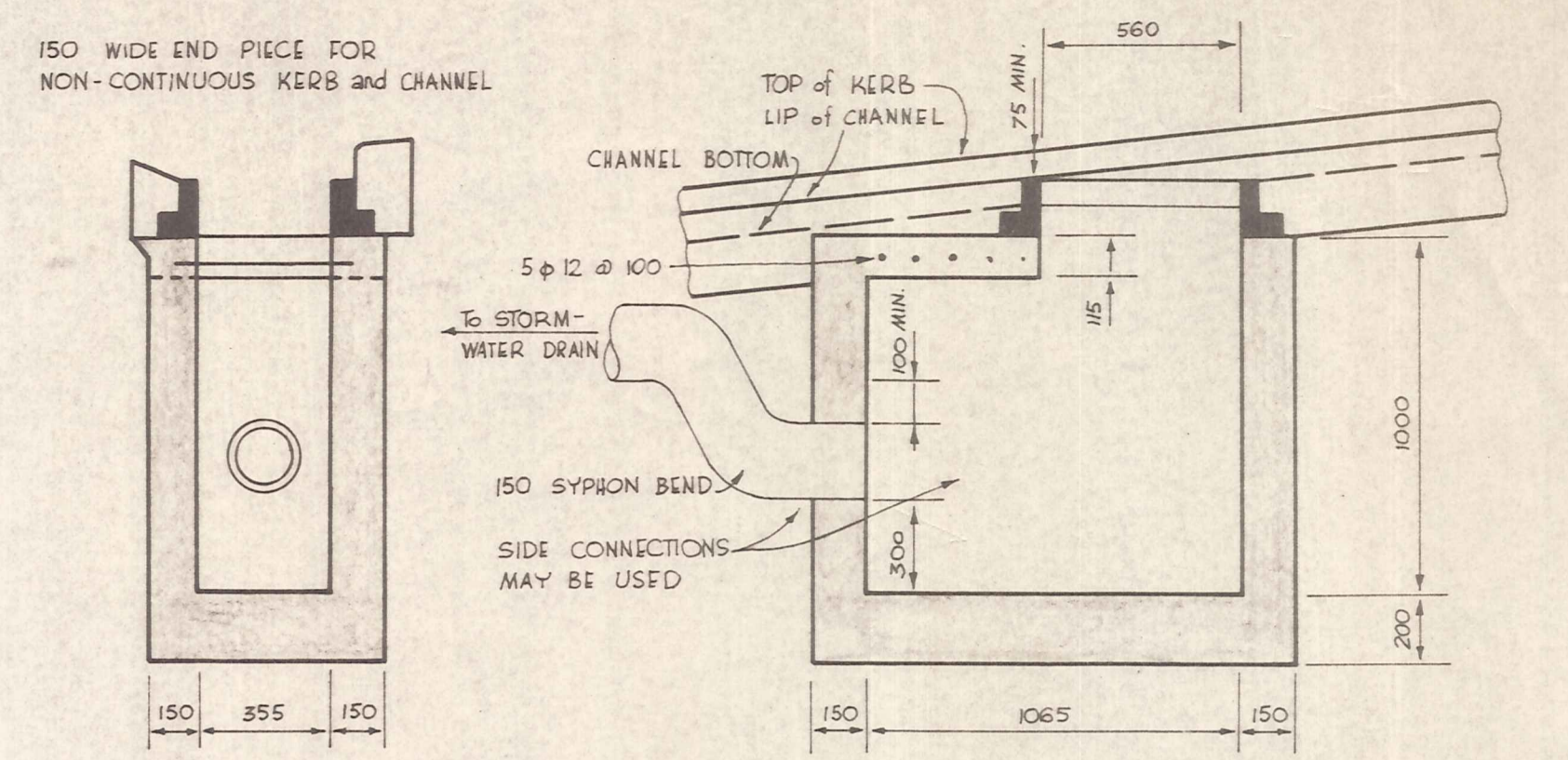


TYPE	Ø1	Ø2	W	L	D	B
A	100	100	900	900	400	200
B	150	100	1000	1000	400	250
C	150	150	1000	1000	400	250
D	375	150	1400	1600	1600	750

CROSS ANCHOR BLOCK DETAIL



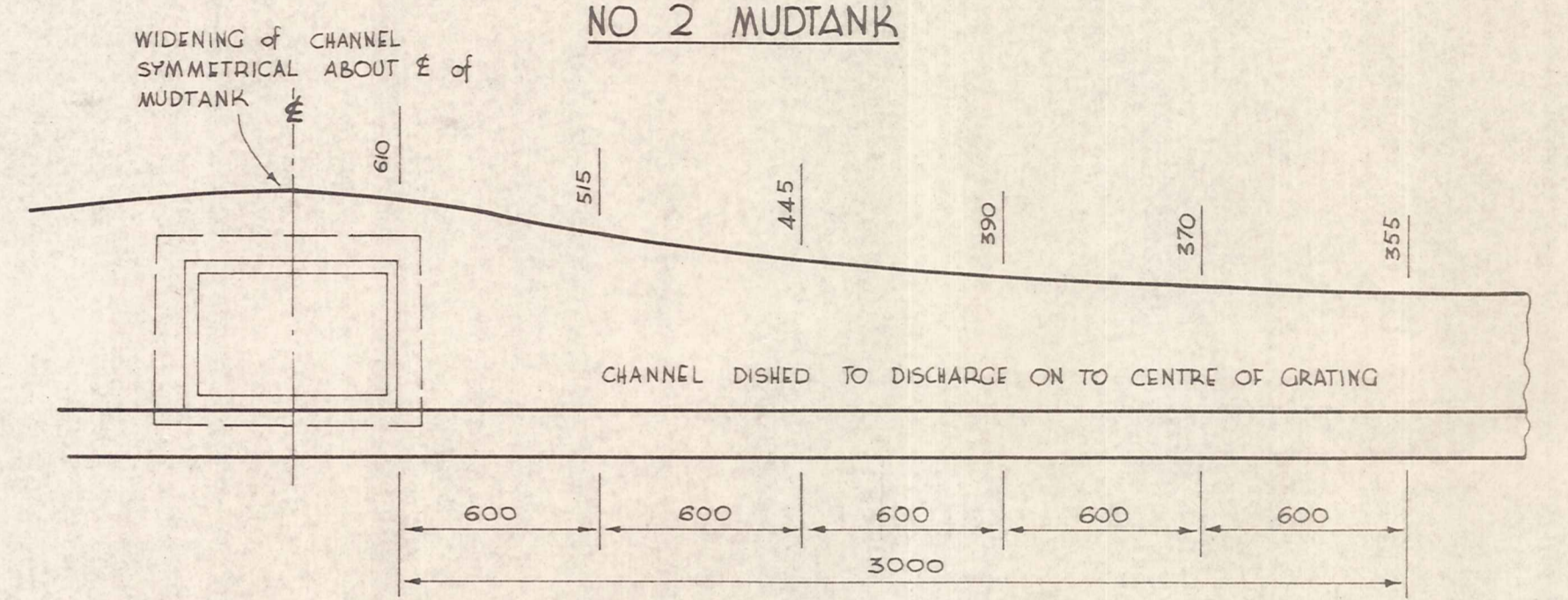
HOUSEHOLD WATER CONNECTION



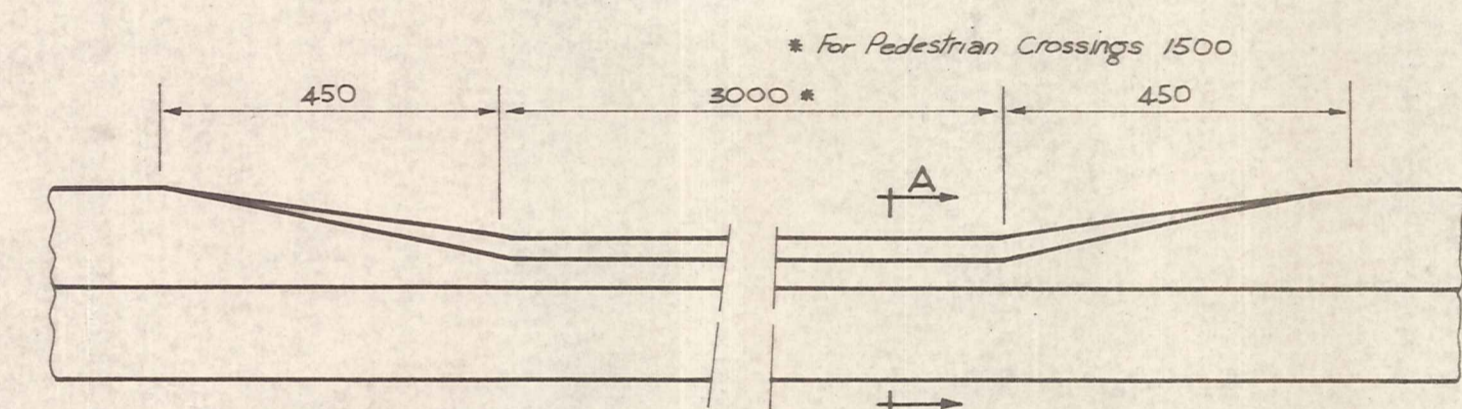
END ELEVATION

SIDE ELEVATION

NO 2 MUDTANK

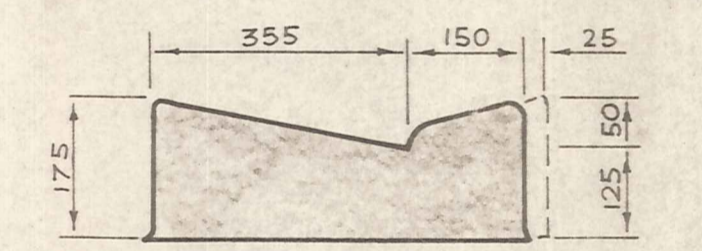


PLAN of CHANNEL at MUDTANKS

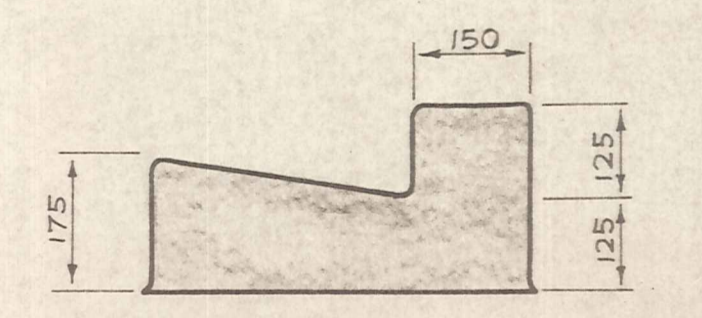


DROP KERB CROSSING

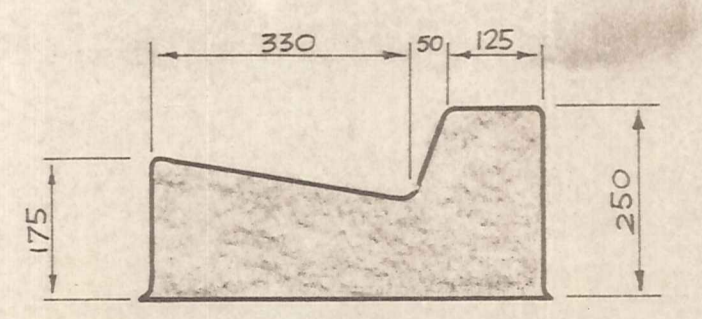
NOTE LENGTH of CROSSINGS 3000 INVERT MUST be on GRADE and be CAREFULLY BONED IN CONCRETE STRENGTH 20 Mpa at 28 DAYS



SECTION A-A



TYPE 1 (EAST of MONAGHAN STREET)



TYPE 2 (WEST of MONAGHAN STREET)

KERB and CHANNEL DETAILS

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