

CONTRACT No.90/115
ALEXANDRA STORMWATER
UPGRADING 1990-91

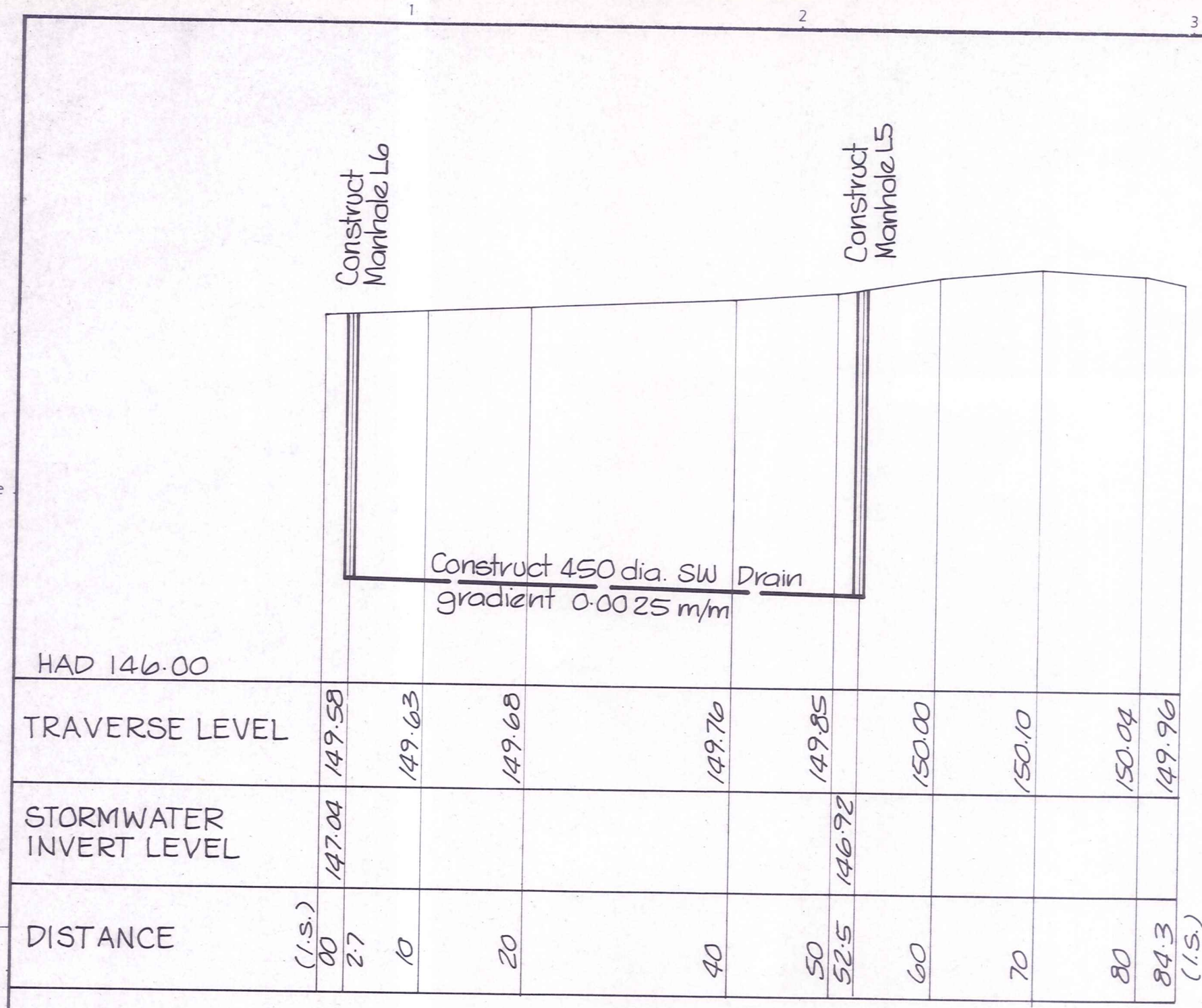
CENTRAL OTAGO DISTRICT COUNCIL

Duffill Watts & King Ltd

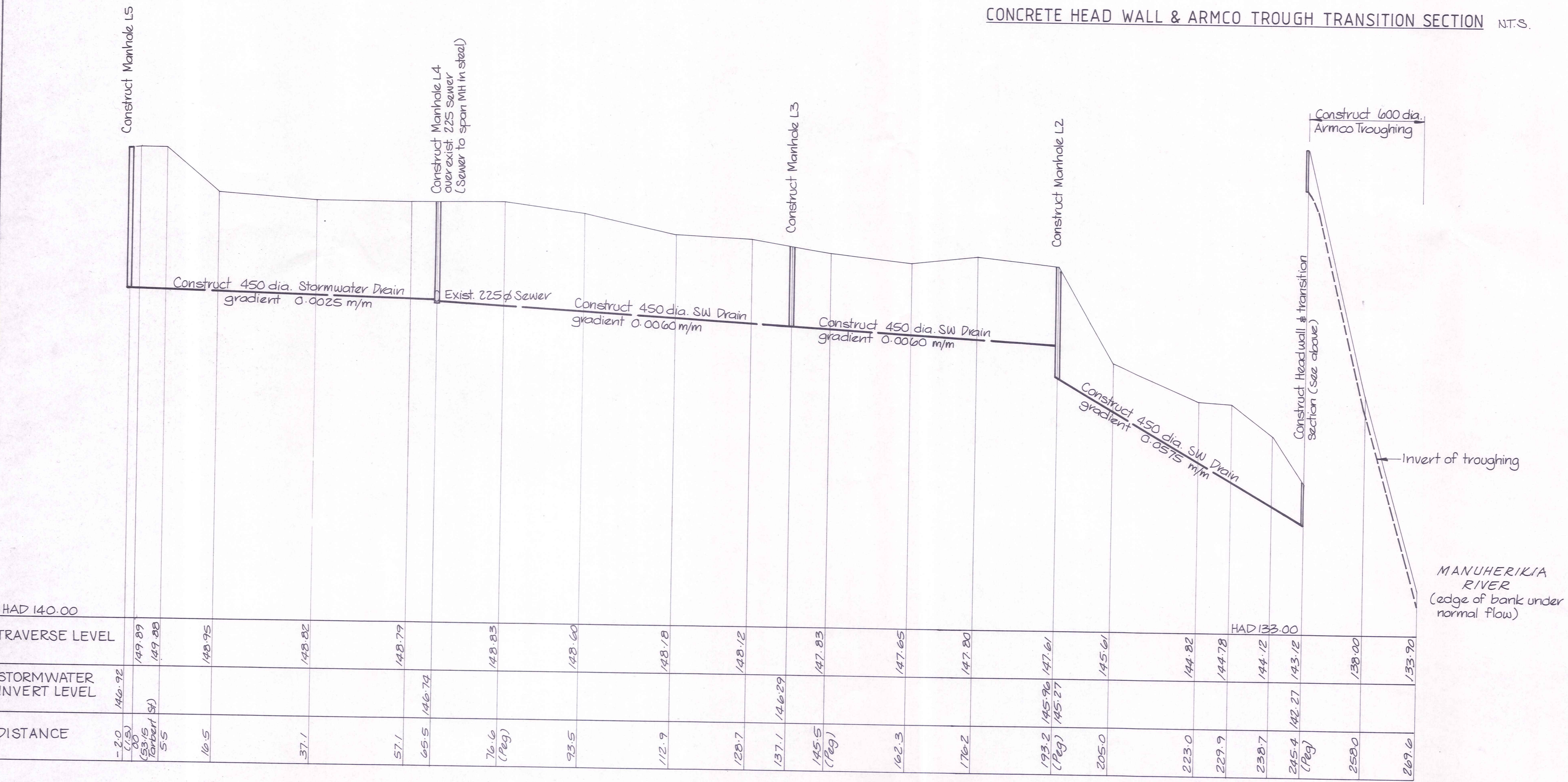
CONSULTING ENGINEERS

DUNEDIN AUCKLAND INVERCARGILL ALEXANDRA QUEENSTOWN

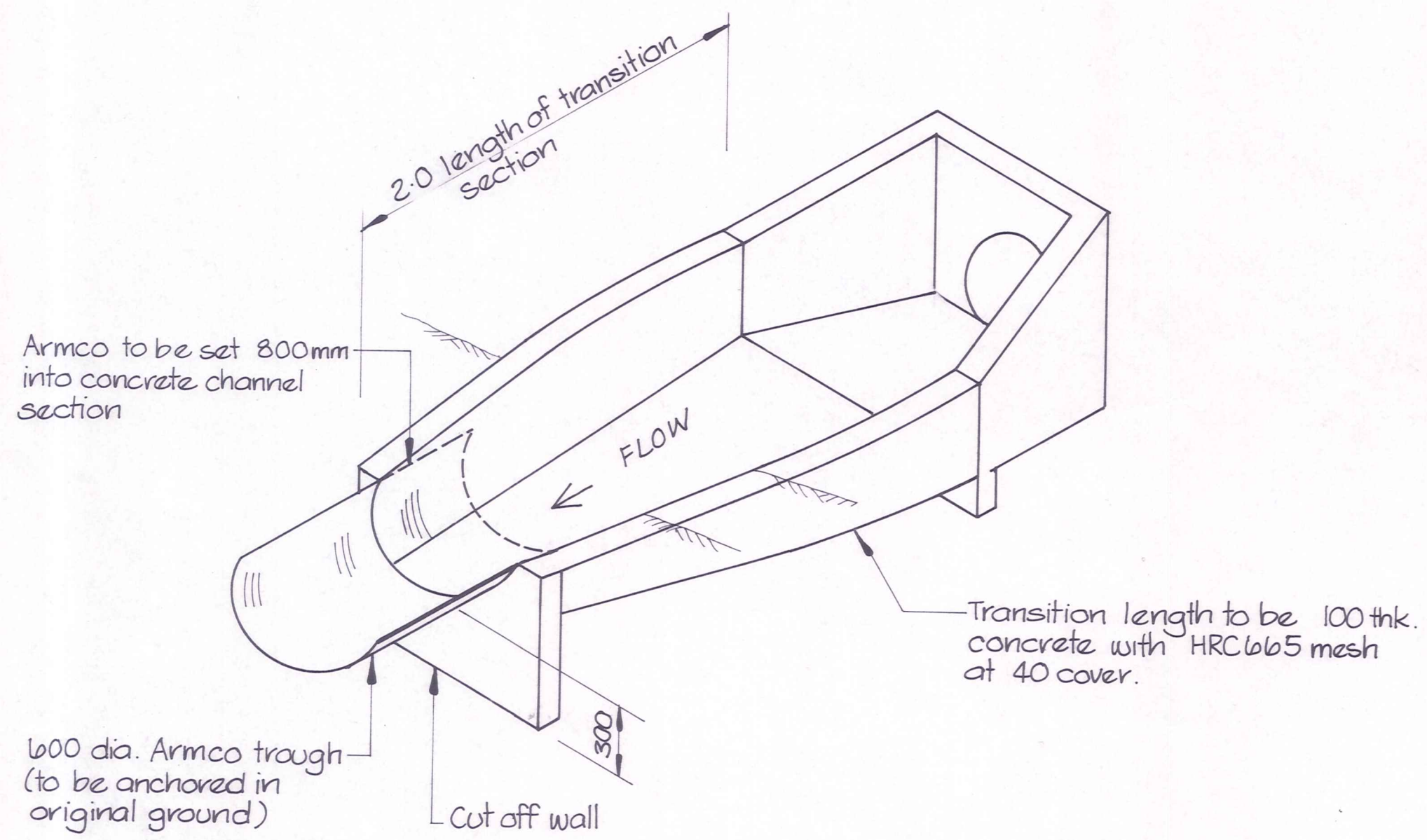
ORIGINAL SIZE mm



LONGITUDINAL SECTION - TARBERT STREET
Horiz. 1:500
Vert. 1:50



LONGITUDINAL SECTION - RAILWAY RESERVE, LITTLE VALLEY ROAD
Horiz. 1:500
Vert. 1:50



CONCRETE HEAD WALL & ARMCO TROUGH TRANSITION SECTION N.T.S.

- Notes
1. Concrete strength - 20 MPa at 28 days
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - MSL (Dunedin datum)

No.	Revisions	Date	Appvd
Designed	N. Jelley	Date June 90	Print Date
Drawn	" / DJT	July 90	
Checked	M. Kiper	Aug 90	
Approved	W. H. H. H.	Aug 90	
File	225/17/4/3	Ref	

Client

CENTRAL OTAGO DISTRICT COUNCIL

Project

CONTRACT N° 90 / 115

ALEXANDRA

STORMWATER

UPGRADING 1990-91

Sheet Title

TARBERT ST, RAILWAY RES.

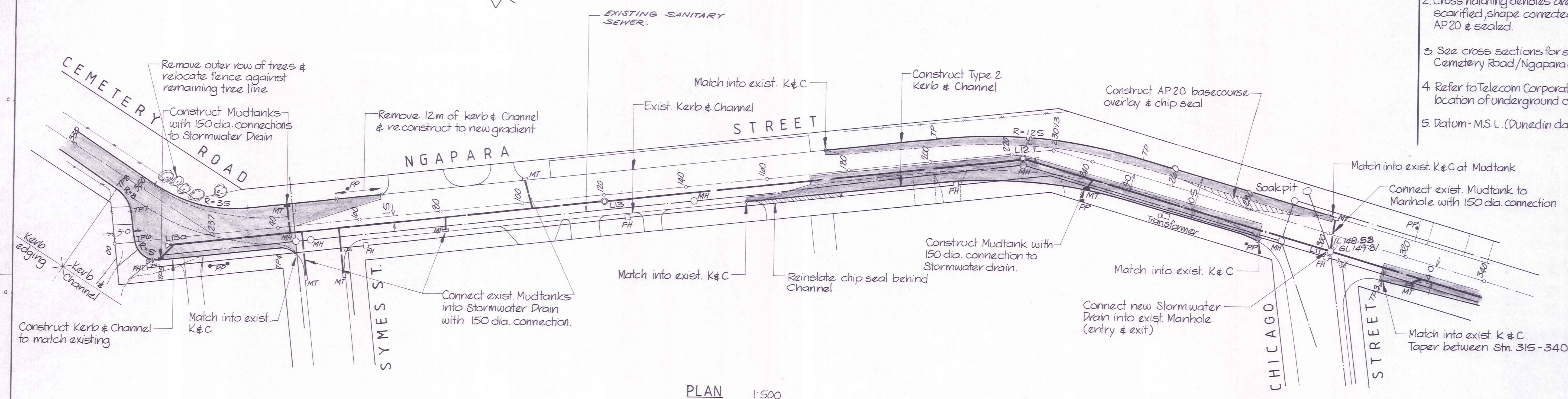
LONG SECTIONS & ARMCO

TROUGH DETAIL

Job No.	Sheet No.	Revision
12543	2	
	of 15	shts

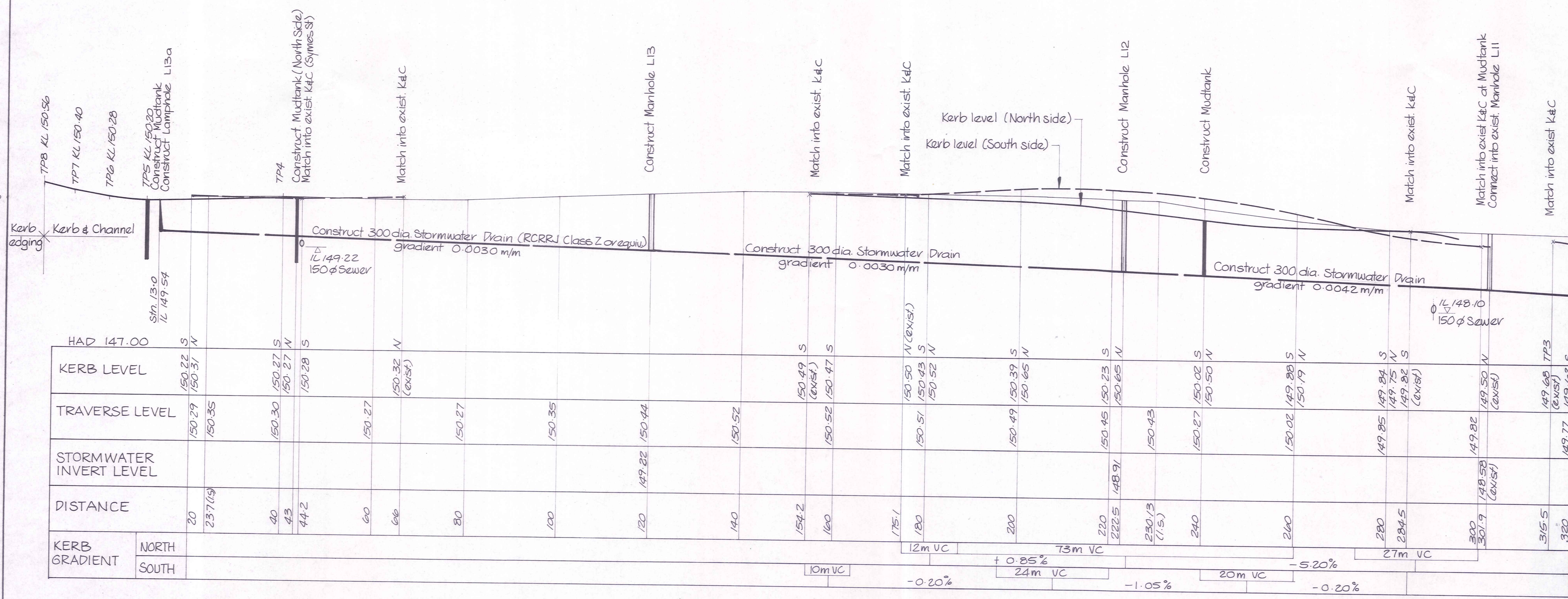
Duffill Watts & King Ltd

CONSULTING ENGINEERS



PLAN 1:500

- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Cross hatching denotes area to be scarified, shape corrected with M/4 AP20 & sealed.
 3. See cross sections for shaping of Cemetery Road / Ngapara St. intersection.
 4. Refer to Telecom Corporation for location of underground cables.
 5. Datum - M.S.L. (Dunedin datum)



LONGITUDINAL SECTION

Vert. 1:50
Horiz. 1:500

No.	Revisions	Date	Appvd
1	Designed	June 90	
2	Drawn	June 90	
3	Checked	Aug 90	
4	Approved	Aug 90	
5	File	22/5/17/4/3	

Client
CENTRAL OTAGO DISTRICT COUNCIL

Project
**CONTRACT N° 90 / 115
ALEXANDRA
STORMWATER
UPGRADING 1990-91**

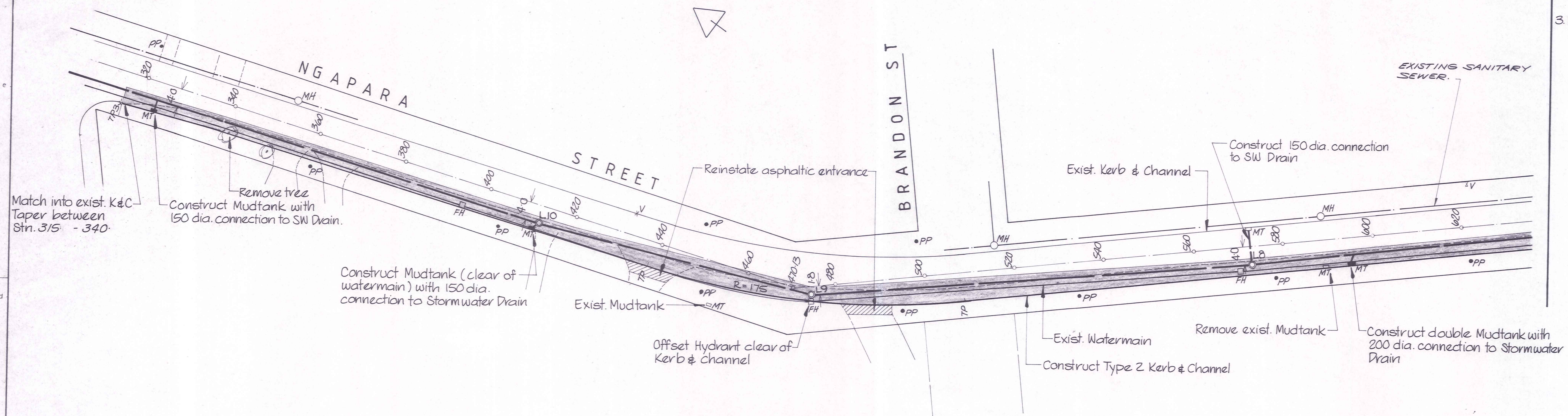
Sheet Title
**NGAPARA STREET 0-320m
PLAN & LONG SECTION**

Job No.
12543

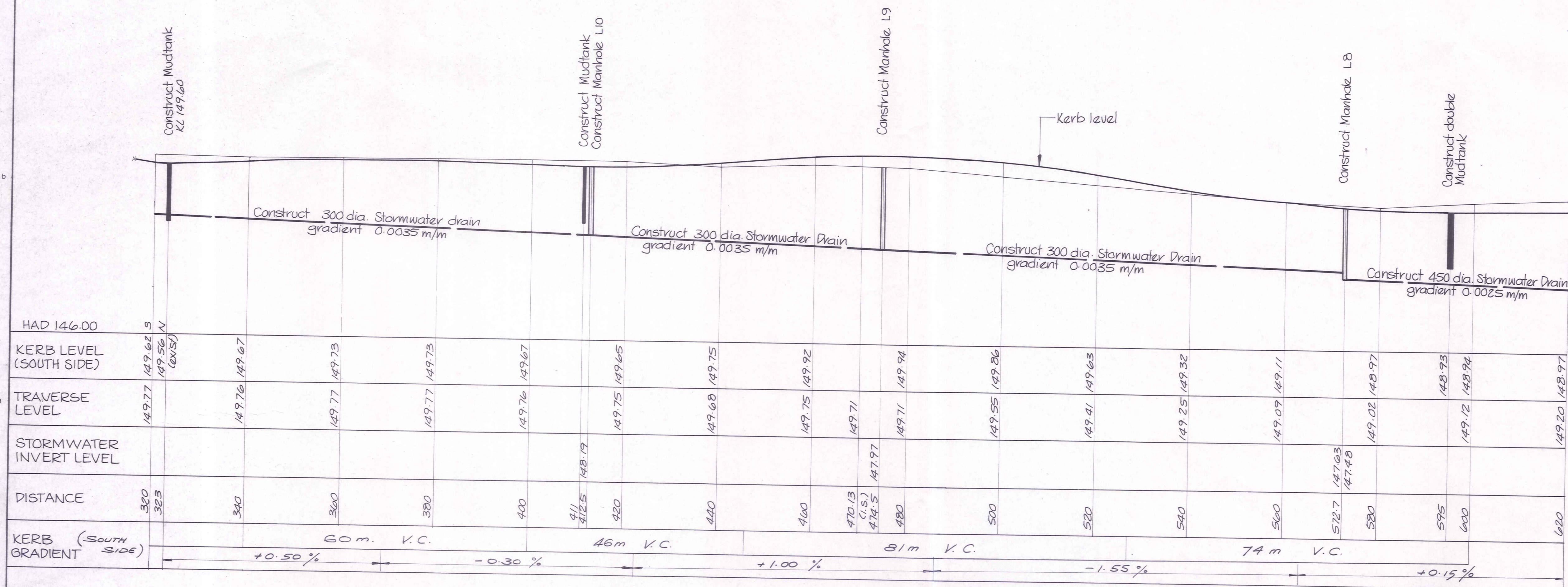
Sheet No.
3
of 15 sheets

Revision

Duffill Watts & King Ltd
CONSULTING ENGINEERS



PLAN 1:500



LONGITUDINAL SECTION

Vert. 1:50
Horiz. 1:500

- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - M.S.L. (Dunedin datum)

No.	Revisions	Date	Appvd
Designed	N. Jolley	Date June 90	Print Date
Drawn	" / DJT	"	"
Checked	" / J. Jolley	Aug 90	"
Approved	" / J. Jolley	Aug 90	"
File	225/17/4/3	Ref	"

Client

CENTRAL OTAGO DISTRICT COUNCIL

Project

CONTRACT N° 90/115

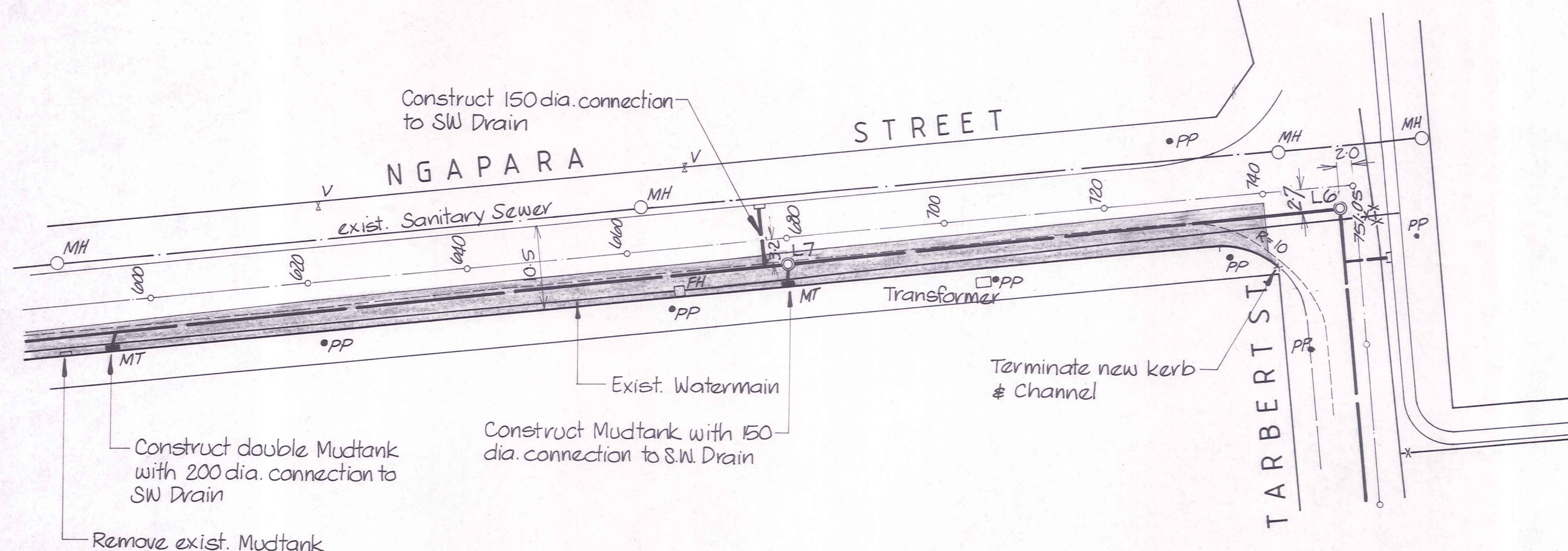
ALEXANDRA STORMWATER UPGRADING 1990-91

Sheet Title

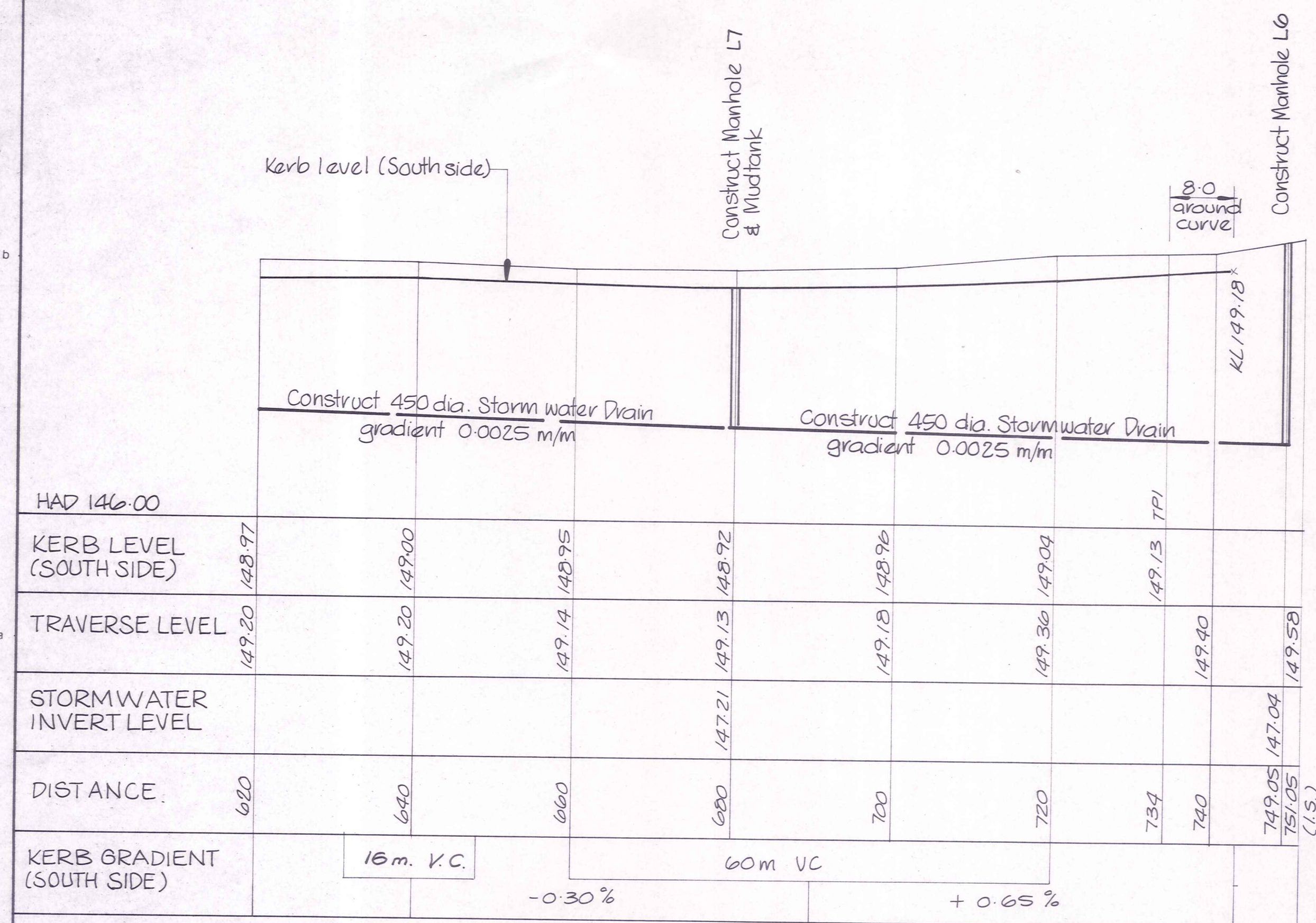
NGAPARA STREET 320-620m PLAN & LONG SECTION

Job No.	Sheet No.	Revision
12543	4	of 15

Duffill Watts & King Ltd
CONSULTING ENGINEERS



PLAN 1:500



LONGITUDINAL SECTION

Horiz. 1:500
Vert. 1:50

- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - M.S.L. (Dunedin datum)

No.	Revisions	Date	Appvd
Designed	N. Jelliey	Date June 90	Print Date
Drawn	" / DIT	"	
Checked	By 10/09/90	Aug 90	
Approved	By 10/09/90	Aug 90	
File	225/17/4/3	Ref	



Project

CONTRACT N° 90 / 115

ALEXANDRA

STORMWATER

UPGRADING 1990-91

Sheet Title

NGAPARA STREET

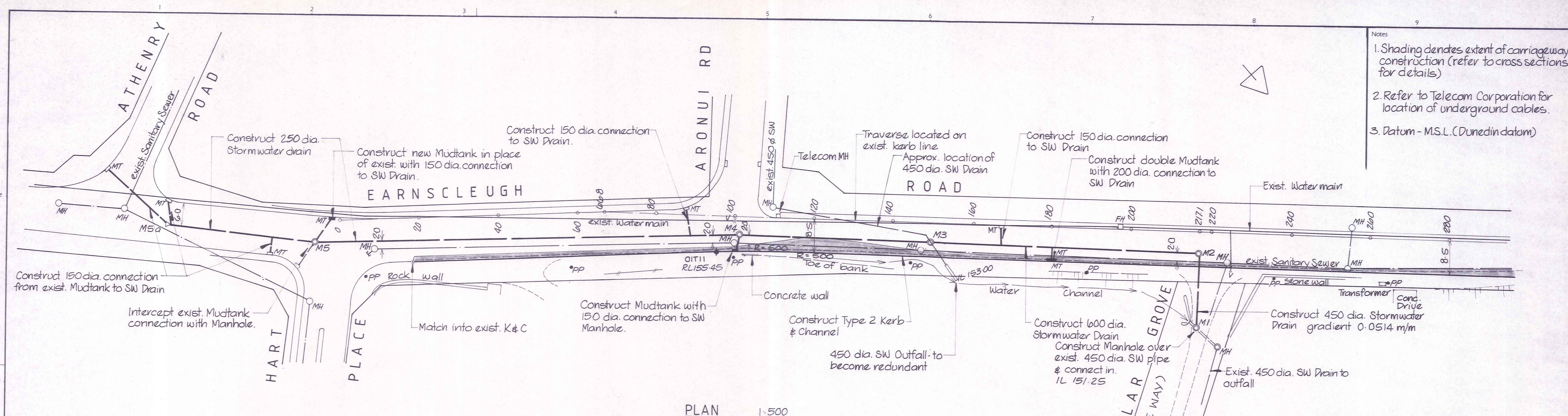
PLAN & LONG SECTION

620 - 751.05m

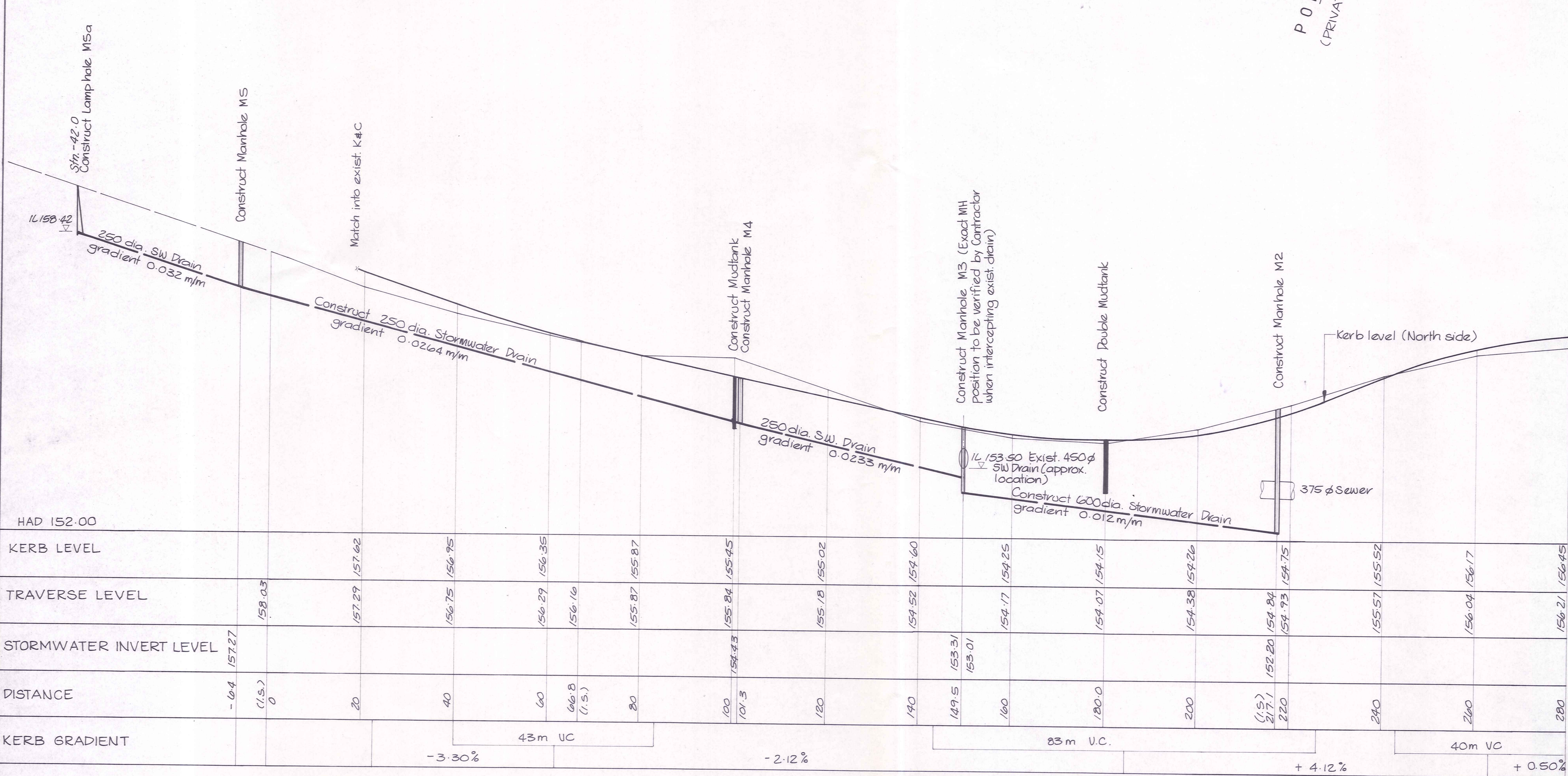
Job No.	Sheet No.	Revision
12543	5	
	of 15	shs

Duffill Watts & King Ltd

CONSULTING ENGINEERS



PLAN 1:500



LONGITUDINAL SECTION

Horiz. 1:500
Vert. 1:50

- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - M.S.L. (Dunedin datum)

No.	Revisions	Date	Appvd
1	Designed N Jellay	Date June 90	Print Date
2	Drawn DJT	11	
3	Checked M. J. Boffe	Aug 90	
4	Approved M. J. Boffe	Aug 90	
5	File 2257117413	11/11/90	

Client

CENTRAL OTAGO DISTRICT COUNCIL

Project

CONTRACT N° 90 / 115

ALEXANDRA

STORMWATER

UPGRADING 1990-91

Sheet Title

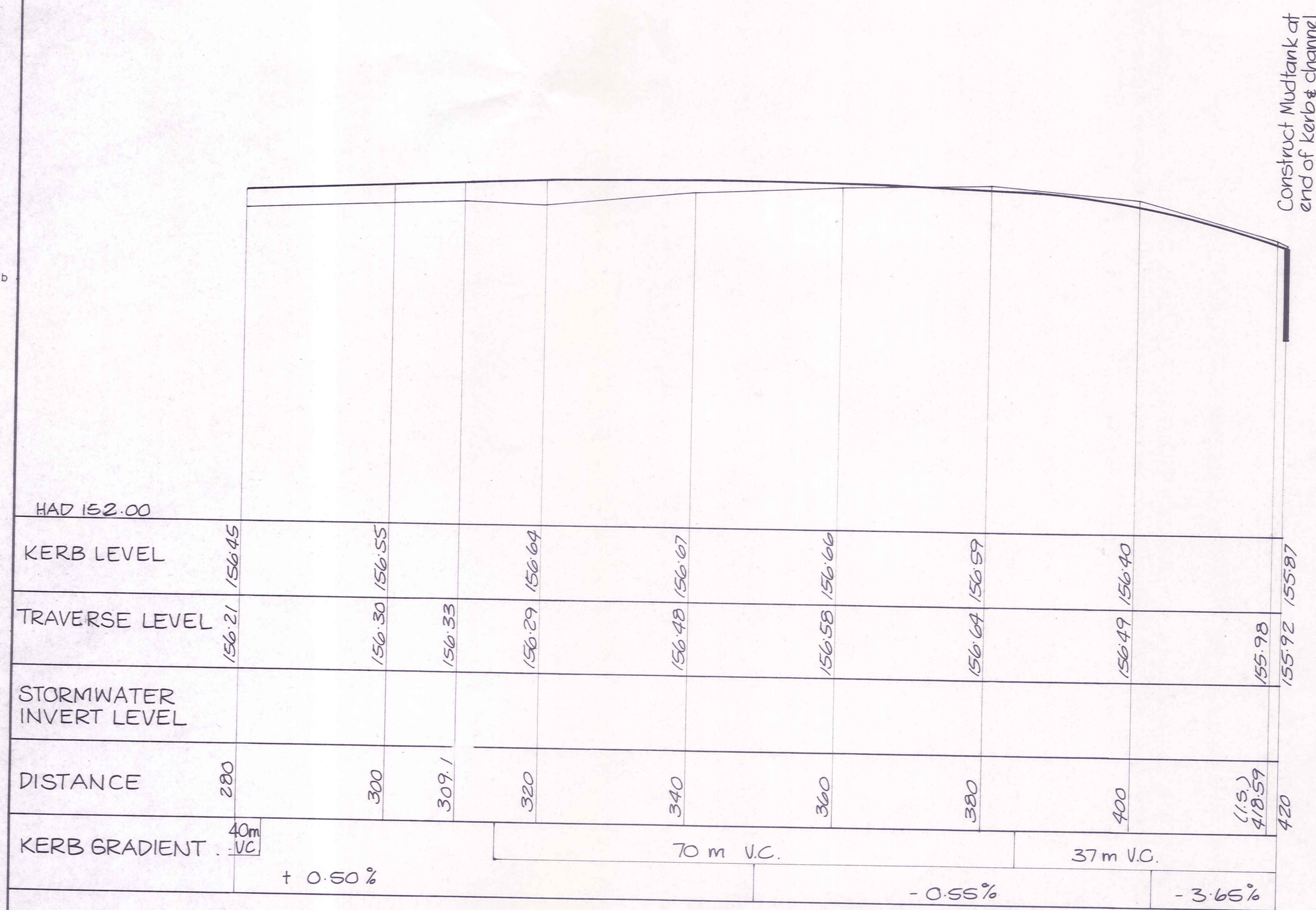
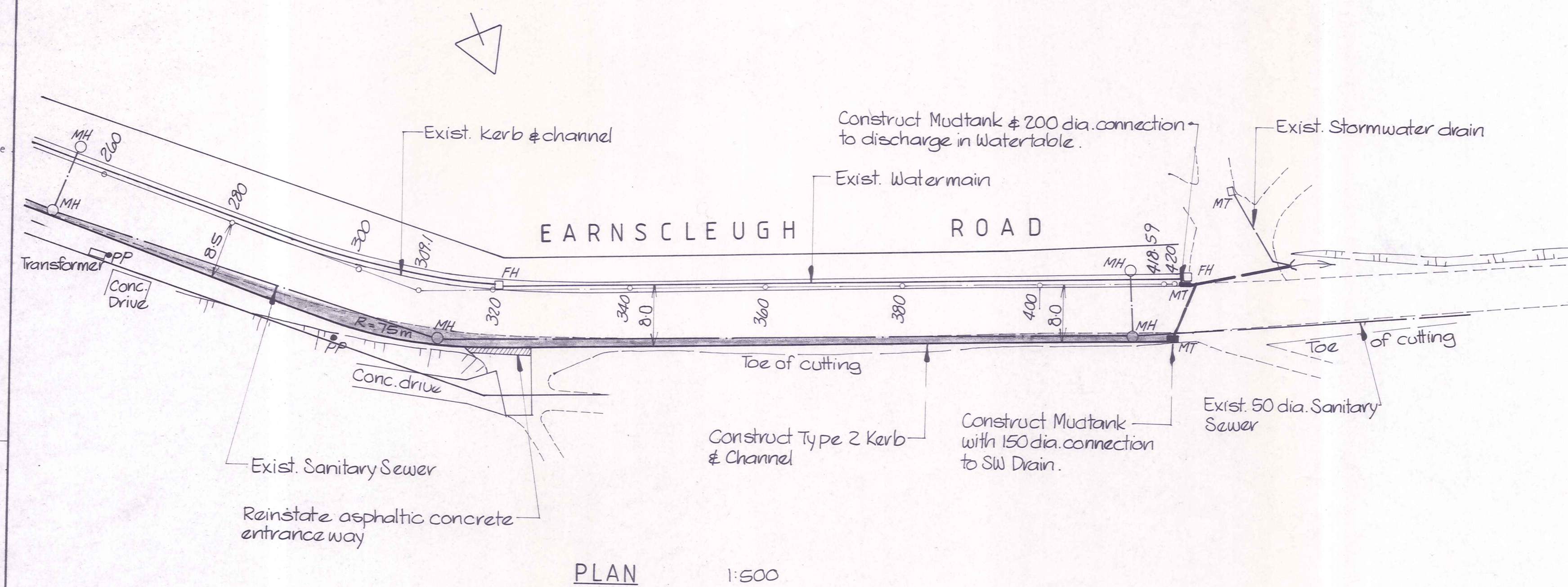
EARNSCLEUGH ROAD

PLAN & LONG SECTION

Job No.	Sheet No.	Revision
12543	7	15

Duffill Watts & King Ltd

CONSULTING ENGINEERS



Notes

1. Shading denotes extent of carriage way construction (refer to cross sections for details)
2. Refer to Telecom Corporation for location of underground cables.
3. Datum - M.S.L. (Dunedin datum)

No.	Revisions			Date	Appvd						
Designed	N.Jelley			Date June 90	Print Date						
Drawn	" DWT			"							
Checked	M. J. Bogan			Aug 90							
Approved	[Signature]			Aug 90							
File	225/17/4/3			Ref							



Project

CONTRACT N° 90 / 115

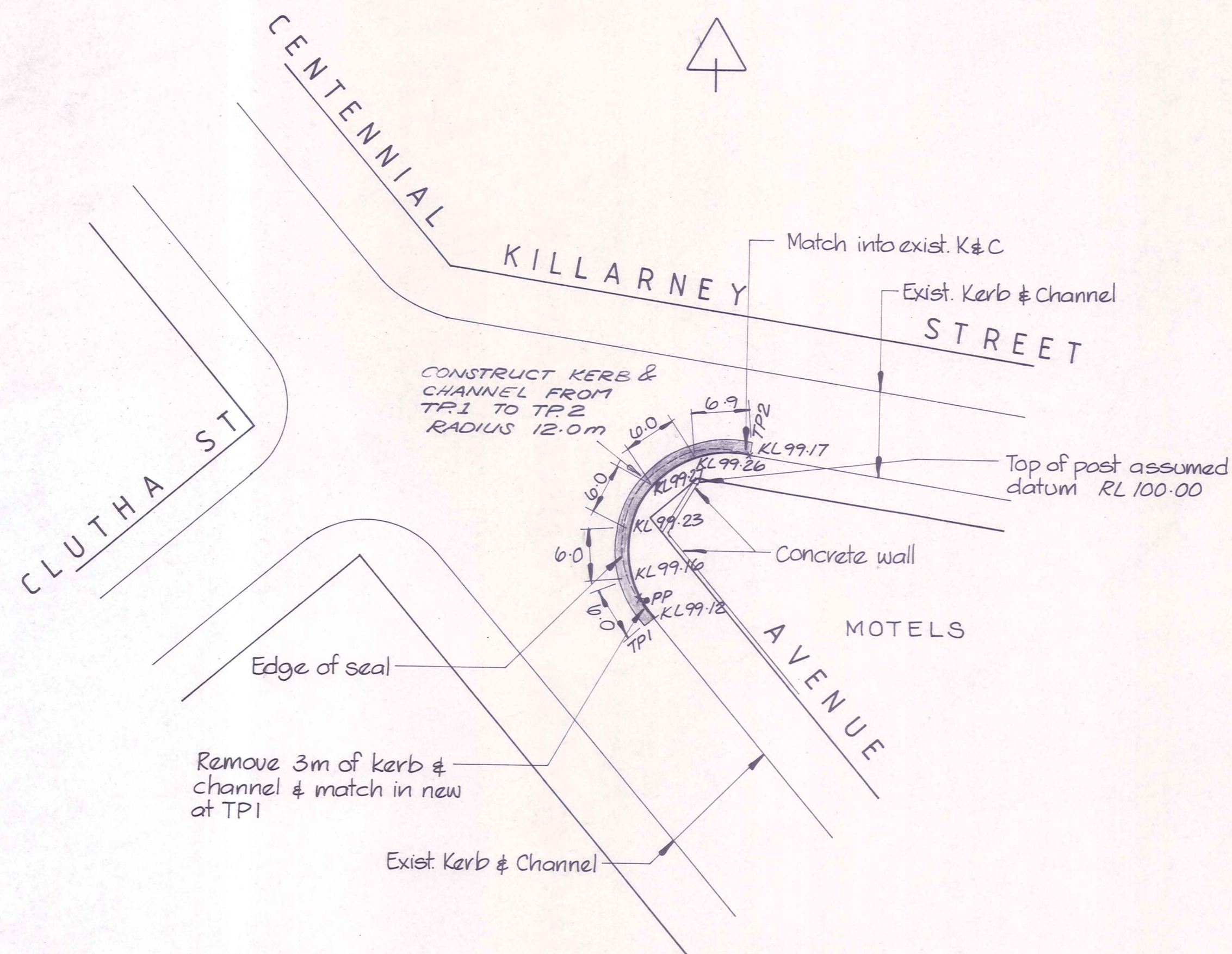
ALEXANDRA
STORMWATER
UPGRADING 1990-91

Sheet Title

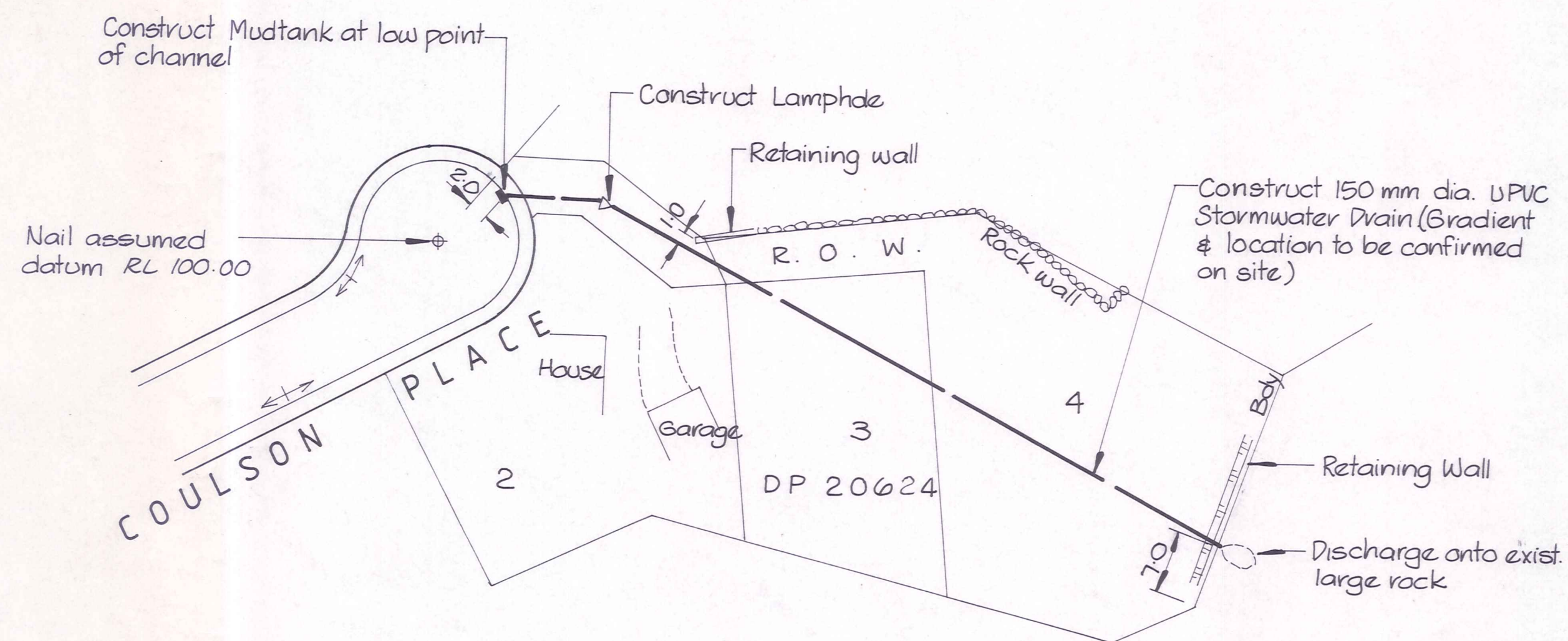
EARNSCLEUGH ROAD
PLAN & LONG SECTION

Job No.	Sheet No.	Revision
12543	8	
	of 15 shrs	

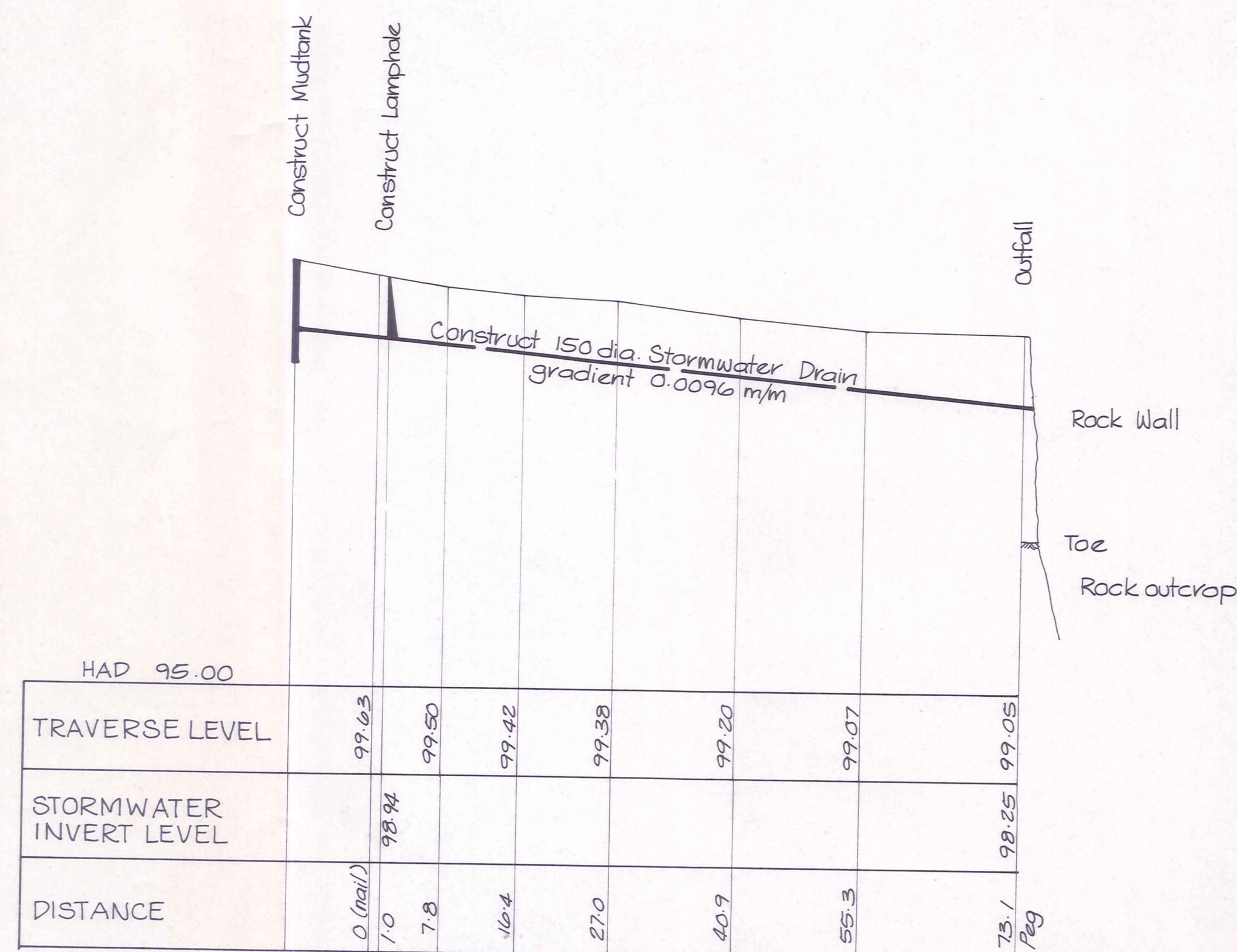
Duffill Watts & King Ltd
CONSULTING ENGINEERS



PLAN
KILLARNEY STREET / CENTENNIAL AVENUE INTERSECTION 1:500



PLAN - COULSON PLACE STORMWATER DRAIN 1:500



LONGITUDINAL SECTION
Horiz 1:500
Vert. 1:50

- Notes
1. Shading denotes extent of carriage way construction
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - Levels for Killarney St / Centennial Ave works & Coulson Place Stormwater drain are in terms of local datum.

No.	Revisions	Date	Appvd
Designed	N. Jolley	Date June '90	Print Date
Drawn	ii / DJT	July '90	
Checked	ii / DJT	Aug '90	
Approved	ii / DJT	Aug '90	
File	225/17/4/3	Ref	

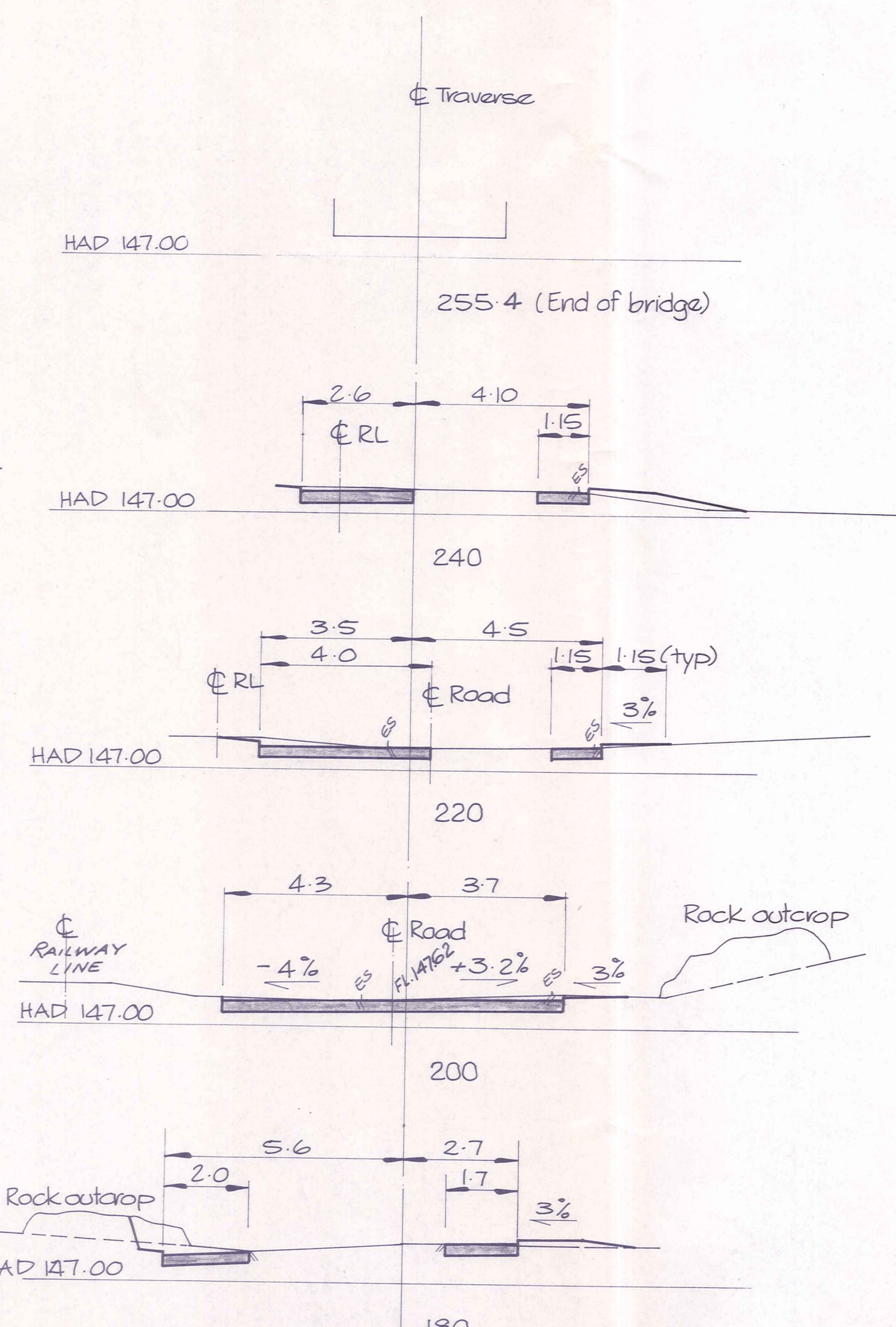
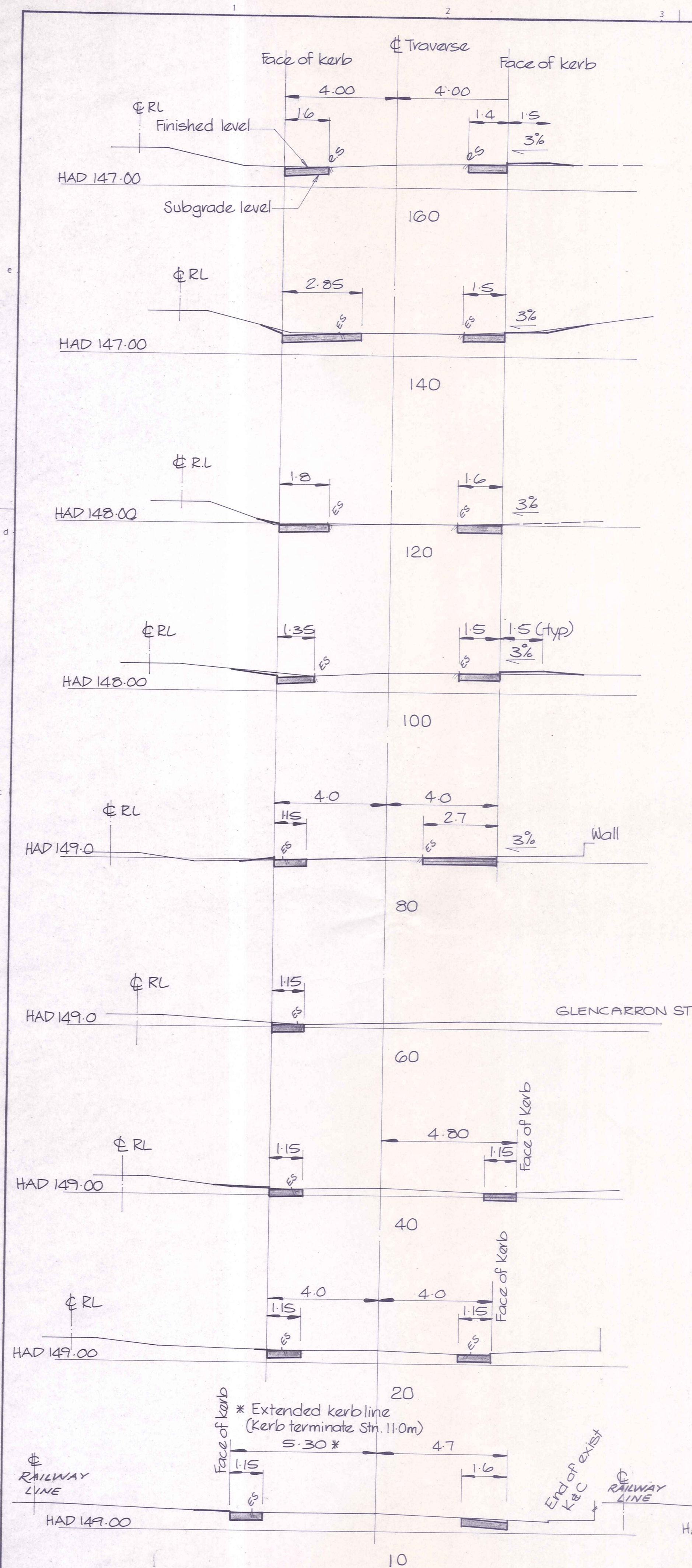
Client
CENTRAL OTAGO DISTRICT COUNCIL

Project
CONTRACT N° 90 / 115
ALEXANDRA
STORMWATER
UPGRADING 1990-91

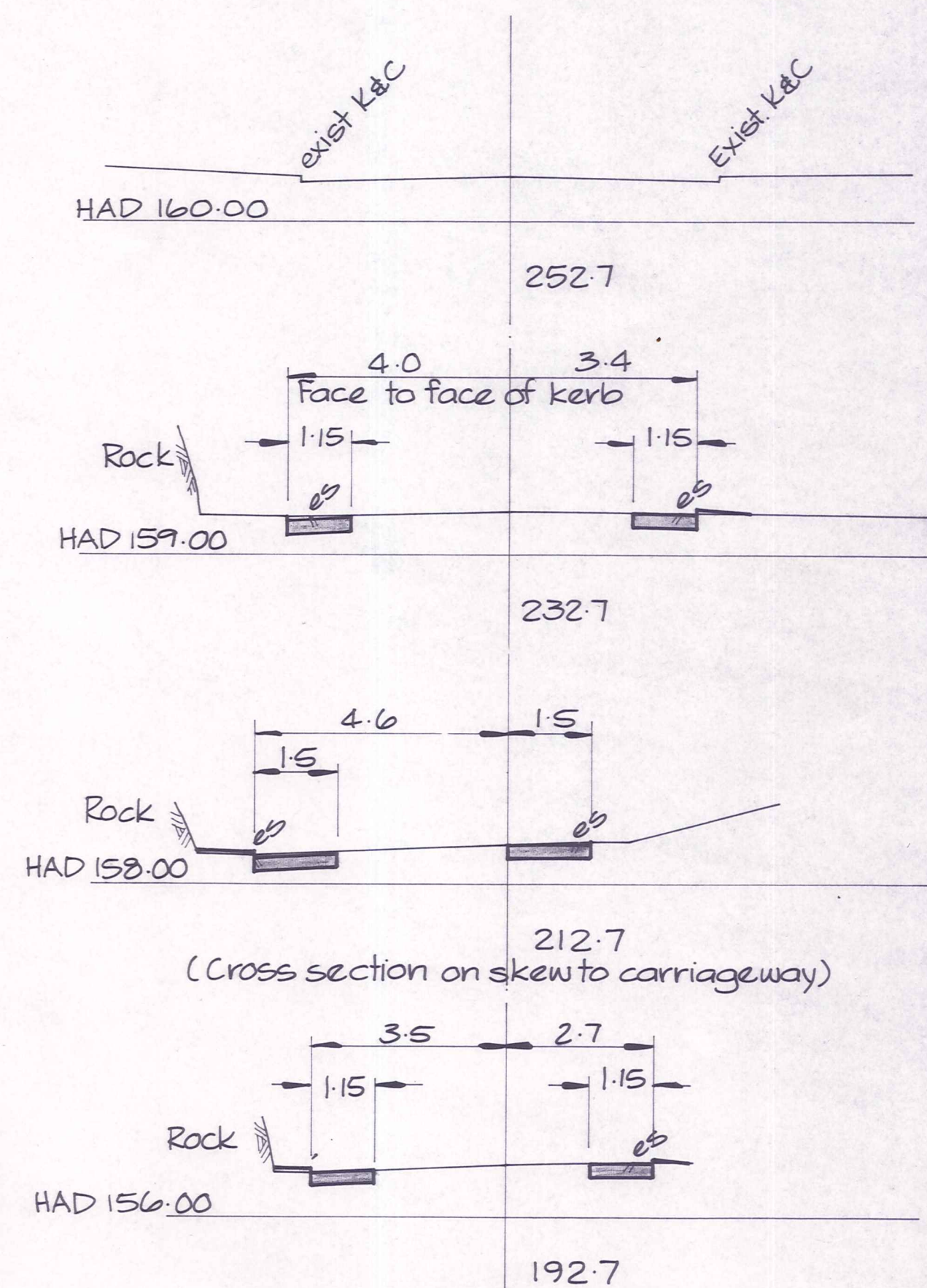
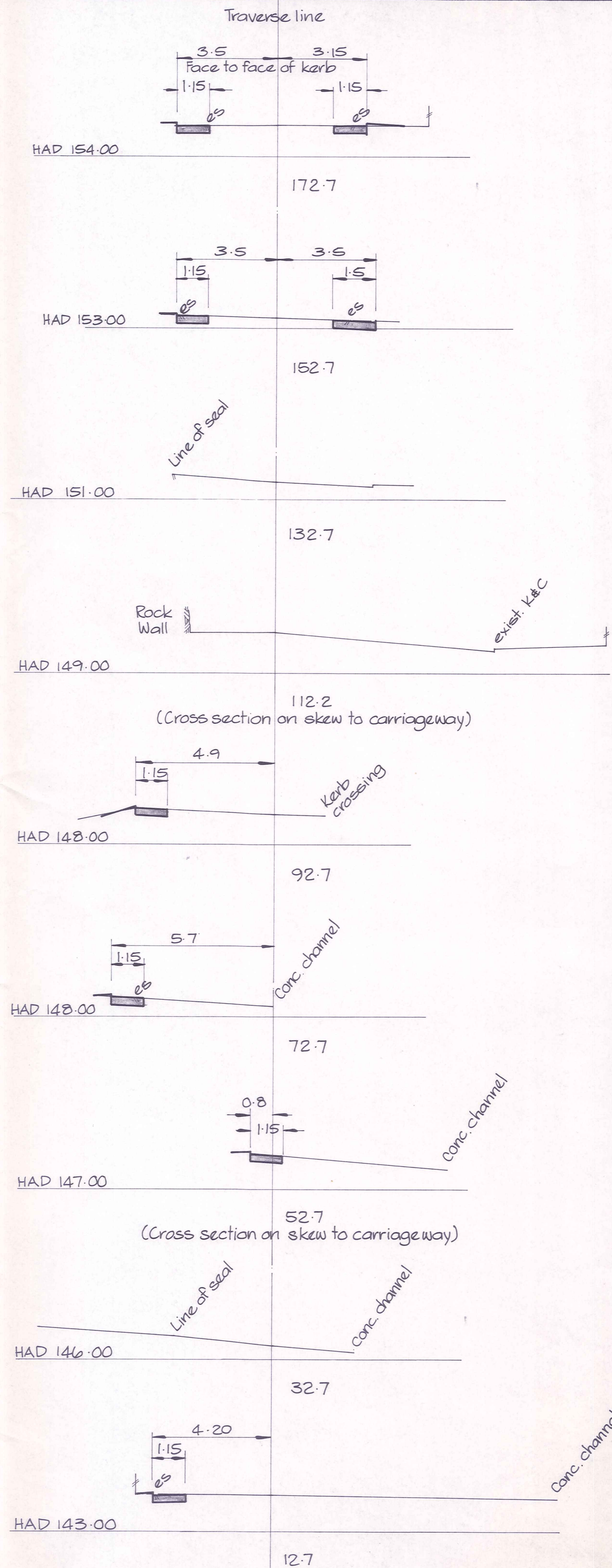
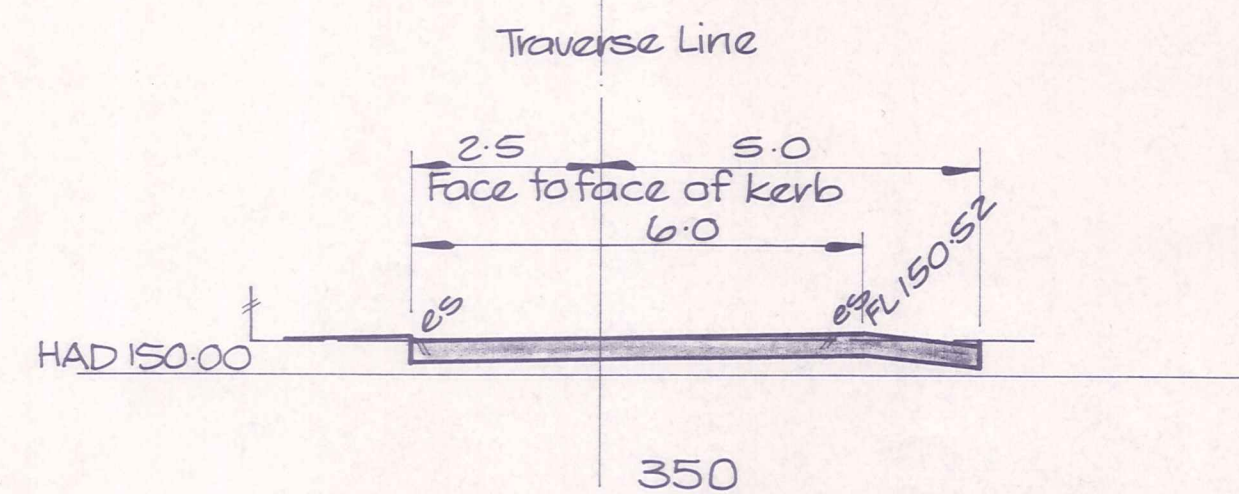
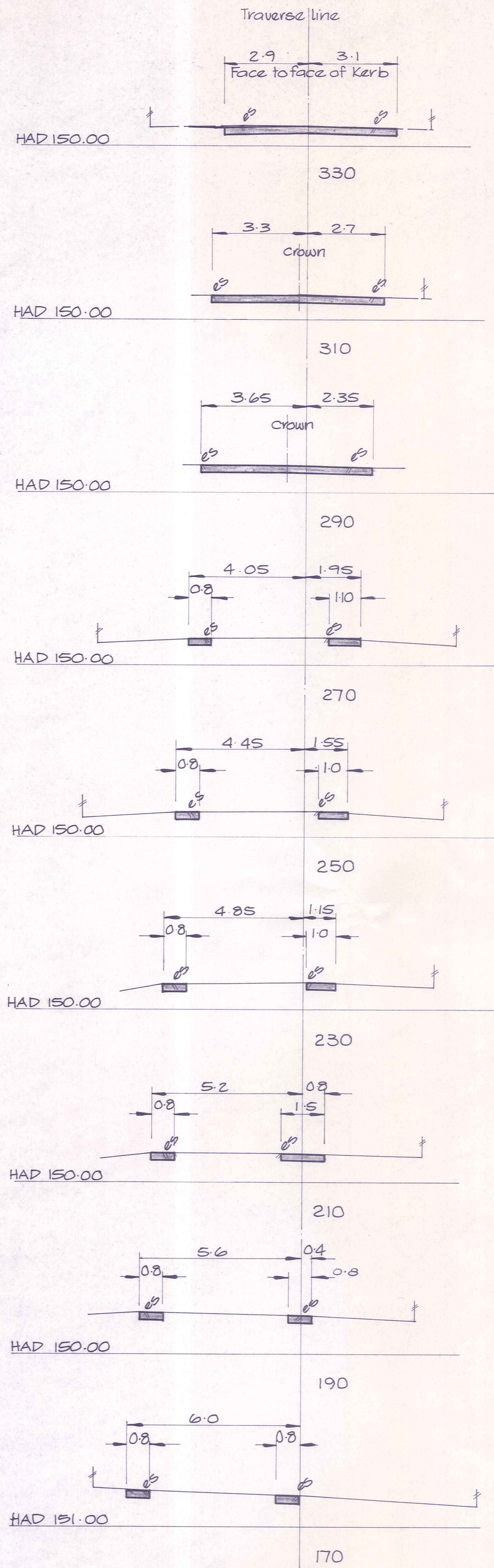
Sheet Title
KILLARNEY ST/CENTENNIAL AVENUE, COULSON PLACE PLANS & LONG SECTION

Job No.	Sheet No.	Revision
12543	10	
	of 15	shts

Duffill Watts & King Ltd
CONSULTING ENGINEERS



Client  CENTRAL OTAGO DISTRICT COUNCIL		
Project <u>CONTRACT N° 90 / 115</u> ALEXANDRA STORMWATER UPGRADING 1990-91		
Sheet Title LITTLE VALLEY ROAD CROSS SECTIONS		
Job No. 12543	Sheet No. 11 of 15 sheets	Revision
Duffill Watts & King Ltd CONSULTING ENGINEERS		



- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum-MSL (Dunedin datum)

No.	Revisions	Date	Appvd
Designed	N. Jelley	Date June 90	Print Date
Drawn	H. DIT	July 90	
Checked	M. G. G.	Aug 90	
Approved	Paul G.	Aug 90	
File	225/17/4/3	Ref	

Client

CENTRAL OTAGO DISTRICT COUNCIL

Project

CONTRACT N° 90 / 115

ALEXANDRA

STORMWATER

UPGRADING 1990-91

Sheet Title

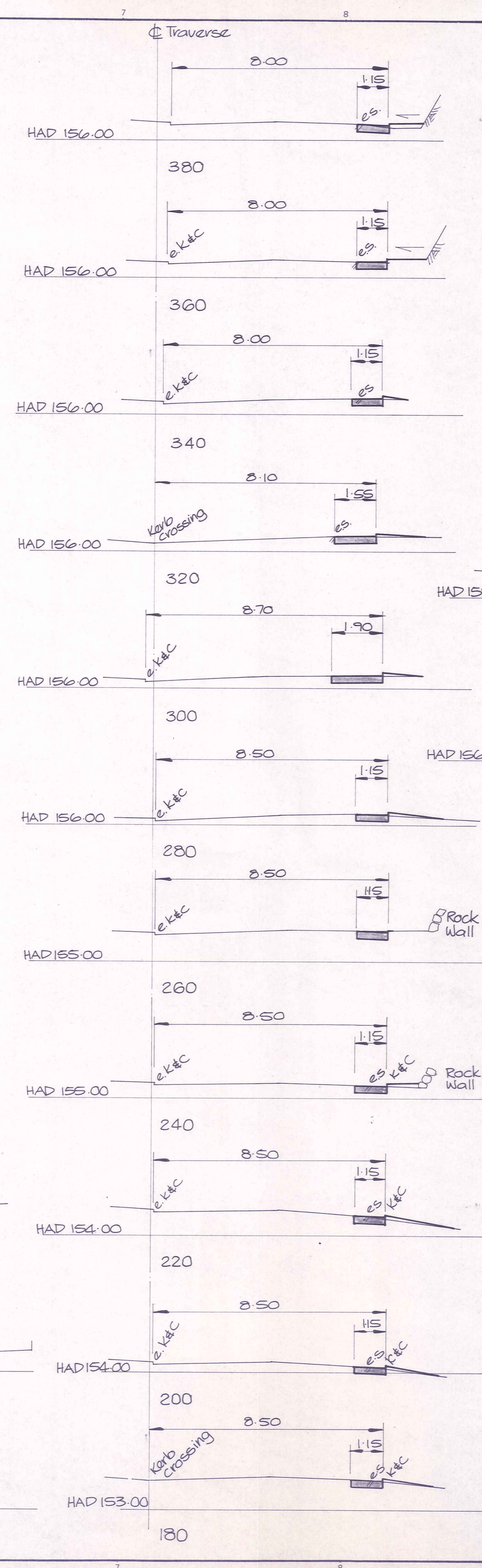
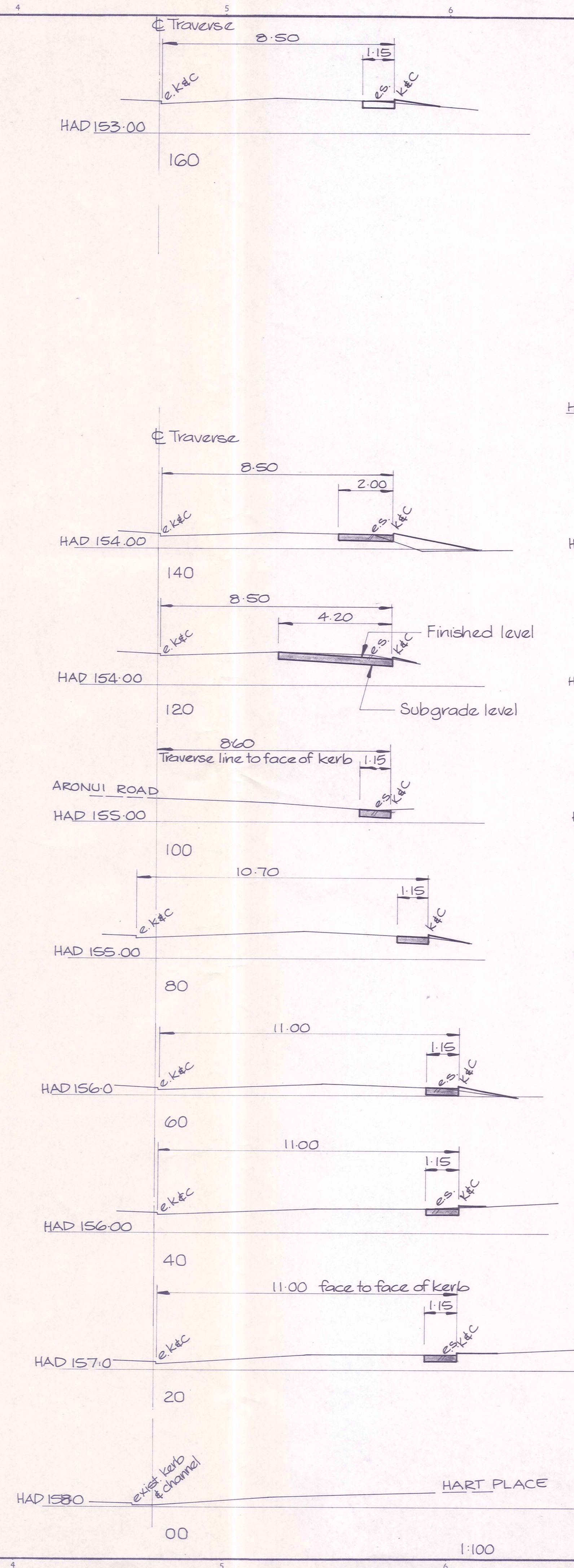
CEMETERY & OLD BRIDGE RD

CROSS SECTIONS

Job No.	Sheet No.	Revision
12543	13	
	of 15	shts

Duffill Watts & King Ltd

CONSULTING ENGINEERS



- Notes
1. Shading denotes extent of carriageway construction (refer to cross sections for details)
 2. Refer to Telecom Corporation for location of underground cables.
 3. Datum - MSL (Dunedin datum)

No.	Revisions	Date	Appvd
Designed	N. Jolley	Date June '90	Print Date
Drawn	II / DJT	"	"
Checked	by [signature]	Aug '90	"
Approved	[signature]	Aug '90	"
File	225/17/4/3	Ref	



Project

CONTRACT N° 90 / 115

ALEXANDRA

STORMWATER

UPGRADING 1990-91

Sheet Title

EARNSCLEUGH ROAD

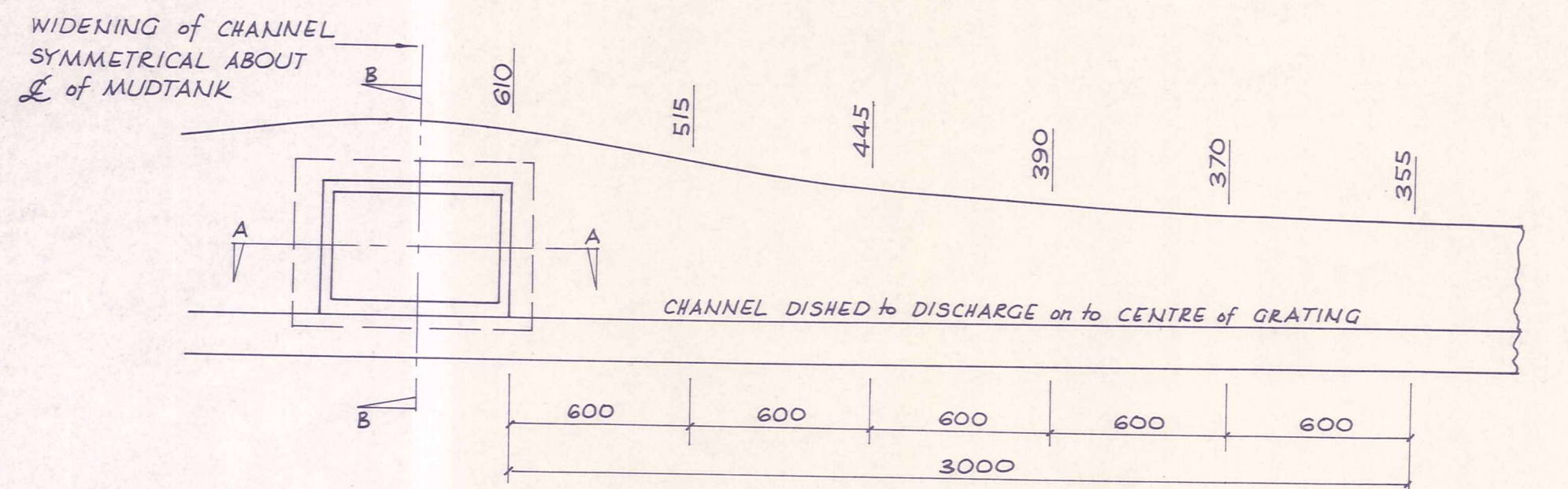
CROSS SECTIONS

Job No.	12543	Sheet No.	14	Revision	
		of	15	sheets	

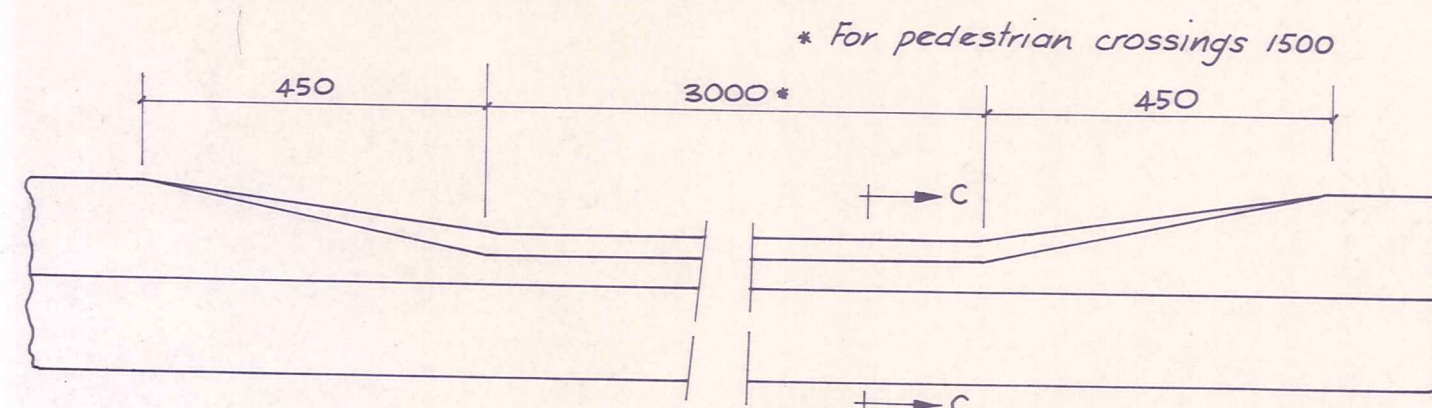
Duffill Watts & King Ltd

CONSULTING ENGINEERS

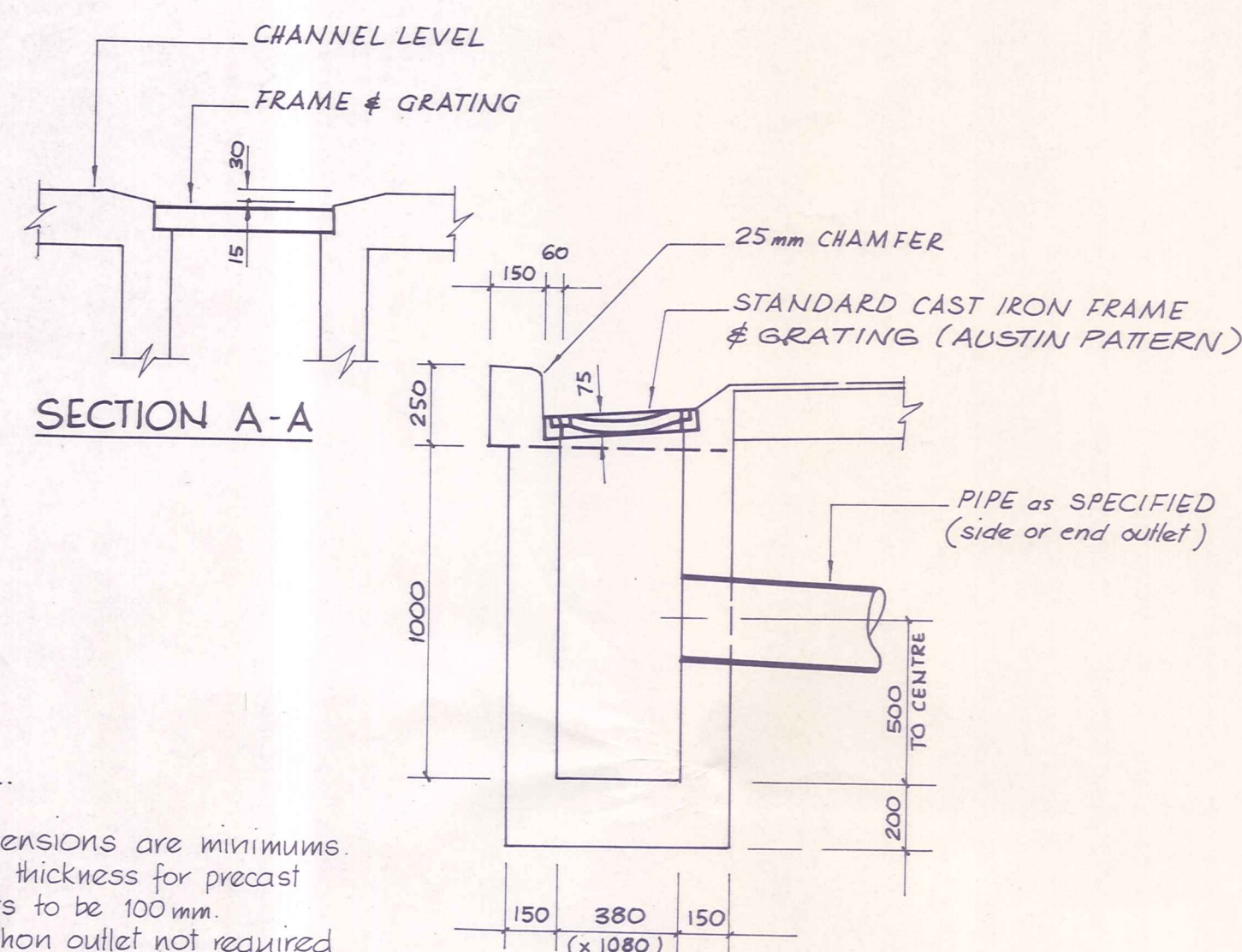
ORIGINAL SIZE mm



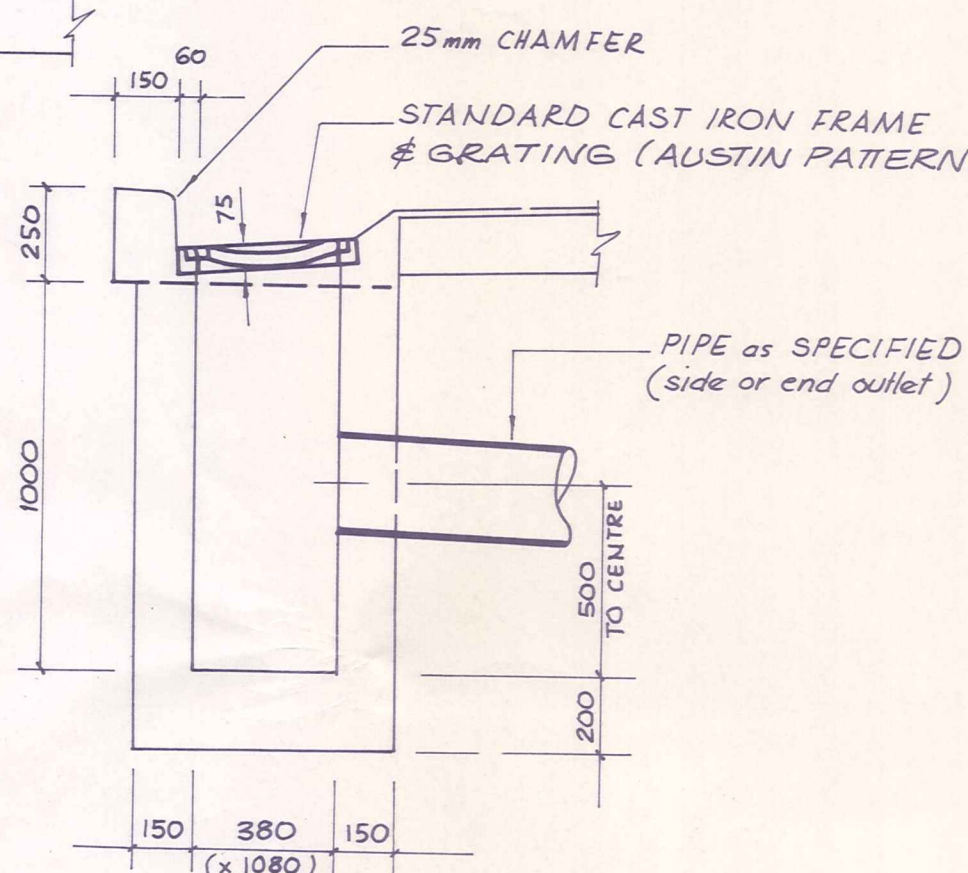
PLAN of CHANNEL at MUDTANKS



DROP KERB CROSSING



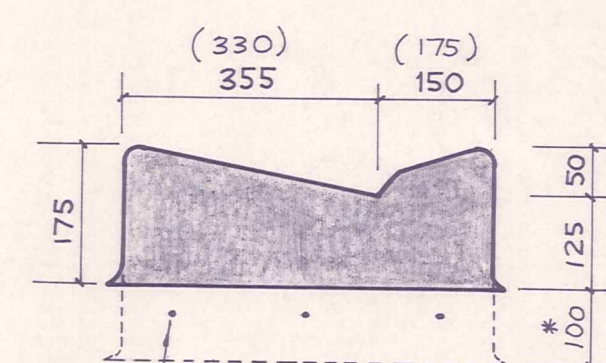
SECTION A-A



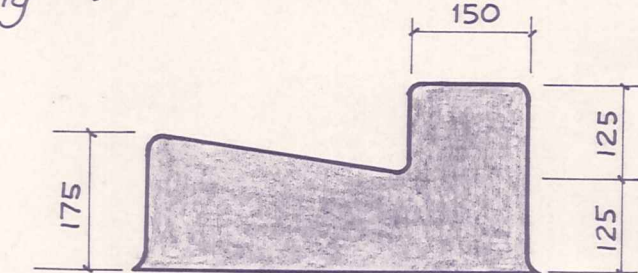
SECTION B-B

STANDARD MUDTANKS

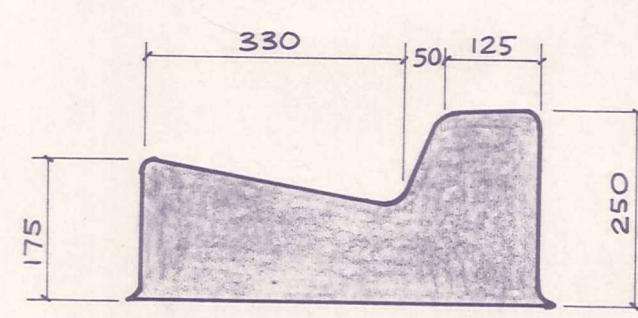
NOTES ..
Dimensions are minimums.
Wall thickness for precast units to be 100mm.
Syphon outlet not required



SECTION C-C



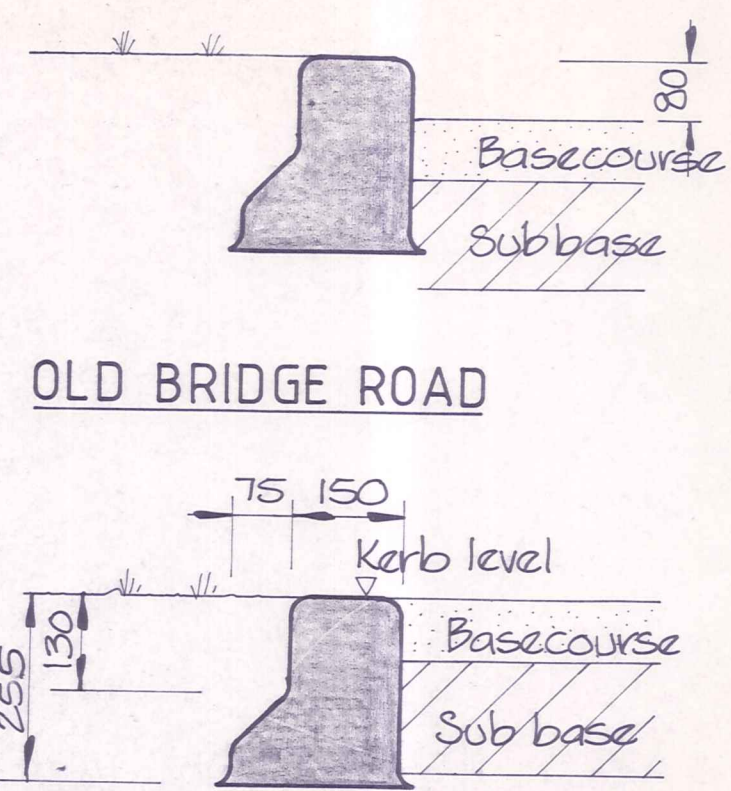
TYPE 1



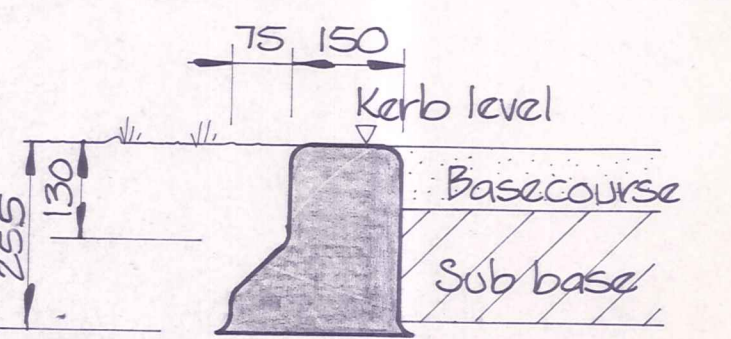
TYPE 2

KERB & CHANNEL DETAILS

(Concrete strength 20 MPa at 28 days)

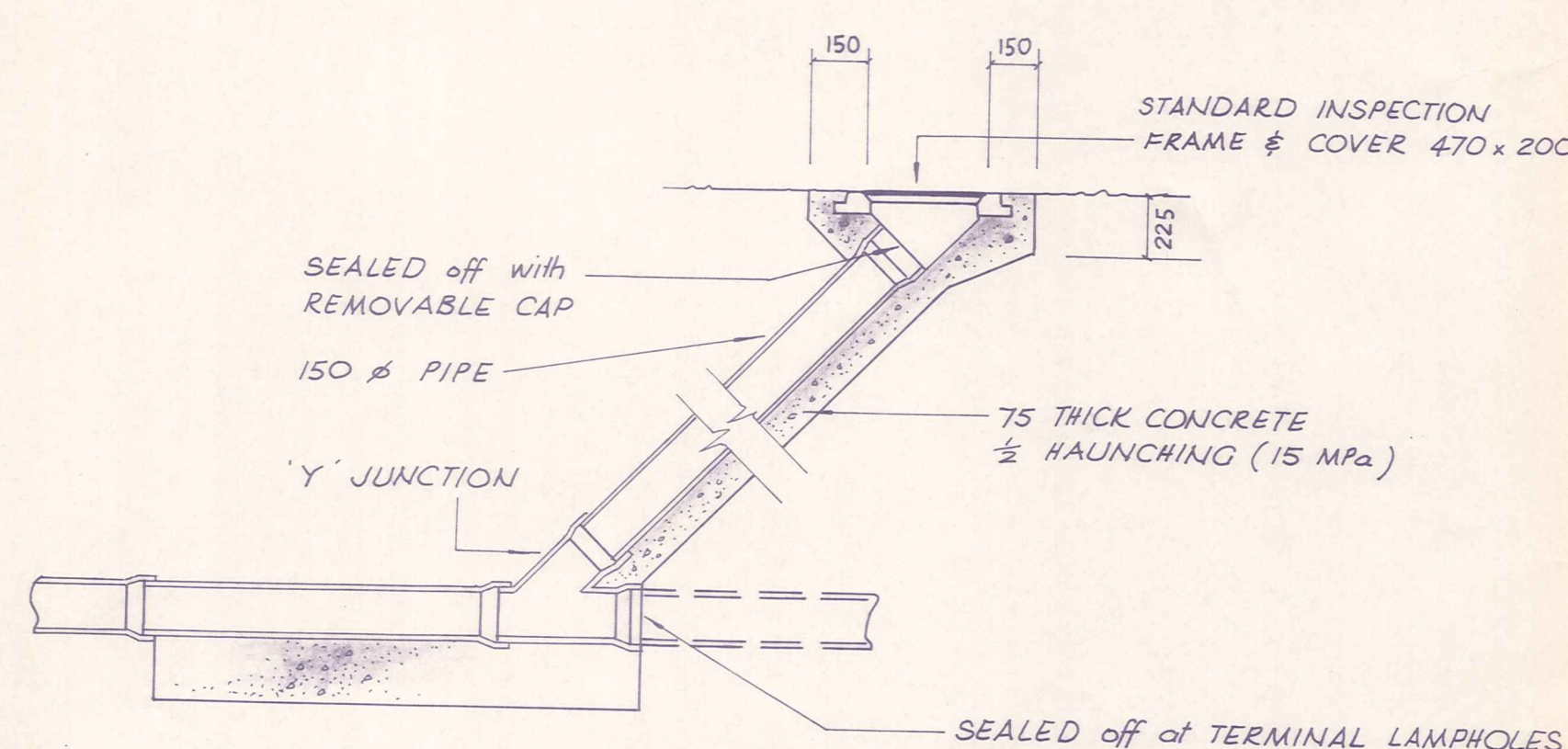


OLD BRIDGE ROAD

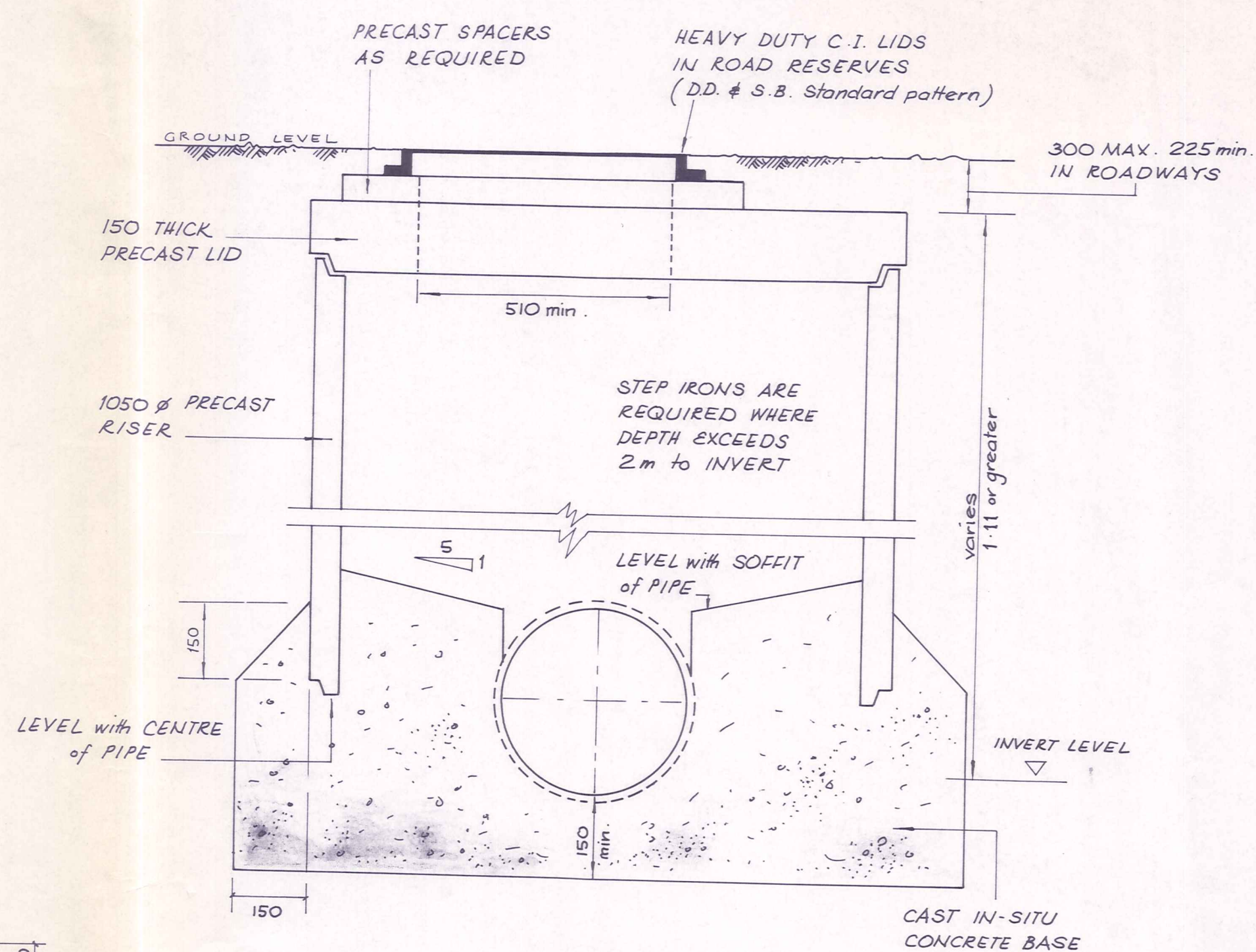


CEMETERY ROAD

Nº 3 TYPE KERB DETAILS 1:10

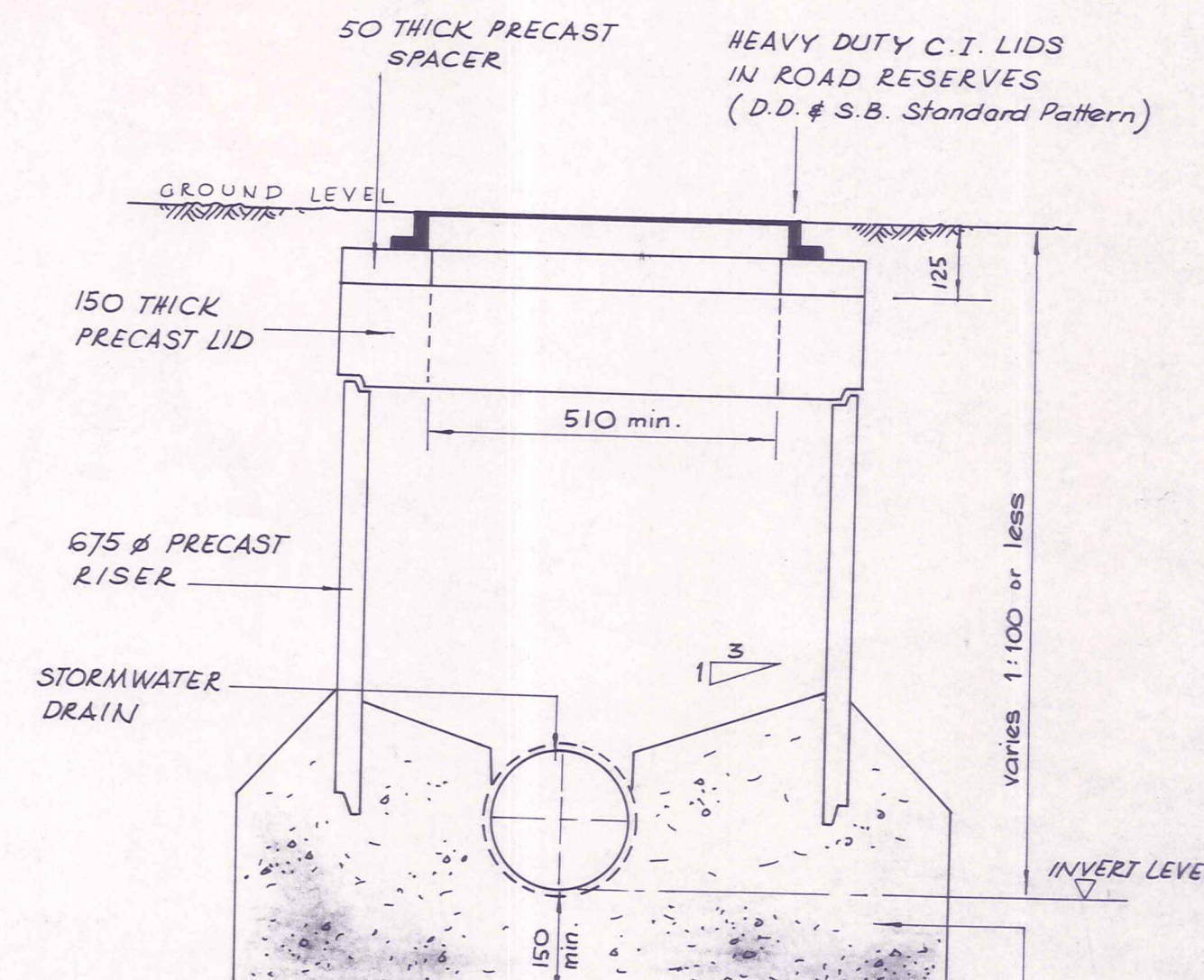


STANDARD LAMP HOLE DETAILS N.T.S.



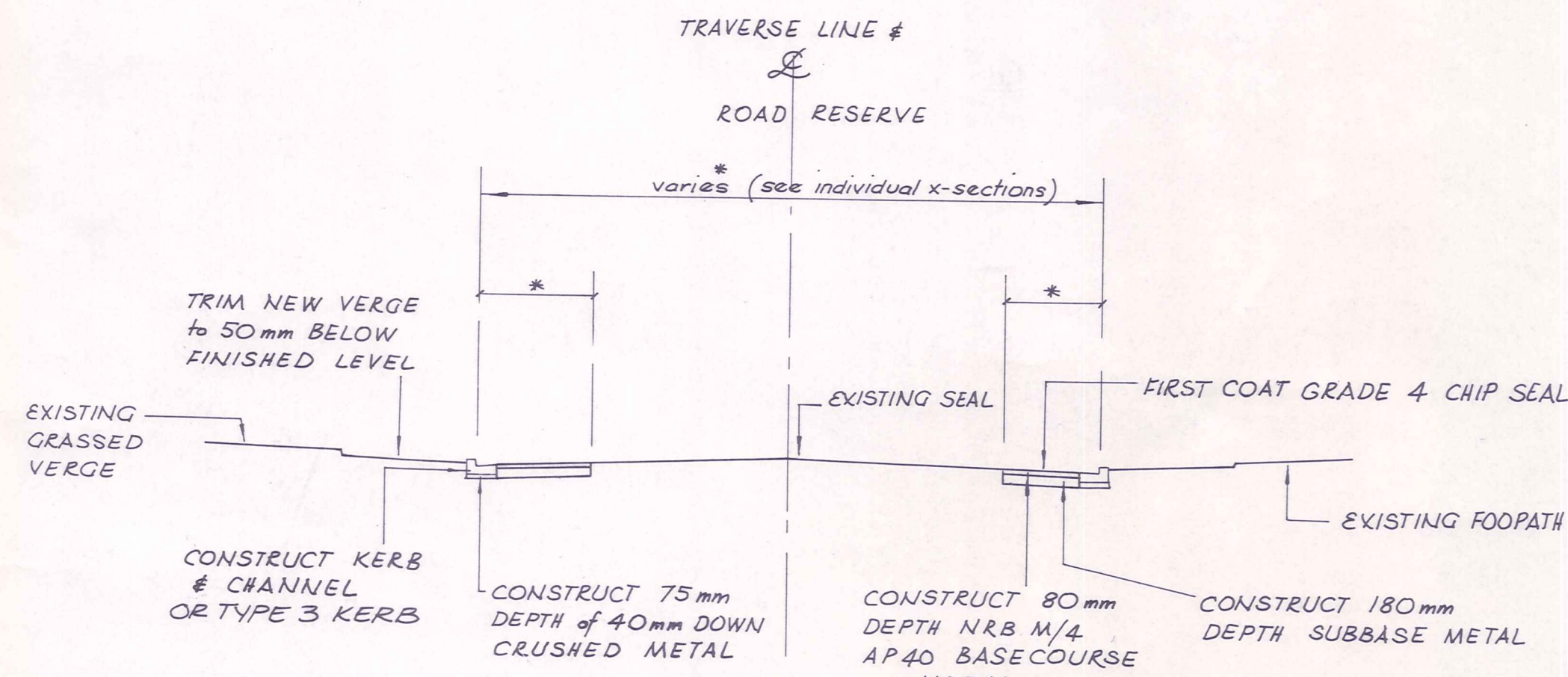
1050 Ø MANHOLE

SCALE 1:10



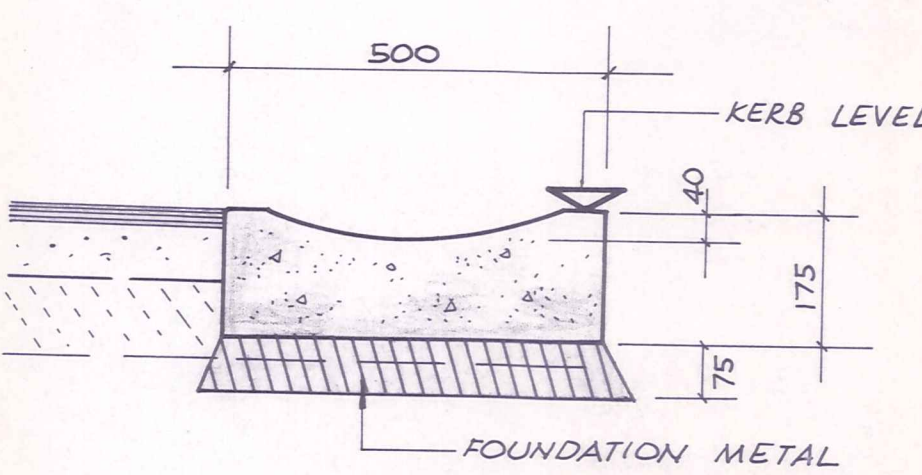
675 Ø MANHOLE

SCALE 1:10



TYPICAL CROSS SECTION (For all streets)

SCALE 1:100



NO 10 CHANNEL (Modified)

MANHOLE NOTES

- 2 flexible joints within 1m of walls required on all pipelines entering or leaving manholes
- Concrete strength shall be 20 MPa at 28 days
- All frames & spacers exposed to view shall have plaster surround of 500 radius
- Locate manhole opening over stormwater pipe
- No step irons are required where depth to invert is less than 2m
- 1050 Ø precast manholes shall be used where pipe diameters range between 375mm & 600mm
675 Ø precast manholes shall be used where pipe diameters are 225mm or 300mm & where depth to invert is less than 1.1m
- Channels from branch lines shall be curved into main line through the manhole to ensure streamlined flow.

No.	Revisions	Date	Appvd
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DUFFILL WATTS & KING LTD
Consulting Civil & Structural Engineers
Dunedin Invercargill Alexandra Queenstown

Client
CENTRAL OTAGO DISTRICT COUNCIL

Project
CONTRACT Nº 90 / 115
ALEXANDRA
STORMWATER
UPGRADING 1990-91

Sheet Title
STANDARD DETAILS

Job No.	Sheet No.	Revision
12543	15	
	of 15	shts