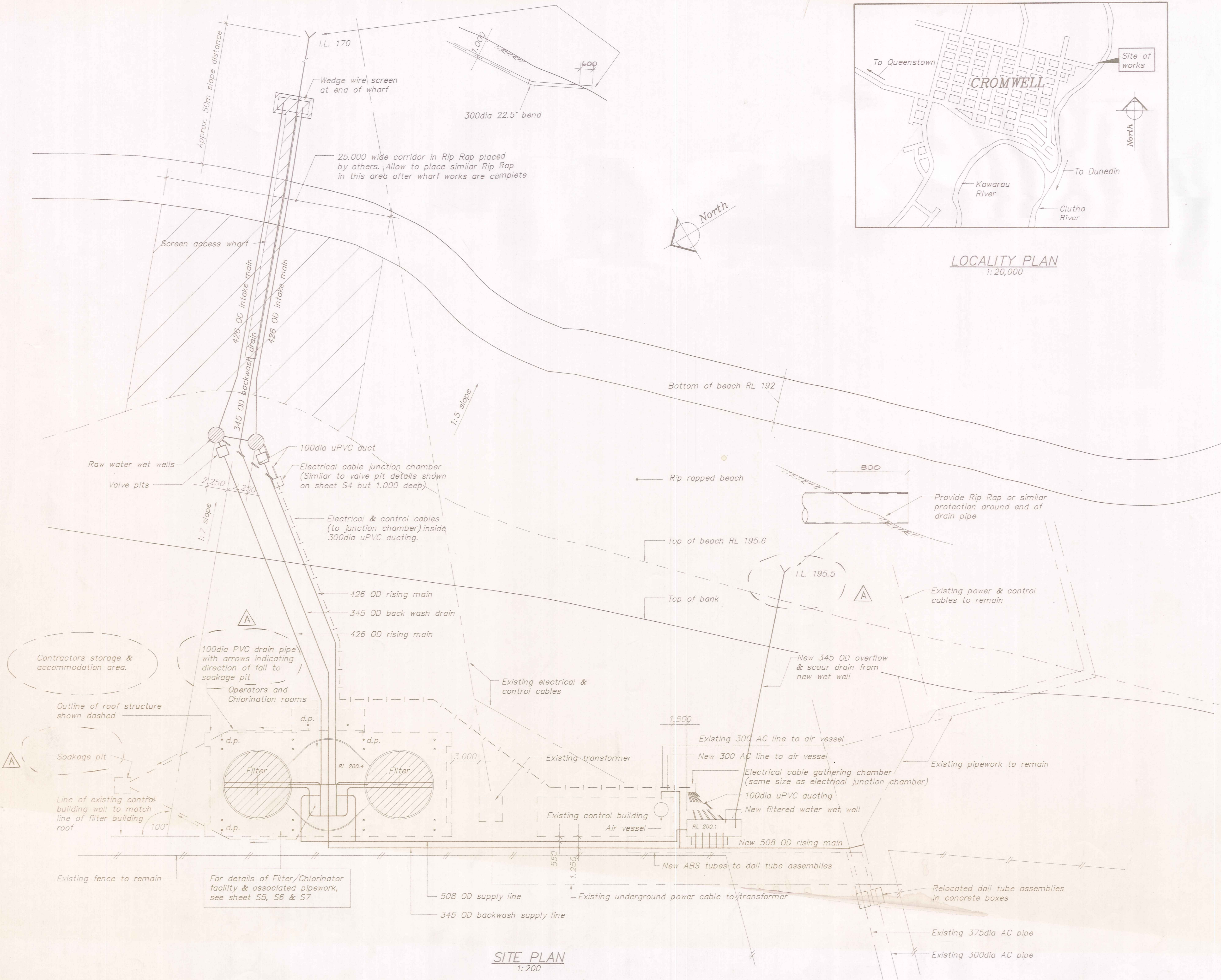


LOCALITY PLAN  
1:20,000



SITE PLAN  
1:200

A General amendments as noted Apr 89			
No.	Revisions	Date	Appvd
1	DESIGNED	11 MAR 89	
2	CHECKED	11 MAR 89	
3	APPROVED	11 MAR 89	
4	FILE	67/2/13/11	L.B. CLAY-P-

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

Client  
**WORKS PROJECT SERVICES  
CLUTHA VALLEY  
DEVELOPMENT**

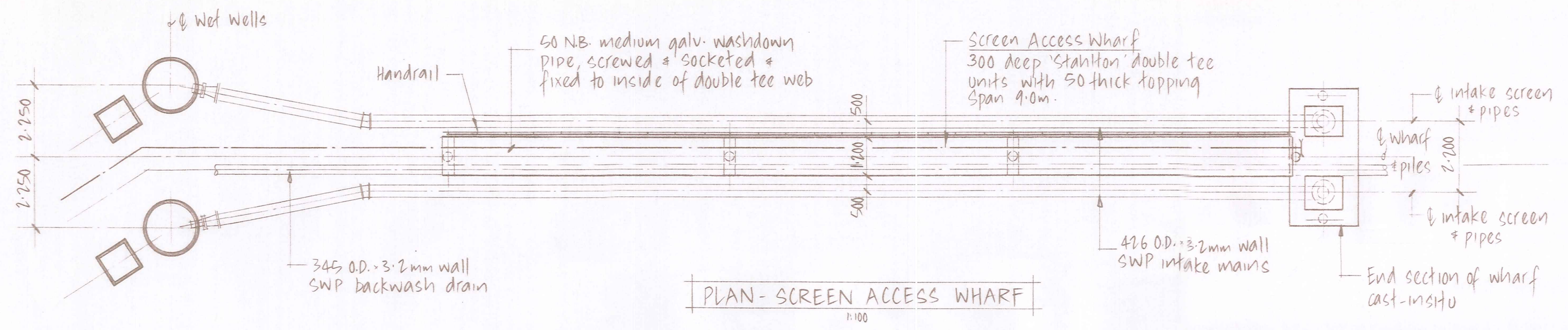
Project  
**LAKE WATER INTAKE  
FACILITIES FOR  
CROMWELL BOROUGH**

Sheet Title  
**LOCALITY PLAN &  
SITE PLAN**

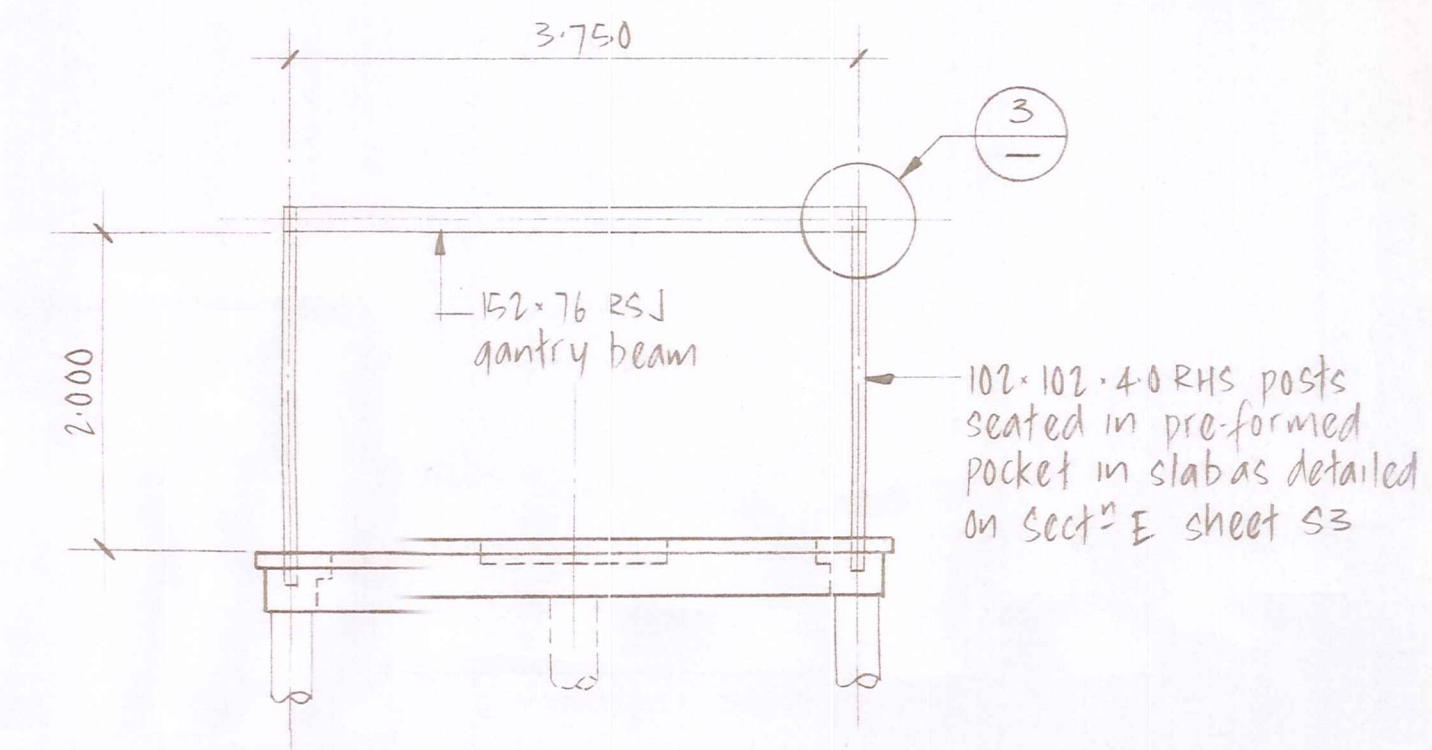
Job No. <b>12276</b>	Sheet No. <b>S1</b>	Revision <b>A</b>
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ORIGINAL SIZE mm



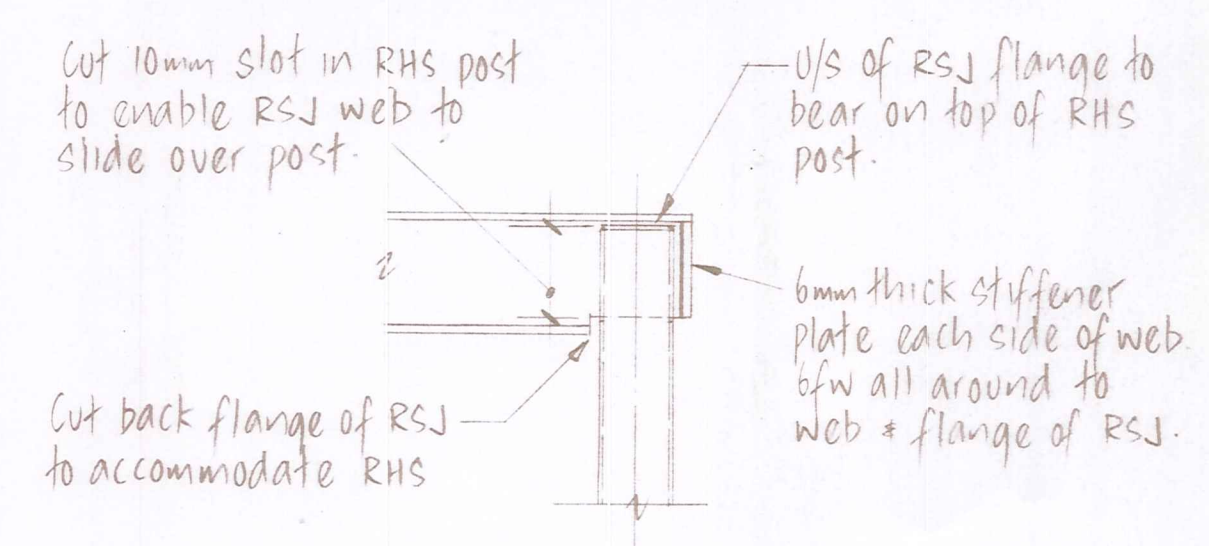


PLAN - SCREEN ACCESS WHARF  
1:100



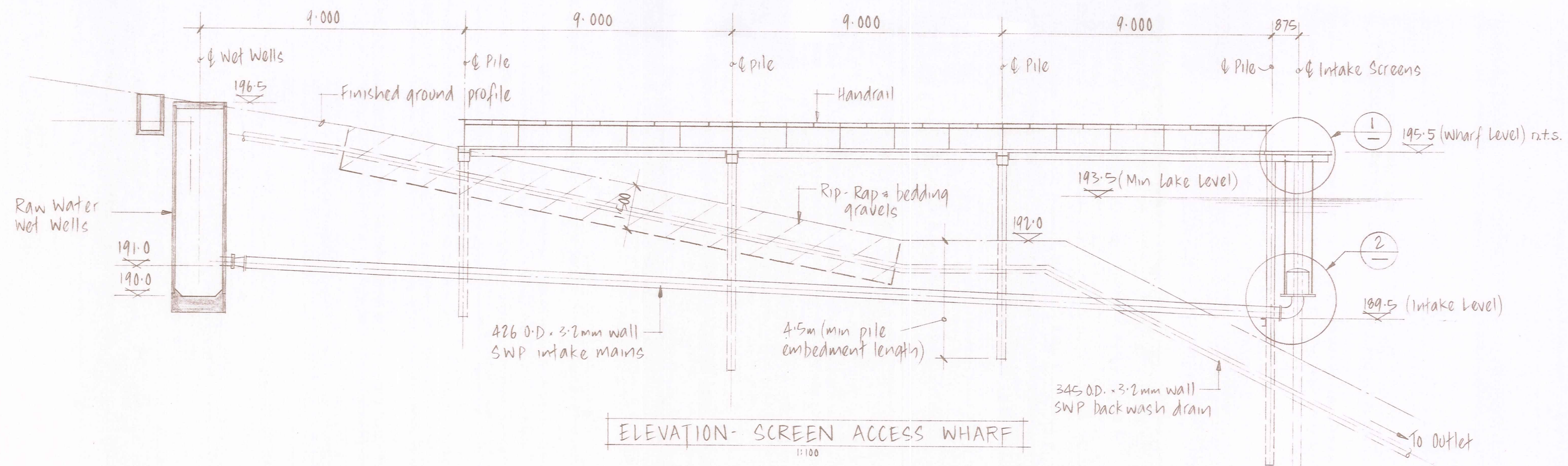
INTAKE SCREEN LIFTING FRAME  
1:50

NOTE: Frame members removable when not in use

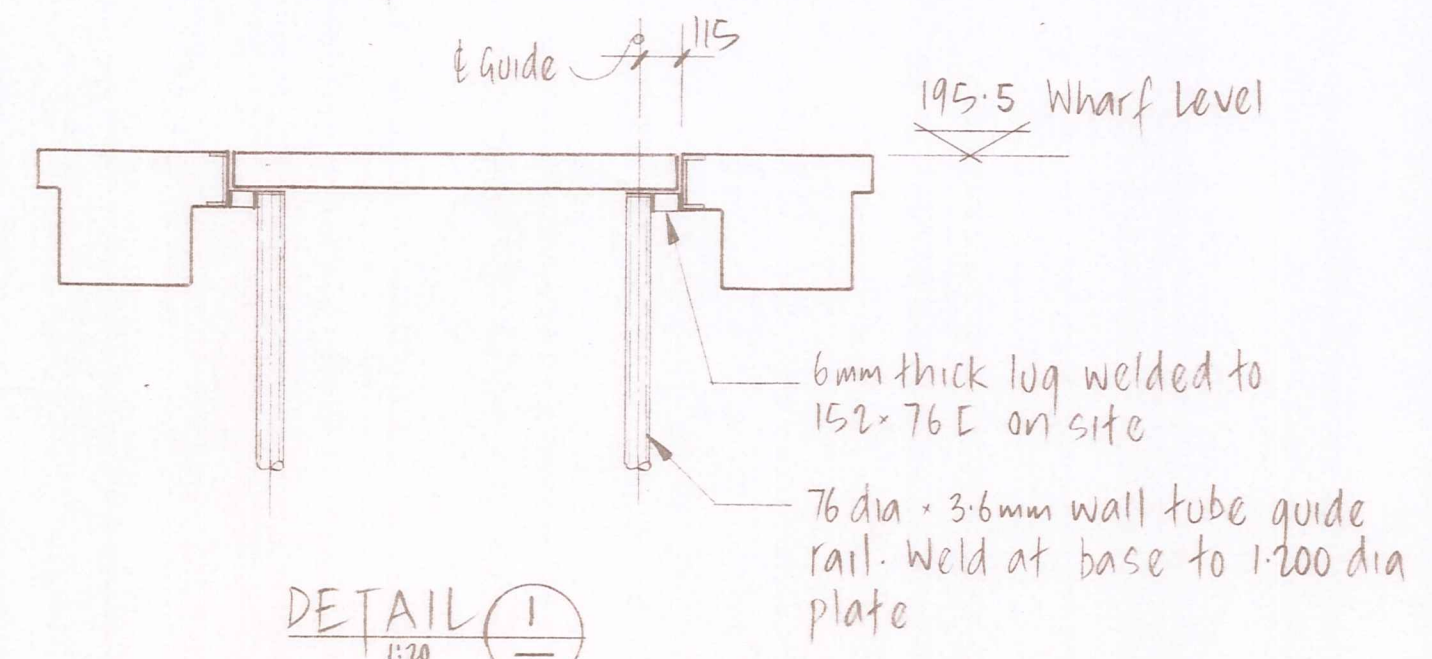


DETAIL 3  
1:10

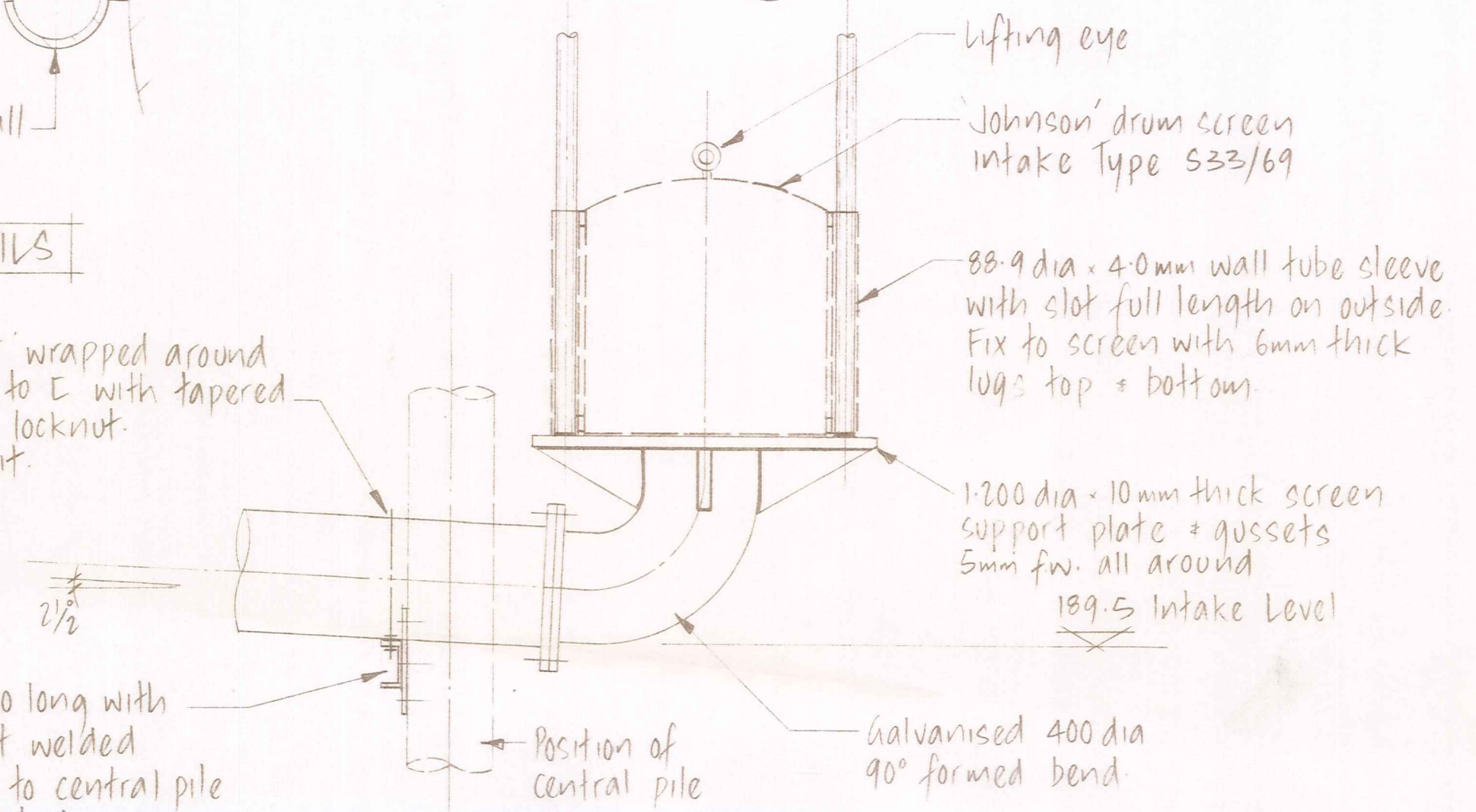
Note: All steelwork to be hot dipped galvanised after fabrication  
All welds to be 3mm fw all around unless otherwise shown



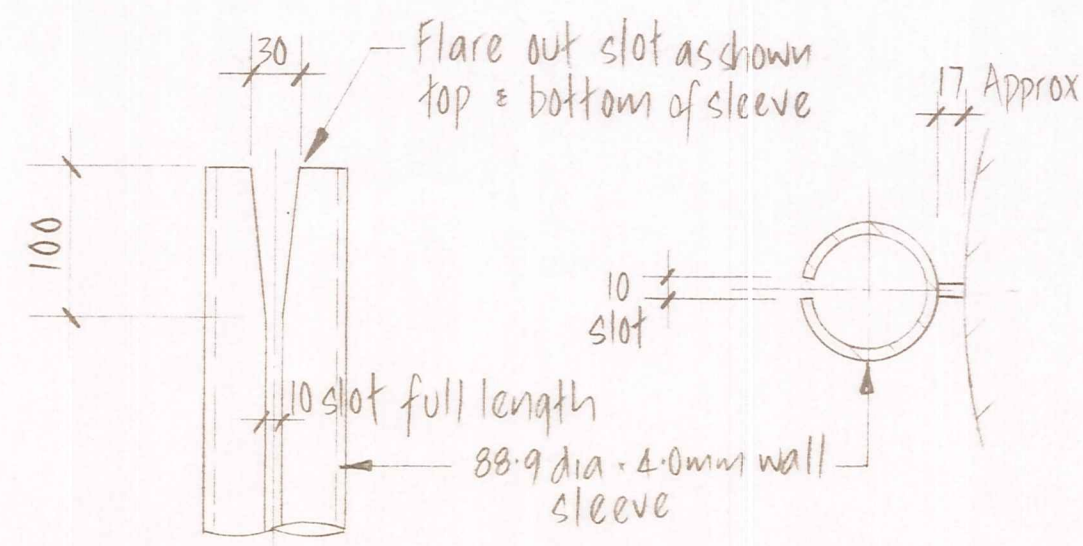
ELEVATION - SCREEN ACCESS WHARF  
1:100



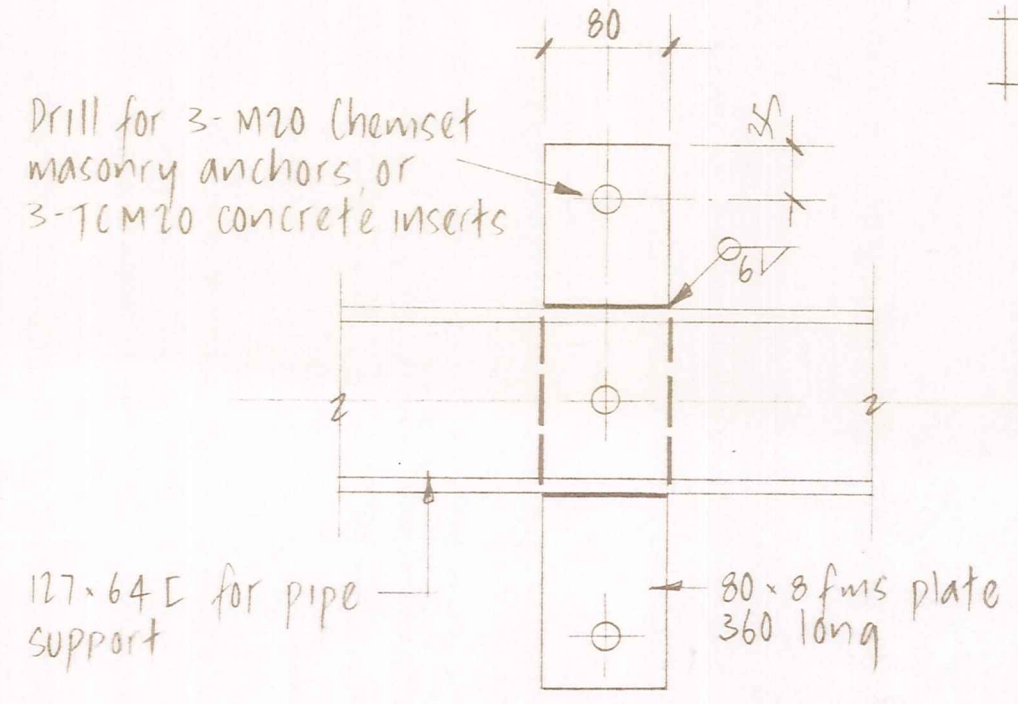
DETAIL 1  
1:20



DETAIL 2  
1:20



SLEEVE DETAILS  
1:5



PILE/E FIXING DETAIL  
1:5

No.	Revisions	Date	Appr
C	Weld size changed to 3mm	12/6/89	
B	Wharf level changed to 195.5	30/5/89	
A	Notes amended	21/4/89	

Designed R. VICKERS Date MAR 89 Print Date  
 Drawn J. KNOX " " " "  
 Checked A. GLOVER MAY 89  
 Approved [Signature] MAY 89  
 File 67/2/13/11 L.B.

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

Client  
**WORKS PROJECT SERVICES**  
 CLUTHA VALLEY  
 DEVELOPMENT

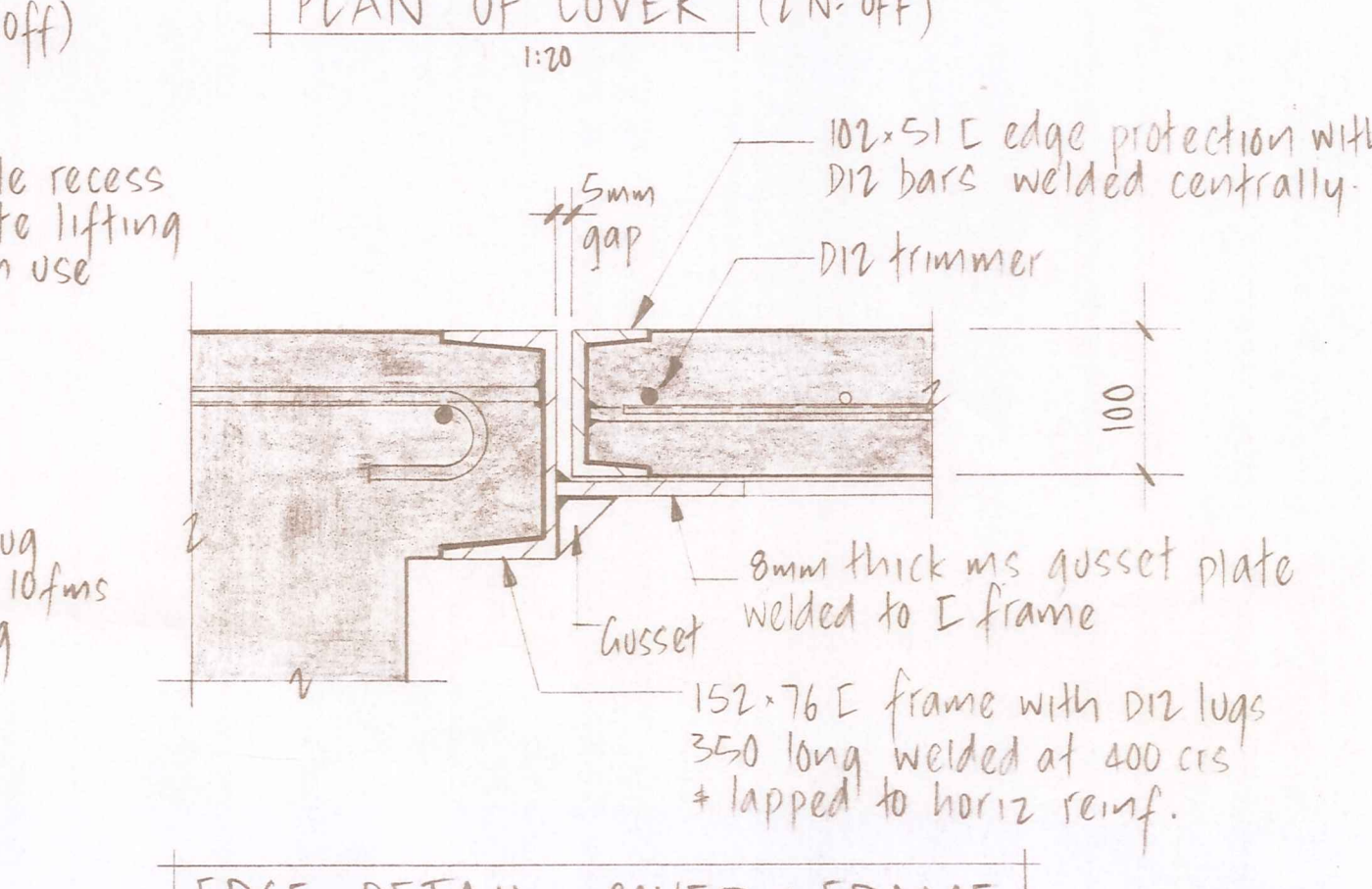
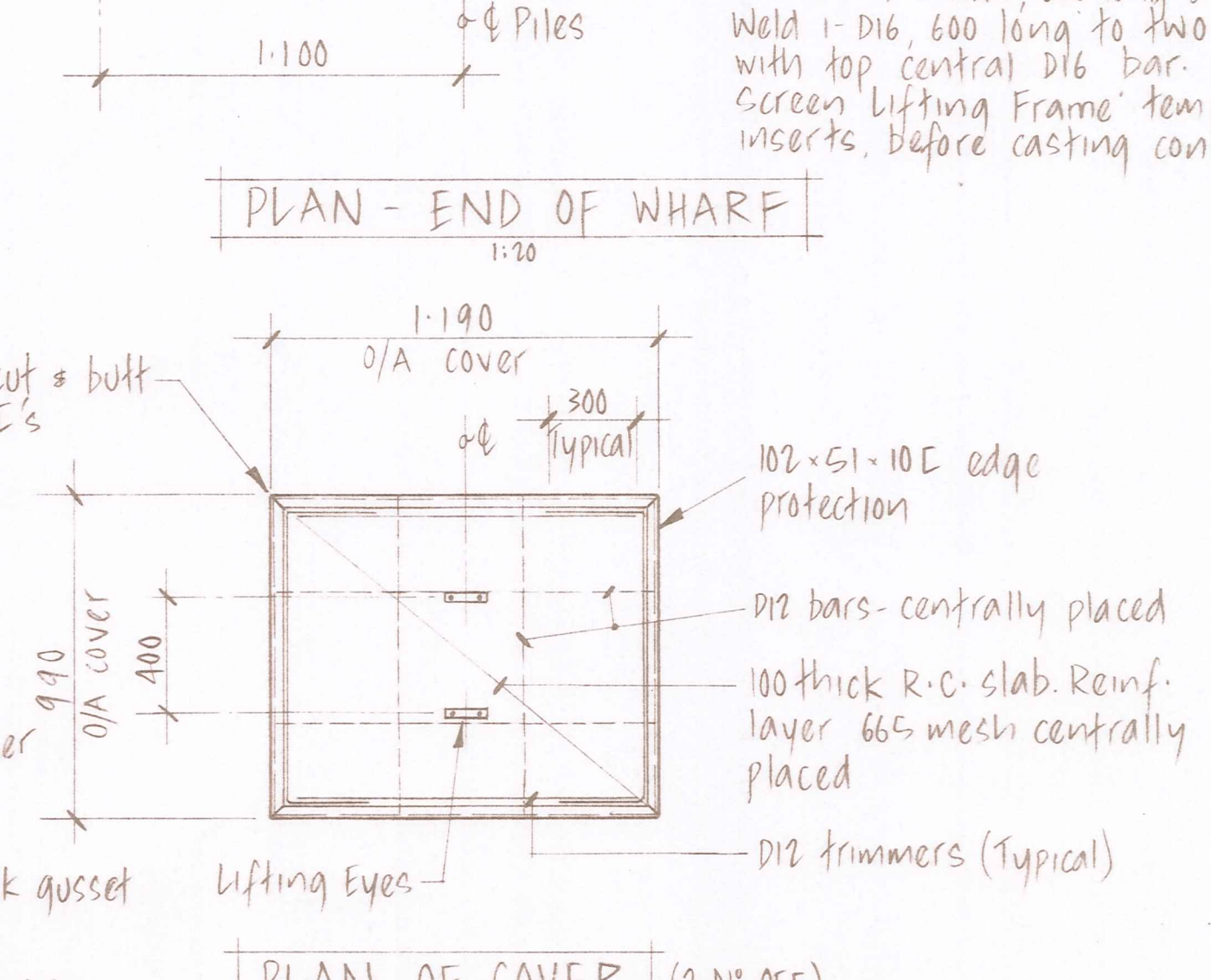
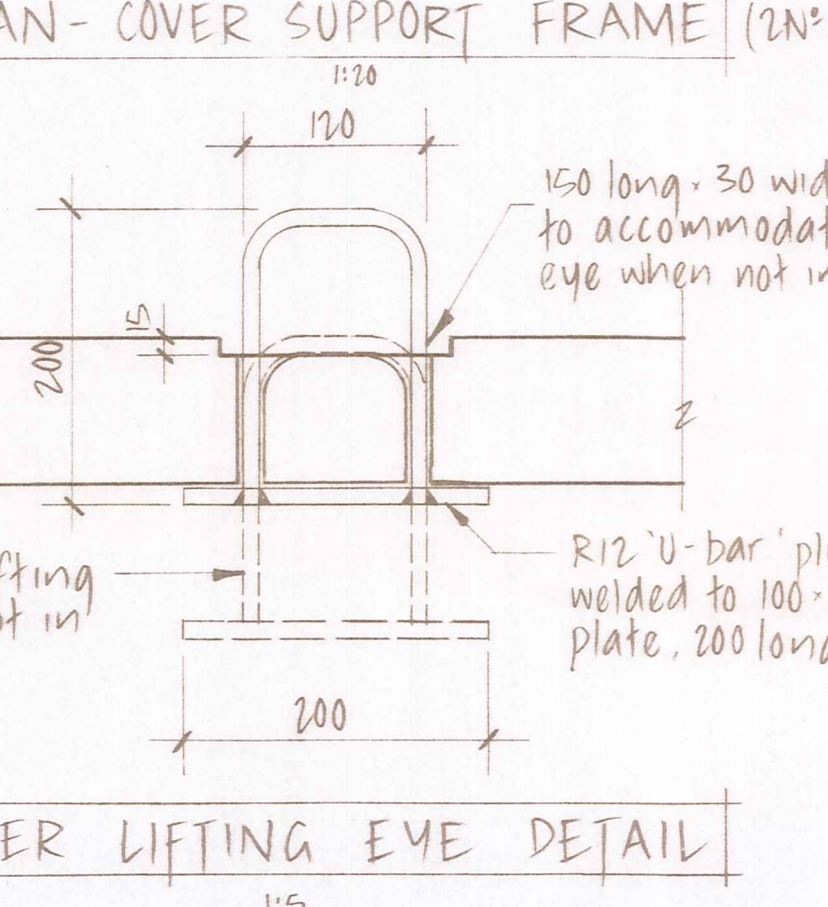
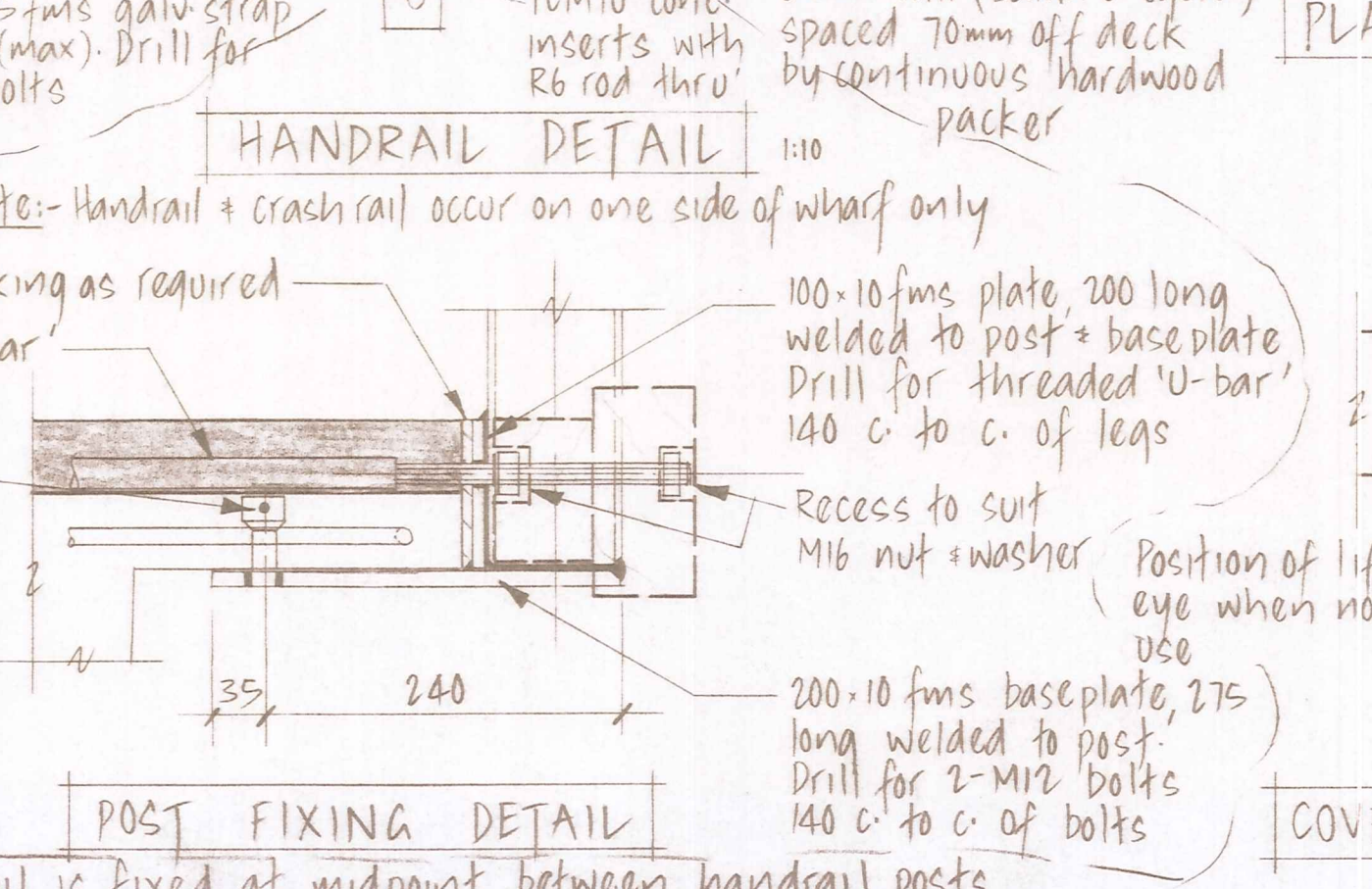
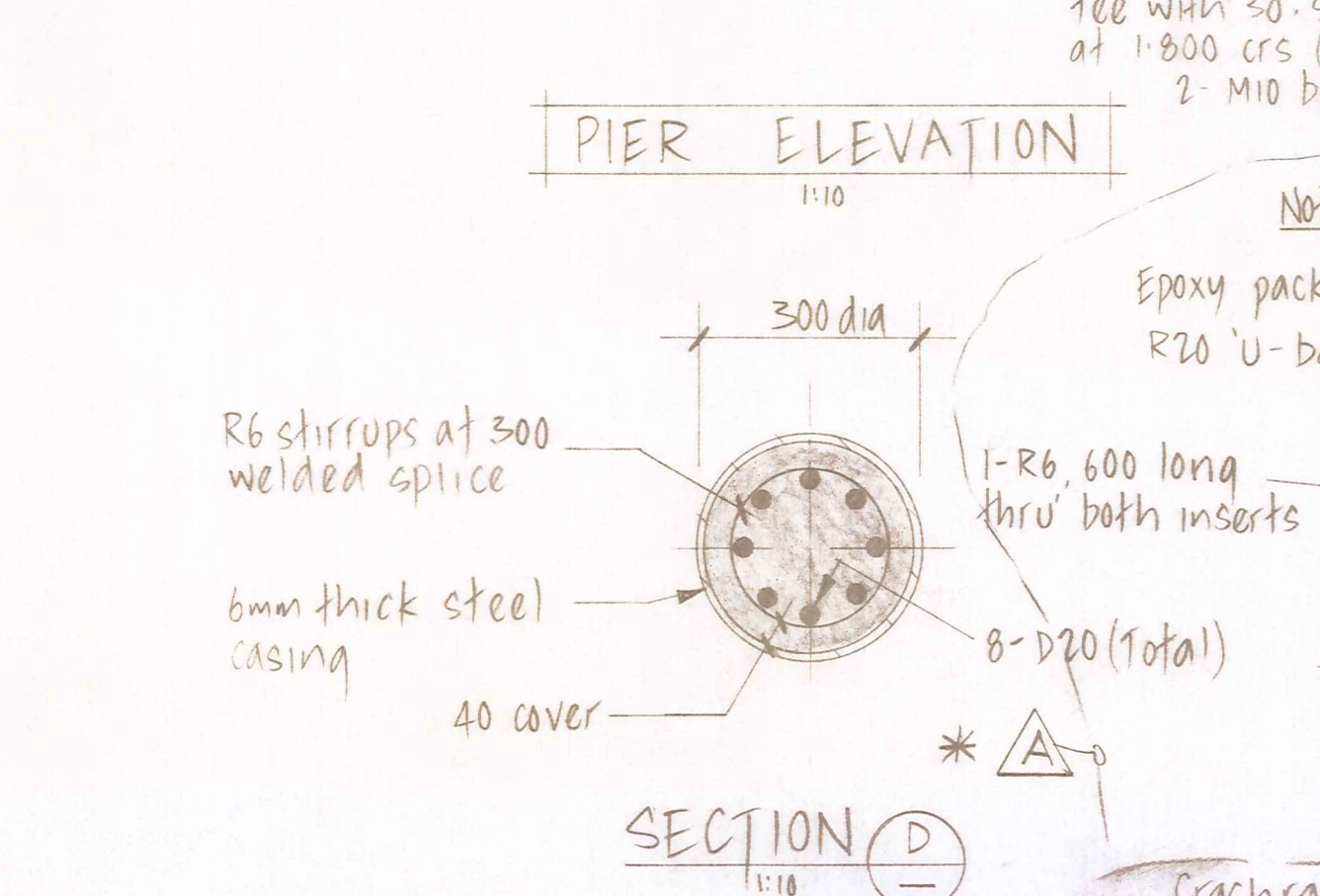
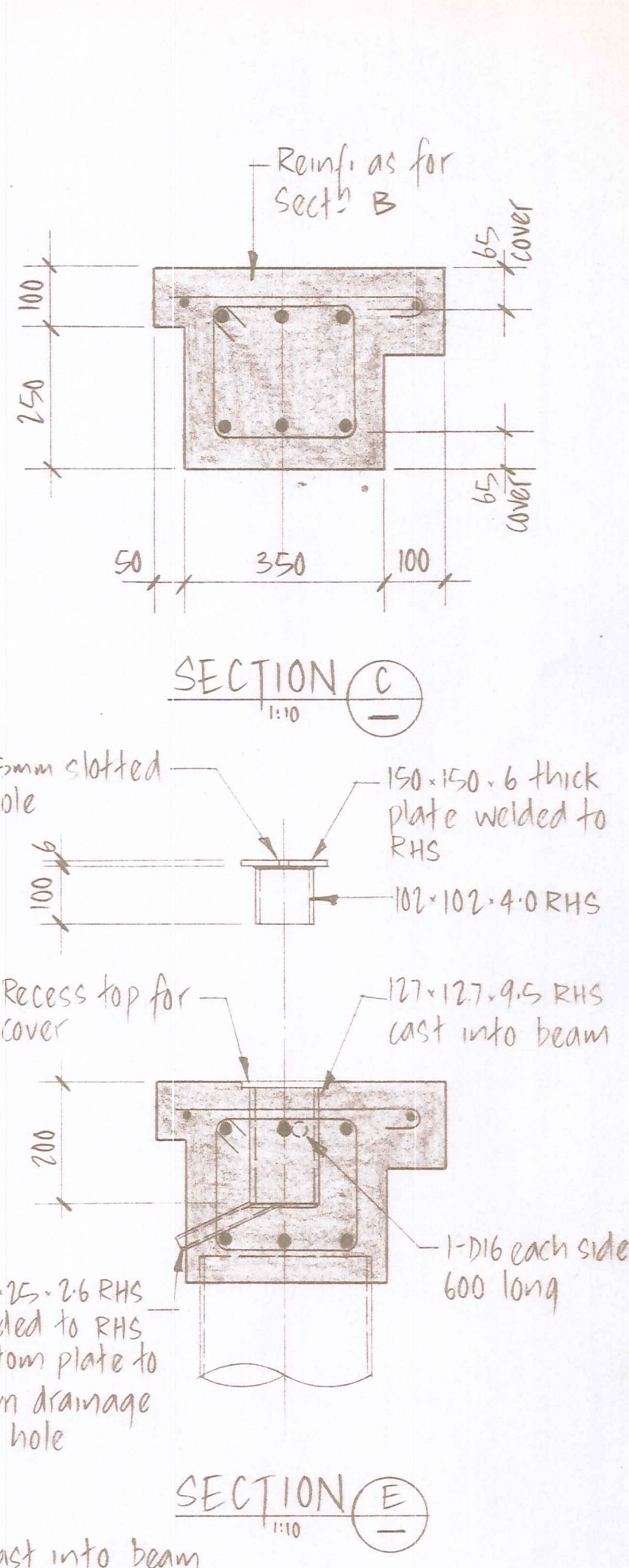
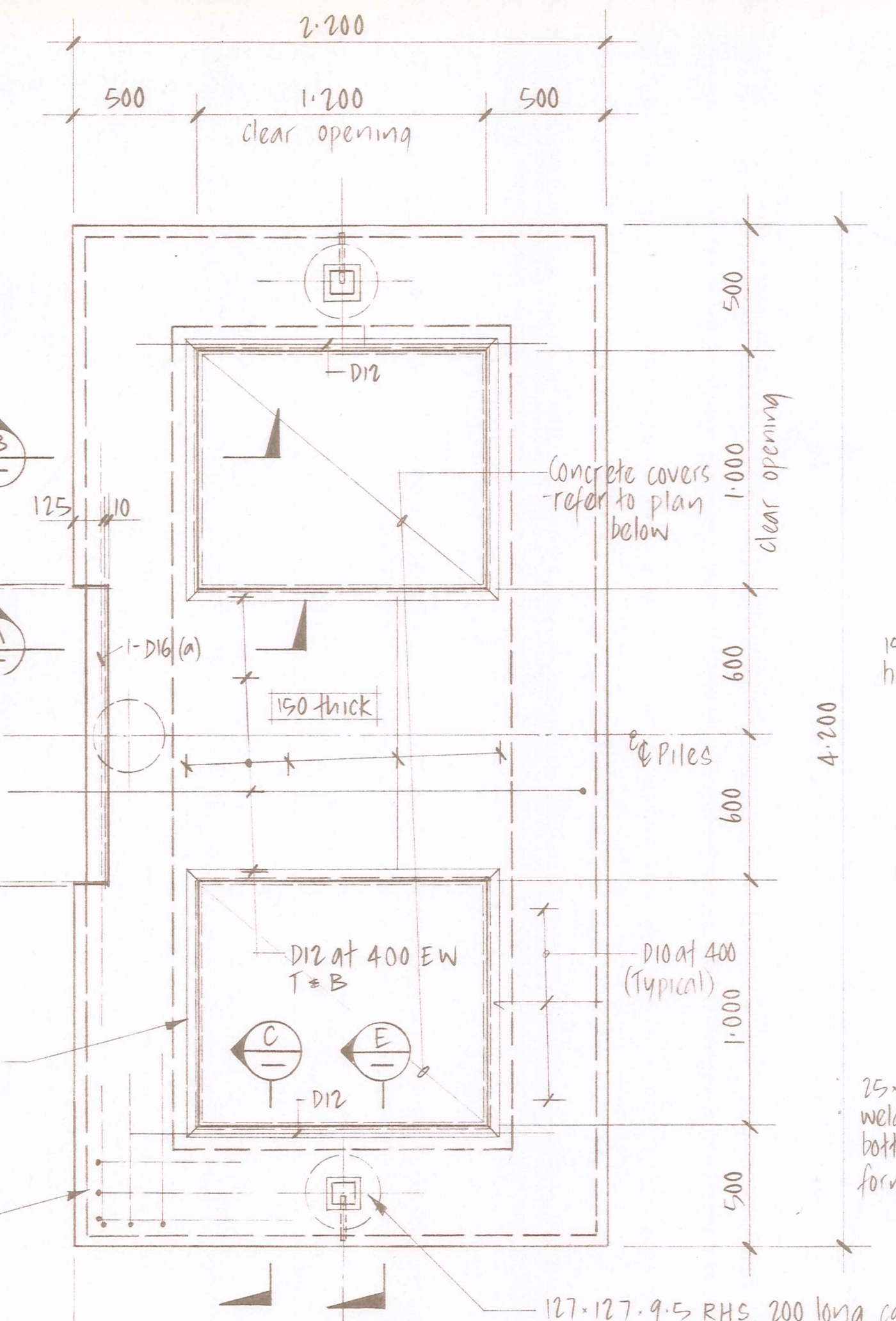
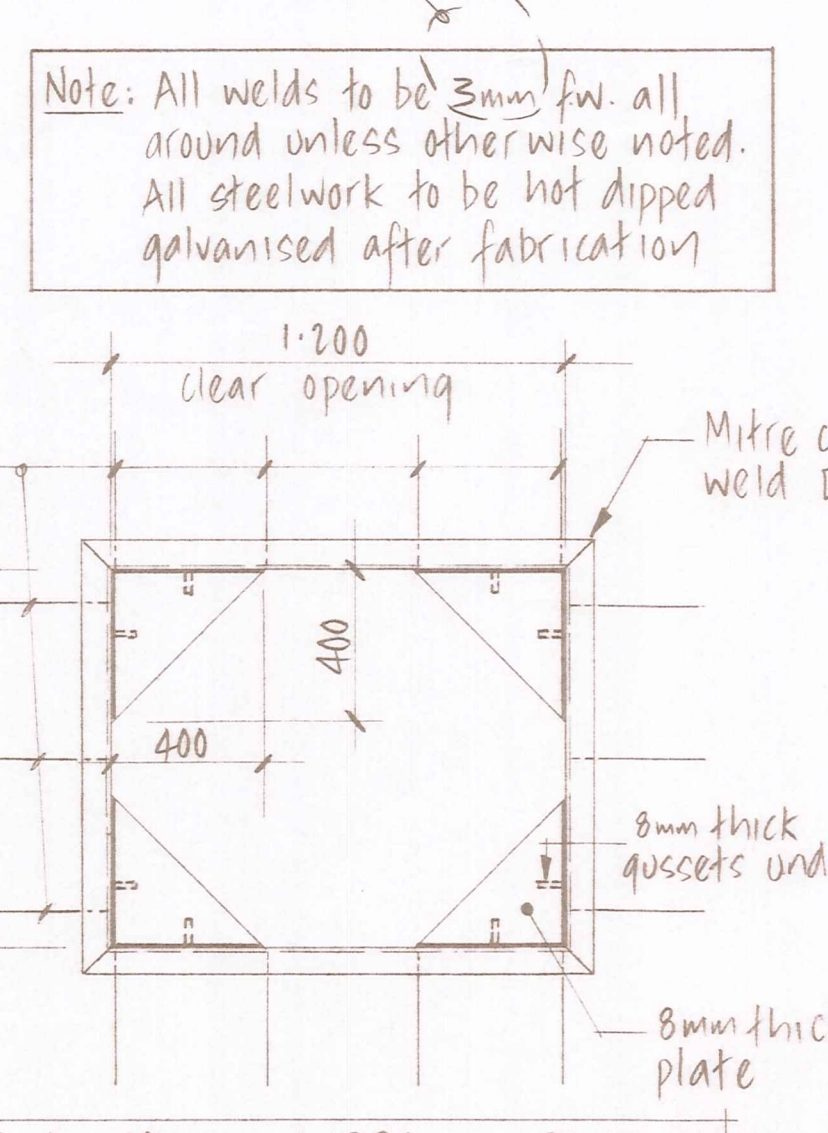
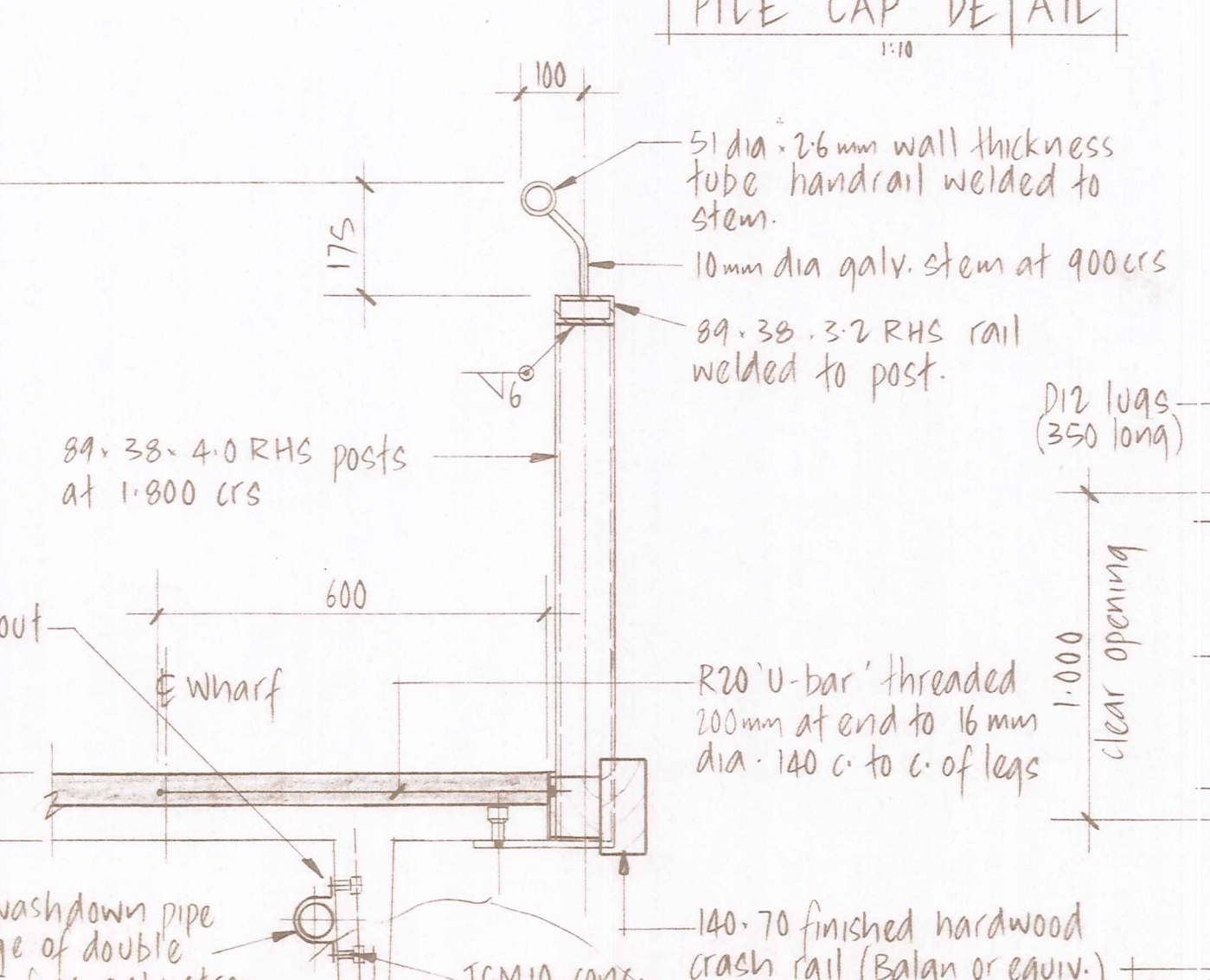
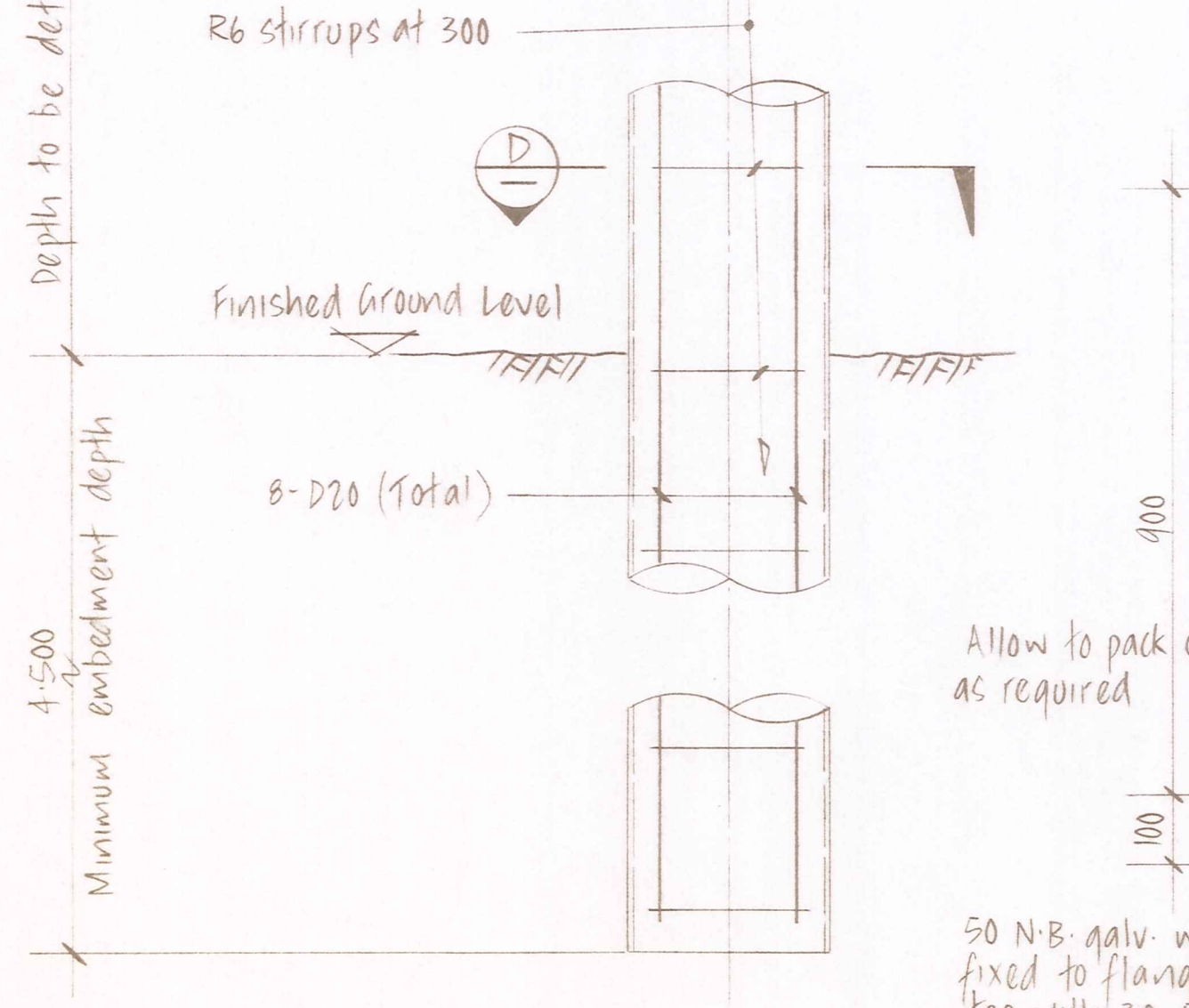
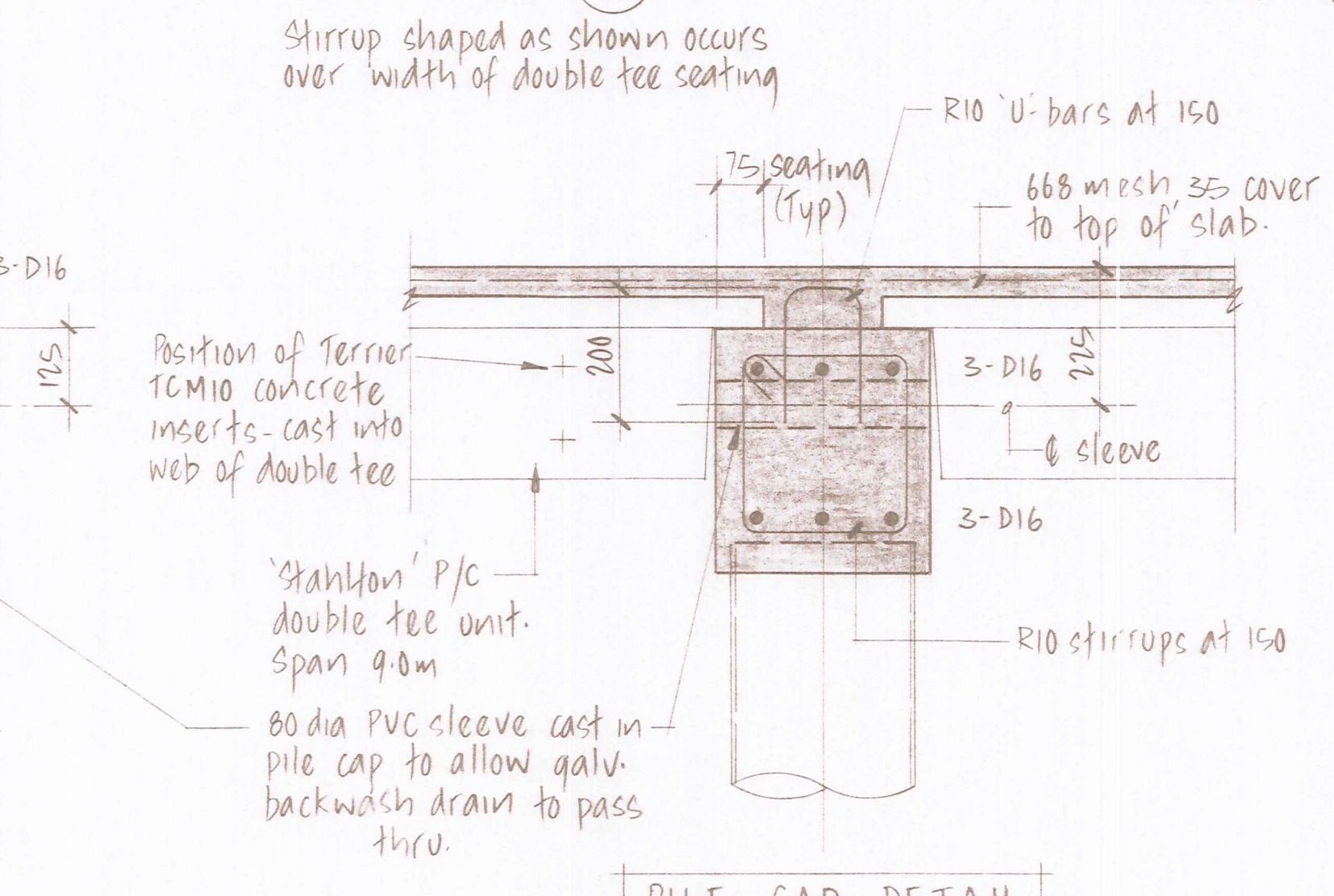
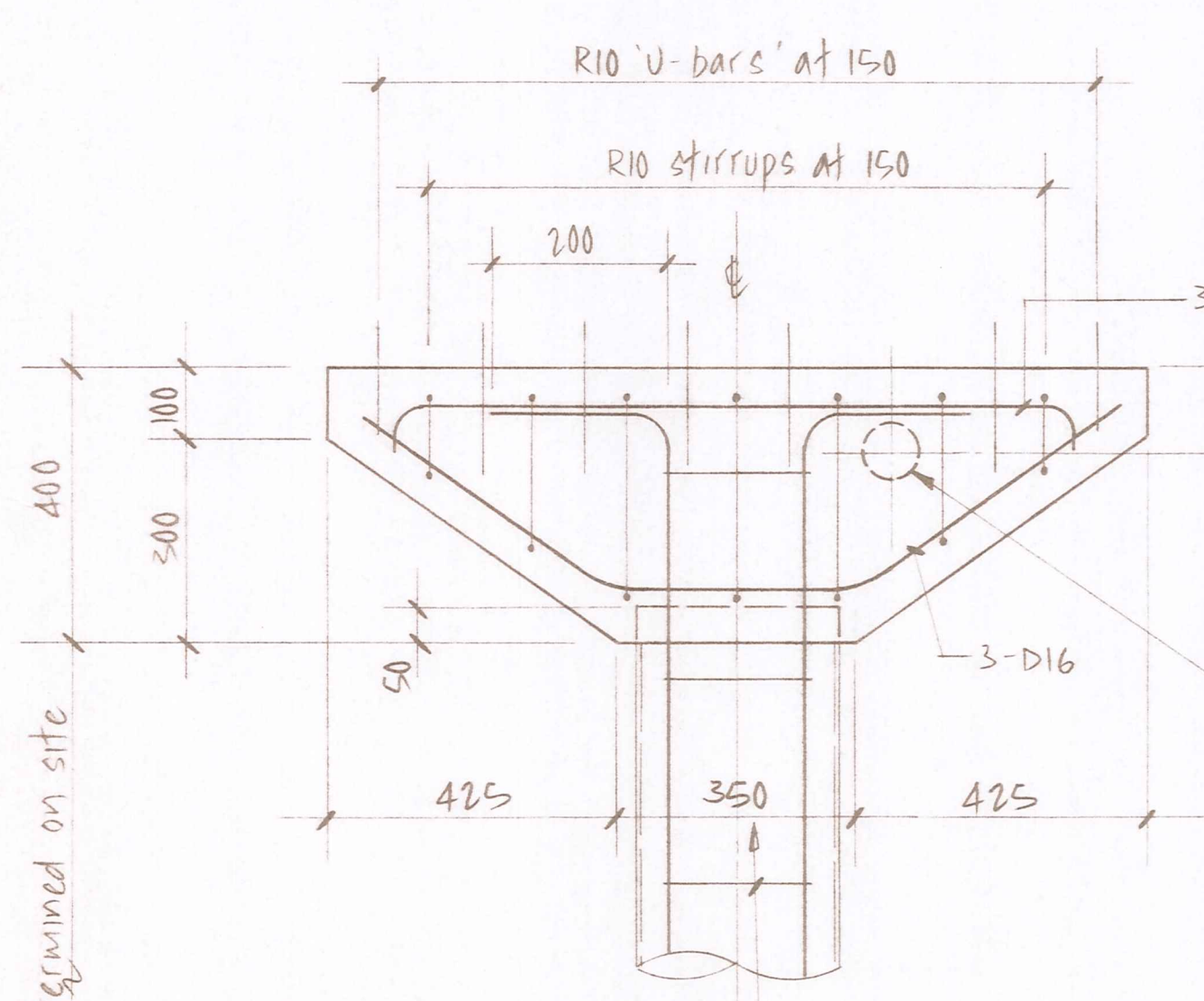
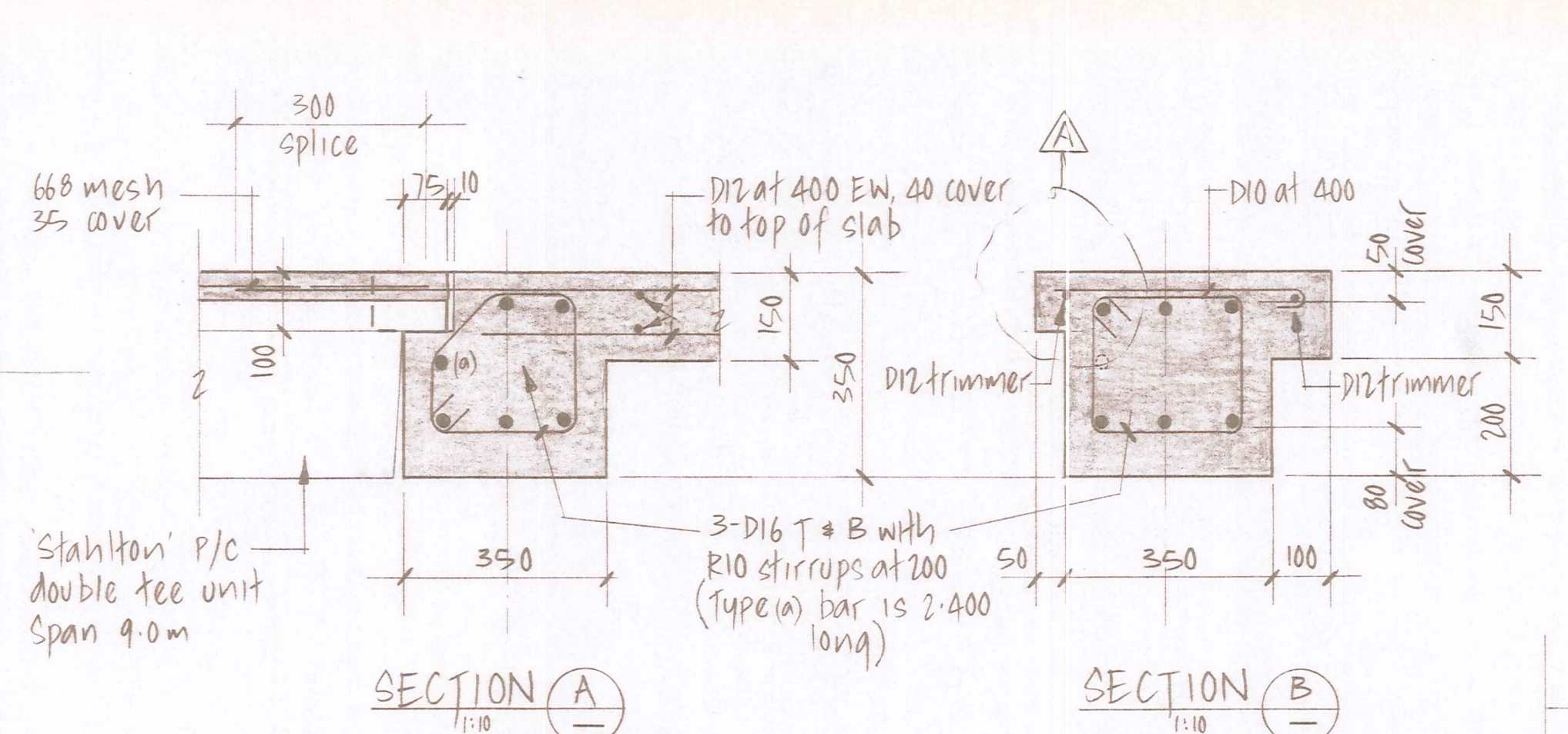
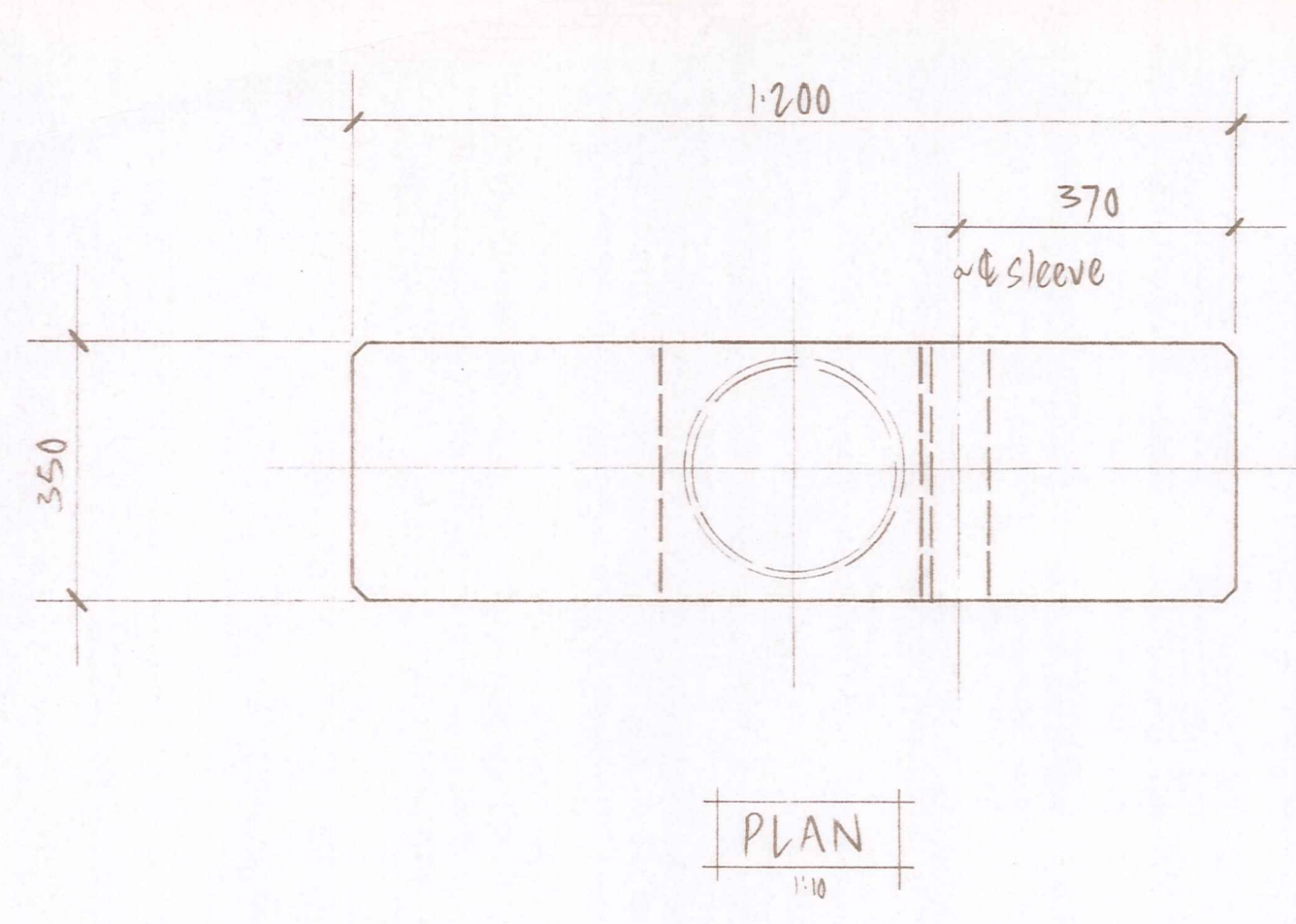
Project  
**LAKE WATER INTAKE**  
**FACILITIES FOR**  
**CROMWELL BOROUGH**

Sheet Title  
**SCREEN ACCESS WHARF**  
**INTAKE SCREEN & PIPEWORK**

Job No. 12276 Sheet No. S2 Revision C  
 of 2 sheets

ORIGINAL SIZE mm





No.	Revisions	Date	Apprv
	B Weld size changed to 3mm	12/6/89	
	A General revisions	21/4/89	
Designed	A. GLOVER	Date MAR 89	Print Date
Drawn	J. KNOX	" "	" "
Checked	J. GLOVER	MAY 89	30 MAR 1992
Approved	J. KNOX	MAY 89	
File	67/2/13/11	L.B.	

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

Client  
**WORKS PROJECT SERVICES**  
CLUTHA VALLEY  
DEVELOPMENT

Project  
**LAKE WATER INTAKE**  
FACILITIES FOR  
CROMWELL BOROUGH

Sheet Title  
**SCREEN ACCESS WHARF**  
CONCRETE WORK

Job No.	Sheet No.	Revision
12276	S3	B

ORIGINAL SIZE mm









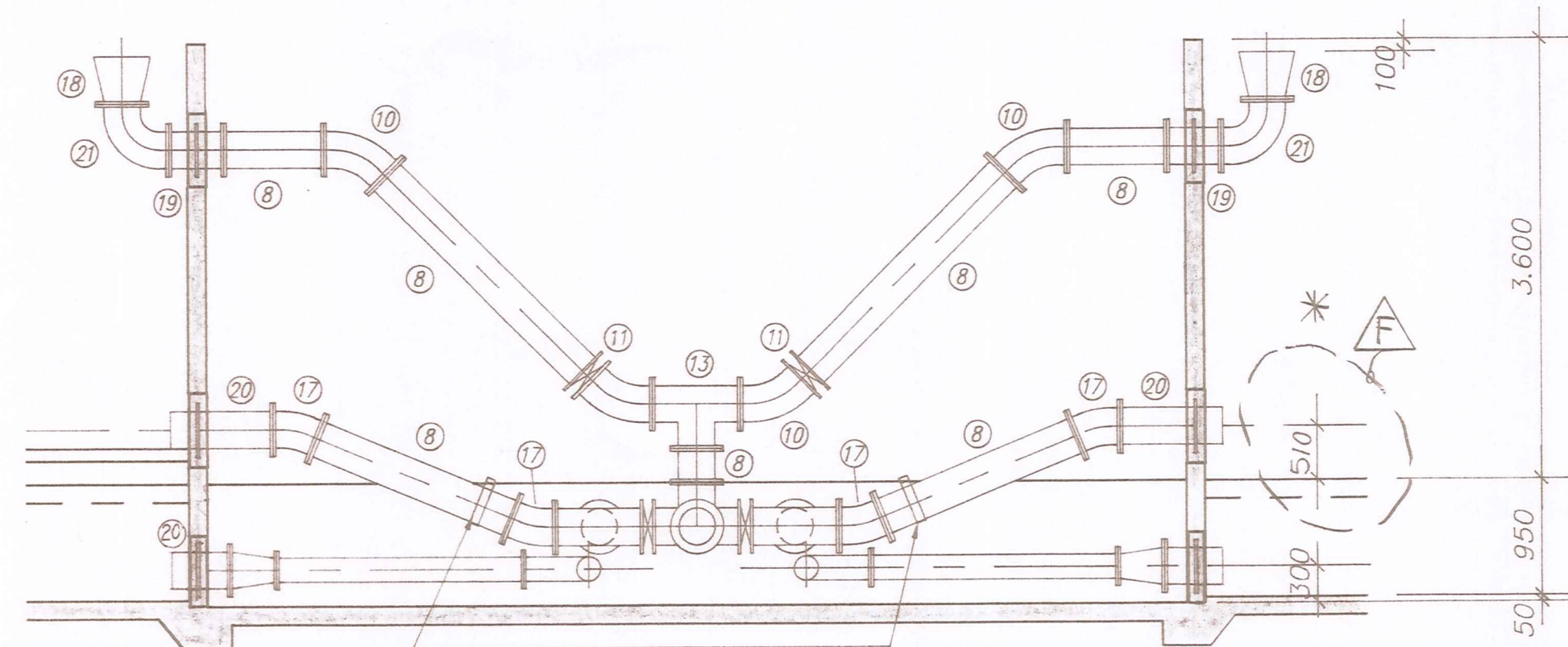






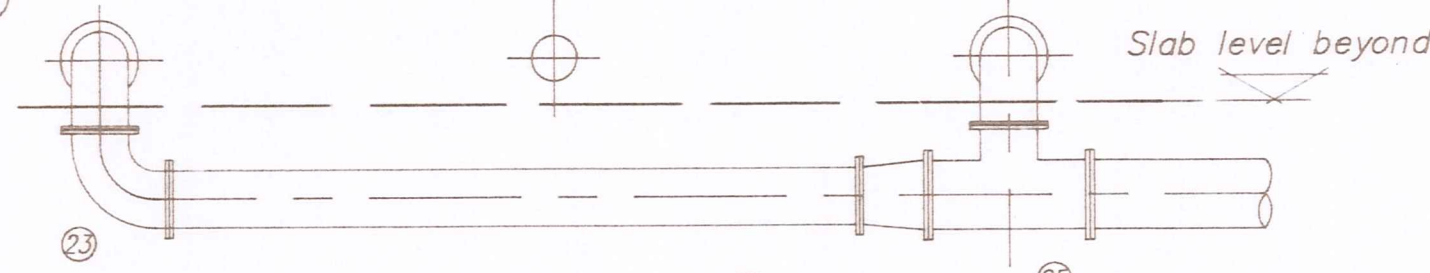




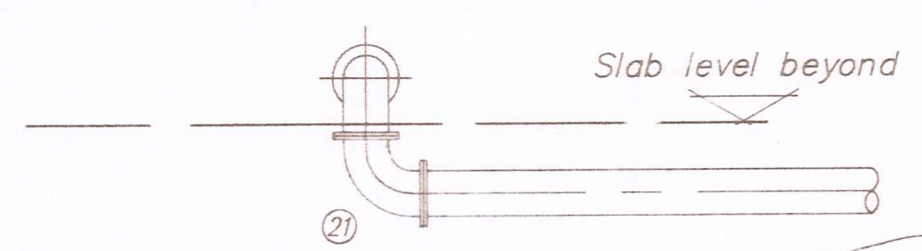


Tapping band for 20dia chlorinator injection line (2-No. required)

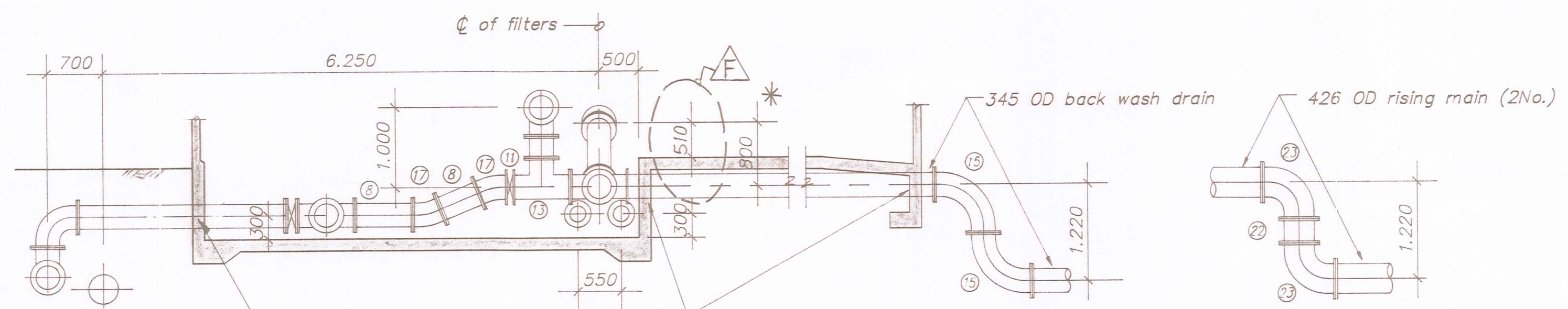
SECTION A  
1:50



SECTION B  
1:50



SECTION C  
1:50

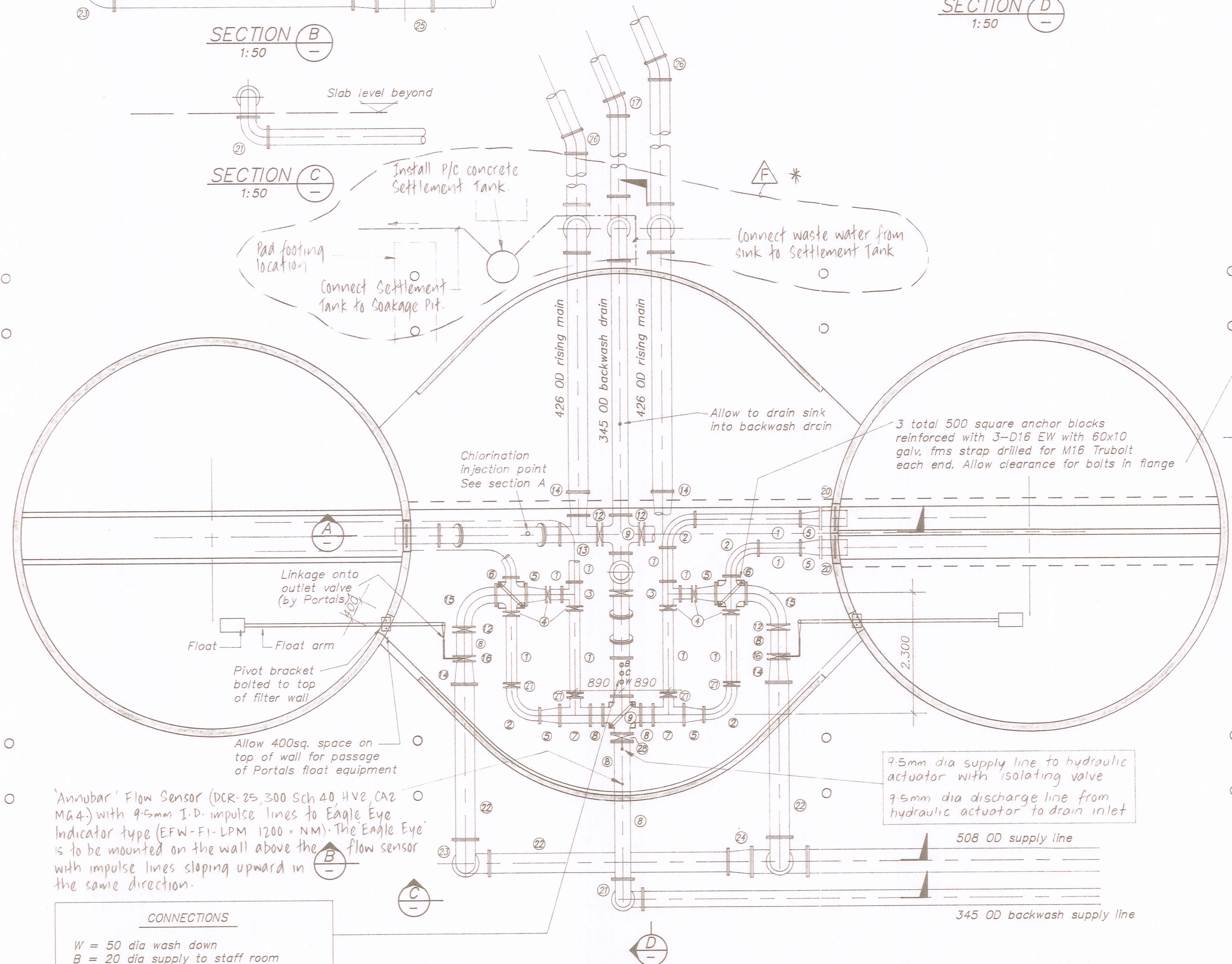


Allow to wrap all pipes in Denso tape where they pass through concrete walls to act as a bond breaker. This occurs unless pipe shown with puddle flange.

SECTION D  
1:50

ITEM	No. OFF	DESCRIPTION
1	12	200 dia flanged straight - length to suit
2	6	200 dia flanged 90° bend
3	2	200 on 200 flanged Tee
4	6	200 dia Wafer butterfly valve with electronic actuator
5	8	200 - 300 flanged reducer
6	2	200 on 300 unequal flanged cross
7	2	200 on 300 flanged Tee
8	15	300 dia flanged straight - length to suit
9	2	300 on 300 equal flanged cross
10	4	300 dia flanged 45° bend
11	3	300 dia Wafer butterfly valve - manually operated
12	4	300 dia Wafer butterfly valve with electronic actuator
13	4	300 on 300 flanged Tee
14	4	300 - 375 flanged reducer
15	4	300 dia flanged 90° bend
16	2	300 dia wing valve
17	7	300 dia flanged 22.5° bend
18	2	300 dia flanged Bellmouth
19	2	300 dia flanged straight with puddle flange
20	6	300 dia flanged one end only straight with puddle flange
21	4	300 dia flanged 90° short bend
22	5	375 dia flanged straight - length to suit
23	7	375 dia flanged 90° short bend
24	1	375 - 450 flanged reducer
25	1	375 on 450 flanged Tee
26	2	375 dia flanged 22.5° bend
27	4	200 dia Wafer butterfly valve
28	1	300 dia Wafer butterfly valve with hyd. actuator with solenoid valve

SCHEDULE OF C I PIPEWORK

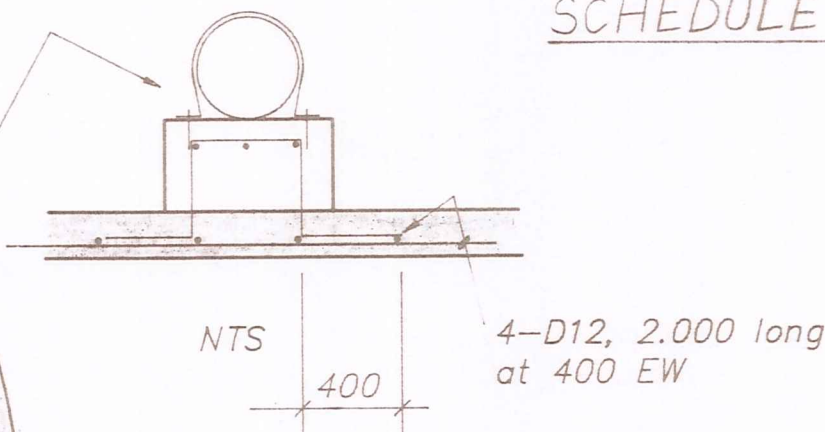


'Annubar' Flow Sensor (DCR-25,300 Sch 40 HVE CA2 M44) with 9.5mm I.D. impulse lines to Eagle Eye Indicator type (EFW-F1-LPM 1200 - NM). The Eagle Eye is to be mounted on the wall above the flow sensor with impulse lines sloping upward in the same direction.

**CONNECTIONS**

- W = 50 dia wash down
- B = 20 dia supply to staff room
- C = 20 dia chlorination pressure supply (Tapping bands required for each or tapping buttons cast on)

PIPEWORK LAYOUT PLAN  
1:50



NTS  
400  
4-D12, 2,000 long at 400 EW

No.	Revisions	Date	Appvd
E	Item 20 + 27 revised	Sept 89	
D	Flow Sensor added	Aug 89	
C	Wafer Butterfly valves added	July 89	
B	Float equipment located	June 89	
A	Waste water system added	Dec 88	

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Dunedin Invercargill Alexandra Queenstown

Client  
**WORKS PROJECT SERVICES**  
CLUTHA VALLEY  
DEVELOPMENT

Project  
**LAKE WATER INTAKE**  
FACILITIES FOR  
CROMWELL BOROUGH

Sheet Title  
**PIPEWORK LAYOUT**

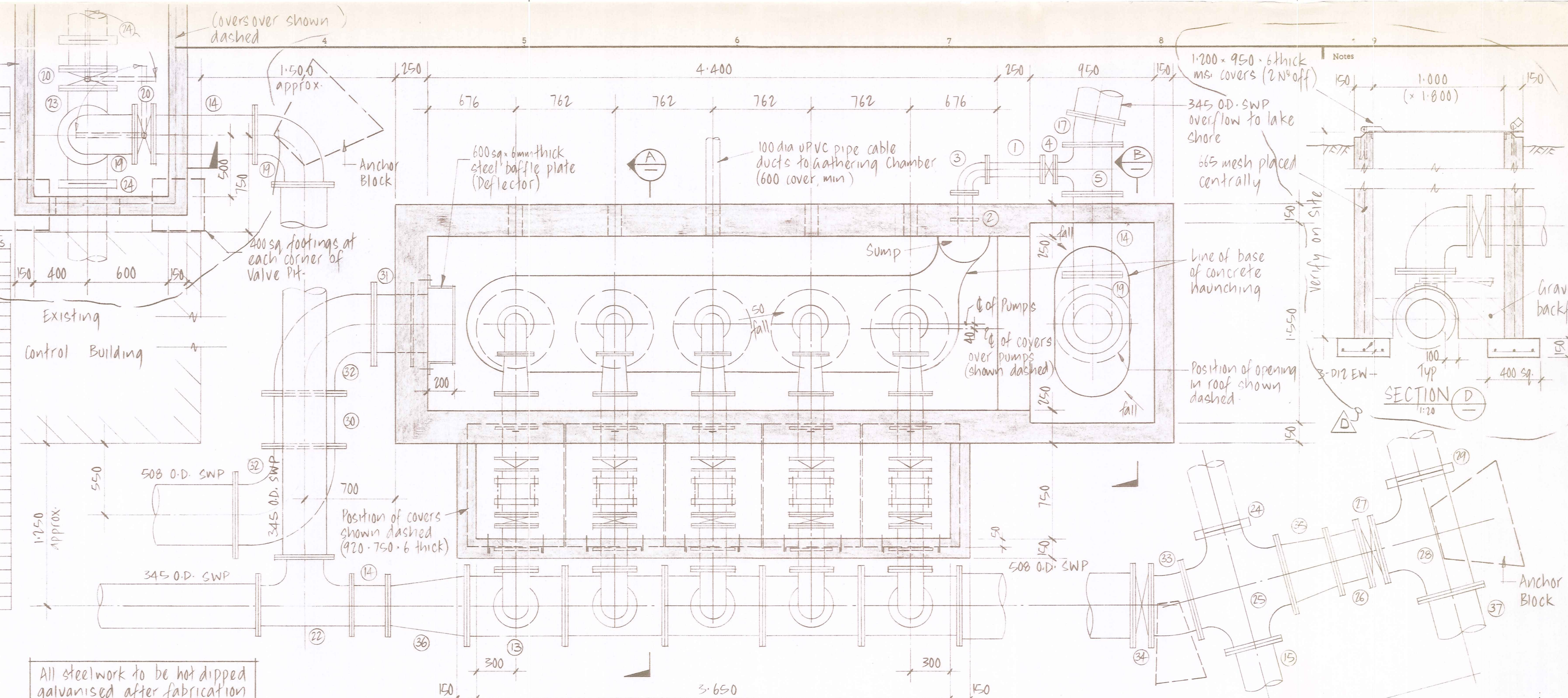
Job No.	Sheet No.	Revision
12276	S8	F



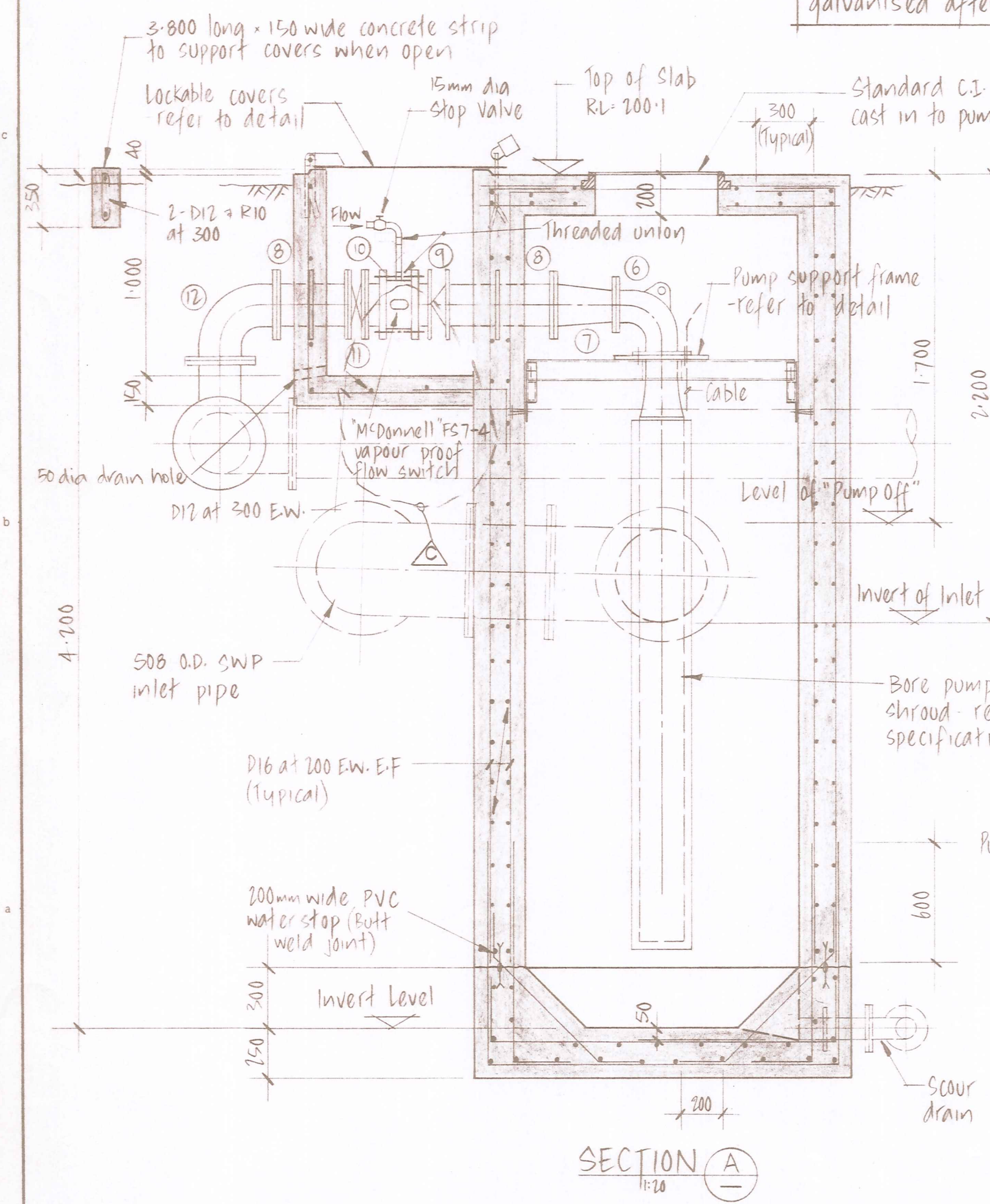
ITEM	No. OFF	DESCRIPTION
1	1	100 dia flanged straight-length to suit
2	1	100 dia straight-flanged one end with puddle flange
3	1	100 dia flanged 90° short bend
4	1	100 dia wafer butterfly valve
5	1	100 on 300 flanged Tee
6	5	150 dia flanged 90° short bend
7	5	200-150 flanged reducer
8	10	200 dia flanged straight with puddle flange
9	5	200 dia wafer swing check valve
10	5	200 dia elongated gibault joint-tapped to suit fittings
11	5	200 dia wafer butterfly valve
12	5	200 dia flanged 90° short bend
13	5	200 on 450 flanged Tee
14	3	300 dia flanged straight-length to suit
15	1	300 dia flanged straight-4.0m long
16	1	300 dia flanged straight with puddle flange
17	1	300 dia flanged 11.25° bend
18	1	300 dia straight-flanged one end
19	3	300 dia flanged 90° short bend
20	2	300 dia wafer butterfly valve
21	1	300 dia flanged Bellmouth
22	1	300 on 300 flanged Tee
23	1	300 on 300 Tee-flanged one end and branch
24	4	300 dia gibault joint
25	1	300 on 450 Cross-flanged each end and one branch
26	1	375 dia flanged straight-length to suit
27	1	375 dia wafer butterfly valve
28	1	375 on 375 Tee-flanged one end and branch
29	2	375 dia gibault joint
30	1	450 dia flanged straight-length to suit
31	1	450 dia straight-flanged one end with puddle flange
32	2	450 dia flanged 90° short bend
33	1	450 dia flanged 11.25° bend
34	1	450 dia wafer butterfly valve
35	1	450-375 flanged reducer
36	1	450-300 flanged reducer
37	1	375 dia flanged straight-4.0m long

**SCHEDULE OF C.I. PIPEWORK**

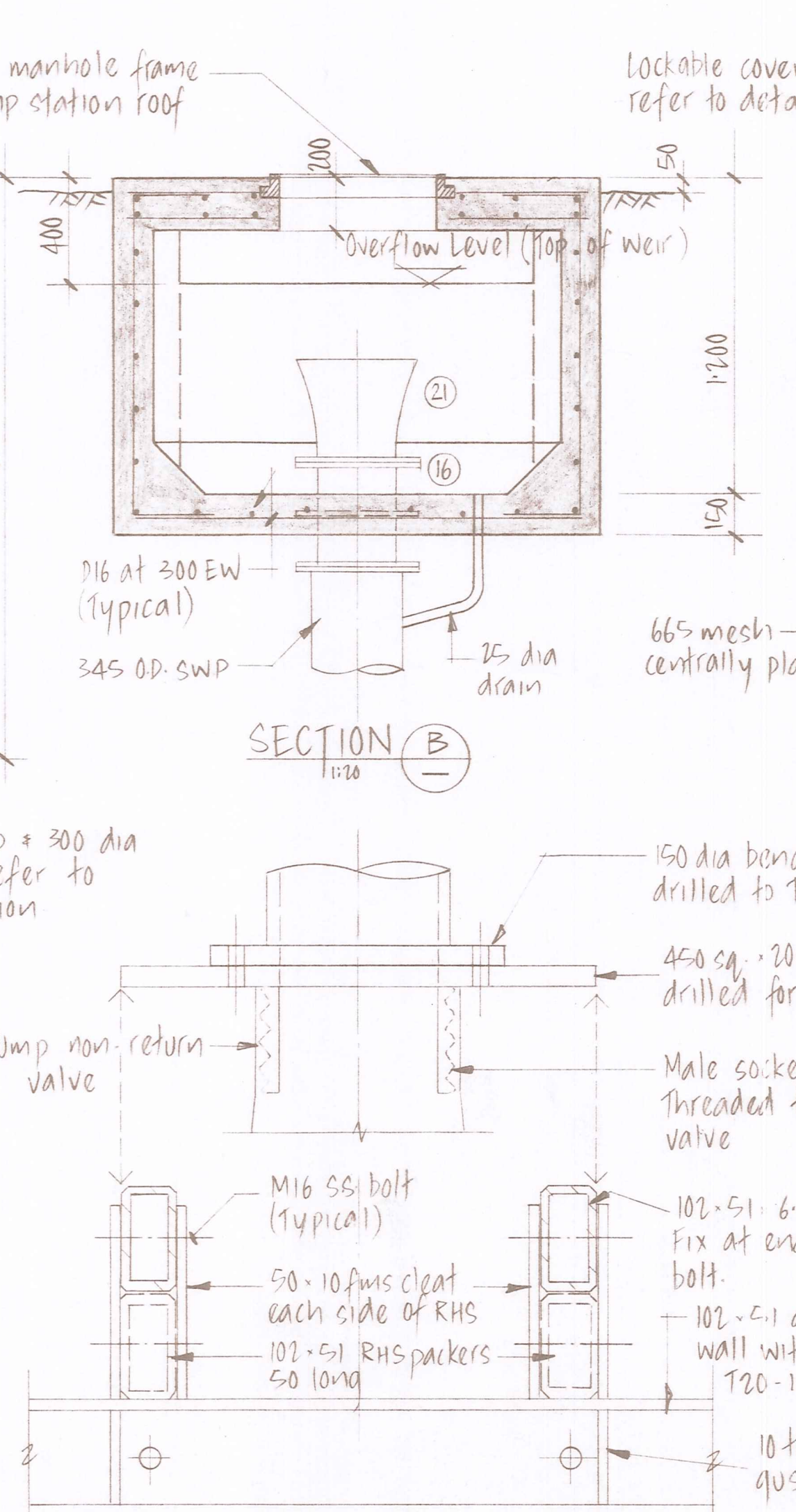
All steelwork to be hot dipped galvanised after fabrication



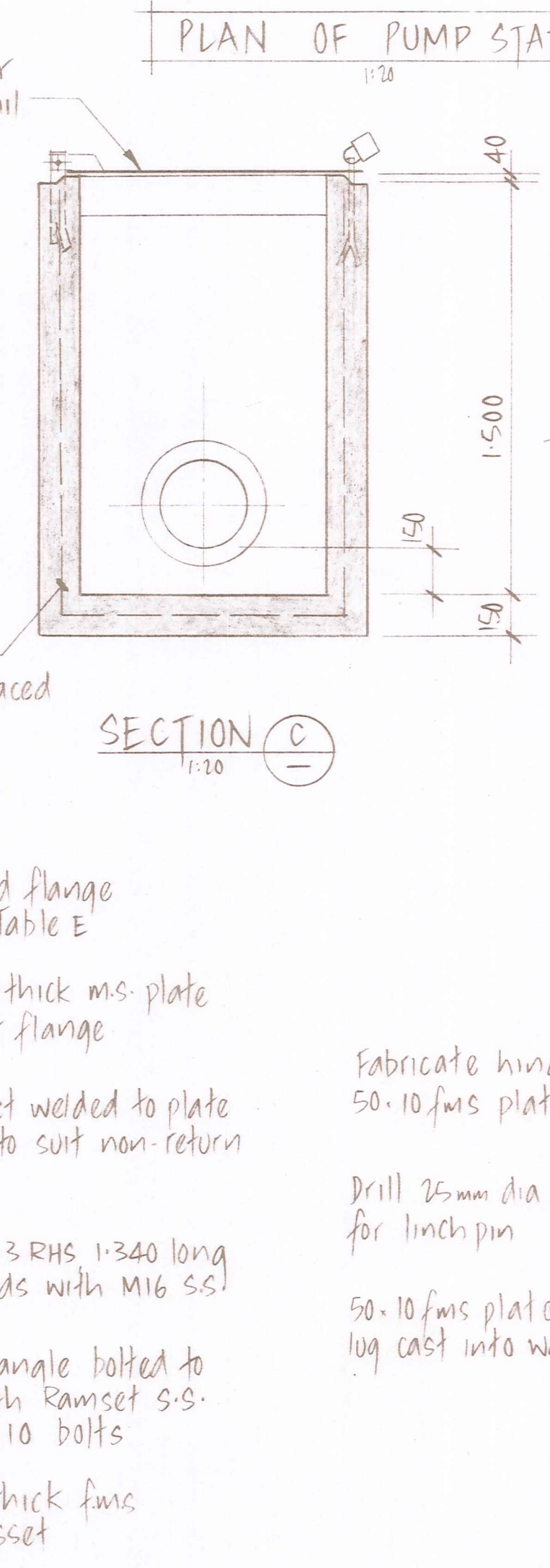
**PLAN OF PUMP STATION**



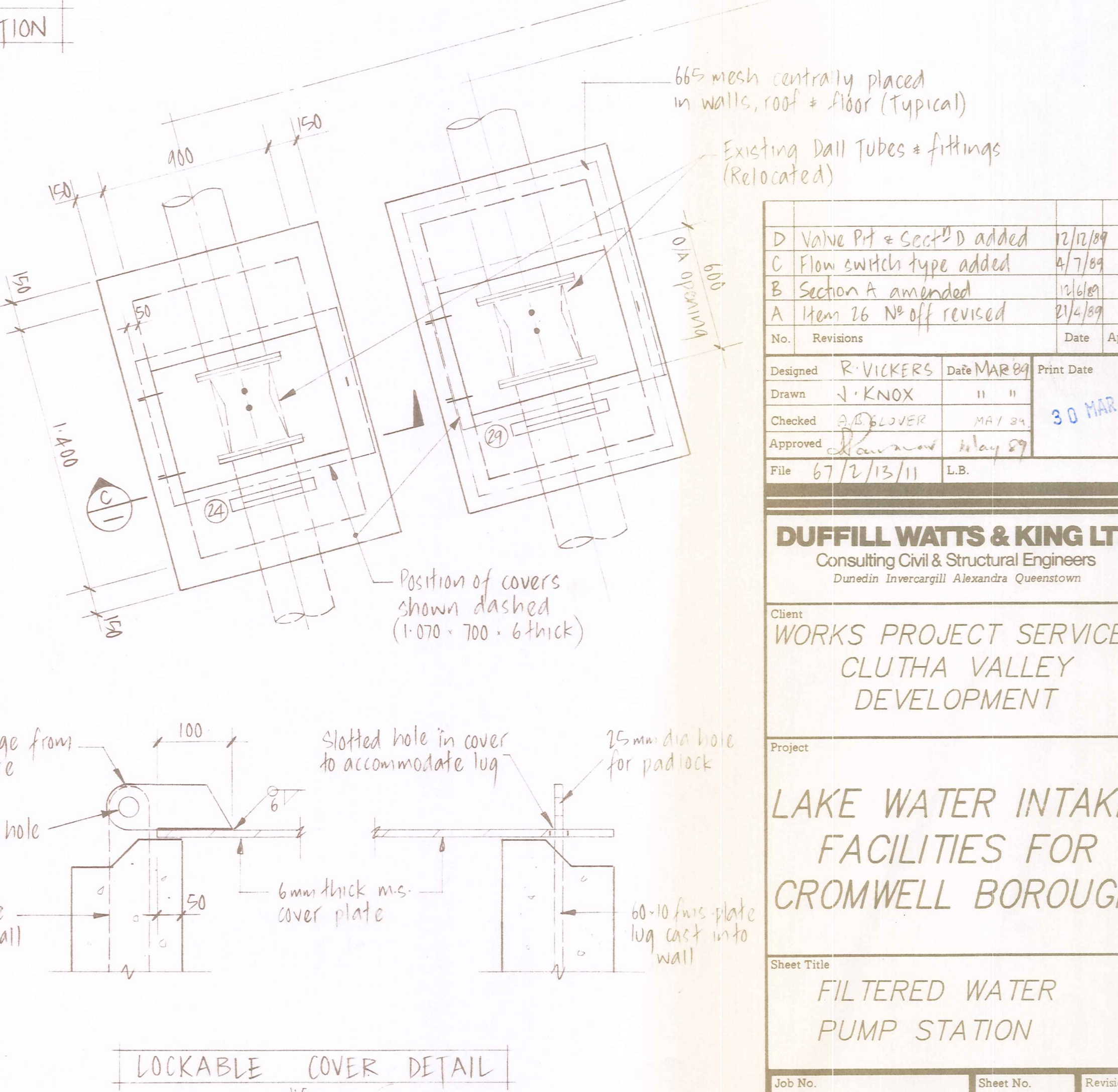
**SECTION A**



**SECTION B**



**SECTION C**



**LOCKABLE COVER DETAIL**

Note: Allow to grind off corners of covers

No.	Revisions	Date	Appd
D	Valve Pit = Sect D added	12/12/09	
C	Flow switch type added	4/7/09	
B	Section A amended	12/01/09	
A	Item 26 No off revised	21/4/09	

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Dunedin Invercargill Alexandra Queenstown

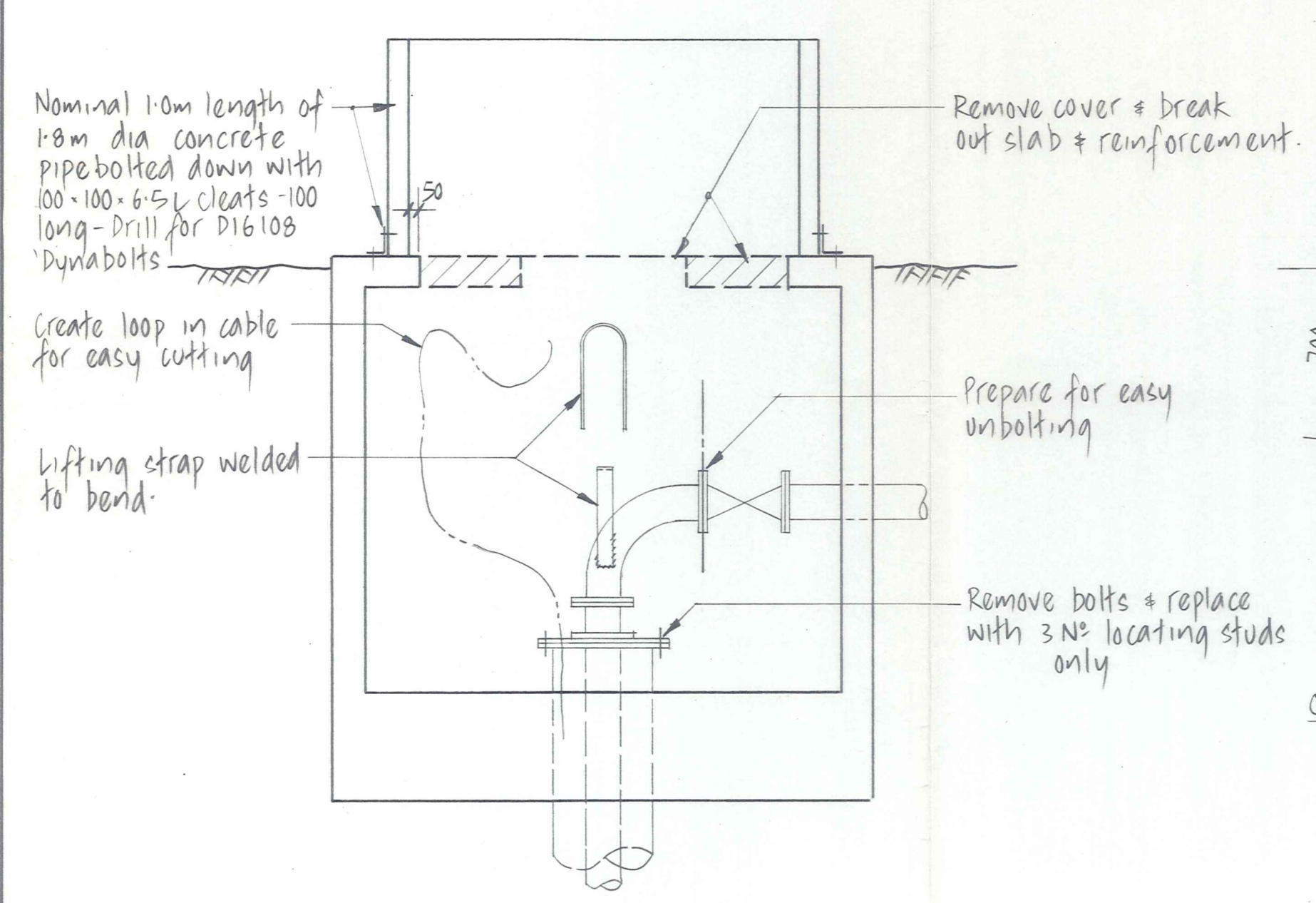
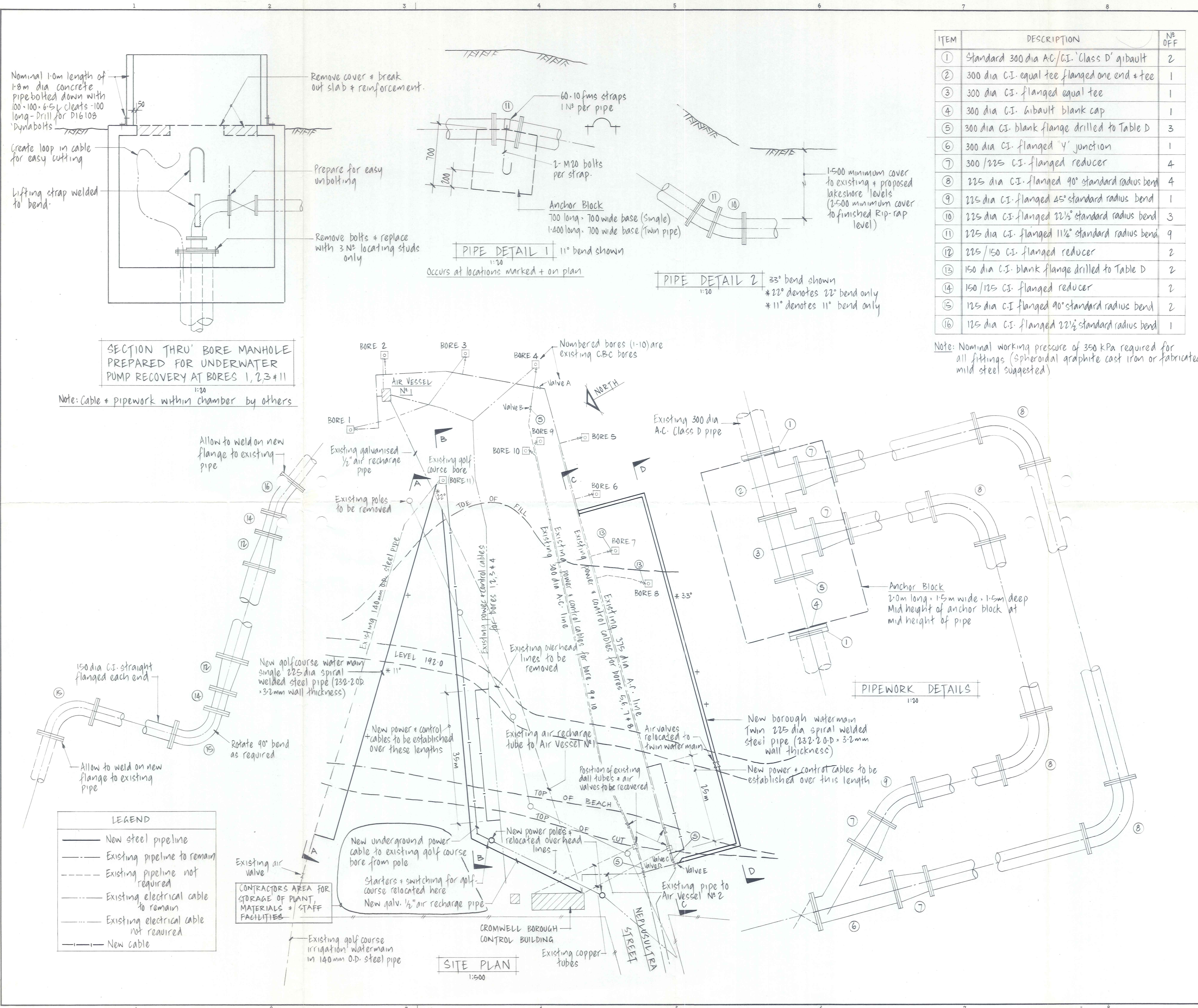
Client: **WORKS PROJECT SERVICES**  
CLUTHA VALLEY DEVELOPMENT

Project: **LAKE WATER INTAKE FACILITIES FOR CROMWELL BOROUGH**

Sheet Title: **FILTERED WATER PUMP STATION**

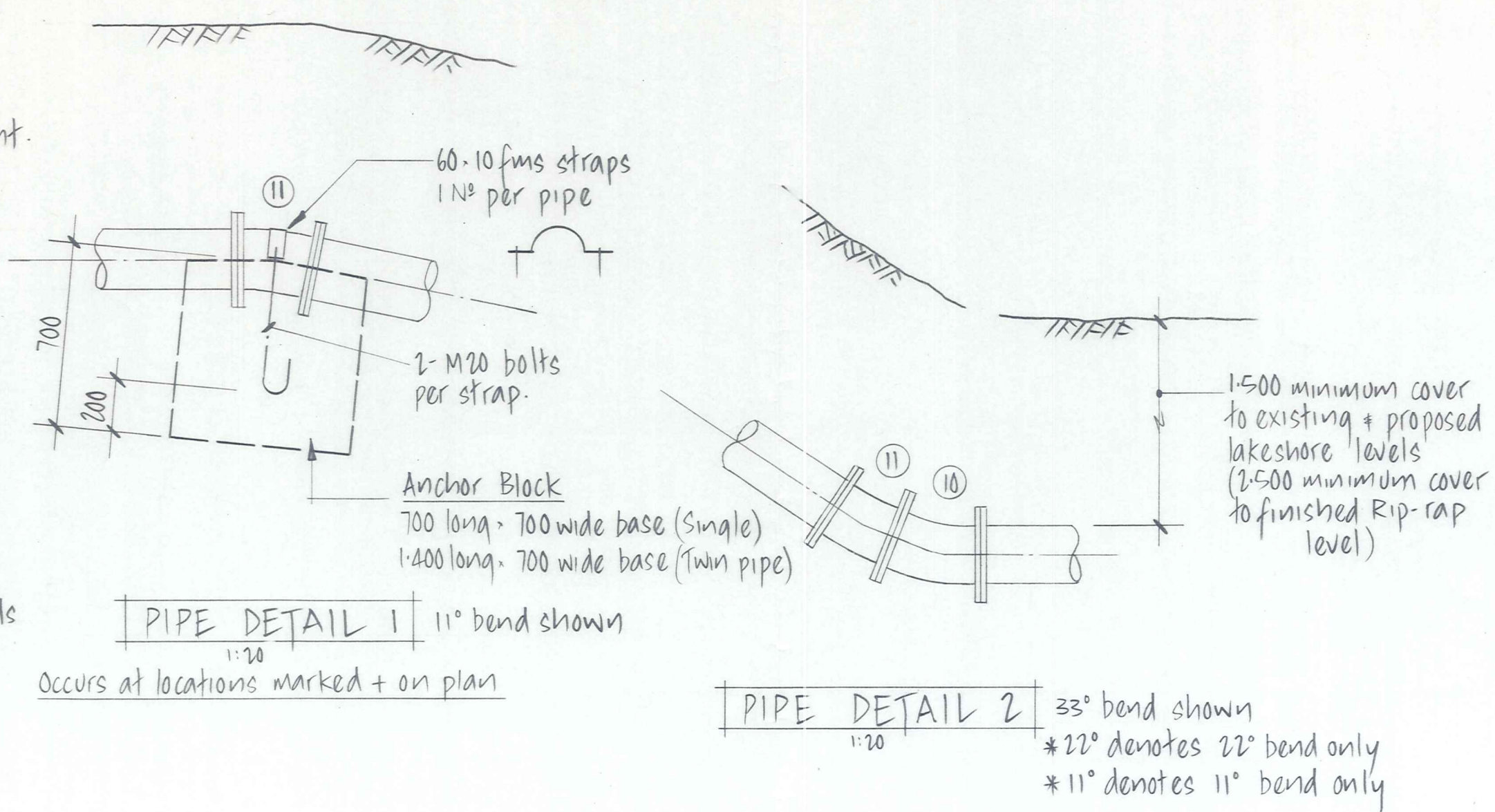
Job No.	Sheet No.	Revision
12276	S9	D





SECTION THRU' BORE MANHOLE PREPARED FOR UNDERWATER PUMP RECOVERY AT BORES 1, 2, 3 & 11  
1:20

Note: Cable & pipework within chamber by others

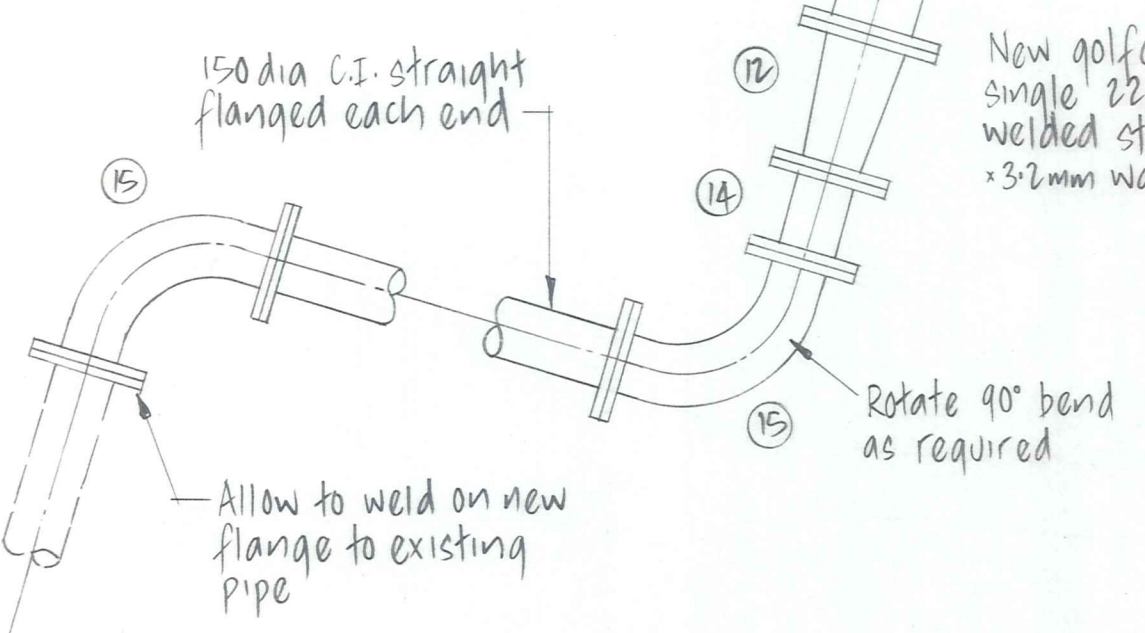


PIPE DETAIL 1 11° bend shown  
Occurs at locations marked + on plan  
1:20

PIPE DETAIL 2 33° bend shown  
\* 22° denotes 22° bend only  
\* 11° denotes 11° bend only  
1:20

ITEM	DESCRIPTION	NO OFF
①	Standard 300 dia AC/C.I. 'Class D' gibault	2
②	300 dia C.I. equal tee flanged one end + tee	1
③	300 dia C.I. flanged equal tee	1
④	300 dia C.I. gibault blank cap	1
⑤	300 dia C.I. blank flange drilled to Table D	3
⑥	300 dia C.I. flanged 'Y' junction	1
⑦	300/225 C.I. flanged reducer	4
⑧	225 dia C.I. flanged 90° standard radius bend	4
⑨	225 dia C.I. flanged 45° standard radius bend	1
⑩	225 dia C.I. flanged 22½° standard radius bend	3
⑪	225 dia C.I. flanged 11½° standard radius bend	9
⑫	225/150 C.I. flanged reducer	2
⑬	150 dia C.I. blank flange drilled to Table D	2
⑭	150/125 C.I. flanged reducer	2
⑮	125 dia C.I. flanged 90° standard radius bend	2
⑯	125 dia C.I. flanged 22½° standard radius bend	1

Note: Nominal working pressure of 350 kPa required for all fittings (Spheroidal graphite cast iron or fabricated mild steel suggested)



LEGEND

	New steel pipeline
	Existing pipeline to remain
	Existing pipeline not required
	Existing electrical cable to remain
	Existing electrical cable not required
	New cable

SITE PLAN  
1:500

PIPEWORK DETAILS  
1:20

Notes

**CROMWELL BOROUGH SUPPLY - SUGGESTED SEQUENCE**

- Turn power off to borepumps 5, 6, 7 & 8 and put bore pumps 1, 2, 3 & 4 on duty.
- Close valves A & C as shown on site plan and drain existing 300/375 AC line.
- Break into the 300 AC line upstream of bore No. 6 and establish twin 225 S.W.P. line. Remove blank flange at valve E and connect S.W.P. line.
- Install new power and control cables to bore pumps 5 & 6. Leave cables to bore pumps 7 & 8 undisturbed.
- Close drain valve and open valves C and E.
- Turn power on to borepumps 5, 6, 7 & 8 and switch these to take pump duties.
- Turn power off to borepumps 1, 2, 3, 4, 9 & 10 (old pumps 1 & 2).
- Close valves B & D and drain existing 300 AC line.
- Establish blank flanges upstream of valve B and downstream of valve D.
- Install new power and control cables to borepumps 1, 2, 3 & 4.
- Remove borepumps 9 and 10 (old pumps 1 & 2).
- Open valve A and restore power and duty to borepumps 1, 2, 3 and 4.
- Turn power off to borepumps 7 & 8, close valve C, establish a blank flange there and remove borepumps 7 and 8.

**CROMWELL GOLF COURSE SUPPLY - SUGGESTED SEQUENCE**

- Install new watermain and expose proposed break in positions to existing line.
- Install new control cables and expose proposed joint locations in existing cable.
- Install new power cable and expose existing connection to bore pump.
- Install new power poles.
- Co-ordinate new watermain connections, control cable connection, power cable connections and relocation of overhead lines and pump station.
- Turn power off to golf course bore and make above connections and relocations.
- Turn power on again.

No.	Revisions	Date	Appd
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Designed R. VICKERS Date JULY 88 Print Date  
 Drawn J. KNOX " " " "  
 Checked R. VICKERS 18/8/88 18 AUG 1988  
 Approved  
 File 67/2/13/19 L.B.

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

Client  
 WORKS PROJECT SERVICES  
 CLUTHA VALLEY DEVELOPMENT

Project  
 LAKESHORE &  
 ASSOCIATED PIPE  
 & CABLE WORKS

Sheet Title  
 PIPE & CABLE PLAN  
 & PIPEWORK DETAILS

Job No.	Sheet No.	Revision
12197	2	
	of	shts







House- Supplied after well contaminated while under Dam Project ownership (Shorty )

Sewer Pump Station- uses water for washdown

Mallett Well private not connected to system.

Church

Hall -system originally designed to give preferential supply with reserve for firefighting

Public Toilets- at Hall supplied from Hall, Lakeshore Committee involvement

Stene Well  
Unused-demolished house supply no longer used. Unlikely to be used, Contact purchased site as unsuited to build because of lake effects.

Connection to Bilton Subv- temporary supply to subdivision while Lake being filled and problems with Biltons original lakeside supply.

SO 3775

SO 18996

SO 21331

LT 24594  
Computed

SO 3911  
Mining

LOWBURN INLET

Linton Bore-private but may have ability to be supplied from Bilton subdivision supply

Bilton Subdivision Supply- supply to subdivision to conform with consent. Replaces Dam Project supply now demolished.

Lakeshore Irrigation Pipeline - status uncertain.

Future Possible Hotel-may require substantial water supply, potential member of any supply association.

SO 3860

SO 9413

SO 20061  
DP 3318

Lake Shore Trees and Toilet- supply through culvert

(11.3287)

Original Pipe- relocated with vineyard

Burn Cottage Holdings Ltd.

David George Residence-supplied by dam project as part of relocation agreement and for allowing access for pipeline to lake shore.

25421 16900.

D. George dc

George

Valve

Valve

Valve

Valve

Tank- plumbed so that hall had reserve of stored water in excess of that available to lakeshore users. Other users may now enjoy this benefit.  
NOTE: Insufficient capacity for fire fighting. Access too distant and difficult to comply, volume too small for more than one premise.

Albany

Lowburn Regd Hotel of G Stewart

112

Linton

Hay

Queale

Queale

Reid

Burton

Dunford of Lowburn Hl

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LOWBURN INLET

Burton

Reid

Quade

Quade

Hay

Linton

Burton

28421 169 00.

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George

(11.3287)

Lowburn Regd Ltd of G Stewart

SO 3775

SO 18996

SO 21331

LT 24594 Computed

SO 3911 Mining

SO 3860

SO 9413

SO 20061 DP 3318

LUCCATE-CROMWELL ROAD (SH 6)

LUCCATE-CROMWELL ROAD (SH 6)

LUCCATE-CRM

LOWBURN VALLEY ROAD

Valve

Valve

Valve

Valve