

R/141543

14 May 2004

The General Manager  
Customer Service  
Pittwater Council  
PO Box 882,  
Unit 1, Vuko Place  
Warriewood 2120

Dear Sir/Madam

1148-1152 BARRENJOEY RD, PALM BEACH  
DEVELOPMENT APPLICATION NO. DA1228/00  
CONSTRUCTION CERTIFICATE NO. 22375/1

City Plan Services have issued a Construction Certificate under Part 4A of the Environmental Planning and Assessment Act 1979 for the above premises.

Please find enclosed the following documentation:

- Construction Certificate No. CC 22375/1
- Copy of application for Construction Certificate.
- Documentation used to determine the application for the Construction Certificate as detailed in Schedule 1 of the certificate.
- Cheque for Council's registration fee.

Should you need to discuss any issues, please do not hesitate to contact the Project Building Surveyor Brendan Bennett on 8270-3500.

Yours Sincerely



Brendan Bennett  
Director  
encl

Pittwater Council

TREN: 61340837871

**TAX INVOICE**  
**OFFICIAL RECEIPT**

18/05/2004 Receipt No 141543

To CITY PLAN SERVICES

*R/141543*

LEVEL 1, 364 KENT ST  
SYDNEY 2000

Qty/ Applic	Reference	Amount
1	RMIC-Rcord	\$27.27
GL Rec	J X DA1228/00 CC22375/1	
	GST	\$2.73
GL Rec		
To GL Receipt:		

Total Amount: \$30.00  
Includes GST of: \$2.73

Amounts Tendered

Cheque	\$30.00
Total	\$30.00
Rounding	\$0.00
Change	\$0.00
Nett	\$30.00

Printed 18/05/2004 2:07:11 PM

Cashier ADlarke

PLANNING  
BUILDING  
HERITAGE  
LANDSCAPE  
URBAN DESIGN

CITY  
PLAN  
SERVICES

1148-1152 Barrenjoey Road, Palm Beach  
Construction Certificate No. 22375/1

## CONSTRUCTION CERTIFICATE NO. 22375/1

Issued under Part 4A of the Environmental Planning and Assessment Act 1979  
Sections 109C and 81A(5)

### APPLICANT

Name:  
Address:  
Contact Details:

**Darren Leete –Raypond Pty Ltd**  
P.O Box 1364, Dee Why  
Phone: 0412 226 044 Fax: 9944 0316

### OWNER

Name:  
Address:  
Contact Details:

**Darren Leete –Raypond Pty Ltd**  
P.O Box 1364, Dee Why  
Phone: 0412 226 044 Fax: 9944 0316

### DEVELOPMENT CONSENT

Consent Authority/Local Government Area:  
Development Consent No:  
Date of Development Consent:

**Pittwater Council**  
**DA1228/00 & S96 Modification**  
**27.12.01**

### PROPOSAL

Address of Development:  
Building Classification:  
Type of Construction:  
Scope of building works covered by this Notice:

**1148-1152 Barrenjoey Rd, Palm Beach**  
**Class 10a**  
**N/A**  
**Civil works for construction of roadway and**  
**associated retaining works for subdivision**  
**and demolition (revised documentation)**  
**N/A**  
**Schedule 1**  
**Nil**  
**Nil**  
**Nil**

Value of Construction Certificate (Incl GST):  
Plans and Specifications approved:  
Fire Safety Schedule:  
Exclusions:  
Conditions (Clause 187 or 188 of the Environmental  
Planning & Assessment Regulation 2000):

### PROJECT BUILDING SURVEYOR

Please contact **Brendan Bennett**  
for any inquiries

### CERTIFYING AUTHORITY

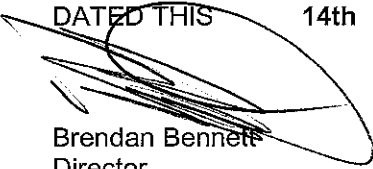
**Brendan Bennett** for and on behalf of  
**City Plan Services Pty Ltd**

### ACCREDITATION BODY

**Planning Institute Australia NSW Accreditation**  
**Scheme**  
Registration No. 3004

*That I, Brendan Bennett, as the certifying authority, certify that the work if completed in accordance with the plans and specifications identified in Schedule 1 (with such modifications verified by the certifying authority as may be shown on that documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation 2000 as referred to in section 81A(5) of the Environmental Planning and Assessment Act 1979.*

DATED THIS 14th day of May 2004

  
Brendan Bennett  
Director

NB: Prior to the commencement of work S81A (2) (b) and (c) of the Environment Planning and Assessment Act 1979 must be satisfied.

## SCHEDULE 1 APPROVED PLANS AND SPECIFICATIONS

### 1. Endorsed architectural plans prepared by Crone Nation Architects

Plan Title	Drawing No	Revision	Date
Sub Division Site Setout – Key Plan	S0006	A	19.01.04
Site Works Sheet 1	S0007	A	19.01.04
Site Works Sheet 2	S0008	A	19.01.04
Site Setout Sheet 1	S0010	A	19.01.04
Site Setout Sheet 2	S0011	A	19.01.04
Sub Division Driveway Cross Sections	S3001	A	19.01.04
Stair, Garbage Bins, Letter Boxes and Entry Retaining Wall Setout	S3002	A	19.01.04

### 2. Endorsed structural plans prepared by Northern Beaches Consulting Engineers P/L

Plan Title	Drawing No	Revision	Date
General Notes	S01	A	22.1.04
General Arrangement Plan	C01		
Bulk Earth Works Cross sections Sheet 1	C02	A	22.01.04
Bulk Earth Works Cross sections Sheet 2	C03	A	22.01.04
Bulk Earth Works Cross sections Sheet 3	C04		
Bulk Earth Works Cross sections Sheet 4	C05	A	22.01.04
Retaining Wall Details Sheet 1	C07	A	22.01.04
Retaining Wall Details Sheet 2	C08	A	22.01.04
Retaining Wall Details Sheet 3	C09	B	29.01.04
Retaining Wall Details Sheet 4	C10	B	29.01.04
Retaining Wall Details Sheet 5	C11	B	29.01.04
Sediment and Erosion Control Plan	C12	A	29.01.04
Sediment and Erosion Control Details	C13		
Drainage Plan	C14		
Driveway Plan and Details	C15		
External Roadworks Plan and Details	C16		
On-Site Detention Tank DT3 Plan and Drainage Details	C17		
On-Site Detention Tank DT4 Plan and Drainage Details	C18	A	29.01.04
Driveway Elevations Sheet 1	C19		
Driveway Elevations Sheet 2	C20		
Suspended Driveway Plan and Details	C21	A	29.01.04

notes  
Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take preference to scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

Amended  
22/3/04

# SUB-DIVISION WORKS

19th JAN 2004

## DRAWINGS

- 20006 / ADDS 0006 / A SUB-DIVISION SITE SETOUT PLAN
- 20006 / ADDS 0007 / A SITE WORKS - SHEET 1
- 20006 / ADDS 0008 / A SITE WORKS - SHEET 2
- 20006 / ADDS 0010 / A SITE SETOUT - SHEET 1
- 20006 / ADDS 0011 / A SITE SETOUT - SHEET 2
- 20006 / ASAS 3001 / A SUB-DIVISION DRIVEWAY CROSS SECTIONS
- 20006 / ASAS 3002 / A STAIRS - GARBAGE BINS - LETTER BOXES - RETAINING WALL

client  
Raypond Pty Ltd.  
po box 1364, dee why, nsw 2099  
mobile ph + 61 2 0412 226 044 fax + 61 2 9944 0316  
structural & civil engineers  
northern beaches consulting engineers  
suite 207, 30 fisha road, dee why new 2099  
ph: + 61 2 9984 7000 fax: + 61 2 9984 7444  
geotechnical engineers  
douglas & partners  
96 hermitage road, west ryde, nsw 2114  
ph: + 61 2 9809 0666 fax: + 61 2 9809 4096  
surveyor  
lawsons group  
12 wernworth street, parramatta, nsw 2124  
ph: + 61 2 9633 2277 fax: + 61 2 9691 4798  
landscape  
parramatta shinkfield & bruce  
360 pacific highway, crown nsw, new 2065  
ph: + 61 2 9906 4500 fax: + 61 2 9906 4479

address  
1148-1152 barrenjoey road  
56 palm beach road, Palm Beach

project/title  
OBSERVATION POINT

RECEIVED
05 MAY 2004
CITY PLANNING SERVICES LTD
Construction Certificate Number: 22375/1
Approved: 14 MAY 2004
Construction Certificate: 22375/1
Application No: PA 3004

344 kent street sydney nsw 2000 australia  
tel: + 61 2 9262 1960 fax: + 61 2 9262 3288  
syd@crone-nation.com ACM 059 789 272  
crone nation architects  
www.crone-nation.com

notes  
 Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take precedence to scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

revision	No	Date	Description
A	19-01-01		for construction setout

RECEIVED	
05 MAY 2004	
CITYPLAN SURVEYS PTY LTD	
Construction Certificate Number:	22375/1
Approved:	14 MAY 2004
Approved Engineer:	Paula Bennett
Project No.:	PA 3004

client  
**Raypond Pty.Ltd.**  
 po box 1364, dee why, nsw 2099  
 mobile ph + 61 2 9112 226 044 fax + 61 2 9944 0310

structural & civil engineers  
 name & address  
 level 6, 111 wharf road, chesham nsw 2759  
 phone + 61 2 9633 2277 fax + 61 2 9891 4798

geotechnical engineers  
 douglas & partners  
 96 hermitage road, west ryde, nsw 2114  
 ph: + 61 2 9809 0888 fax: + 61 2 9809 4095

surveyor  
 bowtons group  
 12 warwick street, parramatta, nsw 2124  
 ph + 61 2 9633 2277 fax + 61 2 9891 4798

landscape  
 pittendigh shinkfield & bruce  
 360 pacific highway, crows nest, nsw 2065  
 ph: +61 2 9306 4500 fax: 181 2 9306 4479

address  
**1148-1152 barrenjoey road  
 56 palm beach road, Palm Beach**

project/title			
OBSERVATION POINT			
drawn	date	checked	plot date
vh	july 2002	OF number	11 nov 2002

file name	job no.
SUB-DIVISION SITE SETOUT - KEY PLAN	20006

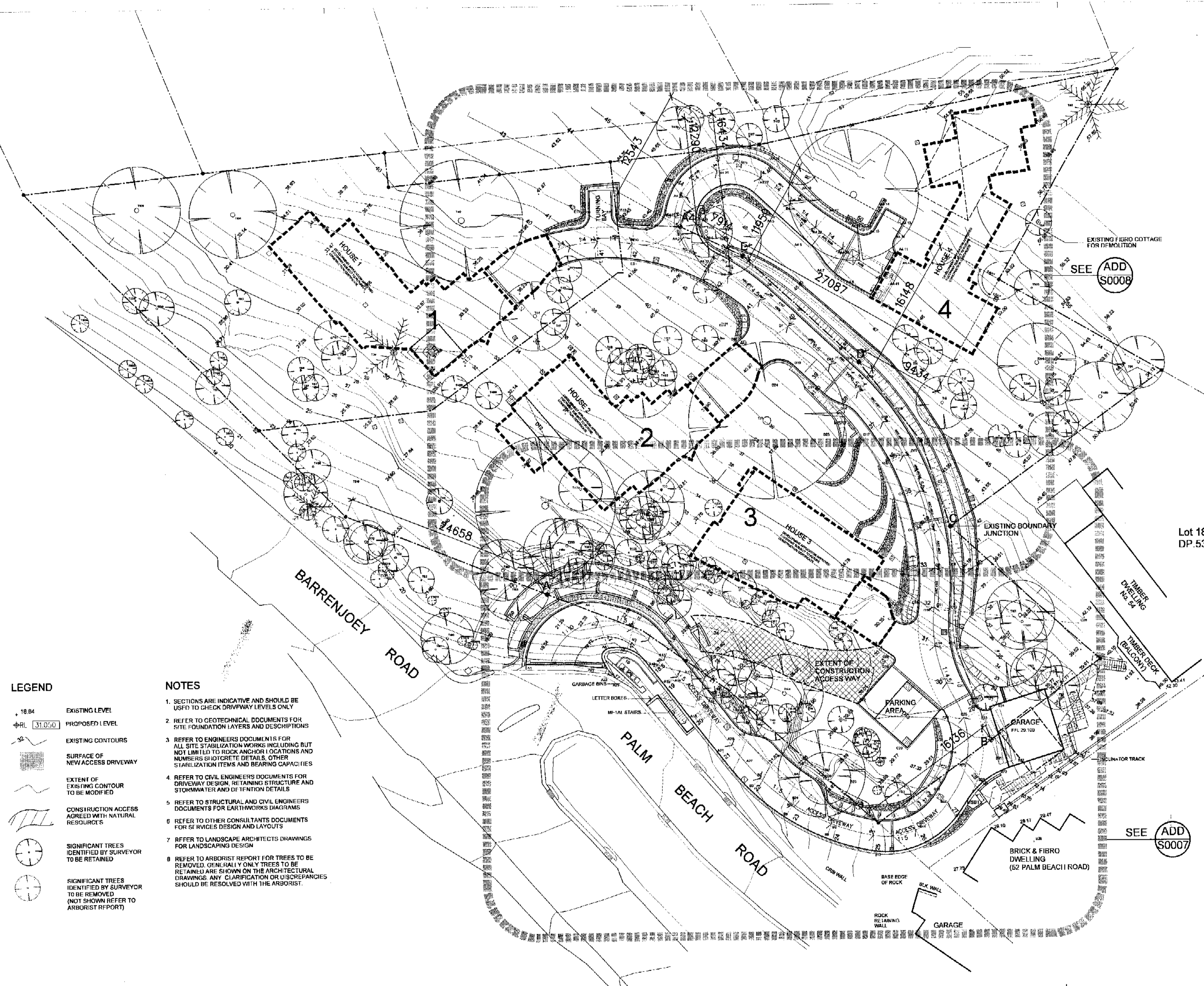
scale
1:200 @ A1 1:400 @ A3

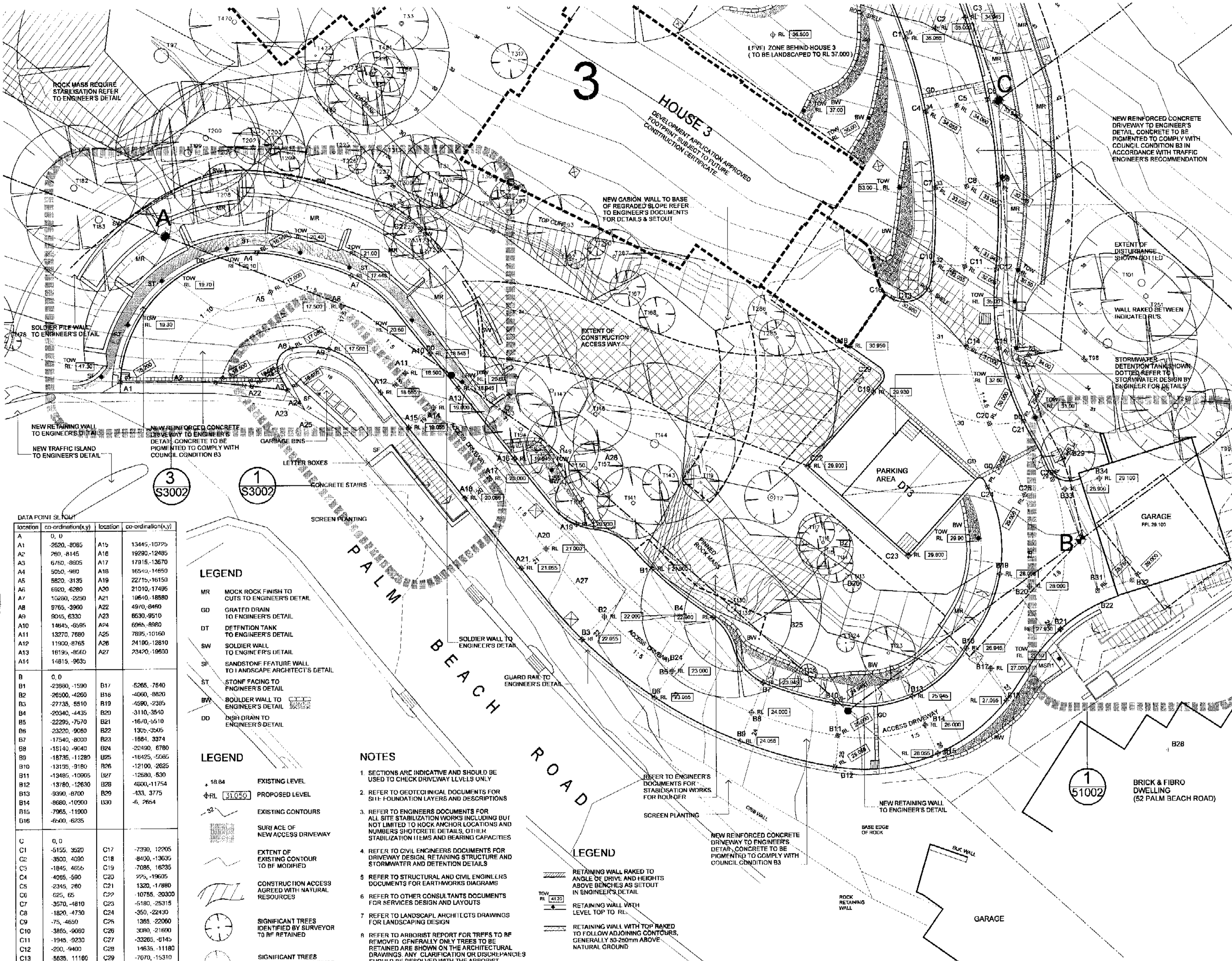
revision/drawing no.	
A for construction	AWD S0006

354 kent street sydney nsw 2000 australia  
 tel + 61 2 9262 1988 fax + 61 2 9262 3288  
 syd@cronearchitects.com acm 059 989 272  
**crone nation architects**  
landscape architects

- LEGEND**
- +18.84 EXISTING LEVEL
  - ±RL 31.050 PROPOSED LEVEL
  - EXISTING CONTOURS
  - SURFACE OF NEW ACCESS DRIVEWAY
  - EXTENT OF EXISTING CONTOUR TO BE MODIFIED
  - CONSTRUCTION ACCESS AGREED WITH NATURAL RESOURCES
  - SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE RETAINED
  - SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE REMOVED (NOT SHOWN REFER TO ARBORIST REPORT)

- NOTES**
1. SECTIONS ARE INDICATIVE AND SHOULD BE USED TO CHECK DRIVEWAY LEVELS ONLY
  2. REFER TO GEOTECHNICAL DOCUMENTS FOR SITE FOUNDATION LAYERS AND DESCRIPTIONS
  3. REFER TO ENGINEERS DOCUMENTS FOR ALL SITE STABILIZATION WORKS INCLUDING BUT NOT LIMITED TO ROCK ANCHOR LOCATIONS AND NUMBERS SHOTCRETE DETAILS, OTHER STABILIZATION ITEMS AND BEARING CAPACITIES
  4. REFER TO CIVIL ENGINEERS DOCUMENTS FOR DRIVEWAY DESIGN, RETAINING STRUCTURE AND STORMWATER AND DETENTION DETAILS
  5. REFER TO STRUCTURAL AND CIVIL ENGINEERS DOCUMENTS FOR EARTHWORKS DIAGRAMS
  6. REFER TO OTHER CONSULTANTS DOCUMENTS FOR SERVICES DESIGN AND LAYOUTS
  7. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DESIGN
  8. REFER TO ARBORIST REPORT FOR TREES TO BE REMOVED. GENERALLY ONLY TREES TO BE RETAINED ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. ANY CLARIFICATION OR DISCREPANCIES SHOULD BE RESOLVED WITH THE ARBORIST.





location	co-ordinates(x,y)	location	co-ordinates(x,y)
A	0, 0	A15	13445, -10725
A1	2620, -8065	A16	19290, -12485
A2	260, -8145	A17	17915, -13670
A3	6760, -8905	A18	16540, -14650
A4	5050, -980	A19	22715, -16150
A5	5820, -3135	A20	21010, -17495
A6	6920, -6280	A21	10640, -18580
A7	10280, -2230	A22	4970, -8460
A8	9765, -3990	A23	8630, -9510
A9	9045, -6330	A24	6090, -8980
A10	14845, -6595	A25	7895, -10160
A11	13270, -7890	A26	24180, -12810
A12	11900, -8765	A27	23470, -10930
A13	18195, -8660		
A14	14815, -9635		
B	0, 0	B17	-5265, -7540
B1	-29890, -1590	B18	-4060, -8820
B2	-26500, -4260	B19	-4590, -2385
B3	-27735, -8510	B20	-3110, -3540
B4	-20340, -4435	B21	-1670, -5510
B5	-22295, -7570	B22	1305, -3505
B6	-23220, -9060	B23	-1864, -3374
B7	-17540, -8000	B24	-22490, -6780
B8	-18140, -9640	B25	-16425, -5085
B9	-18735, -11280	B26	-12190, -2825
B10	-13195, -9180	B27	-12580, -530
B11	-13485, -10985	B28	4600, -11754
B12	-13780, -12630	B29	-433, -3775
B13	-9390, -8790	B30	-6, -2664
B14	-8680, -10590		
B15	-7965, -11900		
B16	-6300, -8235		
C	0, 0	C17	-7390, 12205
C1	-3500, -4090	C18	8400, -13635
C2	-1845, -4655	C19	7085, -16235
C3	-4065, -590	C20	225, -19605
C4	-2345, -260	C21	1320, -17880
C5	625, 65	C22	10755, -20300
C6	-3570, -4810	C23	-5180, -25315
C7	-1820, -4730	C24	-350, -22430
C8	-75, -4650	C25	1365, -22060
C9	-3855, -9060	C26	3080, -21690
C10	-1945, -9230	C27	-32265, -9145
C11	-200, -9400	C28	14635, -11180
C12	-5635, -11180	C29	-7070, -15310
C13	-1865, -13690		
C14	-75, -13795		
C15	-6380, -10775		
C16			

**LEGEND**

- MR MOCK ROCK FINISH TO CUTS TO ENGINEER'S DETAIL
- GD GRATED DRAIN TO ENGINEER'S DETAIL
- DT DETENTION TANK TO ENGINEER'S DETAIL
- SW SOLDIER WALL TO ENGINEER'S DETAIL
- SF SANDSTONE FEATURE WALL TO LANDSCAPE ARCHITECT'S DETAIL
- ST STONE FACING TO ENGINEER'S DETAIL
- BW BOULDER WALL TO ENGINEER'S DETAIL
- DD DISH DRAIN TO ENGINEER'S DETAIL

**LEGEND**

- 18.84 EXISTING LEVEL
- RL 31.050 PROPOSED LEVEL
- EXISTING CONTOURS
- SURFACE OF NEW ACCESS DRIVEWAY
- EXTENT OF EXISTING CONTOUR TO BE MODIFIED
- CONSTRUCTION ACCESS AGREED WITH NATURAL RESOURCES
- SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE RETAINED
- SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE REMOVED (NOT SHOWN REFER TO ARBORIST REPORT)

**NOTES**

- 1 SECTIONS ARE INDICATIVE AND SHOULD BE USED TO CHECK DRIVEWAY LEVELS ONLY
- 2 REFER TO GEOTECHNICAL DOCUMENTS FOR SITE FOUNDATION LAYERS AND DESCRIPTIONS
- 3 REFER TO ENGINEER'S DOCUMENTS FOR ALL SITE STABILIZATION WORKS INCLUDING BUT NOT LIMITED TO ROCK ANCHOR LOCATIONS AND NUMBERS SHOTCRETE DETAILS, GRISS STABILIZATION ITEMS AND BEARING CAPACITIES
- 4 REFER TO CIVIL ENGINEER'S DOCUMENTS FOR DRIVEWAY DESIGN, RETAINING STRUCTURE AND STORMWATER AND DETENTION DETAILS
- 5 REFER TO STRUCTURAL AND CIVIL ENGINEER'S DOCUMENTS FOR EARTHWORKS DIAGRAMS
- 6 REFER TO OTHER CONSULTANTS DOCUMENTS FOR SERVICES DESIGN AND LAYOUTS
- 7 REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DESIGN
- 8 REFER TO ARBORIST REPORT FOR TREES TO BE REMOVED. GENERALLY ONLY TREES TO BE RETAINED ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. ANY CLARIFICATION OR DISCREPANCIES SHOULD BE RESOLVED WITH THE ARBORIST.

**LEGEND**

- RETAINING WALL RAKED TO ANGLE OF DRIVE AND HEIGHTS ABOVE BENCHES AS SETOUT IN ENGINEER'S DETAIL
- RETAINING WALL WITH LEVEL TOP TO RL
- RETAINING WALL WITH TOP RAKED TO FOLLOW ADJOINING CONTOURS, GENERALLY 50-250mm ABOVE NATURAL GROUND

REFER TO DRAWING S0010 FOR DIMENSIONAL SETOUT OF DRIVEWAY

Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take preference in scaled dimensions. This drawing is copyright & shall remain the property of Crane Nation Architects.

revision  
No Date Description  
A 19-01-04 for construction setout

RECEIVED

05 MAY 2004

CITY PLAN SERVICES PTY LTD

Construction Certificate Number: 22375/1

Approved: 14 MAY 2004

Author: Brendan Bennett

Scale: 1:100 @ A1  
1:200 @ A3

client  
Raypond Pty Ltd.

po box 1384, che why, nsw 2090  
mobile ph + 61 2 0412 226 044 fax + 61 2 9944 0316

structural & civil engineers  
4/40-4/42 st patricks rd, sydney nsw 2009  
tel + 61 2 9393 8888 fax + 61 2 9393 8822

geotechnical engineers  
douglas & partners  
96 hermitage road, west hwy, nsw 2114  
ph + 61 2 9839 0888 fax + 61 2 9809 4095

surveyor  
bowdoin group  
12 warworth street, paramatta, nsw 2124  
ph + 61 2 9633 2277 fax + 61 2 9691 4799

landscape  
pittsburgh shirfield & bruce  
380 pacific highway, cronos nsw 2085  
ph + 61 2 9066 4500 fax + 61 2 9066 4478

address  
1148-1152 barrenjoey road  
56 palm beach road, Palm Beach

project title  
OBSERVATION POINT

drawn	date	checked	plot date
vin	july-2002	OF number	11 nov 2002

file name  
SITE WORKS SHEET 1

job no.  
20006

scale  
1:100 @ A1  
1:200 @ A3

revision/drawing no.  
A for construction

AWD | S0007

344 kori street sydney nsw 2000 australia  
tel + 61 2 9262 1988 fax + 61 2 9262 3288  
www.cranenation.com acn 859 989 277

crane nation architects



**LEGEND**

- 18.84 EXISTING LEVEL
- PROPOSED LEVEL
- EXISTING CONTOURS
- SURFACE OF NEW ACCESS DRIVEWAY
- EXTENT OF EXISTING CONTOUR TO BE MODIFIED
- CONSTRUCTION ACCESS AGREED WITH NATURAL RESOURCES
- SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE RETAINED
- SIGNIFICANT TREES IDENTIFIED BY SURVEYOR TO BE REMOVED (NOT SHOWN REFER ARCHIBIST REPORT)

**NOTES**

1. SECTIONS ARE INDICATIVE AND SHOULD BE USED TO CHECK DRIVEWAY LEVELS ONLY
2. REFER TO GEOTECHNICAL DOCUMENTS FOR SIF FOUNDATION LAYERS AND DESCRIPTIONS
3. REFER TO ENGINEERS DOCUMENTS FOR ALL SITE STABILIZATION WORKS INCLUDING BUT NOT LIMITED TO ROCK ANCHOR LOCATIONS AND STABILIZATION ITEMS AND BEARING CAPACITIES
4. REFER TO CIVIL ENGINEERS DOCUMENTS FOR DRIVEWAY DESIGN, RETAINING STRUCTURE AND STORMWATER AND DETENTION DETAILS
5. REFER TO STRUCTURAL AND CIVIL ENGINEERS DOCUMENTS FOR EARTHWORKS DIAGRAMS
6. REFER TO OTHER CONSULTANTS DOCUMENTS FOR SERVICES DESIGN AND LAYOUTS
7. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DESIGN
8. REFER TO ARBORIST REPORT FOR TREES TO BE REMOVED. GENERALLY ONLY TREES TO BE RETAINED ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. ANY CLARIFICATION OR DISCREPANCIES SHOULD BE RESOLVED WITH THE ARBORIST

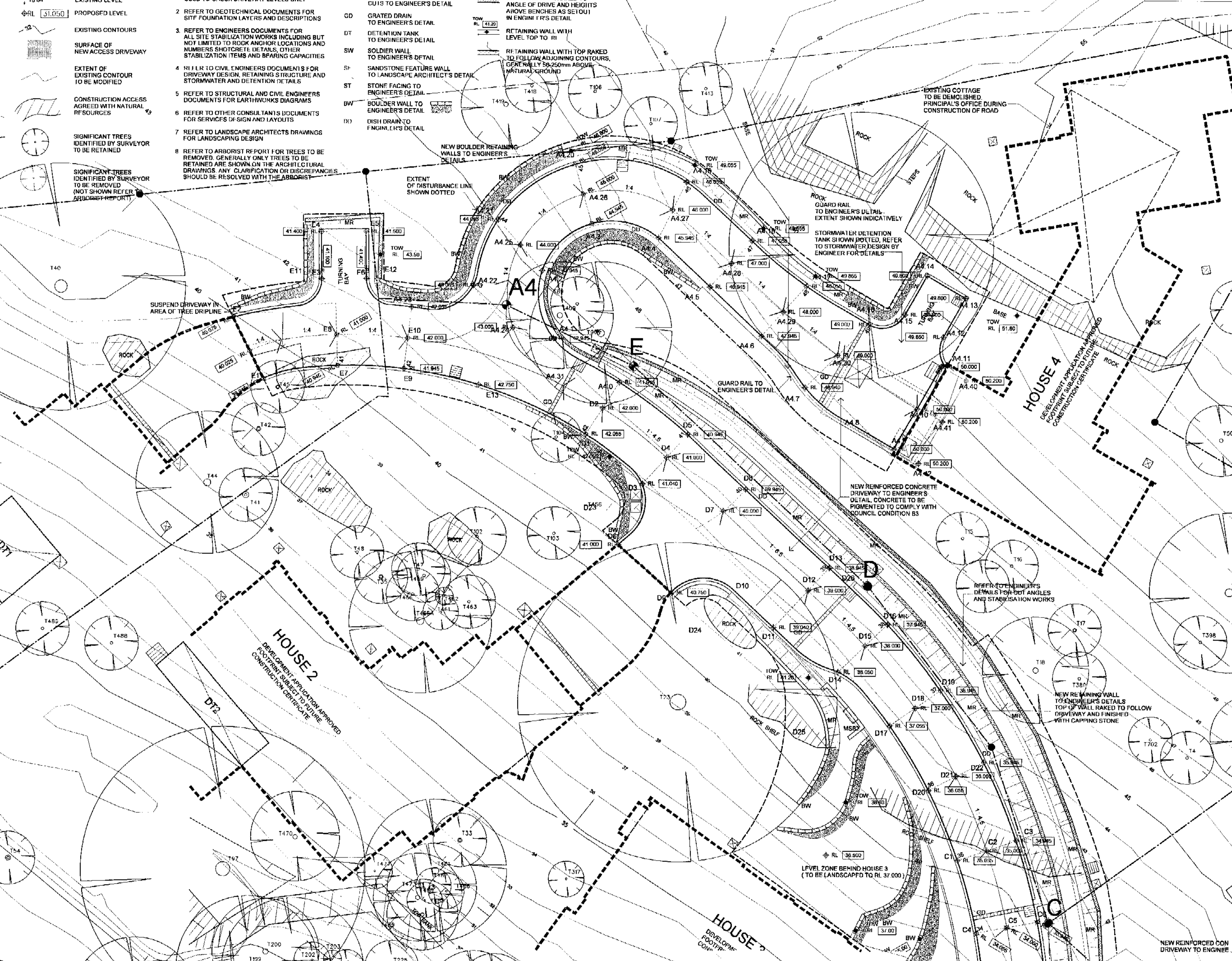
**LEGEND**

- MR MOCK ROCK FINISH TO CURBS TO ENGINEER'S DETAIL
- GD GRATED DRAIN TO ENGINEER'S DETAIL
- DT DETENTION TANK TO ENGINEER'S DETAIL
- SW SOLDIER WALL TO ENGINEER'S DETAIL
- ST SANDSTONE FEATURE WALL TO LANDSCAPE ARCHITECT'S DETAIL
- ST STONE FACING TO ENGINEER'S DETAIL
- BW BOULDER WALL TO ENGINEER'S DETAIL
- RD DISH DRAIN TO ENGINEER'S DETAIL

**LEGEND**

- RETAINING WALL RAKED TO ANGLE OF DRIVE AND HEIGHTS ABOVE BENCHES AS SET OUT IN ENGINEER'S DETAIL
- RETAINING WALL WITH LEVEL TOP TO RI
- RETAINING WALL WITH TOP RAKED TO FOLLOW ADJOINING CONTOURS, GENERALLY 50-250mm ABOVE NATURAL GROUND

REFER TO DRAWING S0011 FOR DIMENSIONAL SETOUT OF DRIVEWAY



**NOTES**  
Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take preference to scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

**REVISION**

No	Date	Description
A	19-01-04	for construction setout

RECEIVED

05 MAY 2004

CITY PLAN SERVICES LTD

Classification Certificate Number: 22375/1

Accessed: 14 MAY 2004

Accessed by: Wanda Berrall

Accessed at: AA 300F

**client**  
Raypond Pty Ltd

po box 1394, dee why, nsw 2099  
mobile ph: + 61 2 0412 226 044 fax: + 61 2 9944 0316

**structural & civil engineers**  
simon & partners  
levels: all major cities, shored new england  
ph: + 61 2 9944 0316 fax: + 61 2 9944 0332

**geotechnical engineers**  
daugh & partners  
96 hermitage road, west ryde, nsw 2114  
ph: + 61 2 9909 0666 fax: + 61 2 9909 4095

**surveyor**  
lowdson group  
12 wenworth street, buranulla, nsw 2124  
ph: + 61 2 9933 2277 fax: + 61 2 9951 4798

**landscape**  
pittendrigh shinkfield & bruce  
380 pacific highway, crowns nest, nsw 2065  
ph: + 61 2 9906 4500 fax: + 61 2 9906 4479

**address**  
1148-1152 barrenjoey road  
56 palm beach road, Palm Beach

**project/site**  
OBSERVATION POINT

drawn	date	checked	plot date
vin	july-2002	Of number	11 nov 2002

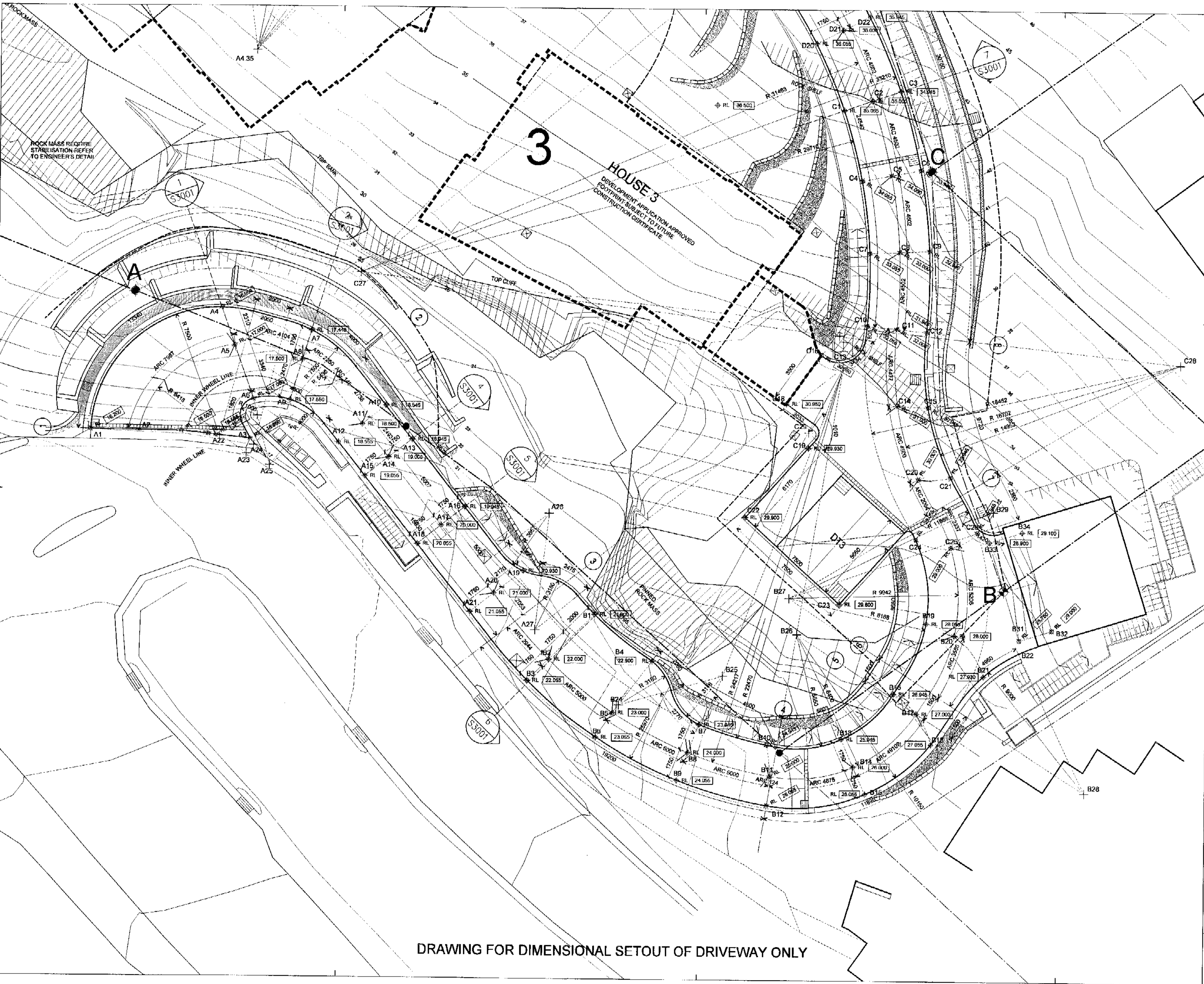
**file name** | **job no**

**SITE WORKS SHEET 2** | **20006**

**scale**  
1:100 @ A1  
1:200 @ A3

**revision/drawing no.**  
A for construction | **AWD | S0008**

344 kennel street sydney nsw 2000 australia  
tel: + 61 2 9262 1988 fax: + 61 2 9262 3288  
syd@crone-nation.com.au acn 059 989 272  
**crone nation architects**



DRAWING FOR DIMENSIONAL SETOUT OF DRIVEWAY ONLY

notes  
 Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take precedence in scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects

revision	
No	Description
A	19-01-04 for construction setout

RECEIVED  
 05 MAY 2004  
 CIVIL ENGINEERS PTY LTD  
 22375/  
 14 MAY 2004  
 RA3004

client  
**Raypond Pty.Ltd.**  
 po box 1394, deo why, nsw 2009  
 mobile ph: +61 2 0412 226 044 fax: +61 2 9944 0316  
 structural & civil engineers  
 geotechnical engineers  
 douglas & partners  
 86 hermitage road, west yde, nsw 2114  
 ph: +61 2 9809 0666 fax: +61 2 9809 4096  
 surveyor  
 bowler & group  
 12 wenworth street, parramatta, nsw 2124  
 ph: +61 2 9633 2277 fax: +61 2 9891 4796  
 landscape  
 pattenhigh shirkfield & bruce  
 360 pacific highway, crms nest, nsw 2065  
 ph: +61 2 9906 4500 fax: +61 2 9906 4479  
 address  
 1148-1152 barrenjoey road  
 56 palm beach road, Palm Beach

project/title  
**OBSERVATION POINT**

drawn	date	checked	plot date
viz	july-2002	OF number	11 nov 2002

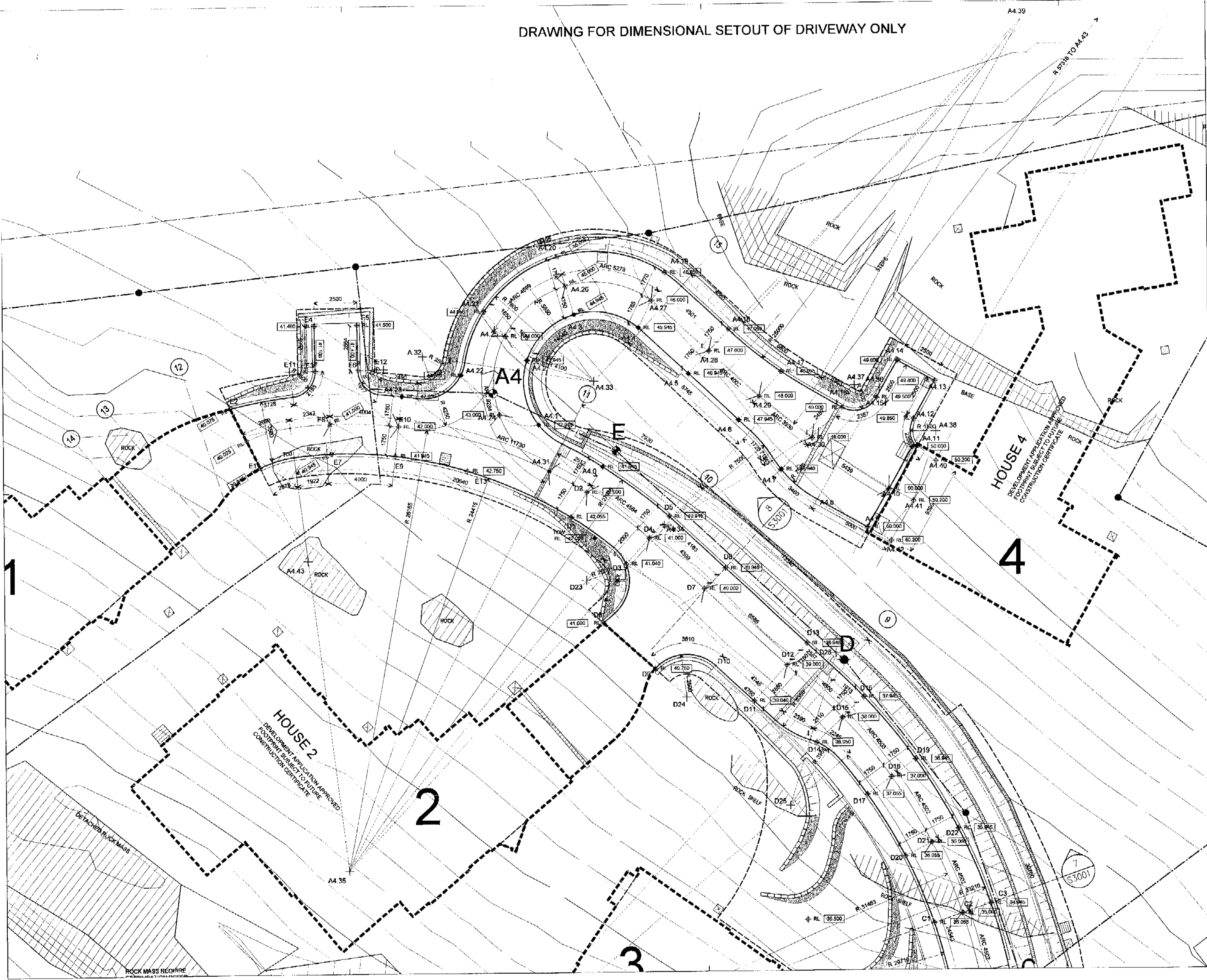
file name	job no.
SITE SETOUT SHEET 1	20006

scale  
 1:100 @ A1  
 1:200 @ A3

revision/drawing no  
 A for construction  
**AWD | S0010**

364 kent street sydney nsw 2000 australia  
 tel: +61 2 9242 1988 fax: +61 2 9267 3288  
 syd@crone-nation.com ACN 859 989 277  
**crone nation architects**

DRAWING FOR DIMENSIONAL SETOUT OF DRIVEWAY ONLY



**NOTES**  
 Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inaccuracies / conflicts. Figured dimensions shall take preference to noted dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

**REVISION**

Nn	Date	Description
1	19-01-04	for construction setout

**RECEIVED**  
 05 MAY 2004  
 CRONE NATION ARCHITECTS  
 22375/1  
 14 MAY 2004  
 919 3004  
 Issued under Part 156 of the Environmental Planning and Assessment Act 1979

**client**  
 Raypond Pty. Ltd.  
 po box 1364, dee why, nsw 2099  
 mobile ph: +61 2 0412 226 044 fax: +61 2 0411 0316

**structural & civil engineers**  
 James E partners  
 level 11, 111 Victoria Road, Parramatta, NSW 2150  
 ph: +61 2 9639 4000 fax: +61 2 9639 4000

**geotechnical engineers**  
 Douglas & Partners  
 56 Hermitage Road, West Ryde, NSW 2114  
 ph: +61 2 9809 0666 fax: +61 2 9809 4095

**surveyor**  
 Bowdler Group  
 12 Werburgh Street, Parramatta, NSW 2124  
 ph: +61 2 9633 2277 fax: +61 2 9591 4798

**landscape**  
 Pittendrigh Shinkfield & Bruce  
 360 Pacific Highway, Crowns Nest, NSW 2065  
 ph: +61 2 9906 4500 fax: +61 2 9906 4479

**address**  
 1148-1152 Barrenjoey Road  
 56 Palm Beach Road, Palm Beach

**project/site**  
 OBSERVATION POINT

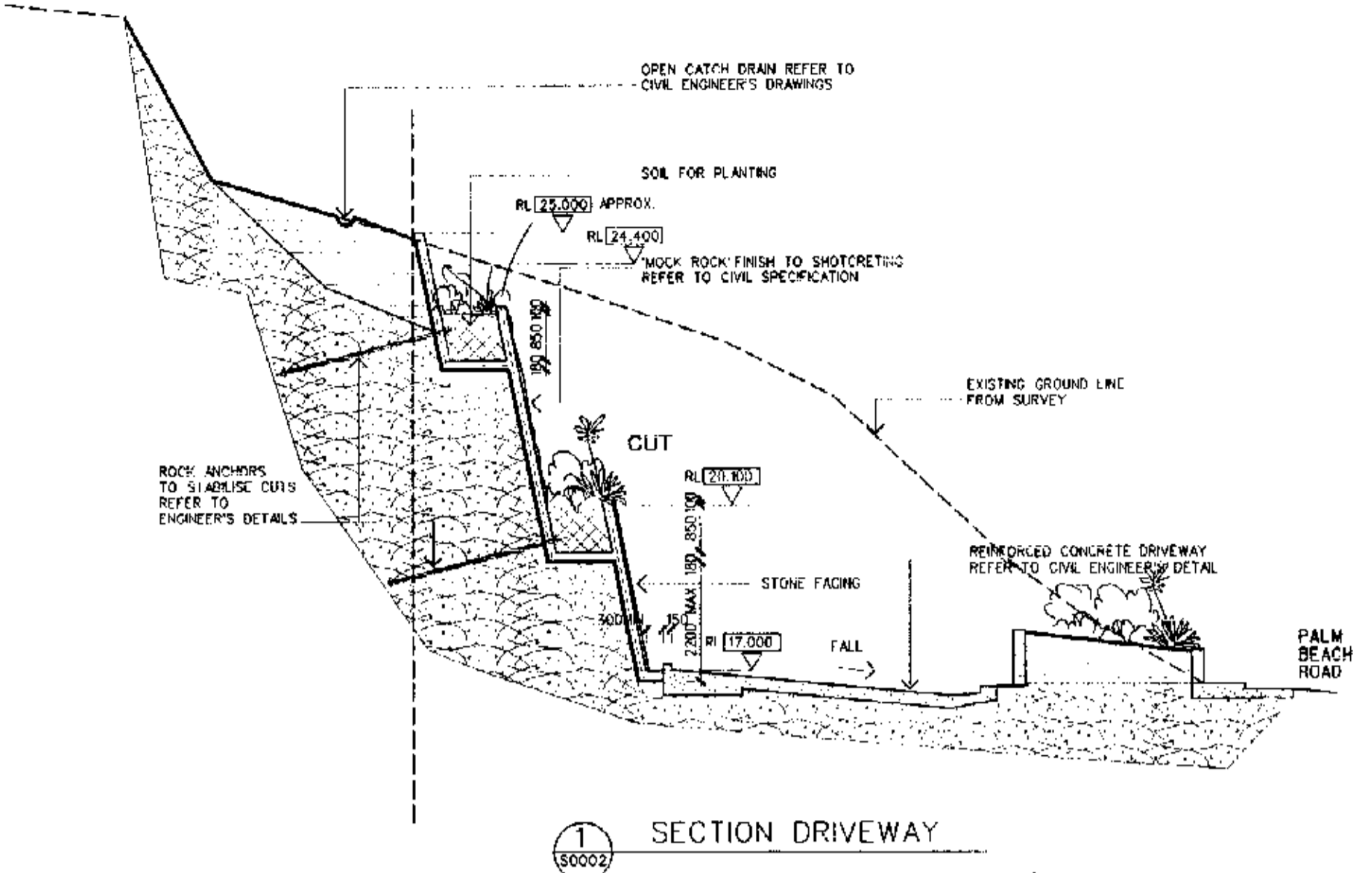
drawn	date	checked	plot date
wh	July 2002	QF number	11 Nov 2002

**file name** SITE SETOUT SHEET 2 **job no.** 20006

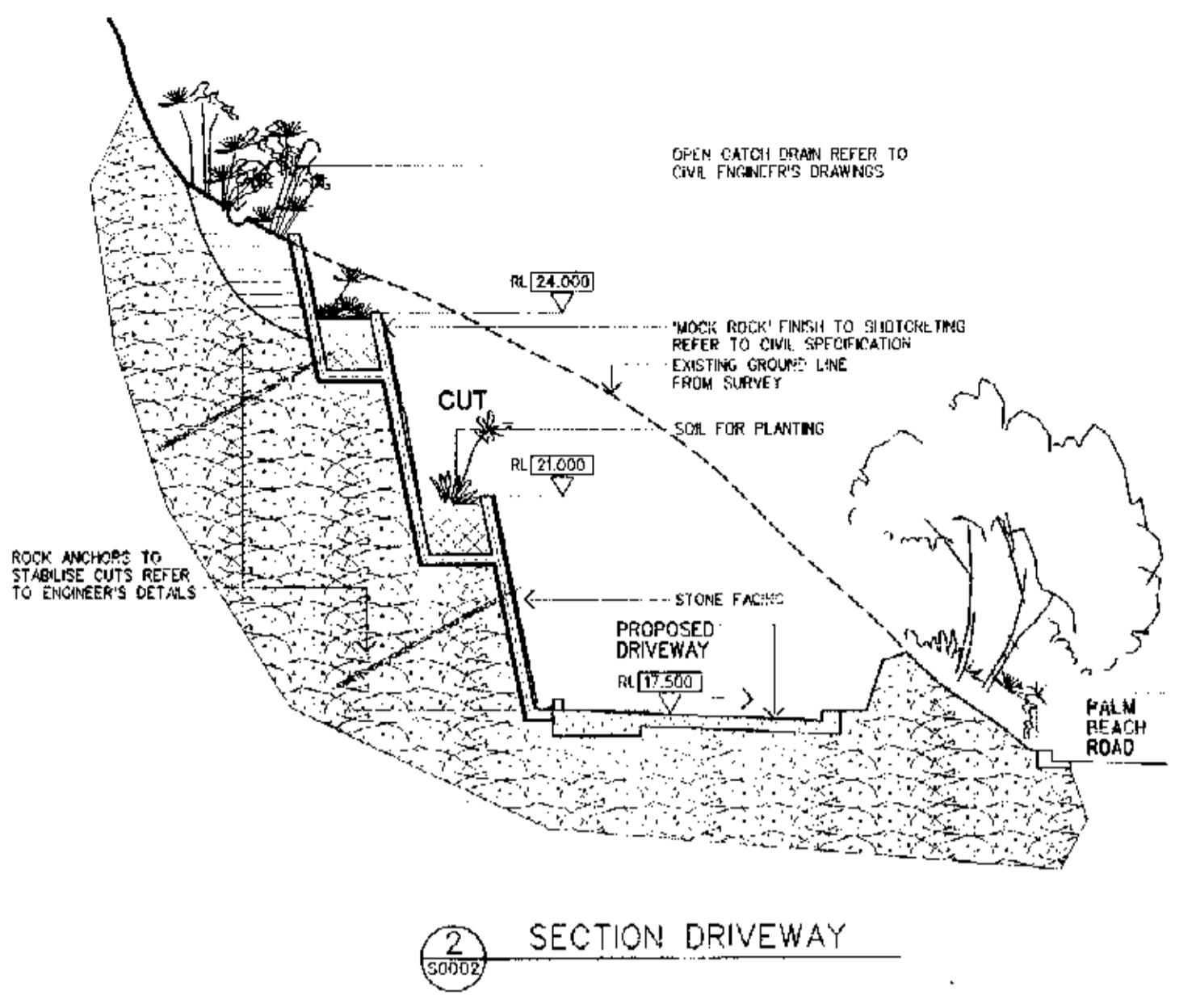
**scale**  
 1:100 @ A1  
 1:200 @ A3

**revision/drawing no.**  
 A for construction **AWD | S0011**

344 Kent Street Sydney NSW 2000 Australia  
 tel: +61 2 9242 1988 fax: +61 2 9242 3288  
 syd@crone.com.au acn 059 989 272  
**crone nation architects**



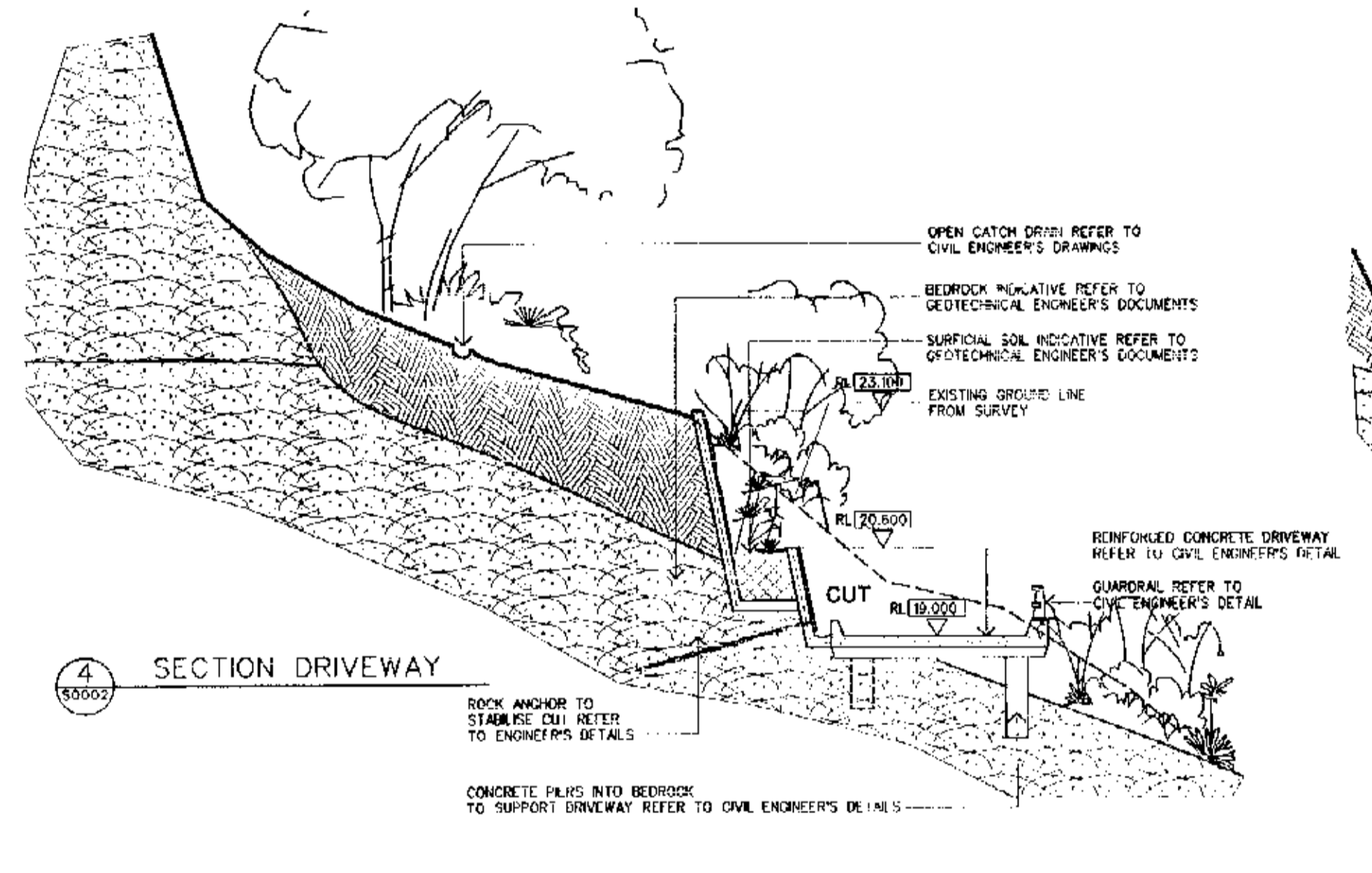
1 SECTION DRIVEWAY  
500002



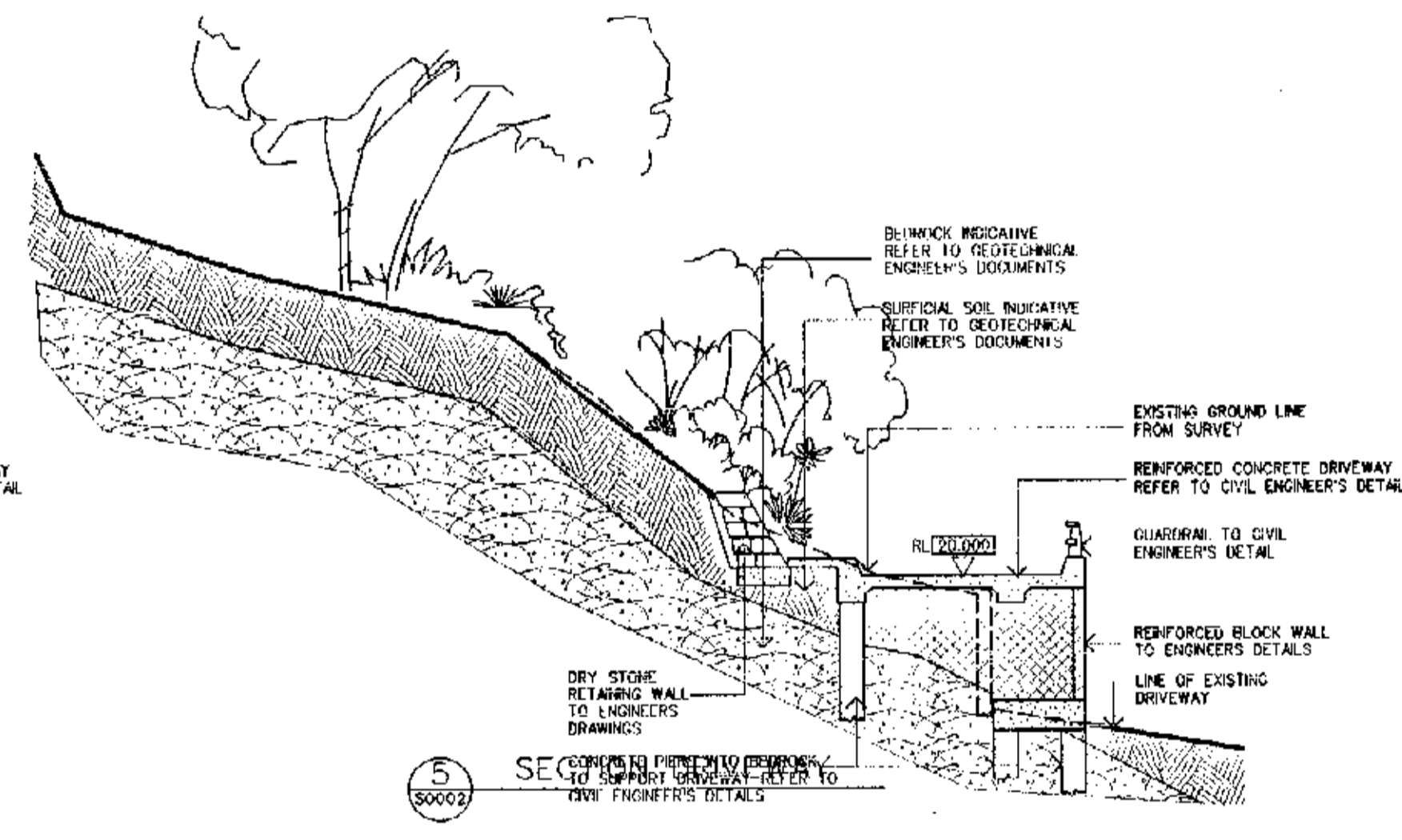
2 SECTION DRIVEWAY  
500002

NOT USED

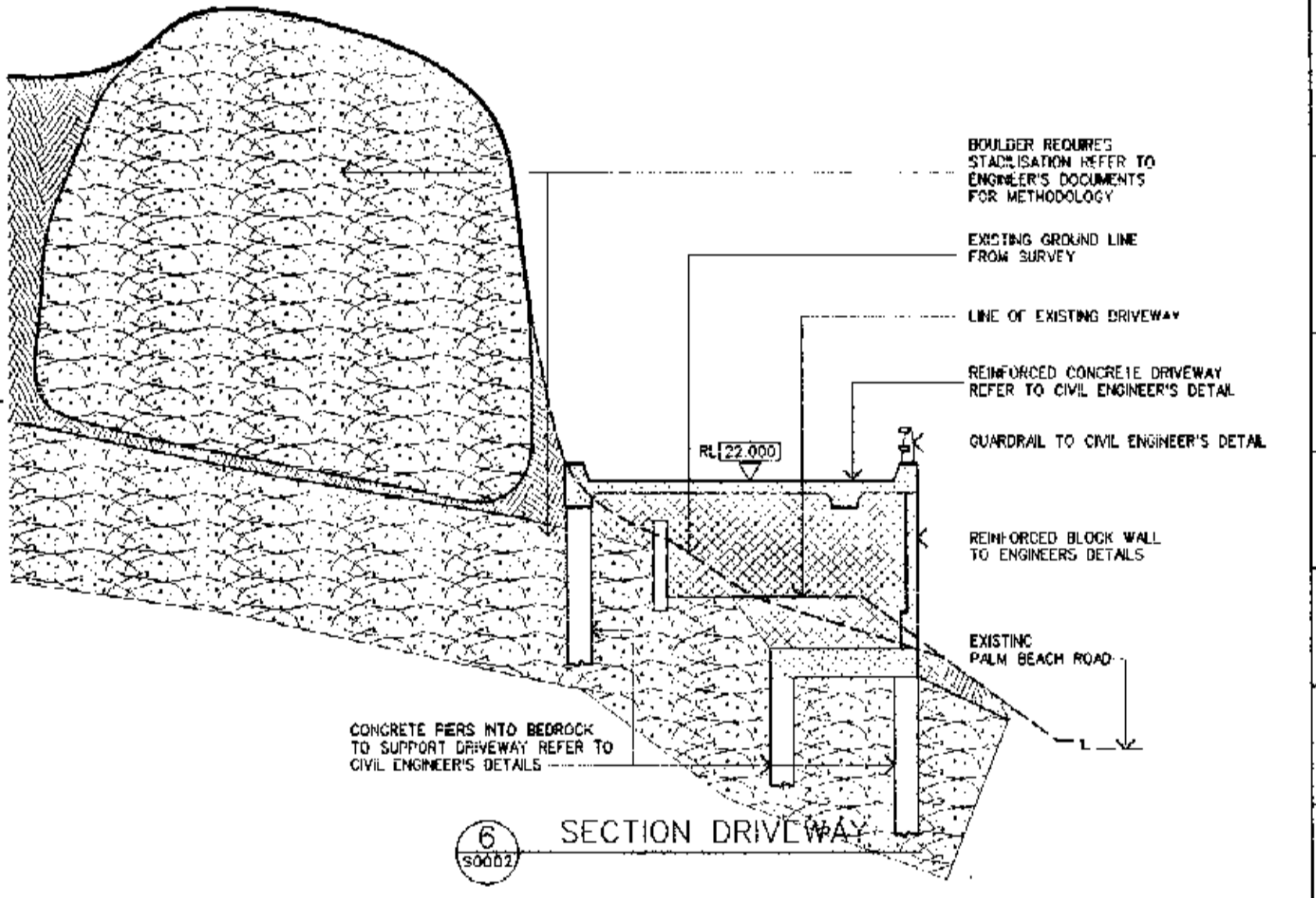
3 SECTION DRIVEWAY  
500002



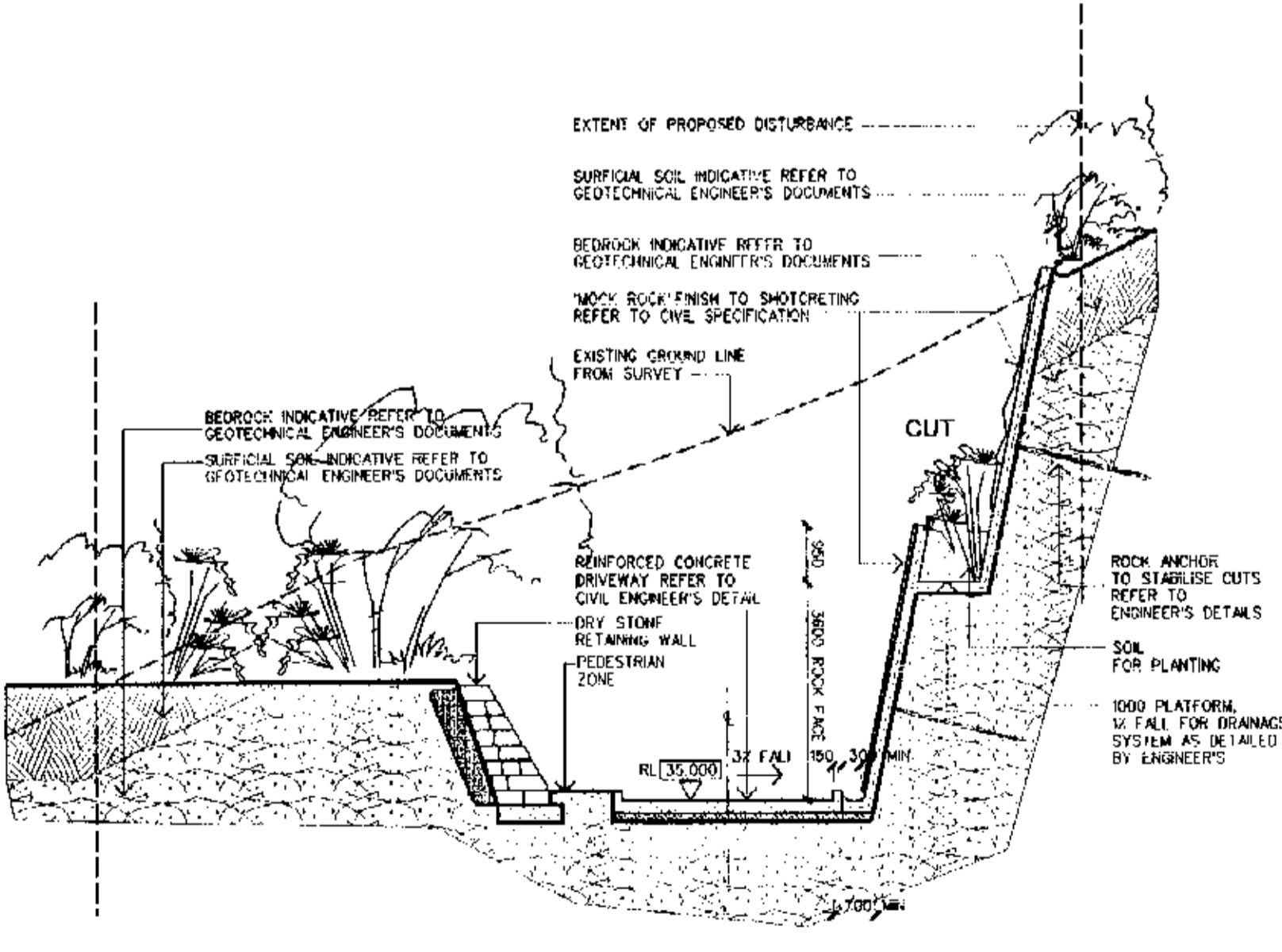
4 SECTION DRIVEWAY  
500002



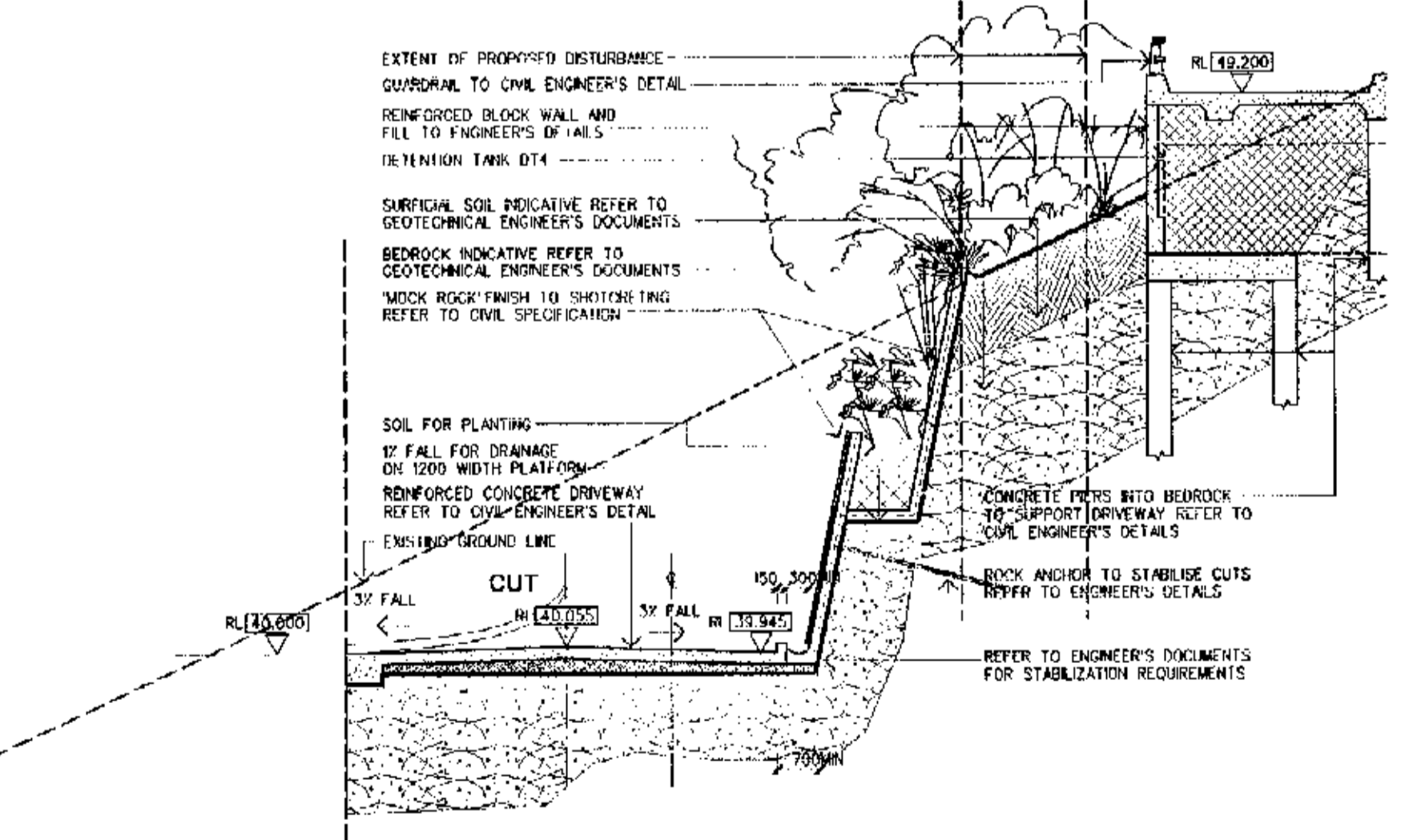
5 SECTION DRIVEWAY  
500002



6 SECTION DRIVEWAY  
500002



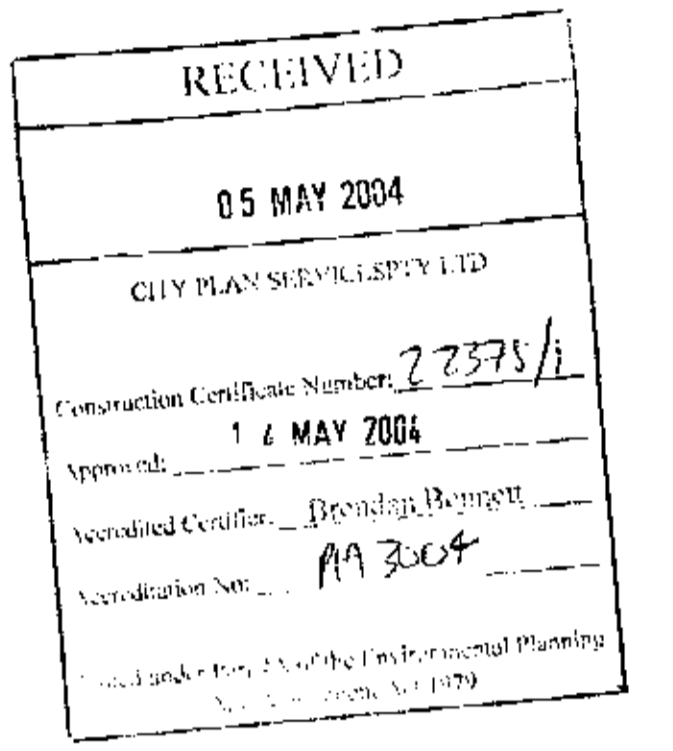
7 SECTION DRIVEWAY  
500002



8 SECTION DRIVEWAY  
500002

Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take preference to scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

revision	No	Date	Description
A	19-01-04		for construction setout



client  
**Raymond Pty Ltd**  
pu box 1364, dnr whv, nsw 2099  
mobile ph + 61 2 0412 2245 044 fax + 61 2 9944 0316  
structural & civil engineers  
www.raymond.com.au  
ph + 61 2 9944 0316 fax + 61 2 9944 0316  
geotechnical engineers  
designs & patterns  
98 hermitage road, west ryde, nsw 2114  
ph + 61 2 9809 0885 fax + 61 2 9809 4095  
surveyor  
boundary group  
12 weirworth street, paramatta, nsw 2124  
ph + 61 2 9633 2777 fax + 61 2 9801 4738  
landscape  
parramatta, stanhield & bruce  
360 pacific highway, crown nest, nsw 2065  
ph + 61 2 9926 4500 fax + 61 2 9906 4479  
address  
1148-1152 barrenjoey road  
56 palm beach road, Palm Beach

project/title  
**OBSERVATION POINT**

drawn	date	checked	plot date
vnn	july-2002	Cl number	11 nov 2002

file name  
**SUB-DIVISION DRIVEWAY CROSS SECTIONS**

job no.  
**20006**

scale  
1:100 @ A1  
1:200 @ A3

revision/drawing no.  
A for construction  
**AWD | S3001**

364 kent street sydney nsw 2000 australia  
tel + 61 2 9242 1988 fax + 61 2 9242 2288  
syd@crone.com.au acn 059 989 272  
**crone nation architects**  
P.L.A.C. (pt) ltd

Check & verify all dimensions prior to commencement of work. This drawing shall be read in conjunction with all other contract documents, including those by other consultants / subcontractors, including specifications. Seek clarification of inconsistencies / conflicts. Figured dimensions shall take preference to scaled dimensions. This drawing is copyright & shall remain the property of Crone Nation Architects.

revision	No	Date	Description
A	19-01-04		for construction setout

RECEIVED  
05 MAY 2004  
CITY PLANNING SERVICE LTD  
Construction Certificate Number: 22375/1  
Approved: 14 MAY 2004  
Valid until: 1/1/2004

client  
**Raypond Pty Ltd.**  
po box 1364, dee why, nsw 2099  
mobile ph. + 61 2 0412 226 044 fax. + 61 2 9944 0316  
structural & civil engineers  
geotechnical engineers  
design & partners  
86 hermitage road, west ycle, nsw 2114  
ph: + 61 2 9609 0666 fax: + 61 2 9609 4095  
surveyor  
bowdens group  
12 winworth street, paramatta, nsw 2124  
ph: + 61 2 9633 2277 fax: + 61 2 9691 4798  
landscape  
philwright whitfield & harron  
380 pacific highway, crows nest, nsw 2065  
ph: + 61 2 9506 4500 fax: + 61 2 9506 4479

address  
**1148-1152 barrenjoey road  
56 palm beach road, Palm Beach**

project title  
**OBSERVATION POINT**

drawn	date	checked	plot date
vln	oct 2002	QF number	11 nov 2002

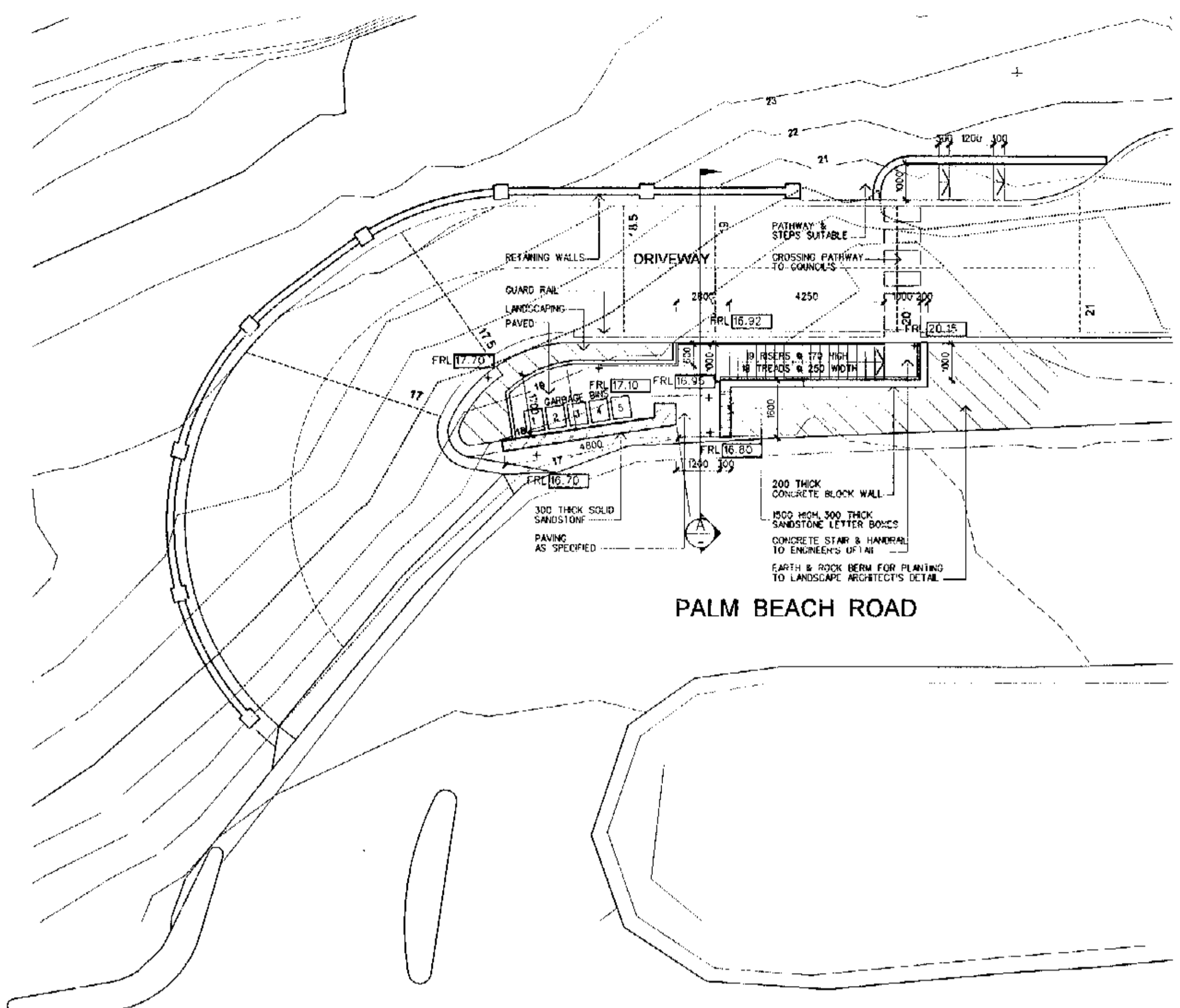
title name  
**STAIR, GARBAGE BINS, LETTER BOXES, AND ENTRY RETAINING WALL SETOUT**

job no.  
**20006**

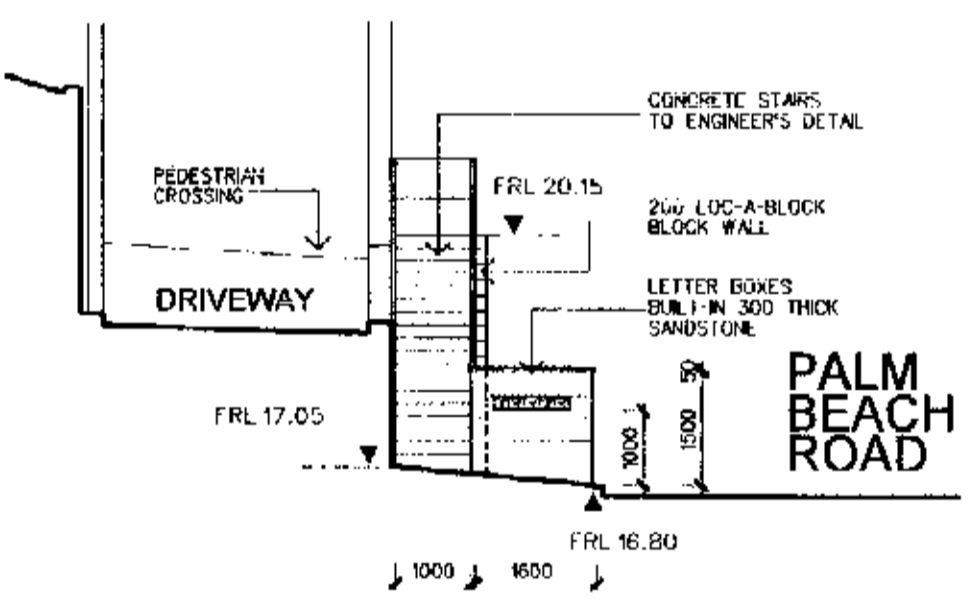
scale  
1:100 @ A1  
1:200 @ A3

revision/drawing no.  
A for construction  
**AWD | S3002**

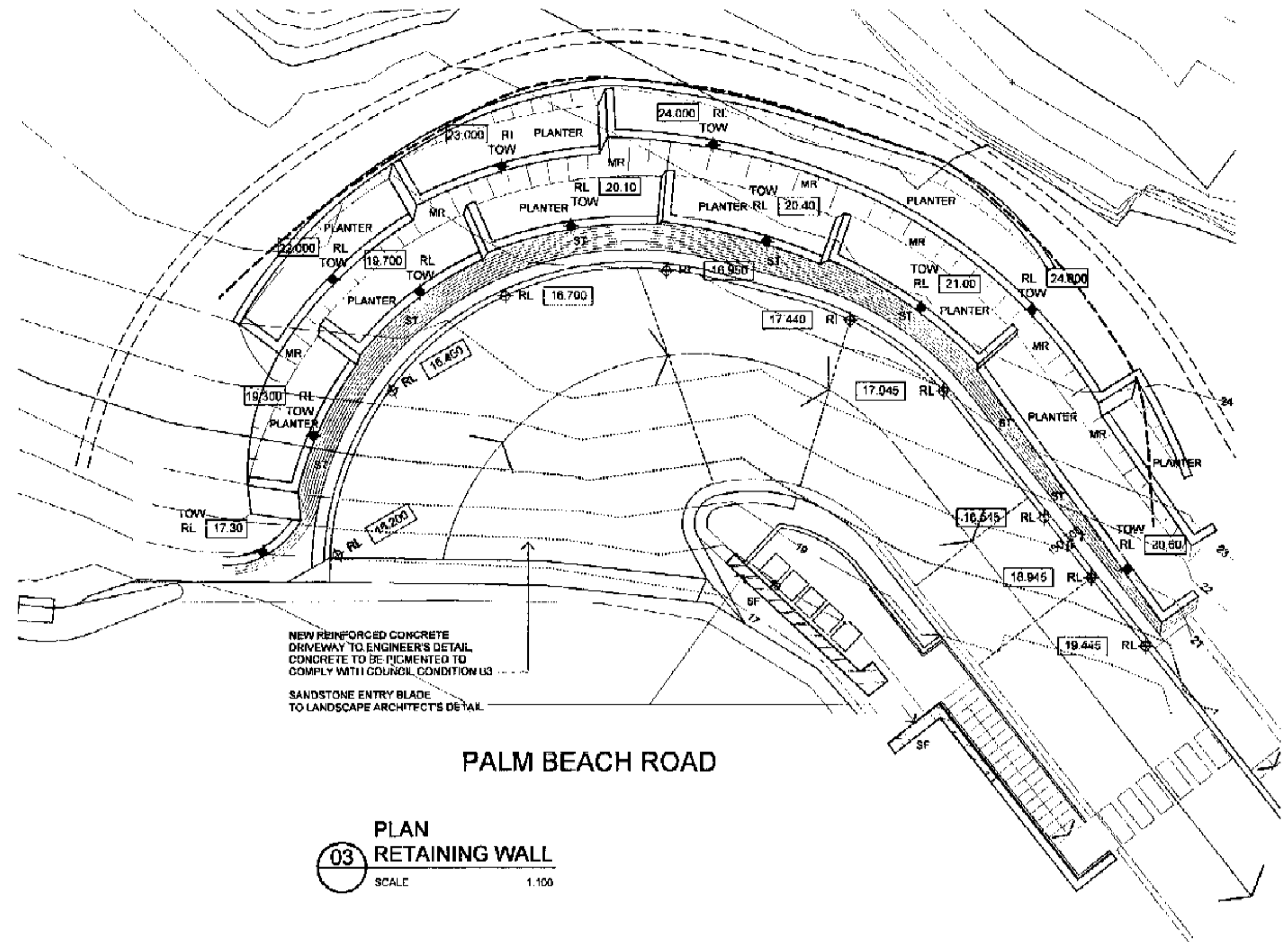
284 kent street sydney nsw 2000 australia  
tel: + 61 2 952 1988 fax: + 61 2 9727 3288  
syd@cronenation.com acn 059 989 272  
**crone nation architects**



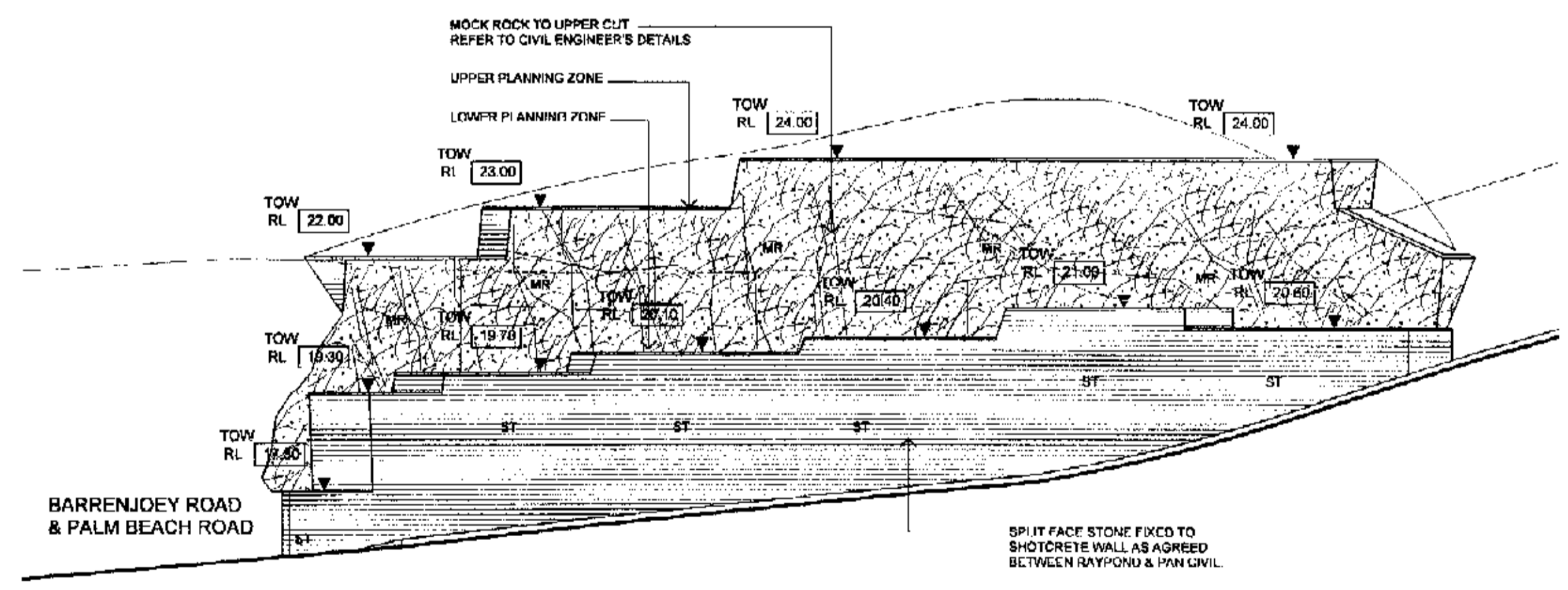
01 PEDESTRIAN PATHWAY STAIRS - LETTERBOXES  
SCALE 1:100



A SECTION A PALM BEACH ROAD  
SCALE 1:100



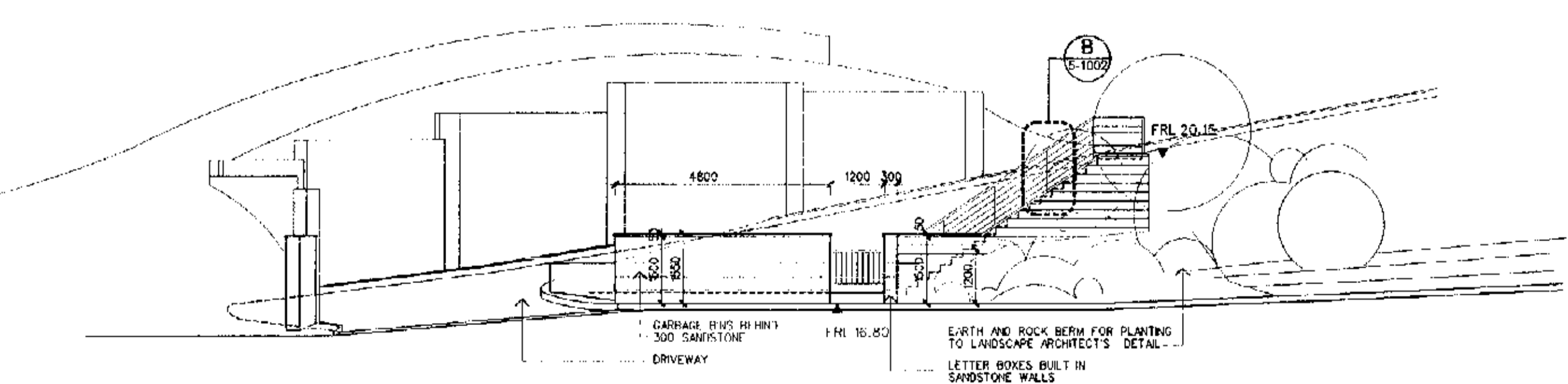
03 PLAN RETAINING WALL  
SCALE 1:100



04 TRUE ELEVATION RETAINING WALL  
SCALE 1:100

**LEGEND**

- MR MOCK ROCK FINISH TO CUTS TO ENGINEER'S DETAIL
- GD GRATED DRAIN TO ENGINEER'S DETAIL
- DT DETENTION TANK TO ENGINEER'S DETAIL
- SW SOLDIER WALL TO ENGINEER'S DETAIL
- SF SANDSTONE FEATURE WALL TO ENGINEER'S DETAIL
- ST STONE FACING TO ENGINEER'S DETAIL
- BW BOULDER WALL TO ENGINEER'S DETAIL
- DD DISH DRAIN TO ENGINEER'S DETAIL



02 ELEVATION PALM BEACH ROAD  
SCALE 1:100

# OBSERVATION POINT PROPOSED ACCESS ROAD

at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach

for: Raypond Development

Prepared By:

**NB** NORTHERN BEACHES  
Consulting Engineers P/L.

A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9984 7444  
e-mail : nb@nbconsulting.com.au

CITY PLAN APPROVED  
TRK: Structural  
FIG NO: 10375/11

## DRAWING SCHEDULE:

S01 - GENERAL NOTES  
C01 - GENERAL ARRANGEMENT PLAN  
C02 - BULK EARTHWORKS CROSS SECTIONS SHEET 1  
C03 - BULK EARTHWORKS CROSS SECTIONS SHEET 2  
C04 - BULK EARTHWORKS CROSS SECTIONS SHEET 3  
C05 - BULK EARTHWORKS CROSS SECTIONS SHEET 4  
C06 - NOT USED

C07 - RETAINING WALL DETAILS SHEET 1  
C08 - RETAINING WALL DETAILS SHEET 2  
C09 - RETAINING WALL DETAILS SHEET 3  
C10 - RETAINING WALL DETAILS SHEET 4  
C11 - RETAINING WALL DETAILS SHEET 5  
C12 - SEDIMENT AND EROSION CONTROL PLAN  
C13 - SEDIMENT AND EROSION CONTROL DETAILS

C14 - DRAINAGE PLAN  
C15 - DRIVEWAY PLAN AND DETAILS  
C16 - EXTERNAL ROADWORKS PLAN AND DETAILS  
C17 - ON-SITE DETENTION TANK DT3 PLAN AND DRAINAGE DETAILS  
C18 - ON-SITE DETENTION TANK DT4 PLAN AND DRAINAGE DETAILS  
C19 - DRIVEWAY ELEVATIONS SHEET 1  
C20 - DRIVEWAY ELEVATIONS SHEET 2  
C21 - SUSPENDED DRIVE WAY PLAN AND DETAILS

030963

**GENERAL NOTES:**

**GENERAL**

- G1. The drawings are to be read together with all Architects drawings and specifications.
- G2. Dimensions shall not be obtained by scaling from the drawings. All setting out dimensions shall be verified and discrepancies shall be referred to the Engineer prior to commencement of work.
- G3. Care is required during construction so that structural elements are not over stressed and that the works and excavations required therefore are kept stable at all times.
- G4. Design, materials and workmanship are to be in accordance with current S.A.A standards and statutory authority regulations except where varied by these documents.
- G5. Design live loads are in accordance with AS 1170.1

**FOOTINGS**

- F1. Footings to be constructed and back filled as soon as possible following excavation to avoid softening by rain or drying out by exposure.
- F2. Footings must bear into undisturbed natural ground clear of organic material. Refer to details.
- F3. If rock or variable bearing strata is encountered during excavation of the footings all footings/piers are to be excavated to similar material of greater bearing capacity. The Engineer is to be contacted at that time for approval or review.
- F4. Footings to be cast in approved material having an allowable capacity as follows:

**Sand Foundations:**

- SA1. Required bearing capacity 100 kPa.
- SA2. Trenches must be cleaned of all debris and hand compacted prior to placement of reinforcement.

**Clay Foundations:**

- CL1. Required bearing capacity 150 kPa.
- CL2. Trenches must be cleaned of all debris. Soft spots must be cut out and filled as per compacted fill notes, prior to placement of reinforcement.

**Shale Foundations:**

- SH1. Required bearing capacity 400 kPa.
- SH2. Excavation for footings into shale must be cast or capped with plain concrete on the same day as excavation.

**Sandstone Foundations:**

- SS1. Required bearing capacity 650 kPa.
- SS2. Scarpe weathered surface to remove cleaved sandstone under footings. Refer adjacent for assumed Design bearing strata.

**CONCRETE**

- C1. All workmanship and materials shall be in accordance with AS 3600.
- C2. Concrete quality shall be as follows and shall be verified by tests.
- C3. All concrete unless otherwise noted shall have a slump of 80mm at point of placement, a max. aggregate size of 20 mm, and a min. cement content of 280 kg/cubic metre. No water shall be added to the mix prior to or during placement of concrete.
- C4. Clear concrete cover to reinforcement shall be as follows unless otherwise shown-

ELEMENT	INTERIOR	EXTERIOR	EXTERIOR CAST AGAINST GROUND
FOOTINGS	-	-	50
COLUMNS/PEDESTALS	30 UNO	REFER TO PLAN	-
SLABS/WALLS	25	REFER TO PLAN	40 ON MEMBRANE
BEAMS	25 UNO	REFER TO PLAN	50
BLOCKWORK	55 FROM APPROPRIATE FACE		

- C5. Sizes of concrete elements do not include thickness of applied finishes.
- C6. All Construction Joints locations shall be approved by the Structural Engineer.
- C7. Beam depths are written first and include slab thickness, if any.
- C8. No holes or chases other than those shown on the structural drawings shall be made in concrete elements without the prior approval of the engineer.
- C9. Shrinkage reducing admixtures such as 'Eclipse' or approved equivalent, if specified, must be added to mix prior to pour.
- C10. Water reducing agents, if specified, must be added to mix prior to pour. No extra water is to be added to increase slump.
- C11. Where vertical slab/beam surfaces are formed against a masonry (or other) wall, provide 10 mm styrene separation material.
- C12. Water must not be added to concrete mix prior to placement of concrete.
- C13. Above covers may have to be adjusted if fire rating is a requirement.

**SEDIMENT & EROSION CONTROL**

- SE1. THE SEDIMENT & EROSION CONTROL MEASURES SHOWN ON THESE DRAWINGS ARE INDICATIVE ONLY AND ARE INTENDED AS A GUIDE TO THE BASIC MEASURES REQUIRED. THE CONTRACTOR IS TO PROVIDE ADDITIONAL MEASURES AS REQUIRED TO SUIT HIS STAGING, WORK METHODS & REQUIREMENTS OF COUNCIL. THE CONTRACTOR IS ALSO TO PROVIDE & MAINTAIN EFFECTIVE DUST CONTROL MEASURES TO THE ABOVE AUTHORITIES SATISFACTION.
- SE2. THE WORKS ARE TO BE UNDERTAKEN WITH SEDIMENT & EROSION CONTROL MEASURES IN ACCORDANCE WITH SPECIFICATION R52.
- SE3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES AND FOR THE MAINTENANCE AND ONGOING OPERATION OF ALL CONTROL MEASURES. ALL CONTROL FEATURES ARE TO BE REGULARLY INSPECTED TO ENSURE CORRECT OPERATION.

**REINFORCEMENT**

- R1. All reinforcement specified is Grade D500 unless noted otherwise.
- R2. Reinforcement is represented diagrammatically it is not necessarily shown in true projection.
- R3. Top reinforcement is to be continuous over supports. Bottom reinforcement to be lapped at supports.
- R4. Welding of reinforcement shall not be permitted unless shown on the structural drawings.
- R5. Pipes or conduits shall not be placed within the zone of concrete cover to the reinforcement without the approval of the engineer.
- R6. All reinforcing bars and fabric shall comply with AS 4671-2001.
- R7. Reinforcement symbols:  
 N - Grade 500N deformed bar (D500) Normal Ductility  
 R - Grade 250N plain round bar (R250) Normal Ductility  
 SL - Grade 500L welded deformed ribbed mesh (D500) Square Low Ductility  
 RL - Grade 500L welded deformed ribbed mesh (D500) Rectangular Low Ductility.  
 The number immediately following these symbols is the number of millimeters in the bar diameter.  
 Example:  
 8 N12-250, denotes 8, Grade 500N deformed bars, 12 mm diameter at 250 cts.  
 R8. Fabric reinforcement to be lapped 1 complete square + 25 mm unless noted otherwise.
- R9. All reinforcement shall be firmly supported on bar chairs spaced at a maximum of 750 centres both ways under rod and fabric reinforcement. Reinforcement shall be tied at alternate intersections.

**FORMWORK**

- FW1. Formwork must be cleaned of all debris prior to casting of concrete.
- FW2. Minimum stripping times for form work shall be as recommended in AS 1504 or as directed by the engineer.
- FW3. The finished concrete shall be a dense homogeneous mass, completely filling the form work, thoroughly embedding the reinforcement and free of stone pockets. All concrete elements including slabs on ground and footings shall be compacted with mechanical vibrators.
- FW4. Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 3 days, followed by prevention of loss of moisture for seven days followed by a gradual drying out. Approved sprayed on curing compounds may be used where no floor finishes are proposed. Polythene sheeting or wet hessian may be used if protected from wind and traffic.

**BRICKWORK**

- BR1. Brickwork is to be constructed to AS 3700.
- BR2. Two layers of approved greased metal based slip material shall be used over all load bearing walls that support concrete slabs and placed on smooth brickwork or trowelled mortar finish. Non load-bearing walls shall have 10 mm compressible material and ties to the slab soffit.
- BR3. No brickwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests.
- BR4. Control joints to be placed at a maximum of 8m centres or in accordance with AS 3700.
- BR5. Exposure grade bricks to be used below damp proof course.
- BR6. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO. Bitumastic fibreboard internal UNO.
- BR7. Provide stainless steel wall ties below DPC to AS 3700. Provide galvanized wall ties above DPC to AS 3700 & Local Council Specifications.

**BLOCKWORK**

- BL1. Concrete blocks shall have a minimum compressive strength of 15 MPa and conform to AS 1500. Masonry to be constructed to AS 3700.
- BL2. Where cores of hollow blocks are to be filled, properly compacted 20MPa concrete with 10 mm aggregate and 230 mm slump shall be used. Clean out openings must be utilized for all cores.
- BL3. Location of actual starters is critical to suit block cores, allow 55 mm cover from the outside face of blockwork. All reinforcement lap lengths to conform to AS 3600.
- BL4. Control joints to be placed at a maximum of 8 m centres or in accordance with AS 3700.
- BL5. Vertical control joint material where specified on plan between slabs and brick walls shall be: 10 mm Spandex External UNO. Bitumastic fibreboard internal UNO.
- BL6. Retaining walls or any reinforced and concrete core filled block walls to be of Double 'U' Block Construction.
- BL7. No blockwork shall be constructed on suspended slabs until all propping has been removed from the underside of the slab and the concrete has the specified 28 day cylinder strength verified by tests unless approved by the Structural Engineer.
- BL8. Max. pour height for unrestrained blockwork is 2000.

**STEEL**

- S1. All structural steelwork to be Grade 300 or greater. Design, fabrication and erection to be in accordance with AS 4100.
- S2. Materials and workmanship shall comply with AS 1250 - 1981, SAA Steel Structures Code and the specification for Structural Steel.
- S3. Rolled steel sections including steel plates shall comply with AS 3678 - 1990.
- S4. Cold formed steel sections shall be Grade 450 Zinc coated in accordance with AS 1518-1988.
- S5. Welded and seamless steel hollow sections shall comply with AS 1163, Grade 350.
- S6. Bolt Designation:  
 4.6S - Commercial bolts Grade 4.6, snug tightened.  
 8.8S - High strength structural bolts Grade 8.8, snug tightened.  
 8.8TB - High strength structural bolts Grade 8.8, fully tightened to AS 1511 and acting as a Bearing Joint.  
 8.8TF - High strength structural bolts Grade 8.8, fully tensioned to AS 1511 and acting as a Bearing Joint.  
 Unless noted otherwise, all bolts will be 8.8S.  
 S7. Unless shown otherwise, minimum connection shall be 2M16 bolts, 10 thick gusset plates, 6mm continuous fillet welds.  
 S8. Load indicating washers shall be used in all fully tensioned joints. (8.8TF & 8.8TB).  
 S9. All welding shall be carried out in accordance with AS 1554 SAA Structural Steel Welding Code.  
 S10. Unless noted otherwise all welds shall be category SP using E41xx Electrodes. All butt welds shall be complete penetration butt welds category SP.  
 S11. Grouting of anchor bolt sleeves and base plates shall be completed by the contractor using High Strength, Non-Shrink grout.  
 S12. Fabrication and erection tolerances for Structural Steelwork shall be in accordance with AS 4100.  
 S13. Purlin bolts shall be M12 - 4.6S galvanised.  
 S14. Steel work shall have one of the following grades of corrosion protection- INTERNAL:  
 a. Thoroughly cleaned wire brushing, followed by two coats of zinc phosphate primer equivalent to Dulux Luxprime applied by hand using brushes to achieve a total dry film thickness of 70 microns.  
 EXTERNAL ELEMENTS & ELEMENTS WITHIN EITHER SKIN OF EXTERNAL CAVITY WALLS:  
 b. Preparation Blast clean to a minimum standard Class 2.5 in accordance with AS 1627 Part 4.  
 Primer 2-pack epoxy phosphate at dft 75 microns (Dulux Durepan P14).  
 Barrier Coat 2-pack epoxy micaceous iron oxide, dft 100 microns  
 Finish Coat 2-pack epoxy high gloss acrylic to dft 75 microns (e.g. Dulux Acathane 1 F) in an approved colour.  
 c. Hot dipped galvanized to AS 4680.  
 Where galvanized coating is broken on site make good with two coats of zinc rich epoxy primer equivalent to Dulux Zinc anode 202 or Hot Metal Spray in accordance with AS 4680.  
 S15. Workshop drawings shall be prepared and two copies submitted to the engineer for review prior to fabrication commencement.

**TIMBER**

- T1. All workmanship and materials to be in accordance with AS 1684 and AS 1720. All soft wood to be Grade F7 unless noted otherwise. All hardwood to be minimum Grade F14 unless otherwise noted. Exposed timber to be CCA treated (to AS 1604) redried after full impregnation, or durability class 1 or 2.
- T2. All joists deeper than 150 to have blocking over support bearers and at a maximum 8000 centres.
- T3. Roof trusses to be designed by the manufacturer to the relevant standards. Pre camber to be an amount equal to dead load deflection u.o.
- T4. All holes for bolts to be exact size. Washers to be used under all heads and nuts and to be at least 2.5 times the bolt diameter. Bolts to be M16 grade 4.6 unless noted otherwise.
- T5. Treat all exposed cut ends with Resol by Protim to manufacturers specification to achieve required Hazard Level Exposure Classification.
- T6. Battens for T & G to be Kiln Dried to 12% 38mm minimum deep treated pine or as recommended by supplier. Flooring to be installed no sooner than 28 days after slab pour.
- T7. Hot dip galvanized nails/clouts/screws to be used with all timber connections.
- T8. Continuous nailing must not be used for any timber connections.

**COMPACTED FILL**

- CF1. Only to be used with approval Engineer & to be certified by a geotechnical Engineer.
- CF2. Clear organic material and topsoil under proposed slabs/footings.
- CF3. Filling shall be granular material compacted in not more than 200 mm layers to a minimum dry density ratio (AS 1289/E4.2 1982) of 98 percent standard.
- CF4. During clearing and excavation for slabs and footings cut out soft spots and fill as above.

**INSPECTIONS BY ENGINEER**

- 24 HOURS NOTICE IS REQUIRED BEFORE ANY SITE INSPECTION
1. Bearing strata of all footings prior to concrete pour.
  2. Any reinforcement prior to concrete pour.
  3. Timber and Steel framing prior to cladding or lining.
  4. Steel lintels after installation.

**RETAINING WALLS**

- RW1. ENSURE FREE DRAINING BACKFILL AND DRAINAGE IS IN PLACE BEHIND ALL RETAINING WALLS.

**SHOTCRETE NOTES**

1. PROVIDE SUPPORT TO EXISTING SERVICES AS REQUIRED. TO BE DETERMINED ON SITE.
2. SHOTCRETE CONCRETE TO BE IN ACCORDANCE WITH THE 'CONCRETE INSTITUTE OF AUSTRALIA' PUBLICATION 'RECOMMENDED PRACTICE - SPRAYED CONCRETE'.
3. SANDSTONE ROCK FACE TO BE INSPECTED BY GEOTECHNICAL ENGINEER TO CONFIRM STABILITY, IF UNFAVOURABLE ROCK MASS CONDITIONS ARE ENCOUNTERED, ROCK BOLTING MAY BE REQUIRED.

**SITE PREPARATION, CLEARING AND GRUBBING**

- S1. ALL WORK TO BE IN ACCORDANCE WITH LANDSCAPE SPECIFICATION
- S2. DIVERTING WATER AND DEMATERING  
 THE CONTRACTOR SHALL TAKE ALL NECESSARY ACTION TO PREVENT ANY SURFACE OR SUBSOIL WATER FROM INTERFERING WITH THE PROGRESS OF THE WORKS. THE WORK SHALL BE KEPT FREE FROM SUCH WATER.  
 ANY EXISTING AREAS OF THE SITE SUBJECT TO INUNDATION SHALL BE DEMATERED PRIOR TO WORKING IN THOSE AREAS.  
 ANY WORK OR MATERIAL DAMAGED BY WATER FROM ANY SOURCE SHALL BE REMOVED, REPLACED WITH FRESH MATERIAL AND RECONSTRUCTED BY THE CONTRACTOR.
- S3. SEDIMENT AND EROSION CONTROL MEASURES SHALL BE CARRIED OUT FOR THE FULL DURATION OF THE WORKS BY THE CONTRACTOR
- S4. THE SITE AREA SUBJECT TO NEW WORKS IS TO BE CLEARED OF ALL VEGETATION, FALLEN TIMBER, RUBBISH, DEBRIS AND CONCRETE FOUNDATIONS.
- S5. STRIP EXISTING TOPSOIL (ALLOW 100mm) AND DISPOSE OF OR REUSE FOR LANDSCAPING AS PER SPECIFICATION. DEPTH OF TOPSOIL MAY EXCEED 200mm IN SOME AREAS. ONLY REMOVE TOPSOIL AS DIRECTED BY THE SUPERINTENDENT.
- S6. EXISTING SMALL TREES IN AREAS SUBJECT TO NEW WORKS TO BE TRANSPLANTED TO OTHER AREAS WITHIN THE SITE.

**EARTHWORKS**

- E1. ALL WORK TO BE IN ACCORDANCE WITH THE SPECIFICATION.
- E2. CUT TO LEVEL OF TOP OF SUBGRADE PROOF ROLL ALL EXPOSED SUBGRADE AND REPLACE SOFT OR SPONGY AREAS AS PER FILL NOTES BELOW, COMPACT AS PER FILL.
- E3. IN FILL AREAS- CUT AND REMOVE VEGETATION AND STRIP TOPSOIL -(AS PER SITE PREPARATION NOTES) PROOF ROLL EXPOSED SUBGRADE AND REPLACE SOFT OR SPONGY AREAS, AS DIRECTED BY THE GEOTECHNICAL ENGINEER OR SUPERINTENDENT. PLACE AND COMPACT NEW FILL.

**GEOTECHNICAL**

- G1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH GEOTECHNICAL INVESTIGATION REPORTS BY SHIRLEY CONSULTING ENGINEERS  
 PREPARED 18 DECEMBER 2000, REF: RN2000108  
 SHIRLEY CONSULTING ENGINEERS  
 PREPARED 27 JULY 2002, REF: RN20020725

**SURVEY**

- S1. THESE DRAWINGS BASED ON SURVEY PREPARED BY BONDENS GROUP DRAWING No. 31784/01
- S2. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D) UNO
- S3. ALL LEVELS AND DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORK AND SUPERINTENDENT NOTIFIED OF ANY DISCREPANCIES.

**EXISTING PAVEMENT**

- EP1. CUT EXISTING PAVEMENT TO FORM NEAT EDGE FOR NEW WORK.
- EP2. LEVELS OF NEW PAVEMENT TO MATCH EXISTING WHERE IT ADJUTS.

**EXCAVATION AND STORAGE**

- ES1. EXCAVATIONS SHALL NOT BE LEFT OPEN OVERNIGHT. CONTRACTOR SHALL PROVIDE ADEQUATE BARRICADES, WARNING SIGNS, LAMPS ETC. AS REQUIRED FOR THE SAFETY OF THE PUBLIC.
- ES2. LOCATION OF STORAGE OF CONSTRUCTION MATERIALS TO BE APPROVED BY THE SUPERINTENDENT.

**DRAINAGE**

- D1. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3600.3.
- D2. ALL PIPES NOMINATE 3 SWC \* ON DRAINAGE PLAN SHALL BE STORMWATER UPVC PIPES CLASS AND HAVE SOLVENT WELDED JOINTS IN ACCORDANCE WITH AS1254 AND INSTALLED IN ACCORDANCE WITH AS 2032
- D3. ALL PIPES NOMINATE \* MSP \* ON DRAINAGE PLAN SHALL BE SENIOR CLASS UPVC PIPE WITH HINE SUBSDENCE JOINT (IPLEX PRODUCT CODE DMEH 150 OR APPROVED EQUIVALENT).
- D4. ALL PITS TO HAVE CONCRETE BENCHING TO FACILITATE THE SMOOTH FLOW OF WATER THROUGH THE PIT.
- D5. MINIMUM COVER TO PIPES SHALL BE 600mm UNDER TRAFFICABLE AREAS WITH NO CONCRETE SLAB OVER 450mm UNDER TRAFFICABLE AREA WITH CONCRETE SLAB OVER AND 300 ELSEWHERE U.N.O.
- D6. ALL PIPE GRADIENTS TO BE A MINIMUM OF 1% U.N.O
- D7. ALL PITS DEEPER THAN 1.2m TO HAVE STEP IRONS.
- D8. PROVIDE SUB-SOIL DRAINS TO ALL LANDSCAPED AREAS AND MEDIANS. CONNECT TO STORMWATER PITS. REFER LANDSCAPE ARCHITECTS DRAWINGS FOR DETAILS.

**PAVEMENTS**

- P1. CONCRETE BASE ON GROUND  
 MINIMUM STRENGTH, F<sub>cd</sub> = 32 MPa  
 OTHER CONCRETE PROPERTIES: REFER STRUCTURAL NOTES
- P2. GRANULAR SUB-PAVEMENT  
 BASE MATERIAL TO BE CRUSHED ROCK NOM. 20 MM MAXIMUM SIZE PARTICLES WITH THE FOLLOWING PROPERTIES:

PARTICLE SIZE GRADING:

SIIEVE SIZE (MM)	% PASSING NOM. 20MM
26.5	100
19.0	98-100
9.5	64-85
4.75	44-64
2.36	32-47
0.425	13-22
0.075	3-11

- PLASTICITY INDEX 6% MAX.  
 LIQUID LIMIT 25% MAX.  
 OTHER MATERIALS MAY BE CONSIDERED FOR APPROVAL. SUPERINTENDENT TO BE PROVIDED WITH DETAILS OF ANY ALTERNATIVE MATERIAL PROPOSED.

ASSUMED FOUNDATION CLASSIFICATION FOR DESIGN PURPOSES - ASSUMED BEARING STRATA FOR DESIGN PURPOSES - VARIES

**FOR CONSTRUCTION.**  
**CITY PLAN SERVICES**  
 1111 Strickland  
 File No. 22375/11

Date	Rev.	Amendment
22.01.2004	A	Drawing Schedule deleted, Footing Notes altered, Notes added

**DOCUMENT CERTIFICATION**

I am a qualified Structural/Civil Engineer.  
 I hold the following qualifications:  
 BE(Civil), CPEng, MIEAust., NPER.  
 Institute of Engineers Membership No. 803938  
 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

Date: FEB 01  
 Rick G. Wray  
 (Director Northern Beaches Consulting Engineers)

**NORTHERN BEACHES Consulting Engineers P/L.**  
 ACN: 078 121 818 ABA, 24 078 121 816  
 Suite 201, 30 FISHER ROAD  
 DEE WHY N.S.W. 2099  
 PH: (02) 9984 7000 Fax: (02) 9984 7444  
 e-mail: nb@nbeconsulting.com.au

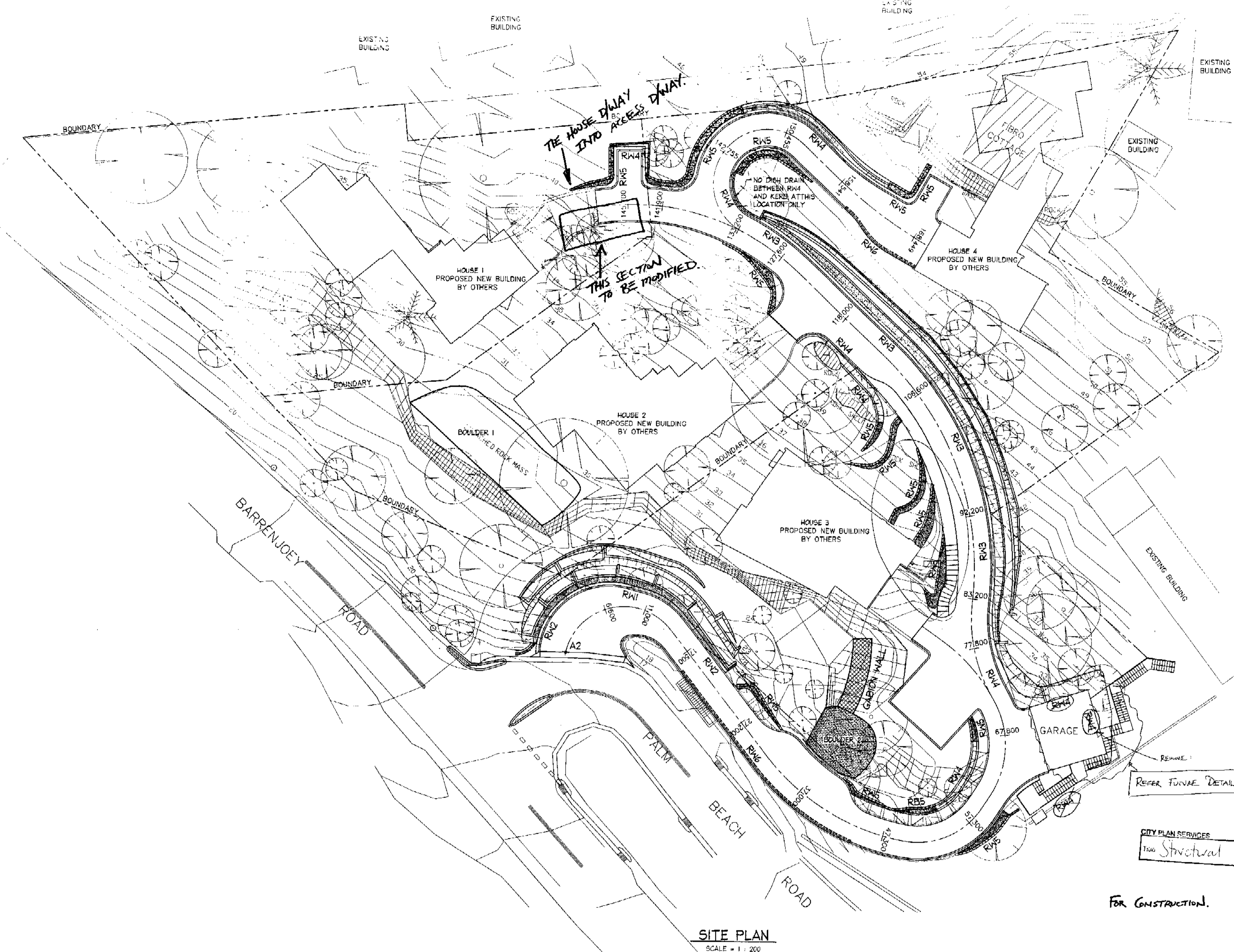
**PROPOSED ACCESS ROAD**  
 at: 1148-1152 Barrenjoey Road  
 and 56 Palm Beach Road  
 Palm Beach  
 for: Raypond Development

Drawing Title:  
**GENERAL NOTES**  
 The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

Date	Design	Drawn	Checked
Oct. 2003	R.G.W.	Paul R. Bruce CPEAust., MDDAust.	
Job No.	Drawing No.	Rev.	
030963	501	A	

**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER S01.



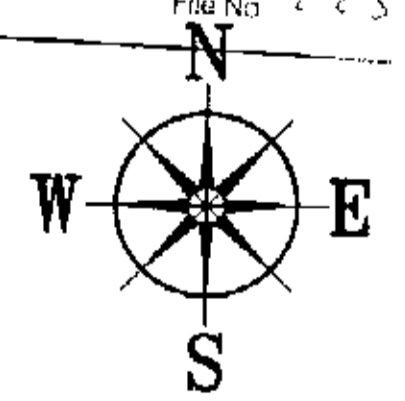
A2 - SETOUT POINT  
REFER ARCHITECTURAL DRAWING  
S0010 FOR DIMENSIONAL  
SETOUT OF DRIVEWAY.

REFER FUTURE DETAILS

NOTE:  
SECTIONS ARE DERIVED FROM SURVEY,  
REFER TO ARCHITECTS DRAWINGS FOR  
PAVEMENT LEVELS AND SET OUT.

CITY PLAN SERVICES  
1100 Structural  
File No 22375/1

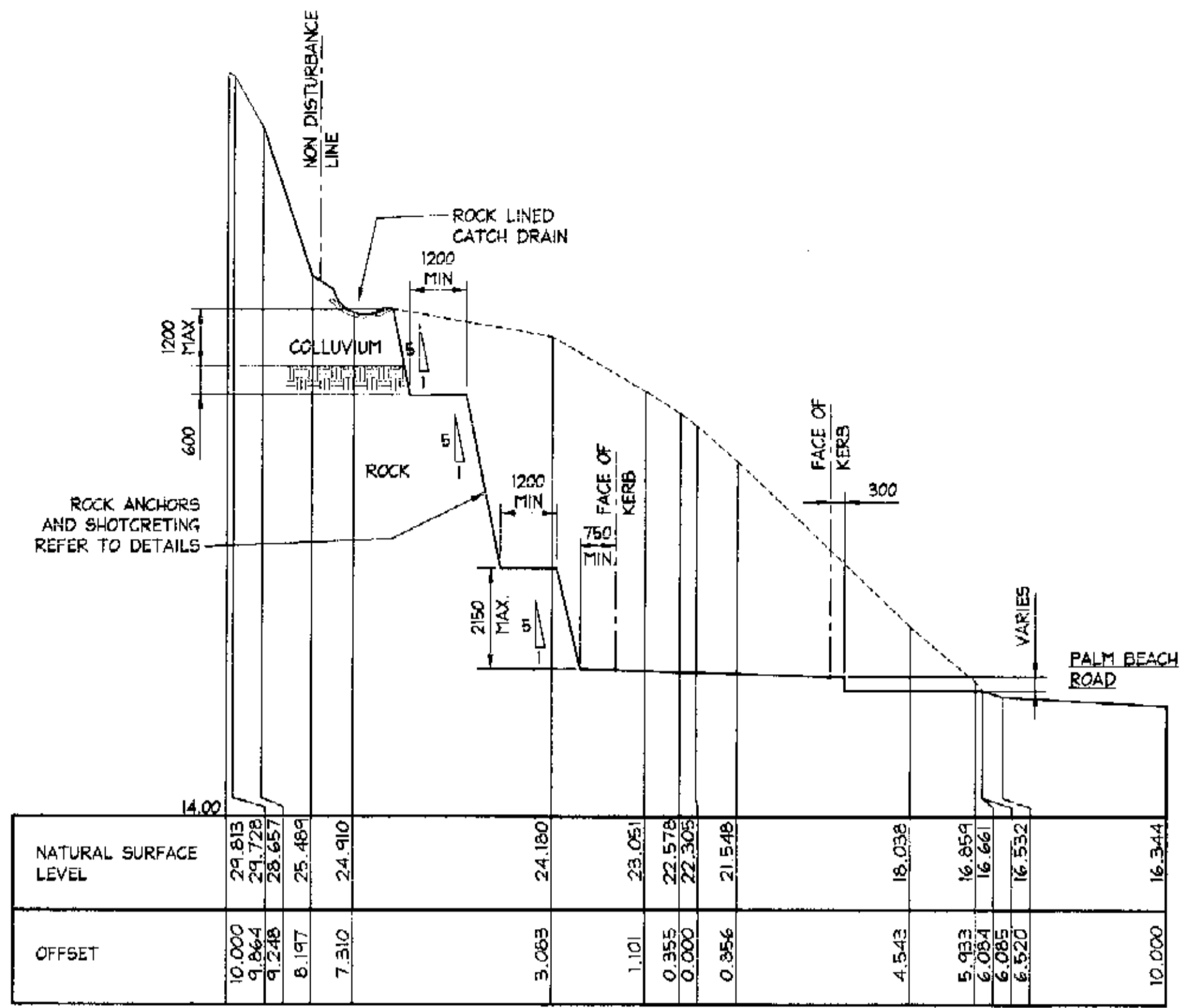
FOR CONSTRUCTION.



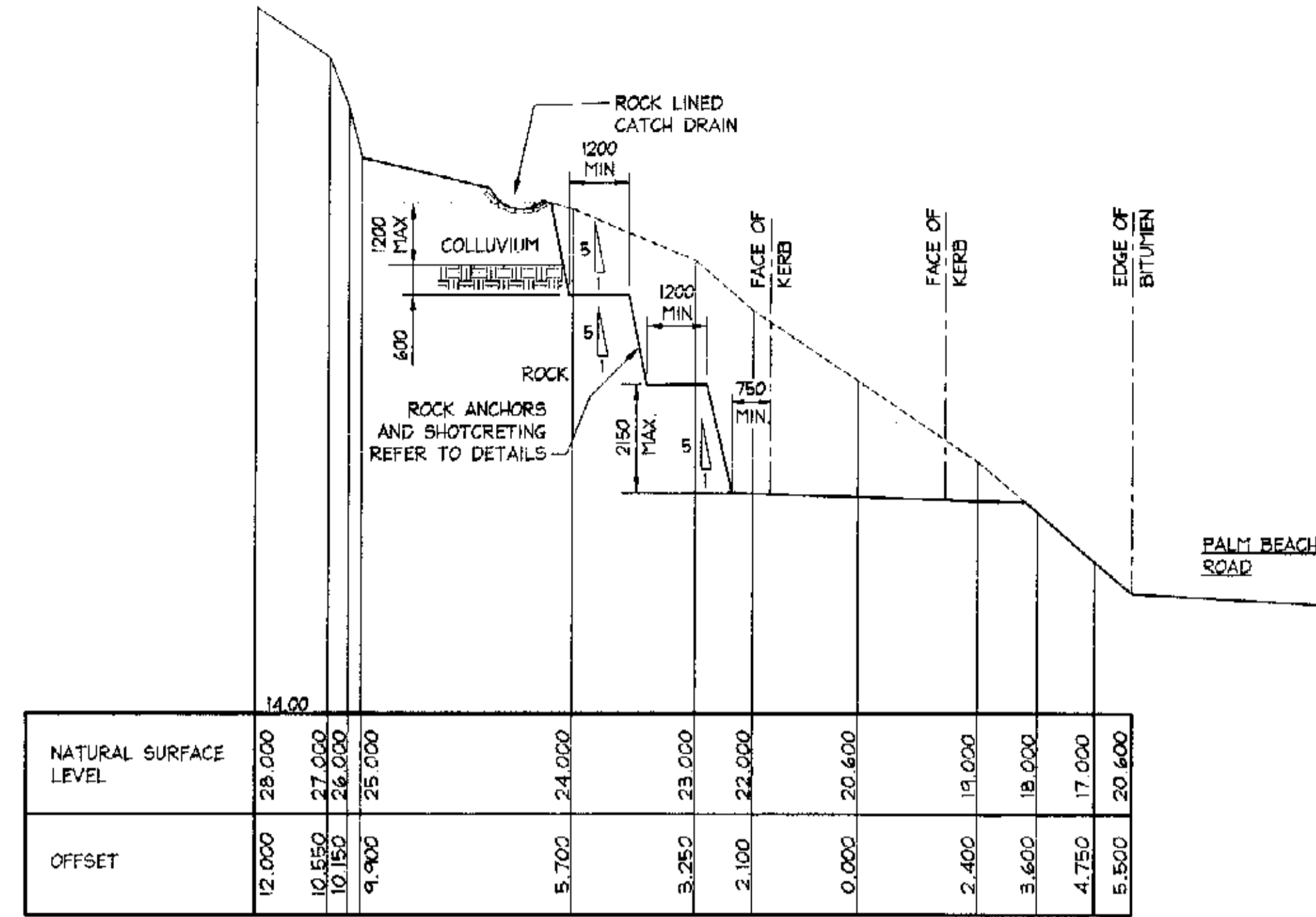
**SITE PLAN**  
SCALE = 1 : 200

<p><b>DOCUMENT CERTIFICATION</b></p> <p>I am a qualified Structural/Civil Engineer I hold the following qualifications: BE(Civil), CPEng, MIEAust, NPER, Institute of Engineers Membership No. 803938</p> <p>I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p>		<p><b>NORTHERN BEACHES</b> Consulting Engineers P/L</p> <p>A.C.N. 078 121 615 A.B.N. 24 076 121 016 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: info@northernbeaches.com.au</p>	<p>Project: <b>PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</b></p>	<p>Drawing Title: <b>GENERAL ARRANGEMENT PLAN</b></p>	<p>Date: Nov. 2003 Design: R.G.W. Drawn: Paul R. Bruce CPEAust, MICEAust</p>	<p>Checked:</p>
<p>Date: FEB 04 Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>	<p>Job No: <b>030963</b> Drawing No: <b>C01</b> Rev: -</p>					

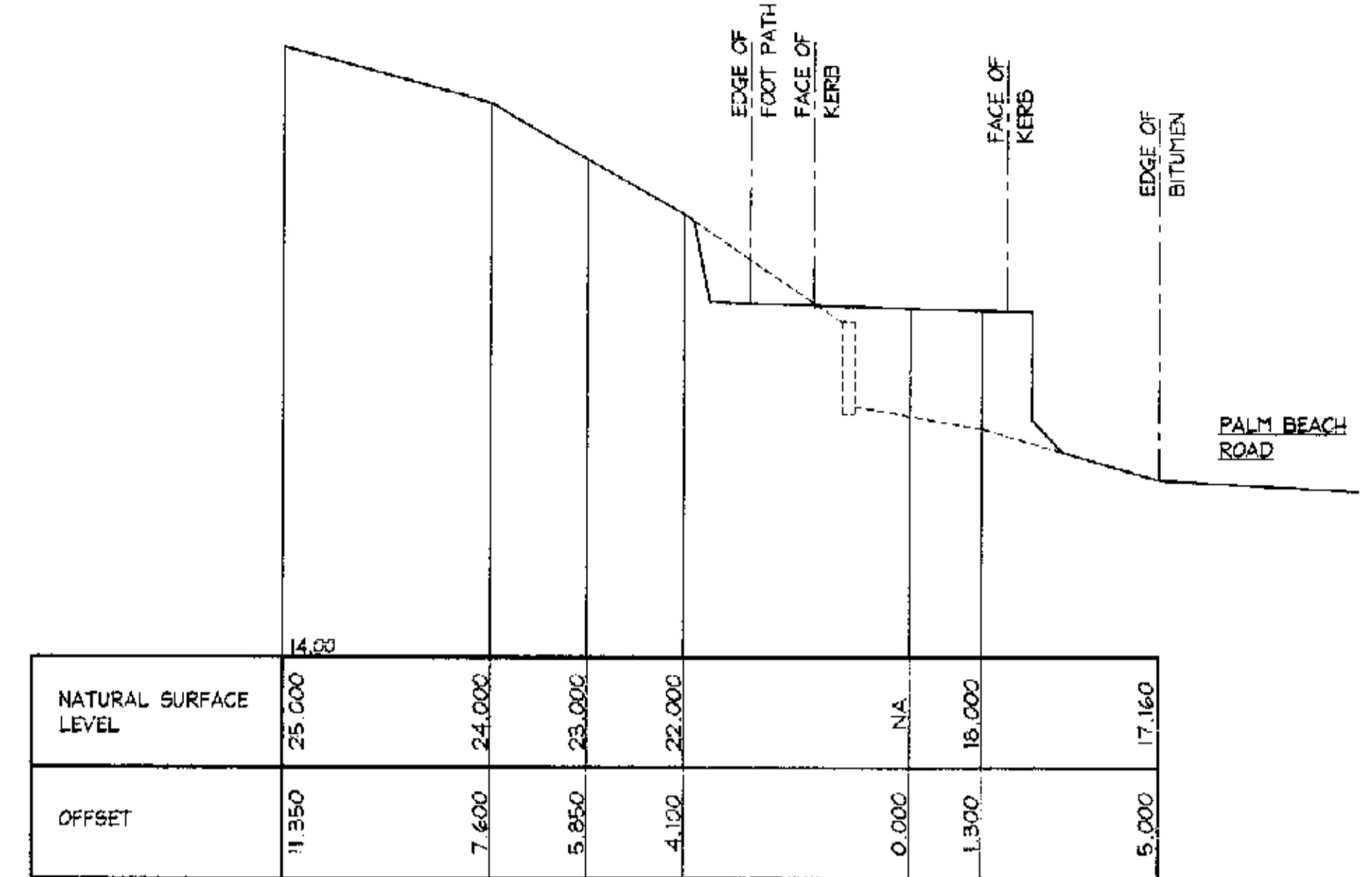




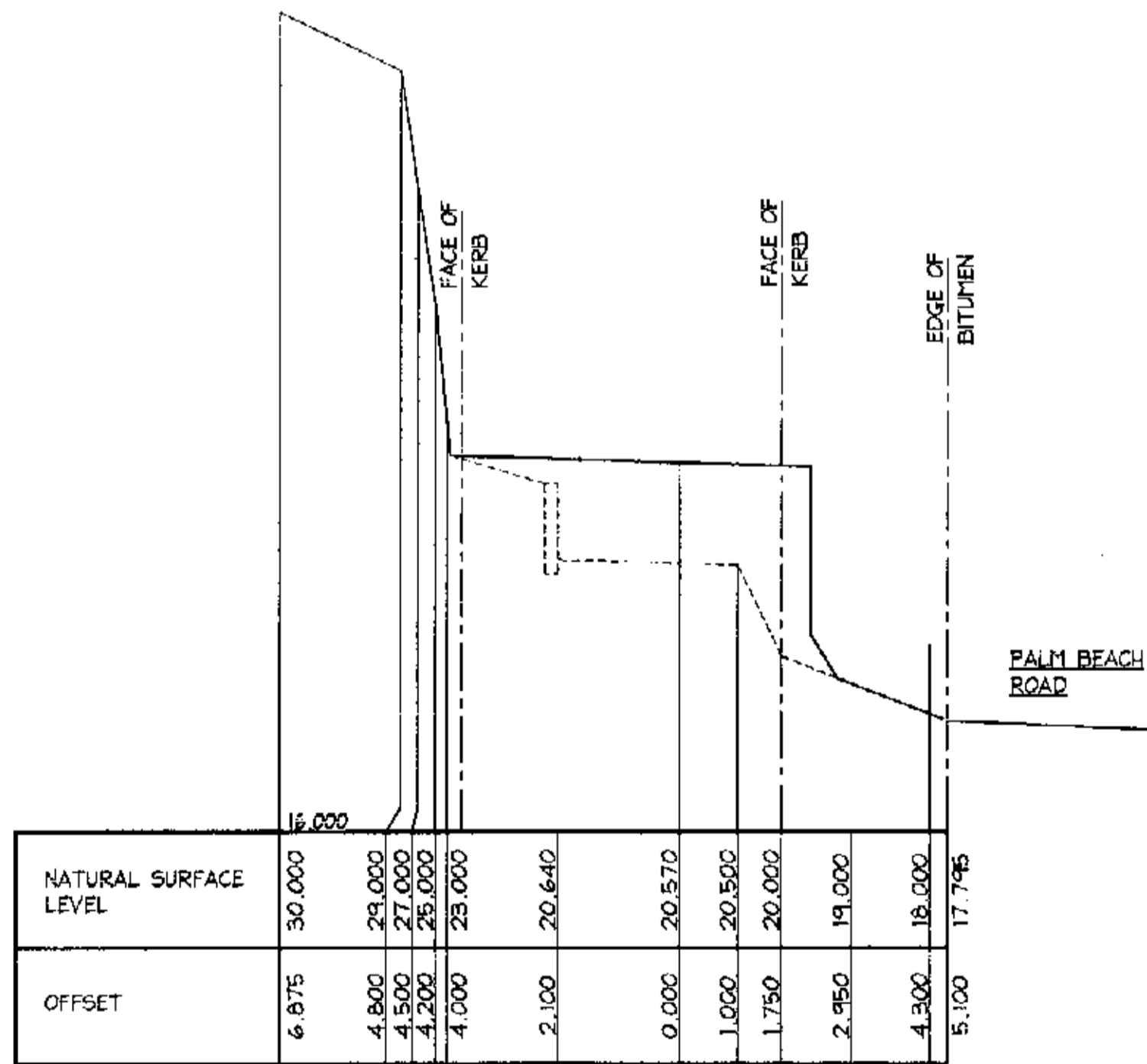
CH 11.100  
SCALE = 1 : 100



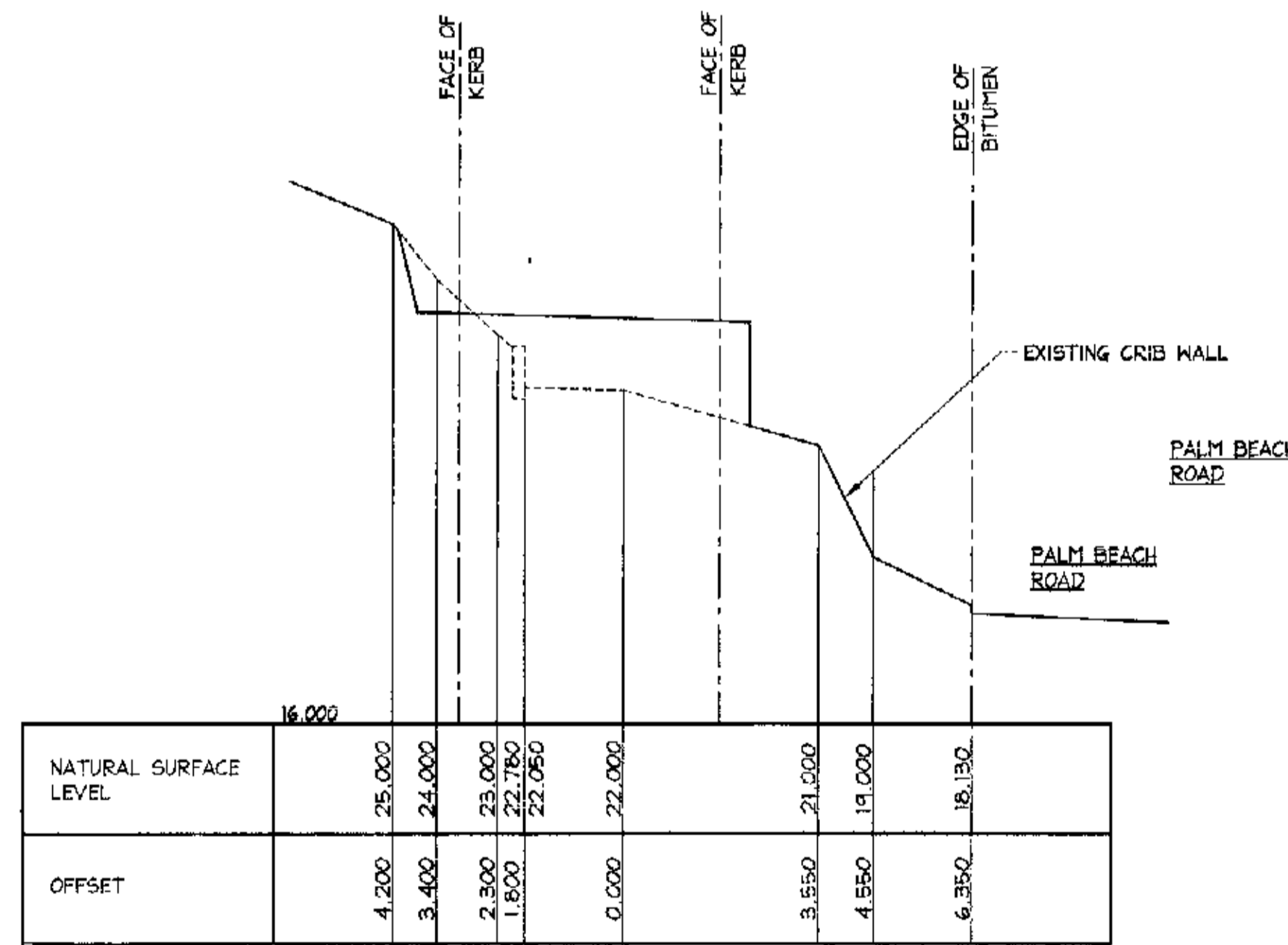
CH 17.500  
SCALE = 1 : 100



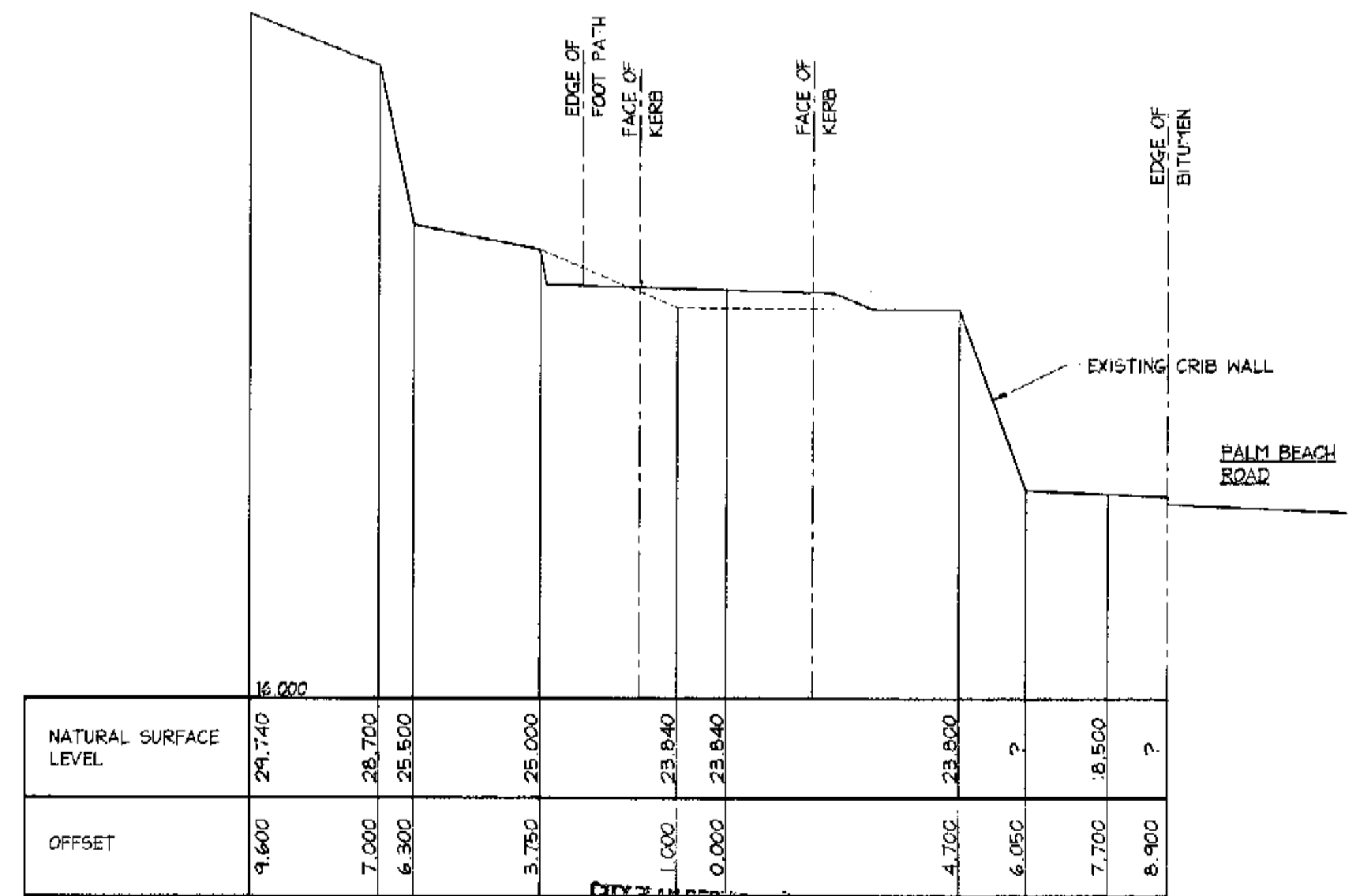
CH 27.200  
SCALE = 1 : 100



CH 37.000  
SCALE = 1 : 100



CH 42.000  
SCALE = 1 : 100



CH 47.300  
SCALE = 1 : 100

Structural 22395/1

FOR CONSTRUCTION.

NOTE:  
SECTIONS ARE DERIVED FROM SURVEY,  
REFER TO ARCHITECTS DRAWINGS FOR  
PAVEMENT LEVELS AND SET OUT.

NOTES:

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501.

A1

Date:	22.01.2004	Rev:	A	Amendment:	SECTIONS CH 27.200 CH 42.000 CH 47.300 ALTERED
-------	------------	------	---	------------	------------------------------------------------

DOCUMENT CERTIFICATION  
Date FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer  
I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER,  
Institute of Engineers Membership No. 903938  
I hereby state that this drawing is in compliance  
with the conditions of the development consent,  
the provisions of the Building Code of Australia  
and/or relevant Australian/Industry Standards.

**NB** NORTHERN BEACHES  
Consulting Engineers P/L  
A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 39 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9984 7444  
e-mail: nb@nbconsulting.com.au

Project: PROPOSED ACCESS ROAD  
at: 1148-1152 Barrenjoey Road  
and 56 Palm Beach Road  
Palm Beach  
for: Raypond Development

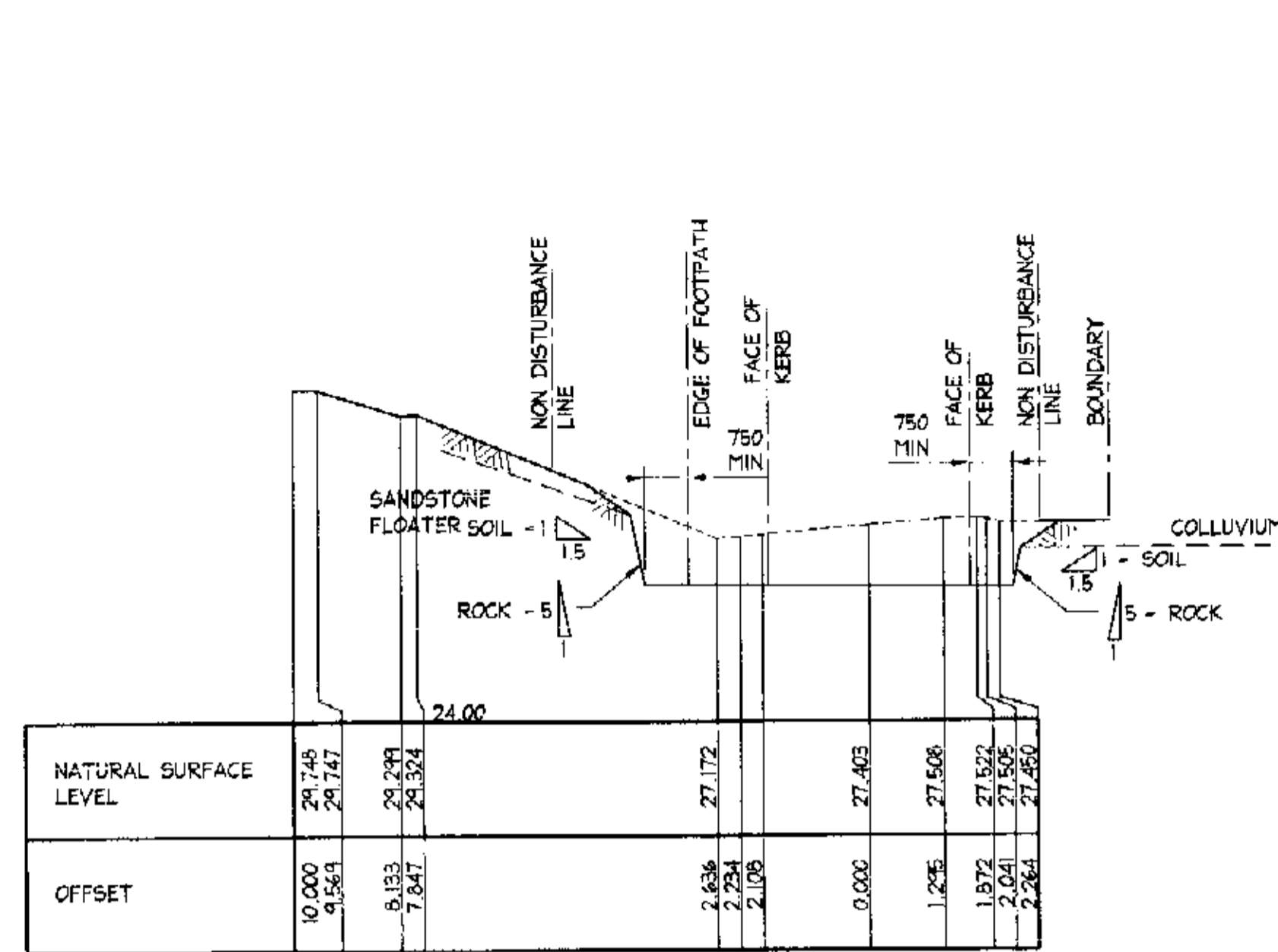
Drawing Title:  
BULK EARTH WORKS  
CROSS SECTIONS  
SHEET 1  
The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

Date:	Oct. 2003	Design:	R.G.W.	Drawn:	Paul R Bruce CPREAust., MIEAust.	Checked:	
Job No:	030963	Drawing No:	C02	Rev:	A		

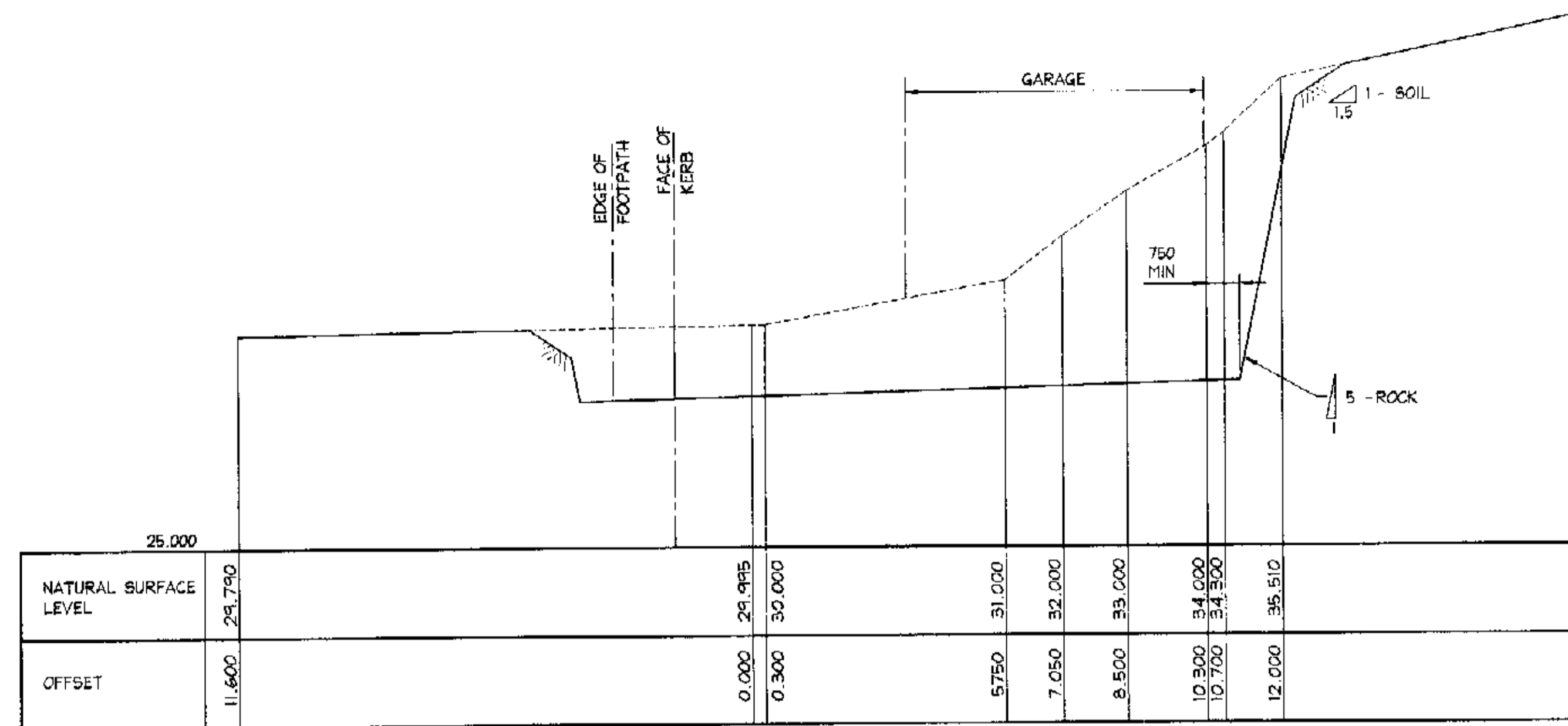
**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

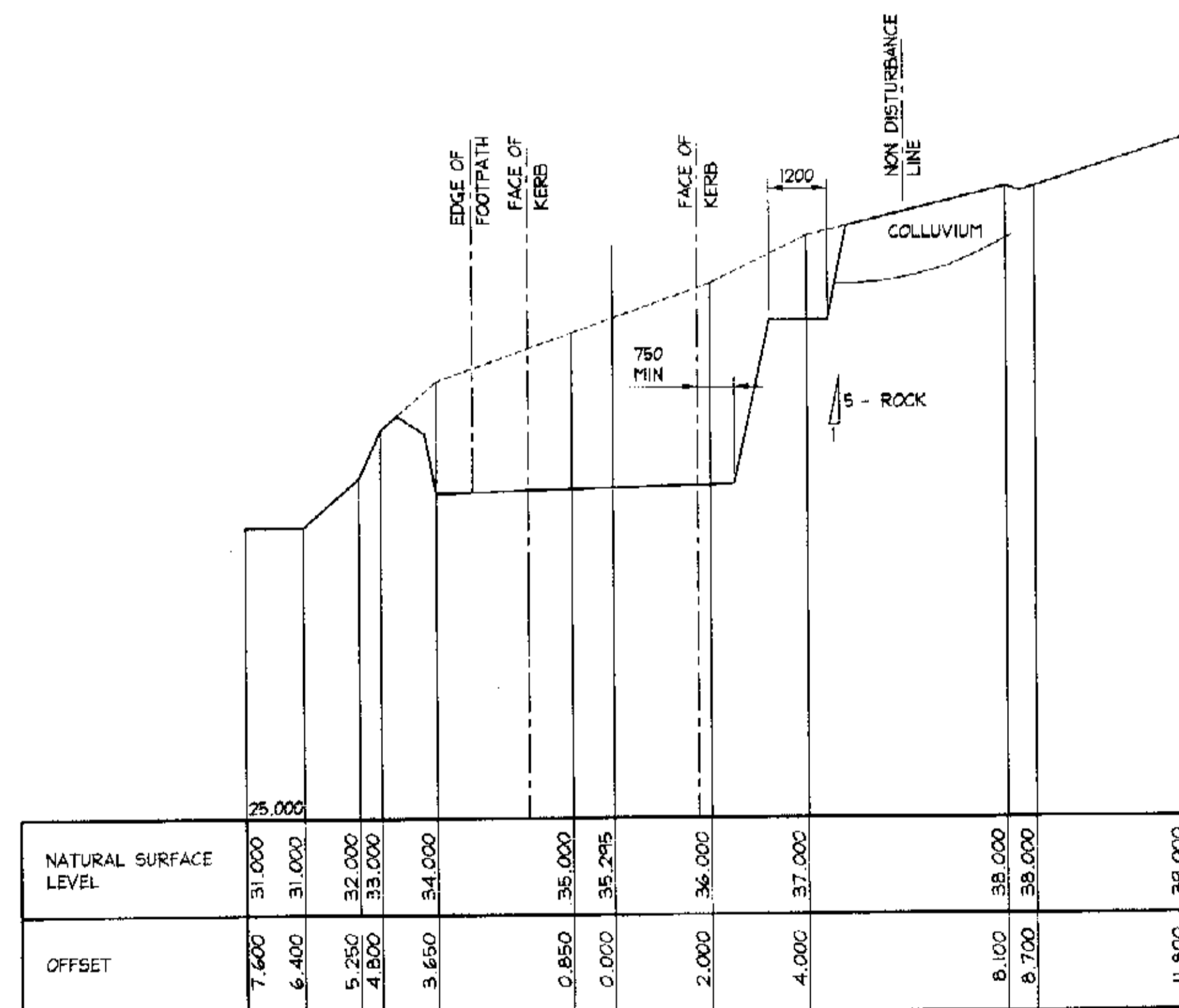
NOTE:  
SECTIONS ARE DERIVED FROM SURVEY. REFER TO ARCHITECTS DRAWINGS FOR PAVEMENT LEVELS AND SET OUT.



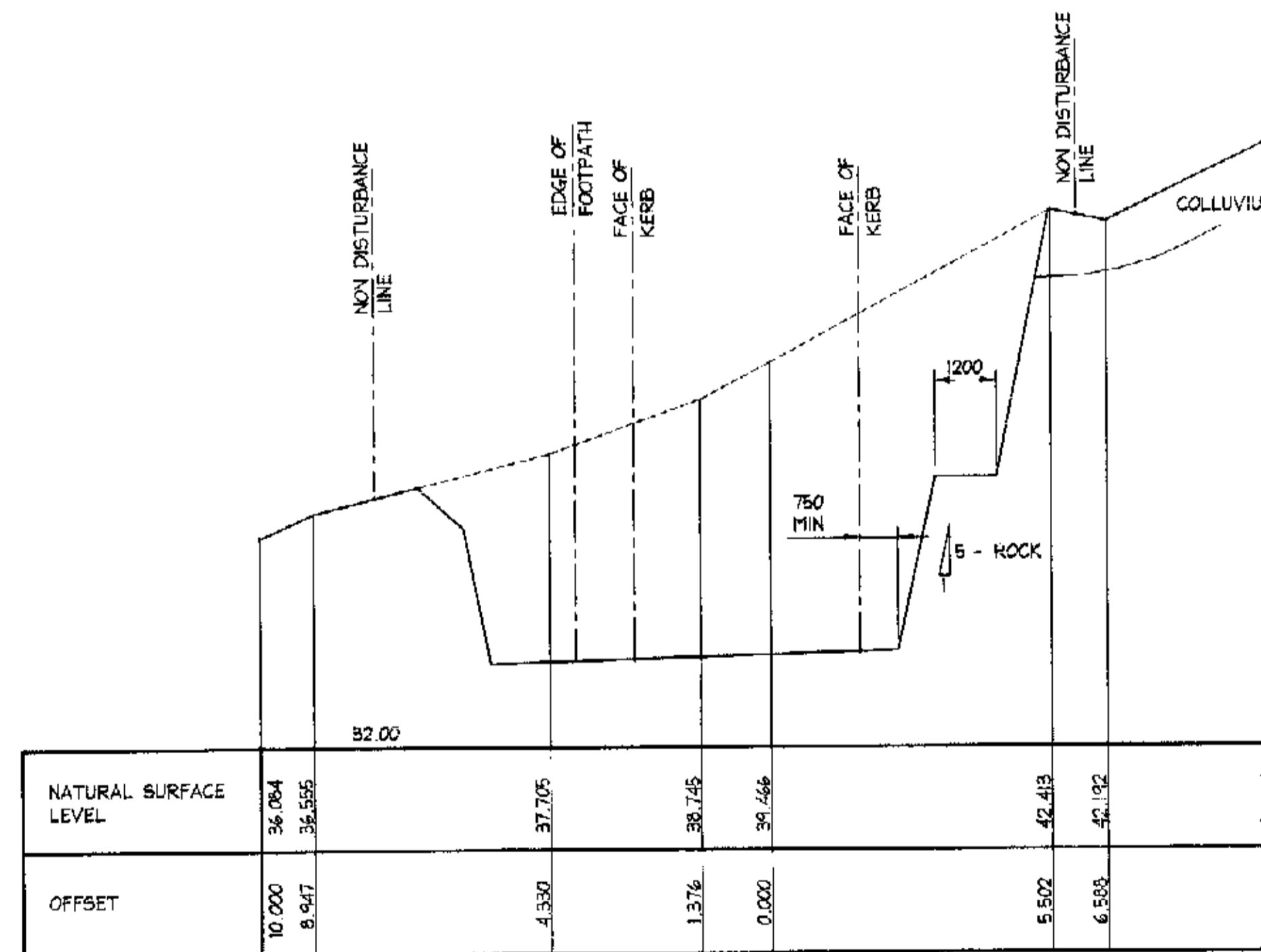
**CH 57.300**  
SCALE = 1 : 100



**CH 67.800**  
SCALE = 1 : 100



**CH 83.200**  
SCALE = 1 : 100



**CH 92.200**  
SCALE = 1 : 100

FOR CONSTRUCTION.

CITY PLAN SERVICES  
Structural  
File No: 22.375/1

AI

Date:	22.01.2004	Rev:	A	Amendment:	SECTIONS CH 67.800 CH 83.200 CH 92.200 ALTERED
-------	------------	------	---	------------	------------------------------------------------

**DOCUMENT CERTIFICATION**  
Date: Feb 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.  
I hold the following qualifications:  
BE(Civil), CPEng, MIEAust, NPER,  
Institute of Engineers Membership No. 803938  
I hereby state that this drawing is in compliance  
with the conditions of the development consent,  
the provisions of the Building Code of Australia  
and/or relevant Australian Industry Standards.

**NB** NORTHERN BEACHES  
Consulting Engineers P/L  
A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9584 7000 Fax: (02) 9584 7444  
e-mail: nb@nbconsulting.com.au

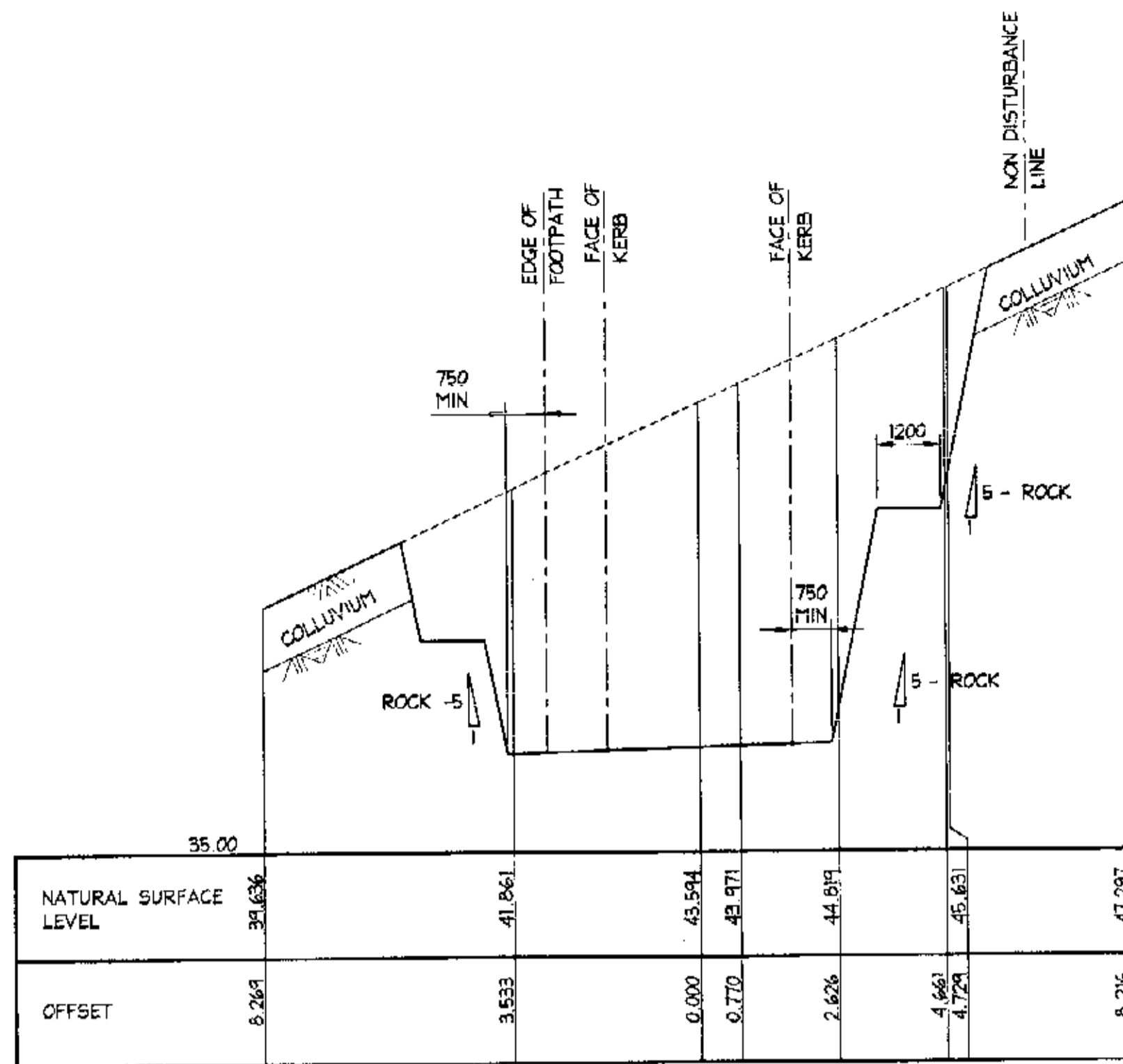
Project: **PROPOSED ACCESS ROAD**  
at: 1148-1152 Barrenjoey Road  
and 56 Palm Beach Road  
Palm Beach  
for: Raypond Development

Drawing Title: **BULK EARTH WORKS**  
**CROSS SECTIONS**  
**SHEET 2**  
The copyright of this drawing remains with Northern Beaches Consulting Engineers Pty.

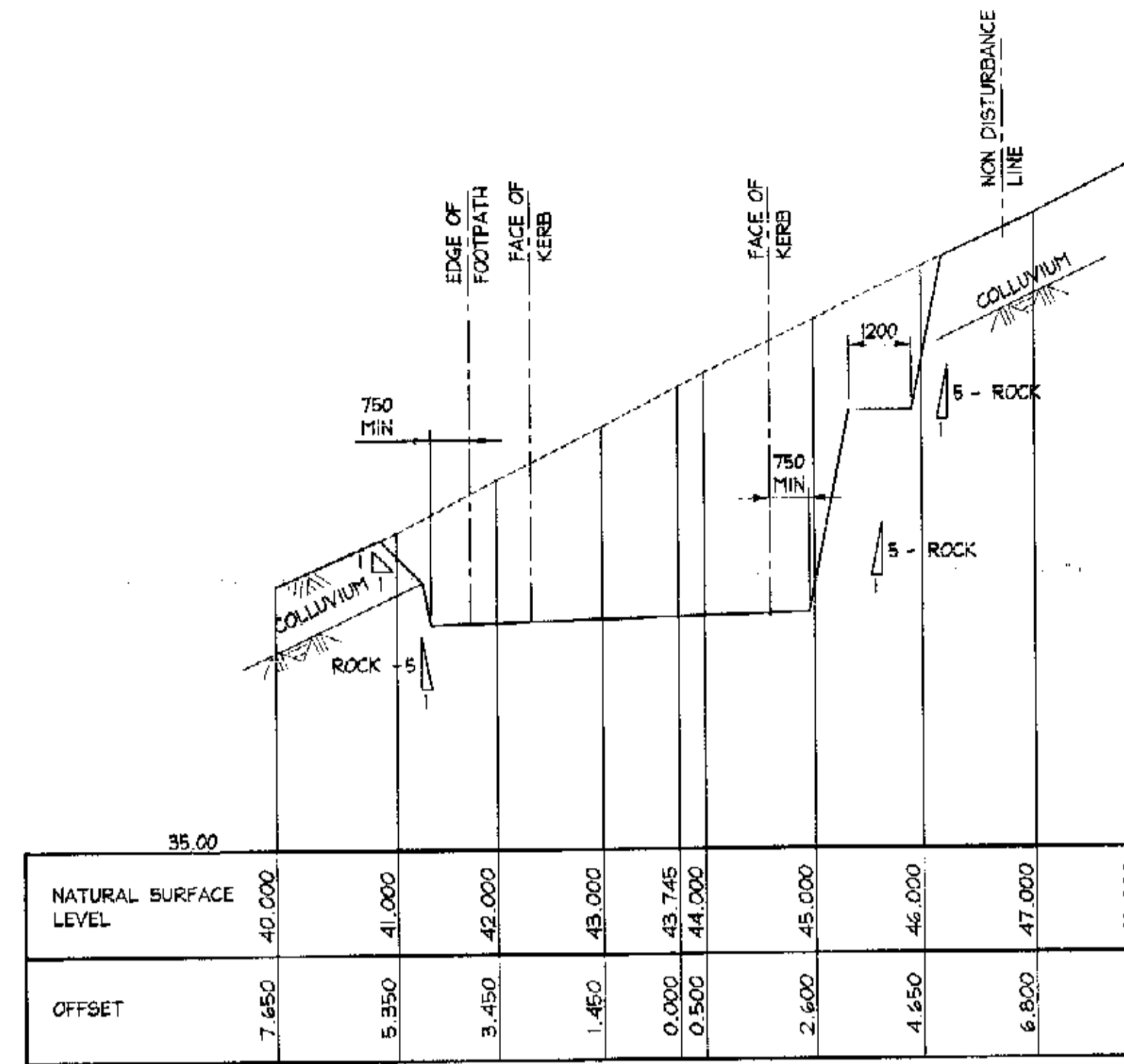
Date:	Oct. 2003	Design:	R.G.W.	Drawn:	Paul R. Bruce ONEAust, MIEAust	Checked:	
Job No:	030963	Drawing No:	C03	Rev:	A		

NOTE:  
SECTIONS ARE DERIVED FROM SURVEY,  
REFER TO ARCHITECTS DRAWINGS FOR  
PAVEMENT LEVELS AND SET OUT.

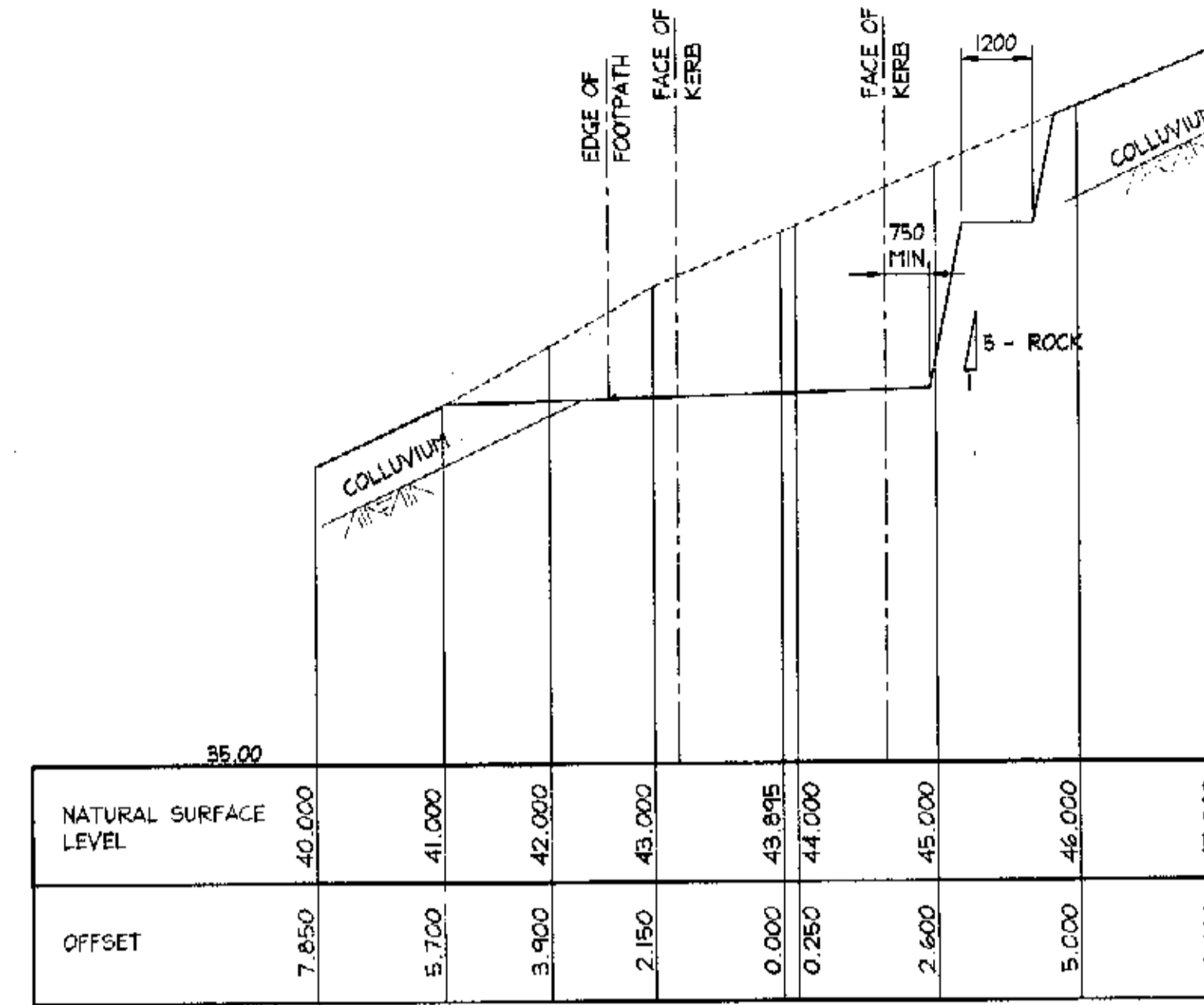
- NOTES:
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501.



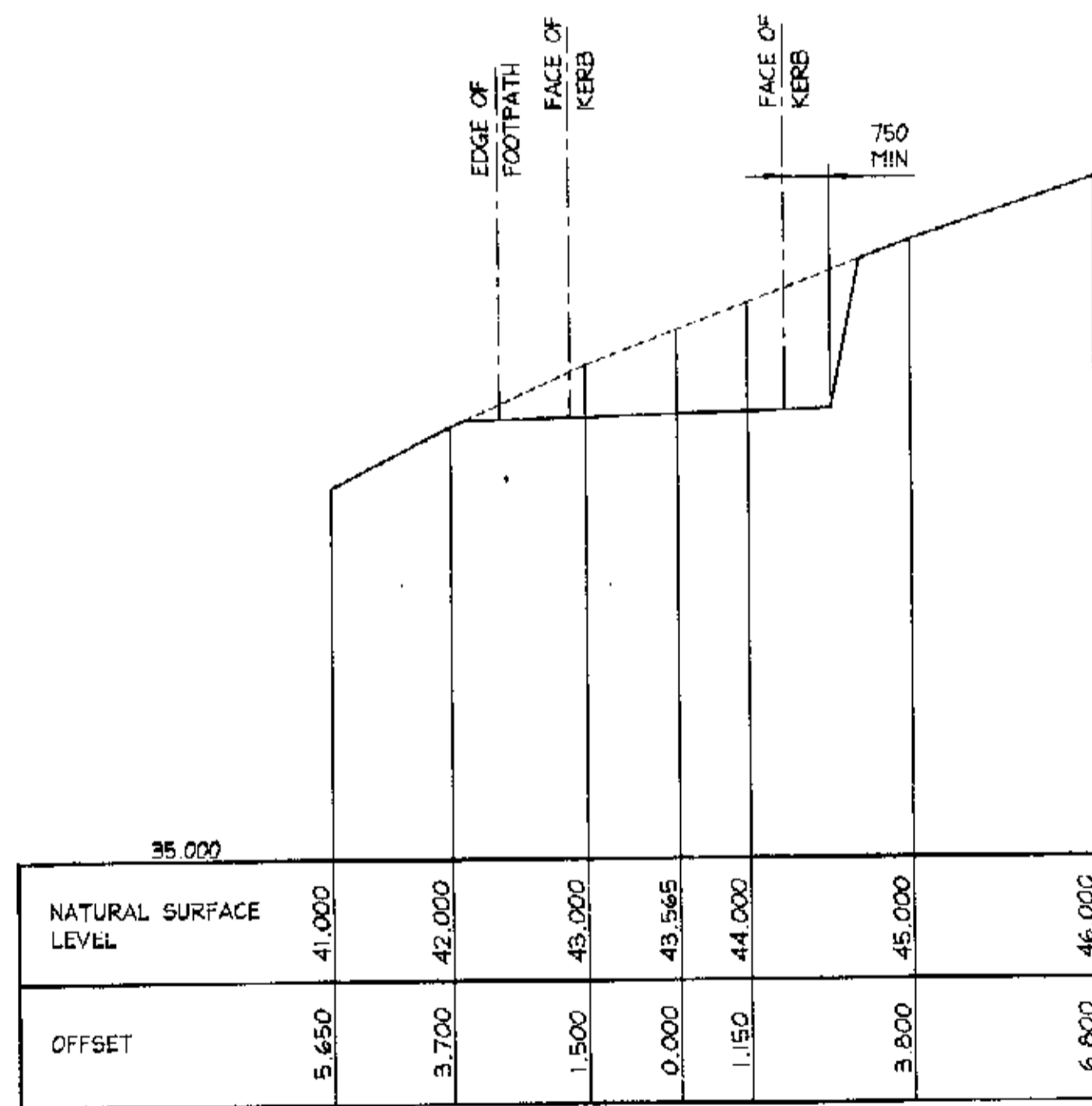
CH 106.600  
SCALE = 1 : 100



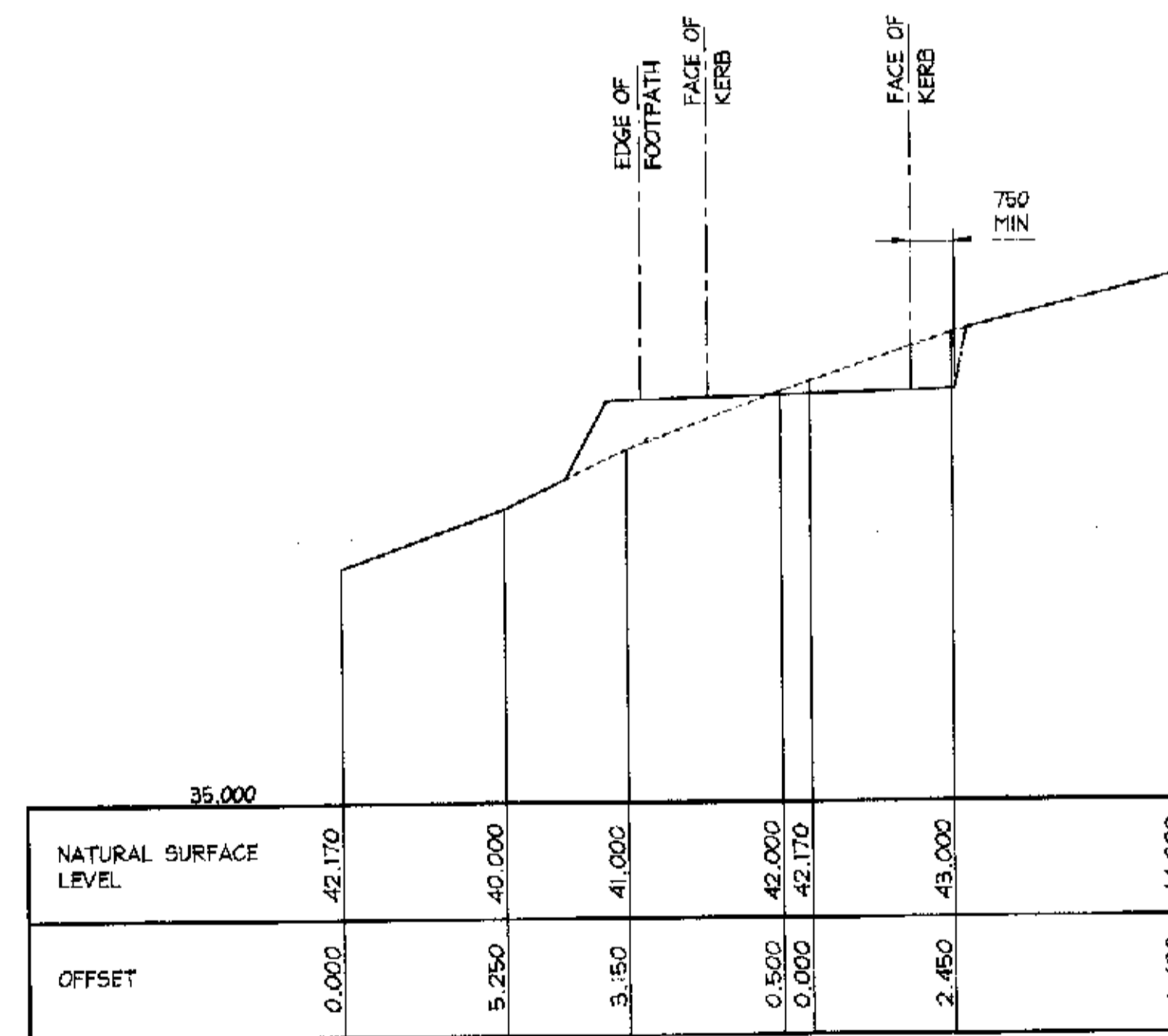
CH 118.000  
SCALE = 1 : 100



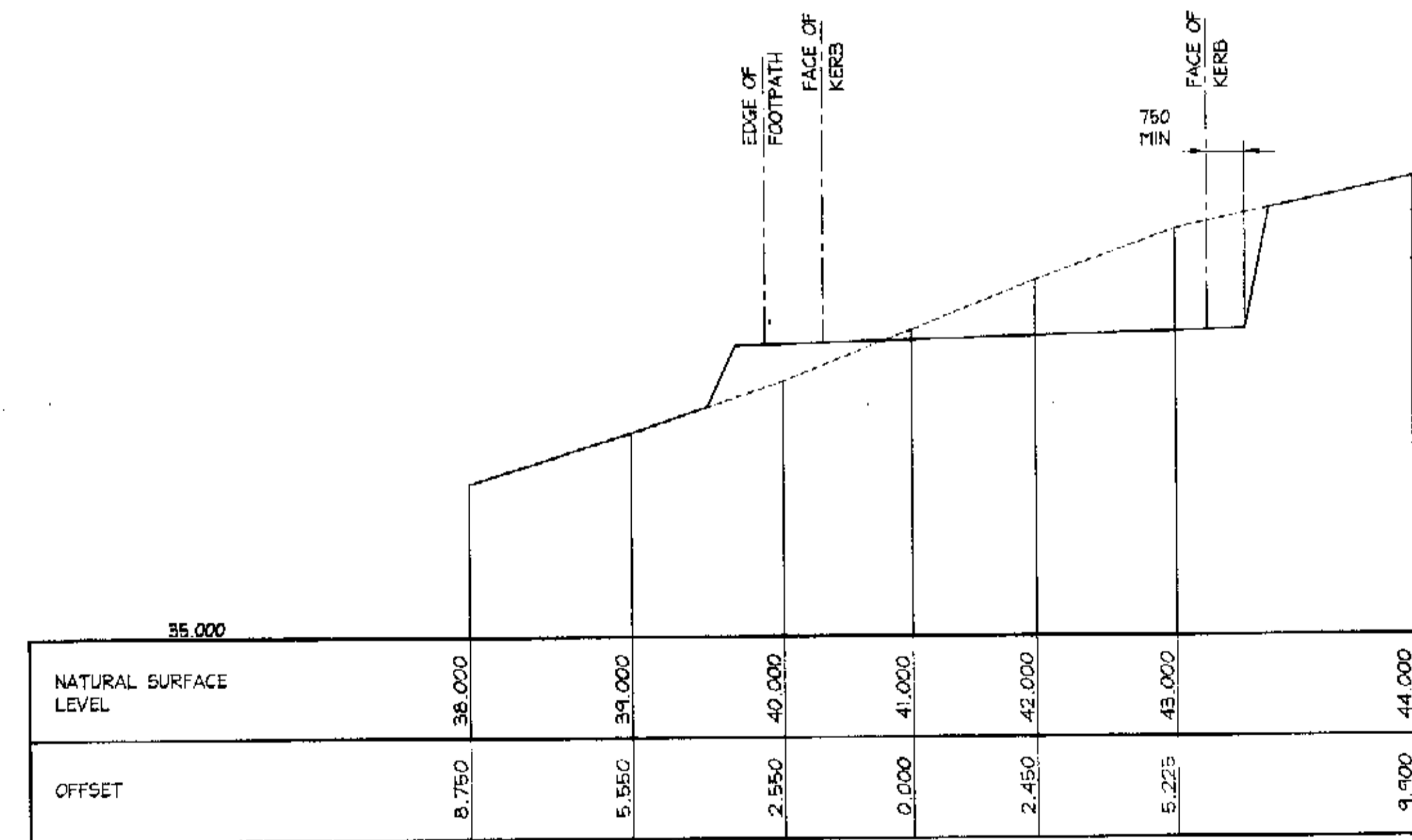
CH 127.600  
SCALE = 1 : 100



CH 133.200  
SCALE = 1 : 100



CH 141.900  
SCALE = 1 : 100



CH 145.700  
SCALE = 1 : 100

FOR CONSTRUCTION.

CITY PLAN SERVICES  
Title: Structural  
File No: 22375/1

A1

DOCUMENT CERTIFICATION

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.  
I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER,  
Institute of Engineers Membership No. 803433  
I hereby state that this drawing is in compliance  
with the conditions of the development consent,  
the provisions of the Building Code of Australia  
and/or relevant Australian/Industry Standards.



NORTHERN BEACHES  
Consulting Engineers P/L.  
A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DRE WHY N.S.W. 2098  
Ph: (02) 9994 7000 Fax: (02) 9994 7444  
e-mail: nb@nbiconsulting.com.au

Project: PROPOSED ACCESS ROAD  
at: 1148-1152 Barrenjoey Road  
and 56 Palm Beach Road  
Palm Beach  
for: Raypond Development

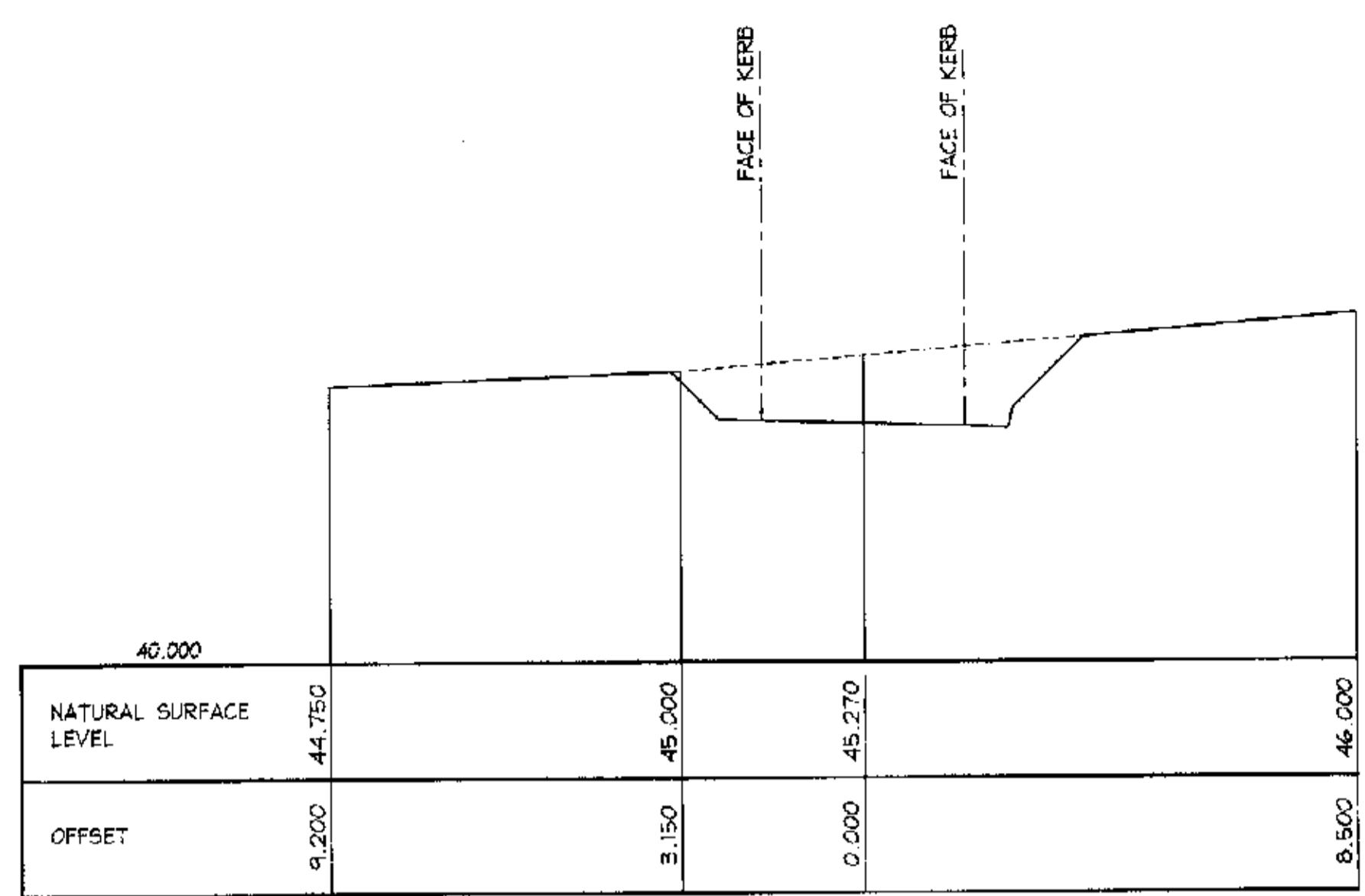
Drawing Title:  
BULK EARTH WORKS  
CROSS SECTIONS  
SHEET 3

The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

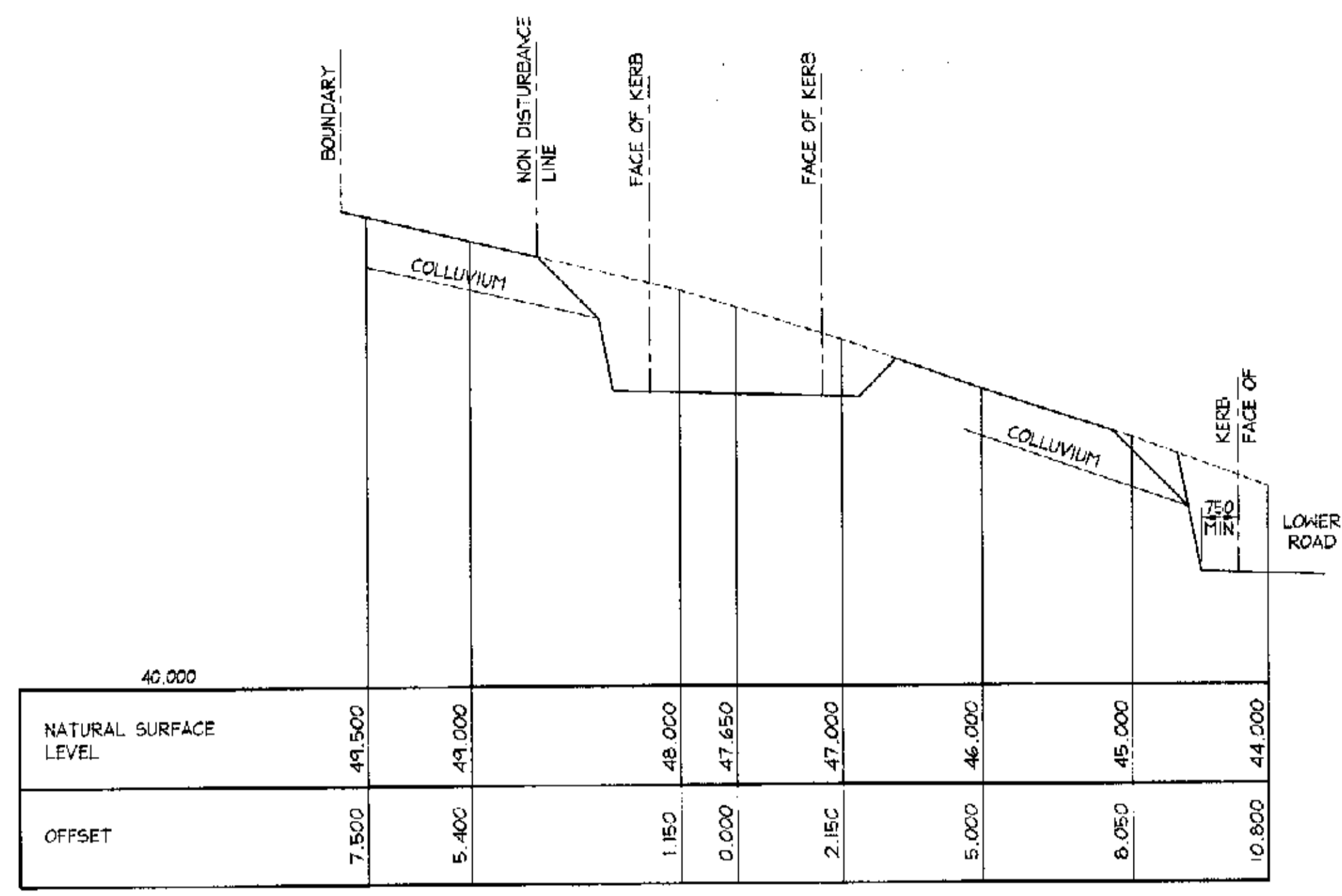
Date:	Oct. 2003	Des gn:	R.G.W.	Drawn:	Paul R Bruce OMEAust., MICEAust.	Checked:	
Job No:	030963	Drawing No:	C04	Rev:	-		

- NOTES:**
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

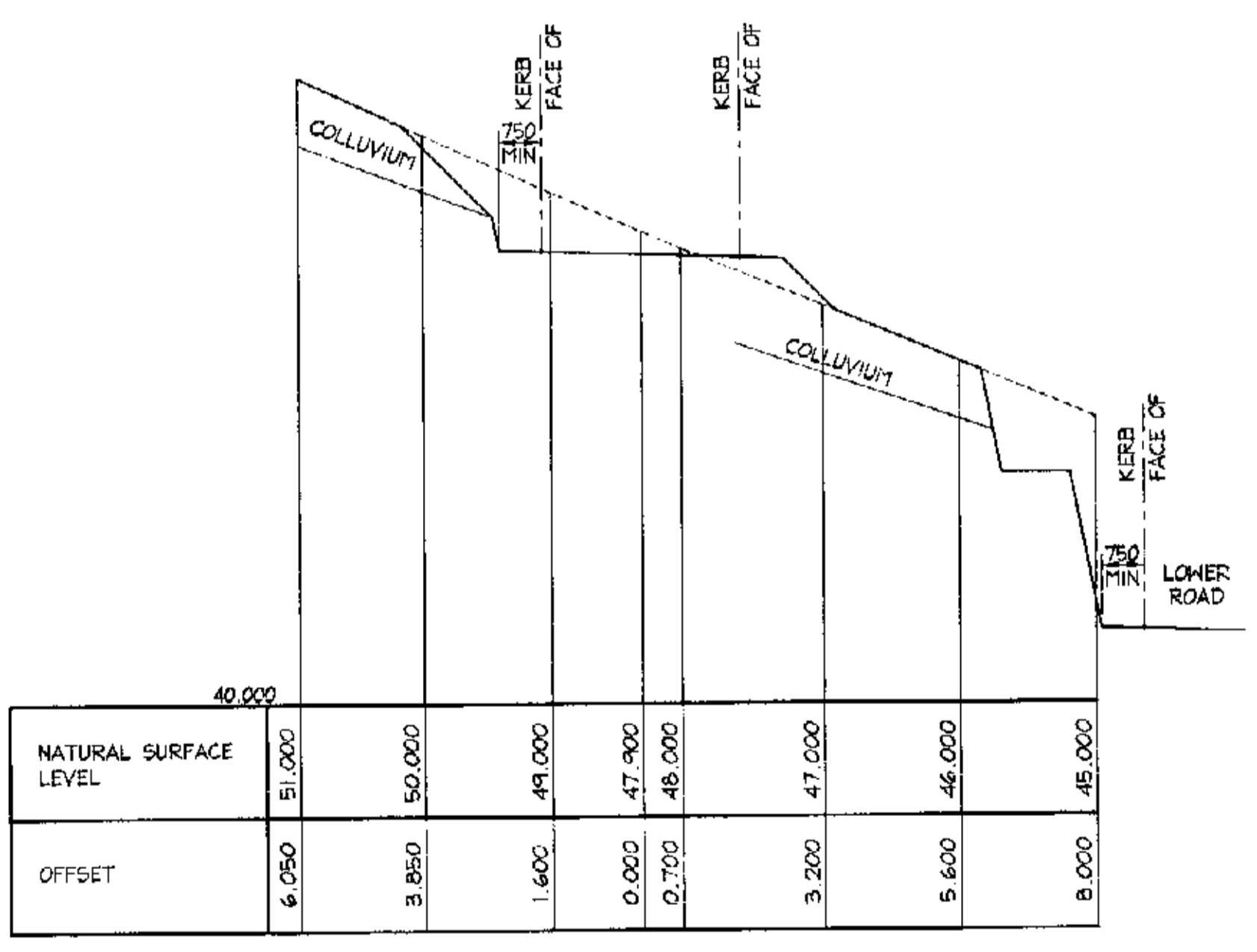
NOTE:  
SECTIONS ARE DERIVED FROM SURVEY, REFER TO ARCHITECTS DRAWINGS FOR PAVEMENT LEVELS AND SET OUT.



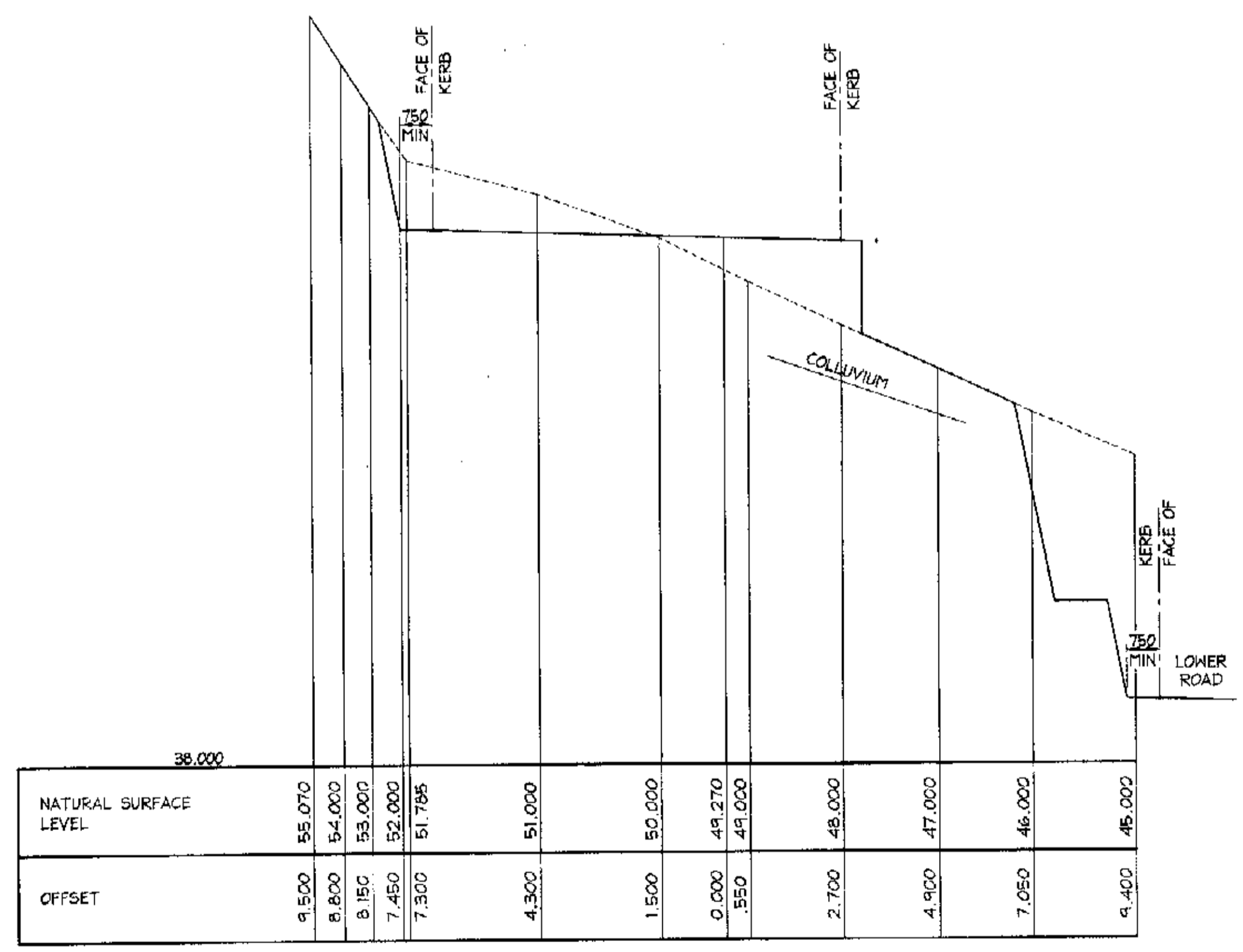
**CH 142.755 - UPPER ROAD**  
SCALE = 1 : 100



**CH 150.455 - UPPER ROAD**  
SCALE = 1 : 100



**CH 158.541 - UPPER ROAD**  
SCALE = 1 : 100



**CH 168.449 - UPPER ROAD**  
SCALE = 1 : 100

FOR CONSTRUCTION

CITY PLAN SERVICES  
Title: *Stratford* File No: *22375/1*

Date:	22.01.2004
Rev:	A
Amendment:	SECTIONS CH 142.755 CH 150.455 ALTERED

**DOCUMENT CERTIFICATION**

I am a qualified Structural/Civil Engineer. I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938

I hereby state that this drawing is in compliance with the provisions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

Date: *FEB 01*  
*R. Wray*  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

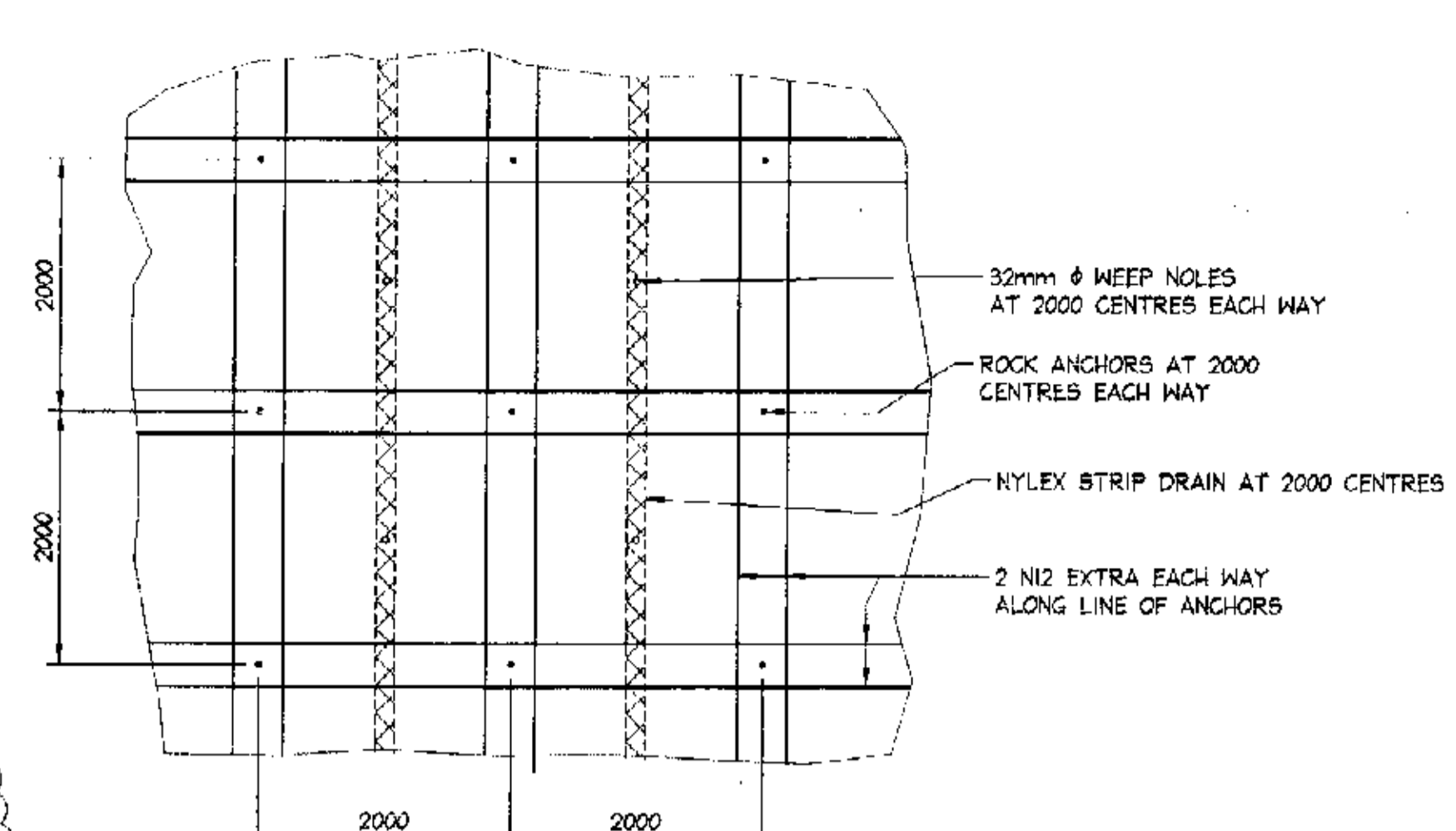
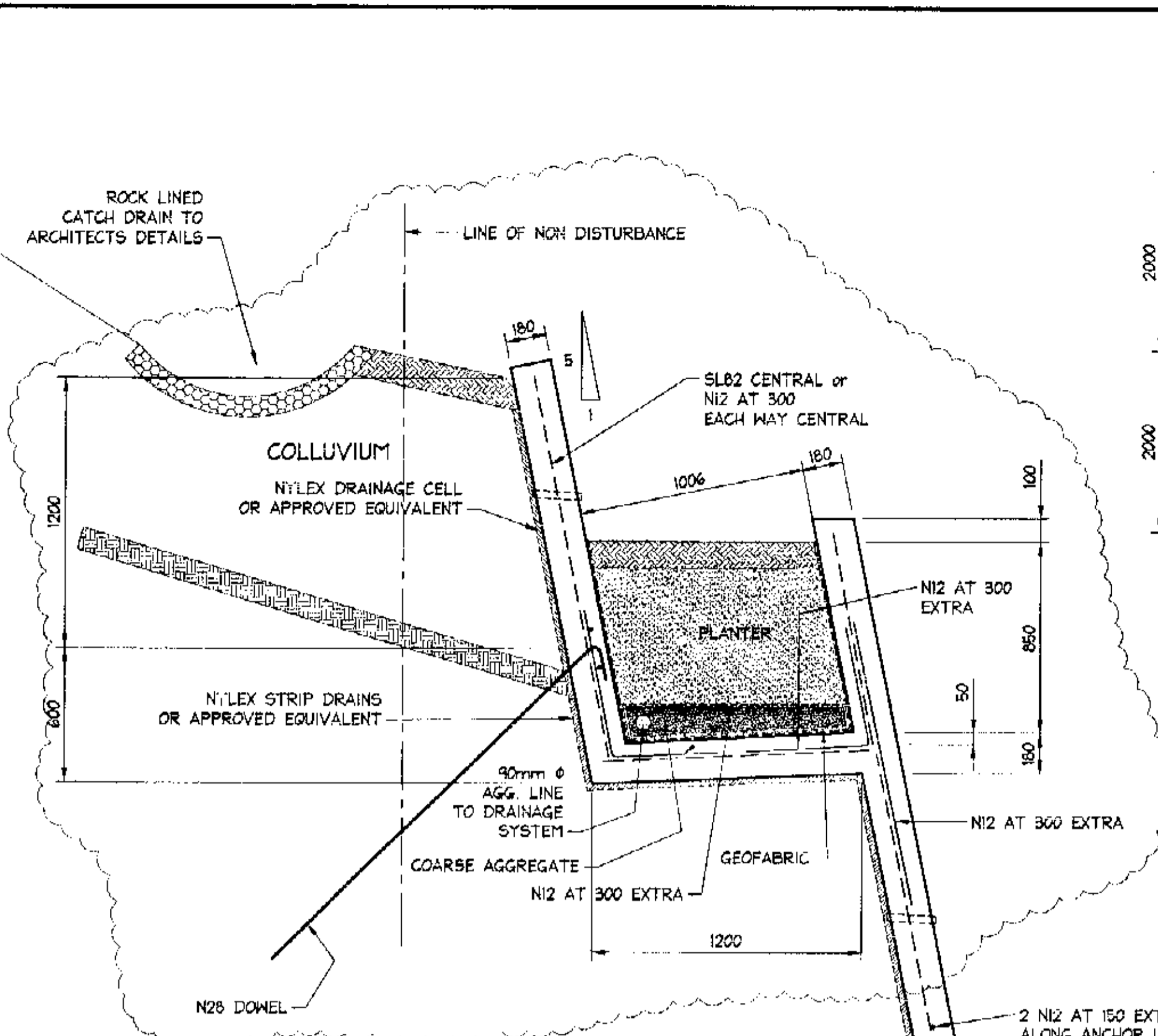
**NORTHERN BEACHES Consulting Engineers P/L.**

A.C.N. 075 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9984 7444  
e-mail: nb@nbcconsulting.com.au

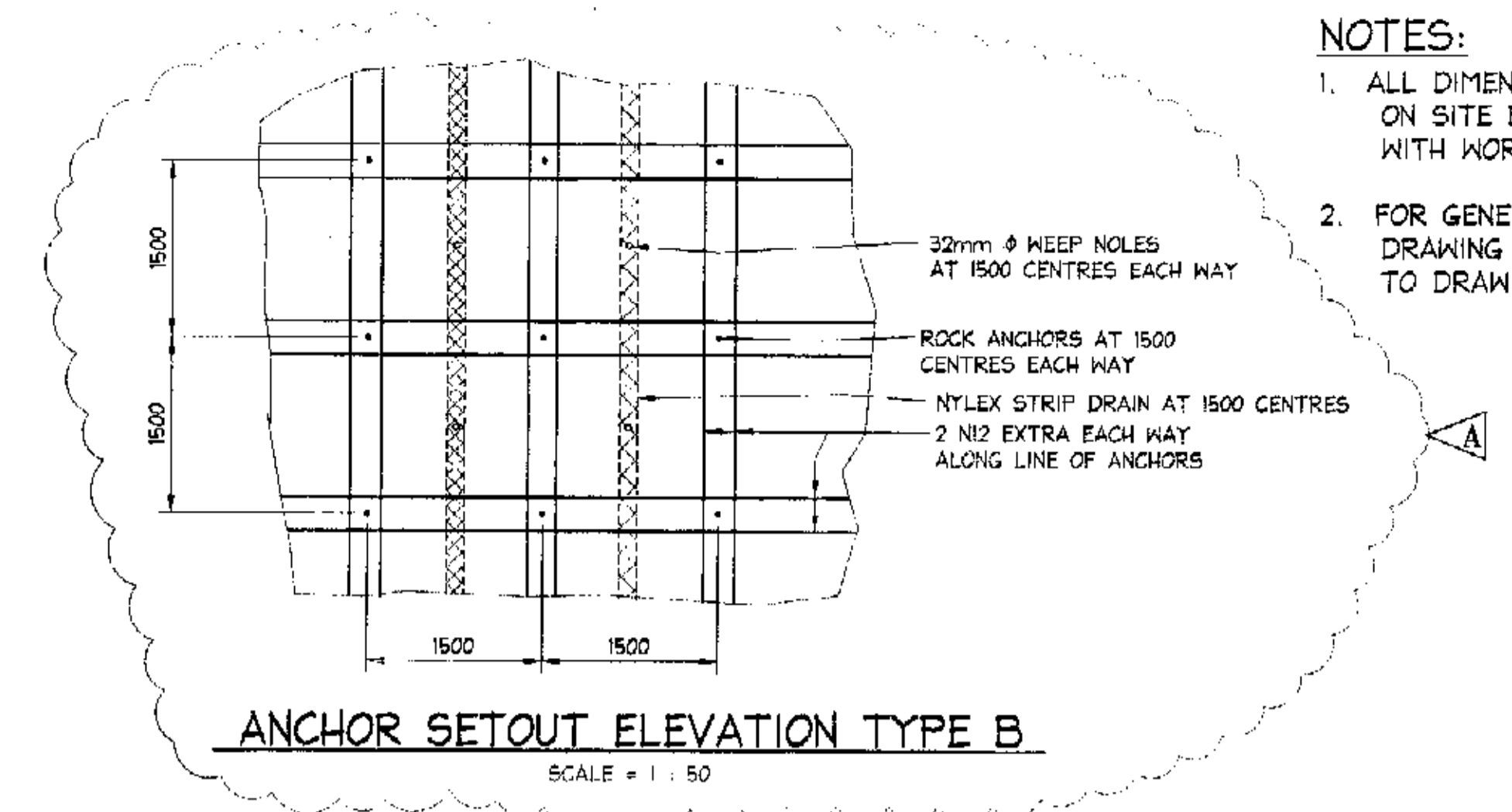
Project: **PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development**

Drawing Title: **BULK EARTH WORKS CROSS SECTIONS SHEET 4**

Date:	Oct. 2003	Design:	R.G.W.	Drawn:	Paul R Bruce	Checked:	
Job No:	030963	Drawing No:	C05	Rev:	A		



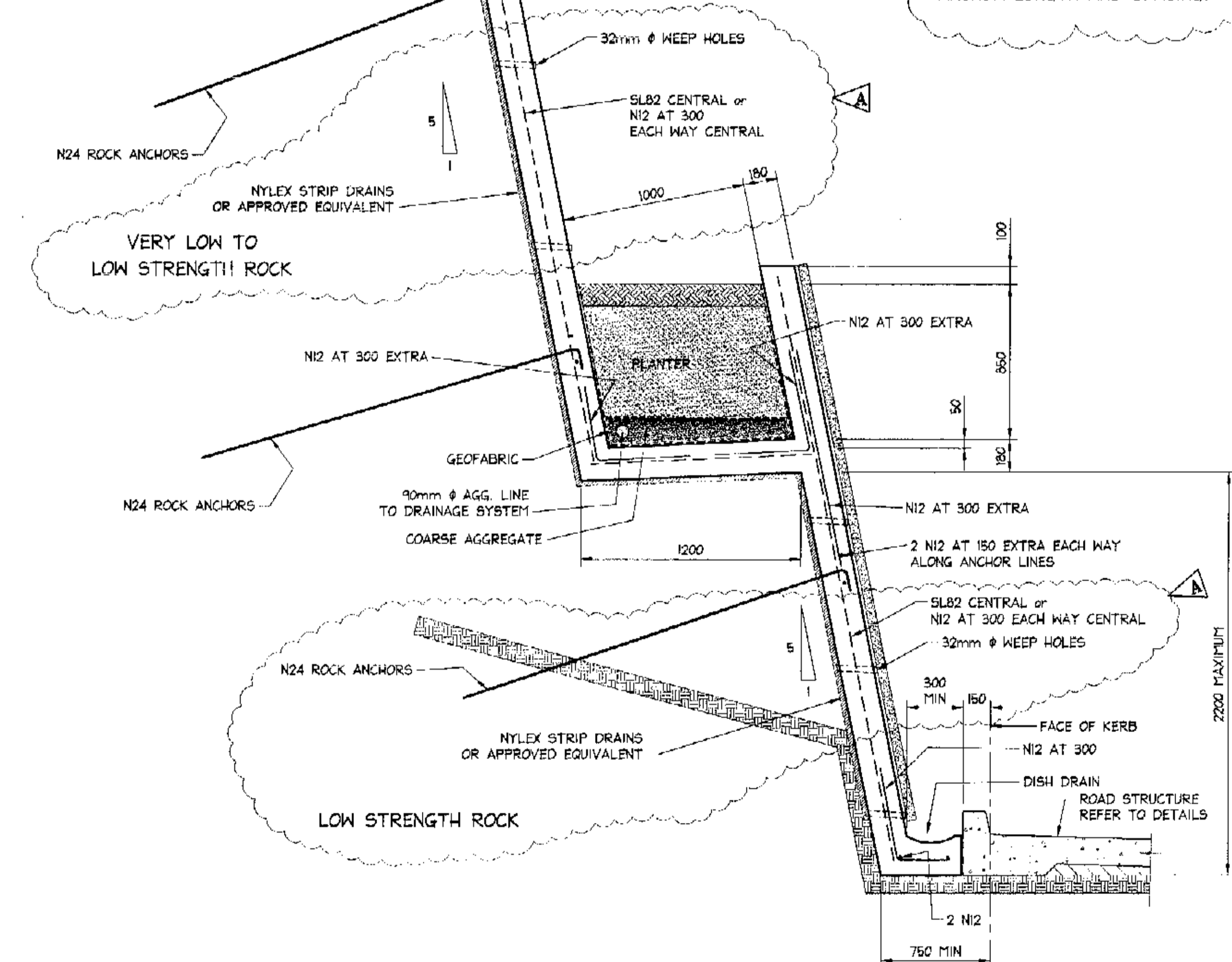
ANCHOR SETOUT ELEVATION TYPE A  
SCALE = 1 : 50



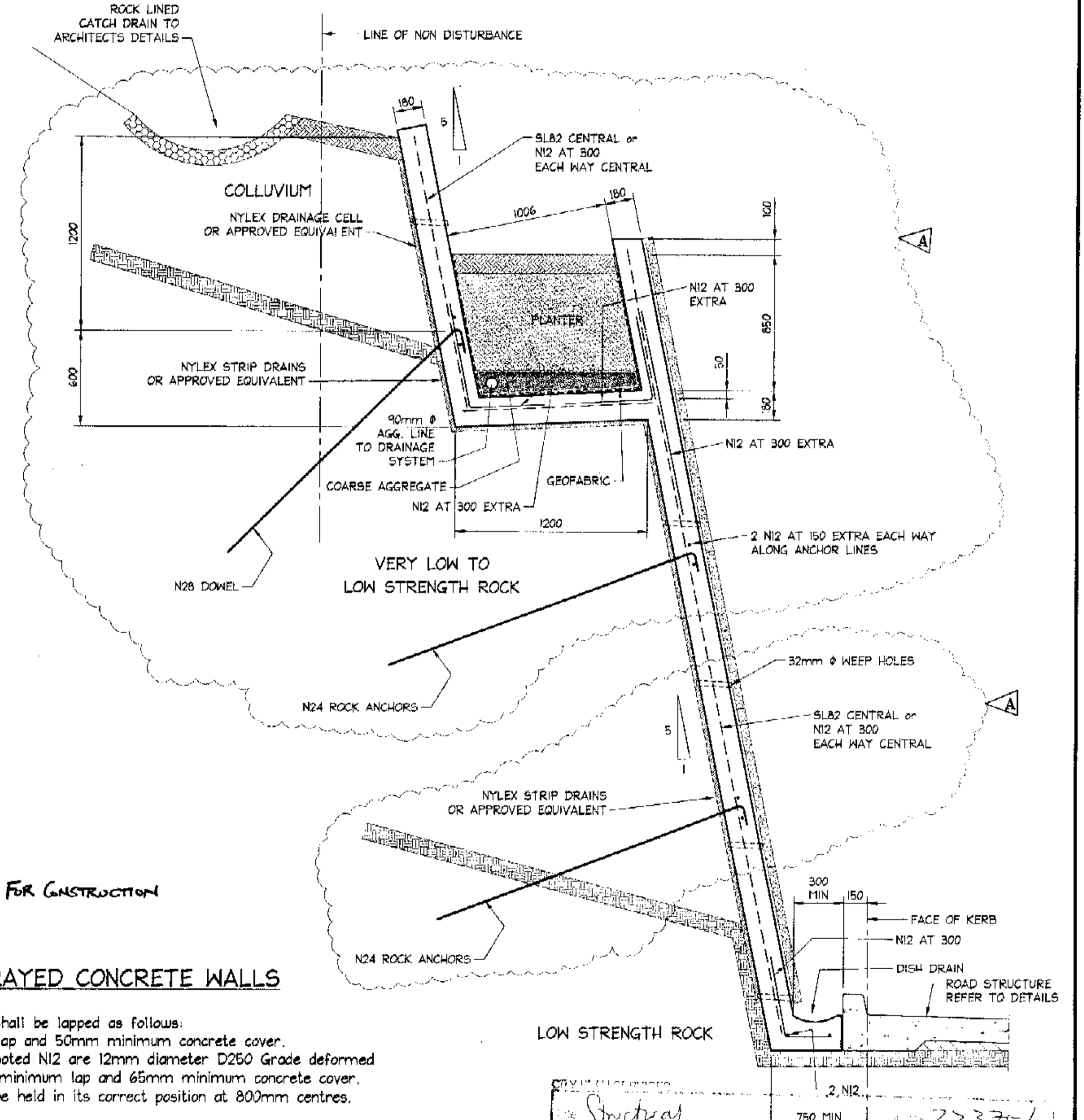
ANCHOR SETOUT ELEVATION TYPE B  
SCALE = 1 : 50

NOTES:  
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.  
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

NOTE:  
ANCHOR LENGTH AND CENTRES TO BE APPROVED ON SITE BY THE GEOTECHNICAL ENGINEER. REFER TO ANCHOR BOLTING SCHEDULE ON DRAWING No. C20 FOR ANCHOR LENGTH AND SPACING.



TYPICAL RETAINING WALL - TYPE RW1  
SCALE = 1 : 20



TYPICAL RETAINING WALL - TYPE RW2  
SCALE = 1 : 20

FOR CONSTRUCTION

NOTES: SPRAYED CONCRETE WALLS  
REINFORCEMENT:  
All welded fabric shall be lapped as follows:  
300mm minimum lap and 50mm minimum concrete cover.  
Mild steel rods denoted N12 are 12mm diameter D250 Grade deformed bars with 450mm minimum lap and 65mm minimum concrete cover.  
Reinforcement to be held in its correct position at 800mm centres.  
CONCRETE:  
All workmanship and materials shall be carried out in accordance with AS 3600. Concrete design strength (f'c) at 28 days to be : 32 MPa.

<p>22.01.2004 A NOTES ALTERED DETAIL ADDED</p>		<p>DOCUMENT CERTIFICATION Date: FEB 04 Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>		<p>I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust, NPER, Institute of Engineers Membership No. 803939 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p>		<p><b>NB</b> NORTHERN BEACHES Consulting Engineers P/L A.C.N. 076 121 516 A.B.N. 24 075 121 516 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9884 7000 Fax: (02) 9884 7444 e-mail: nb@nbconsulting.com.au</p>		<p>Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</p>		<p>Drawing Title: RETAINING WALL DETAILS SHEET 1</p>		<p>Date: Oct. 2003 Design: R.G.W. Drawn: Paul R Bruce Checked: MIDD/Aust.</p>		<p>Job No: 030963 Drawing No: C07 Rev: A</p>	
------------------------------------------------	--	----------------------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------	--	-------------------------------------------------------------------------------------------	--	------------------------------------------------------	--

**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501

**NOTES: SPRAYED CONCRETE WALLS**

**REINFORCEMENT:**

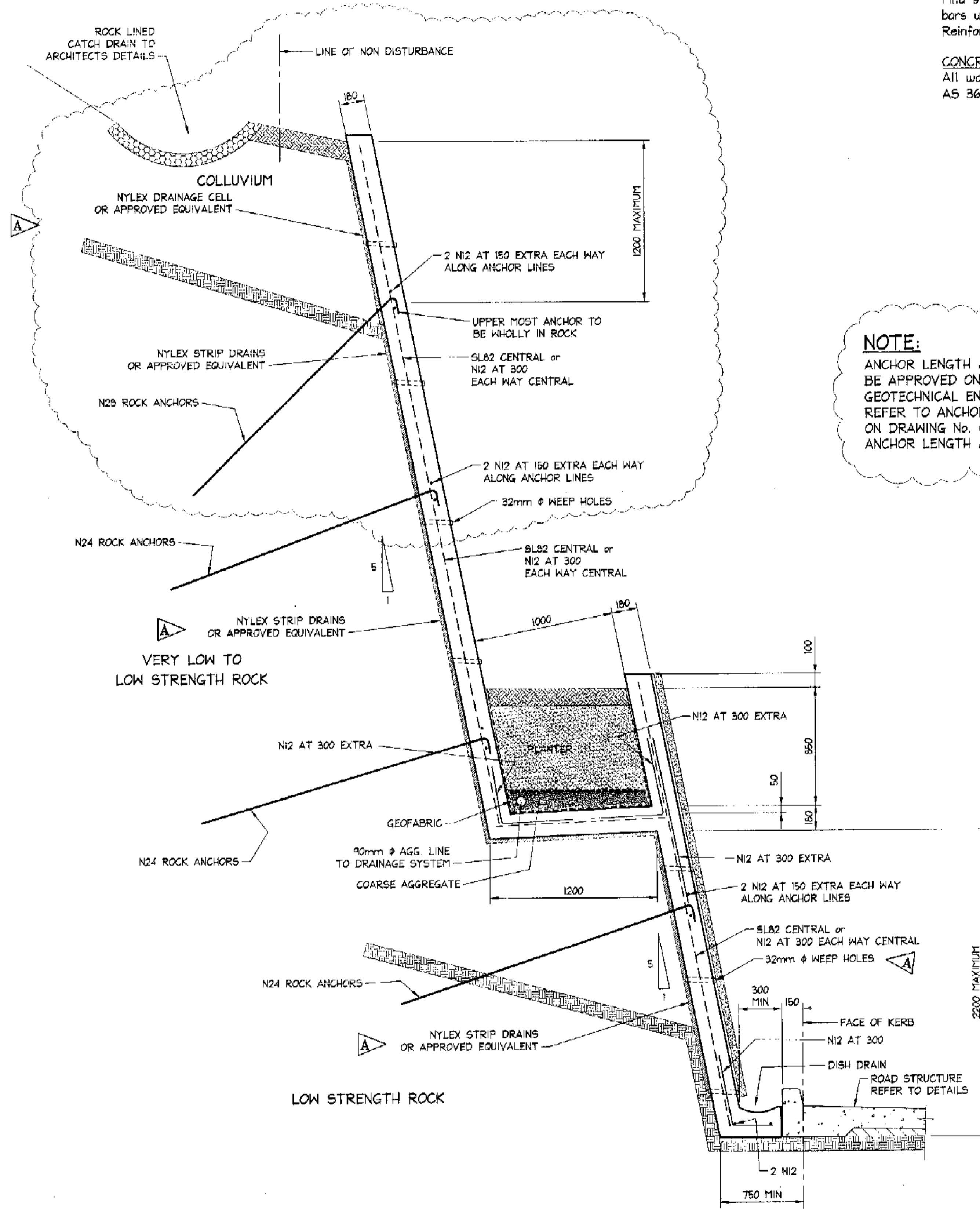
All welded fabric shall be lapped as follows:  
 300mm minimum lap and 50mm minimum concrete cover.  
 Mild steel rods denoted N12 are 12mm diameter D250 Grade deformed bars with 450mm minimum lap and 65mm minimum concrete cover.  
 Reinforcement to be held in its correct position at 800mm centres.

**CONCRETE:**

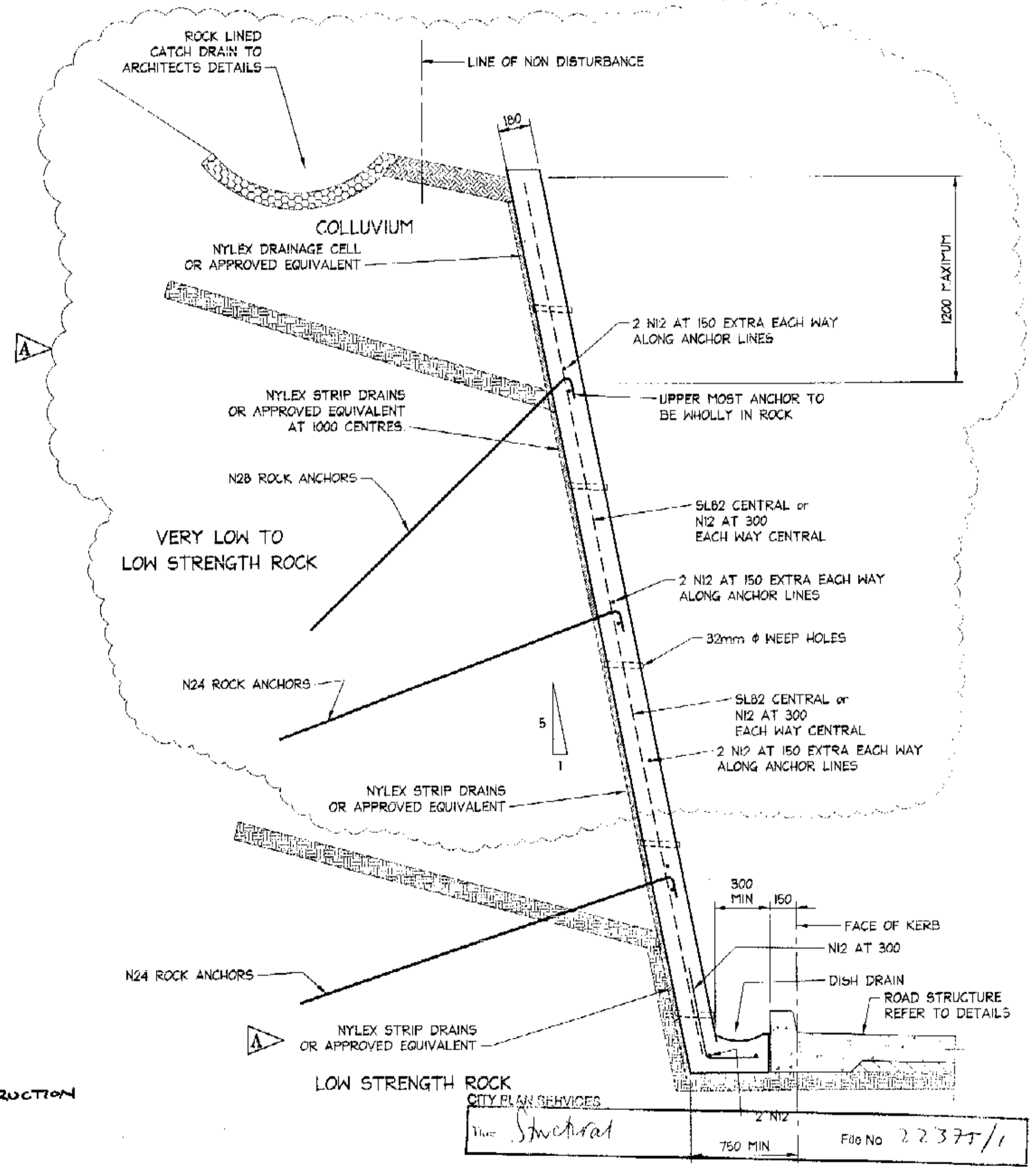
All workmanship and materials shall be carried out in accordance with AS 3600. Concrete design strength (F<sub>c</sub>) at 28 days to be : 32 MPa.

**NOTE:**

ANCHOR LENGTH AND CENTRES TO BE APPROVED ON SITE BY THE GEOTECHNICAL ENGINEER. REFER TO ANCHOR BOLTING SCHEDULE ON DRAWING No. C20 FOR ANCHOR LENGTH AND SPACING.



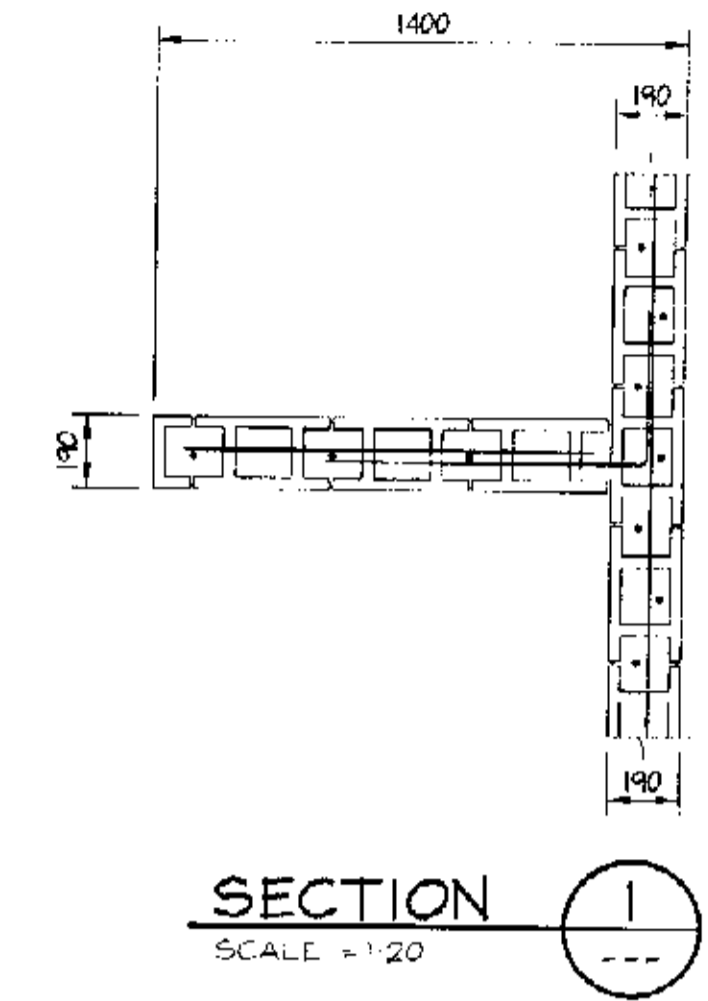
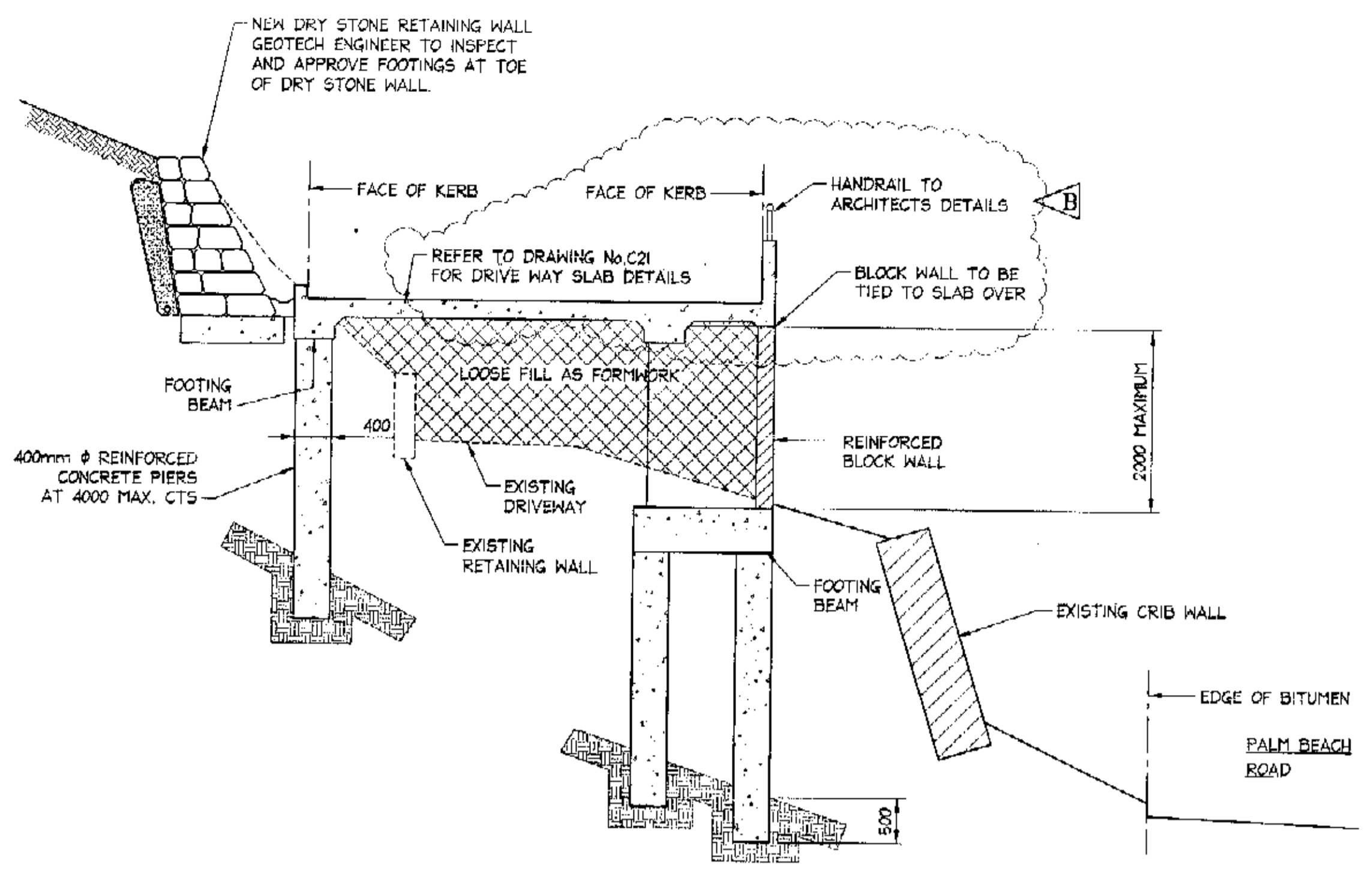
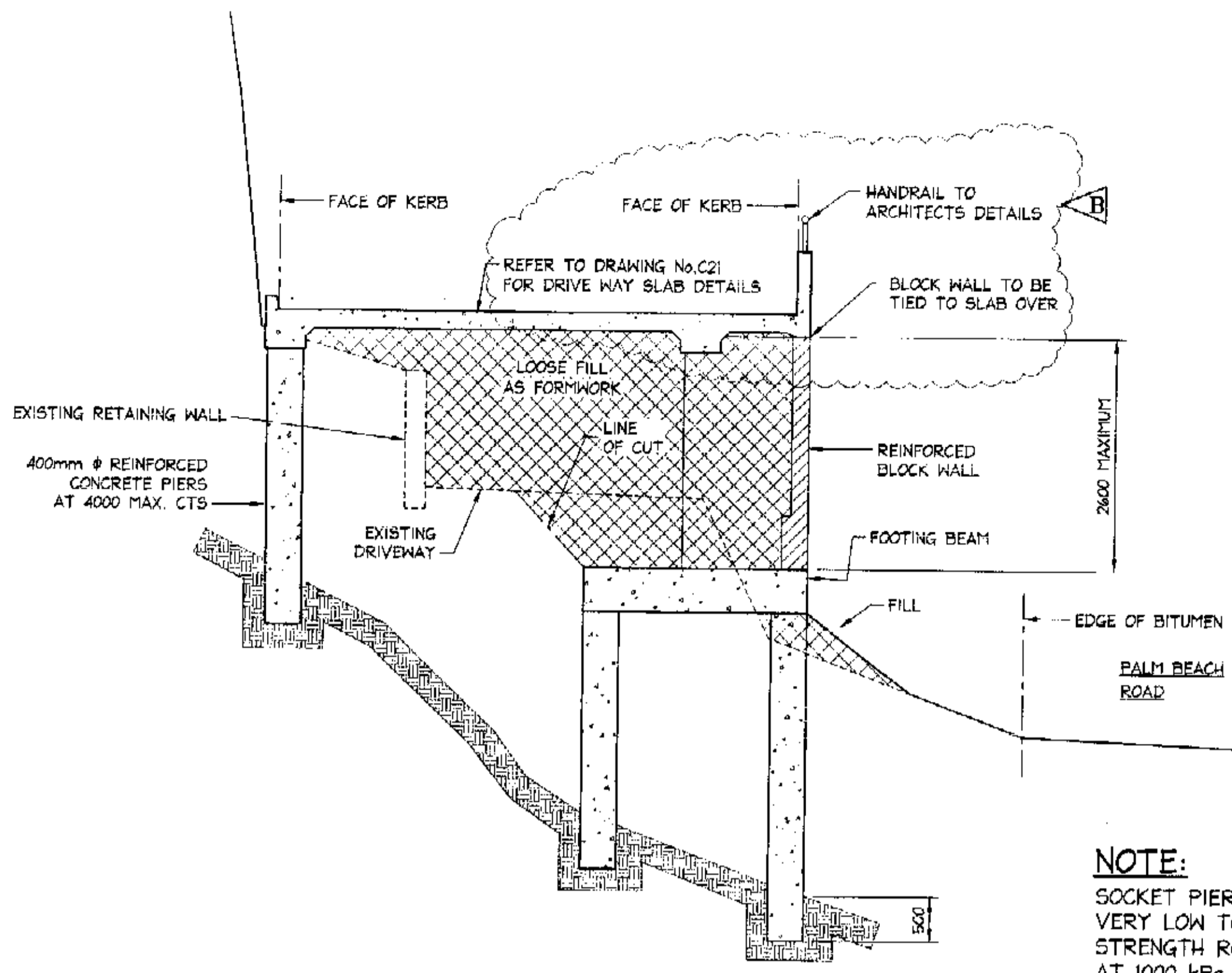
TYPICAL RETAINING WALL - TYPE RW3  
 SCALE = 1 : 20



TYPICAL RETAINING WALL - TYPE RW4  
 SCALE = 1 : 20

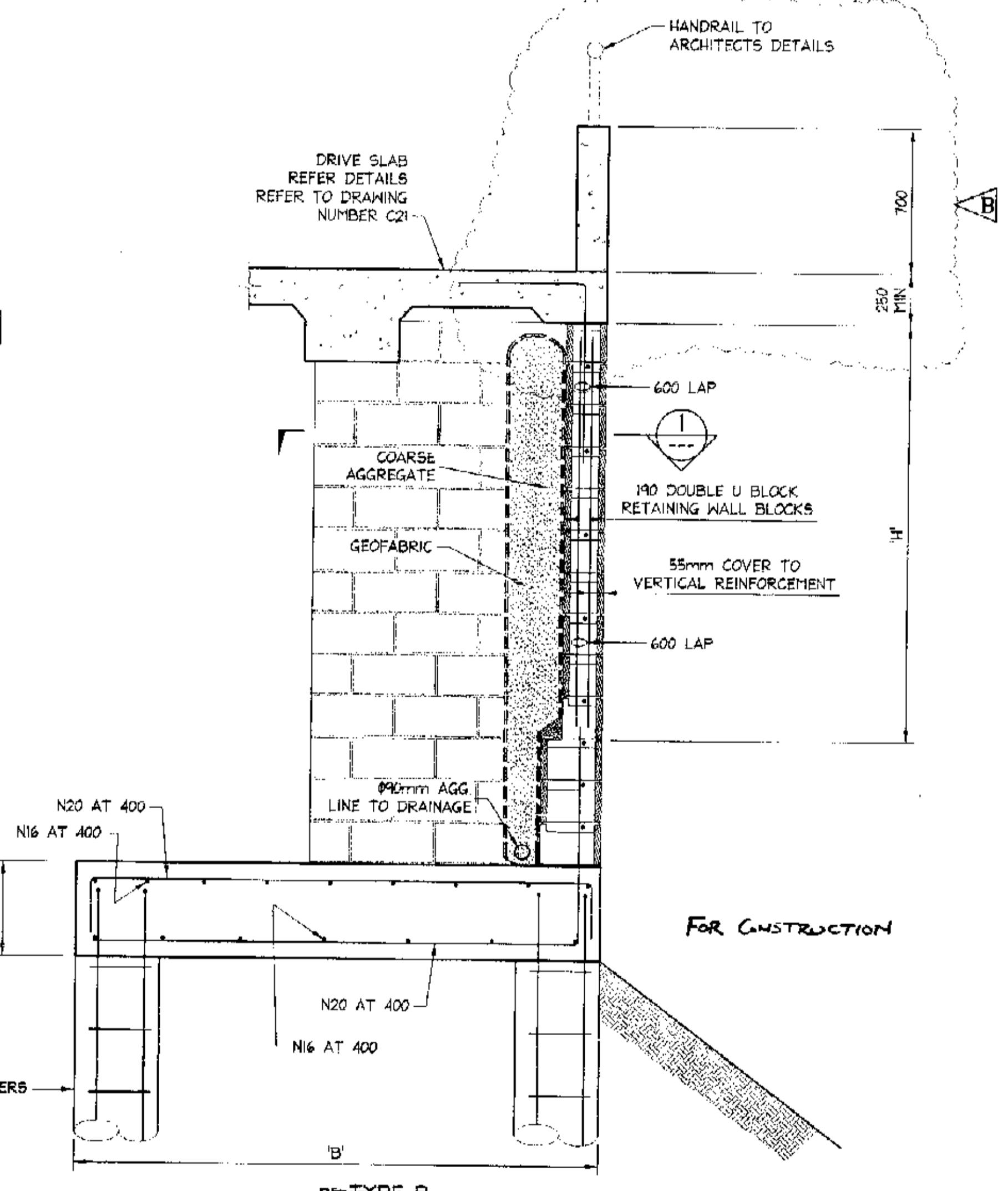
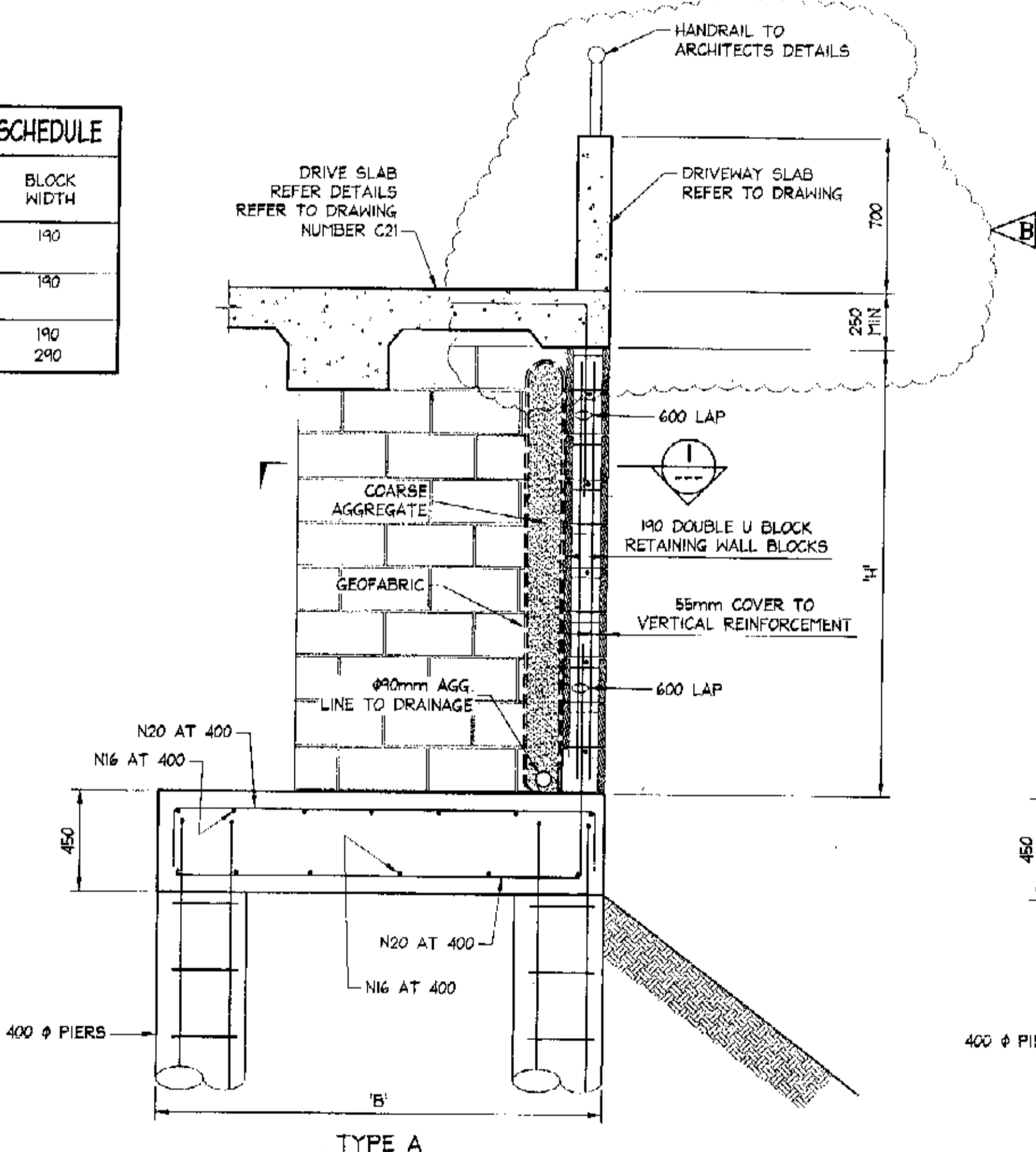
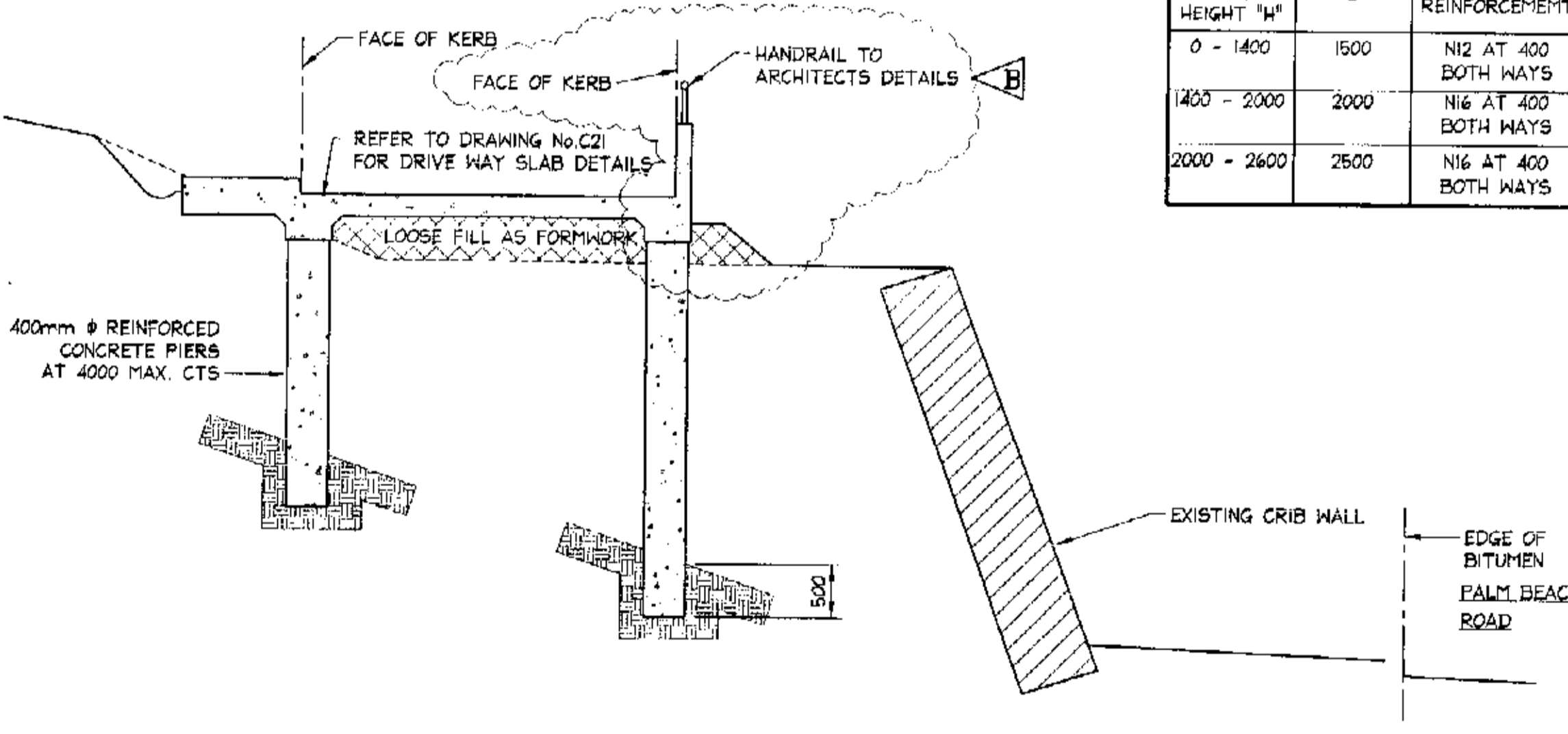
<p>22.01.2004 A NOTES AND DETAILS ALTERED</p>		<p>2004 A</p>		<p>2004 A</p>		<p>2004 A</p>		<p>2004 A</p>		<p>2004 A</p>			
<p>DOCUMENT CERTIFICATION</p> <p>Date FEB 04</p> <p>Rick G. Wray                  (Director Northern Beaches Consulting Engineers)</p>		<p>I am a qualified Structural/Civil Engineer. I hold the following qualifications:                  BE(Civil), CPENG, MIEAust., NPER, Institute of Engineers Membership No. 803936                  I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p>		<p><b>NORTHERN BEACHES</b>                  Consulting Engineers P/L</p> <p>A.C.N. 075 121 616 A.B.N. 24 075 121 616                  Suite 207, 30 FISHER ROAD                  DEE WHY N.S.W. 2099                  Ph: (02) 9984 7000 Fax: (02) 9984 7444                  e-mail: nb@nbconsulting.com.au</p>		<p>Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</p>		<p>Drawing Title: RETAINING WALL DETAILS SHEET 2</p>		<p>Date: Oct. 2003</p> <p>Design: R.G.W.</p> <p>Drawn: Paul R Bruce                  CIVIL ENGR, MIEAust.</p> <p>Job No: 030963</p> <p>Drawing No: C08</p>		<p>Checked: A</p>	

- NOTES:**
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.



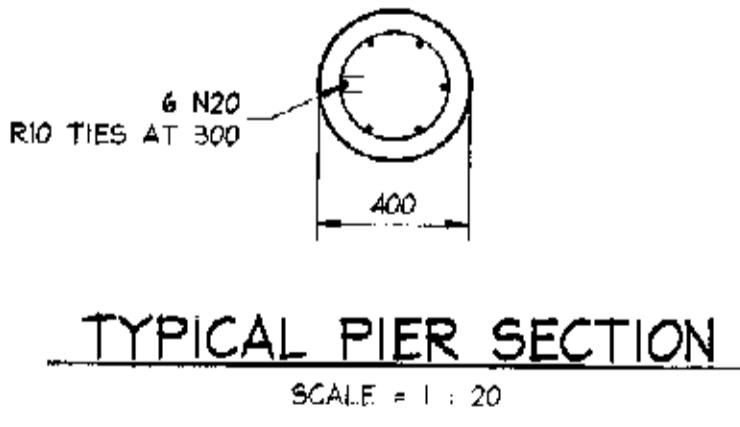
**NOTE:**  
SOCKET PIERS INTO VERY LOW TO LOW STRENGTH ROCK AT 1000 kPa.

TOTAL WALL HEIGHT 'H'	'B'	WALL REINFORCEMENT	BLOCK WIDTH
0 - 1400	1500	N12 AT 400 BOTH WAYS	190
1400 - 2000	2000	N16 AT 400 BOTH WAYS	190
2000 - 2600	2500	N16 AT 400 BOTH WAYS	290



**BLOCK RETAINING WALL - RW6**  
SCALE = 1 : 20

**TYPICAL PLAN CROSS SECTION OF WALL**  
SCALE = 1 : 20



Date	Rev.	Amendment
29.01.2004	A	DETAILS ALTERED
22.01.2004	A	DETAILS ALTERED AND ADDED

**DOCUMENT CERTIFICATION**

I am a qualified Structural/Civil Engineer. I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938

I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

**NORTHERN BEACHES Consulting Engineers P/L**

A.C.N. 076 121 816 A.B.N. 24 076 121 816  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9984 7444  
e-mail: nb@nbconsulting.com.au

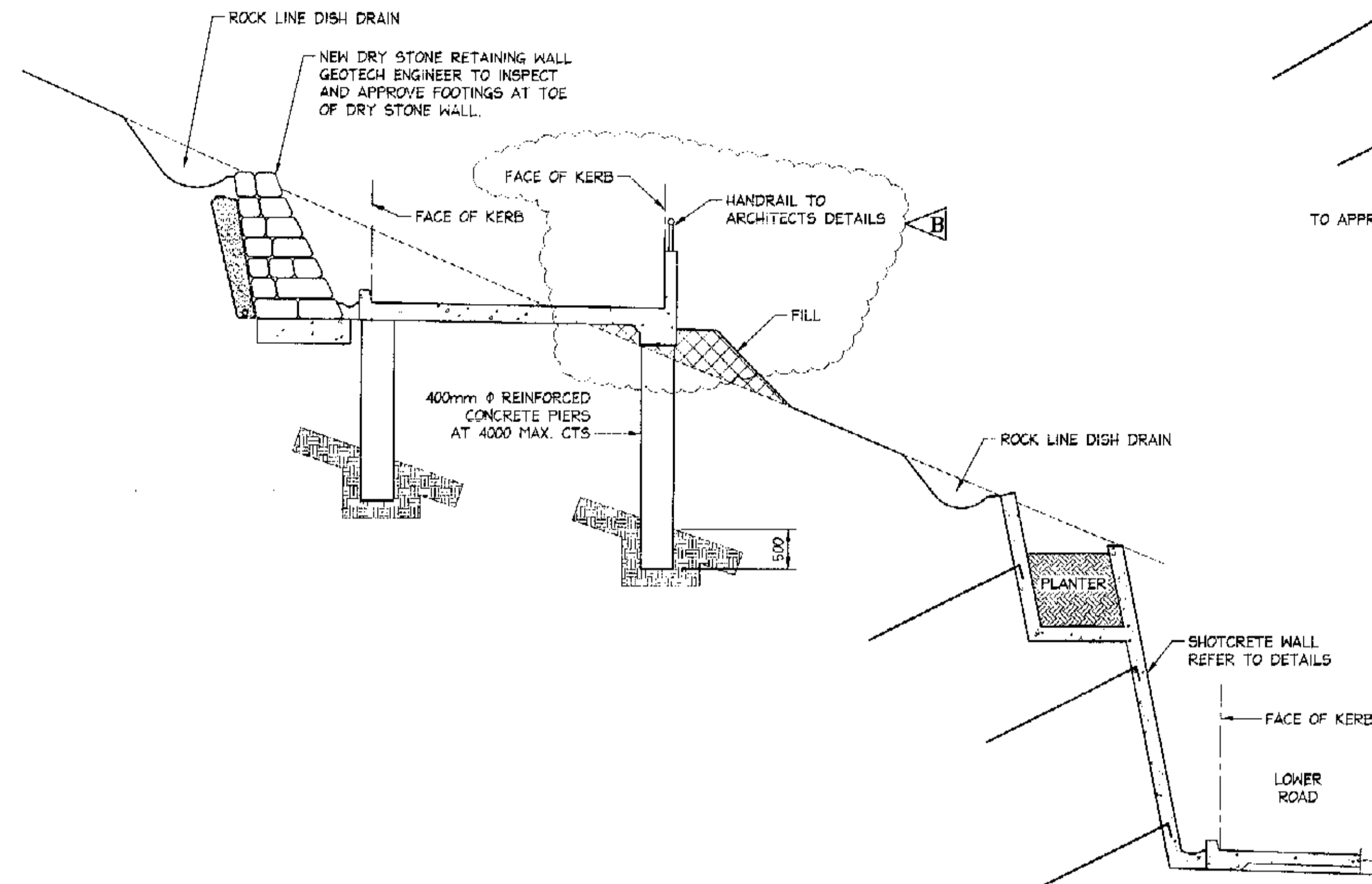
**Project:** PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development

**Drawing Title:** RETAINING WALL DETAILS SHEET 3

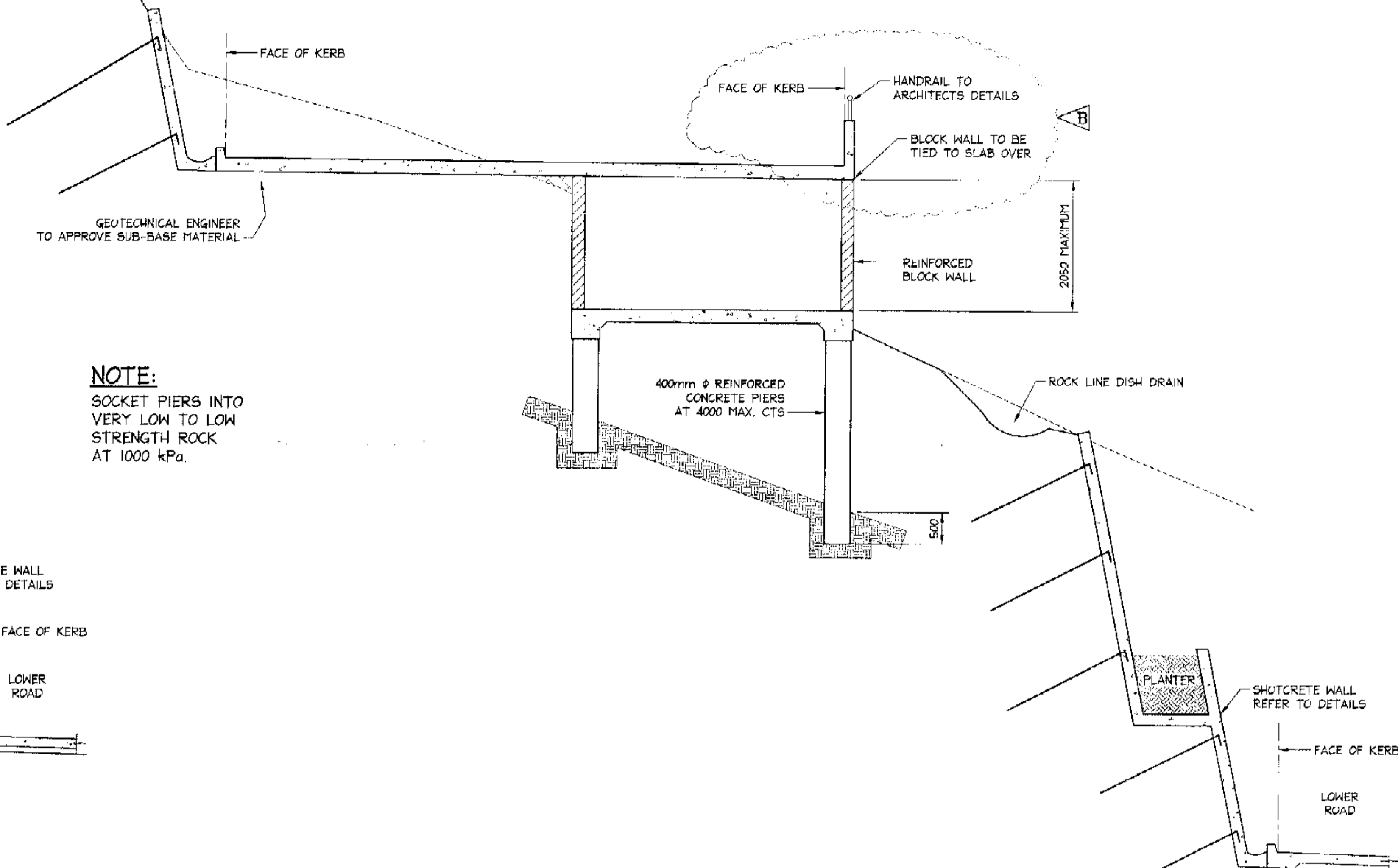
Date	Design	Drawn	Checked
Oct. 2003	R.G.W.	Paul R Bruce	CPAust, MIEDAust.
Job No:	Drawing No:	Rev:	
030963	C09	B	

The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

- NOTES:**
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501.

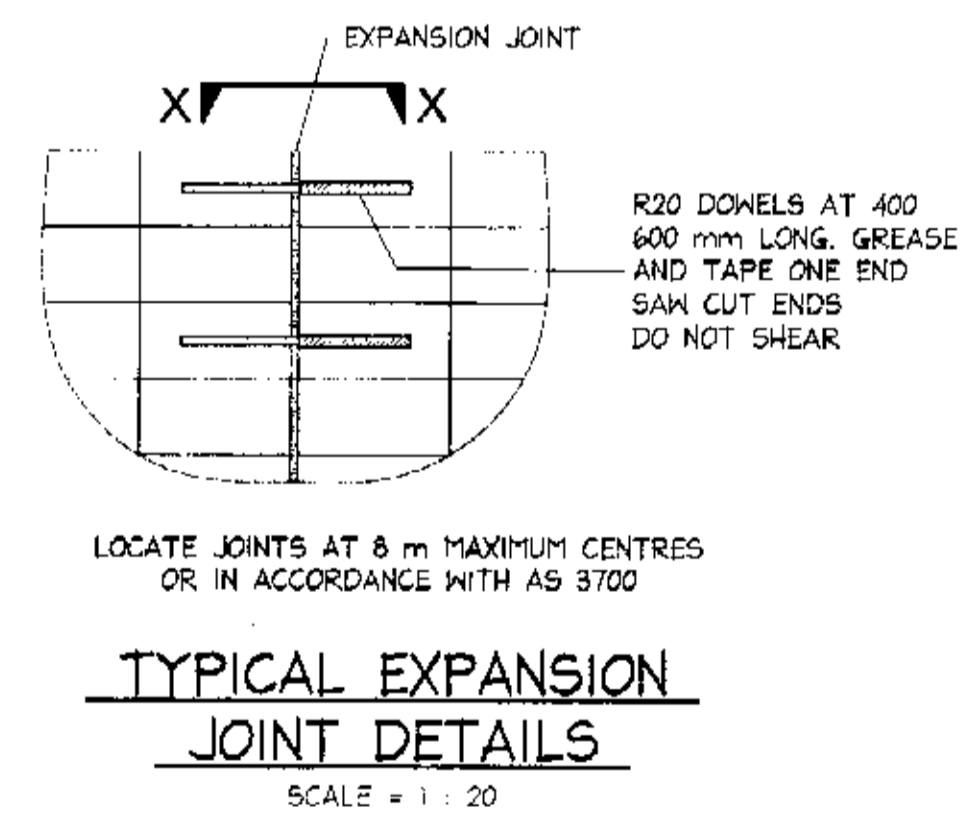


**TYPICAL SECTION AT CH 158.541 (UPPER ROAD)**  
SCALE = 1 : 50

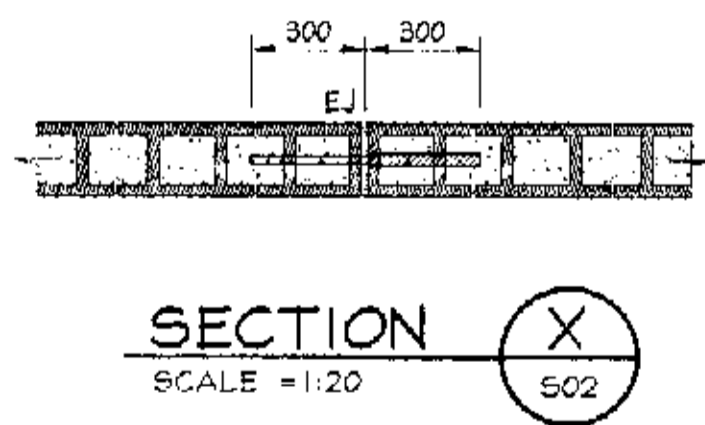


**TYPICAL SECTION AT CH 168.449 (UPPER ROAD)**  
SCALE = 1 : 50

**NOTE:**  
SOCKET PIERS INTO VERY LOW TO LOW STRENGTH ROCK AT 1000 kPa.



**TYPICAL EXPANSION JOINT DETAILS**  
SCALE = 1 : 20



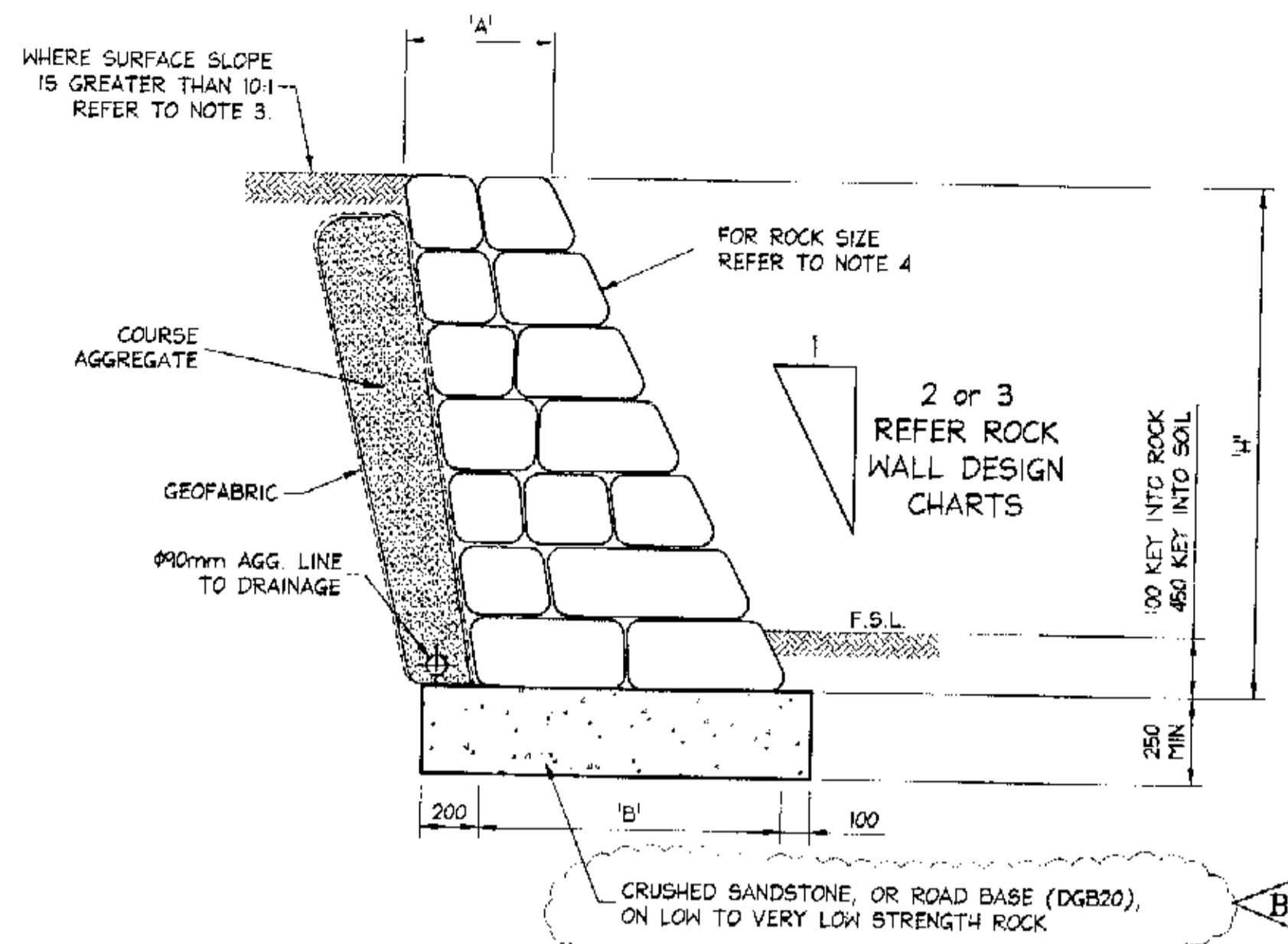
**SECTION**  
SCALE = 1:20

FOR CONSTRUCTION.

CITY PLAN SERVICES  
Structural  
22371//

<p>29.01.2004 B DETAILS ALTERED</p> <p>22.01.2004 A DETAILS ALTERED AND ADDED</p> <p>Date: Rev: Amendment:</p>		<p><b>DOCUMENT CERTIFICATION</b></p> <p>Date: FEB 04</p> <p>Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>	<p>I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938</p> <p>I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p>	<p><b>NORTHERN BEACHES Consulting Engineers P/L</b></p> <p>A.C.N. 078 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 8984 7000 Fax: (02) 8984 7444 e-mail: nb@nbconsulting.com.au</p>	<p>Project: <b>PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</b></p>	<p>Drawing Title: <b>RETAINING WALL DETAILS SHEET 4</b></p>	<p>Date: Oct. 2003 Design: R.G.W. Drawn: Paul R Bruce Checked: PMIEAust., MIDD/Aust.</p>	<p>Job No: <b>030963</b> Drawing No: <b>C10</b> Rev: <b>B</b></p>
----------------------------------------------------------------------------------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------	------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

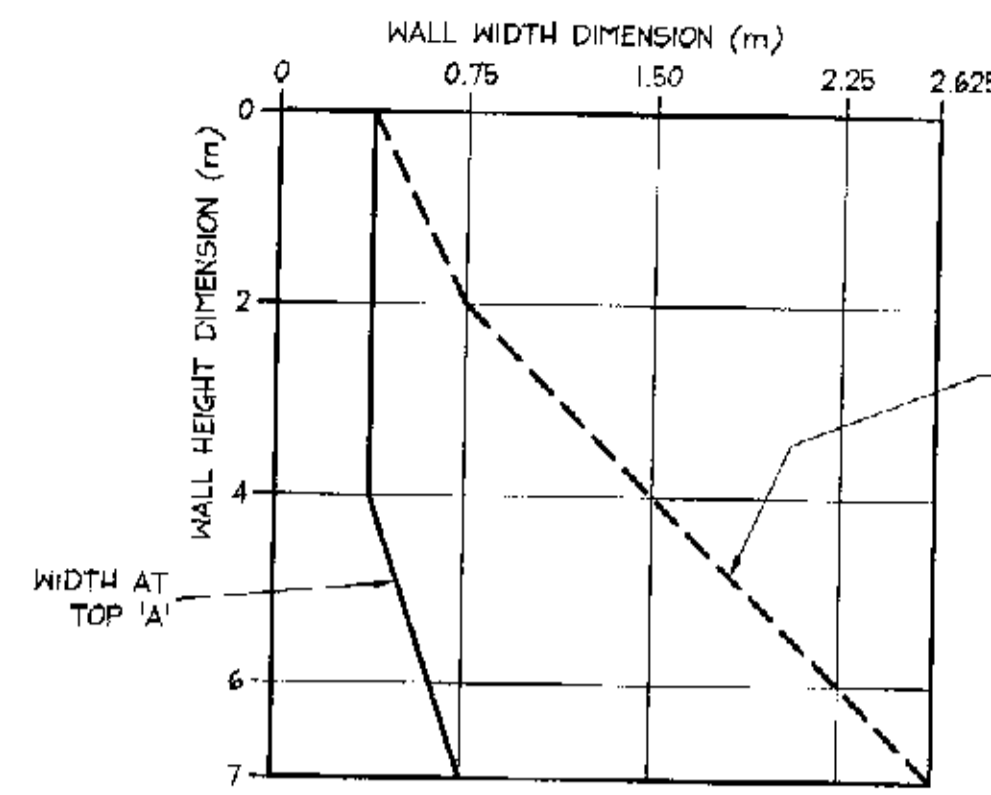




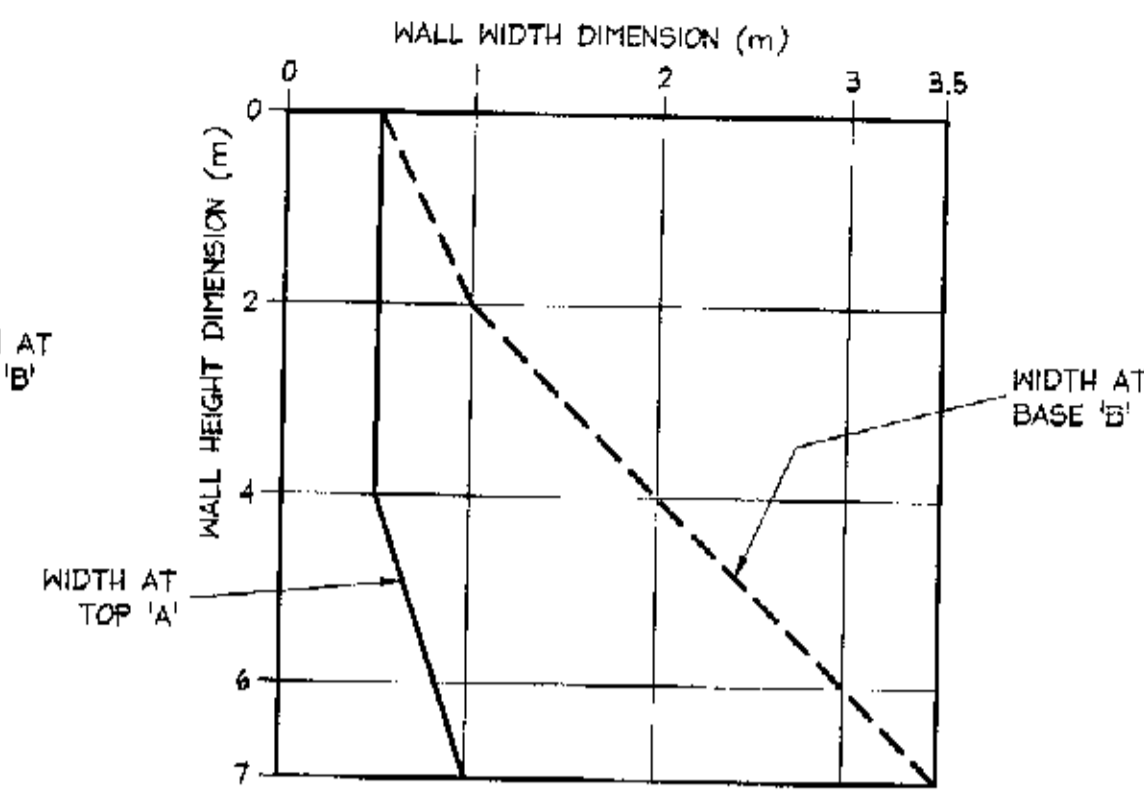
**TYPICAL DRY STONE RETAINING WALL DETAIL - RW5**  
SCALE = 1 : 20

**DRY STONE RETAINING WALL NOTES:**

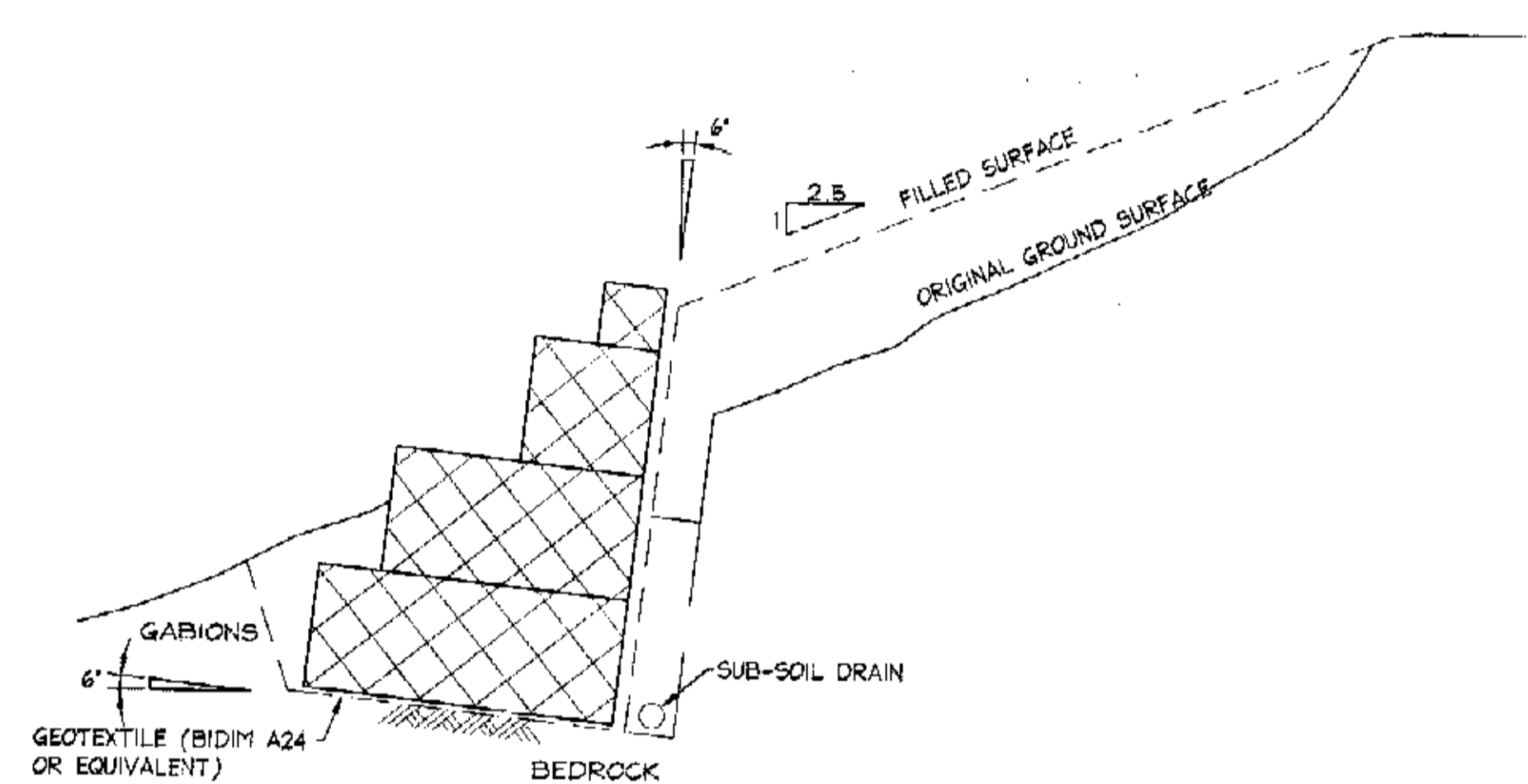
1. BACKFILL IS TO BE GRANULAR, FREE DRAINING AND COMPACTED.
2. FOUNDATION TO BE APPROVED FOR A SAFE BEARING CAPACITY OF 200 KPa PRIOR TO CONSTRUCTION.
3. WHERE THE SURFACE SLOPE OF RETAINED MATERIAL IS BETWEEN 10:1 AND 4:1 THE WALL BASE DIMENSION IS TO BE INCREASED BY 500mm.
4. ROCK IS TO BE SOUND DURABLE SANDSTONE OR OTHER APPROVED MATERIAL AND AT LEAST 0.5 SQUARE METRES PLAN AREA.
5. A CONTINUOUS 90mm DIA. SUBSOIL DRAIN IS TO BE INSTALLED AT THE REAR OF THE WALL WHERE THE WALL HEIGHT EXCEEDS 3000mm OR WHERE THE WALL FOUNDATION CONSISTS OF OTHER THAN ROCK.
6. ROCKS SHALL BE PLACED IN SUCH A MANNER THAT THEY ARE STABLE AND INTERLOCKING AND LAID ROUGHLY COURSED AND BEDDED ON THEIR BROADEST BASE.



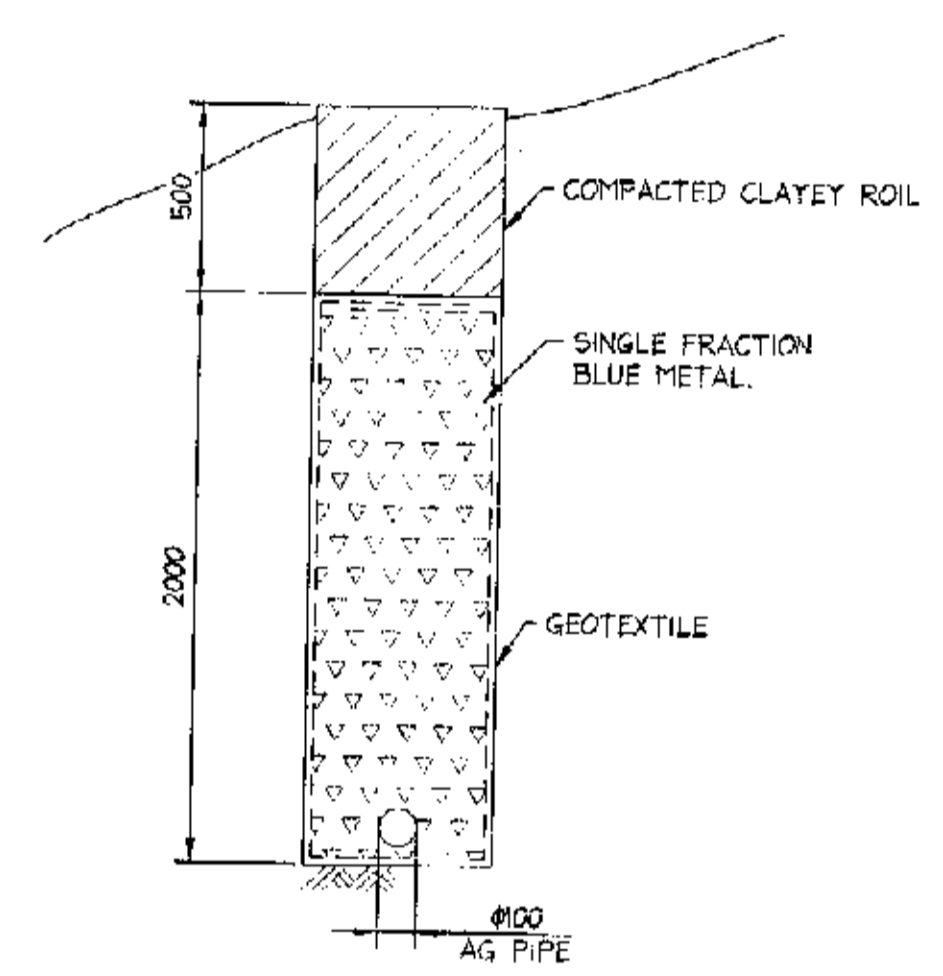
**ROCK WALL DESIGN CHART FOR 1 : 2 WALL BATTER**



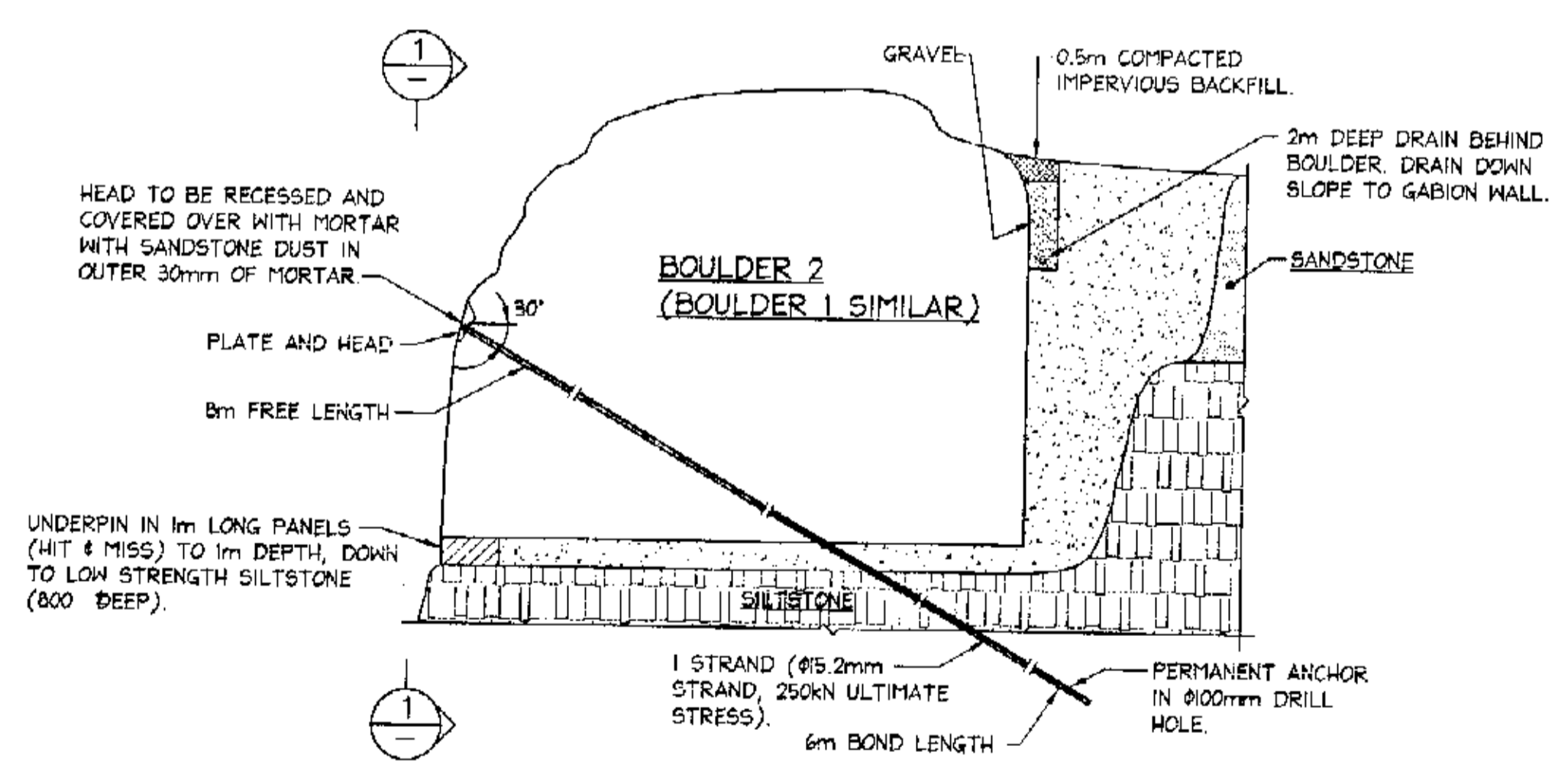
**ROCK WALL DESIGN CHART FOR 1 : 3 WALL BATTER**



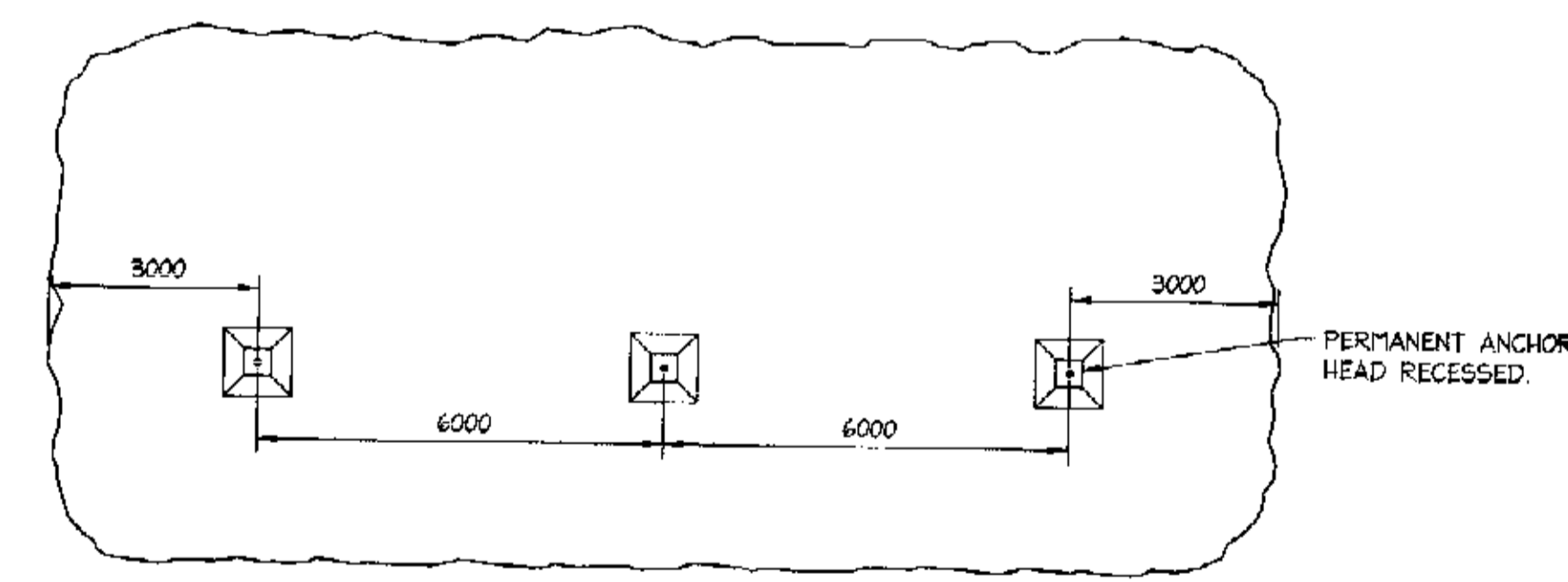
**GABION WALL**  
SCALE = 1 : 50



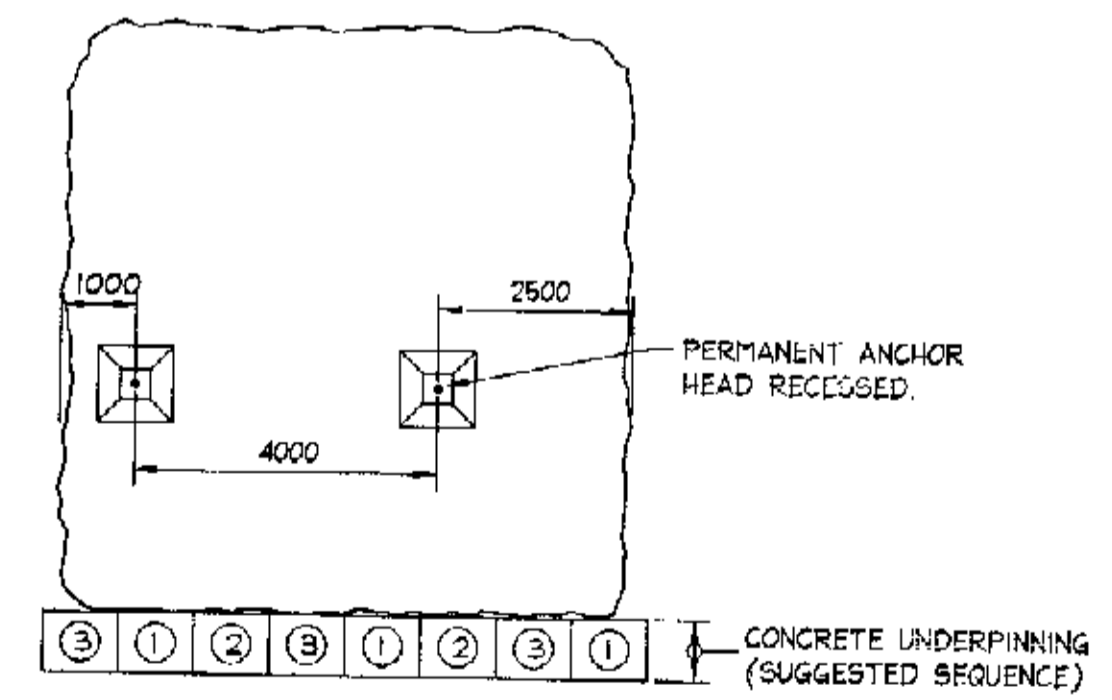
**SUB-SOIL DRAIN**  
SCALE = 1 : 20



**TYPICAL ROCK ANCHOR CROSS SECTION**  
SCALE = 1 : 100



**BOULDER 1**  
ELEVATION 1  
SCALE = 1 : 100



**BOULDER 2**  
ELEVATION 1  
SCALE = 1 : 100

FOR CONSTRUCTION.

Structural

File No 22375/11

**DOCUMENT CERTIFICATION**

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938  
I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

**NB** NORTHERN BEACHES Consulting Engineers P/L  
A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9984 7444  
e-mail: nb@nbconsulting.com.au

Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development

Drawing Title: RETAINING WALL DETAILS SHEET 5

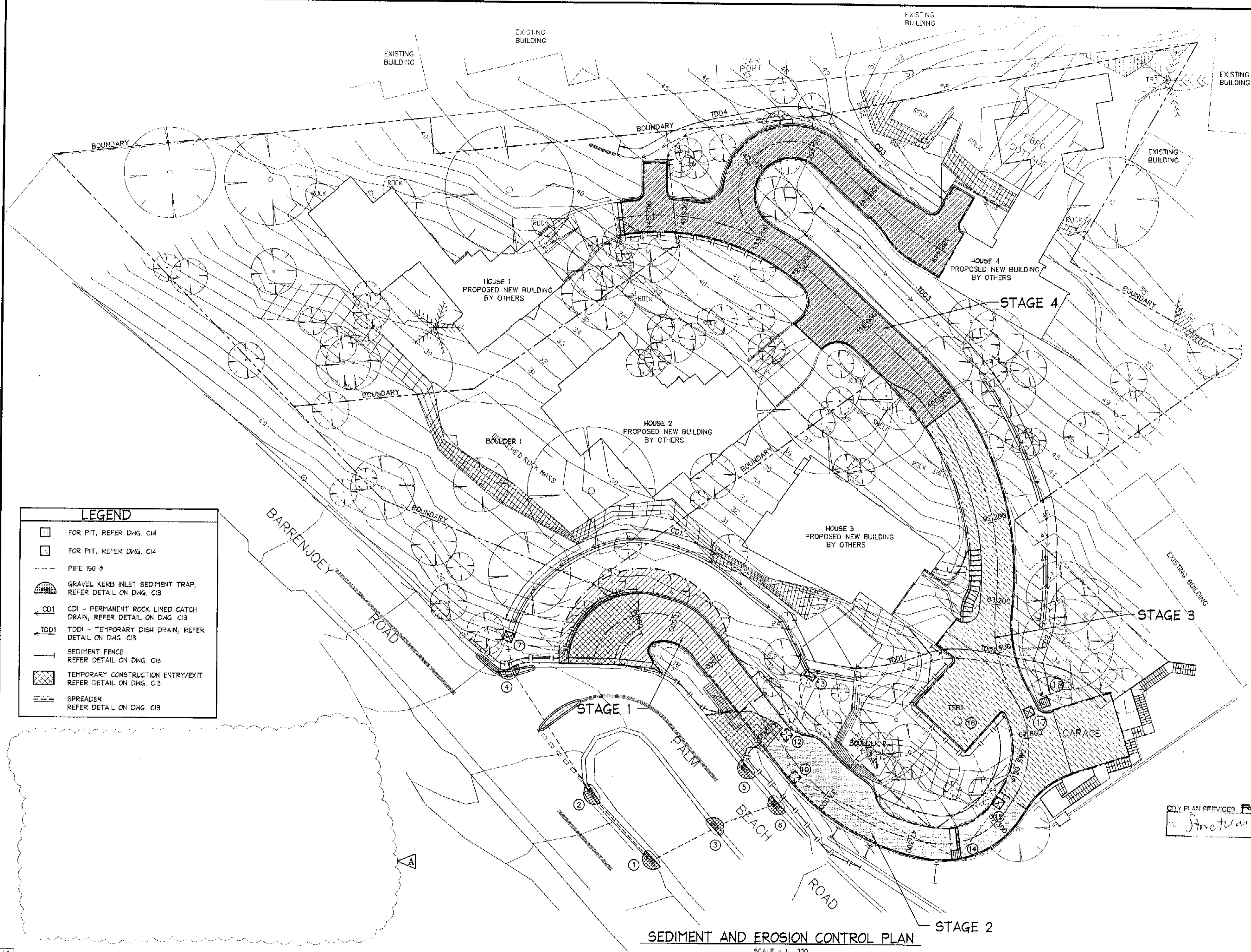
Date:	Design:	Drawn:	Checked:
Oct. 2003	R.G.W.	Paul R Bruce CPREAust., MIEAust.	
Job No:	Drawing No:	Rev:	
030963	C11	B	

29.01.2004	B	NOTE ALTERED
22.01.2004	A	DETAILS ADDED
Date:	Rev:	Amendment:

The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

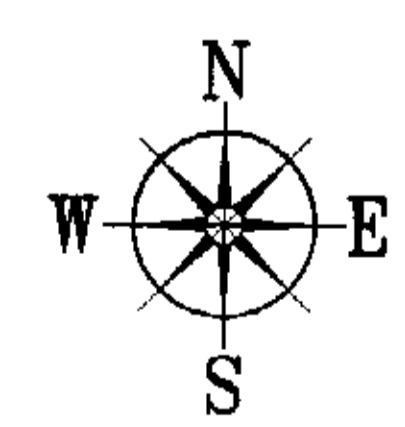
**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAINING SCHEDULE REFER TO DRAWING NUMBER: S01.



LEGEND	
	FOR PIT, REFER DWG. C14
	FOR PIT, REFER DWG. C14
	PIPE 150 Ø
	GRAVEL KERB INLET SEDIMENT TRAP, REFER DETAIL ON DWG. C13
	CD1 - PERMANENT ROCK LINED CATCH DRAIN, REFER DETAIL ON DWG. C13
	TDD1 - TEMPORARY DISH DRAIN, REFER DETAIL ON DWG. C13
	SEDIMENT FENCE REFER DETAIL ON DWG. C13
	TEMPORARY CONSTRUCTION ENTRY/EXIT REFER DETAIL ON DWG. C13
	SPREADER REFER DETAIL ON DWG. C13

CITY PLAN SERVICES FOR CONSTRUCTION  
*Structural* 22375/1



**SEDIMENT AND EROSION CONTROL PLAN**  
 SCALE = 1 : 200

Date:	29.01.2004	Rev:	A	Amendment:	SCHEDULE DELETED
-------	------------	------	---	------------	------------------

**DOCUMENT CERTIFICATION**  
 Date: FEB 04  
 Rick G. Wray  
 (Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer. I hold the following qualifications:  
 BE(Civil), CPENG, MIEAust., NFER.  
 Institute of Engineers Membership No. 803938  
 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

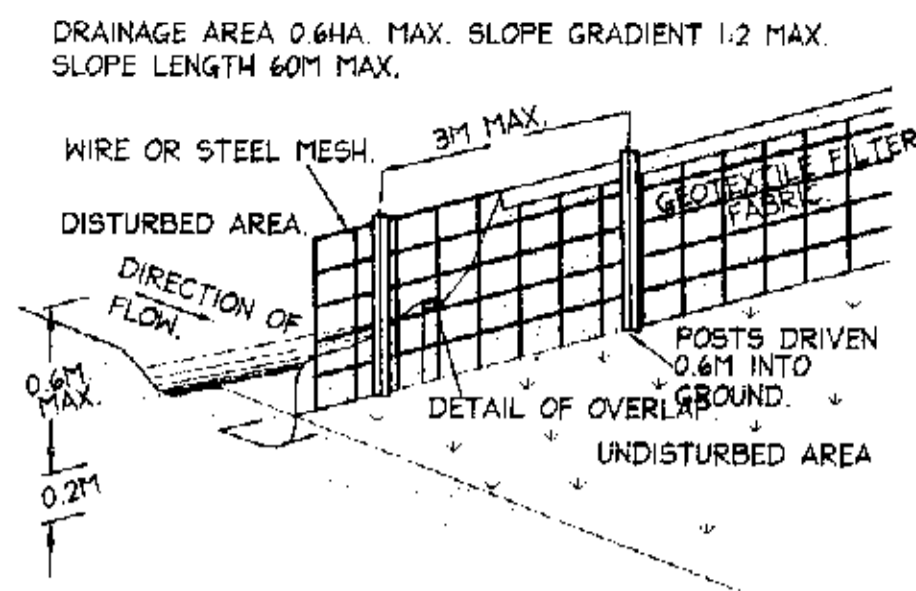
**NB** NORTHERN BEACHES Consulting Engineers P/L  
 A.C.N. 076 121 616 A.B.N. 24 076 121 618  
 Suite 207, 30 FISHER ROAD  
 DEE WHY N.S.W. 2099  
 Ph: (02) 9984 7000 Fax: (02) 9984 7444  
 e-mail: nb@nbconsulting.com.au

Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Roypond Development

Drawing Title: SEDIMENT AND EROSION CONTROL PLAN

Date:	Nov. 2003	Design:	R.G.W.	Drawn:	Paul R Bruce	Checked:	ONEAust. MIDAust.
Job No:	030963	Drawing No:	C12	Rev:	A		

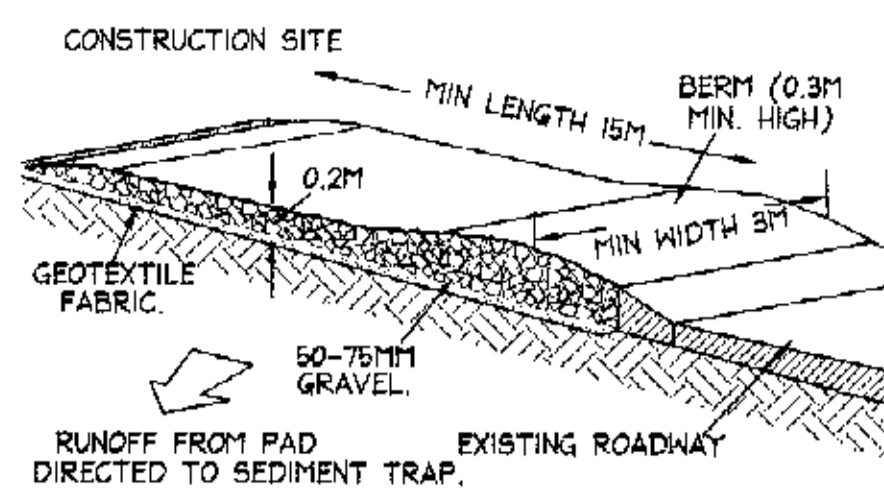
The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.



**SEDIMENT FENCE**

**CONSTRUCTION NOTES:**

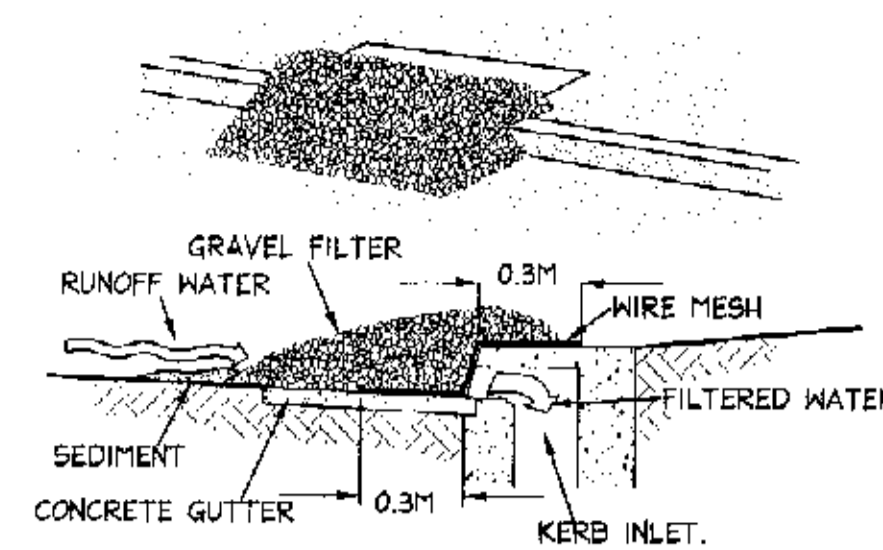
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 15 METRE LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.



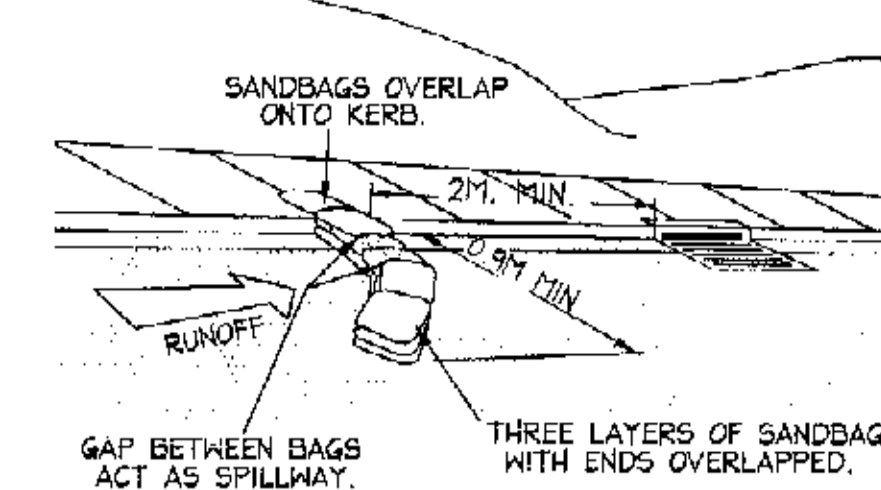
**TYPICAL TEMPORARY CONSTRUCTION ENTRY/EXIT DETAIL**

**CONSTRUCTION NOTES:**

1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE.
3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING ROADBASE OR 30mm AGGREGATE. MINIMUM LENGTH 15 METRES OR TO BUILDING ALIGNMENT. MINIMUM WIDTH 3 METRES.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP.



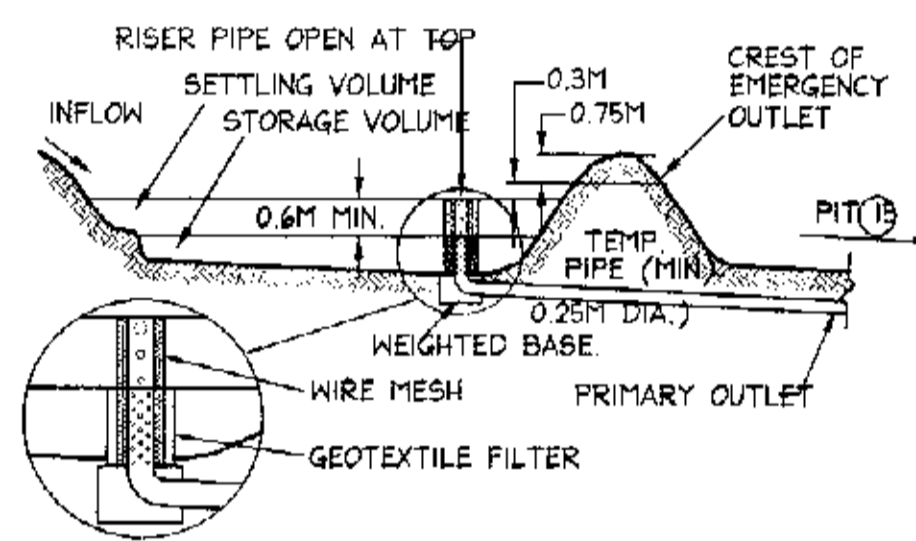
**GRAVEL KERB INLET SEDIMENT TRAP**



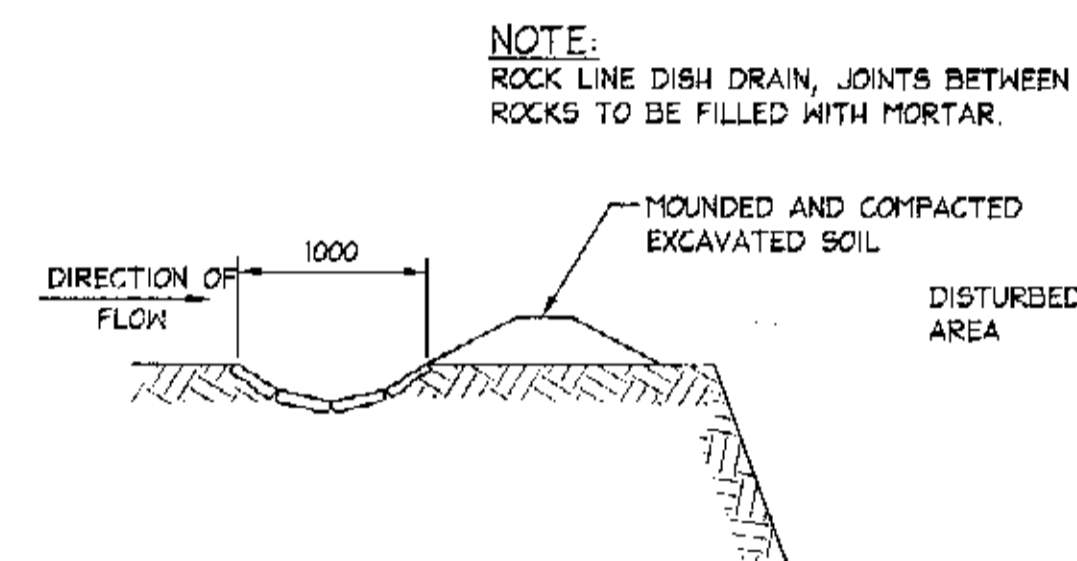
**SANDBAG KERB INLET SEDIMENT TRAP**

**NOTES:**

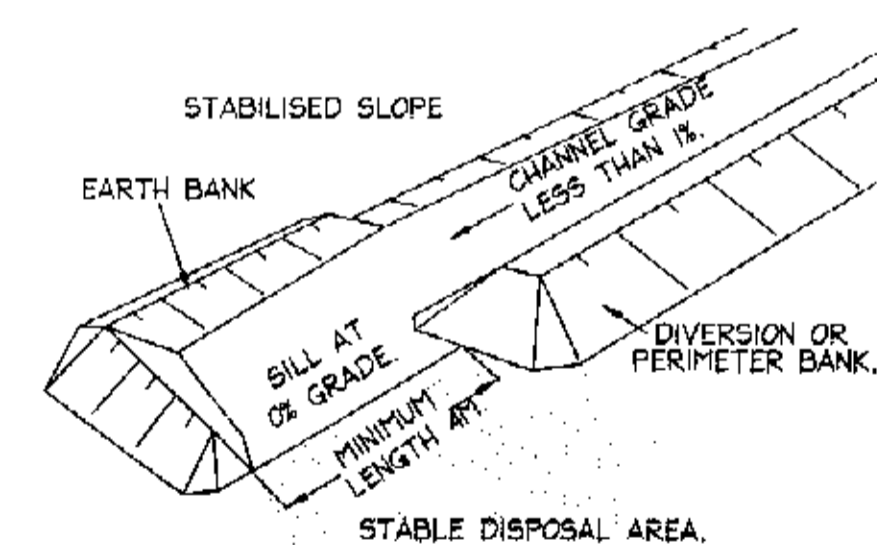
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 50.



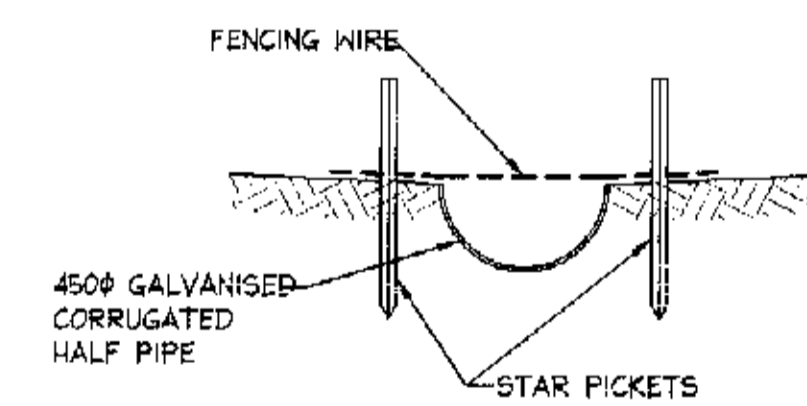
**TYPICAL TEMPORARY SEDIMENT BASIN**  
DENOTED TSBI ON DWG. C12



**CATCH DRAIN - ROCK LINED**  
DENOTED CD1, CD2 & CD3 ON DWG. C12



**TYPICAL SPREADER DETAIL**



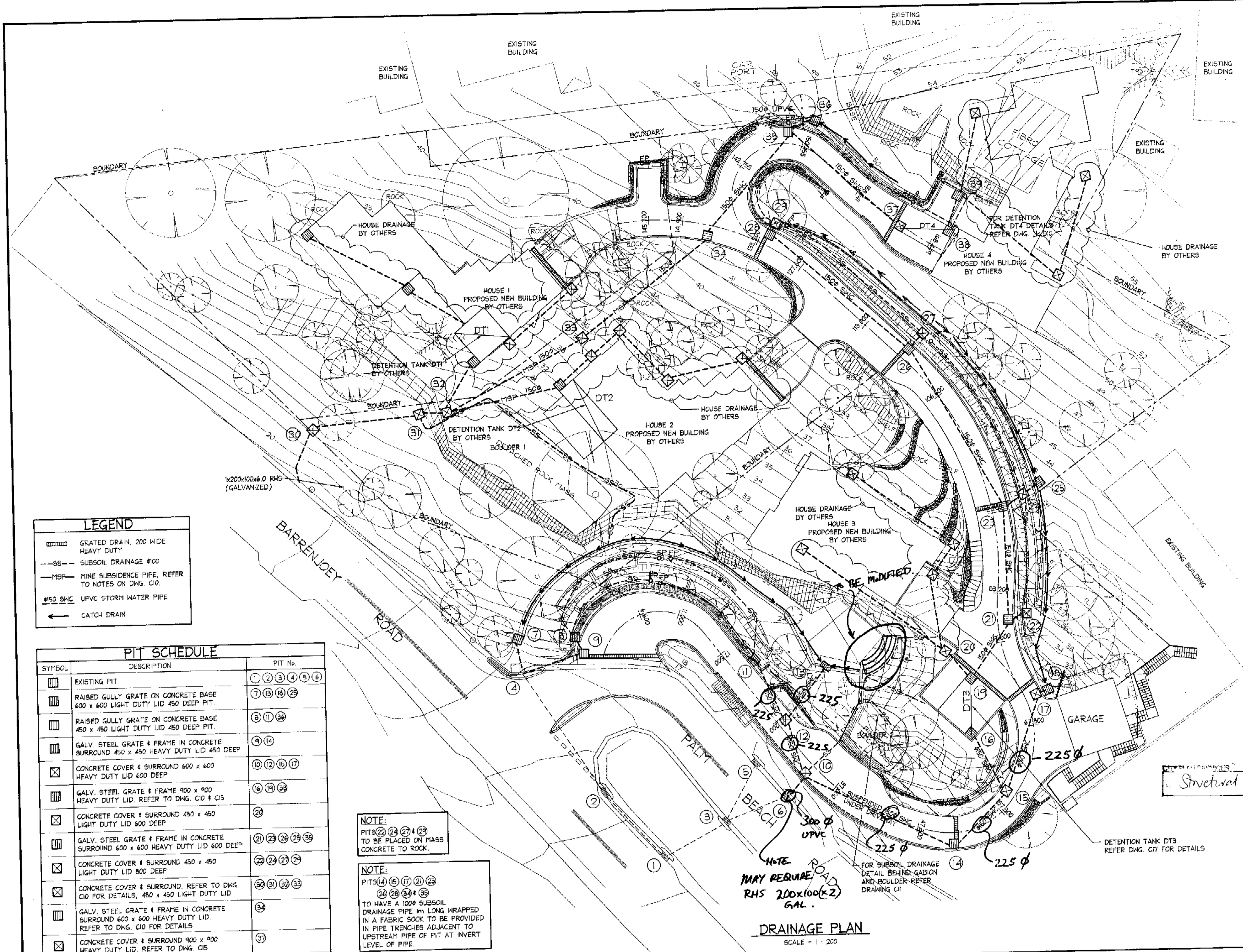
**TEMPORARY DISH DRAIN**  
DENOTED TDD1, TDD2, TDD3 & TDD4 ON DWG. C12

FOR CONSTRUCTION

CITY PLAN SERVICES  
*Structural*  
 File No 22375/11

AI		DOCUMENT CERTIFICATION		I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CP Eng, MIE Aust, NPER Institute of Engineers Membership No. 803938 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/industry Standards.		<b>NORTHERN BEACHES Consulting Engineers P/L</b> A.C.N. 078 121 616 A.B.N. 24 078 121 616 Suite 207, 30 FISHER ROAD DEE WARY N.S.W. 2099 Ph: (02) 9584 7000 Fax: (02) 9584 7444 e-mail: nb@nbconsulting.com.au		Project: <b>PROPOSED ACCESS ROAD</b> at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development		Drawing Title: <b>SEDIMENT AND EROSION CONTROL DETAILS</b> <small>The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.</small>		Date: Nov. 2003 Design: R.G.W. Drawn: Paul R Bruce <small>CP Eng Aust, MIE Aust.</small>		Checked:	
Date:	Rev:	Amendment:	Date: FEB 04	Rick G. Wray (Director Northern Beaches Consulting Engineers)				Job No: <b>030963</b>		Drawing No: <b>C13</b>		Rev: -			

- NOTES:**
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501.



**LEGEND**

- GRATED DRAIN, 200 WIDE HEAVY DUTY
- SUBSOIL DRAINAGE 100
- MINE SUBSIDENCE PIPE, REFER TO NOTES ON DWG. C10.
- 150 S/W UPVC STORM WATER PIPE
- CATCH DRAIN

**PIT SCHEDULE**

SYMBOL	DESCRIPTION	PIT No.
	EXISTING PIT	① ② ③ ④ ⑤ ⑥
	RAISED GULLY GRATE ON CONCRETE BASE 600 x 600 LIGHT DUTY LID 450 DEEP PIT.	⑦ ⑧ ⑨ ⑩
	RAISED GULLY GRATE ON CONCRETE BASE 450 x 450 LIGHT DUTY LID 450 DEEP PIT.	⑪ ⑫ ⑬
	GALV. STEEL GRATE & FRAME IN CONCRETE SURROUND 450 x 450 HEAVY DUTY LID 450 DEEP	⑭ ⑮
	CONCRETE COVER & SURROUND 600 x 600 HEAVY DUTY LID 600 DEEP	⑯ ⑰ ⑱ ⑲
	GALV. STEEL GRATE & FRAME 900 x 900 HEAVY DUTY LID. REFER TO DWG. C10 & C15	⑳ ㉑ ㉒
	CONCRETE COVER & SURROUND 450 x 450 LIGHT DUTY LID 600 DEEP	㉓
	GALV. STEEL GRATE & FRAME IN CONCRETE SURROUND 600 x 600 HEAVY DUTY LID 600 DEEP	㉔ ㉕ ㉖ ㉗ ㉘
	CONCRETE COVER & SURROUND 450 x 450 LIGHT DUTY LID 800 DEEP	㉙ ㉚ ㉛ ㉜
	CONCRETE COVER & SURROUND. REFER TO DWG. C10 FOR DETAILS, 450 x 450 LIGHT DUTY LID	㉝ ㉞ ㉟ ㊱ ㊲
	GALV. STEEL GRATE & FRAME IN CONCRETE SURROUND 600 x 600 HEAVY DUTY LID. REFER TO DWG. C10 FOR DETAILS	㊳
	CONCRETE COVER & SURROUND 900 x 900 HEAVY DUTY LID. REFER TO DWG. C15	㊴

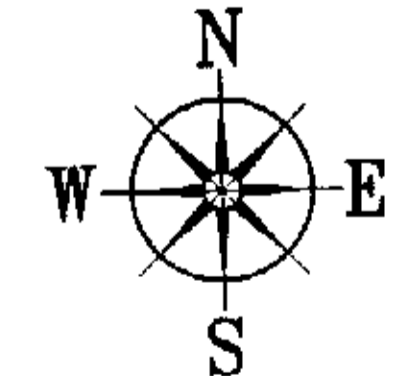
**NOTE:**  
PITS ⑳ ㉑ ㉒ ㉓ ㉔  
TO BE PLACED ON MASS CONCRETE TO ROCK.

**NOTE:**  
PITS ⑭ ⑮ ⑰ ⑱ ㉕  
TO HAVE A 100# SUBSOIL DRAINAGE PIPE 1m LONG WRAPPED IN A FABRIC SOCK TO BE PROVIDED IN PIPE TRENCHES ADJACENT TO UPSTREAM PIPE OF PIT AT INVERT LEVEL OF PIPE.

**\*NOTE:**  
HYDRAULIC GRADE LINES TO BE CALCULATED.  
LINE SIZES MAY CHANGE.

Structural 22375/1

FOR CONSTRUCTION.



**DRAINAGE PLAN**  
SCALE = 1 : 200

**DOCUMENT CERTIFICATION**

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

I am a qualified Structural/Civil Engineer.  
I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER.  
Institute of Engineers Membership No. 803938  
I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

**NORTHERN BEACHES**  
Consulting Engineers P/L

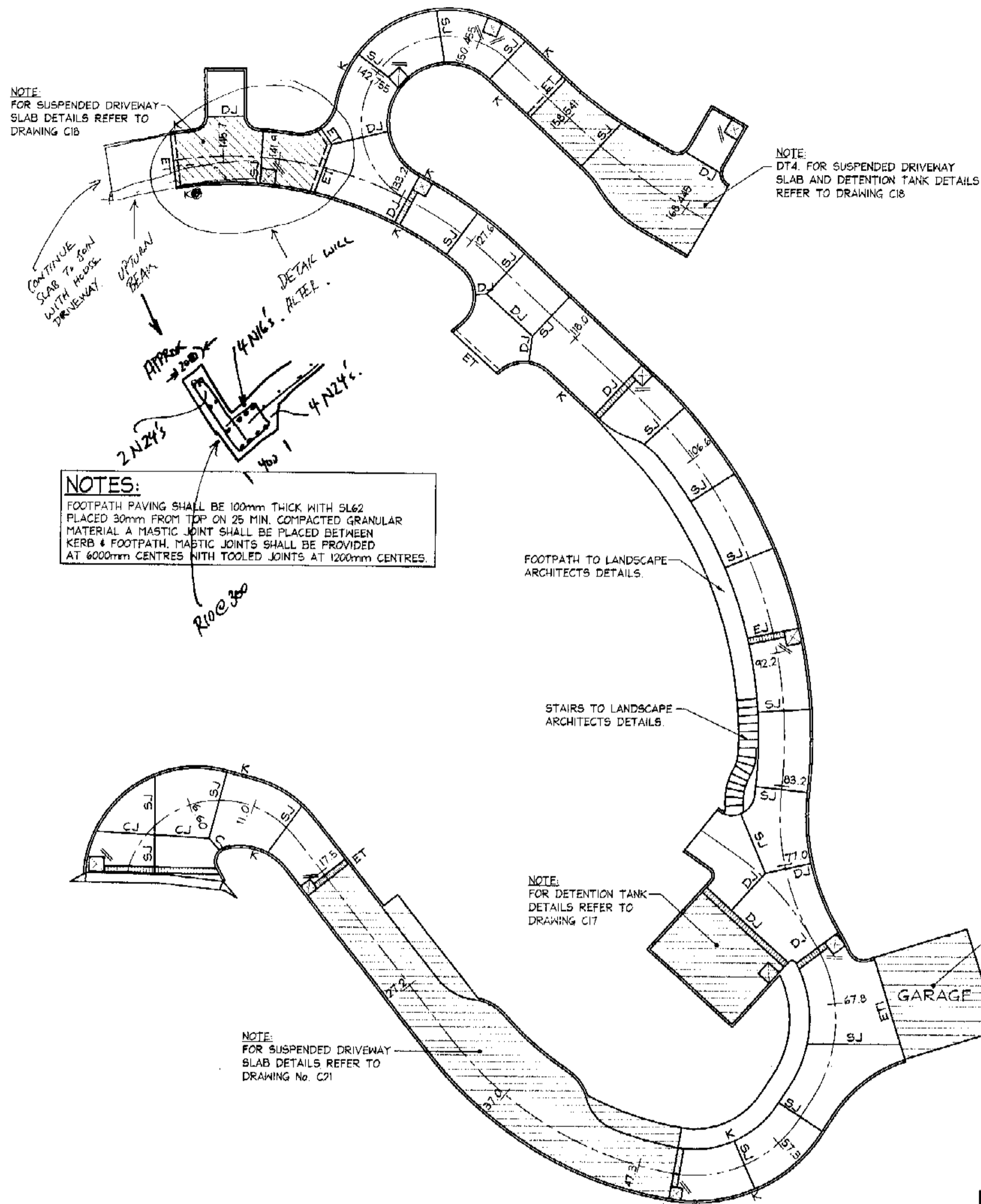
AC.N. 076 121 616 A.B.N. 24 078 121 616  
Suite 207, 30 FISHER ROAD  
DEE WHY N.S.W. 2099  
Ph: (02) 9984 7000 Fax: (02) 9684 7444  
email: nb@nbconsulting.com.au

Project: PROPOSED ACCESS ROAD  
at: 1148-1152 Barrenjoey Road  
and 56 Palm Beach Road  
Palm Beach  
for: Raypond Development

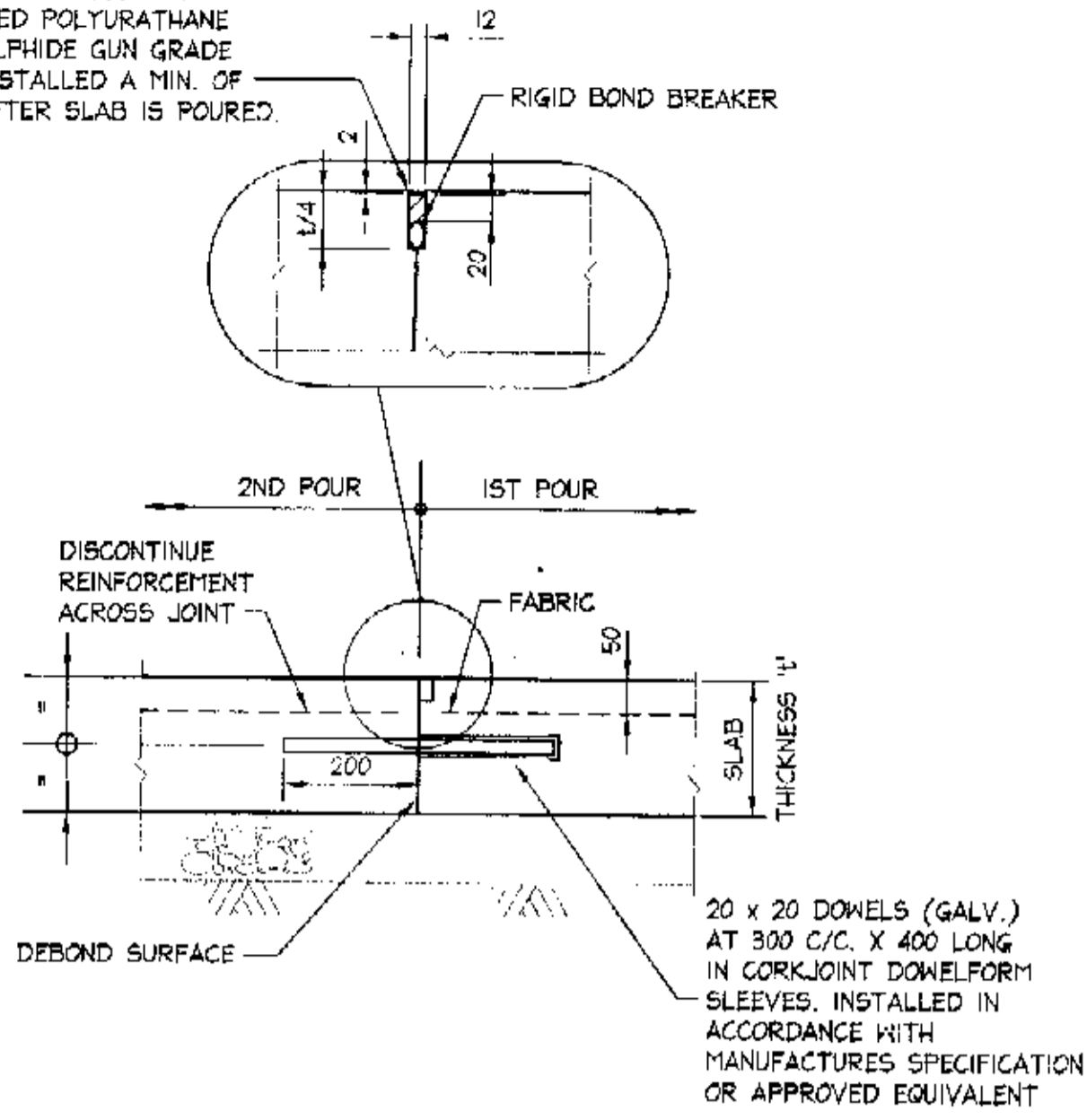
Drawing Title: **DRAINAGE PLAN**

Date: Nov. 2003	Design: R.G.W.	Drawn: Paul R Bruce (MIEAust., MIDDAS)	Checked:
Job No: <b>030963</b>	Drawing No: <b>C14</b>	Rev:	-

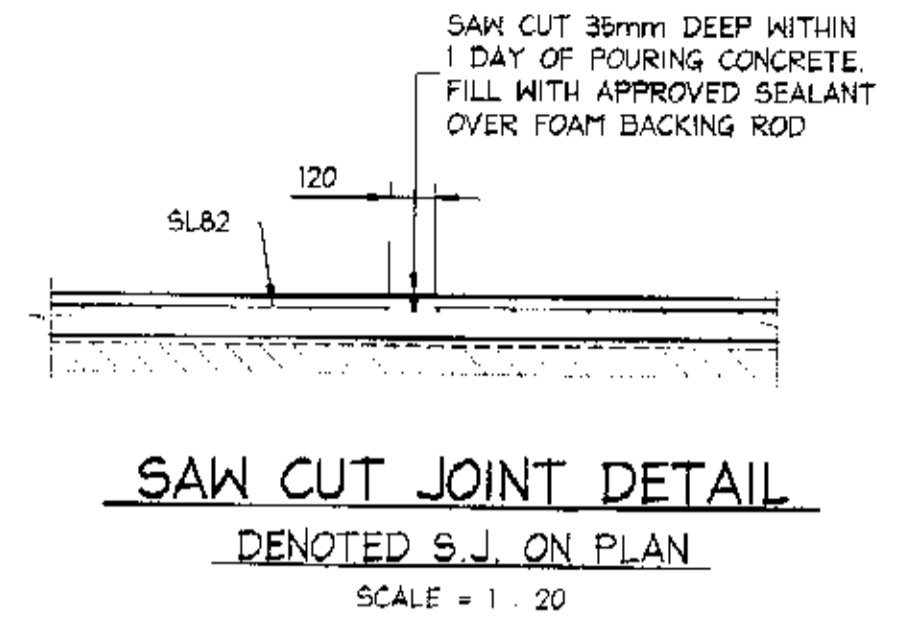
The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.



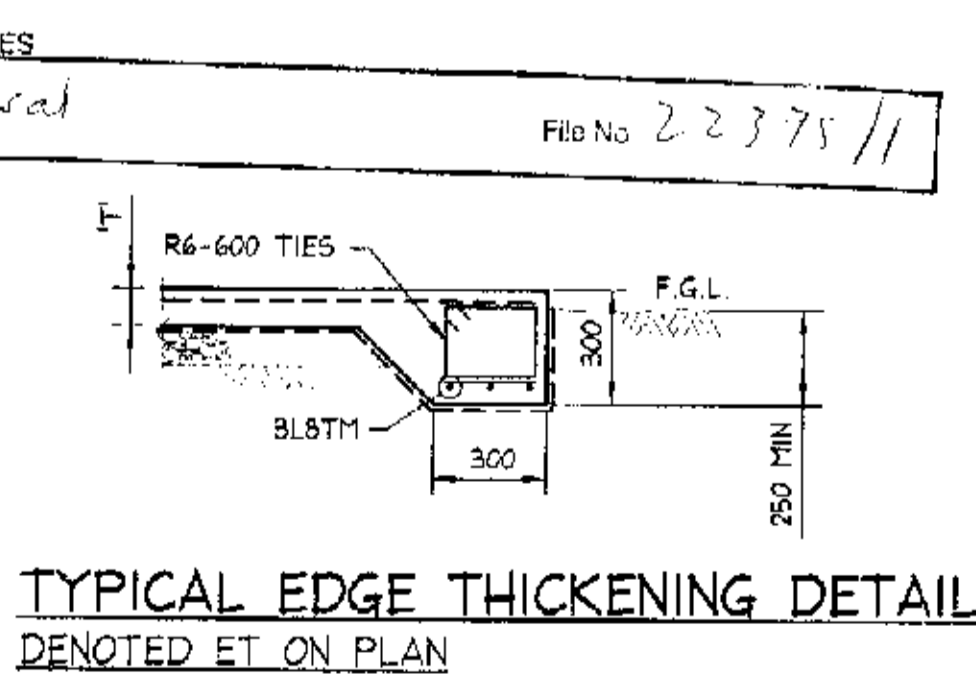
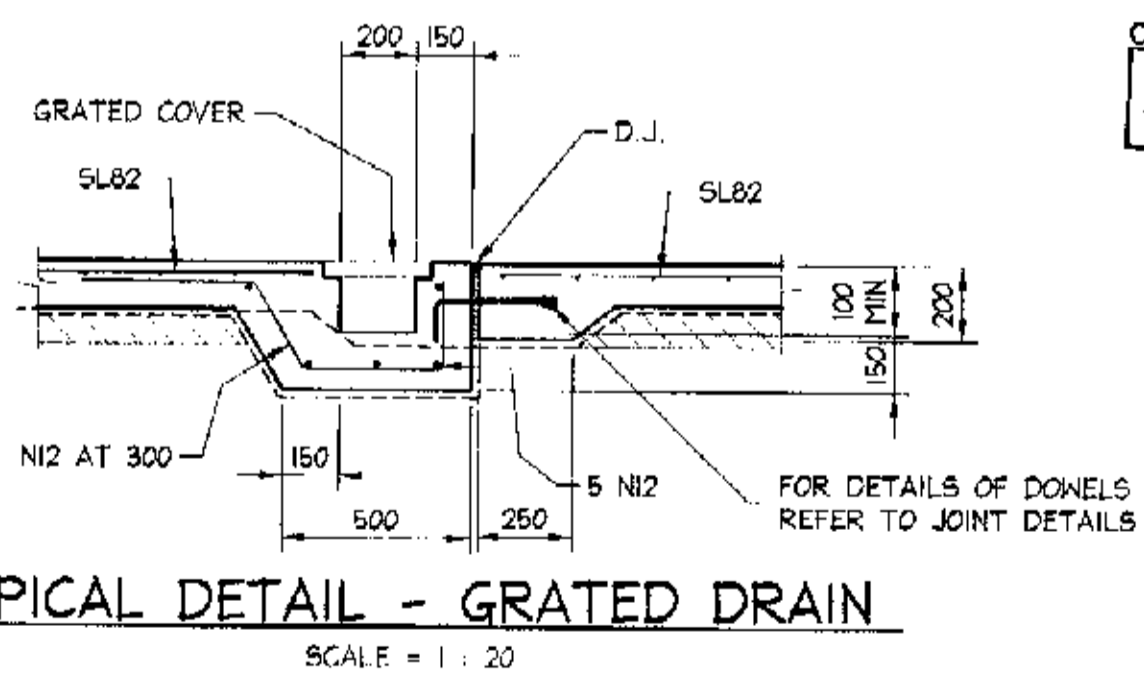
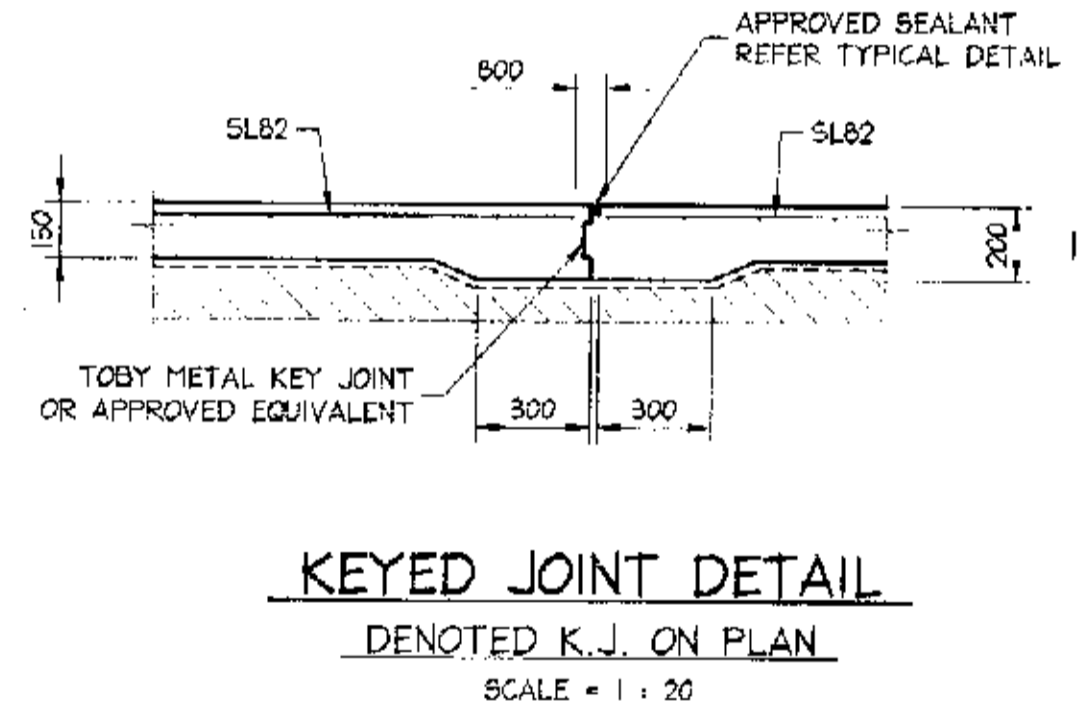
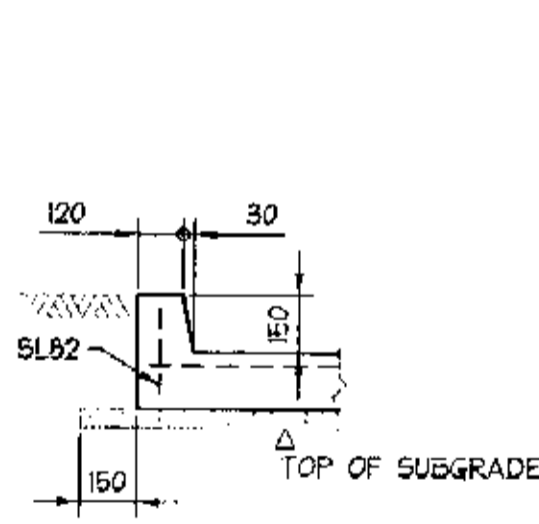
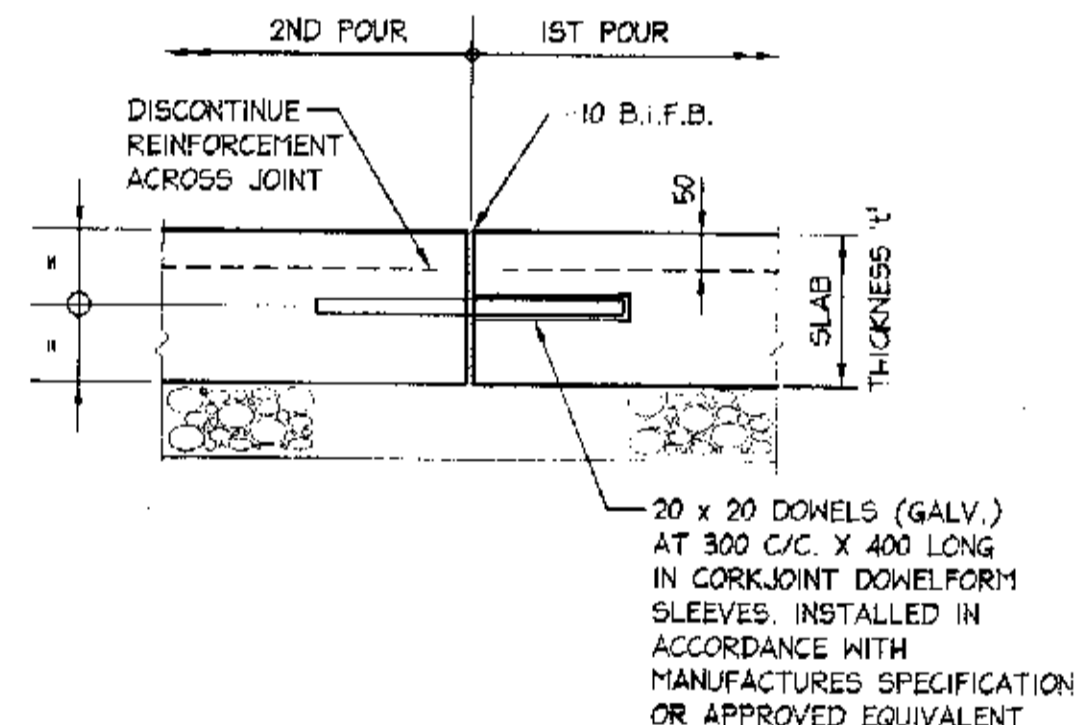
DOUBLE BLADED SAWCUT, TO BE CLEANED BEFORE FILLING SAWCUT TO BE FILLED WITH AN APPROVED POLYURETHANE OR POLYSULPHIDE GIN GRADE SEALANT INSTALLED A MIN. OF 30 DAYS AFTER SLAB IS POURED



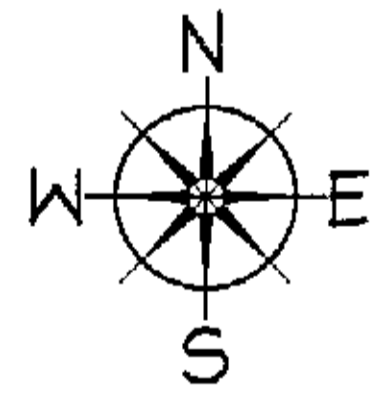
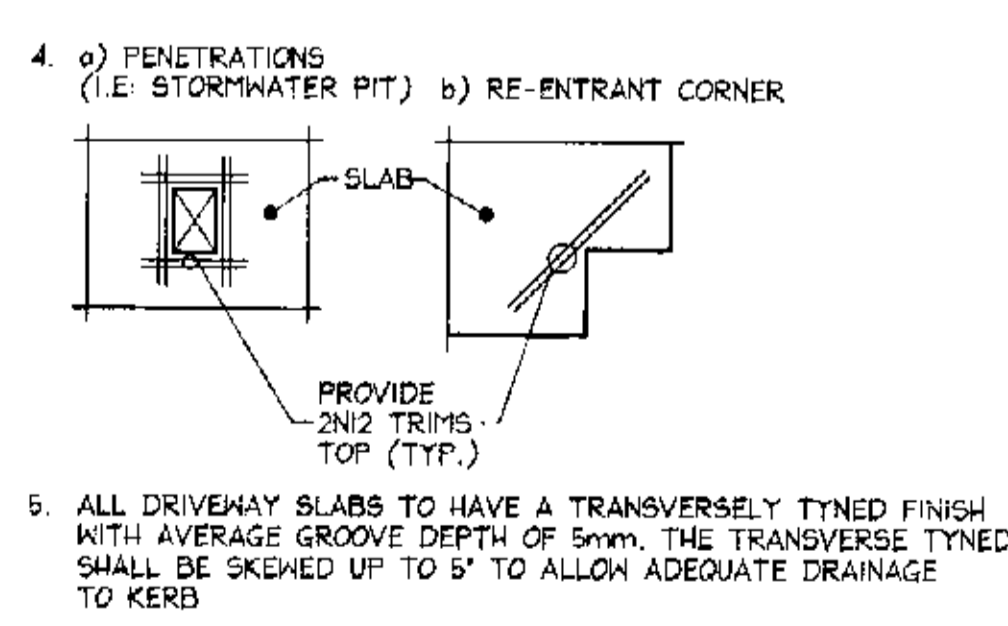
- NOTES:
- DOWELS SHALL BE ONE-PIECE BARS COMPLYING WITH AS 1902. THE ENDS SHALL BE CUT SQUARE AND FREE FROM BURRS. HOT DIPPED GALVANIZED TO AS 4791.
  - DOWELS TO BE INSTALLED TO THE FOLLOWING TOLERANCES:  
HORIZONTAL VERTICAL LOCATION - HALF THE DIAMETER OF THE DOWEL
  - DOWELS IN LONGITUDINAL JOINTS SHALL BE OMITTED WHEN THE CENTRE OF THE DOWEL WOULD OCCUR WITHIN 200mm (HORIZONTALLY) OF A TRANSVERSE JOINT.



- NOTES:
- THE TIME OF SAWING SHALL BE VARIED, DEPENDING ON WEATHER CONDITIONS, AND SHALL BE SUCH TO PREVENT UNCONTROLLED CRACKING OF THE PAVEMENT.
  - SAWING OF THE JOINTS SHALL COMMENCE AS EARLY AS POSSIBLE AND TO BE COMPENSURATE WITH THE CONCRETE HAVING HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT EXCESSIVE CHIPPING, SPALLING OR TEARING.
  - ADEQUATE PROVISION SHALL BE MADE TO PERMIT SAWING OVERNIGHT IF REQUIRED.
  - THE APPROPRIATE TIME FOR SAWING IS BEST ASSESSED BY CASTING TEST PANELS ADJACENT TO THE WORKS AND CONDUCTING SAWING TRIALS.
  - AS A GENERAL GUIDE, THE JOINTS SHOULD BE SAWN WITHIN THE FOLLOWING PERIODS:
- | DAILY MAXIMUM TEMP (°C) | LATEST TIME FOR SAWING (HOURS) |
|-------------------------|--------------------------------|
| <10                     | 49                             |
| 10-20                   | 36                             |
| 20-30                   | 24                             |
| >30                     | 12                             |
6. THE JOINTS SHALL BE SAWN IN THE SEQUENCE OF THE CONCRETE PLACEMENT



- SLAB ON GROUND NOTES
- ALL DRIVEWAY SLABS ON GROUND TO BE 150 THICK WITH SLB2 PLACED 35 FROM TOP ON - 50 THICK SAND WHERE SUBGRADE IS ROCK - 100 THICK GRANULAR SUBPAVEMENT WHERE SUBGRADE IS RESIDUAL SOIL. ALL REINFORCEMENT TO BE POSITIONED ON BAR CHAIRS WITH CORRECT COVER AND NOT TO BE WALKED IN
  - TYPICAL FABRIC LAP: 25 MIN
  - ALL EXISTING FILL TO BE PROOF ROLLED.



FOR CONSTRUCTION

- NOTES:
- ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
  - FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01

DOCUMENT CERTIFICATION

I am a qualified Structural/Civil Engineer. I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938

I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers)

**NB** NORTHERN BEACHES Consulting Engineers P/L

A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbcconsulting.com.au

Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development

Drawing Title: DRIVEWAY PLAN AND DETAILS

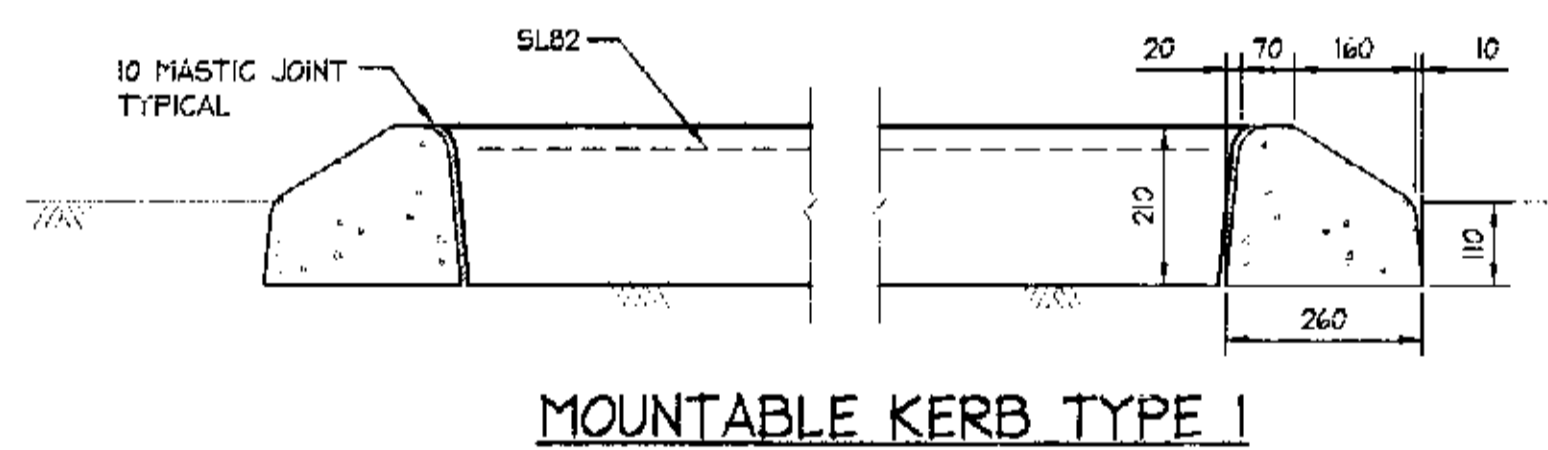
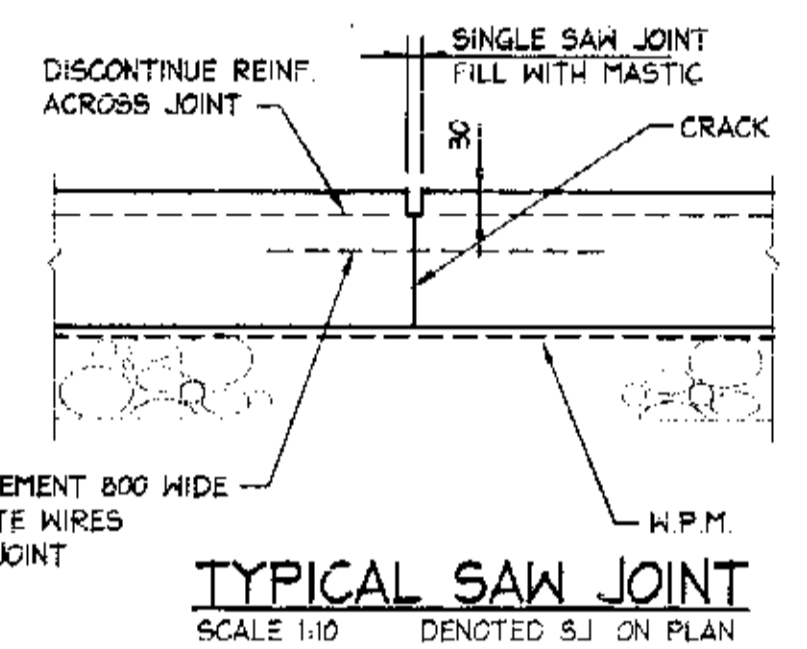
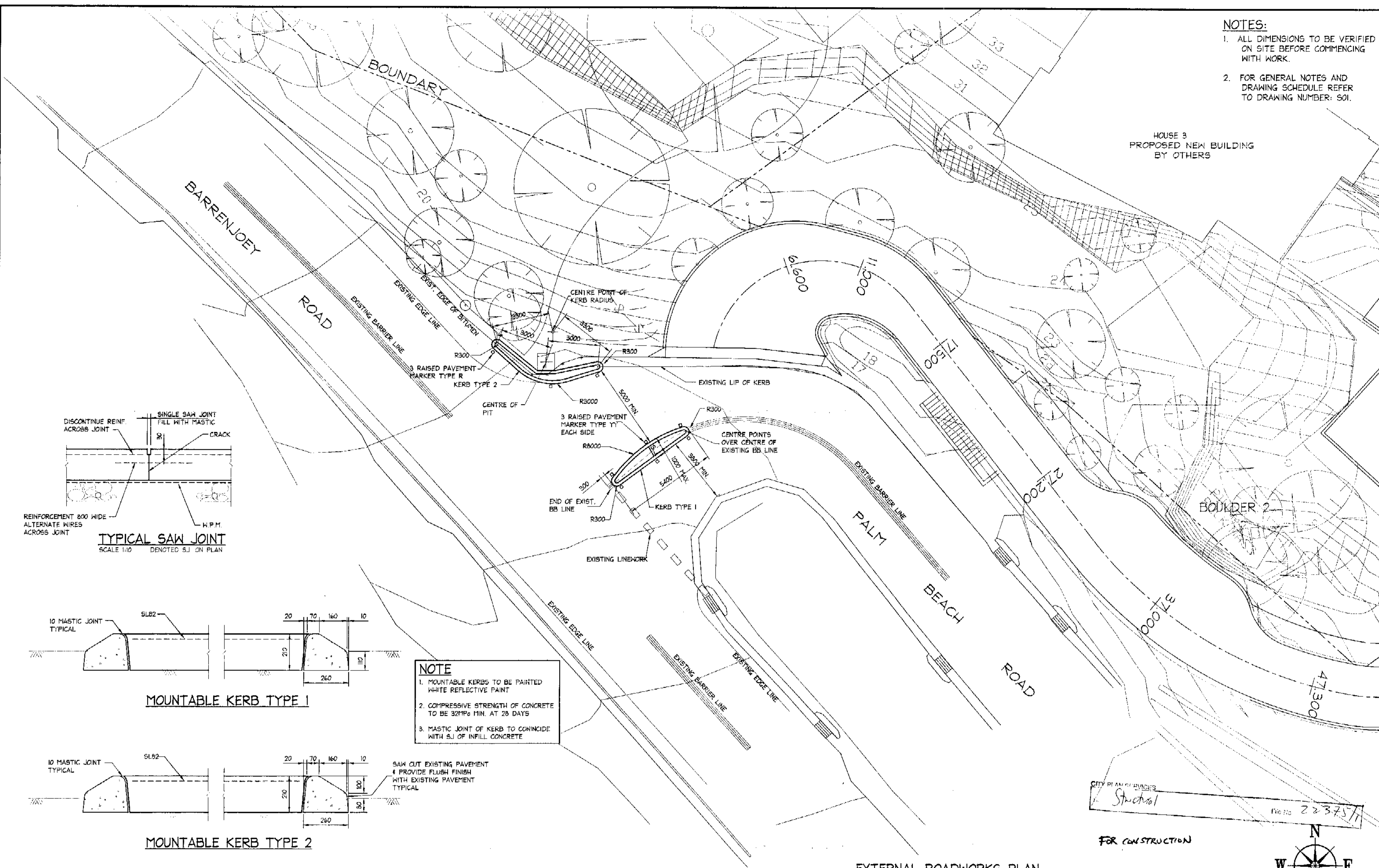
Date: Nov. 2003	Design: R.G.W.	Drawn: Paul R Bruce (MIEAust., MIOAust.)	Checked:
Job No: 030963	Drawing No: C15	Rev: -	

AI

**NOTES:**

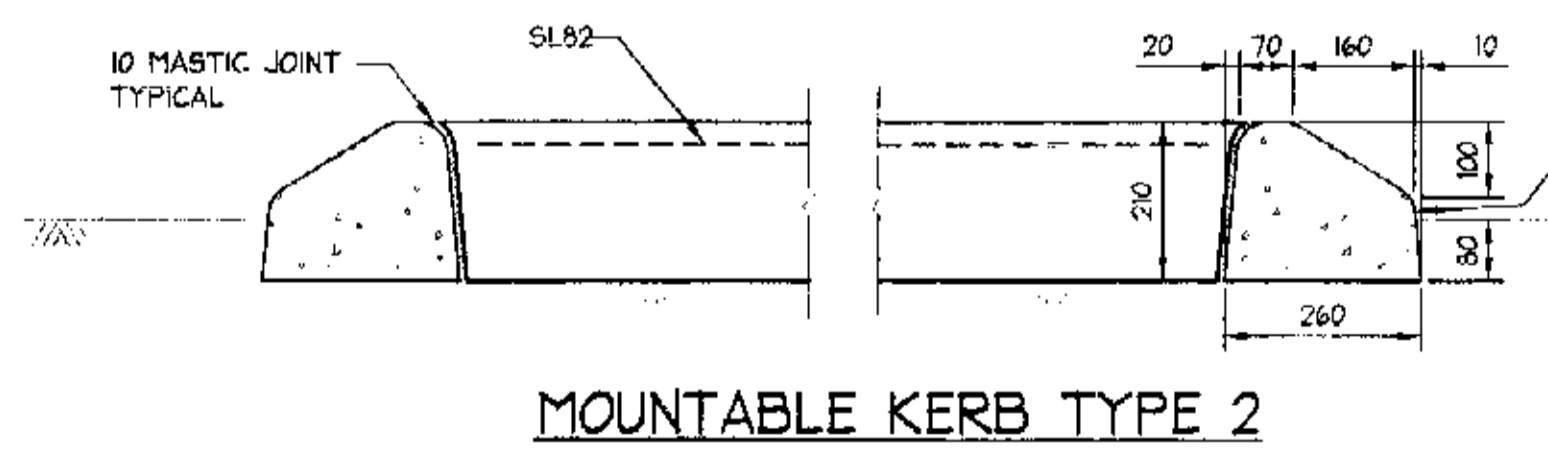
1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

HOUSE 3  
PROPOSED NEW BUILDING  
BY OTHERS



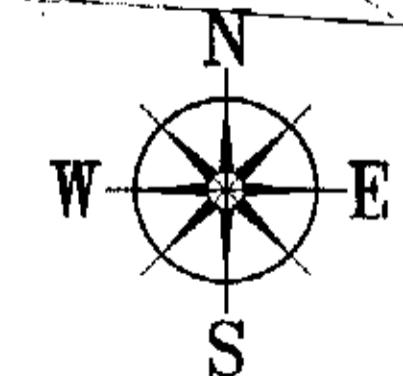
**NOTE**

1. MOUNTABLE KERBS TO BE PAINTED WHITE REFLECTIVE PAINT
2. COMPRESSIVE STRENGTH OF CONCRETE TO BE 32MPa MIN. AT 28 DAYS
3. MASTIC JOINT OF KERB TO COINCIDE WITH S.J. OF INFILL CONCRETE



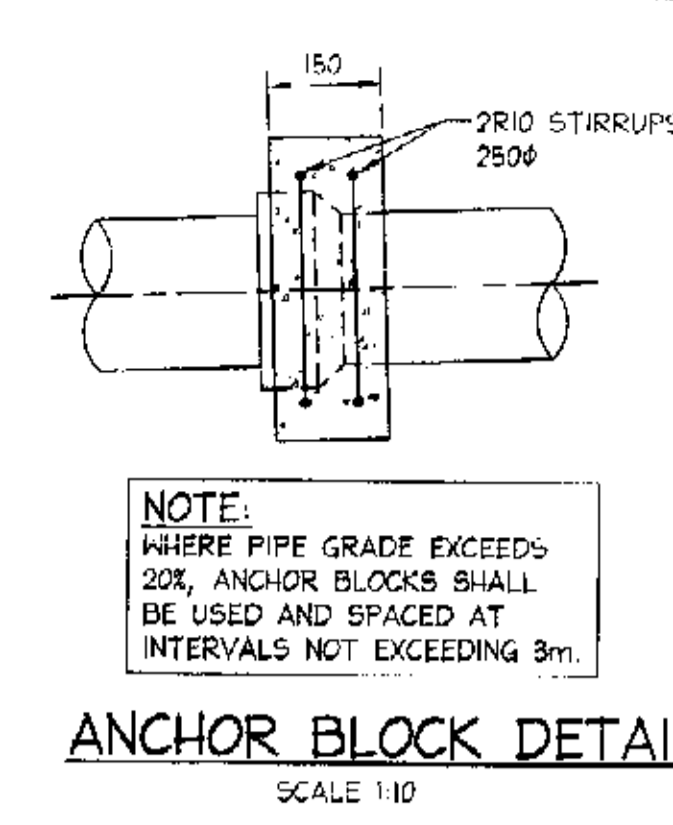
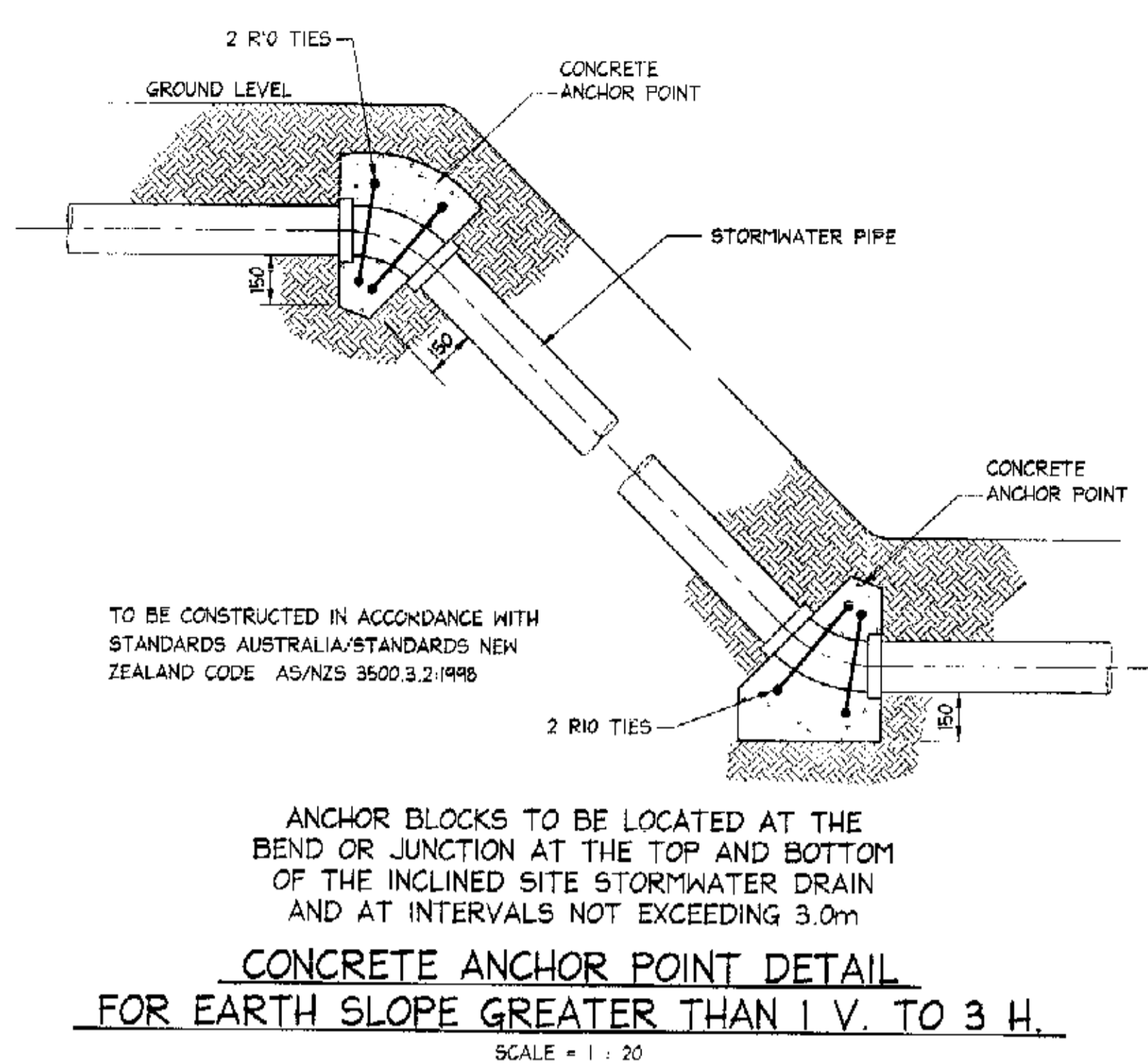
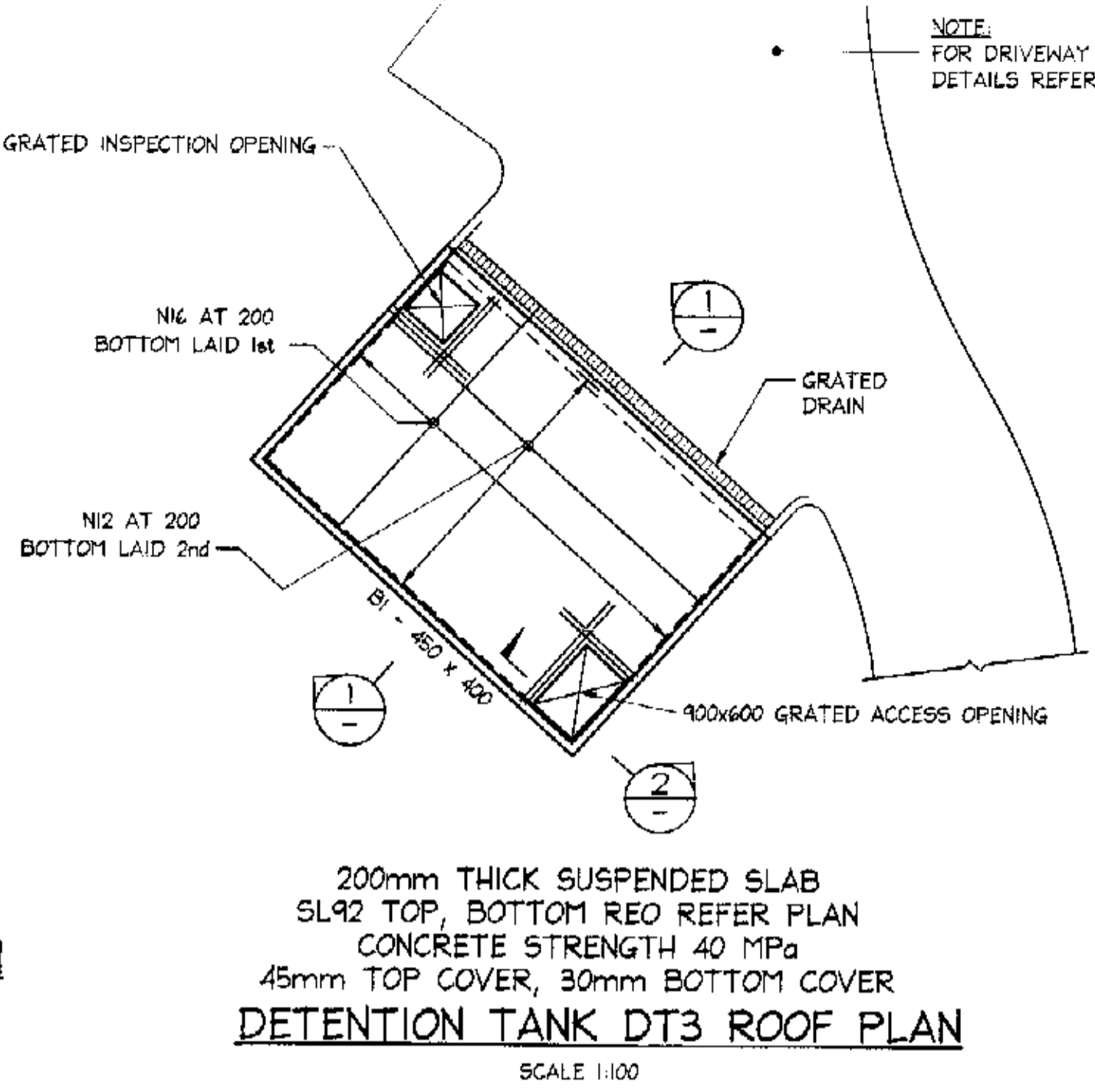
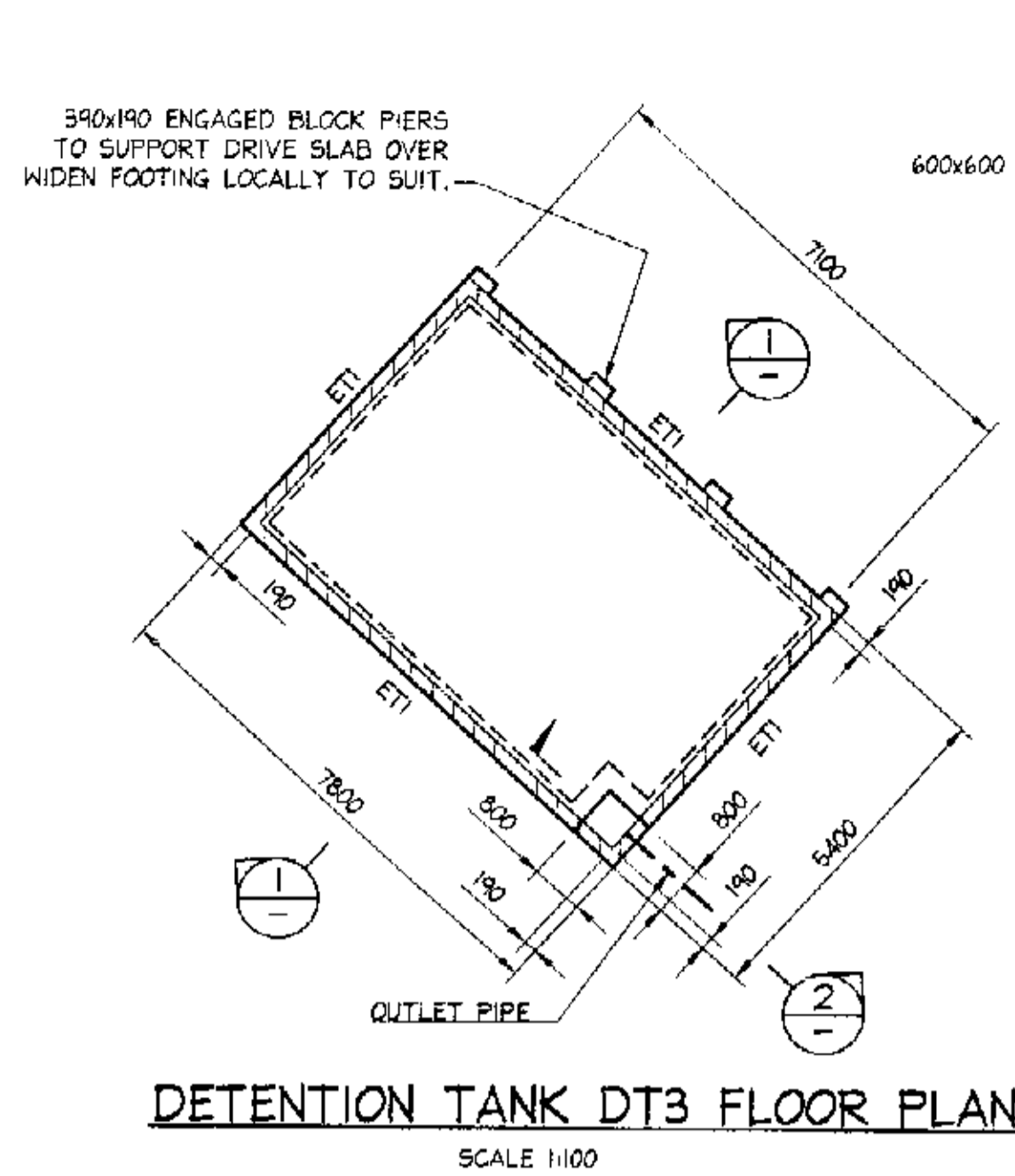
CITY PLANNING SERVICES  
Structural  
File No: 22375/11

FOR CONSTRUCTION

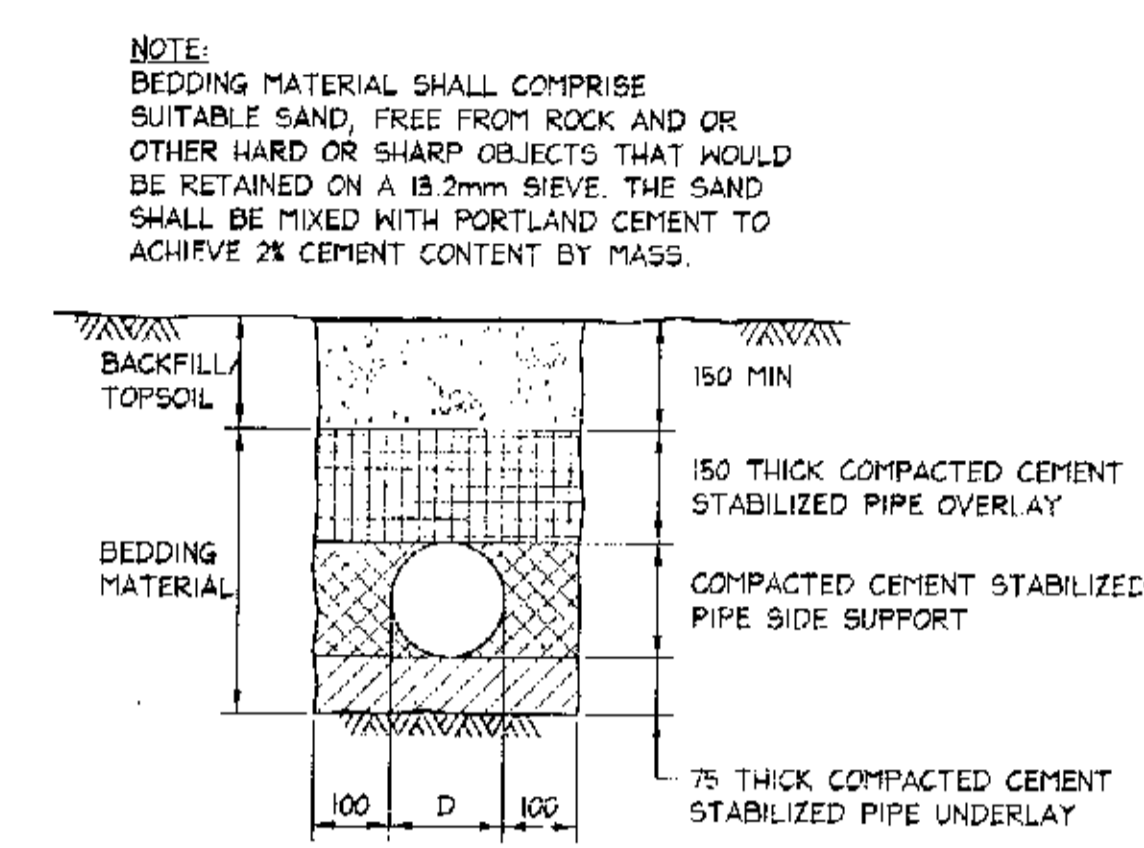


**EXTERNAL ROADWORKS PLAN**  
SCALE = 1 : 100

<p>DOCUMENT CERTIFICATION</p> <p>Date: <b>FEB 04</b></p> <p><i>R. Wray</i></p> <p>Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>		<p>I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803935</p> <p>I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian Industry Standards.</p>	<p><b>NB</b> NORTHERN BEACHES Consulting Engineers P/L</p> <p>A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD QUEENSLAND, N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nhb@northernbeaches.com.au</p>	<p>Project: <b>PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</b></p>	<p>Drawing Title: <b>EXTERNAL ROADWORKS PLAN AND DETAILS</b></p>	<p>Date: Nov. 2003</p>	<p>Design: R.G.W.</p>	<p>Drawn: Paul R. Bruce MIEAust., MICEAust.</p>	<p>Checked:</p>
Date:	Rev:	Amendment:				Job No: <b>030963</b>	Drawing No: <b>C16</b>	Rev: <b>-</b>	



**NOTES:**  
 1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.  
 2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: 501.

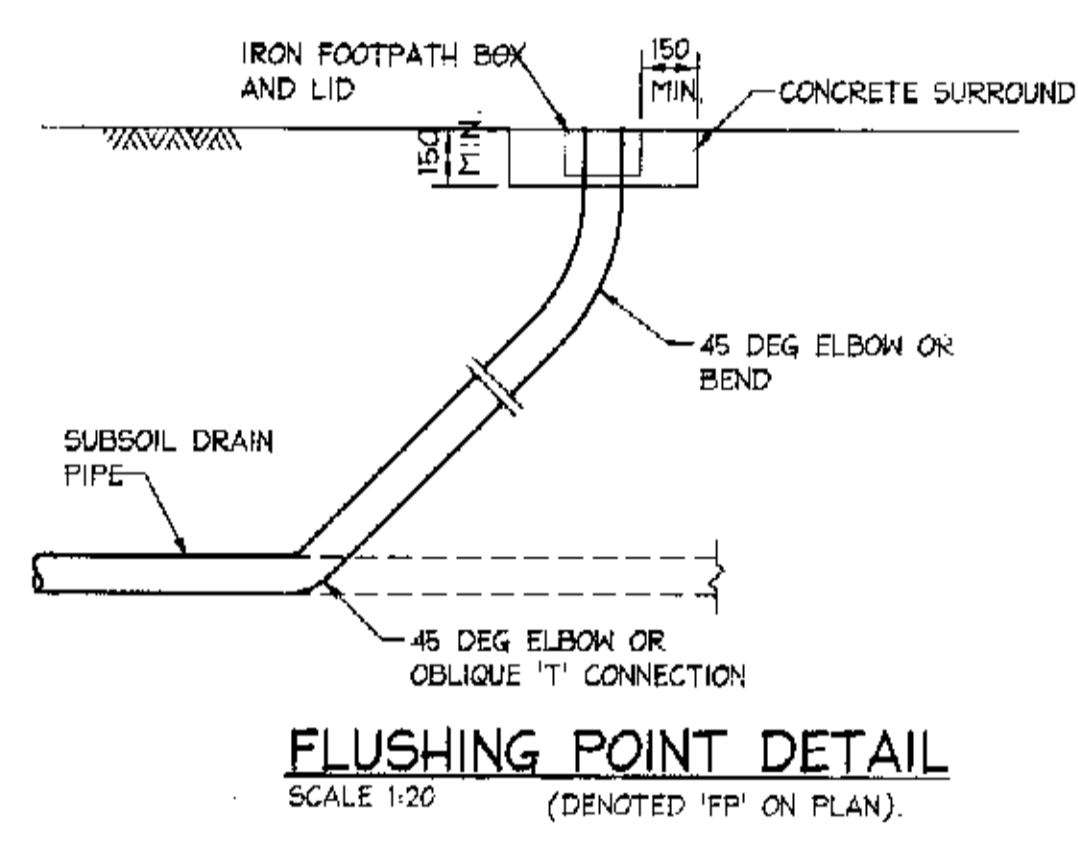


**SLAB ON GROUND NOTES**

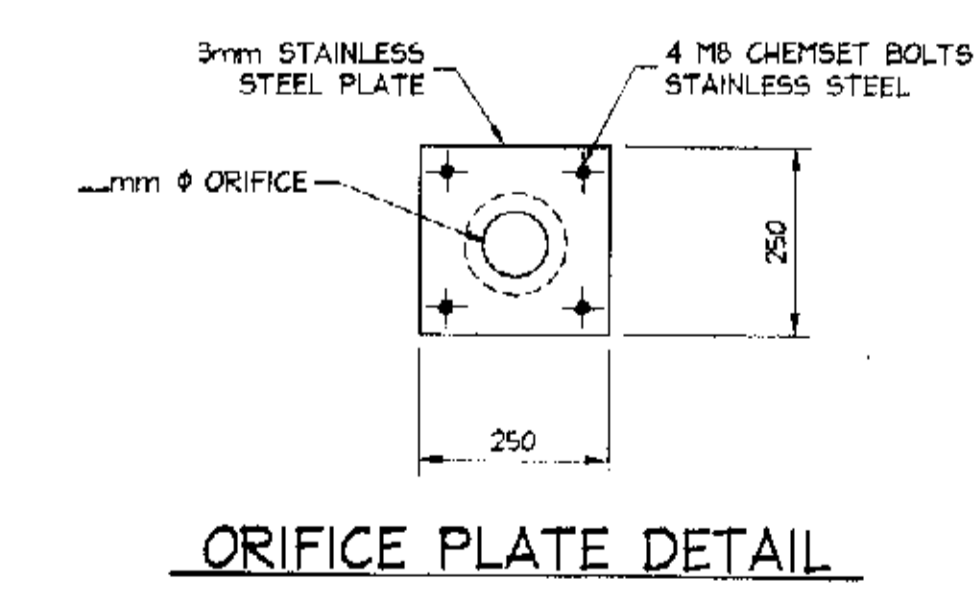
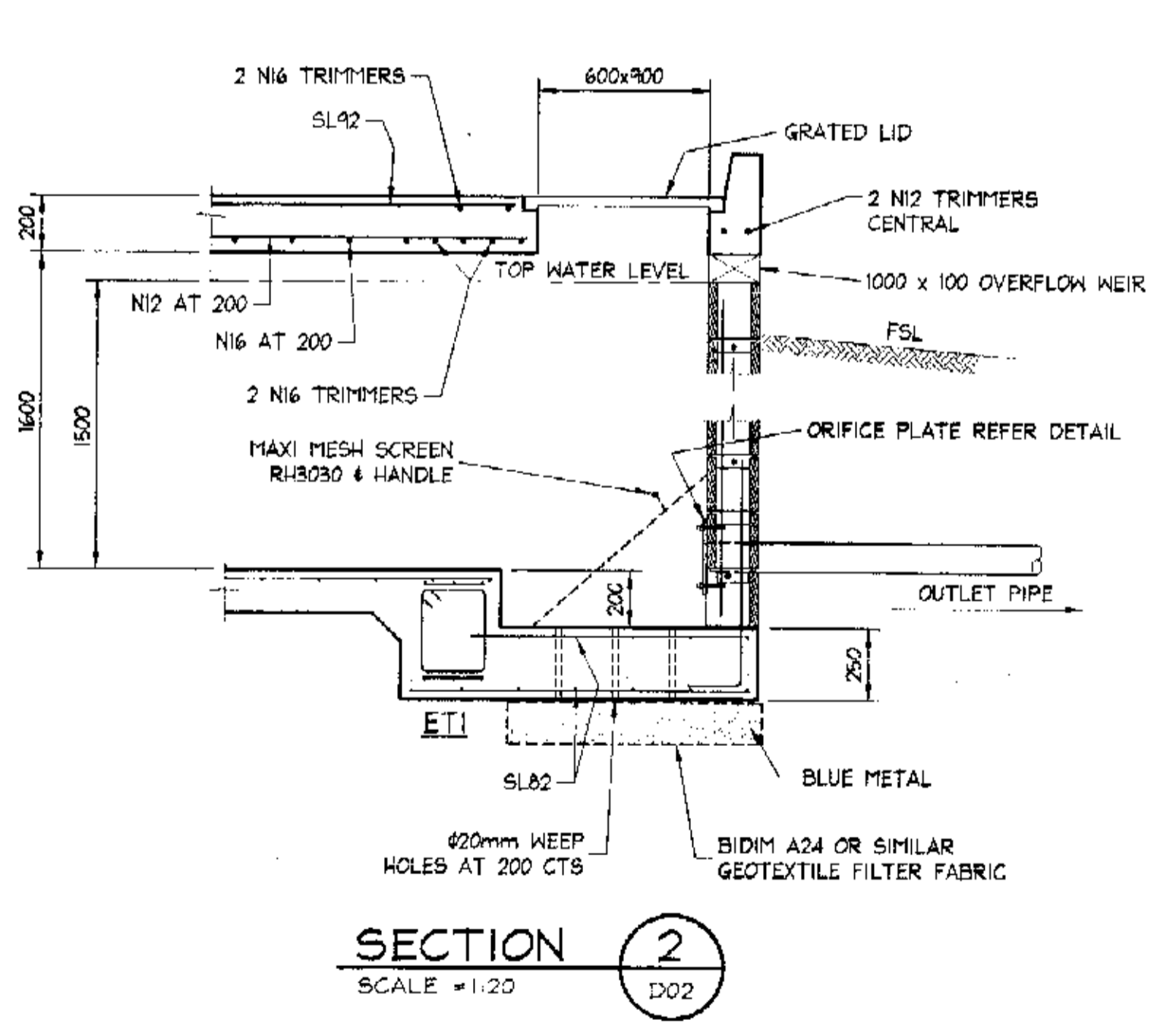
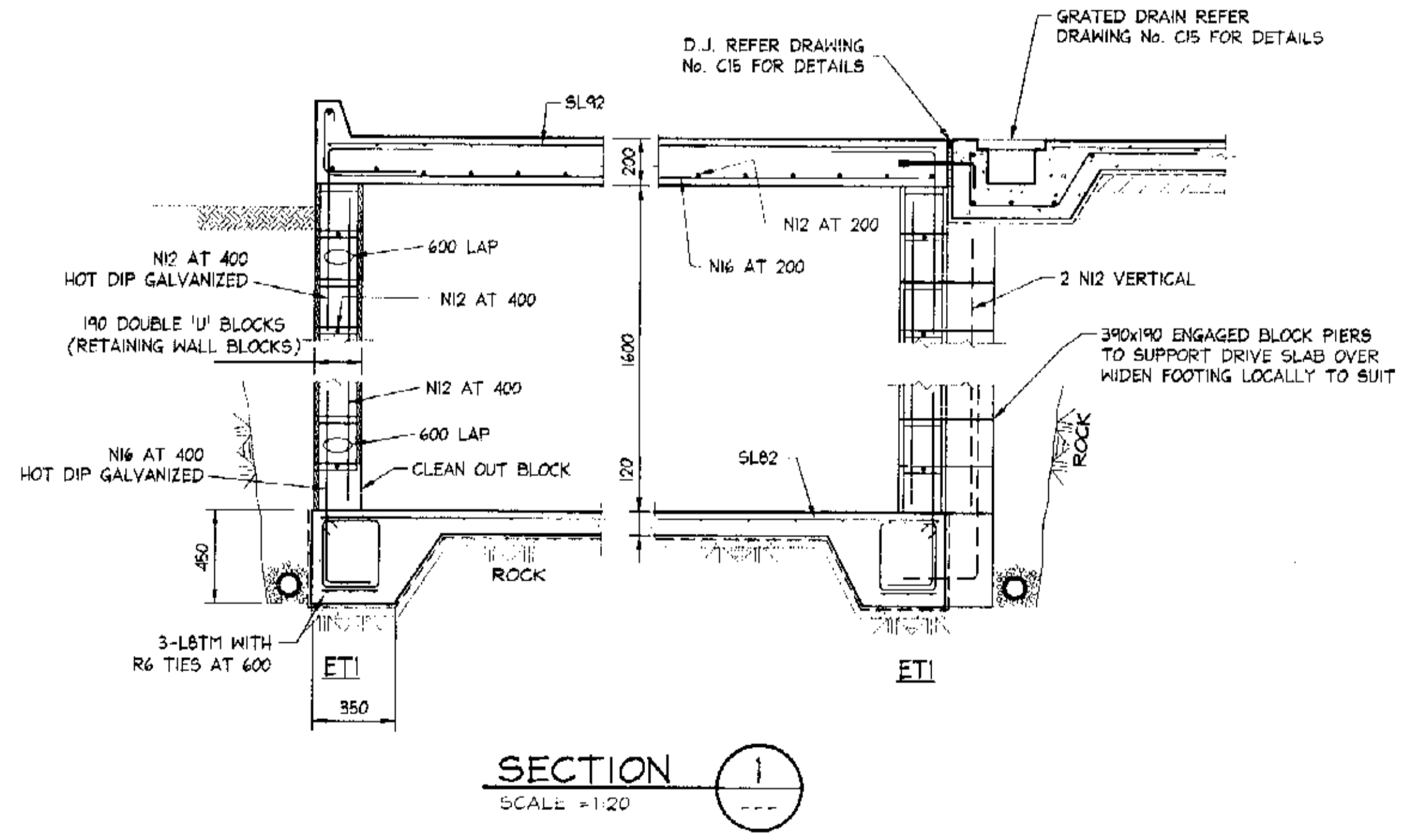
- ALL SLABS TO BE 120 THICK WITH SL72 PLACED 30 FROM TOP ON 50 NOM. SAND BLINDING LAYER (U.N.O.)  
ALL REINFORCEMENT TO BE POSITIONED ON BAR CHAIRS WITH CORRECT COVER AND NOT TO BE WALKED IN
- TYPICAL FABRIC LAP: 25 MIN
- ALL SLABS TO BE FOURED ON APPROVED VAPOUR BARRIER MEMBRANE (V.B.M.)
- ALL EXISTING FILL TO BE PROOF ROLLED.
- a) PENETRATIONS (I.E. STORMWATER PIT) b) RE-ENTRANT CORNER  
PROVIDE 2N16 TRIMS TOP (TYP.)

**SLAB NOTES**

- ALL SLABS TO BE 180 THICK U.N.O.
- TYPICAL FABRIC LAP: 25 MIN
- DEPTH OF SETDOWN TO BE MEASURED FROM TOP OF STRUCTURAL SLAB LEVEL.
- PROVIDE SL72 TOP WHERE NO OTHER REINFORCEMENT SHOWN.
- a) PENETRATIONS  
PROVIDE 2N16 TRIMS TOP & BTM. (TYP.)



**NOTES:**  
 THE INSTALLATION OF PIPE DRAINAGE BETWEEN PIT 30 TO PIT 34 SHALL BE AS FOLLOWS:  
 - DRAINS SHALL BE LAID IN SHALLOW TRENCHES EXCAVATED WITH THE MINIMUM GROUND DISTURBANCE, THE MINIMUM REMOVAL OF VEGETATION, AND SHALL HAVE A COVER OF ABOUT 300mm.  
 - HAND EXCAVATION METHODS SHALL BE EMPLOYED WHEREVER POSSIBLE AND THE USE OF EXCAVATION MACHINERY SHALL BE AVOIDED.  
 - DRAINS SHALL BE BEDDED DIRECTLY ON THE UNDISTURBED SOIL AT THE BASE OF THE TRENCH AND WHERE NECESSARY, SHALL BE SECURELY ANCHORED TO PREVENT THE WEIGHT OF THE PIPELINE BEING TRANSFERRED TO THE DOWNSTREAM PIPELINE.  
 - EXCAVATED MATERIAL SHALL BE USED FOR BACKFILLING AND BE THOROUGHLY COMPACTED BY HAND METHODS, TO ACHIEVE AS NEAR TO THE ORIGINAL SOIL DENSITY AS POSSIBLE.  
 - THE ORIGINAL TOPSOIL SHALL BE PLACED SO THAT THE FORMATION OF WATER COURSES IS PREVENTED  
 - WHERE IT IS ANTICIPATED THAT WATER FROM ANY SOURCE MAY ENTER THE TRENCH EXCAVATION, LAYING AND BACKFILLING OF THE DRAIN SHALL BE CARRIED OUT IN SECTIONS NO LONGER THAN 3m.  
 - EVERY EFFORT SHALL BE MADE TO MINIMIZE THE TIME THAT THE TRENCHES ARE OPEN.



**SWC PIPE TRENCHING DETAIL**  
 SCALE 1:20

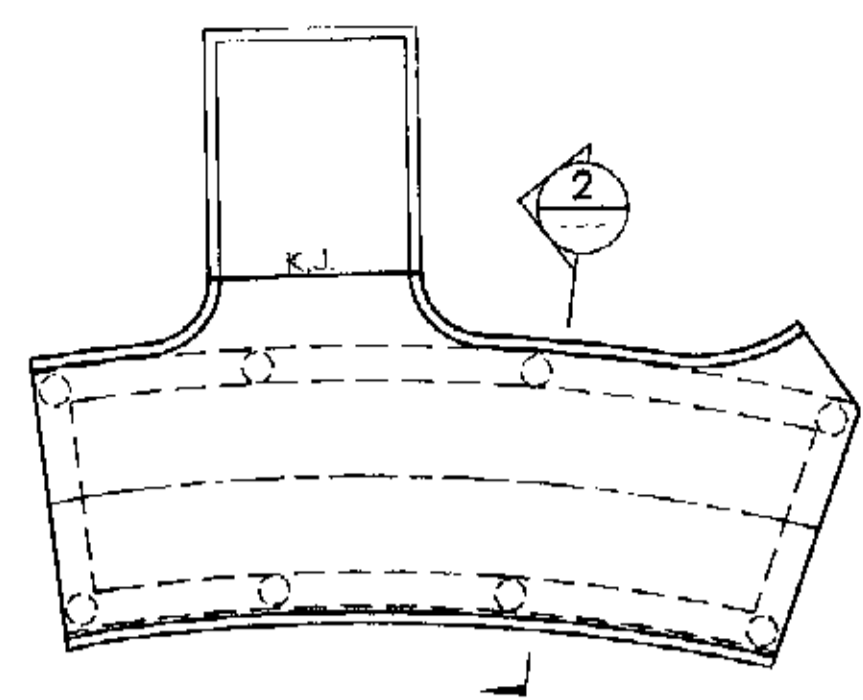
CIVIL PLAN SERVICES  
 Structural  
 File No: 22375/1

<b>DOCUMENT CERTIFICATION</b> Date: FEB 04 Rick G. Wray (Director Northern Beaches Consulting Engineers)		I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust., NPER Institute of Engineers Membership No. 809988 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.	<b>NORTHERN BEACHES Consulting Engineers P/L</b> A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DREEWHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nb@nbconsulting.com.au	Project: <b>PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</b>	Drawing Title: <b>ON-SITE DETENTION TANK DT3 PLAN AND DRAINAGE DETAILS</b>	Date: Nov. 2003 Design: R.G.W. Drawn: Paul R Bruce (MIEAust., MIDD Aust.) Job No: <b>030963</b> Drawing No: <b>C17</b> Rev: -	Date: _____ Rev: _____ Amendment: _____
-------------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------

**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.

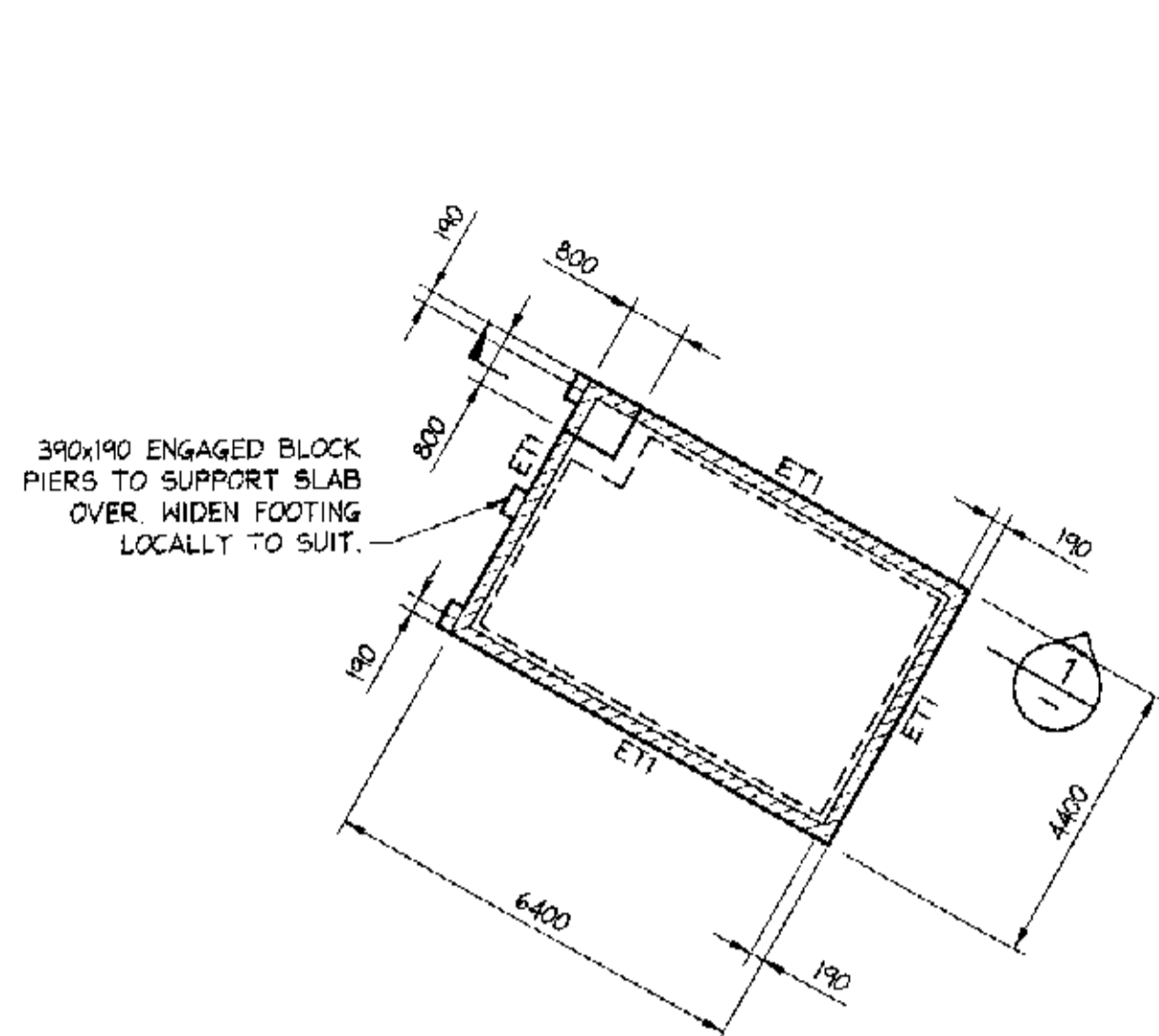
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.



150mm THICK SUSPENDED SLAB  
SL92 TOP, BOTTOM SL82 TOP  
CONCRETE STRENGTH 40 MPa  
45mm TOP COVER, 30mm BOTTOM COVER

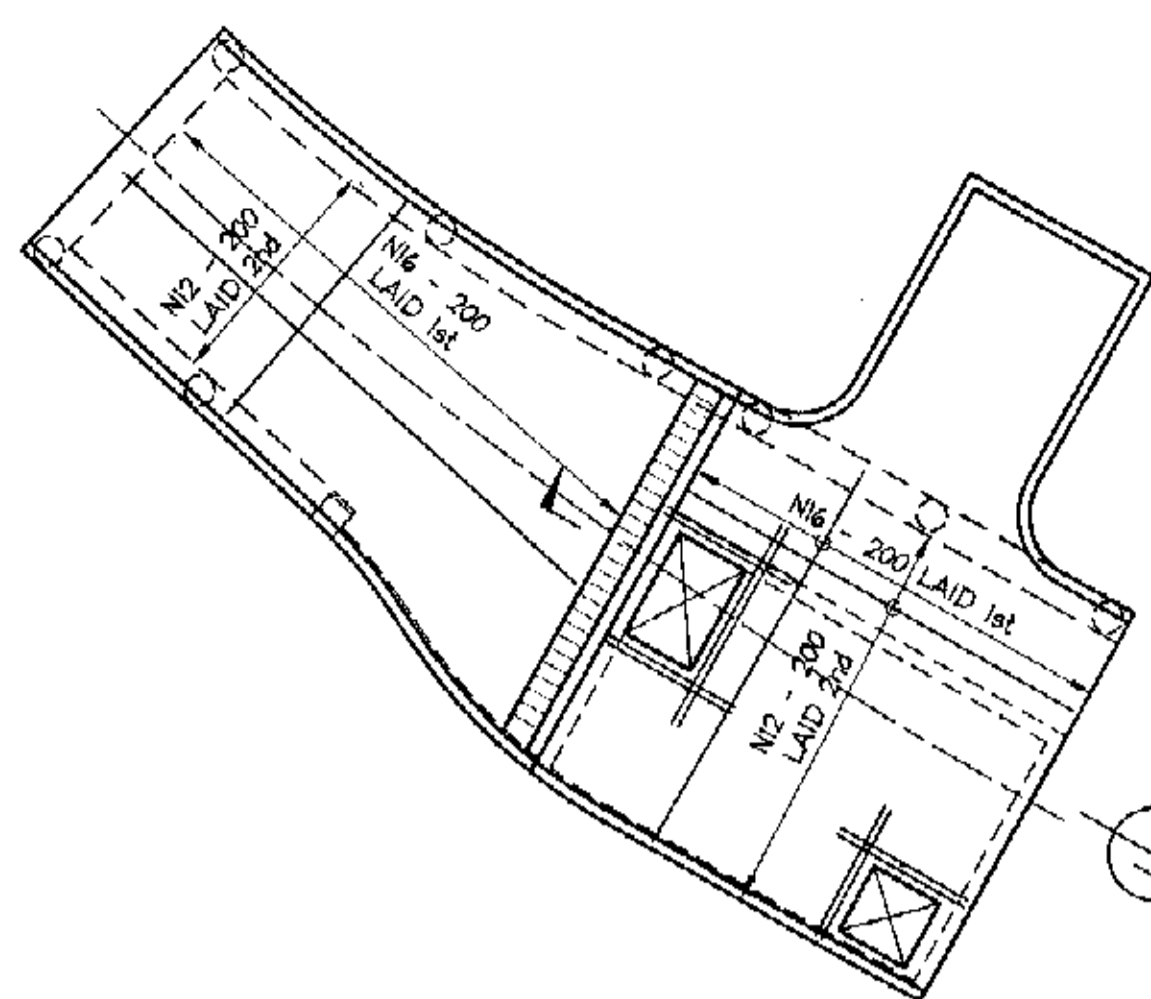
**SUSPENDED DRIVEWAY SLAB PLAN TO HOUSE 1 - AND TOP AND BOTTOM REINFORCEMENT**

SCALE 1:100



**DETENTION TANK DT4 FLOOR PLAN**

SCALE 1:100

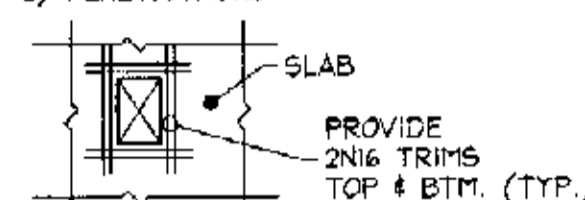


**DETENTION TANK DT4 ROOF AND SUSPENDED DRIVEWAY SLAB PLAN**

SCALE 1:100

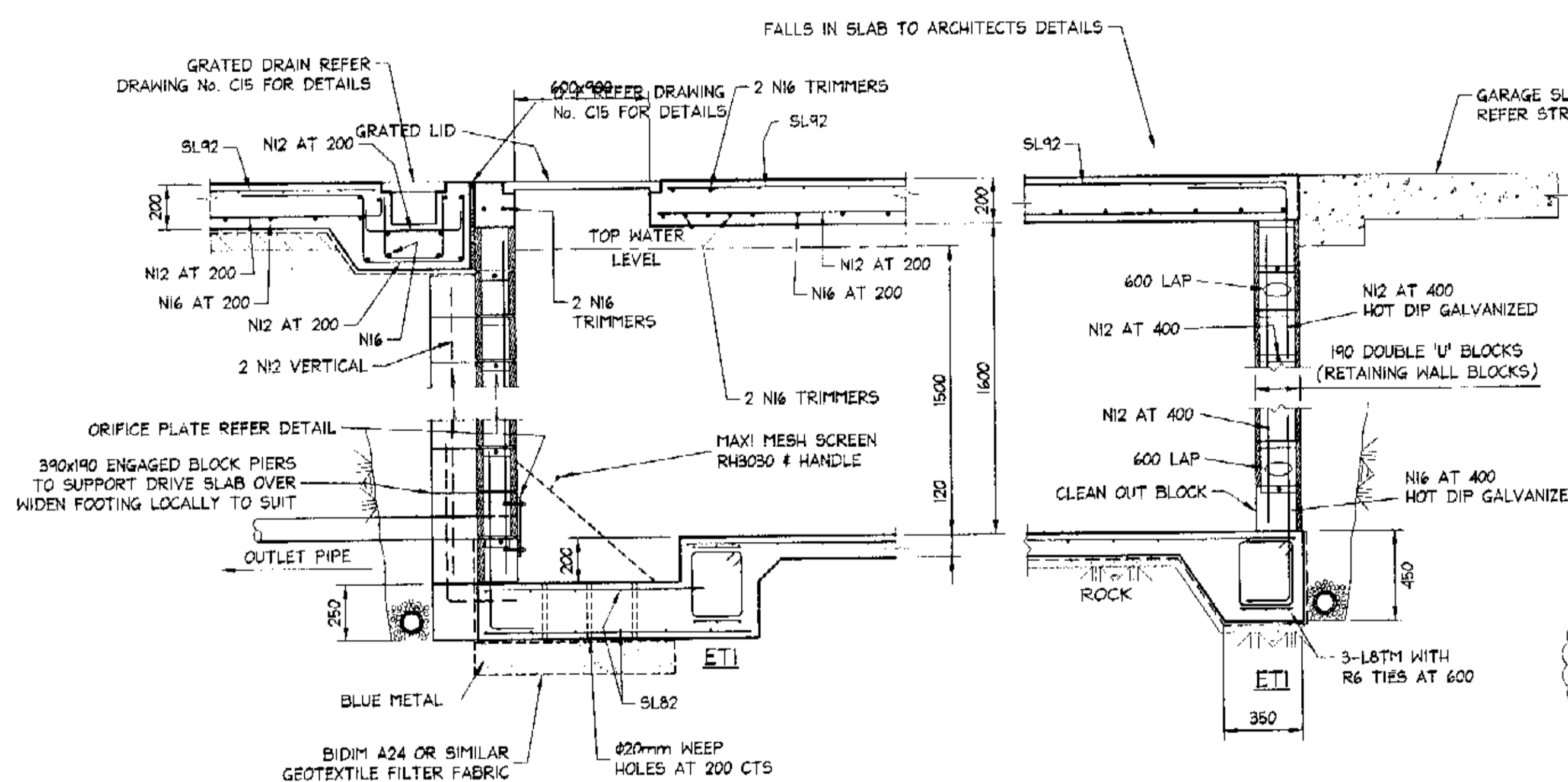
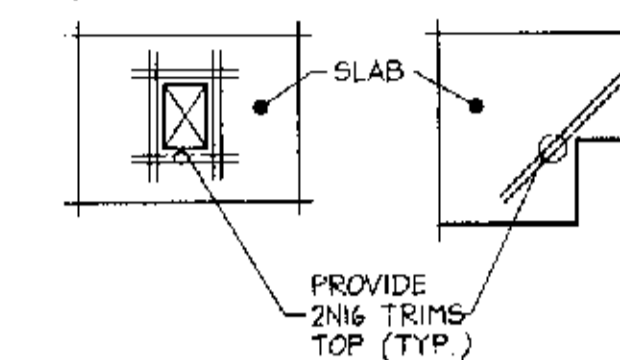
**SLAB NOTES**

- ALL SLABS TO BE 150 THICK U.N.O.
- TYPICAL FABRIC LAP ;
- DEPTH OF SETDOWN TO BE MEASURED FROM TOP OF STRUCTURAL SLAB LEVEL.
- PROVIDE SL82 TOP WHERE NO OTHER REINFORCEMENT SHOWN.
- a) PENETRATIONS



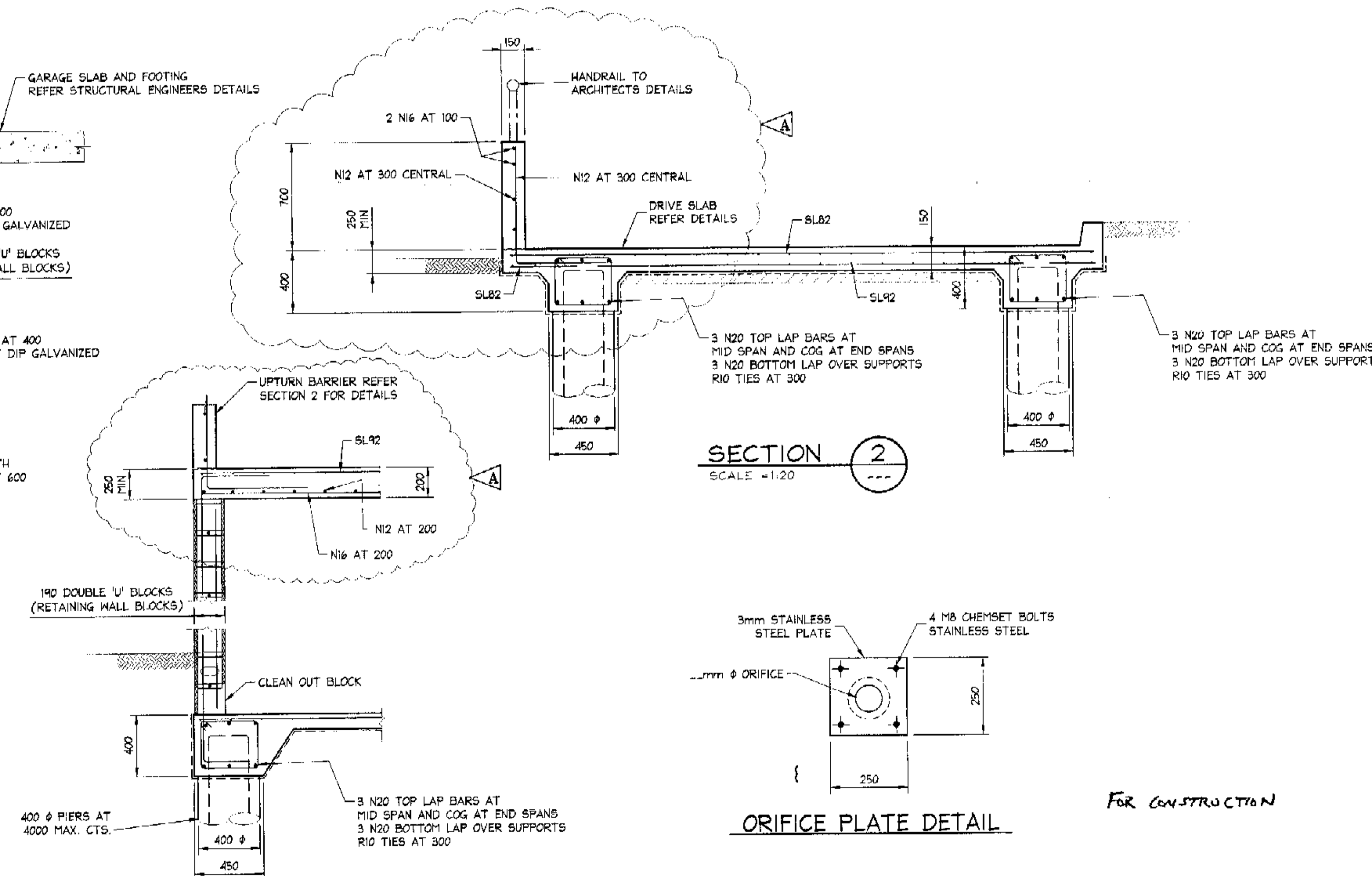
**SLAB ON GROUND NOTES**

- ALL SLABS TO BE 120 THICK WITH SL72 PLACED 30 FROM TOP ON 50 NOM. SAND BLINDING LAYER. (U.N.O.) ALL REINFORCEMENT TO BE POSITIONED ON BAR CHAIRS WITH CORRECT COVER AND NOT TO BE WALKED IN
- TYPICAL FABRIC LAP ;
- ALL SLABS TO BE POURED ON APPROVED VAPOUR BARRIER MEMBRANE (V.B.M.)
- ALL EXISTING FILL TO BE PROOF ROLLED.
- a) PENETRATIONS (I.E. STORMWATER PIT) b) RE-ENTRANT CORNER



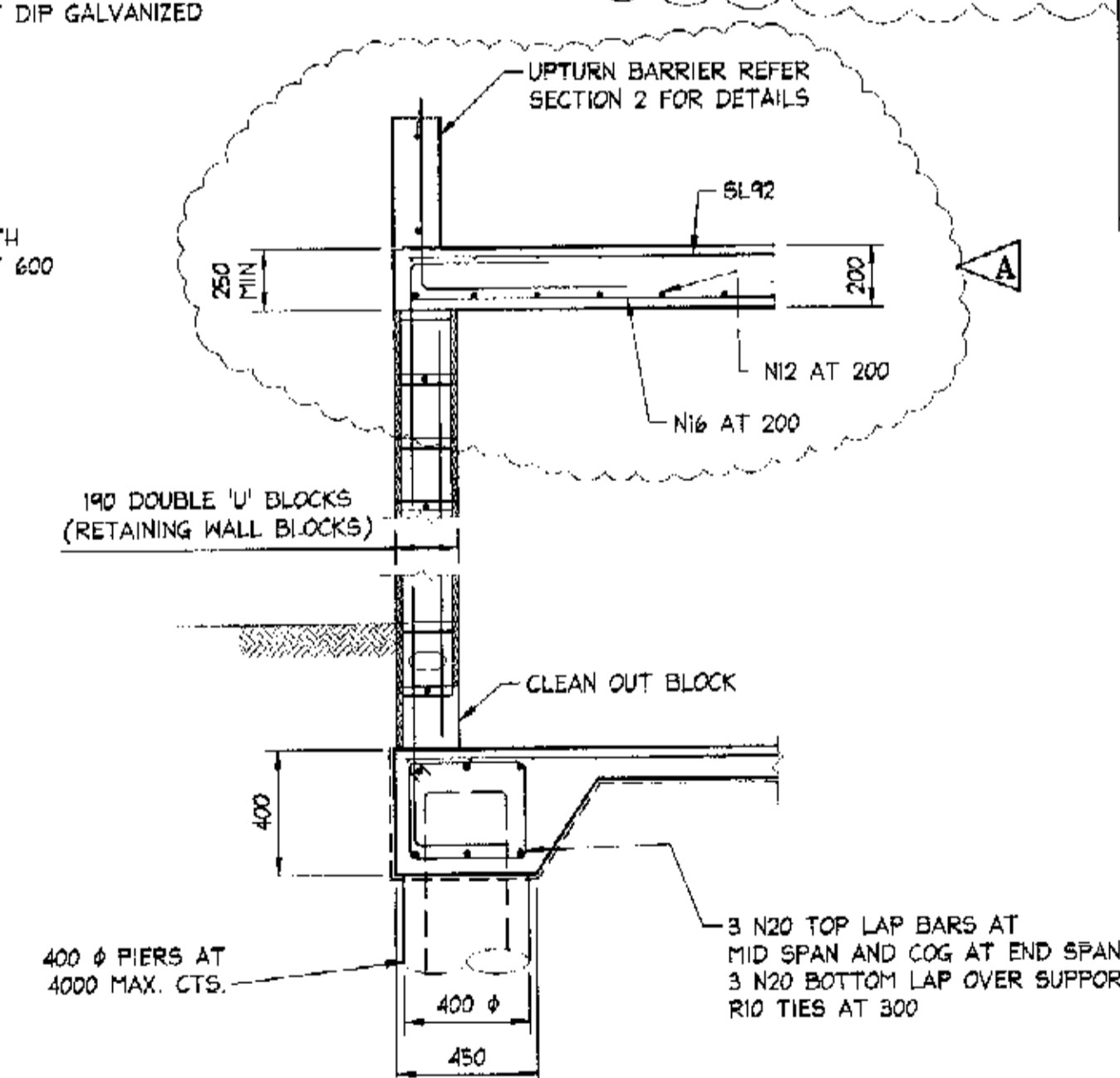
**SECTION 1**

SCALE = 1:20



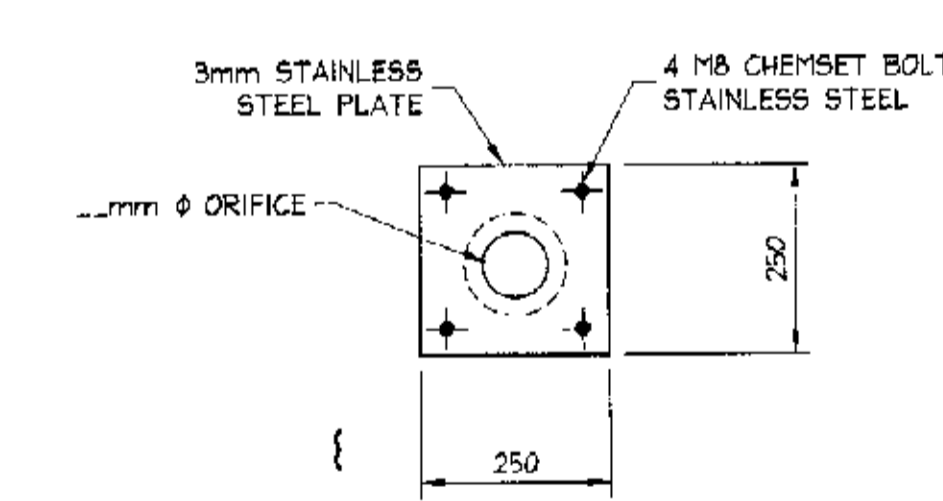
**SECTION 2**

SCALE = 1:20



**SECTION 3**

SCALE = 1:20



**ORIFICE PLATE DETAIL**

FOR CONSTRUCTION

<p>29.01.2004 A DETAILS ALTERED</p>		<p>DOCUMENT CERTIFICATION</p> <p>I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 8094936 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p> <p>Date: FEB 04 Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>		<p><b>NB</b> NORTHERN BEACHES Consulting Engineers P/L</p> <p>A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: <a href="mailto:info@nbconsulting.com.au">info@nbconsulting.com.au</a></p>		<p>Project: PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</p>		<p>Drawing Title: ON-SITE DETENTION TANK DT4 PLAN AND DRAINAGE DETAILS</p>		<p>Date: Nov. 2003 Design: R.G.W. Drawn: Paul R Bruce Checked: Paul R Bruce</p>		<p>Job No: 030963 Drawing No: C18 Rev: A</p>	
-------------------------------------	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	-------------------------------------------------------------------------------------------------------------------------------	--	----------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------	--	------------------------------------------------------	--

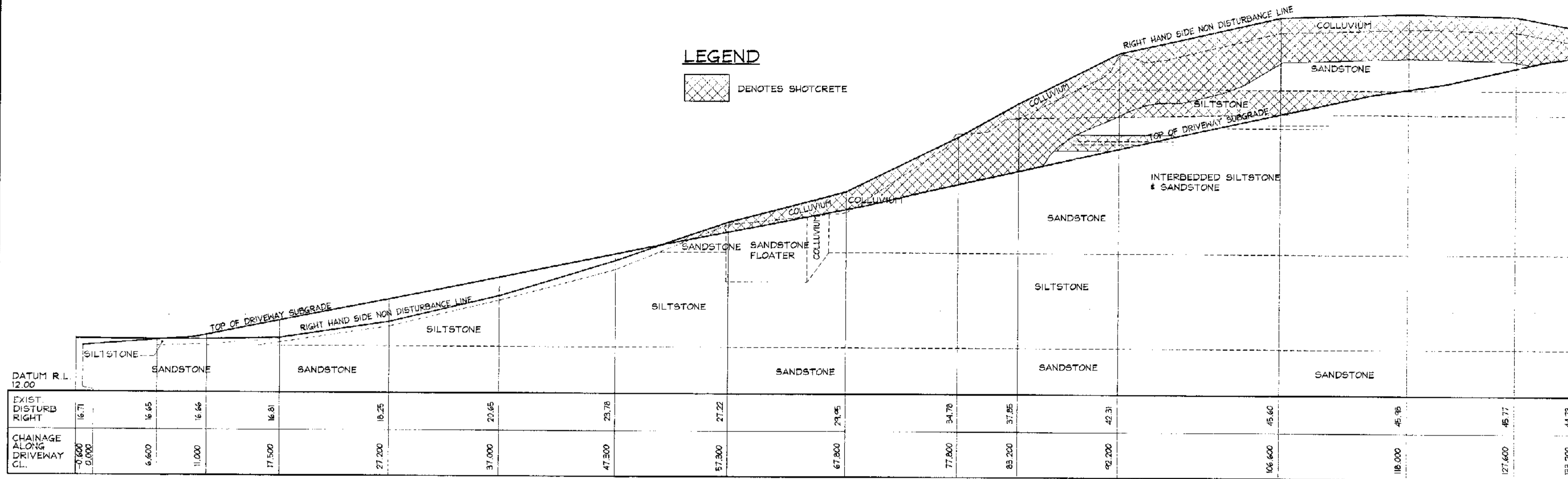


**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.

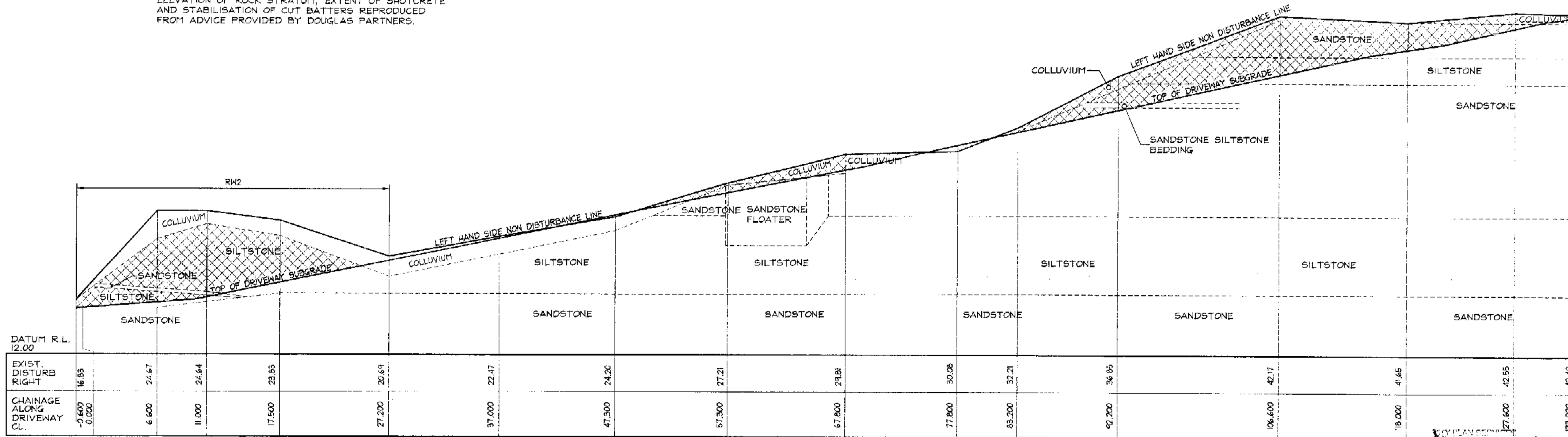
**LEGEND**

 DENOTES SHOTCRETE



**DRIVEWAY ELEVATION  
RIGHT HAND SIDE VIEW**  
SCALE 1:200

**NOTE:**  
ELEVATION OF ROCK STRATUM, EXTENT OF SHOTCRETE AND STABILISATION OF CUT BATTERS REPRODUCED FROM ADVICE PROVIDED BY DOUGLAS PARTNERS.



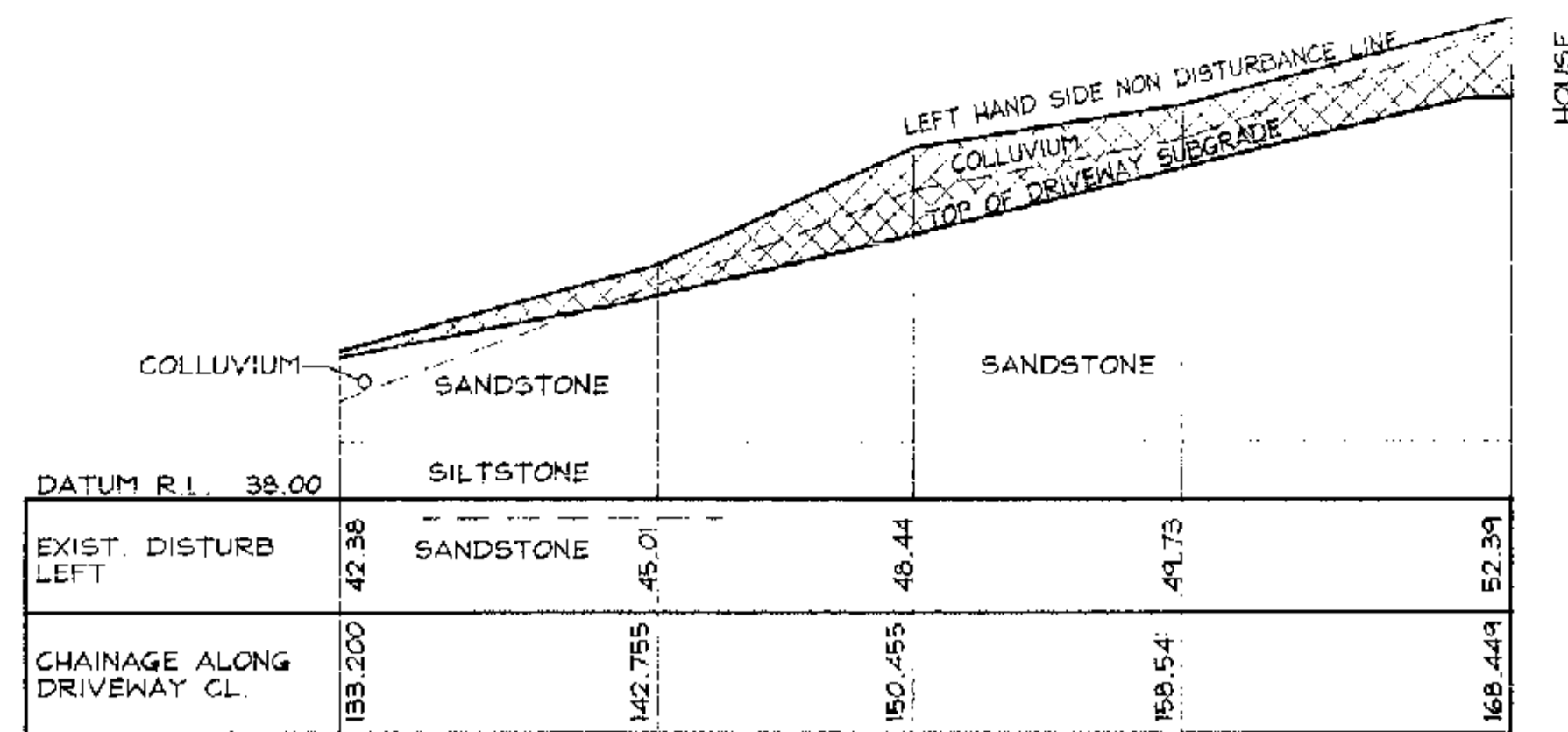
**DRIVEWAY ELEVATION  
LEFT HAND SIDE VIEW**  
SCALE 1:200

FOR CONSTRUCTION

**NOTE:**  
SECTIONS ARE DERIVED FROM SURVEY, REFER TO ARCHITECTS DRAWINGS FOR PAVEMENT LEVELS AND SET OUT.

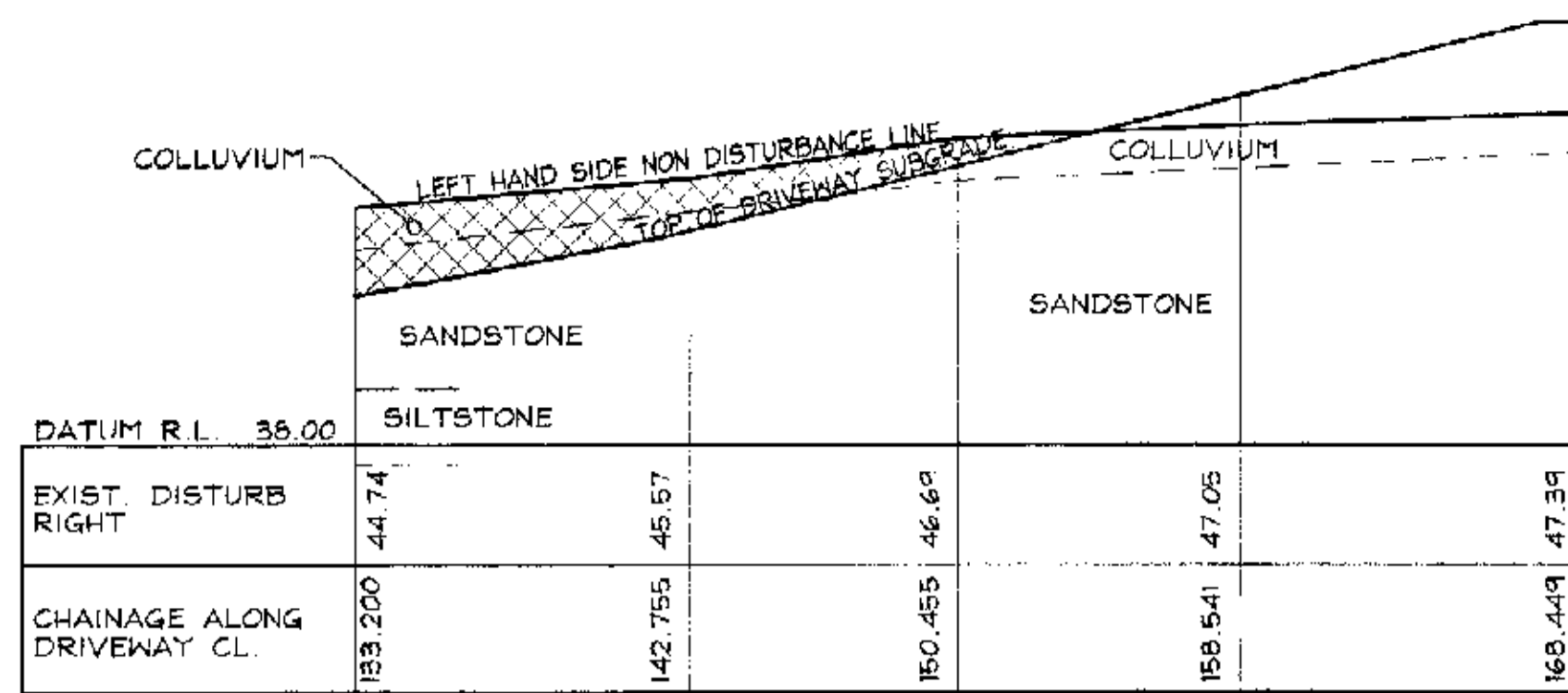
A1

<p><b>DOCUMENT CERTIFICATION</b></p> <p>Date: FEB 04</p> <p>Rick G. Wray (Director Northern Beaches Consulting Engineers)</p>		<p>I am a qualified Structural/Civil Engineer. I hold the following qualifications:</p> <p>BE(Civil), CPEng, MIEAust, NPER, Institute of Engineers Membership No. 603938</p> <p>I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.</p>	<p><b>NORTHERN BEACHES Consulting Engineers P/L</b></p> <p>A.C.N. 075 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9984 7000 Fax: (02) 9984 7444 e-mail: nbc@nbcconsulting.com.au</p>	<p>Project: <b>PROPOSED ACCESS ROAD at: 1148-1152 Barrenjoey Road and 56 Palm Beach Road Palm Beach for: Raypond Development</b></p>	<p>Drawing Title: <b>DRIVEWAY ELEVATIONS SHEET 1</b></p>	<p>Date: Nov. 2003</p> <p>Design: R.G.W.</p> <p>Drawn: Paul R Bruce (P/Eng, MIEAust)</p> <p>Checked: Paul R Bruce</p>	<p>Job No: <b>030963</b></p> <p>Drawing No: <b>C19</b></p> <p>Rev: -</p>
-------------------------------------------------------------------------------------------------------------------------------	--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------



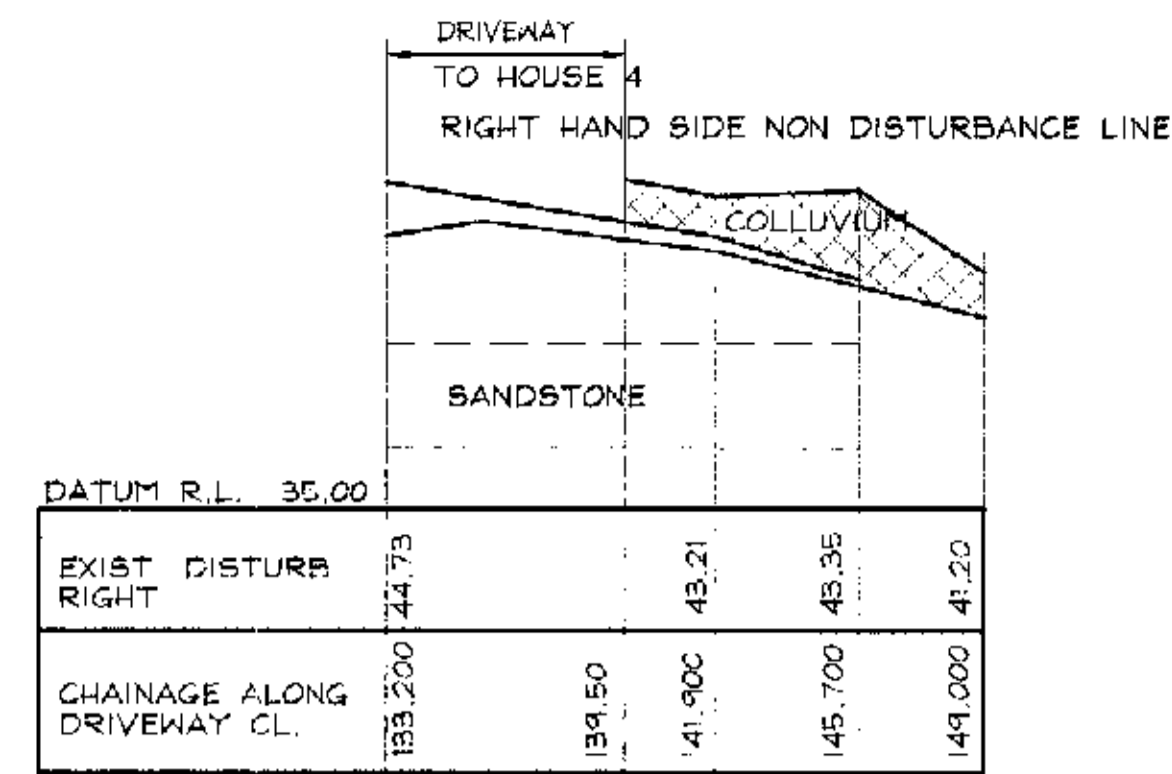
**DRIVEWAY ELEVATION  
LEFT HAND SIDE VIEW**

SCALE 1:200



**DRIVEWAY ELEVATION  
RIGHT HAND SIDE VIEW**

SCALE 1:200



**LOWER DRIVEWAY ELEVATION  
RIGHT HAND SIDE VIEW**

SCALE 1:200

**NOTES:**

1. ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
2. FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: SOI.

**LEGEND**

DENOTES SHOTCRETE

DOWEL SCHEDULE FOR BATTER IN COLLUVIUM SOIL		
MATERIAL	SLOPE HEIGHT (H)	BOLTING REQUIREMENTS
COLLUVIUM AND RESIDUAL SOIL	UP TO 1.5m	2.5m LONG GALV. N28 COGGED DOWEL SPACED AT 2.0m CENTRES HORIZONTALLY & DIPPING AT 45°. INSTALLED IN 75Ø HOLE BLOWN CLEAN & FULLY GROUTED.
	1.5m TO 2.0m	3.0m LONG GALV. N28 COGGED DOWEL SPACED AT 2.0m CENTRES HORIZONTALLY & DIPPING AT 45°. INSTALLED IN 75Ø HOLE BLOWN CLEAN & FULLY GROUTED.
SILTSTONE/SANDSTONE EXTREMELY WEATHERED HIGHLY WEATHERED AND MODERATELY WEATHERED SILTSTONE	-	2.0m LONG GALV. N24 COGGED DOWEL SPACED AT 1.5m CENTRES BOTH HORIZONTALLY & VERTICALLY & DIPPING AT 10°. INSTALLED IN 75Ø HOLES BLOWN CLEAN & FULLY GROUTED.
SILTSTONE SLIGHTLY WEATHERED FRESH	-	1.0m LONG GALV. N24 COGGED DOWEL SPACED AT 1.5m CENTRES BOTH HORIZONTALLY & VERTICALLY & DIPPING AT 10°. INSTALLED IN 75Ø HOLES BLOWN CLEAN & FULLY GROUTED.
ANCHOR BOLTING SCHEDULE FOR BATTER IN ROCK		
MATERIAL	SLOPE HEIGHT (H)	BOLTING REQUIREMENTS
SANDSTONE/SILTSTONE MEDIUM TO HIGH STRENGTH WITH 60° DAYLIGHTING JOINTS	2.5m	2.5m LONG 24Ø CT BOLT (R24HT OR APPROVED EQUIVALENT) INSTALLED AT 2.0m CENTRES DIPPING AT 10°, INSTALLED IN 45Ø HOLES, BLOWN CLEAN & FULLY GROUTED & TENSIONED TO 50kN.
SANDSTONE/SILTSTONE MEDIUM TO HIGH STRENGTH WITH 60° DAYLIGHTING JOINTS	3.0m	2.5m LONG 24Ø CT BOLT (R24HT OR APPROVED EQUIVALENT) INSTALLED AT 1.5m CENTRES DIPPING AT 10°, INSTALLED IN 45Ø HOLES, BLOWN CLEAN & FULLY GROUTED & TENSIONED TO 50kN.
SANDSTONE/SILTSTONE MEDIUM TO HIGH STRENGTH WITH 60° DAYLIGHTING JOINTS	4.5m	3.0m LONG 24Ø CT BOLT (R24HT OR APPROVED EQUIVALENT) INSTALLED AT 1.5m CENTRES DIPPING AT 10°, INSTALLED IN 45Ø HOLES, BLOWN CLEAN & FULLY GROUTED & TENSIONED TO 50kN.
SANDSTONE/SILTSTONE MEDIUM TO HIGH STRENGTH WITH 60° DAYLIGHTING JOINTS	6.0m	3.0m LONG 24Ø CT BOLT (R24HT OR APPROVED EQUIVALENT) INSTALLED AT 1.5m CENTRES DIPPING AT 10°, INSTALLED IN 45Ø HOLES, BLOWN CLEAN & FULLY GROUTED & TENSIONED TO 50kN.
SANDSTONE/SILTSTONE MEDIUM TO HIGH STRENGTH WITH 60° DAYLIGHTING JOINTS	9.0m	3.0m LONG 24Ø CT BOLT (R24HT OR APPROVED EQUIVALENT) INSTALLED AT 1.3m CENTRES DIPPING AT 10°, INSTALLED IN 45Ø HOLES, BLOWN CLEAN & FULLY GROUTED & TENSIONED TO 50kN.

**NOTE:**

ELEVATION OF ROCK STRATUM, EXTENT OF SHOTCRETE AND STABILISATION OF CUT BATTERS, REPRODUCED FROM ADVICE PROVIDED BY 'DOUGLAS PARTNERS'.

**CONSTRUCTION SEQUENCE FOR BATTER IN COLLUVIUM SOIL**

- 1) EXCAVATE COLLUVIUM AND PIN STRIP DRAINS.
- 2) PLACE 60mm THICK "SHOTCRETE"
- 3) INSTALL MESH AS DETAILED ON DRAWING No's C07 & C08
- 4) PIN MESH TO "SHOTCRETE" WITH ROCK BOLT, REFER TO TABLE
- 5) APPLY SECOND PASS OF "SHOTCRETE" TO DEPTHS ON DRAWING No's C07 & C08.

CITY PLAN SERVICES  
Title: Structural  
File No: 22375/1

FOR CONSTRUCTION

**NOTE:**  
SECTIONS ARE DERIVED FROM SURVEY, REFER TO ARCHITECTS DRAWINGS FOR PAVEMENT LEVELS AND SET OUT

Date	Rev.	Amendment

**DOCUMENT CERTIFICATION**

Date: FEB 04  
Rick G. Wray  
(Director Northern Beaches Consulting Engineers.)

am a qualified Structural/Civil Engineer. I hold the following qualifications:  
BE(Civil), CPEng, MIEAust., NPER  
Institute of Engineers Membership No. 803988  
I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian Industry Standards.

**NORTHERN BEACHES**  
Consulting Engineers P/L.

**NB**

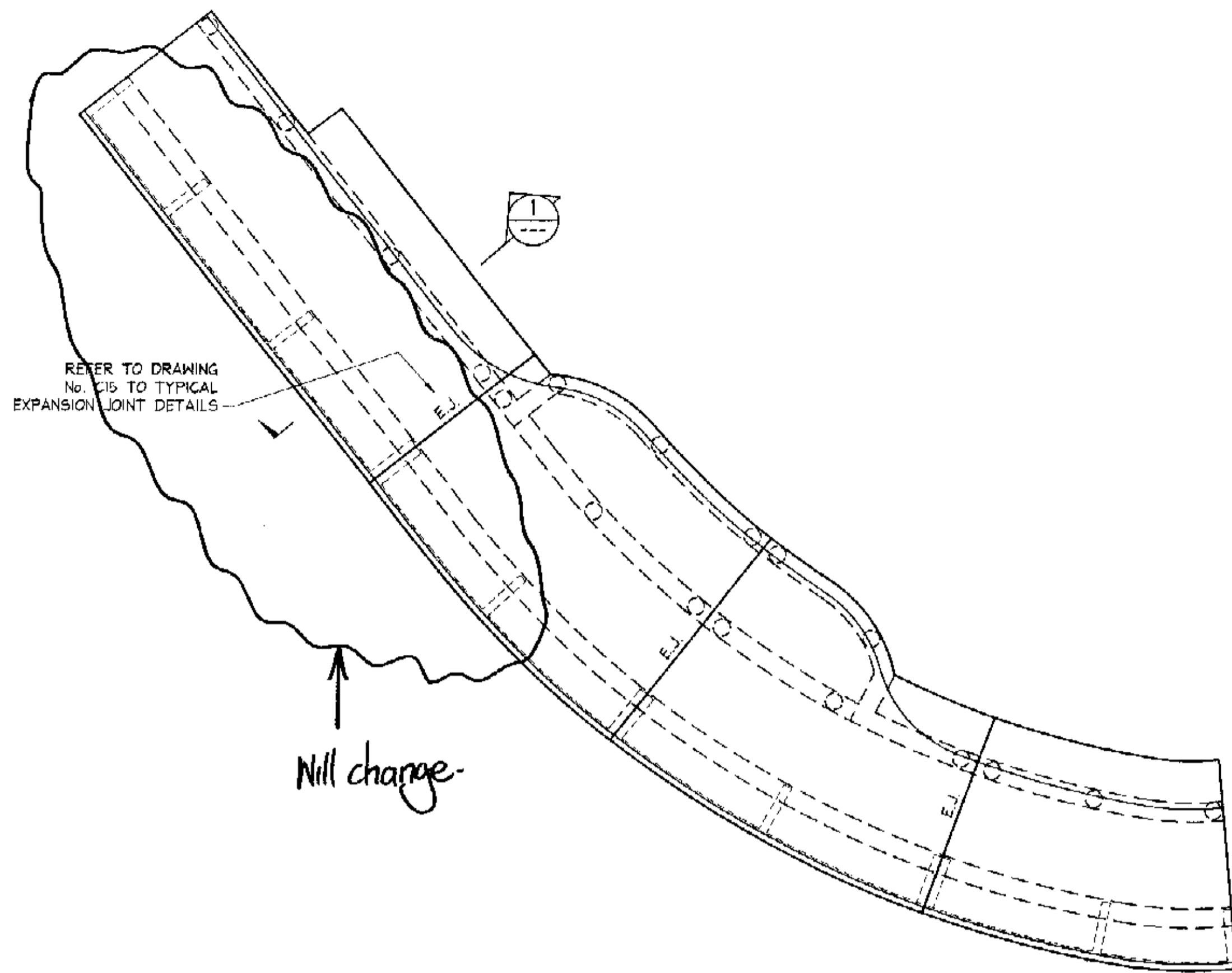
A.C.N. 076 121 616 A.B.N. 24 076 121 616  
Suite 207, 30 FISHER ROAD  
DEE WARY N.S.W. 2099  
Ph: (02) 9584 7000 Fax: (02) 9584 7444  
e-mail: nb@nbeconslng.com.au

Project: **PROPOSED ACCESS ROAD**  
at: 1148-1152 Barrenjoey Road  
and 56 Palm Beach Road  
Palm Beach  
for: Raypond Development

Drawing Title:  
**DRIVEWAY ELEVATIONS  
SHEET 2**

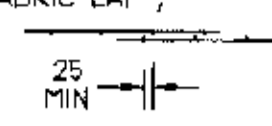
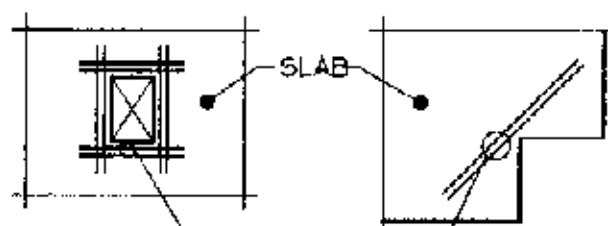
The copyright of this drawing remains with Northern Beaches Consulting Engineers P/L.

Date:	Des gn:	Drawn:	Checked:
Nov. 2003	R.G.W.	Paul R Bruce C11EAust., MIDD Aust.	
Job No:	Drawing No:	Rev.	
030963	C20	-	

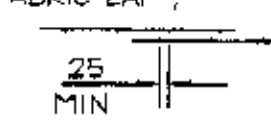
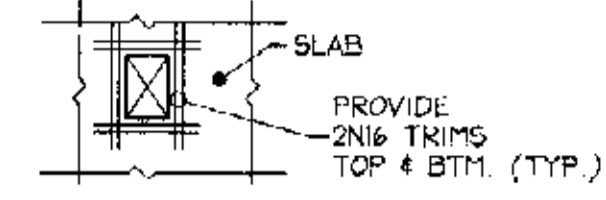


150mm THICK SUSPENDED SLAB  
 SL82 TOP, SL92 BOTTOM  
 CONCRETE STRENGTH 40 MPa  
 45mm TOP COVER, 30mm BOTTOM COVER  
**SUSPENDED DRIVEWAY SLAB PLAN  
 TO HOUSE 1 - AND TOP AND  
 BOTTOM REINFORCEMENT**  
 SCALE 1:100

**SLAB ON GROUND NOTES**

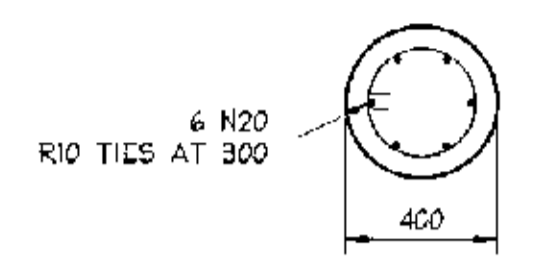
- ALL SLABS TO BE 120 THICK WITH SL72 PLACED 30 FROM TOP ON 50 NOM. SAND BLINDING LAYER. (U.N.C.)  
 ALL REINFORCEMENT TO BE POSITIONED ON BAR CHAIRS WITH CORRECT COVER AND NOT TO BE WALKED IN
- TYPICAL FABRIC LAP ;  

- ALL SLABS TO BE POURED ON APPROVED VAPOUR BARRIER MEMBRANE (V.B.M.)
- ALL EXISTING FILL TO BE PROOF ROLLED.
- a) PENETRATIONS (I.E. STORMWATER PIT) b) RE-ENTRANT CORNER  


**SLAB NOTES**

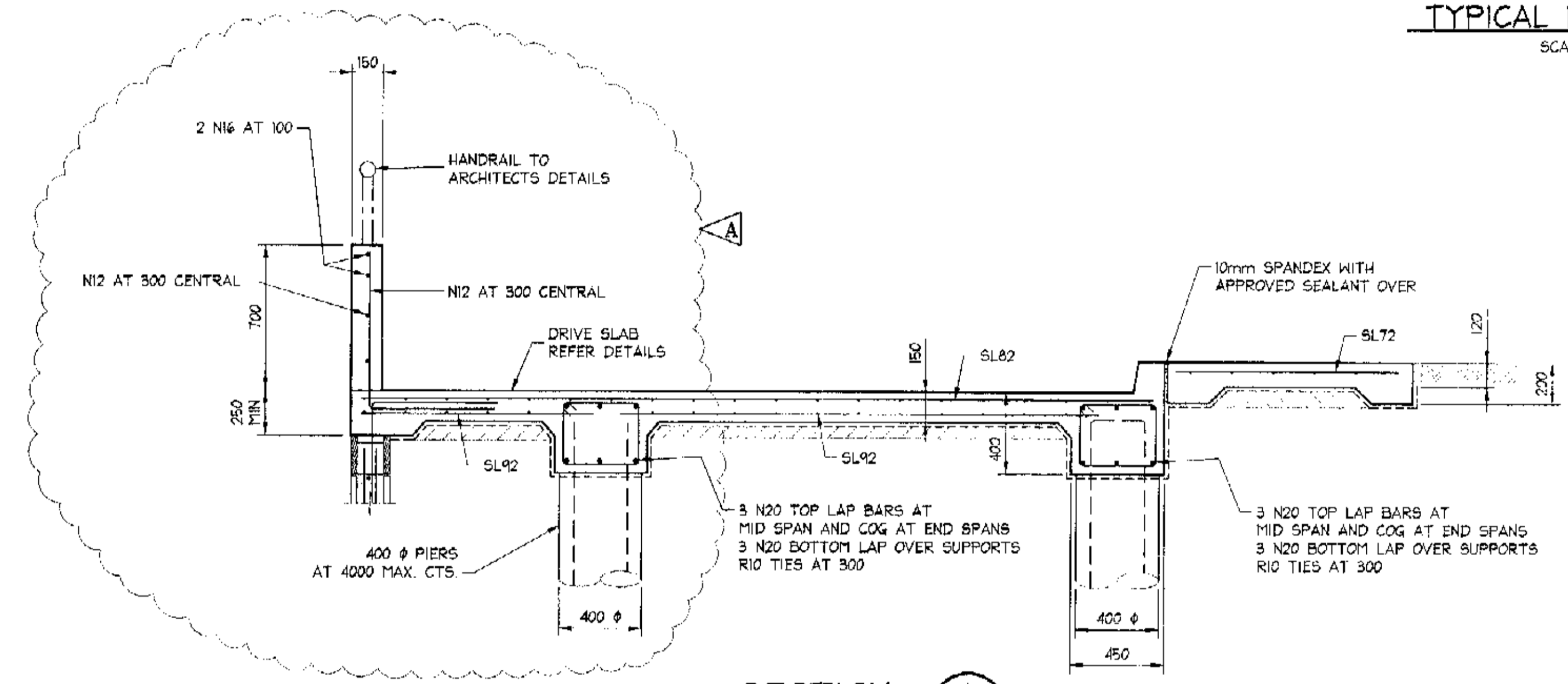
- ALL SLABS TO BE 180 THICK U.N.O
- TYPICAL FABRIC LAP ;  

- DEPTH OF SETDOWN TO BE MEASURED FROM TOP OF STRUCTURAL SLAB LEVEL.
- PROVIDE SL72 TOP WHERE NO OTHER REINFORCEMENT SHOWN.
- a) PENETRATIONS  


**NOTES:**

- ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WITH WORK.
- FOR GENERAL NOTES AND DRAWING SCHEDULE REFER TO DRAWING NUMBER: S01.



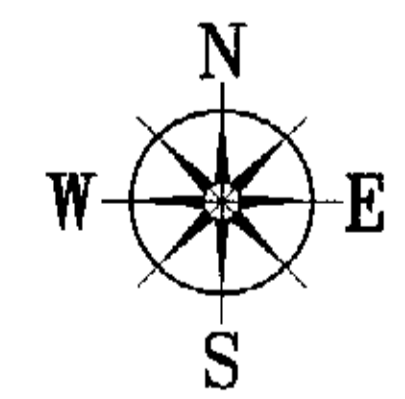
**TYPICAL PIER SECTION**  
 SCALE = 1 : 20



**SECTION 1**  
 SCALE = 1:20

**NOTE:**  
 REFER TO DRAWING NUMBER C09 FOR ADDITIONAL DETAILS

COPY PLAN SERVICES  
 Structural 22375/1



FOR CONSTRUCTION

<b>DOCUMENT CERTIFICATION</b> Date: FEB 04' <i>R. Wray</i> Rick G. Wray (Director Northern Beaches Consulting Engineers)		I am a qualified Structural/Civil Engineer. I hold the following qualifications: BE(Civil), CPEng, MIEAust., NPER, Institute of Engineers Membership No. 803938 I hereby state that this drawing is in compliance with the conditions of the development consent, the provisions of the Building Code of Australia and/or relevant Australian/Industry Standards.	 <b>NORTHERN BEACHES          Consulting Engineers P/L.</b> A.C.N. 076 121 616 A.B.N. 24 076 121 616 Suite 207, 30 FISHER ROAD DEE WHY N.S.W. 2099 Ph: (02) 9994 7000 Fax: (02) 9994 7444 e-mail: nb@nbconsulting.com.au	Project: <b>PROPOSED ACCESS ROAD          at: 1148-1152 Barrenjoey Road          and 56 Palm Beach Road          Palm Beach          for: Raypond Development</b>	Drawing Title: <b>SUSPENDED DRIVEWAY          PLAN AND DETAILS</b>	Date: Nov. 2003 Design: R.G.W. Drawn: Paul R. Bruce (MIEAust., MIDD.Aust.) Checked:	Job No: <b>030963</b> Drawing No: <b>C21</b> Rev: <b>A</b>
29.01.2004 Date:	A Rev:	DETAILS ALTERED Amendment:					