STEPHEN MITCHELL
ENGINEERS LIMITED
CONSULTING STRUCTURAL ENGINEERS

STRUCTURAL REPORT

Seismic Structural Assessment by IEP

Job Title:	2 Fred Thomas Drive
Building Type:	Existing Building
Client:	Smales Farm Management Ltd
Location:	2 Fred Thomas Drive, Takapuna Auckland
Job No.:	11/1559
Date:	April 2012
Rev:	1

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CONTENTS:

INTRODUCTION

This report represents a seismic assessment of the existing building at 2 Fred Thomas Drive, Takapuna, Auckland based on the Initial Evaluation Procedure (IEP) detailed in the New Zealand Society for Earthquake Engineering technical publication ‘Assessment and Improvement of the Structural Performance of Buildings in Earthquakes’

The IEP method was developed to provide an initial coarse screening tool for the assessment of the potential seismic performance of a building structure bench marked against the New Building Standard (NBS). The grading system is expressed as the percentage of the New Building Standard lateral load capacity that the building is likely to achieve. The assessment is derived from both quantative parameters and the qualitative review of specific features of the buildings form, design, construction and location.

BUILDING DESCRIPTION:

The building was designed in 1986/1987 by Roberts Mitchell & Associates Ltd Architects with the structural engineering design undertaken by Thorburn Davidson Ltd, a reputable structural engineering firm that we understand is still practicing as structural engineers. We have reviewed the council building consent records and have located a selection of Structural and Architectural drawings which are appended to this report (Appendix B). A full set of the Structural and Architectural drawings was not available but the drawings obtained provide sufficient information supplemented by our site inspections to undertake an IEP assessment of the building.

The existing building consists of three levels with the upper two tower levels designed as offices and the ground floor level designed as offices and a bowling alley which extends from the tower out to the northern boundary. The building is clad with non-structural precast panels from the ground level up to the first floor level and has a blockwork boundary wall along the eastern boundary adjacent to the existing storm water culvert. Above the first floor level the tower is clad with curtain wall glazing. The roof is metal clad over the office and bowling alley with sections of membrane roofing over the entrance lobby.

The structure of the building consists of pre-stressed double tee flooring units with an insitu concrete topping supported onto reinforced concrete moment resisting frames at Level 1 and Level 2. The ground floor slab is a suspended double tee floor system similar to the upper levels but this floor is supported onto ground beams. The entire ground floor level is suspended due to the site being located over a historic rubbish dump and has been founded onto steel driven UC piles embedded into the Waitemata series rock.

The roof structure for the tower consists of a metal cladding system supported on steel purlins and rafters. The rafters span between the concrete columns which have all been taken up to the roof level to provide the lateral restraint for the roof under wind and seismic loadings. The bowling alley extension has a steel truss roof which spans approximately 30m and is supported onto reinforced concrete columns which are independent from the office tower columns. The roof structure for the bowling alley has therefore been seismically separated from the Level 1 tower floor diaphragm and is self supporting under seismic and wind loadings.

The lateral seismic loading is resolved into two way reinforced concrete moment resisting frames. The ground beams at the ground level provide resolution of the column moments at the base of the structure in both directions. Based on the limited structural drawings that we have reviewed the detailing and design is typical of a reinforced concrete structure of this era and would have been designed for a reasonable level of ductility as required by the codes of the day.

BUILDING CONDITION:

The visual survey of the building demonstrated that it is in sound condition and excellent repair. As far as we could tell, the physical constructions observed closely matched the original documentation and therefore we have confidence that the building was built in general accordance with the design detail. The building appears to remain straight, true and level giving no indication of settlement or dilapidation due to deformation.
Settlement of the surrounding car park areas was observed and is not un-expected due to the historic rubbish dump under the site. This has no effect on the structural integrity of the building.

SEISMIC ASSESSMENT BY THE INITIAL EVALUATION PROCEDURE:

The evaluation was carried out for both the longitudinal and transverse directions utilizing the standard IEP spread sheets, (Appendix A), The baseline %NBS from this assessment is 146% which qualifies the building a Grade A+. With a rating of A+ and a %NBS > 67% the existing structure is considered a low risk building and is well above the legal threshold of 33%NBS which requires seismic improvement works to be undertaken.

CONCLUSIONS:

- The existing reinforced concrete structure has been assessed to have 146% NBS capacity and is therefore a building grade of A+. No seismic strengthening of the structure is required

DISCLAIMERS:

This report presents the conclusions reached from the application of the Initial Evaluation Procedure as required by the brief from Smales Farm Management Ltd. The report is based only on the information contained within the Auckland Council property file and the observations during a walk around visual inspection of the exterior of the building. No measurements, samples or testing of any structural or architectural materials including geotechnical soils, were undertaken during this investigation. No numerical analysis, design or investigative calculations were carried out other than as required during the IEP process. The examination and investigation of architectural and services elements is outside the scope of this brief.

Yours faithfully

Mathew Erskine-Shaw
(Partner)

Appendix A

Initial Evaluation Procedure (IEP)

Table IEP-1: Initial Evaluation Procedure – Step 1

Table IEP-1 Initial Evaluation Procedure Step 1 Page 1....

(Refer Table IEP - 2 for Step 2; Table IEP - 3 for Step 3, Table IEP - 4 for Steps 4, 5 and 6)

Building Name 2 FRED THOMAS DRIVE	Ref. 11/1559
Location 2 FRED THOMAS DRIVE TAKAPUNA	By M. ERSKINE-SHAW
	Date APRIL 2012

Step 1 - General Information

1.1 Photos (attach sufficient to describe building)

REFER APPENDIX C OF STRUCTURAL REPORT

1.2 Sketch of building plan

REFER APPENDIX B OF STRUCTURAL REPORT

1.3 List relevant features

TWO WAY MOMENT RESISTING CONCRETE FRAME DESIGNED IN 1986/87. REFER TO STRUCTURAL REPORT FOR ADDITIONAL INFORMATION

1.4 Note information sources

	tick as appropriate
Visual Inspection of Exterior	✓
Visual Inspection of Interior	✓
Drawings (note type)	✓ → SELECTION OF STRUCTURAL & ARCHITECTURAL DRAWINGS AS PER APPENDIX B OF STRUCTURAL REPORT.
Specifications	
Geotechical Reports	
Other (list)	

Table IEP-2: Initial Evaluation Procedure – Step 2

Table IEP-2 Initial Evaluation Procedure Step 2 **Page 2....**

(Refer Table IEP - 1 for Step 1; Table IEP - 3 for Step 3; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 2 - FRED THOMAS DRIVE	Ref. 11/1559
Location	By M.E-S
Direction Considered: a) Longitudinal ✓ b) Transverse ✓	
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)	Date APRIL 2012

Step 2 - Determination of $(\%NBS)_b$

2.1 Determine nominal (%NBS) = $(\%NBS)_{nom}$

a) Date of Design and Seismic Zone

		tick as appropriate	
Pre 1935		☐	See also notes 1, 3
1935-1965		☐	
1965-1976	Seismic Zone; A	☐	
	B	☐	
	C	☐	
1976-1992	Seismic Zone; A	☐	See also note 2
	B	☐	
	C	✓	
1992-2004		☐	

b) Soil Type

From NZS1170.5:2004, Cl 3.1.3	A or B Rock	☐
	C Shallow Soil	☐
	D Soft Soil	✓
	E Very Soft Soil	☐
From NZS4203:1992, Cl 4.6.2.2 (for 1992 to 2004 only and only if known)	a) Rigid	☐
	b) Intermediate	☐

c) Estimate Period, T — 0.40 Seconds

Can use following:

$T = 0.09h_n^{0.75}$	for moment-resisting concrete frames ✓
$T = 0.14h_n^{0.75}$	for moment-resisting steel frames
$T = 0.08h_n^{0.75}$	for eccentrically braced steel frames
$T = 0.06h_n^{0.75}$	for all other frame structures
$T = 0.09h_n^{0.75}/A_c^{0.5}$	for concrete shear walls
$T \leq 0.4$sec	for masonry shear walls

Where h_n = height in m from the base of the structure to the uppermost seismic weight or mass.

$A_c = \Sigma A_i(0.2 + L_{wi}/h_n)^2$

A_i = cross-sectional shear area of shear wall i in the first storey of the building, in m^2

l_{wi} = length of shear wall i in the first storey in the direction parallel to the applied forces, in m with the restriction that l_{wi}/h_n shall not exceed 0.9

d) $(\%NBS)_{nom}$ determined from Figure 3.3 — 13.3 $(\%NBS)_{nom}$

Note 1: For buildings designed prior to 1965 and known to be designed as public buildings in accordance with the code of the time, multipy $(\%NBS)_{nom}$ by 1.25. — 1.0
For buildings designed 1965 - 1976 and known to be designed as public buildings in accordance with the code of the time, multipy $(\%NBS)_{nom}$ by 1.33 - Zone A; 1.2 - Zone B 1

Note 2: For reinforced concrete buildings designed between 1976-84 multiply $(\%NBS)_{nom}$ by 1.2 — 1.0

Note 3: For buildings designed prior to 1935 multiply $(\%NBS)_{nom}$ by 0.8 except for Wellington where the factor may be taken as 1. — 1.0 — 13.3 $(\%NBS)_{nom}$

Continued over page

$h = 7.2m \Rightarrow T = 0.09 \times 7.2^{0.75}$
$\simeq 0.405$

Table IEP-2: Initial Evaluation Procedure – Step 2 continued

Table IEP-2 Initial Evaluation Procedure Step 2 continued **Page 3....**

2.2 Near Fault Scaling Factor, Factor A
If $T \leq$ 1.5sec, Factor A = 1

a) Near Fault Factor, *N(T,D)* $\boxed{1.0}$
(from NZS1170.5:2004, Cl 3.1.6)

b) Near Fault Scaling Factor = 1/N(T,D) Factor A $\boxed{1.0}$

2.3 Hazard Scaling Factor, Factor B

a) Hazard Factor, *Z, for site* $\boxed{0.13}$
(from NZS1170.5:2004, Table 3.3)

b) Hazard Scaling Factor
For pre 1992 = $1/Z$
For 1992 onwards = Z_{1992}/Z

(Where Z_{1992} is the NZS4203:1992 Zone Factor from accompanying Figure 3.5(b)) Factor B $\boxed{7.69}$

2.4 Return Period Scaling Factor, Factor C

a) Building Importance Level $\boxed{2}$
(from NZS1170.0:2004, Table 3.1 and 3.2)

b) Return Period Scaling Factor from accompanying Table 3.1 Factor C $\boxed{1.0}$

2.5 Ductility Scaling Factor, D

a) Assessed Ductility of Existing Structure, μ $\boxed{2}$
(shall be less than maximum given in accompanying Table 3.2)

b) Ductility Scaling Factor
For pre 1976 = k_μ
* → For 1976 onwards = 1

(where k_μ is NZS1170.5:2004 Ductility Factor, from accompanying Table 3.3) Factor D $\boxed{1.0}$

2.6 Structural Performance Scaling Factor, Factor E

a) Structural Performance Factor, S_p $\boxed{0.7}$
from accompanying Figure 3.4

b) Structural Performance Scaling Factor = $1/S_p$ Factor E $\boxed{1.43}$

2.7 Baseline %NBS for Building, $(\%NBS)_b$
(equals $(\%NSB)_{nom}$ x A x B x C x D x E) $\boxed{146}$

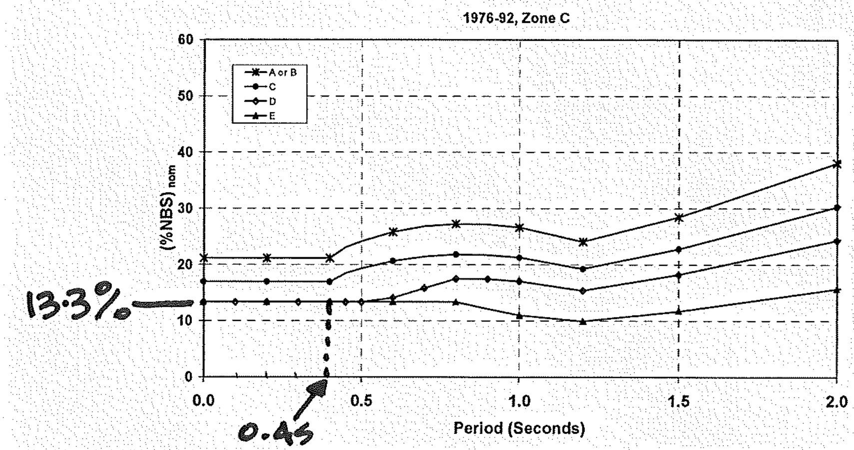


Figure 3.3(g): $(\%NBS)_{nom}$ 1976-92, Zone C

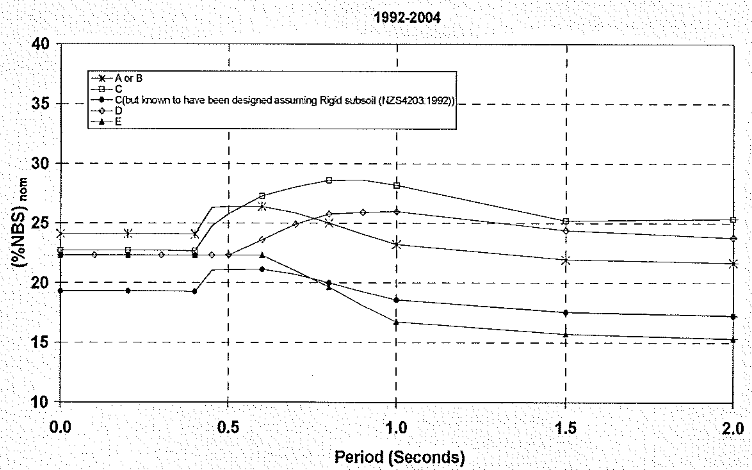


Figure 3.3(h): $(\%NBS)_{nom}$ 1992-2004

Figure 3.3: $(\%NBS)_{nom}$ for Different Building Design Vintages

Table 3.1: Return period scaling factor

NZS1170.5:2004 Return Period Factor, *R*				Return Period Scaling Factor, *C*			
Importance level	Comment	Annual Probability of Exceedance	Return Period Factor, *R*	Pre 1965	1965-76	1976-92	1992-04
1	Minor structures (failure not likely to endanger human life)	1/100	0.5	2	2	2	1.2
2	Normal structures and structures not falling into other levels	1/500	1	1	1	1	1 ← ***
3	Major structures (affecting crowds)	1/1000	1.3	0.8	0.8	1.1	0.9
4	Post-disaster structures (post-disaster functions or dangerous activities)	1/2500	1.8	0.6	0.6	1	0.7
5	Exceptional structures are outside the scope of the IEP, special study required.						

Where R is the return period factor appropriate to the current use of the building, as shown in Table 3.5 of NZS 1170.0:2002

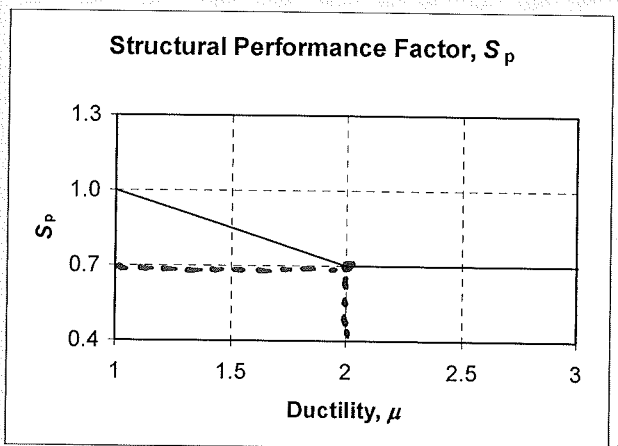
Table 3.2: Ductility factors to be used for existing buildings

Structure Type	Maximum allowable ductility factor for IEP			
	Pre-1935	1935-65	1965-76	1976-2004
All buildings	2	2	2	6

↑ CONSIDER $\mu = 2.0$

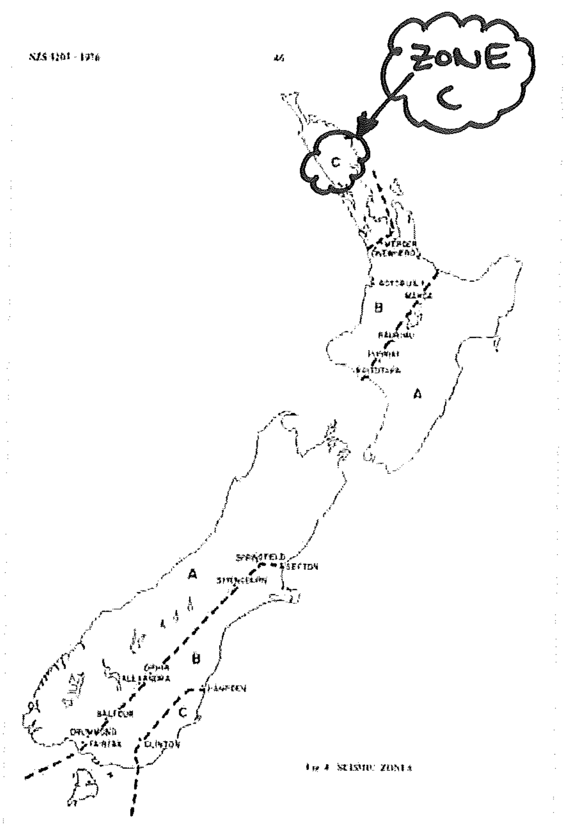
Table 3.3: Ductility scaling factor

	Structural Ductility Scaling Factor, k_μ							
	1.0 or less		1.25		1.50		2	
Soil Type	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E
Period, *T*								
≤ 0.40s	1	1	1.14	1.25	1.29	1.50	1.57	1.70
0.50s	1	1	1.18	1.25	1.36	1.50	1.71	1.75
0.60s	1	1	1.21	1.25	1.43	1.50	1.86	1.80
0.70s	1	1	1.25	1.25	1.50	1.50	2.00	1.85
0.80s	1	1	1.25	1.25	1.50	1.50	2.00	1.90
≥1.00s	1	1	1.25	1.25	1.50	1.50	2.00	2.00



Where S_p is the Structural Performance Factor from NZS1170.5:2004, Cl 4.4.2.

Figure 3.4: Structural performance factor, S_p



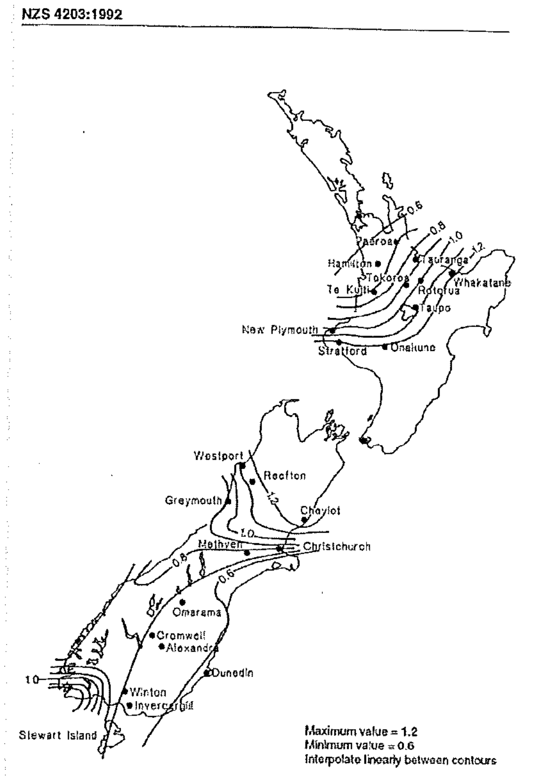


Figure 4.6.2 – Zone factor, Z

RELEVANT CODE

Figure 3.5(a) **NZS 4203:1984, NZS 4203: 1976 and NZS 1900:Chapter 8 sim.**

Figure 3.5(b) **NZS 4203:1992**

Figure 3.5: Extracts from previous Standards showing seismic zoning schemes

Table IEP-3: Initial evaluation procedure – Step 3

Table IEP-3 Initial Evaluation Procedure Step 3 **Page ......**

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 2 FRED THOMAS DRIVE **Ref.** 11/1559
Location **By** M.E-S
Direction Considered: a) Longitudinal ✓ b) Transverse ✓
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt) **Date** APRIL 2012

Step 3 - Assessment of Performance Achievement Ratio (PAR)
(Refer Appendix B - Section B3.2)

Critical Structural Weakness | **Building Score** | **Effect on Structural Performance** *(Choose a value - Do not interpolate)*

3.1 Plan Irregularity
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor A	1.0	0.4 max	0.7	1

Comment

3.2 Vertical Irregularity
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor B	1.0	0.4 max	0.7	1

Comment

3.3 Short Columns
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor C	1.0	0.4 max	0.7	1

Comment

3.4 Pounding Potential
(Estimate D1 and D2 and set D = the lower of the two, or =1.0 if no potential for pounding)

a) Factor D1: - Pounding Effect → NO ADJACENT STRUCTURES
Select appropriate value from Table

Note:
Values given assume the building has a frame structure. For stiff buildings (eg with shear walls), the effect of pounding may be reduced by taking the co-efficient to the right of the value applicable to frame buildings.

Factor D1 1.0

Table for Selection of Factor D1	Severe	Significant	Insignificant
Separation	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Alignment of Floors within 20% of Storey Height	0.7	0.8	1
Alignment of Floors not within 20% of Storey Height	0.4	0.7	0.8

b) Factor D2: - Height Difference Effect
Select appropriate value from Table

Factor D2 1.0

Table for Selection of Factor D2	Severe	Significant	Insignificant
	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Height Difference > 4 Storeys	0.4	0.7	1
Height Difference 2 to 4 Storeys	0.7	0.9	1
Height Difference < 2 Storeys	1	1	1

Factor D 1.0 ***(Set D = lesser of D1 and D2 or.. set D = 1.0 if no prospect of pounding)***

3.5 Site Characteristics - *(Stability, landslide threat, liquefaction etc)*
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor E	1.0	0.5 max	0.7	1

3.6 Other Factors

Factor F 1.0 **For ≤ 3 storeys - Maximum value 2.5, otherwise - Maximum value 1.5. No minimum.**

Record rationale for choice of Factor F:
CONSERVATIVELY TAKE AS 1.0 – REGULAR STRUCTURE – GOOD DETAILING

3.7 Performance Achievement Ratio (PAR)
(equals A x B x C x D x E x F) 1.0

Table IEP-4: Initial evaluation procedure – Steps 4, 5 and 6

Table IEP- 4 Initial Evaluation Procedure Steps 4, 5 and 6 Page ...

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 3 for Step 3)

Building Name 2 FRED THOMAS DRIVE
Location

Ref. 11/1559
By M.E-S
Date APRIL 2012

Step 4 - Percentage of New Building Standard (*%NBS*)

	Longitudinal	Transverse
4.1 Assessed Baseline (*%NBS*)$_b$ (from Table IEP - 1)	146	146
4.2 Performance Achievement Ratio (PAR) (from Table IEP - 2)	1.0	1.0
4.3 PAR x Baseline (*%NBS*)b	146	146
4.4 Percentage New Building Standard (*%NBS*) (Use lower of two values from Step 3.3)		146

Step 5 - Potentially Earthquake Prone? (Mark as appropriate)

%NBS > 33	NO
%NBS ≤ 33	YES

Step 6 - Potentially Earthquake Risk? (Mark as appropriate)

%NBS ≥ 67	NO
%NBS < 67	YES

Step 7 - Provisional Grading for Seismic Risk based on IEP

Seismic Grade A+

Evaluation Confirmed by... [signature] **Signature**

M. ERSKINE-SHAW **Name**

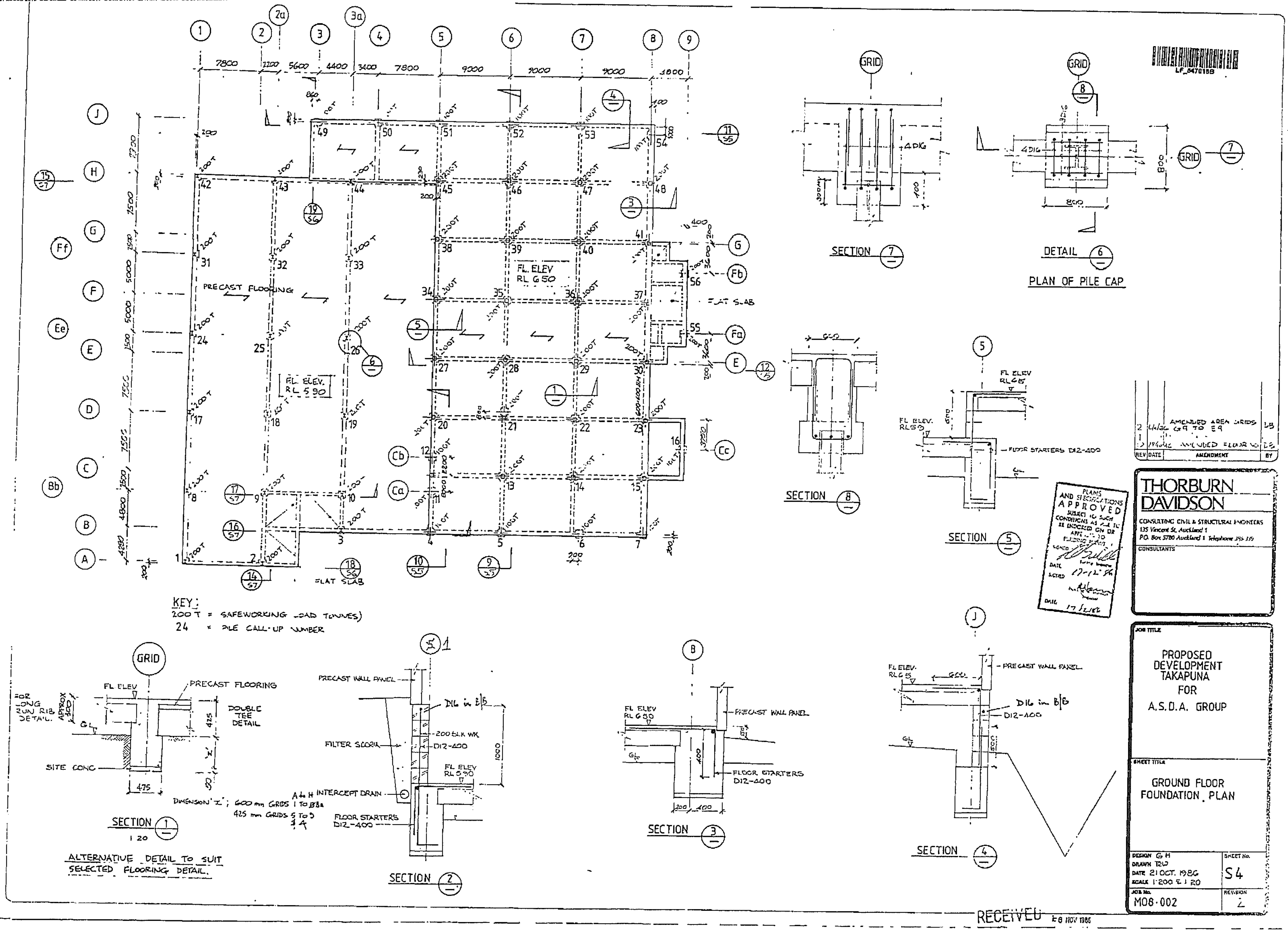
217561 **CPEng. No**

Relationship between Seismic Grade and *%NBS*:

Grade:	A+	A	B	C	D	E
%NBS:	> 100	100 to 80	80 to 67	67 to 33	33 to 20	< 20

Appendix B

Existing Structural and Architectural Drawings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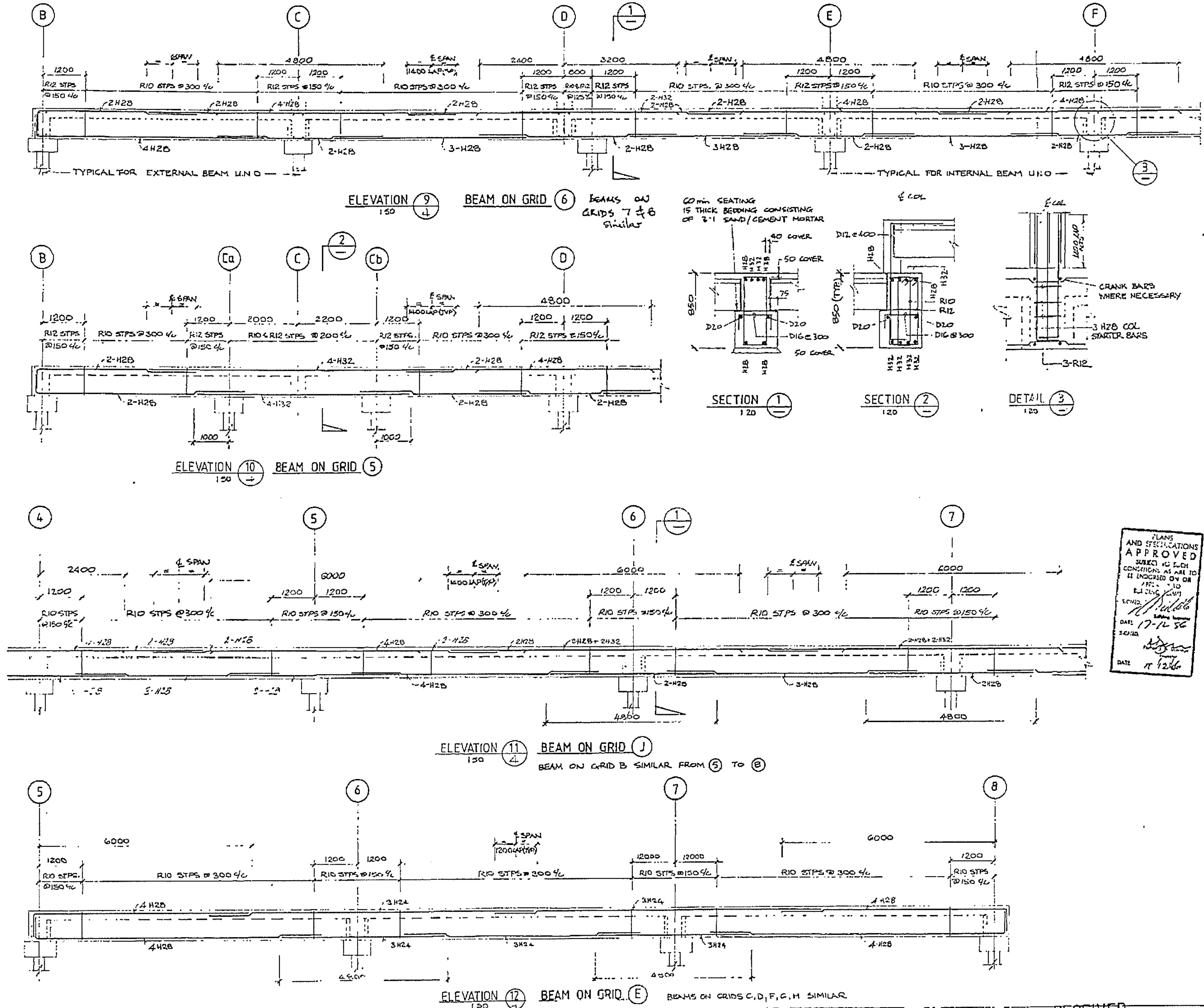
200 T = SAFEWORKING LOAD TONNES)
24 = PILE CALL-UP NUMBER
PRECAST FLOORING
FL. ELEV RL 6.50
FL. ELEV. RL 5.90
FLAT SLAB
SECTION 7
DETAIL 6
PLAN OF PILE CAP
SECTION 8
SECTION 5
FLOOR STARTERS D12-400
SECTION 1
1:20
ALTERNATIVE DETAIL TO SUIT SELECTED FLOORING DETAIL.
PRECAST FLOORING
DOUBLE TEE DETAIL
SITE CONC
FOR LONG RUN RIB DETAIL.
SECTION 2
PRECAST WALL PANEL
FILTER SCORIA
200 BLK WK
D12-400
D16 in B/B
A to H INTERCEPT DRAIN
DIMENSION 'Z'; 600 mm GRIDS 1 TO B/Ba
425 mm GRIDS 5 TO 3
SECTION 3
SECTION 4
PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS MAY BE ENDORSED ON OR ATTACHED THERETO
DATE 17-12-86
REV DATE AMENDMENT BY
2 AMENDED AREA GRIDS G9 TO E9 LB
1 AMENDED FLOOR LB
THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St, Auckland 1
P.O. Box 5780 Auckland 1
CONSULTANTS
JOB TITLE
PROPOSED DEVELOPMENT TAKAPUNA FOR A.S.D.A. GROUP
SHEET TITLE
GROUND FLOOR FOUNDATION PLAN
DESIGN G H
DRAWN TRD
DATE 21 OCT. 1986
SCALE 1:200 & 1:20
SHEET No. S4
JOB No. M08-002
REVISION 2
RECEIVED 6 NOV 1986



LF_847016B

REV	DATE	AMENDMENT
1		AMENDED BEAM GRID J
0		CONSENT ISSUE

THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
133 Vincent St Auckland 1
P.O. Box 5780 Auckland 1 Telephone 795 144

CONSULTANTS

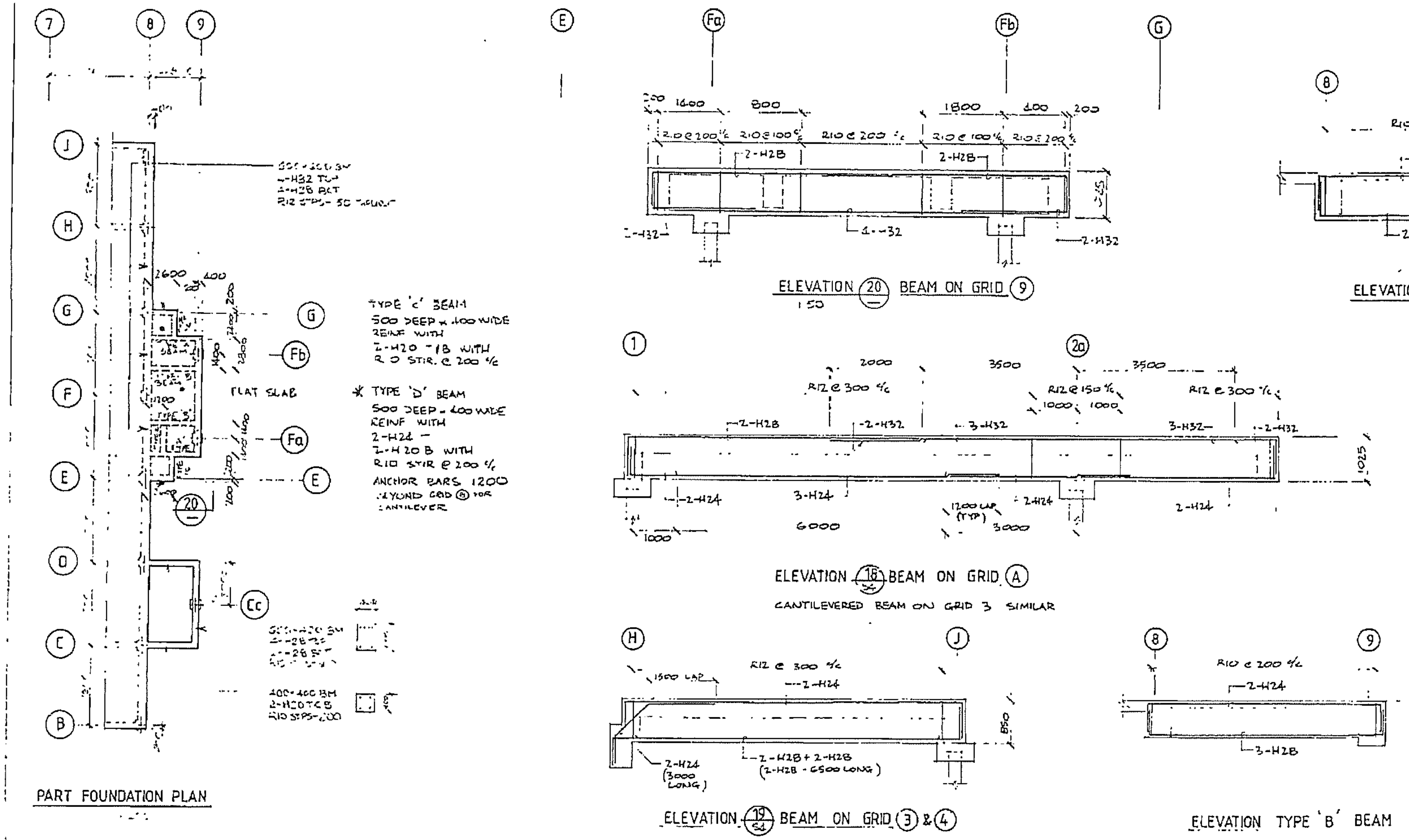
PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE INDICATED ON OR
DATE 17-12-86

JOB TITLE
PROPOSED DEVELOPMENT TAKAPUNA FOR A.S.D.A. GROUP

SHEET TITLE
BEAM ELEVATIONS

DESIGN G H
DRAWN T.R.W.
DATE 21 OCT 1986
SCALE AS SHOWN
JOB No. M08-002
SHEET No. S5
REVISION 1

RECEIVED 6 NOV 1986



REV. DATE	AMENDMENT	BY
	AREA GRID 9 TO 9 AMENDED	DB

THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St, Auckland 1
P.O. Box 5700 Auckland 1 Telephone 395 339

CONSULTANTS

JOB TITLE
PROPOSED DEVELOPMENT TAKAPUNA FOR A.S.D.A. GROUP

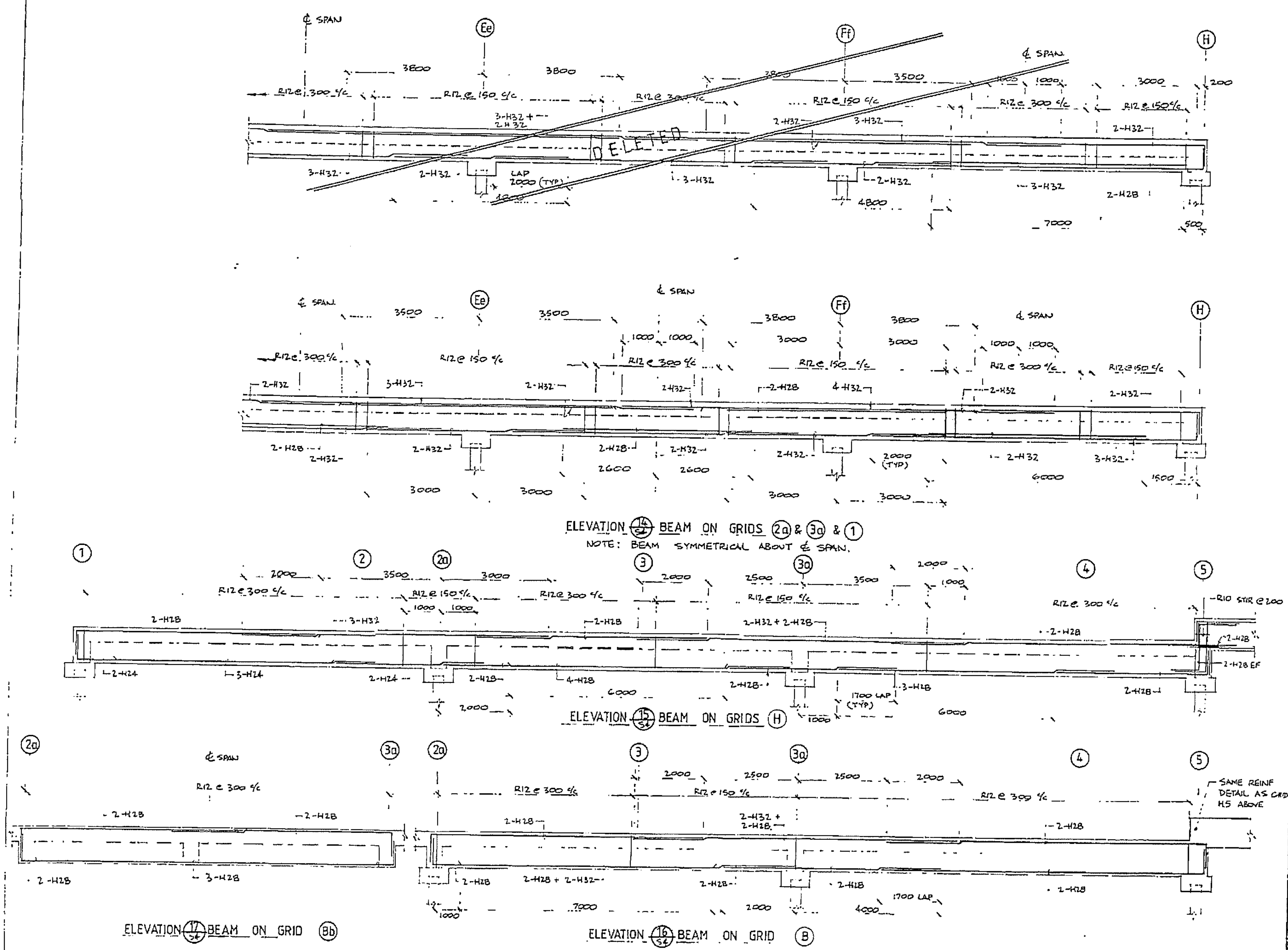
SHEET TITLE
PART GROUND FLOOR FOUNDATION PLAN

DESIGN
DRAWN
DATE
SCALE

SHEET No. S6

JOB No. M08-002

REVISION



REV	DATE	AMENDMENT	BY
		BEAM DELETED	

THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St. Auckland 1
P.O. Box 5780 Auckland 1. Telephone 795-379

CONSULTANTS

JOB TITLE
PROPOSED DEVELOPMENT TAKAPUNA FOR A.S.D.A. GROUP

SHEET TITLE
BEAM ELEVATIONS

DESIGN	G H	SHEET No	S 7
DRAWN	DB		
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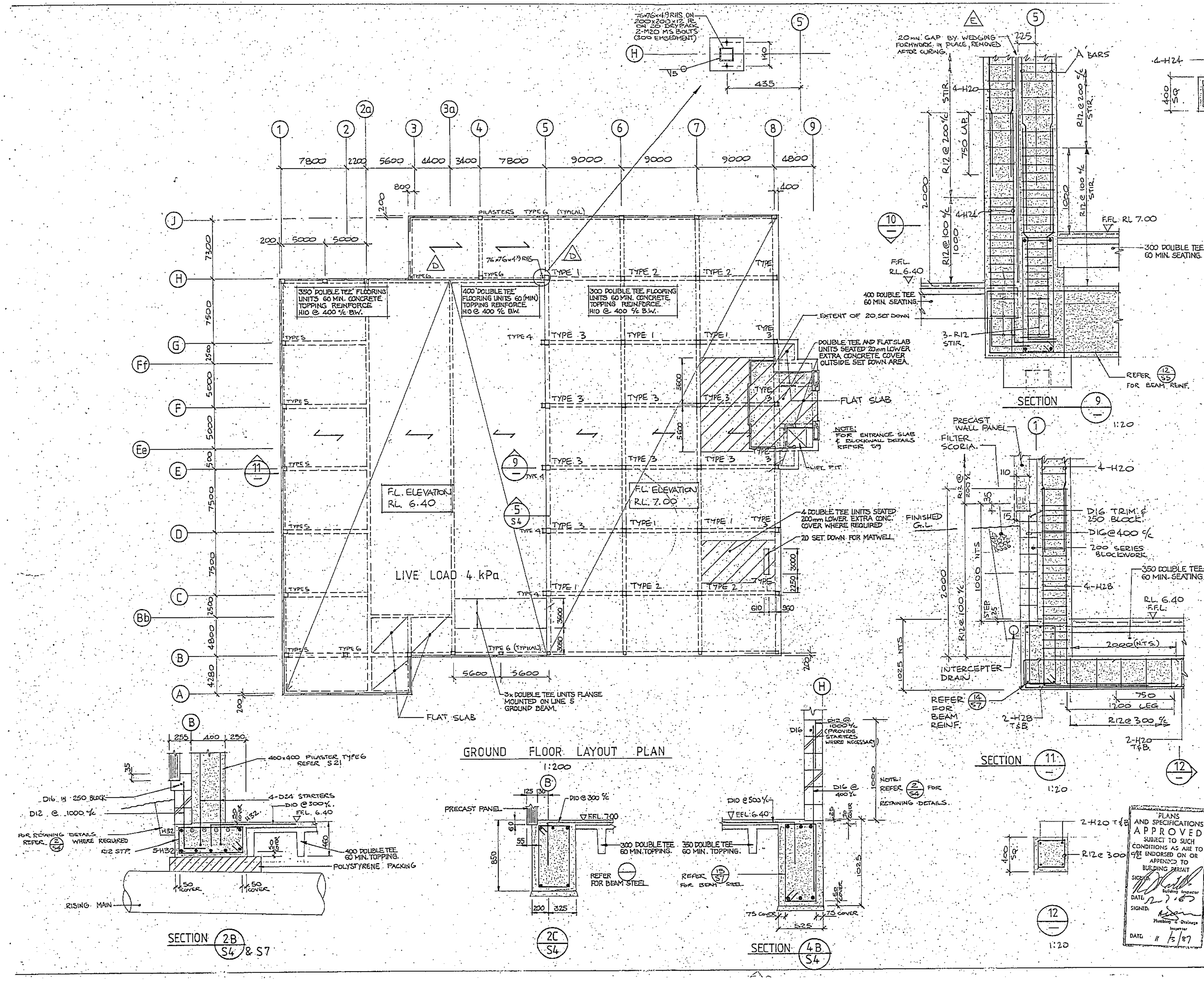
JOB No	M 08 ~ 002	REVISION	



COLUMN TYPE	'A' BARS	LAP ABOVE F.F.L.
1	8-H24	1200
2	8-H28	1200
3	8-H20	800

REINFORCING FOR 450 SQ. COLUMNS

REV	DATE	AMENDMENT	BY
E	15/7/87	REMOVE POLYSTYRENE PACKER	CGH
D	17/1/87	76x76x4.9 RHS BASEPLATE DETAIL	CGH
C	7/1/87	PRECAST PANEL SET DOWNS	CGH
B	2/12/86	FLOOR UNITS SPECIFIED	M.H.
A	26/11/86	CONSTRUCTION ISSUE	CGH
O	29/11/86	PERMIT ISSUE	CGH
	12/11/86	ISSUED FOR PRICING	DB

THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St, Auckland 1
P.O. Box 5780 Auckland 1. Telephone 395-339

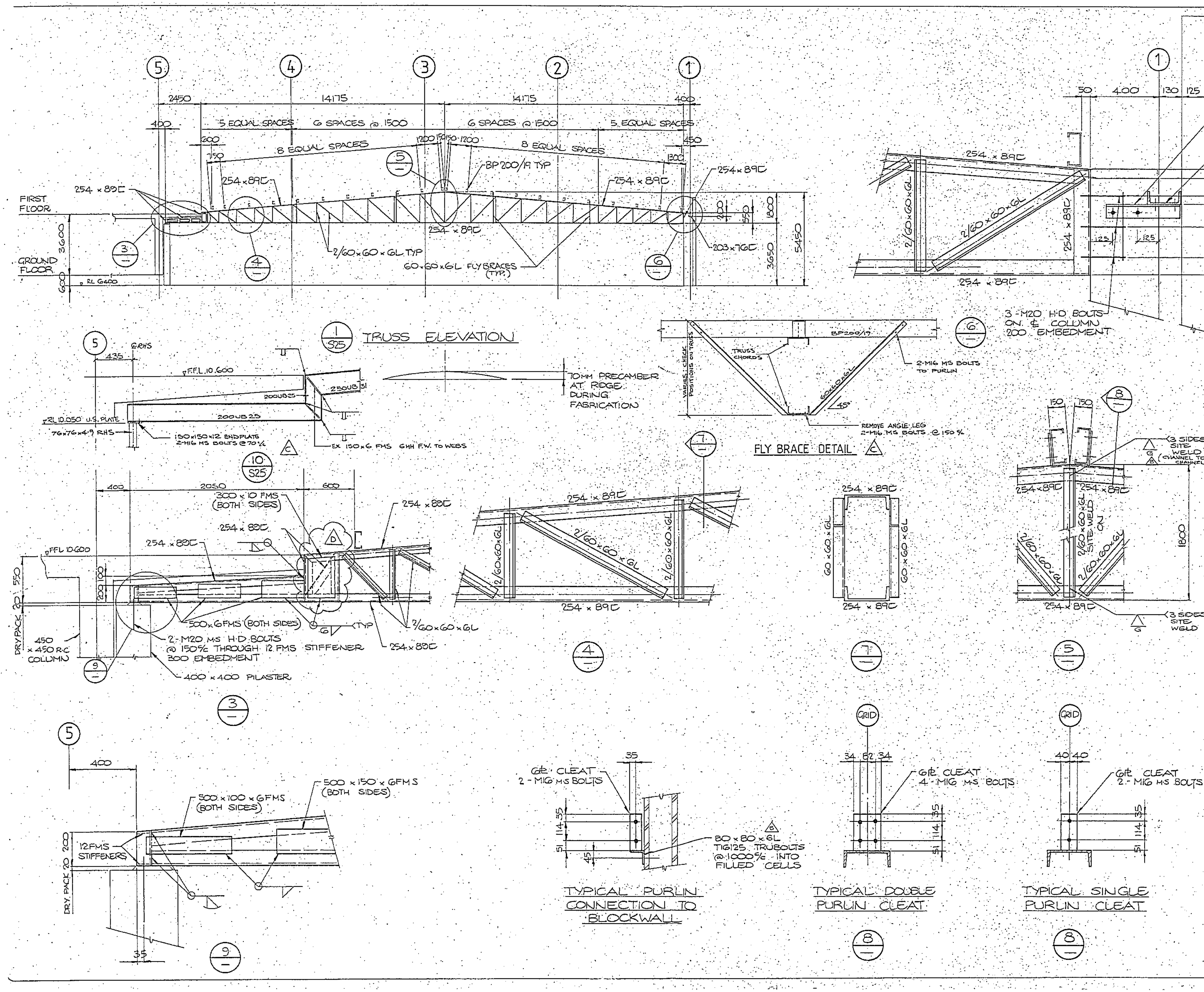
CONSULTANTS
ROBERTS MITCHELL ASSOCIATES LTD

JOB TITLE
ASDA. GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

SHEET TITLE
GROUND FLOOR LAYOUT PLAN AND DETAILS

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED: Building Inspector
DATE:
SIGNED: Plumbing & Drainage Inspector
DATE: 11/3/87

DESIGN	G.H.	SHEET No.	S8
DRAWN	D.B.		
DATE	NOV. 86.		
SCALE	1:20, 1:200		
JOB No.	M08-002	REVISION	E



PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED (Building Inspector) DATE 12-2-87
SIGNED (Plumbing & Drainage Inspector) DATE 11/3/87

REV	DATE	AMENDMENT	BY
D	26/2/87	ADDITIONAL 254×89C STRUT	CGH
C	17/2/87	NEW SECTION 10/S25, FLYBRACE DETAIL	CGH
B	3/2/87	AS SHOWN	CGH
A	12/12/86	FOR CONSTRUCTION	
0		PERMIT ISSUE	

THORBURN DAVIDSON

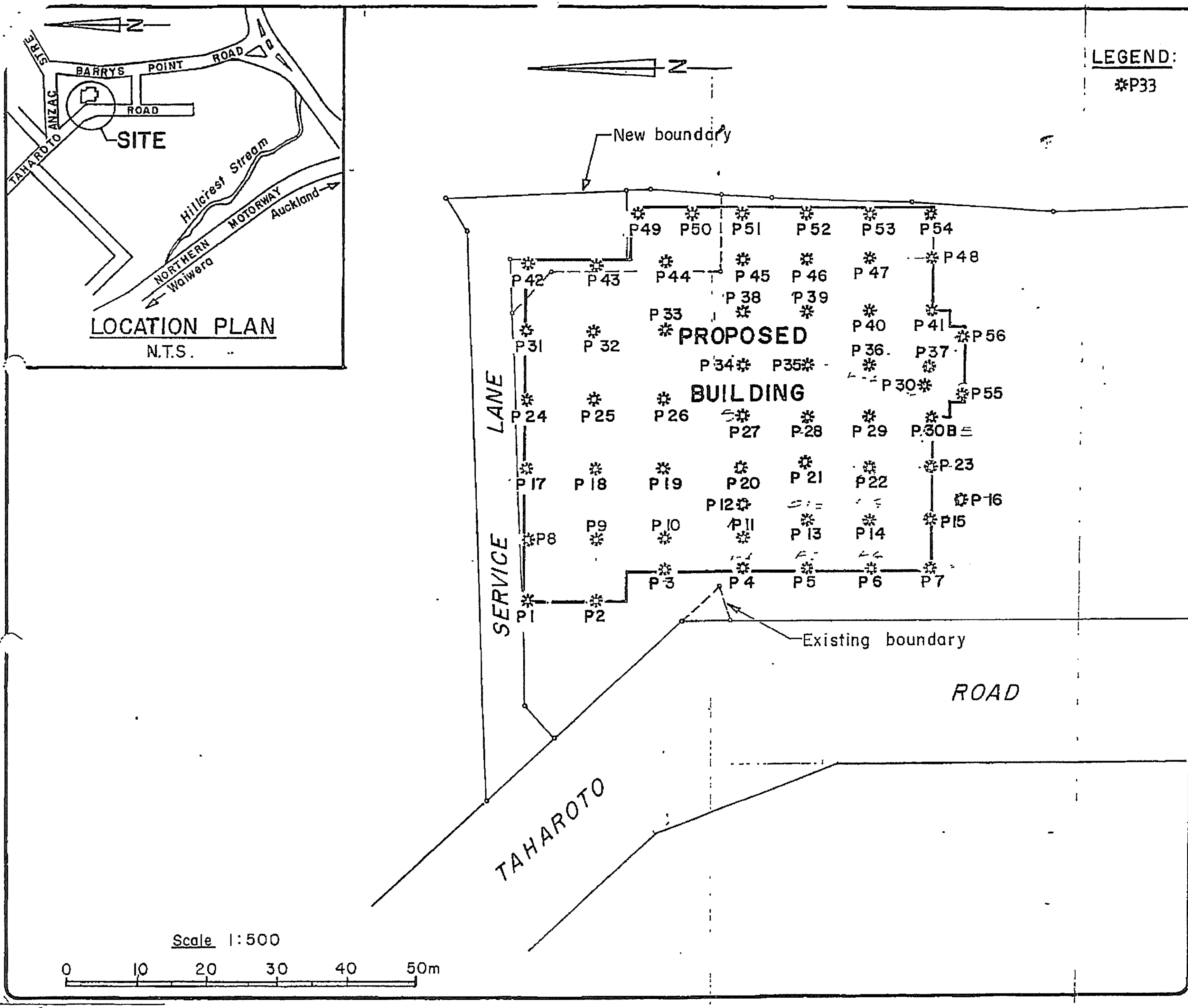
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St. Auckland 1
P.O. Box 5780 Auckland 1. Telephone 395-339

CONSULTANTS
ROBERTS MITCHELL ASSOCIATES LTD.

JOB TITLE
A.S.D.A. GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

SHEET TITLE
TRUSS ELEVATION AND DETAILS.

DESIGN CGH
DRAWN GLYN WHITING ASSOC
DATE Dec. 86
SCALE 1:10 & 1:100 & 1:20
SHEET No. S27
JOB No. M08-002
REVISION D



TONKIN & TAYLOR LTD

CONSULTING ENGINEERS
REGISTERED SURVEYORS
TOWN PLANNERS

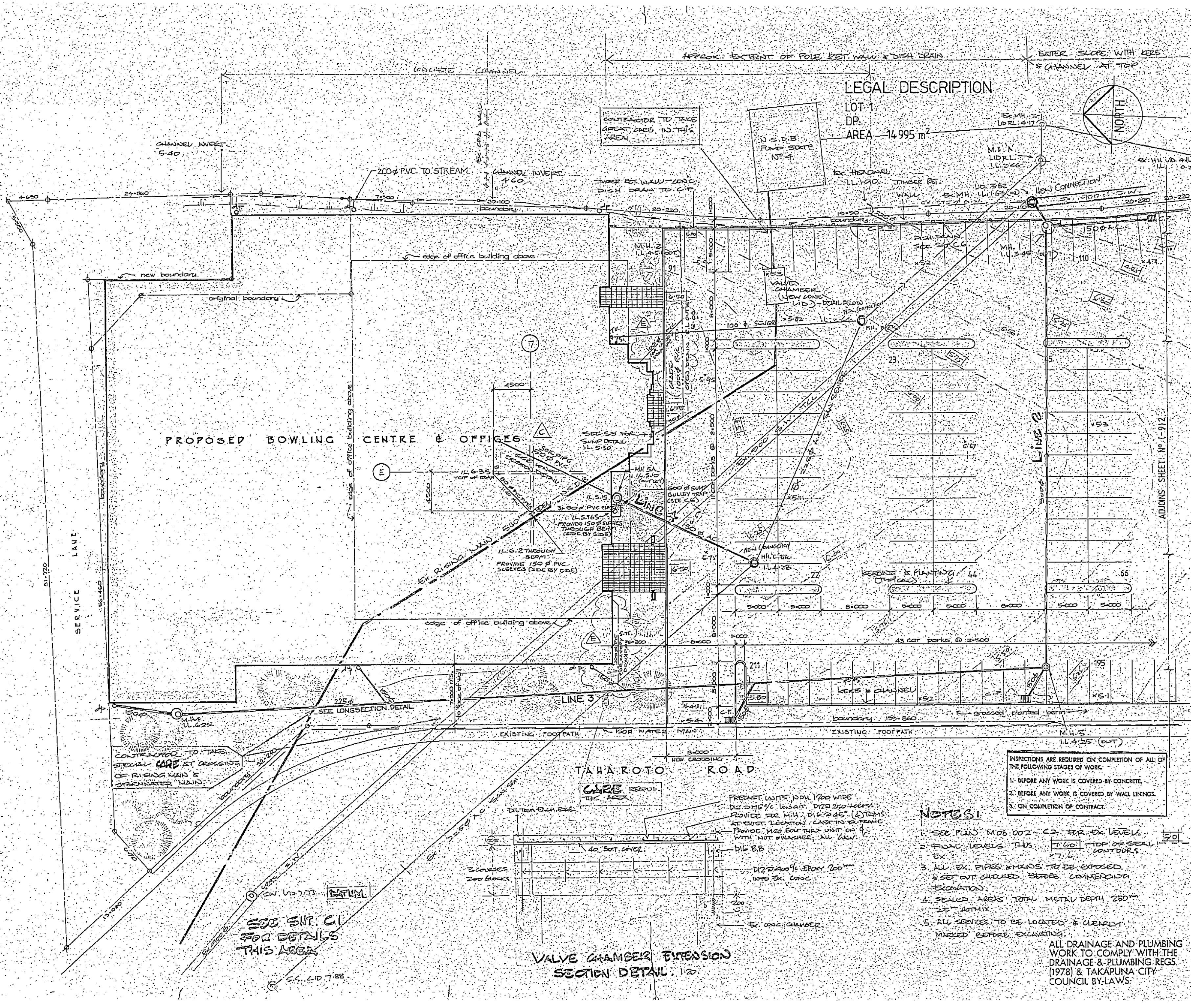
47 George St, Newmarket, Auckland.
101 Molesworth St, Wellington.
7 Hunt St, Whangarei.
111 Cameron Rd, Tauranga

ASDA GROUP LTD

TAHAROTO ROAD
TAKAPUNA

Pile Location Plan
E13911

DRAWING NO:	DATE
7582 - 3	Dec 1986
	Revision



PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED: Building Inspector
DATE: 12.3.87
SIGNED: Plumbing & Drainage Inspector
DATE: 11.3.87

issue	revision	date
E	ADDITIONAL STORMWATER	25/5/87
D	3-80 ø PIPES	29/2/87
C	AMENDED LINE 4, ADDED 80 ø DRAINPIPE & GULLEY TRAP SUMP	12/2/87
B	DRAINAGE AMENDS. LINE 1. VALVE CHAMBER DETAILS, PLANNED DETAIL	18/12/86
A	CARPARK DETAILS	3/12/86
0	NEW ISSUE	11/86

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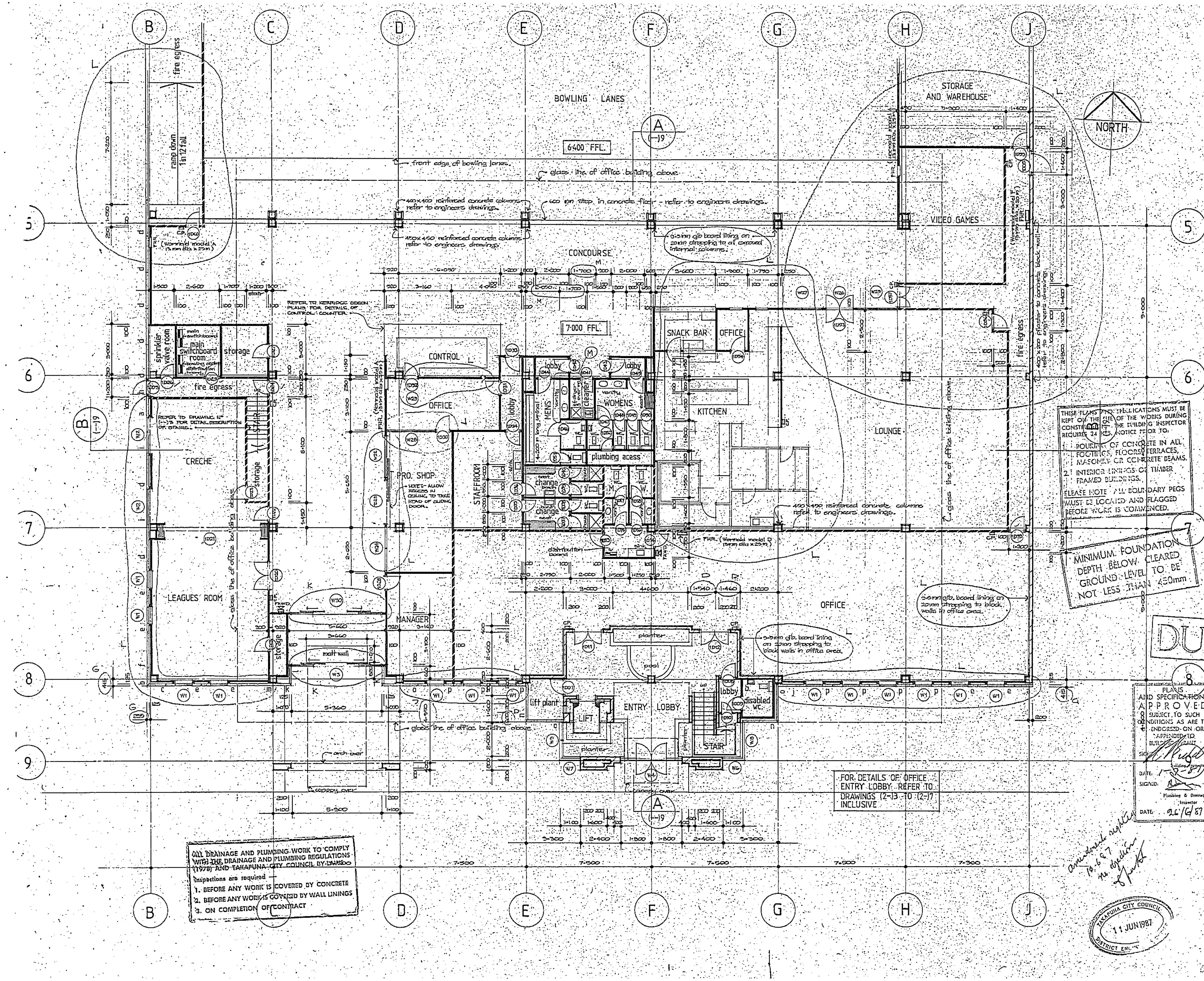
THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St, Auckland 1
PO Box 5780 Auckland 1, Telephone 395 339

drawn: C. U. GAYLOR
checked:
date: NOVEMBER '86

project title: ASDA GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

sheet title: SITE PLAN DRAINAGE AND CARPARK DETAILS

scales: 1:200
project number: M08-002
sheet number: C4
revision: E C



these drawings, and all parts thereof, are copyright

notes:

- 125mm precast concrete wall panels
- 200mm reinforced concrete block wall.
- 100x50 timber framed wall.
- 1 hr. F.R.R. 100x50 timber framed wall lined with 1-9.5mm gib bd. both sides.
- FHR. FIRE HOSE REEL AS SPECIFIED.
- CP. CALL POINT.

REFER TO ELECTRICAL ENGINEERS DRAWINGS FOR POSITIONS OF EMERGENCY LIGHTING.

- FAWD. TWO TONE HORN FIRE ALARM WARNING DEVICE

NOTE: THE FOLLOWING DOORS ON GROUND FLOOR TO BE SMOKE STOP DOORS AS SPECIFIED BY NZS 1900 CH.5 & NZSS 1188, 1D11, 1D12, 1D15, 1D23, 1D24, 1D25, 1D26, 1D56, 1D57, 1D59, 1D60.

issue	revision	date
M	CLEANERS CPD ENLARGED TO ACCOMODATE WASHING MACHINE & DRYER.	10-5-87
L	CHANGES TO FIRE EGRESS LAYOUT, FHR. POSITIONS, EGRESS DOORS, W27, W28, W26, W24, W25, W22. STRAPPING SHOWN TO COLUMNS & BLOCK WALLS & FRAMING & LINING TO INSIDE OF PRECAST.	5-5-87
K	CHANGE W3 & W30 TO AUTOMATIC SLIDING DOORS.	21-4-87
J	CHANGE POSITION OF 1D32 ADD WINDOWS W28 & W29 & W30	16-3-87
I	DIMENSION MATTWALL TO BOWLS ENTRY, ADD DIMENSIONS TO TOILETS WINDOW NUMBER ADDED.	9-3-87
H	GROUND FLOOR TOILETS CHANGED INTERNAL PARTITIONING SHOWN CHANGES AS DIRECTED BY LOCAL AUTHORITY.	12-2-87
G	DIMENSIONAL CHANGES	2-2-87
F	SWITCH BOARD ROOM LOCATION CHANGED	16-1-87
E	TENANCY DIVIDING WALL ADDED.	22-12-86
D	PRECAST PANEL REFERENCES ADDED	9-12-86
C	WINDOW & DOOR N°S ADDED	4-12-86
B	REPOSITION MANHOLE	1-12-86
A	PERMIT ISSUE	24-11-86

ROBERTS MITCHELL ASSOCIATIES LTD

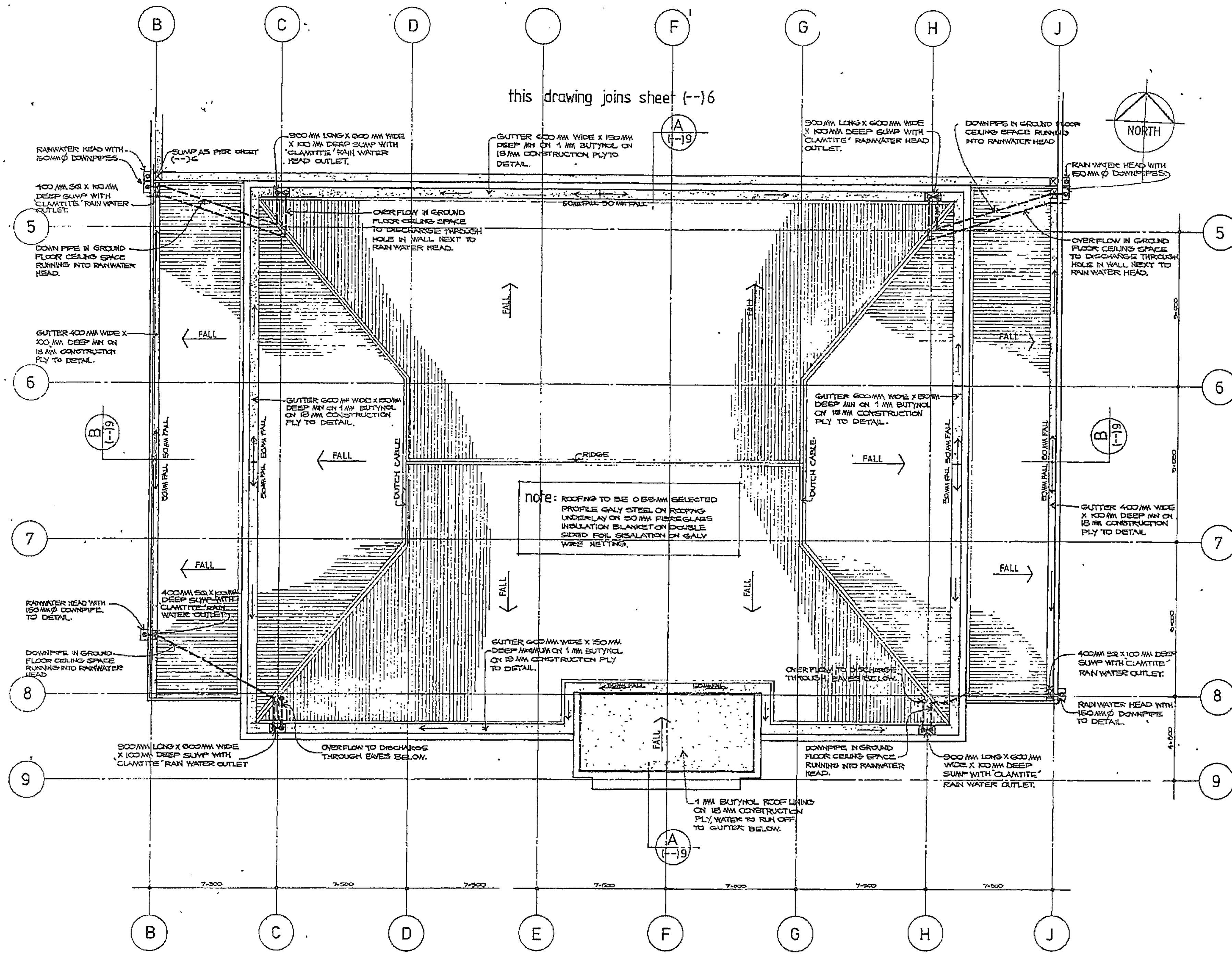
drawn C.J. CAYLOR
checked
date NOVEMBER '86

project title
ASDA GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

sheet title
GROUND FLOOR PLAN

ENDORSEMENTS IN RED INK ON PLANS TO BE STRICTLY ADHERED TO

scales 1:100
project number 8625
sheet number (--)1
revision M



notes.

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED
DATE 12-3-87
SIGNED
DATE

issue	revision	date
A.	PERMIT ISSUE.	24-11-86

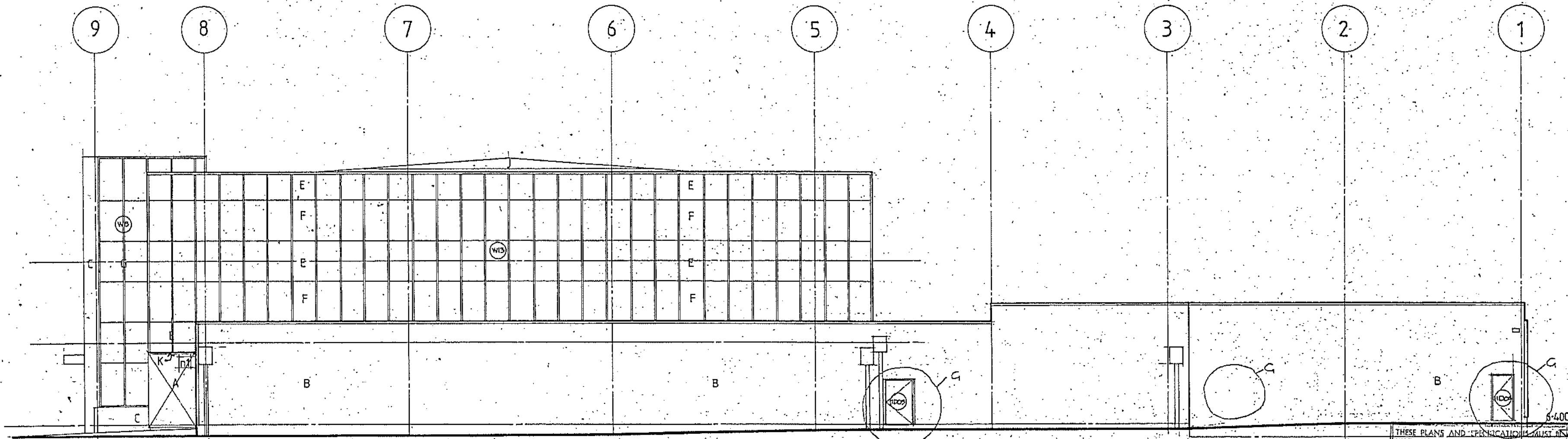
ROBERTS MITCHELL ASSOCIATES LTD

drawn : C.W. CAYLOR, SIMON.
checked :
date : NOVEMBER '86

project title
ASDA GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

sheet title
ROOF PLAN

scales	1:100
project number	8625
sheet number (--) 5	revision A

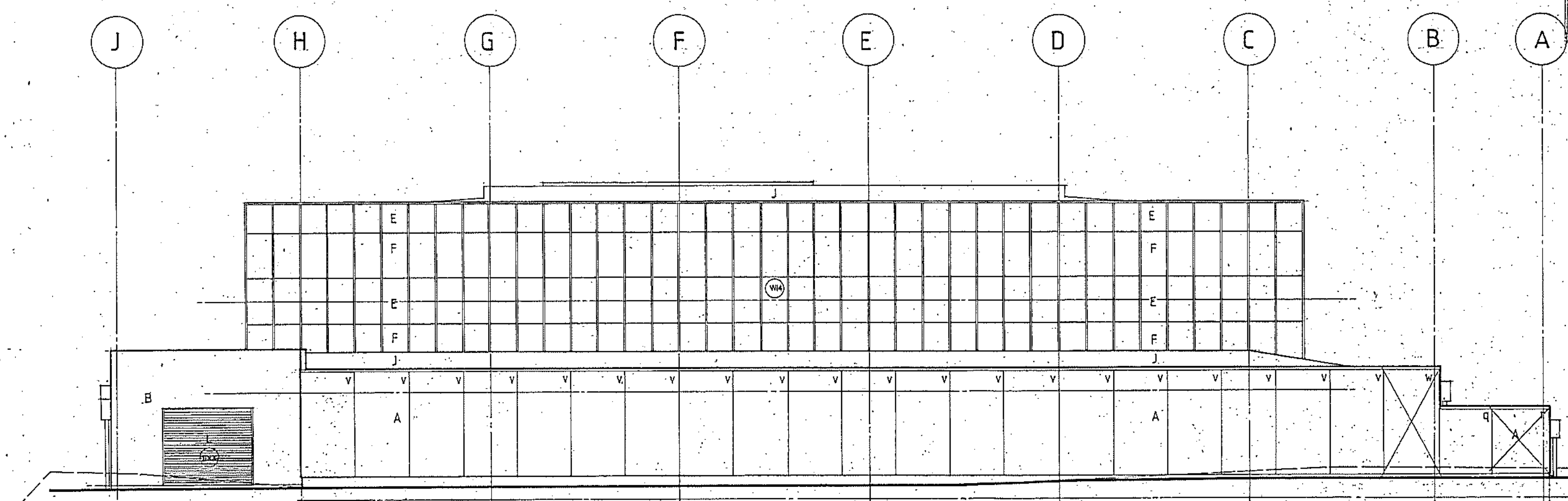


EAST ELEVATION

THESE PLANS AND SPECIFICATIONS MUST BE KEPT ON THE SITE OF THE WORKS DURING CONSTRUCTION. THE BUILDING INSPECTOR REQUIRES 24 HRS. NOTICE PRIOR TO:

1. POURING OF CONCRETE IN ALL FOOTINGS, FLOORS, TERRACES, MASONRY C.P. CONCRETE BEAMS.
2. INTERIOR LININGS OF TIMBER FRAMED BUILDINGS.

PLEASE NOTE: ALL BOUNDARY PEGS MUST BE LOCATED AND FLAGGED BEFORE WORK IS COMMENCED.



NORTH ELEVATION

MINIMUM FOUNDATION DEPTH BELOW CLEARED GROUND LEVEL TO BE NOT LESS THAN 450mm

notes:

A precast concrete wall panels with exposed aggregate ribbed face – refer to structural details.

B 200 mm reinforced concrete blockwork, paint finish refer to specification.

C 25 mm selected marple facing to 200mm reinforced concrete block wall.

D 25 mm selected marple facing free standing arch.

E selected 'armour clad' spandrel glass in curtain wall glazing system.

F selected tinted glass in curtain wall glazing system

G selected mirror glass in aluminium curtain wall glazing system.

H 'clear vue' toughened framed main entry doors.

J 0.4mm galvanised steel roofing in prefinished selected colour.

K 6mm 'hardiflex' soffit lining screw fixed.

L roller shutter door, paint finish, refer to specification.

issue	revision	date
G	DOOR 1004 RELOCATED DOOR 1005 ENLARGED	6-5-87
F	PRECAST PANELS AMENDED	17-3-87
E	DOOR ADDED	22-12-86
D	PRECAST PANEL REFERENCES ADDED	5-12-86
C	WINDOW & DOOR NO'S ADDED	4-12-86
B	FLOOR LEVELS REVISED	1-12-86
A	PERMIT ISSUE	24-11-86

ROBERTS MITCHELL ASSOCIATES LTD
architects & designers box 34123 auckland
90 mokoia road birkenhead ph 419 0254

DUPLICATE

drawn : G.M.CAYLOR
checked :
date : NOVEMBER '86

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED: Building Inspector
DATE: 1-7-87
SIGNED: Inspector
DATE: 26/6/87

TAKAPUNA CITY COUNCIL 11 JUN 1987 DISTRICT ENGINEER'S OFFICE

project title
ASDA GROUP DEVELOPMENT AT TAKAPUNA STAGE ONE

sheet title
ELEVATIONS

scales	1:100
project number	8625
sheet number (--) 8	revision G

Appendix C

Site Photos

Figure 1: Southern Elevation

Figure 2: Northern Elevation

Figure 3: Eastern Elevation

Figure 4: Western Elevation

STEPHEN MITCHELL
ENGINEERS LIMITED
CONSULTING STRUCTURAL ENGINEERS

STRUCTURAL REPORT

Seismic Structural Assessment by IEP

Job Title:	4 Fred Thomas Drive
Building Type:	Existing Building
Client:	Smales Farm Management Ltd
Location:	4 Fred Thomas Drive, Takapuna Auckland
Job No.:	12/1651
Date:	June 2012
Rev:	1

61b Barrys Point Road, Takapuna, North Shore City 0622
P.O. Box 32312, Devonport, North Shore City 0744
Tel: +64 9 914 5502, Fax: +64 9 914 5504
Email : general@srmitchell.co.nz

CONTENTS:

INTRODUCTION

This report represents a seismic assessment of the existing building at 4 Fred Thomas Drive, Takapuna, Auckland based on the Initial Evaluation Procedure (IEP) detailed in the New Zealand Society for Earthquake Engineering technical publication ‘Assessment and Improvement of the Structural Performance of Buildings in Earthquakes’

The IEP method was developed to provide an initial coarse screening tool for the assessment of the potential seismic performance of a building structure bench marked against the New Building Standard (NBS). The grading system is expressed as the percentage of the New Building Standard lateral load capacity that the building is likely to achieve. The assessment is derived from both quantative parameters and the qualitative review of specific features of the buildings form, design, construction and location.

BUILDING DESCRIPTION:

The building was designed in 1987/1988 by Roberts Mitchell & Associates Ltd Architects with the structural engineering design undertaken by Thorburn Davidson Ltd, a reputable structural engineering firm that we understand is still practicing as structural engineers. We have reviewed the Council Building Consent records and have located a selection of Structural and Architectural drawings which are appended to this report (Appendix B). A full set of the Structural and Architectural drawings was not available but the drawings obtained provide sufficient information supplemented by our site inspections to undertake an IEP assessment of the building.

The existing building consists of three levels with the upper two tower levels designed as offices and the ground floor level originally designed as offices, gymnasium and warehousing. The building has been designed as two independent blocks with a rectangular block (Block 1) which forms the bulk of the building and an annex (Block 2) to the eastern side of the structure which forms the double height warehouse area. The two blocks have been detailed with a 100mm seismic gap to allow for the independent seismic behaviour of each structure and avoid pounding effects.

The structure of Block 1 consists of pre-stressed Dycore flooring units with an insitu concrete topping supported onto reinforced concrete moment resisting frames at Level 1 and Level 2. The ground floor slab is a suspended Dycore flooring system similar to the upper levels but this floor is supported onto ground beams. The entire ground floor level is suspended due to the site being located over a historic rubbish dump and has been founded onto steel driven UC piles embedded into the Waitemata series rock. The concrete floor at level 1 does not cover the full footprint of the building and was designed for a double height Warehouse and gymnasium at the northern end of the building. This was infilled at the time of construction with some areas of timber flooring to form mezzanine office areas and a viewing gallery for the squash courts. Subsequently in 1998 the remaining areas of floor were infilled with additional timber framing over the gymnasium area but the warehouse remains as a double height space. In addition one bay of the existing moment resisting frame along grid G between grids 6-7 has been removed at L1. The flexural reinforcement has been anchored on the column face by weldplates so we assume that this modification has been considered and certified by a Chartered Professional Engineer.

The roof structure for Block 1 consists of a metal cladding system supported on steel purlins and rafters. The rafters span between the concrete columns which have all been taken up to the roof level to provide the lateral restraint for the roof under wind and seismic loadings. A precast spandrel forms the parapet around the perimeter of the building and this is supported by the perimeter concrete columns.

The lateral seismic loading is resolved into reinforced concrete moment resisting frames. The ground beams at the ground level provide resolution of the column moments at the base of the structure in both directions. Based on the limited structural drawings that we have reviewed the detailing and design is typical of a reinforced concrete structure of this era and would have been designed for a reasonable level of ductility as required by the codes of the day.

The structure of Block 2 consists of pre-stressed Dycore flooring units with an insitu concrete topping supported onto reinforced concrete gravity frames at Level 2 only. The perimeter of the building on three sides consists of reinforced masonry shear walls. The ground floor slab is a suspended Dycore flooring system similar to the upper levels but this floor is supported onto ground beams. The entire ground floor level is suspended due to the site being located over a historic rubbish dump and has been founded onto steel driven UC piles embedded into the Waitemata series rock.

The roof structure for Block 2 is of similar construction to Block 1 with a metal cladding system supported on steel purlins and rafters. The rafters span between the concrete columns which have all been taken up to the roof level to provide the lateral restraint for the roof under wind and seismic loadings.

The lateral seismic loading is resolved into the perimeter masonry shear walls with a substantial wall along the eastern boundary and smaller shear walls at each end of the building running in the north/south direction. The walls in the north/south direction are heavily reinforced for shear and would have been designed for a reasonable level of ductility as required by the codes of the day.

BUILDING CONDITION:

The visual survey of the building demonstrated that it is in sound condition and excellent repair. As far as we could tell, the physical constructions observed closely matched the original documentation and therefore we have confidence that the building was built in general accordance with the design detail. The building appears to remain straight, true and level giving no indication of settlement or dilapidation due to deformation.
Settlement of the surrounding car park areas was observed and is not un-expected due to the historic rubbish dump under the site. This has no effect on the structural integrity of the building.

SEISMIC ASSESSMENT BY THE INITIAL EVALUATION PROCEDURE:

The evaluation was carried out for both the longitudinal and transverse directions of both blocks utilizing the standard IEP spread sheets, (Appendix A), The baseline %NBS from this assessment for Block 1 is 102% which qualifies the building a Grade A+. The baseline %NBS from this assessment for Block 2 is also 102% which qualifies the building a Grade A+. With a rating of A+ and a %NBS > 67% the existing structure is considered a low risk building and is well above the legal threshold of 33%NBS which requires seismic improvement works to be undertaken.

CONCLUSIONS:

- The existing reinforced concrete structure has been assessed to have 102% NBS capacity and is therefore a building grade of A+. No seismic strengthening of the structure is required

DISCLAIMERS:

This report presents the conclusions reached from the application of the Initial Evaluation Procedure as required by the brief from Smales Farm Management Ltd. The report is based only on the information contained within the Auckland Council property file and the observations during a walk around visual inspection of the exterior of the building. No measurements, samples or testing of any structural or architectural materials including geotechnical soils, were undertaken during this investigation. No numerical analysis, design or investigative calculations were carried out other than as required during the IEP process. The examination and investigation of architectural and services elements is outside the scope of this brief.

Yours faithfully

Mathew Erskine-Shaw
(Partner)

Appendix A

Initial Evaluation Procedure (IEP)

Table IEP-1: Initial Evaluation Procedure – Step 1

Table IEP-1 Initial Evaluation Procedure Step 1 → BLOCK 1 Page 1....

(Refer Table IEP - 2 for Step 2; Table IEP - 3 for Step 3, Table IEP - 4 for Steps 4, 5 and 6)

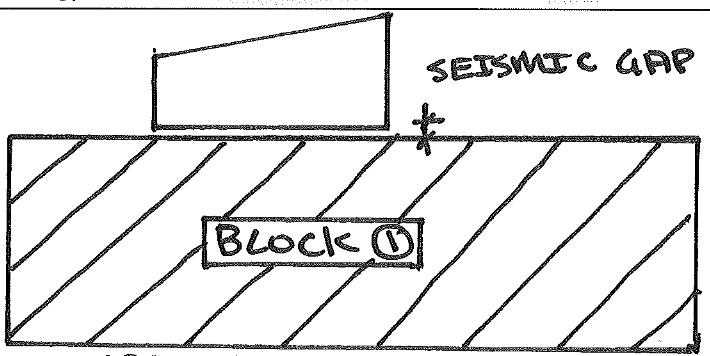
Building Name 4 FRED THOMAS DRIVE	Ref. 12/1651
Location 4 FRED THOMAS DRIVE TAKAPUNA, AUCKLAND	By M. E-S
	Date MAY 2012

Step 1 - General Information

1.1 Photos (attach sufficient to describe building)

REFER APPENDIX C OF STRUCTURAL REPORT

1.2 Sketch of building plan



REFER APPENDIX B OF STRUCTURAL REPORT

1.3 List relevant features

TWO WAY MOMENT RESISTING CONCRETE FRAME DESIGNED IN 1987/88. REFER TO STRUCTURAL REPORT FOR ADDITIONAL INFORMATION.

1.4 Note information sources

	tick as appropriate
Visual Inspection of Exterior	✓
Visual Inspection of Interior	✓
Drawings (note type)	✓ ← SELECTION OF STRUCTURAL & ARCHITECTURAL DRAWINGS
Specifications	
Geotechical Reports	
Other (list)	

Table IEP-2: Initial Evaluation Procedure – Step 2

Table IEP-2 Initial Evaluation Procedure Step 2 - BLOCK (1) **Page 2....**

(Refer Table IEP - 1 for Step 1; Table IEP - 3 for Step 3; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 4 - FRED THOMAS DRIVE	Ref. 12/1651
Location	By M.E-S
Direction Considered: a) Longitudinal ✓ b) Transverse ✓	
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)	Date MAY 2012

Step 2 - Determination of $(\%NBS)_b$

2.1 Determine nominal (%NBS) = $(\%NBS)_{nom}$

a) Date of Design and Seismic Zone — tick as appropriate

Pre 1935		☐	See also notes 1, 3
1935-1965		☐	
1965-1976	Seismic Zone; A	☐	
	B	☐	
	C	☐	
1976-1992	Seismic Zone; A	☐	See also note 2
	B	☐	
	C	✓	- 1988
1992-2004		☐	

b) Soil Type

From NZS1170.5:2004, Cl 3.1.3	A or B Rock	☐
	C Shallow Soil	☐
	D Soft Soil	✓
	E Very Soft Soil	☐
From NZS4203:1992, Cl 4.6.2.2 (for 1992 to 2004 only and only if known)	a) Rigid	☐
	b) Intermediate	☐

c) Estimate Period, T — 0.40S Seconds

Can use following:

$T = 0.09h_n^{0.75}$ for moment-resisting concrete frames ✱
$T = 0.14h_n^{0.75}$ for moment-resisting steel frames
$T = 0.08h_n^{0.75}$ for eccentrically braced steel frames
$T = 0.06h_n^{0.75}$ for all other frame structures
$T = 0.09h_n^{0.75}/A_c^{0.5}$ for concrete shear walls
$T \leq 0.4\text{sec}$ for masonry shear walls

Where h_n = height in m from the base of the structure to the uppermost seismic weight or mass.
$A_c = \Sigma A_i(0.2 + L_{wi}/h_n)^2$
A_i = cross-sectional shear area of shear wall i in the first storey of the building, in m^2
l_{wi} = length of shear wall i in the first storey in the direction parallel to the applied forces, in m
with the restriction that l_{wi}/h_n shall not exceed 0.9

d) $(\%NBS)_{nom}$ determined from Figure 3.3 — 13.3 $(\%NBS)_{nom}$

Note 1: For buildings designed prior to 1965 and known to be designed as public buildings in accordance with the code of the time, multipy $(\%NBS)_{nom}$ by 1.25.
For buildings designed 1965 - 1976 and known to be designed as public buildings in accordance with the code of the time, multiply $(\%NBS)_{nom}$ by 1.33 - Zone A
1.2 - Zone B — 1.0

1

Note 2: For reinforced concrete buildings designed between 1976-84 multiply $(\%NBS)_{nom}$ by 1.2 — 1.0

Note 3: For buildings designed prior to 1935 multiply $(\%NBS)_{nom}$ by 0.8 except for Wellington where the factor may be taken as 1. — 1.0 — 13.3 $(\%NBS)_{nom}$

Continued over page

$h_n = 7.2m \quad T = 0.09 \times 7.2^{0.75}$
$= 0.40S$

Table IEP-2: Initial Evaluation Procedure – Step 2 continued

Table IEP-2 Initial Evaluation Procedure Step 2 continued **Page 3....**

2.2 Near Fault Scaling Factor, Factor A
If $T \leq 1.5$sec, Factor A = 1

a) **Near Fault Factor, *N(T,D)*** 1.0
(from NZS1170.5:2004, Cl 3.1.6)

b) **Near Fault Scaling Factor** = 1/N(T,D) **Factor A** 1.0

2.3 Hazard Scaling Factor, Factor B

a) **Hazard Factor, *Z, for site*** 0.13
(from NZS1170.5:2004, Table 3.3)

b) **Hazard Scaling Factor**
For pre 1992 = 1/Z
For 1992 onwards = Z_{1992}/Z

(Where Z_{1992} is the NZS4203:1992 Zone Factor from accompanying Figure 3.5(b)) **Factor B** 7.69

2.4 Return Period Scaling Factor, Factor C

a) **Building Importance Level** 2
(from NZS1170.0:2004, Table 3.1 and 3.2)

b) **Return Period Scaling Factor from accompanying Table 3.1** **Factor C** 1.0

2.5 Ductility Scaling Factor, D

a) **Assessed Ductility of Existing Structure, μ** 2
(shall be less than maximum given in accompanying Table 3.2)

b) **Ductility Scaling Factor**
For pre 1976 = k_μ
1988 → For 1976 onwards = 1

(where k_μ is NZS1170.5:2004 Ductility Factor, from accompanying Table 3.3) **Factor D** 1.0

2.6 Structural Performance Scaling Factor, Factor E

a) **Structural Performance Factor, S_p** 0.7
from accompanying Figure 3.4

b) **Structural Performance Scaling Factor** = $1/S_p$ **Factor E** 1.43

2.7 Baseline %NBS for Building, $(\%NBS)_b$
(equals $(\%NSB)_{nom}$ x A x B x C x D x E) 146

4-FRED THOMAS – BLOCK (1)

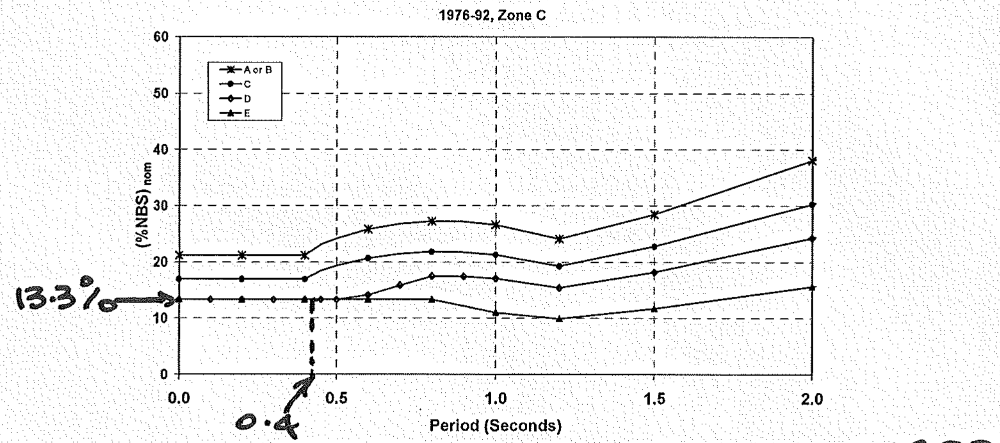


Figure 3.3(g): $(\%NBS)_{nom}$ 1976-92, Zone C ⇐ 1988

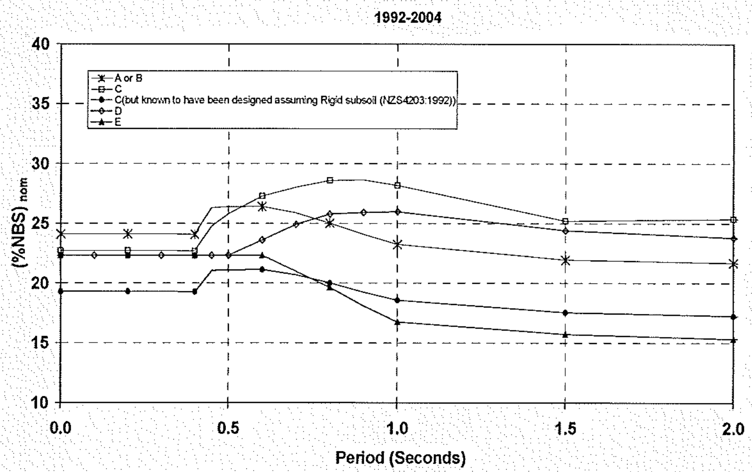


Figure 3.3(h): $(\%NBS)_{nom}$ 1992-2004

Figure 3.3: $(\%NBS)_{nom}$ for Different Building Design Vintages

4-FRED THOMAS – BLOCK 1

Table 3.1: Return period scaling factor

NZS1170.5:2004 Return Period Factor, *R*				Return Period Scaling Factor, *C*			
Importance level	Comment	Annual Probability of Exceedance	Return Period Factor, *R*	Pre 1965	1965-76	1976-92	1992-04
1	Minor structures (failure not likely to endanger human life)	1/100	0.5	2	2	2	1.2
2	Normal structures and structures not falling into other levels	1/500	1	1	1	1	1
3	Major structures (affecting crowds)	1/1000	1.3	0.8	0.8	1.1	0.9
4	Post-disaster structures (post-disaster functions or dangerous activities)	1/2500	1.8	0.6	0.6	1	0.7
5	Exceptional structures are outside the scope of the IEP, special study required.						

* 1988

Where R is the return period factor appropriate to the current use of the building, as shown in Table 3.5 of NZS 1170.0:2002

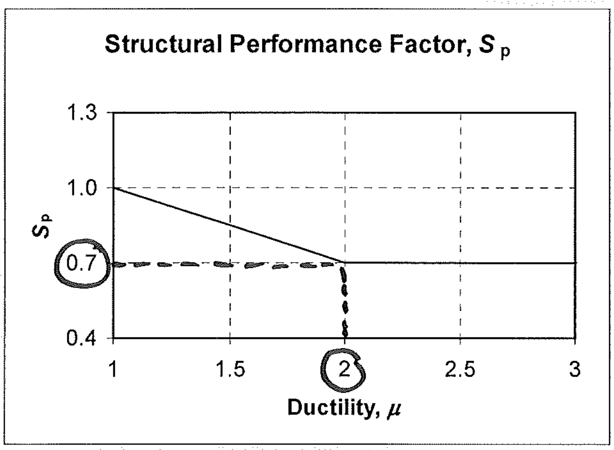
Table 3.2: Ductility factors to be used for existing buildings

Structure Type	Maximum allowable ductility factor for IEP			
	Pre-1935	1935-65	1965-76	1976-2004
All buildings	2	2	2	6

MINIMUM μ = 2.0

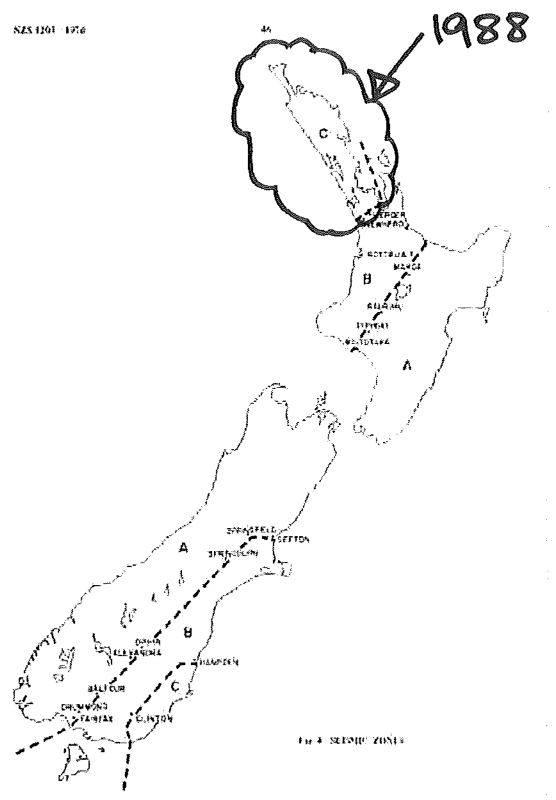
Table 3.3: Ductility scaling factor

	Structural Ductility Scaling Factor, k_μ							
	1.0 or less		1.25		1.50		2	
Soil Type	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E
Period, *T*								
≤ 0.40s	1	1	1.14	1.25	1.29	1.50	1.57	1.70
0.50s	1	1	1.18	1.25	1.36	1.50	1.71	1.75
0.60s	1	1	1.21	1.25	1.43	1.50	1.86	1.80
0.70s	1	1	1.25	1.25	1.50	1.50	2.00	1.85
0.80s	1	1	1.25	1.25	1.50	1.50	2.00	1.90
≥1.00s	1	1	1.25	1.25	1.50	1.50	2.00	2.00



Where S_p is the Structural Performance Factor from NZS1170.5:2004, Cl 4.4.2.

Figure 3.4: Structural performance factor, S_p



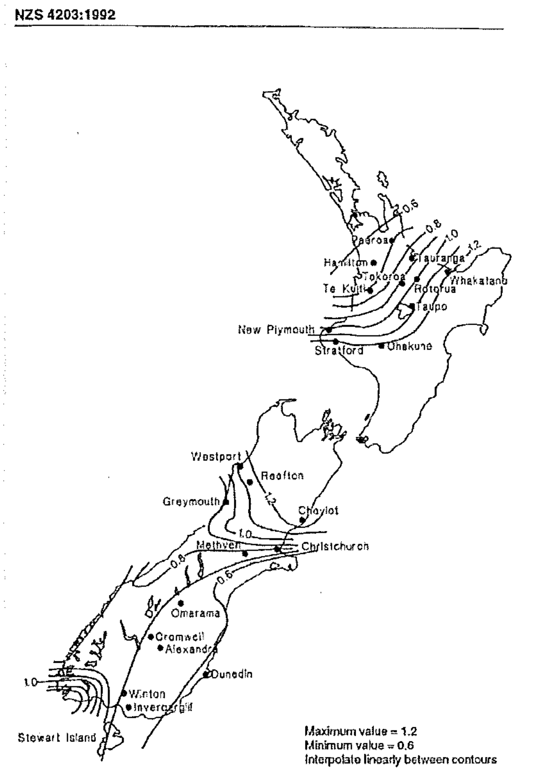


Figure 4.6.2 – Zone factor, Z

Figure 3.5(a) **NZS 4203:1984, NZS 4203: 1976 and NZS 1900:Chapter 8 sim.**

Figure 3.5(b) **NZS 4203:1992**

Figure 3.5: Extracts from previous Standards showing seismic zoning schemes

Table IEP-3: Initial evaluation procedure – Step 3

Table IEP-3 Initial Evaluation Procedure Step 3 – BLOCK 1 **Page ......**

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 4 - FRED THOMAS -
Location
Direction Considered: a) Longitudinal ✓ b) Transverse ✓
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)

Ref. 12/1651
By M.E-S
Date MAY 2012

Step 3 - Assessment of Performance Achievement Ratio (PAR)
(Refer Appendix B - Section B3.2)

Critical Structural Weakness | **Building Score** | **Effect on Structural Performance** *(Choose a value - Do not interpolate)*

3.1 Plan Irregularity
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor A	1.0	0.4 max	0.7	1

Comment

3.2 Vertical Irregularity
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor B	0.70	0.4 max	0.7	1

DIAPHRAGM SIZE SMALLER @ L1 + NEW FLOORS ADDED IN TIMBER FRAMING

Comment

3.3 Short Columns
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor C	1.0	0.4 max	0.7	1

Comment

3.4 Pounding Potential
(Estimate D1 and D2 and set D = the lower of the two, or =1.0 if no potential for pounding)

a) Factor D1: - Pounding Effect
Select appropriate value from Table

Note:
Values given assume the building has a frame structure. For stiff buildings (eg with shear walls), the effect of pounding may be reduced by taking the co-efficient to the right of the value applicable to frame buildings.

Factor D1 1.0

Table for Selection of Factor D1

	Severe	Significant	Insignificant
Separation	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Alignment of Floors within 20% of Storey Height	0.7	0.8	1
Alignment of Floors not within 20% of Storey Height	0.4	0.7	0.8

SEISMIC GAP 100mm > 0.01H

b) Factor D2: - Height Difference Effect
Select appropriate value from Table

Factor D2 1.0 ← N/A FLOORS ALIGNED

Table for Selection of Factor D2

	Severe	Significant	Insignificant
	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Height Difference > 4 Storeys	0.4	0.7	1
Height Difference 2 to 4 Storeys	0.7	0.9	1
Height Difference < 2 Storeys	1	1	1

Factor D 1.0 ***(Set D = lesser of D1 and D2 or.. set D = 1.0 if no prospect of pounding)***

3.5 Site Characteristics - *(Stability, landslide threat, liquefaction etc)*
Effect on Structural Performance

	Building Score	Severe	Significant	Insignificant
Factor E	1.0	0.5 max	0.7	1

3.6 Other Factors

Factor F 1.0 **For ≤ 3 storeys - Maximum value 2.5, otherwise - Maximum value 1.5. No minimum.**

Record rationale for choice of Factor F:
CONSERVATIVELY TAKE AS 1.0 - REGULAR STRUCTURE - GOOD DETAILING FOR DUCTILITY

3.7 Performance Achievement Ratio (PAR)
(equals A x B x C x D x E x F) 0.7

Table IEP-4: Initial evaluation procedure – Steps 4, 5 and 6

Table IEP- 4 Initial Evaluation Procedure Steps 4, 5 and 6 – BLOCK 1 **Page ...**

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 3 for Step 3)

Building Name 4 FRED THOMAS
Location

Ref. 12/1651
By M. E-S
Date MAY 2012

Step 4 - Percentage of New Building Standard (*%NBS*)

	Longitudinal	Transverse
4.1 Assessed Baseline (*%NBS*)$_b$ (from Table IEP - 1)	146	146
4.2 Performance Achievement Ratio (PAR) (from Table IEP - 2)	0.7	0.7
4.3 PAR x Baseline (*%NBS*)b	102%	102%
4.4 Percentage New Building Standard (*%NBS*) (Use lower of two values from Step 3.3)		102%

Step 5 - Potentially Earthquake Prone? (Mark as appropriate)

%NBS > 33	NO
%NBS ≤ 33	YES

Step 6 - Potentially Earthquake Risk? (Mark as appropriate)

%NBS ≥ 67	NO
%NBS < 67	YES

Step 7 - Provisional Grading for Seismic Risk based on IEP

Seismic Grade A+

Evaluation Confirmed by... [signature] **Signature**

M. ERSKINE-SHAW **Name**

217561 **CPEng. No**

Relationship between Seismic Grade and *%NBS*:

Grade:	A+	A	B	C	D	E
%NBS:	> 100	100 to 80	80 to 67	67 to 33	33 to 20	< 20

Table IEP-1: Initial Evaluation Procedure – Step 1

Table IEP-1 **Initial Evaluation Procedure Step 1** – BLOCK 2 **Page 1....**

(Refer Table IEP - 2 for Step 2; Table IEP - 3 for Step 3, Table IEP - 4 for Steps 4, 5 and 6)

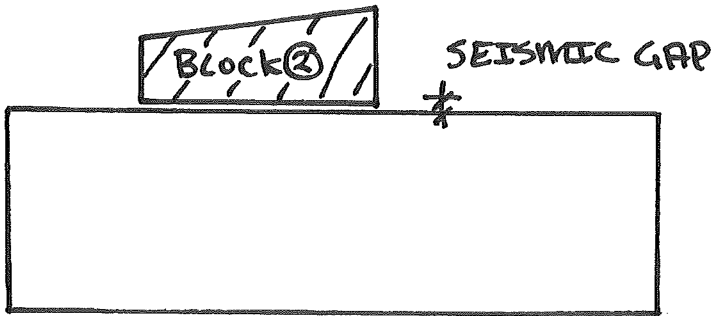
Building Name 4 FRED THOMAS DRIVE **Location** 4 - FRED THOMAS DRIVE TAKAPUNA, AUCKLAND	**Ref.** 12/1651 **By** M. E-S **Date** MAY 2012

Step 1 - General Information

1.1 Photos (attach sufficient to describe building)

REFER TO APPENDIX C OF STRUCTURAL REPORT.

1.2 Sketch of building plan



REFER APPENDIX B OF STRUCTURAL REPORT

1.3 List relevant features

BLOCKWORK SHEAR WALLS IN BOTH DIRECTIONS. DESIGNED IN 1987/88. REFER TO STRUCTURAL REPORT FOR ADDITIONAL INFORMATION

1.4 Note information sources

	tick as appropriate
Visual Inspection of Exterior	✓
Visual Inspection of Interior	✓
Drawings (note type)	✓ ← SELECTION OF STRUCTURAL & ARCHITECTURAL DRAWINGS
Specifications	
Geotechical Reports	
Other (list)	

Table IEP-2: Initial Evaluation Procedure – Step 2

Table IEP-2 Initial Evaluation Procedure Step 2 – BLOCK (2) **Page 2....**

(Refer Table IEP - 1 for Step 1; Table IEP - 3 for Step 3; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 4 FRED THOMAS DRIVE **Ref.** 12/1651
Location **By** M.E-S
Direction Considered: a) Longitudinal ✓ **b) Transverse** ✓
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt) **Date** MAY 2012

Step 2 - Determination of $(\%NBS)_b$

2.1 Determine nominal (%NBS) = $(\%NBS)_{nom}$

a) Date of Design and Seismic Zone

		tick as appropriate	
Pre 1935		☐	See also notes 1, 3
1935-1965		☐	
1965-1976	Seismic Zone; A	☐	
	B	☐	
	C	☐	
1976-1992	Seismic Zone; A	☐	See also note 2
	B	☐	
	C	✓	1988
1992-2004		☐	

b) Soil Type

From NZS1170.5:2004, Cl 3.1.3	A or B Rock	☐
	C Shallow Soil	☐
	D Soft Soil	✓
	E Very Soft Soil	☐
From NZS4203:1992, Cl 4.6.2.2 (for 1992 to 2004 only and only if known)	a) Rigid	☐
	b) Intermediate	☐

c) Estimate Period, *T* 0.45 Seconds

MASONRY SHEAR WALLS

Can use following:

$T = 0.09h_n^{0.75}$	for moment-resisting concrete frames
$T = 0.14h_n^{0.75}$	for moment-resisting steel frames
$T = 0.08h_n^{0.75}$	for eccentrically braced steel frames
$T = 0.06h_n^{0.75}$	for all other frame structures
$T = 0.09h_n^{0.75}/A_c^{0.5}$	for concrete shear walls
$T \leq 0.4$sec	for masonry shear walls

Where h_n = height in m from the base of the structure to the uppermost seismic weight or mass.
$A_c = \Sigma A_i(0.2 + L_{wi}/h_n)^2$
A_i = cross-sectional shear area of shear wall i in the first storey of the building, in m^2
l_{wi} = length of shear wall i in the first storey in the direction parallel to the applied forces, in m
with the restriction that l_{wi}/h_n shall not exceed 0.9

d) $(\%NBS)_{nom}$ determined from Figure 3.3 13.3 $(\%NBS)_{nom}$

Note 1: For buildings designed prior to 1965 and known to be designed as public buildings in accordance with the code of the time, multipy $(\%NBS)_{nom}$ by 1.25.
For buildings designed 1965 - 1976 and known to be designed as public buildings in accordance with the code of the time, multipy $(\%NBS)_{nom}$ by 1.33 - Zone A
1.2 - Zone B
1.0

1

Note 2: For reinforced concrete buildings designed between 1976-84 multiply $(\%NBS)_{nom}$ by 1.2 1.0

Note 3: For buildings designed prior to 1935 multiply $(\%NBS)_{nom}$ by 0.8 except for Wellington where the factor may be taken as 1. 1.0 13.3 $(\%NBS)_{nom}$

Continued over page

Table IEP-2: Initial Evaluation Procedure – Step 2 continued

Table IEP-2 Initial Evaluation Procedure Step 2 continued **Page 3....**

2.2 Near Fault Scaling Factor, Factor A
If $T \leq 1.5$sec, Factor A = 1

a) **Near Fault Factor, *N(T,D)*** 1.0
(from NZS1170.5:2004, Cl 3.1.6)

b) **Near Fault Scaling Factor** = 1/N(T,D) **Factor A** 1.0

2.3 Hazard Scaling Factor, Factor B

a) **Hazard Factor, *Z, for site*** 0.13
(from NZS1170.5:2004, Table 3.3)

b) **Hazard Scaling Factor**
For pre 1992 = $1/Z$
For 1992 onwards = Z_{1992}/Z

(Where Z_{1992} is the NZS4203:1992 Zone Factor from accompanying Figure 3.5(b)) **Factor B** 7.69

2.4 Return Period Scaling Factor, Factor C

a) **Building Importance Level** 2
(from NZS1170.0:2004, Table 3.1 and 3.2)

b) **Return Period Scaling Factor from accompanying Table 3.1** **Factor C** 1.0

2.5 Ductility Scaling Factor, D

a) **Assessed Ductility of Existing Structure, μ** 2.0
(shall be less than maximum given in accompanying Table 3.2)

b) **Ductility Scaling Factor**
For pre 1976 = k_μ
1988 → For 1976 onwards = 1

(where k_μ is NZS1170.5:2004 Ductility Factor, from accompanying Table 3.3) **Factor D** 1.0

2.6 Structural Performance Scaling Factor, Factor E

a) **Structural Performance Factor, S_p** 0.7
from accompanying Figure 3.4

b) **Structural Performance Scaling Factor** = $1/S_p$ **Factor E** 1.43

2.7 Baseline %NBS for Building, $(\%NBS)_b$
(equals $(\%NSB)_{nom}$ x A x B x C x D x E) 146

4 FRED THOMAS - BLOCK (2)

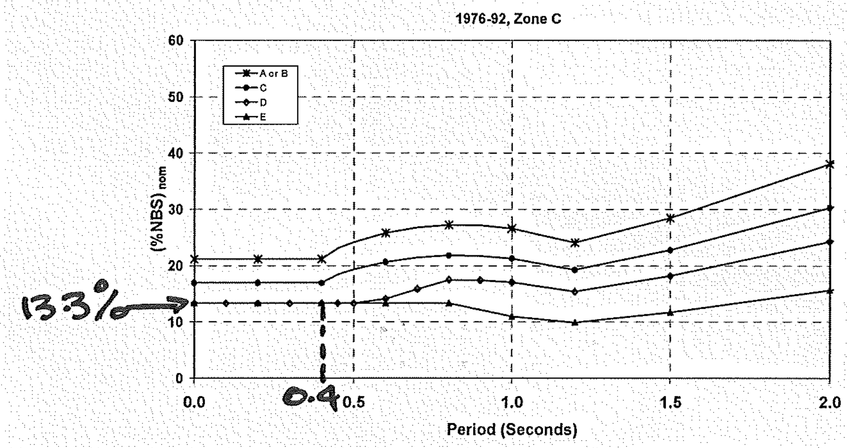


Figure 3.3(g): $(\%NBS)_{nom}$ 1976-92, Zone C ← 1988

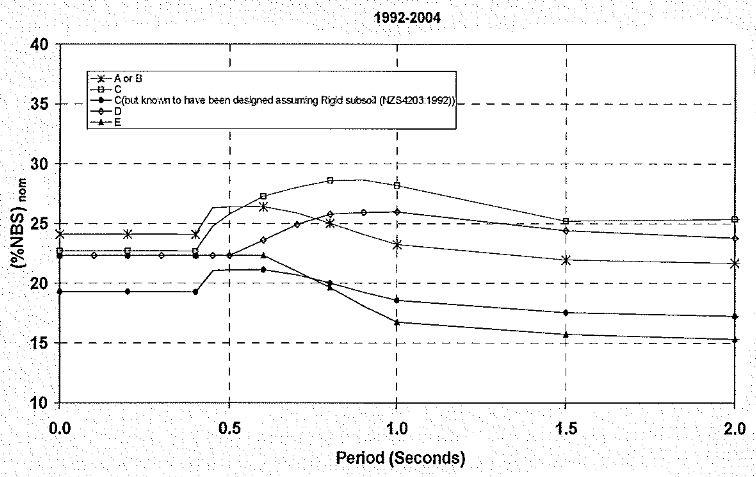


Figure 3.3(h): $(\%NBS)_{nom}$ 1992-2004

Figure 3.3: $(\%NBS)_{nom}$ for Different Building Design Vintages

4 FRED THOMAS – BLOCK 2

Table 3.1: Return period scaling factor

NZS1170.5:2004 Return Period Factor, *R*				Return Period Scaling Factor, *C*			
Importance level	Comment	Annual Probability of Exceedance	Return Period Factor, *R*	Pre 1965	1965-76	1976-92	1992-04
1	Minor structures (failure not likely to endanger human life)	1/100	0.5	2	2	2	1.2
2	Normal structures and structures not falling into other levels	1/500	1	1	1	1	1 ≤ 1988
3	Major structures (affecting crowds)	1/1000	1.3	0.8	0.8	1.1	0.9
4	Post-disaster structures (post-disaster functions or dangerous activities)	1/2500	1.8	0.6	0.6	1	0.7
5	Exceptional structures are outside the scope of the IEP, special study required.						

Where R is the return period factor appropriate to the current use of the building, as shown in Table 3.5 of NZS 1170.0:2002

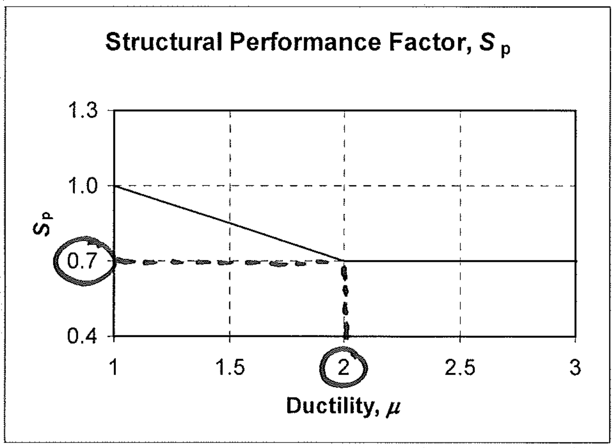
Table 3.2: Ductility factors to be used for existing buildings

Structure Type	Maximum allowable ductility factor for IEP			
	Pre-1935	1935-65	1965-76	1976-2004
All buildings	2	2	2	6

MINIMUM $\mu = 2.0$

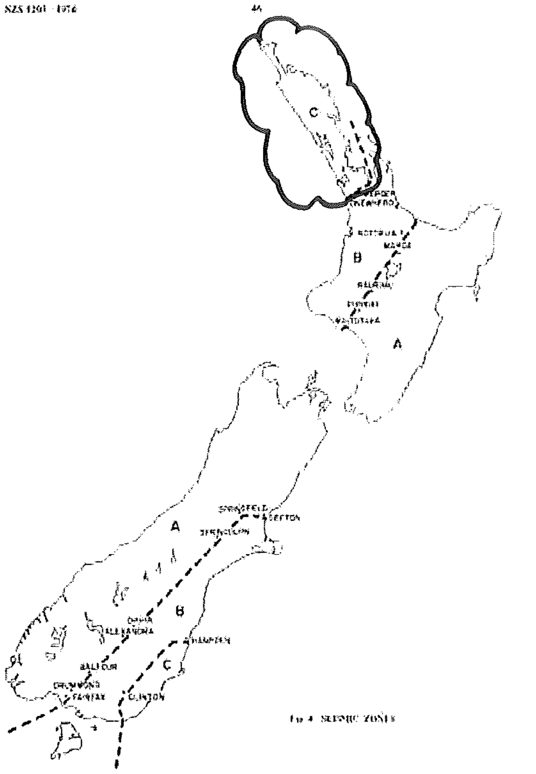
Table 3.3: Ductility scaling factor

	Structural Ductility Scaling Factor, k_μ							
	1.0 or less		1.25		1.50		2	
Soil Type	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E	A,B,C & D	E
Period, *T*								
≤ 0.40s	1	1	1.14	1.25	1.29	1.50	1.57	1.70
0.50s	1	1	1.18	1.25	1.36	1.50	1.71	1.75
0.60s	1	1	1.21	1.25	1.43	1.50	1.86	1.80
0.70s	1	1	1.25	1.25	1.50	1.50	2.00	1.85
0.80s	1	1	1.25	1.25	1.50	1.50	2.00	1.90
≥1.00s	1	1	1.25	1.25	1.50	1.50	2.00	2.00

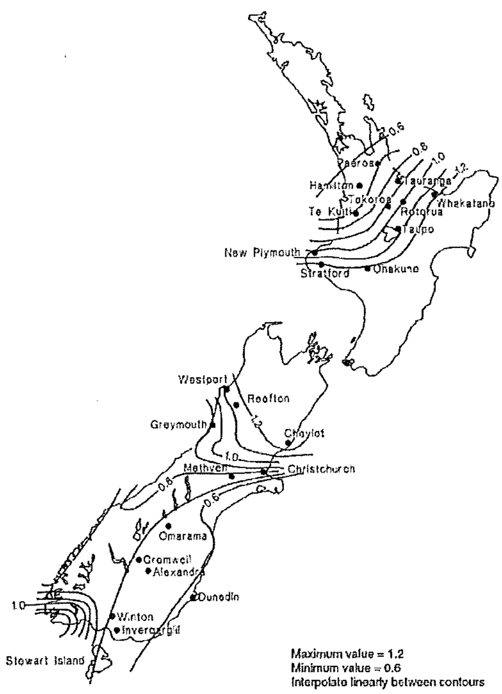


Where S_p is the Structural Performance Factor from NZS1170.5:2004, Cl 4.4.2.

Figure 3.4: Structural performance factor, S_p



NZS 4203:1992



1988

Figure 4.6.2 – Zone factor, Z

Figure 3.5(a) **NZS 4203:1984, NZS 4203: 1976 and NZS 1900:Chapter 8 sim.**

Figure 3.5(b) **NZS 4203:1992**

Figure 3.5: Extracts from previous Standards showing seismic zoning schemes

Table IEP-3: Initial evaluation procedure – Step 3

Table IEP-3   Initial Evaluation Procedure Step 3 – BLOCK 2   **Page ......**

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 4 for Steps 4, 5 and 6)

Building Name 4 FRED THOMAS   **Ref.** 12/1651
Location   **By** M.E-S
Direction Considered: a) Longitudinal ✓   b) Transverse ✓
(Choose worse case if clear at start. Complete IEP-2 and IEP-3 for each if in doubt)   **Date** MAY 2012

Step 3 - Assessment of Performance Achievement Ratio (PAR)
(Refer Appendix B - Section B3.2)

Critical Structural Weakness	Building Score	Effect on Structural Performance		
		(Choose a value - Do not interpolate)		
3.1 Plan Irregularity *Effect on Structural Performance*		Severe	Significant	Insignificant
Factor A	0.7	0.4 max	0.7	1
Comment				
3.2 Vertical Irregularity *Effect on Structural Performance*		Severe	Significant	Insignificant
Factor B	1.0	0.4 max	0.7	1
Comment				
3.3 Short Columns *Effect on Structural Performance*		Severe	Significant	Insignificant
Factor C	1.0	0.4 max	0.7	1
Comment				

← ECCENTRIC SHEAR WALL CONFIGURATION

3.4 Pounding Potential
(Estimate D1 and D2 and set D = the lower of the two, or =1.0 if no potential for pounding)

a) **Factor D1: - Pounding Effect**
Select appropriate value from Table

Note:
Values given assume the building has a frame structure. For stiff buildings (eg with shear walls), the effect of pounding may be reduced by taking the co-efficient to the right of the value applicable to frame buildings.

Factor D1 1.0

Table for Selection of Factor D1	Severe	Significant	Insignificant
Separation	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Alignment of Floors within 20% of Storey Height	0.7	0.8	1
Alignment of Floors not within 20% of Storey Height	0.4	0.7	0.8

← SEISMIC GAP 100mm > 0.01H

b) **Factor D2: - Height Difference Effect**
Select appropriate value from Table

Factor D2 1.0 ← N/A FLOORS ALIGNED

Table for Selection of Factor D2	Severe	Significant	Insignificant
	0<Sep<.005H	.005<Sep<.01H	Sep>.01H
Height Difference > 4 Storeys	0.4	0.7	1
Height Difference 2 to 4 Storeys	0.7	0.9	1
Height Difference < 2 Storeys	1	1	1

Factor D 1.0   ***(Set D = lesser of D1 and D2 or.. set D = 1.0 if no prospect of pounding)***

3.5 Site Characteristics - *(Stability, landslide threat, liquefaction etc)*
Effect on Structural Performance

		Severe	Significant	Insignificant
Factor E	1.0	0.5 max	0.7	1

3.6 Other Factors

Factor F 1.0   **For ≤ 3 storeys - Maximum value 2.5, otherwise - Maximum value 1.5. No minimum.**

Record rationale for choice of Factor F:
CONSERVATIVELY TAKE AS 1.0

3.7 Performance Achievement Ratio (PAR)
(equals **A x B x C x D x E x F**)   0.7

Table IEP-4: Initial evaluation procedure – Steps 4, 5 and 6

Table IEP- 4 Initial Evaluation Procedure Steps 4, 5 and 6 – BLOCK 2 **Page ...**

(Refer Table IEP - 1 for Step 1; Table IEP - 2 for Step 2; Table IEP - 3 for Step 3)

Building Name 4 FRED THOMAS
Location

Ref. 12/1651
By M. E-S
Date MAY 2012

Step 4 - Percentage of New Building Standard (*%NBS*)

	Longitudinal	Transverse
4.1 Assessed Baseline (*%NBS*)$_b$ (from Table IEP - 1)	146	146
4.2 Performance Achievement Ratio (PAR) (from Table IEP - 2)	0.7	0.7
4.3 PAR x Baseline (*%NBS*)b	102%	102%
4.4 Percentage New Building Standard (*%NBS*) (Use lower of two values from Step 3.3)		102%

Step 5 - Potentially Earthquake Prone? (Mark as appropriate)

%NBS > 33	NO	
%NBS ≤ 33	YES	

Step 6 - Potentially Earthquake Risk? (Mark as appropriate)

%NBS ≥ 67	NO
%NBS < 67	YES

Step 7 - Provisional Grading for Seismic Risk based on IEP

Seismic Grade A+

Evaluation Confirmed by... [signature] **Signature**

M. ERSKINE-SHAW **Name**

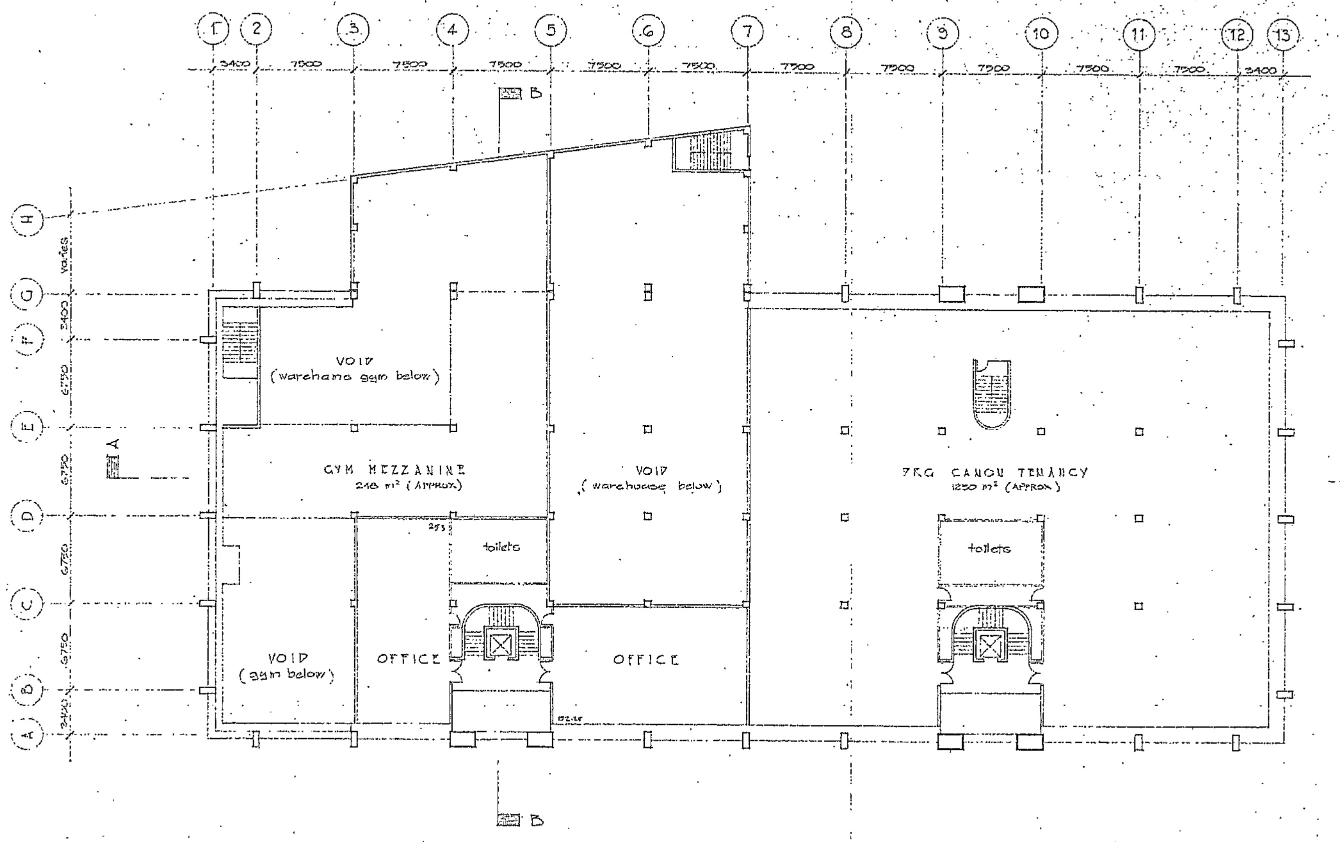
217561 **CPEng. No**

Relationship between Seismic Grade and *%NBS*:

Grade:	A+	A	B	C	D	E
%NBS:	> 100	100 to 80	80 to 67	67 to 33	33 to 20	< 20

Appendix B

Existing Structural and Architectural Drawings



PLANS AND SPECIFICATIONS
APPROVED
SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
DATE 14-1-87

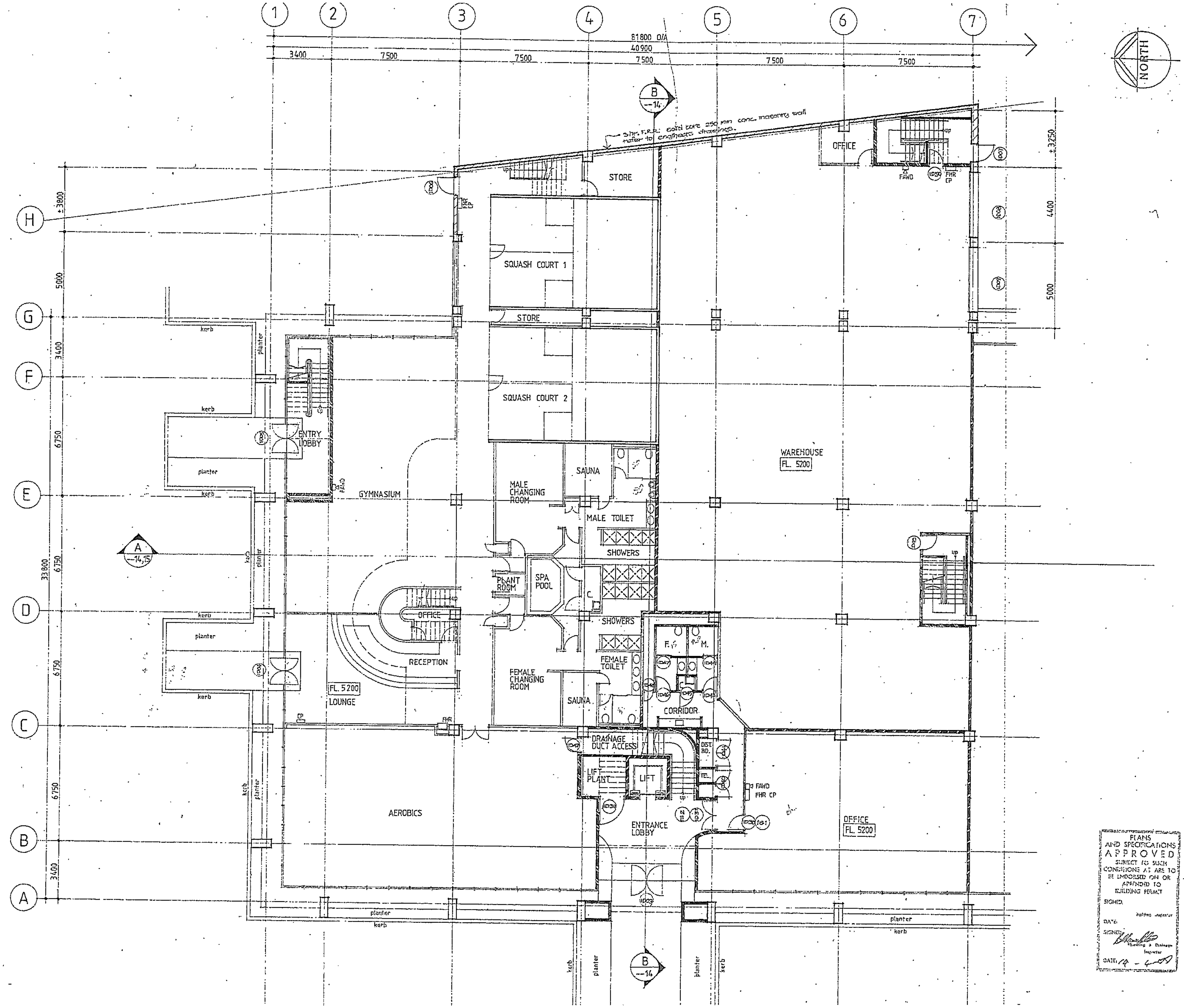
PRELIMINARY ONLY

FIRST FLOOR PLAN 1:200

9-12-87

ROBERTS MITCHELL

ASDA GROUP DEVELOPMENT - STAGE TWO - AT TAKAPUNA



These drawings, and all parts thereof, are copyright

notes:

PLAN KEY

REINFORCED CONCRETE MASONRY WALL REFER TO ENGINEER'S DRAWINGS

100 X 50 TIMBER FRAMED WALL

150 X 50 TIMBER FRAMED WALL

1 HR. FRR. 100 X 50 TIMBER FRAMED WALL LINED WITH 14.5 mm. GIB BOARD ON BOTH SIDES

1 HR. FRR. 150 X 50 TIMBER FRAMED WALL LINED WITH 14.5 mm. GIB BOARD ON BOTH SIDES

1/2 HR. FRR. 150 X 50 TIMBER FRAMED WALL LINED WITH 16.0 mm. GIB BOARD ON BOTH SIDES

FHR — FIRE HOSE REEL AS SPECIFIED

CP — CALL POINT

FHR CP — CALL POINT ABOVE FIRE HOSE REEL

FAWD — TWO TONE HORN FIRE ALARM WARNING DEVICE

REFER TO ELECTRICAL ENGINEER'S DRAWINGS FOR POSITIONS OF EMERGENCY LIGHTS

THE FOLLOWING DOORS ARE TO BE SMOKE STOP DOORS AS SPECIFIED BY NZS 1900 CHAPTER 5 AND NZS 4188
1D37, 1D38, 1D39, 1D49, 1D50
1D06 TO BE 1 HR. FRR. FIRE DOOR.
1D07 TO BE 2 HR. FRR. FIRE DOOR.

ROBERTS MITCHELL

Roberts Mitchell Associates Limited
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90 Mokoia Road, Birkenhead, Auckland PO Box 34123, Ph 4180254
Fax No. (09) 4180903.

drawn: CHANTY.
checked:
date: FEB. '88

project title: ASDA GROUP DEVELOPMENT STAGE TWO TAKAPUNA

sheet title: PART GROUND FLOOR PLAN

scale: 1 : 100

project number: 8752

sheet number: (--) 1 A

revision:

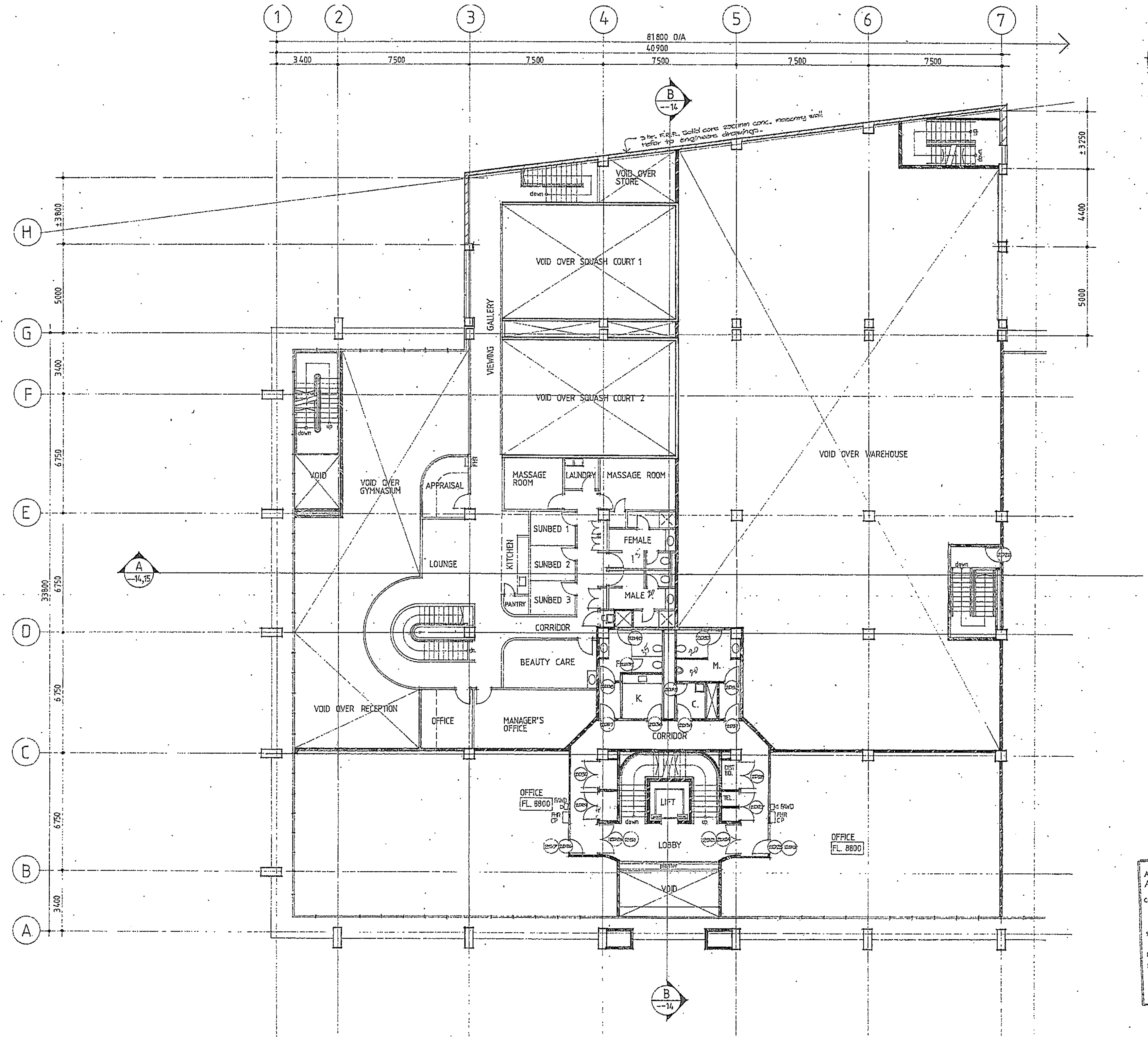
PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT

SIGNED.

DATE.

SIGNED Building & Drainage Inspector

DATE 19 - 4 - 88



notes:

PLAN KEY

- REINFORCED CONCRETE MASONRY WALL REFER TO ENGINEER'S DRAWINGS
- 100 X 50 TIMBER FRAMED WALL
- 150 X 50 TIMBER FRAMED WALL
- 1 HR. FRR. 100 X 50 TIMBER FRAMED WALL LINED WITH 14.5mm. GIB BOARD ON BOTH SIDES
- 1 HR. FRR. 150 X 50 TIMBER FRAMED WALL LINED WITH 14.5mm. GIB BOARD ON BOTH SIDES
- 1/2 HR. FRR. 150 X 50 TIMBER FRAMED WALL LINED WITH 16.0 mm. GIB BOARD ON BOTH SIDES
- FHR — FIRE HOSE REEL AS SPECIFIED
- CP — CALL POINT
- FHR CP — CALL POINT ABOVE FIRE HOSE REEL
- FAWD — TWO TONE HORN FIRE ALARM WARNING DEVICE

REFER TO ELECTRICAL ENGINEER'S DRAWINGS FOR POSITIONS OF EMERGENCY LIGHTS.

THE FOLLOWING DOORS ARE TO BE SMOKE STOP DOORS AS SPECIFIED BY NZS 1900 CHAPTER 5 AND NZS 1166.
2022, 2023, 2024, 2025, 2026

ROBERTS MITCHELL

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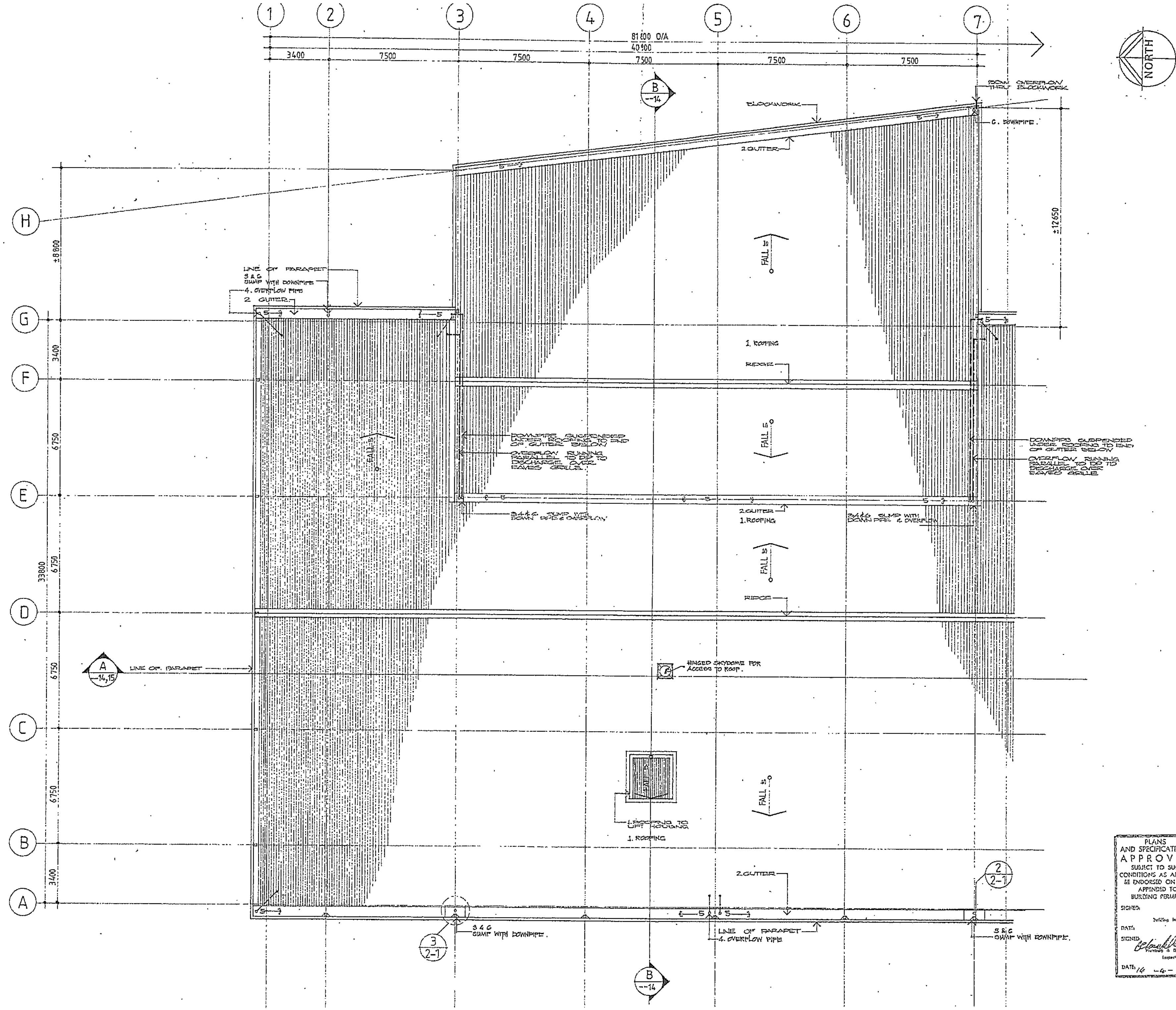
drawn: CHANTY.
checked:
date: FEB '88

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED: Building Inspector
DATE:
SIGNED: Building & Drainage Inspector
DATE: 16 - 4 - 88

project title: ASDA GROUP DEVELOPMENT STAGE TWO TAKAPUNA

sheet title: PART FIRST FLOOR PLAN

scales:	1 : 100
project number.	8752
sheet number:	(--)3 A
revision:	



These drawings, and all parts thereof, are copyright

notes:

PLAN KEY

1. ROOFING: TO BE SELECTED 0.55mm GALV STEEL ON ROOFING UNDERLAY ON 50mm FIBREGLASS INSULATION ON DOUBLE SIDED FOIL INSULATION ON GALV WIRE MESH
2. GUTTERS: 1mm BUTYNOL ON 19mm CONSTRUCTION PLY.
3. SUMPS: 1mm BUTYNOL ON 15mm CONSTRUCTION PLY WITH 'CLAMTITE' RAINWATER OUTLETS
4. OVERFLOWS: TO DISCHARGE THRU' EAVES. 100mm ø PVC.
5. FALLS 4° PITCH TO GALV ROOFING. 50mm MAXIMUM FALL TO ALL GUTTERS
6. DOWNPIPES ALL TO BE 150mm ø PVC.

revision. date:

ROBERTS MITCHELL

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80 Mokoia Road, Birkenhead, Auckland, PO Box 34123, Ph 4180254
Fax No. (09) 4189203.

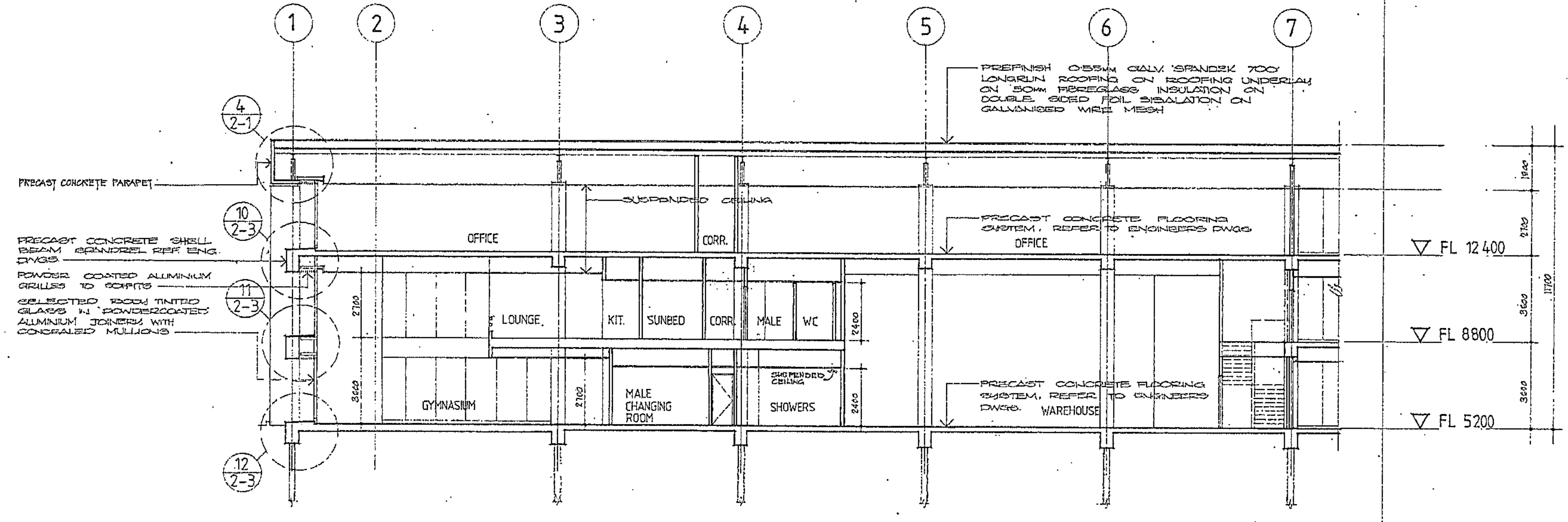
drawn: CHAN.T.Y.
checked:
date: MARCH '88

project title:
ASDA GROUP DEVELOPMENT STAGE TWO TAKAPUNA

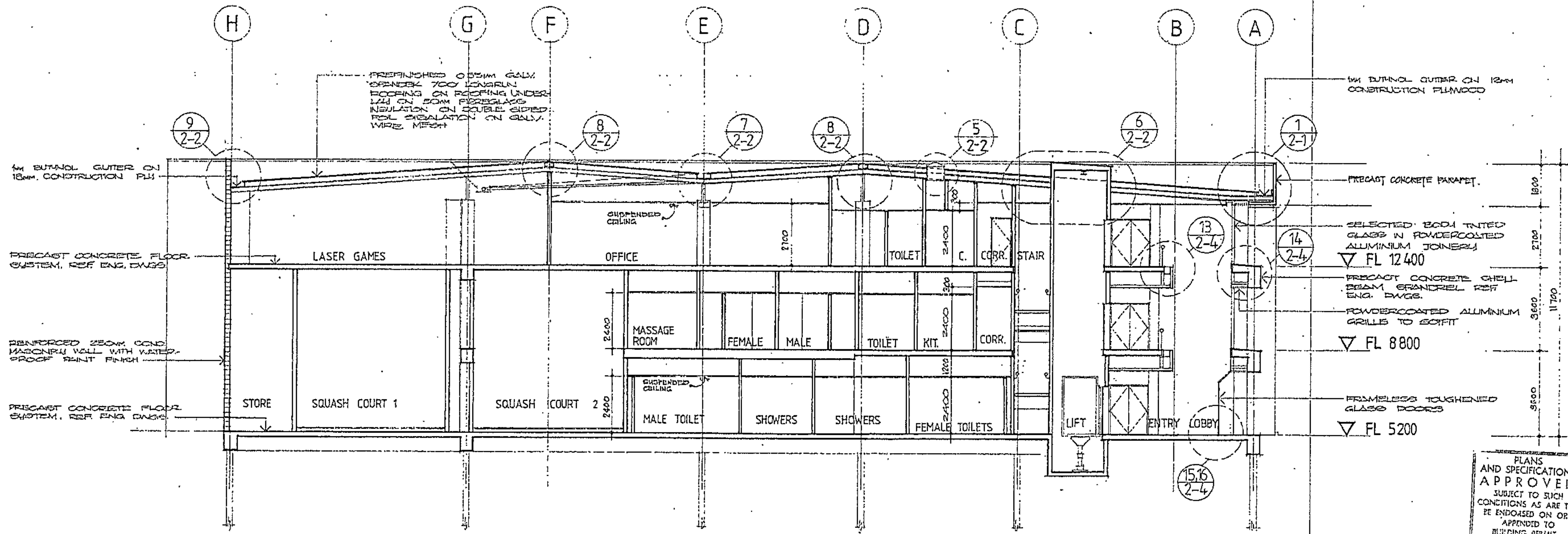
sheet title:
PART ROOF PLAN

scales: 1:100
project number: 8752
sheet number: (--)7 A
revision:

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED Building Inspector
DATE
SIGNED Plumbing & Drainage Inspector
DATE 14-4-88



SECTION A-A part 1



SECTION B-B

notes:

revision: date:

ROBERTS MITCHELL

Roberts Mitchell Associates Limited
Design Consultants and Registered Architects
90 Mokoia Road, Birkenhead, Auckland. PO Box 34123. Ph 4190254
Fax No. (09) 4190003.

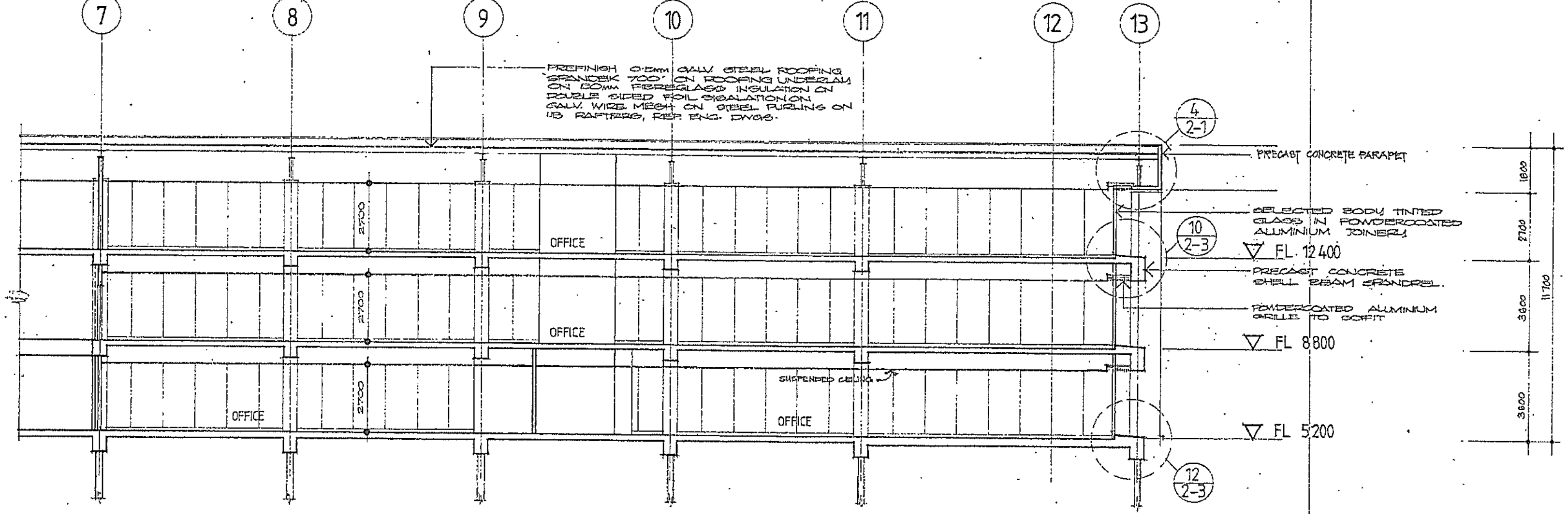
drawn: WARREN PAINE
checked:
date: JANUARY 1998

project title:
ASDA GROUP
DEVELOPMENT
STAGE TWO
TAKAPUNA

sheet title:
SECTIONS
A-A Part 1
B-B

scales: 1:100
project number 8752
sheet number: (--)14 A
revision:

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED. Building Inspector
DATE.
SIGNED. Plumbing & Drainage Inspector
DATE. 14-4-98



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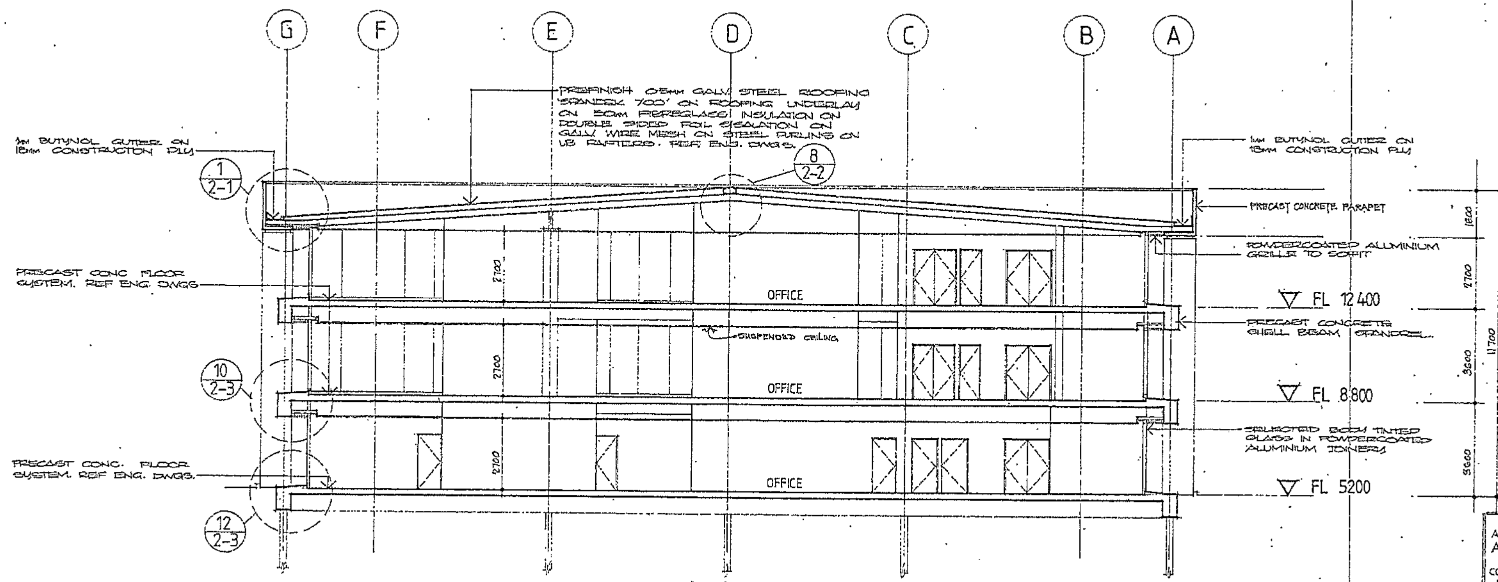


SECTION C-C

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT

SIGNED Building Inspector

DATE

SIGNED Plumbing & Drainage Inspector

DATE 16-4-89

notes:

revision: date:

ROBERTS MITCHELL

Roberts Mitchell Associates Limited
Design Consultants and Registered Architects
90 Makola Road, Birkenhead, Auckland. PO Box 34123. Ph 4100254
Fax No. (09) 4190903.

drawn: WARREN PAUNE
checked:
date: JANUARY 1988

project title: ASDA GROUP DEVELOPMENT STAGE TWO TAKAPUNA

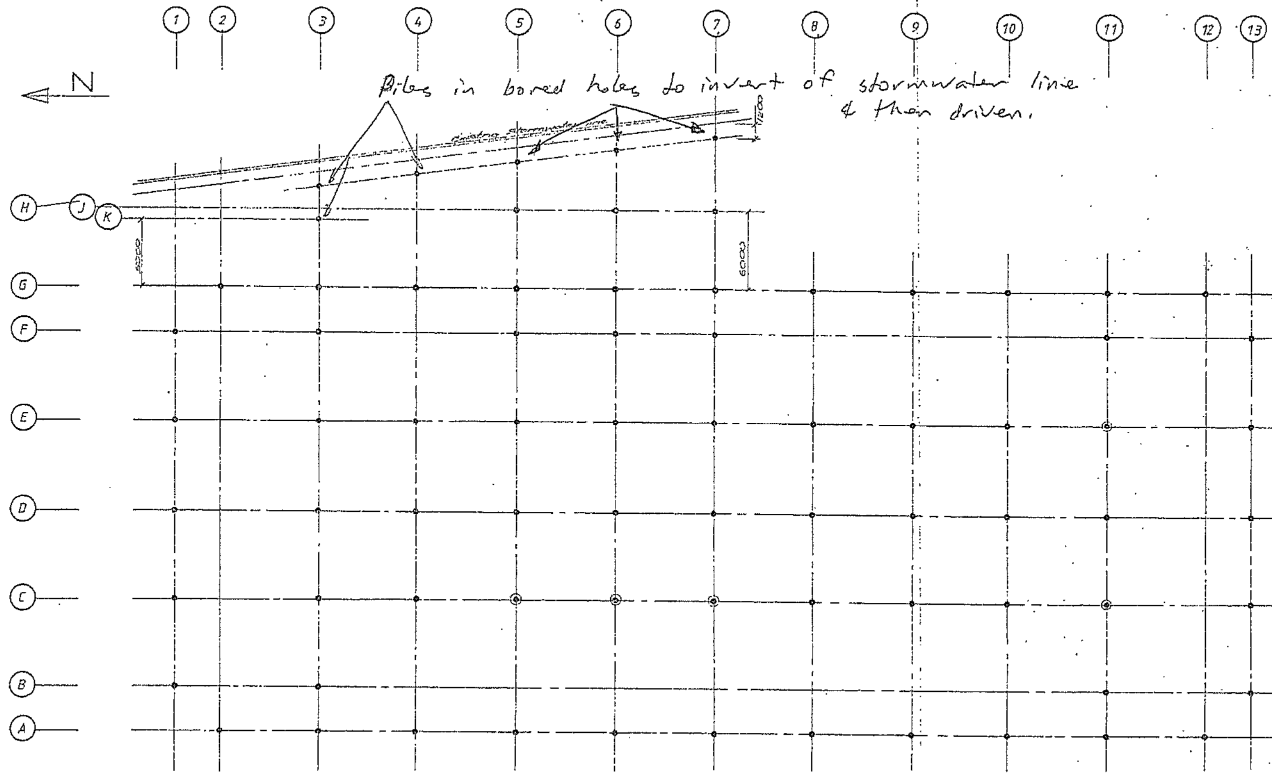
sheet title: SECTIONS A-A Part 2 C-C

scales: 1:100

project number: 8752

sheet number: (--)15 A

revision:



PILE LAYOUT PLAN

NOTE
1) Excavation of foundation to: RL 4.285 m
2) Finished top of pile RL 4.435 m
3) Steel Grade 250 (AS 1204)
4) Piling contractor to check positions of existing stormwater line near Grid H (Refer C1
5) Provide bitumastic enamel coating min 2.5mm thick over sand blasted surface, to piles above RL 9.700m

PILE	SECTION SIZE	ULTIMATE PILE LOAD (1.4D+1.7L) kN	EQUIVALENT WORKING LOAD (DL+LL) kN
A2	310 UC 97	1800	1100
A3	310 UC 97	1800	1100
A4	310 UC 97	2000	1200
A5	310 UC 97	2300	1400
A6	310 UC 97	2300	1400
A7	310 UC 97	2800	1700
A8	310 UC 97	2000	1200
A9	310 UC 97	2000	1200
A10	310 UC 97	2000	1200
A11	310 UC 97	1800	1100
A12	310 UC 97	1800	1100
B1	310 UC 97	2000	1200
B3	310 UC 97	1800	1100
B11	310 UC 97	1800	1100
B13	310 UC 97	2000	1200
C1	310 UC 97	1900	1200
C3	310 UC 97	3000	1800
C4	310 UC 97	3000	1800
C5	310 UC 118	3530	2100
C6	310 UC 118	3530	2100
C7	310 UC 118	3530	2100
C8	310 UC 97	3000	1800
C9	310 UC 97	3000	1800
C10	310 UC 97	3000	1800
C11	310 UC 118	3530	2100
C13	310 UC 97	1700	1200
D1	310 UC 97	1900	1200
D3	310 UC 97	3000	1800
D4	310 UC 97	2300	1800
D5	310 UC 97	2800	1700
D6	310 UC 97	2800	1700
D7	310 UC 97	2800	1700
D8	310 UC 97	2500	1800
D9	310 UC 97	2200	1300
D10	310 UC 97	2200	1300
D11	310 UC 97	3000	1800
D13	310 UC 97	1900	1200
E1	310 UC 97	1700	1200
E3	310 UC 97	3000	1800
E4	310 UC 97	3000	1800
E5	310 UC 97	2800	1700
E6	310 UC 97	2800	1700
E7	310 UC 97	2800	1700
E8	310 UC 97	3000	1800
E9	310 UC 97	3000	1800
E10	310 UC 97	3000	1800
E11	310 UC 118	3400	2100
E13	310 UC 97	1900	1200
F1	310 UC 97	2000	1200
F3	310 UC 97	1800	1100
F5	310 UC 97	2200	1300
F6	310 UC 97	2200	1300
F7	310 UC 97	2200	1300
F11	310 UC 97	1800	1100
F13	310 UC 97	2000	1200
G2	310 UC 97	1800	1100
G3	310 UC 97	2500	1500
G4	310 UC 97	2800	1700
G5	310 UC 97	2000	1200
G6	310 UC 97	2000	1200
G7	310 UC 97	2000	1200
G8	310 UC 97	2000	1200
G9	310 UC 97	2000	1200
G10	310 UC 97	2000	1200
G11	310 UC 97	1800	1100
G12	310 UC 97	1800	1100
H3	310 UC 97	1800	1100
H4	310 UC 97	1800	1100
H5	310 UC 97	1800	1100
H6	310 UC 97	1800	1100
H7	310 UC 97	1800	1100
J5	310 UC 97	2500	1500
J6	310 UC 97	2500	1500
J7	310 UC 97	2500	1500
K3	310 UC 97	1800	1100

See revised sheet S1 no 3.

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT
SIGNED [signature] Building Inspector
DATE 22-1-88
SIGNED [signature] Plumbing & Drainage Inspector
DATE 14-1-88

REV	DATE	AMENDMENT	DY
2	1/1/88	Permit issue	

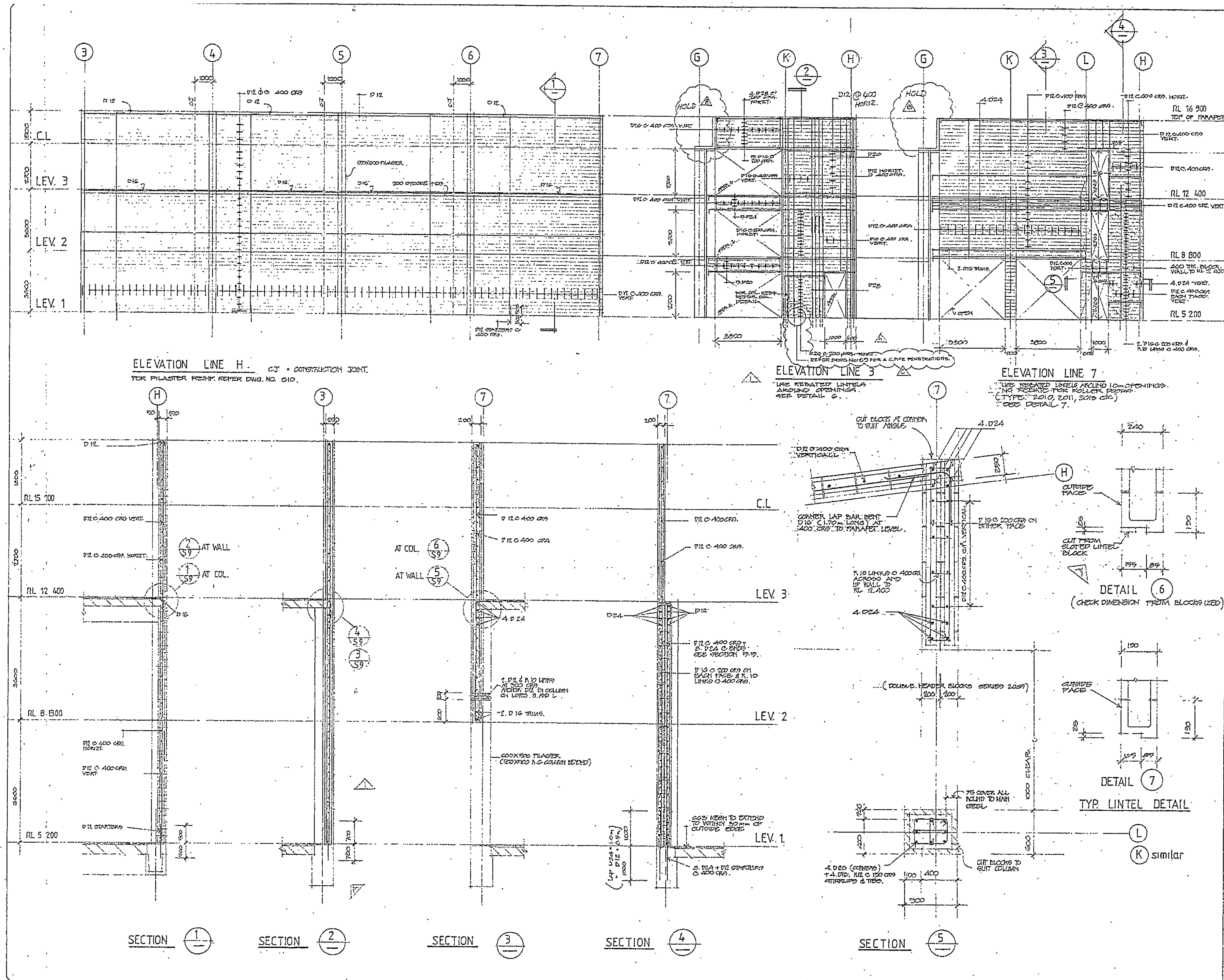
THORBURN DAVIDSON
CONSULTING CIVIL & STRUCTURAL ENGINEERS
135 Vincent St, Auckland 1
P.O. Box 5780 Auckland 1. Telephone 395-339

CONSULTANTS

JOB TITLE
ASDA GROUP DEVELOPMENT STAGE TWO AT TAKAPUNA

SHEET TITLE
PILE LAYOUT PLAN

DESIGN J.S.
DRAWN B Allen
DATE 10-12-87
SCALE 1:200
SHEET No. S1
JOB No. M 08-011
REVISION 2



NOTES :

1. BLOCKWORK REINFORCING LAP LENGTHS .

D 12	500
D 16	700
D 20	800
D 24	1000
D 28	1100

2. LAP BLOCKWORK REBAR AS REQUIRED. LAP SIDE BY SIDE NO KINKS IN BARS.
3. END ALL BARS IN STANDARD 90° HOOKS.
4. CLASS A MASONRY TO NZS 4230 AND NZS 4210 P.
5. USE HIGH LIFT GROUT METHOD. ALL CELLS FILLED.
6. ALL BLOCKWORK TO BE RUNNING BOND.
7. BLOCKWORK FACE ON EXTERIOR TO BE MAINTAINED EXCEPT FOR 500X500 CAST IN SITU COLUMNS ON GRID g-3, g-7
8. DO NOT USE FIRE BLOCKS

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE INDORSED ON OR APPENDED TO BUILDING PERMIT

REV	DATE	AMENDMENT	BY
C			
B	12/4	PRECAST FASCIA PANEL LINE G, BLOCKWALL REINF. TO SUIT.	CC
A			AK
0			AK

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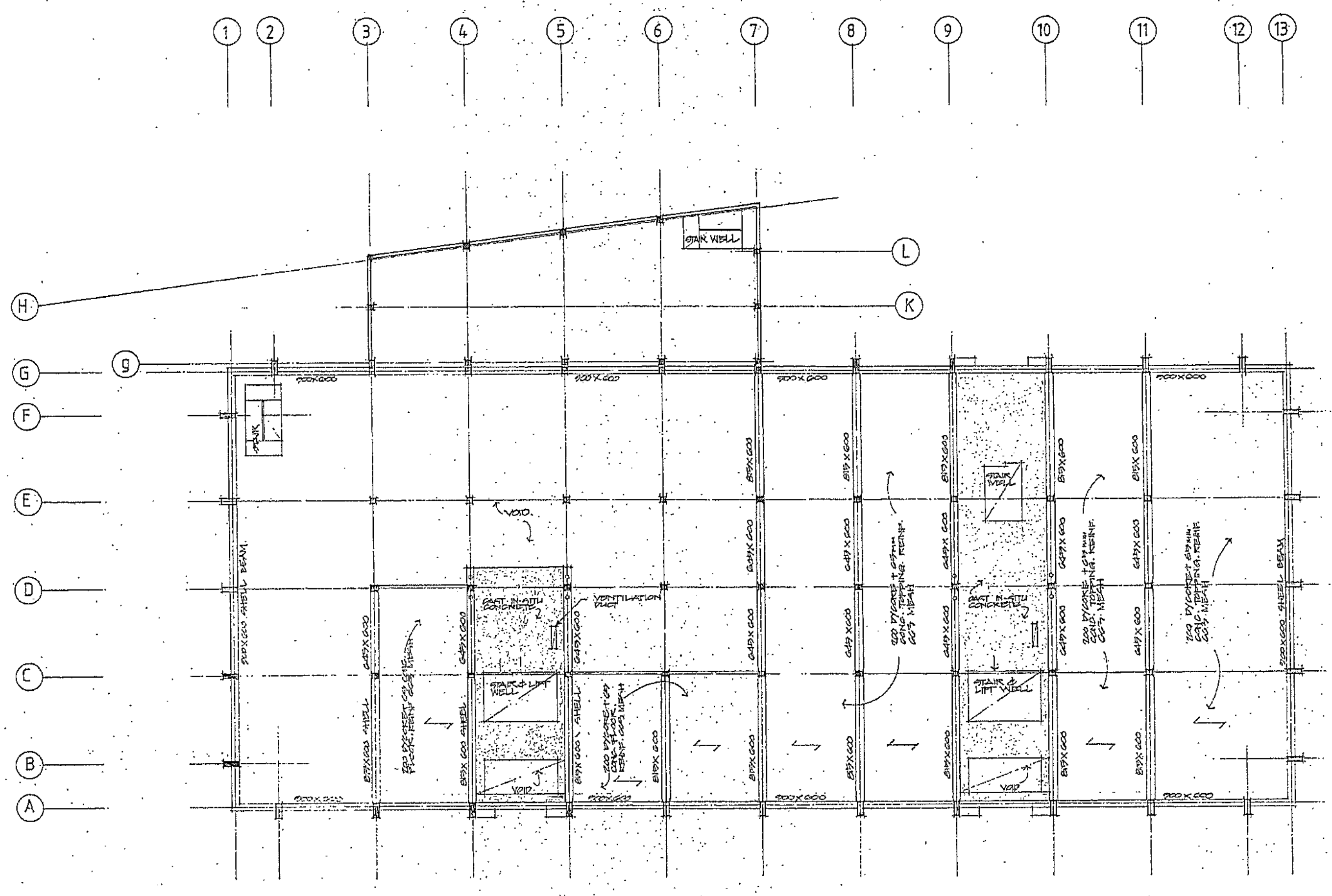
CONSULTANTS

JOB TITLE
ASDA GROUP DEVELOPMENT STAGE TWO at TAKAPUNA

FOR CONSTRUCTION

SHEET TITLE
BLOCKWALL ELEVATION AND SECTION

DESIGN	J.S.
DRAWN	A. KUDH
DATE	
SCALE	1:100, 1:50, 1:20
JOB No.	M 08_011
SHEET No.	S8
REVISION	C



LEVEL 2 FLOOR BEAM FRAMING PLAN

200 DYCORE + 65mm CONC. TOPPING. REINF. 665 MESH.

CAST IN-SITU CONCRETE FLOOR SLAB.

REV	DATE	AMENDMENT	BY
0	20-1	FOR PERMIT	AR

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P.O. Box 5780 Auckland 1. Telephone 395-339

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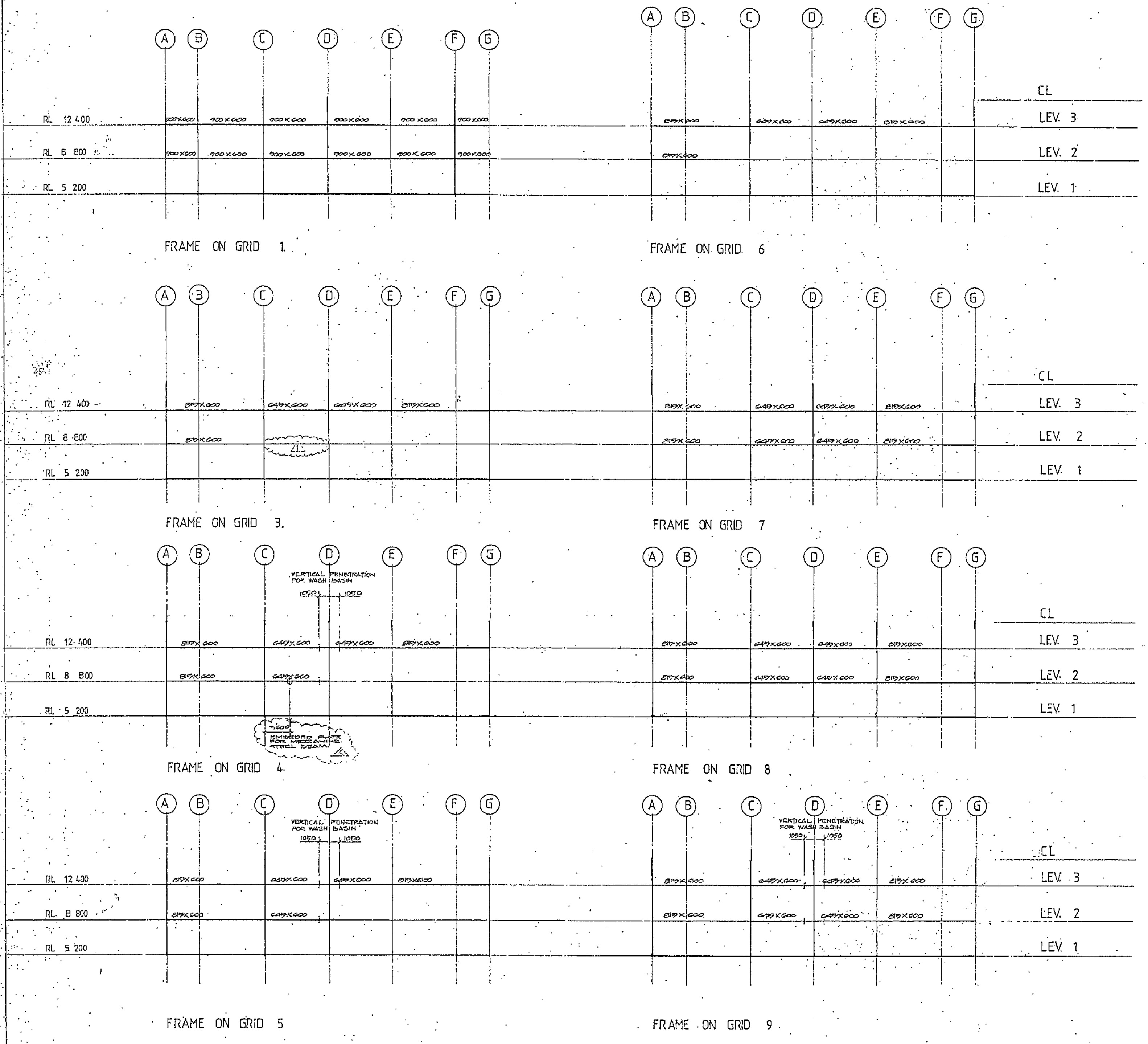
JOB TITLE
ASDA GROUP DEVELOPMENT STAGE TWO at TAKAPUNA

SHEET TITLE
LEVEL 2 - FLOOR FRAMING PLAN

DESIGN JMG.
DRAWN A.RUSH
DATE JAN. 88
SCALE 1:200
JOB No. M08_011
SHEET No. S 17
REVISION 0



REV	DATE	AMENDMENT	BY
A		FOR CONSTRUCTION	A.R.
1	11/4	[illegible]	D.R.
0	[illegible]	FOR PERMIT	A.R.

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JOB TITLE

ASDA GROUP DEVELOPMENT STAGE TWO at TAKAPUNA

FOR CONSTRUCTION

SHEET TITLE

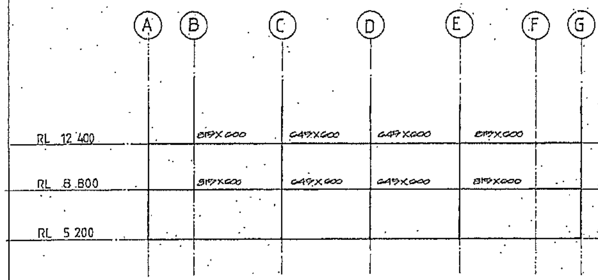
BEAM FRAME ELEVATION SHEET 1

DESIGN JMS.
DRAWN A. RUPH
DATE JAN. 85
SCALE 1:200

SHEET No. S19

JOB No. M08_011

REVISION A



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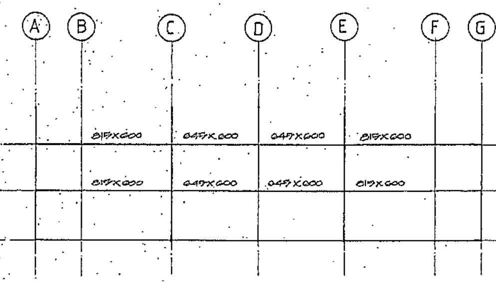

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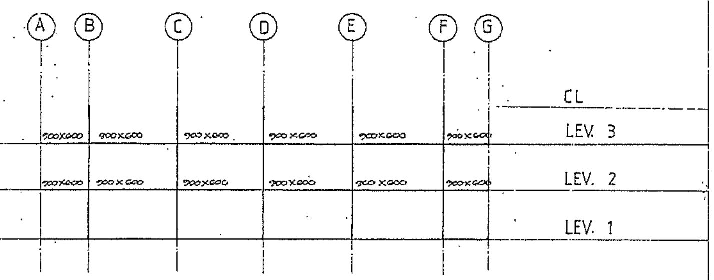

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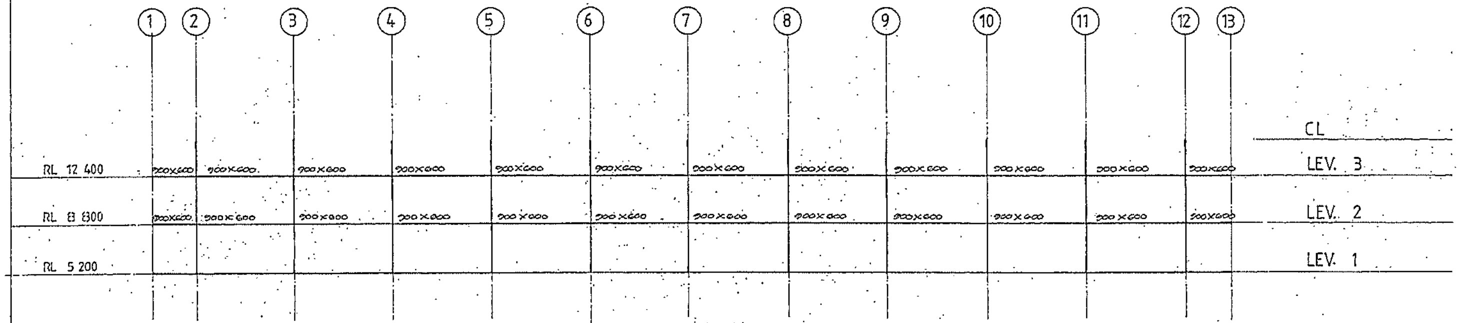

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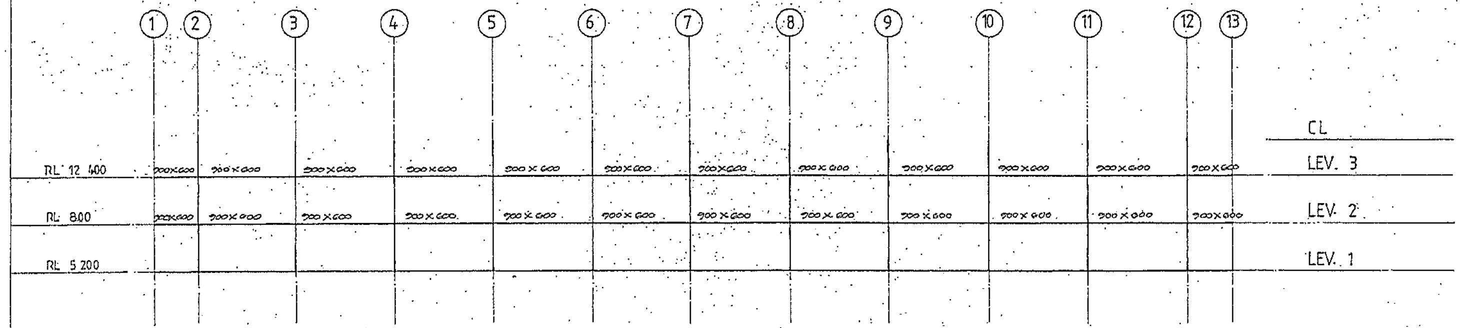

FRAME ON GRID G.

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT

DATE 9-3-88

03 FEB 1988

REV	DATE	AMENDMENT	BY
C	20-1	FOR PERMIT	AK

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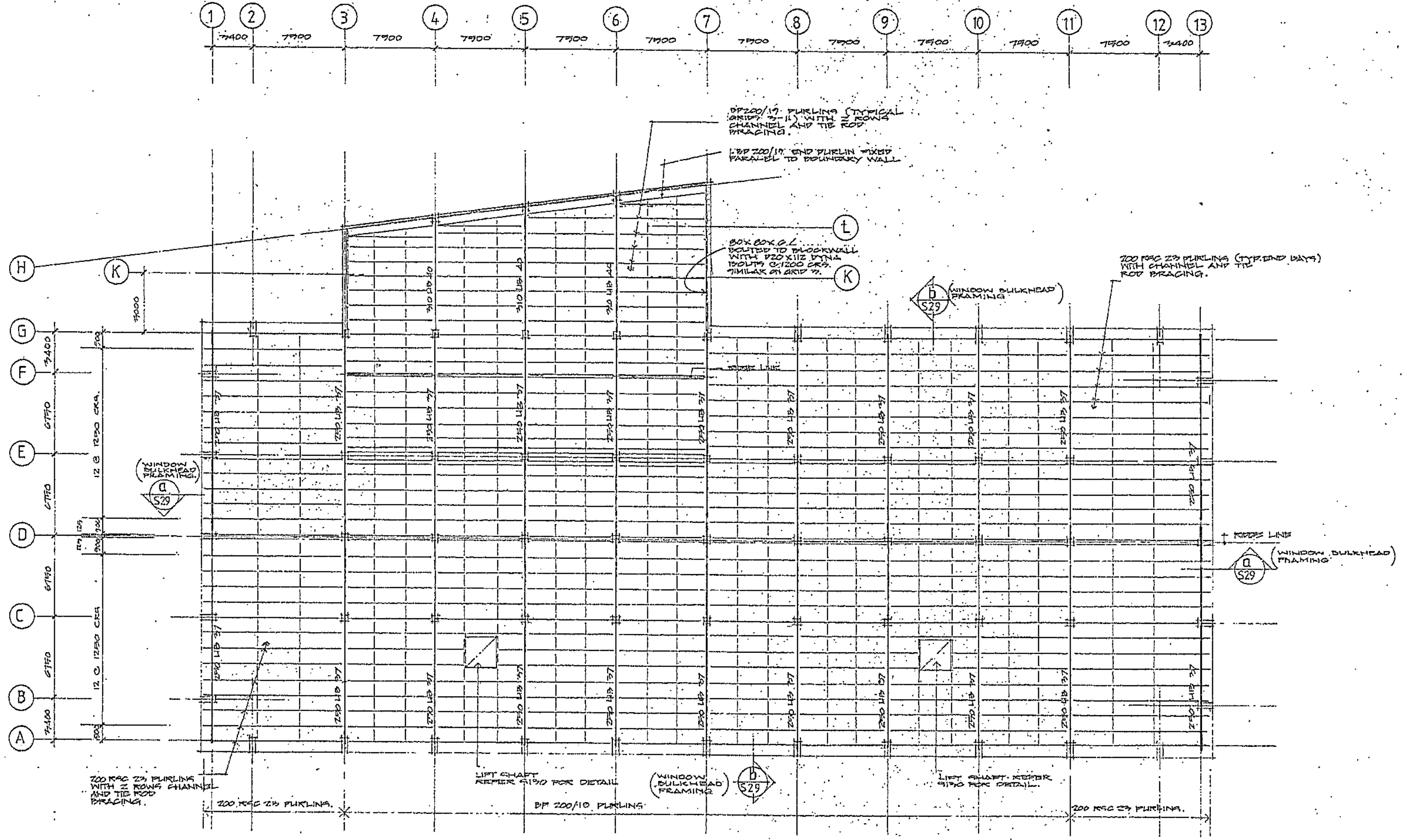
135 Vincent St. Auckland 1
P.O. Box 5780 Auckland 1. Telephone 395-339

CONSULTANTS

JOB TITLE
ASDA GROUP DEVELOPMENT STAGE TWO at TAKAPUNA

SHEET TITLE
BEAM FRAME ELEVATION SHEET 2

DESIGN JMS.
DRAWN A.KUSH
DATE JAN. 88.
SCALE 1:200
JOB No. M08_011
SHEET No. S 20
REVISION C



ROOF FRAMING PLAN

PLANS AND SPECIFICATIONS APPROVED SUBJECT TO SUCH CONDITIONS AS ARE TO BE ENDORSED ON OR APPENDED TO BUILDING PERMIT

REV	DATE	AMENDMENT	BY
A		FOR CONSTRUCTION	
		FOR PERMIT	

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135 Vincent St. Auckland 1
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CONSULTANTS

JOB TITLE

ASDA GROUP DEVELOPMENT STAGE TWO
at
TAKAPUNA
FOR CONSTRUCTION.

SHEET TITLE

STRUCTURAL STEELWORK.
Roof framing plan.

DESIGN JMA.
DRAWN A. RUSH
DATE JAN. 88
SCALE 1:200
JOB No. M08_011
SHEET No. S 23
REVISION A

Appendix C

Site Photos

Figure #1 Northern Elevation-Block 1

Figure #2 Western Elevation-Block 1

Figure #3 Southern Elevation-Block 1

Figure #4 Southern Elevation-Block 2 Annex

Figure #5: Northern Elevation-Block 2 Annex

Figure #6: Internal Double Storey Warehouse