

21/06/2016

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Milsons Point,
NSW, 2061,
Australia

For the attention of : - Chris Hansen

Dear Chris,

**Northpoint Tower
Structural Engineering Consultant Advice Note 007
Sydney Metro**

Further to your recent request, we have reviewed the proposed Sydney Metro plans and provide a section showing the approximate level of the new bored tunnels relative to the Northpoint basement level. The tunnel alignment appears to be at least 12m beneath the lowest basement level at Northpoint.

The commercial tower at Northpoint sits on a rock pedestal at level 6 with the basement carpark being excavated around this pedestal. Based on discussions with Jim Forrest of our office who worked on the original Northpoint project in the early 1970's, we understand that a number of issue were encountered during the excavation works to expose this pedestal. These issues related to stress relief of the pedestal during excavation and the presence of seams and soft layers running through the pedestal. As a result of these seams and soft layers, a significant underpinning exercise was undertaken to enhance the vertical capacity of the pedestal. A concrete buttress (some 11m x 8m in section) was also constructed in the south east corner of the pedestal to bridge the seam. These works are shown on the existing Ove Arup structural drawings for the project. I attach a marked up set of extracts from the available existing structural drawings showing the principles of these works. We can provide a full set of all available relevant drawings if required.

Given that the Northpoint tower foundations lie within the TfNSW typical zone of influence, we believe that it would be prudent to make a formal submission alerting the tunnel designers to the remedial works that were undertaken on the site.

We have also had brief discussions on the matter with Paul Hewitt and Dr. David Och of Parsons Brinkerhoff and they both support the position that a formal submission should be made.

I trust this satisfies your requirements at this point.

Should you have any comments or queries on the above, please don't hesitate to contact me.

Yours Sincerely,

A handwritten signature in black ink that reads "Brian Healy." The signature is written in a cursive, flowing style.

for
enstruct group pty ltd

Brian Healy BE CPEng MIE Aust NER
Senior Associate

attach

Level 12
▼ 81790

Level 11
▼ 78390

Level 10 Existing
▼ 75438

Level 9
▼ 71590

Level 8 - Pacific Hwy
▼ 67150

Level 7 - Miller St
▼ 63370

Level 6 Basement
▼ 59450

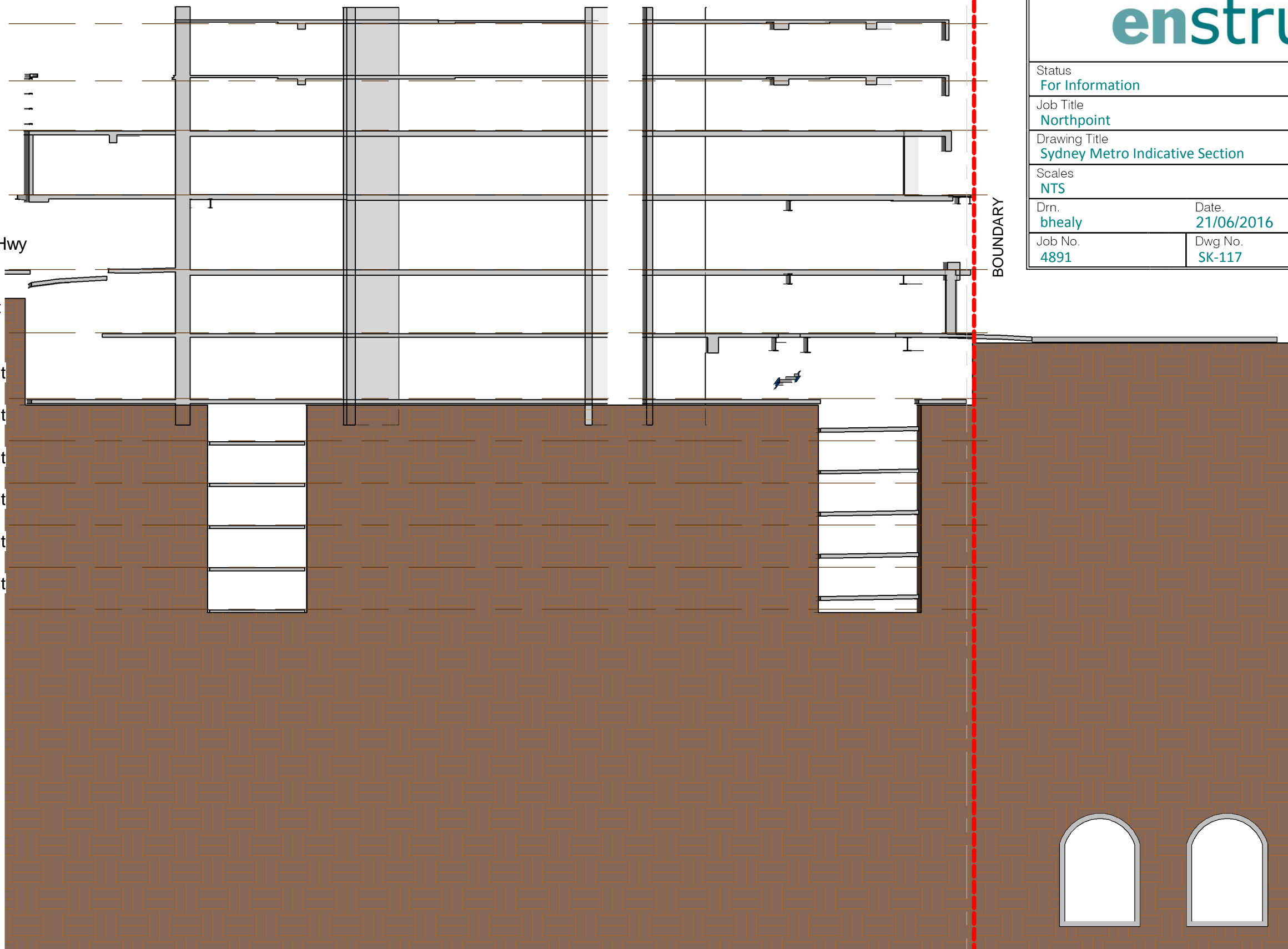
Level 5 Basement
▼ 56940

Level 4 Basement
▼ 54430

Level 3 Basement
▼ 51920

Level 2 Basement
▼ 49410

Level 1 Basement
▼ 46900



enstruct

Status For Information		
Job Title Northpoint		
Drawing Title Sydney Metro Indicative Section		
Scales NTS	File Ref.	
Drn. bhealy	Date. 21/06/2016	Chd. BH
Job No. 4891	Dwg No. SK-117	Rev 1

SEAMS:

SEAMS:

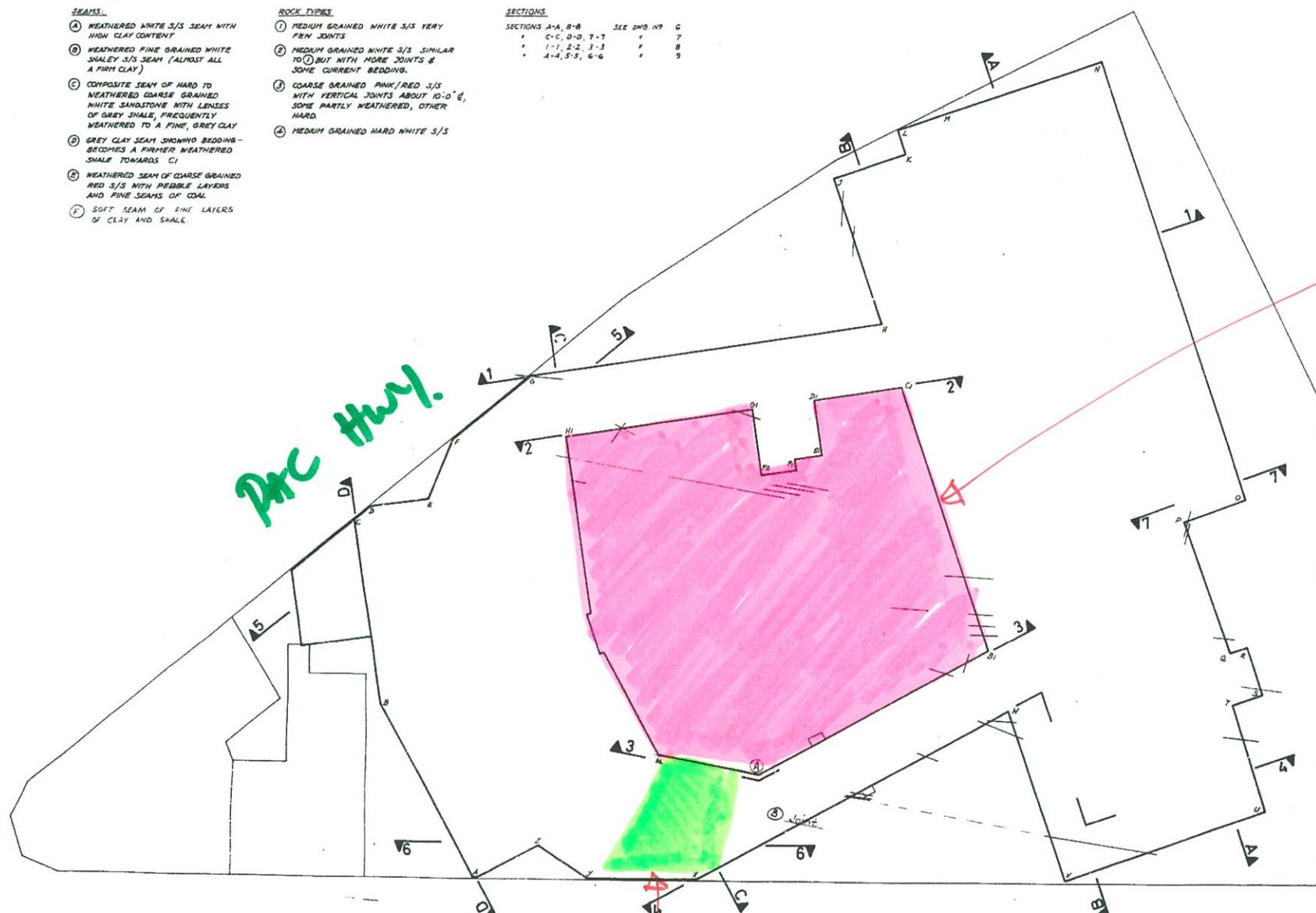
- (A) WEATHERED WHITE S/S SEAM WITH HIGH CLAY CONTENT
- (B) WEATHERED FINE GRAINED WHITE SEAM (ALMOST ALL A FISH CLAY)
- (C) COMPOSITE SEAM OF HARD TO WEATHERED COARSE GRAINED WHITE SANDSTONE WITH LENSES OF GREY SHALE, FREQUENTLY WEATHERED TO A FINE, GREY CLAY
- (D) GREY CLAY SEAM SHOWING BEDDING BECOMES A FIRMER WEATHERED SHALE TOWARDS CI
- (E) WEATHERED SEAM OF COARSE GRAINED RED S/S WITH PEBBLE LAYERS AND FINE SEAMS OF COAL
- (F) SOFT SEAM OF FINE LAYERS OF CLAY AND SHALE

ROCK TYPES

- ① MEDIUM GRAINED WHITE S/S VERY FEN JOINTS
- ② MEDIUM GRAINED WHITE S/S SIMILAR TO ① BUT WITH MORE JOINTS & SOME CURRENT BEDDING.
- ③ COARSE GRAINED PINK/RED S/S WITH VERTICAL JOINTS ABOUT 10-0" & SOME PARTLY WEATHERED, OTHER HARD.
- ④ MEDIUM GRAINED HARD WHITE S/S

SECTIONS

- | SECTIONS | A-A, B-B | SEE DWG. NO | G |
|----------|---------------|-------------|---|
| # | C-C, D-D, 7-7 | # | 7 |
| # | 1-1, 2-2, 3-3 | # | 8 |
| # | 4-4, 5-5, 6-6 | # | 9 |



ROCK PEDESTAL
SUPPORTING
TOWER. UNDERPINNED
DUE TO PRESENCE
OF HORIZONTAL
SEAMS AND
WEAK LAYERS

BUTTRESS TO SOUTH EAST
CORNER AT L1
SEE DRG 17.

NORTHPOINT

ONE MILLER STREET & PACIFIC HIGHWAY, NORTH SYDNEY.

PROPRIETORS
NORTHPOINT PROPERTIES PTY. LIMITED

PROJECT MANAGERS
MAX G. BOWEN (AUST.) PTY. LIMITED
+ 929 084

FRANK KOLOS & J. H. BRYANT
118 PACIFIC HIGHWAY
NORTH SYDNEY 2060 * 92 039

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122 WALKER STREET
NORTH SYDNEY 2060
* 129 733

D. S. THOMAS & PARTNERS
114 MOUNT STREET
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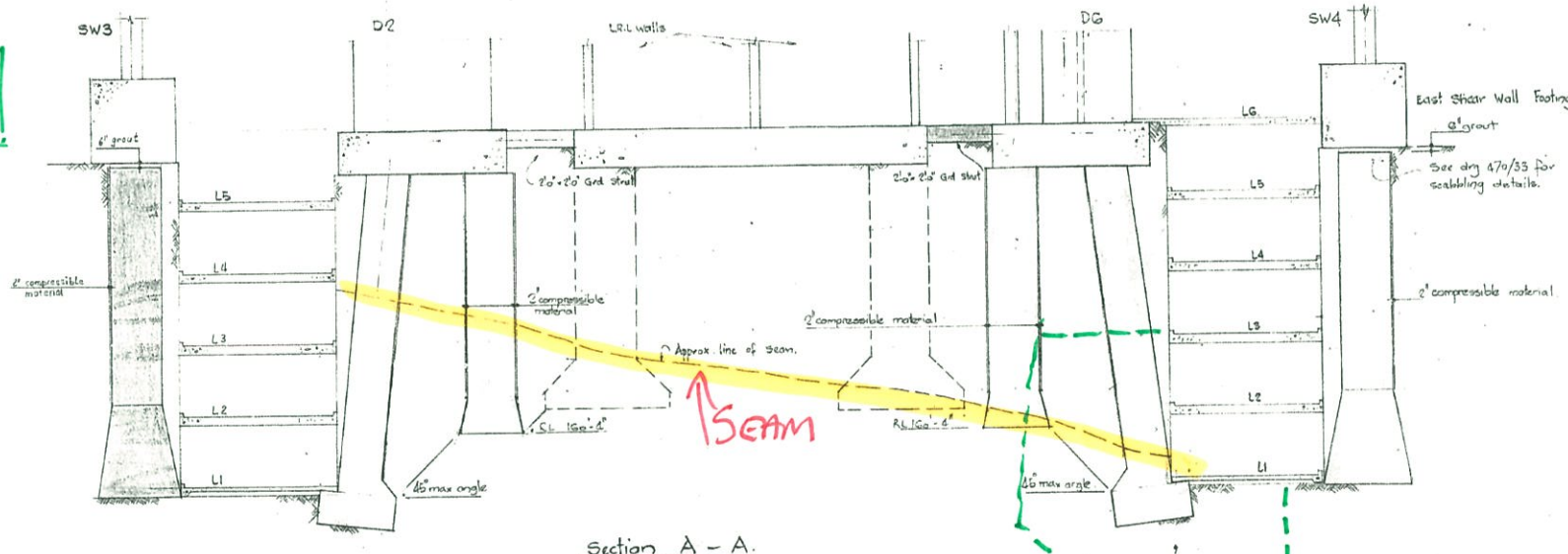
STRATA PROFILES -
EXCAVATION FACES
KEY PLAN

SCALE 1/4" = 1'-0"	DRAWN <i>R. J. [Signature]</i>	470
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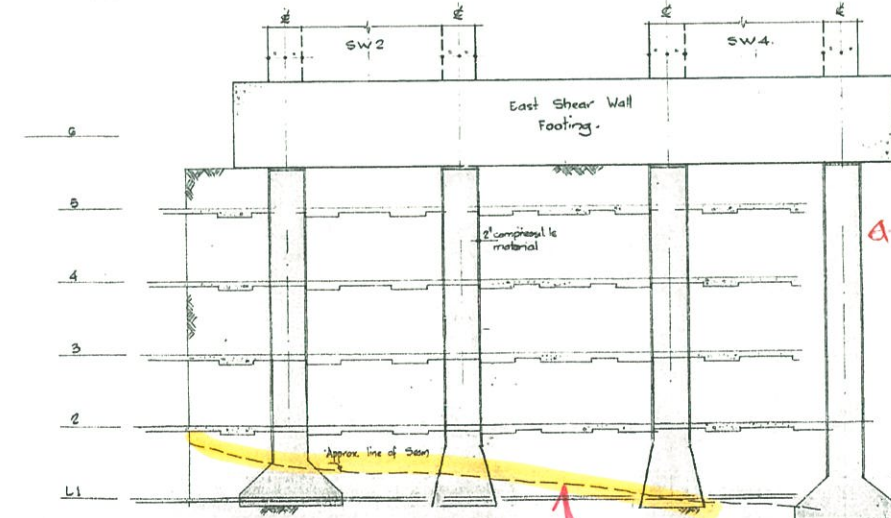
30. 2. 72	Guinea	1. 5
STRUCTURAL		5

PAC HWY

MILLER ST



Section A - A.



Section B - B. SEAM.

APPROX. POSITION OF
PEDESTAL TO S.E.
CORNER. SEE DRG 17

Note: Refer to drg 470/31.
for location of sections.

UNDERPINNING
NEW PIERS

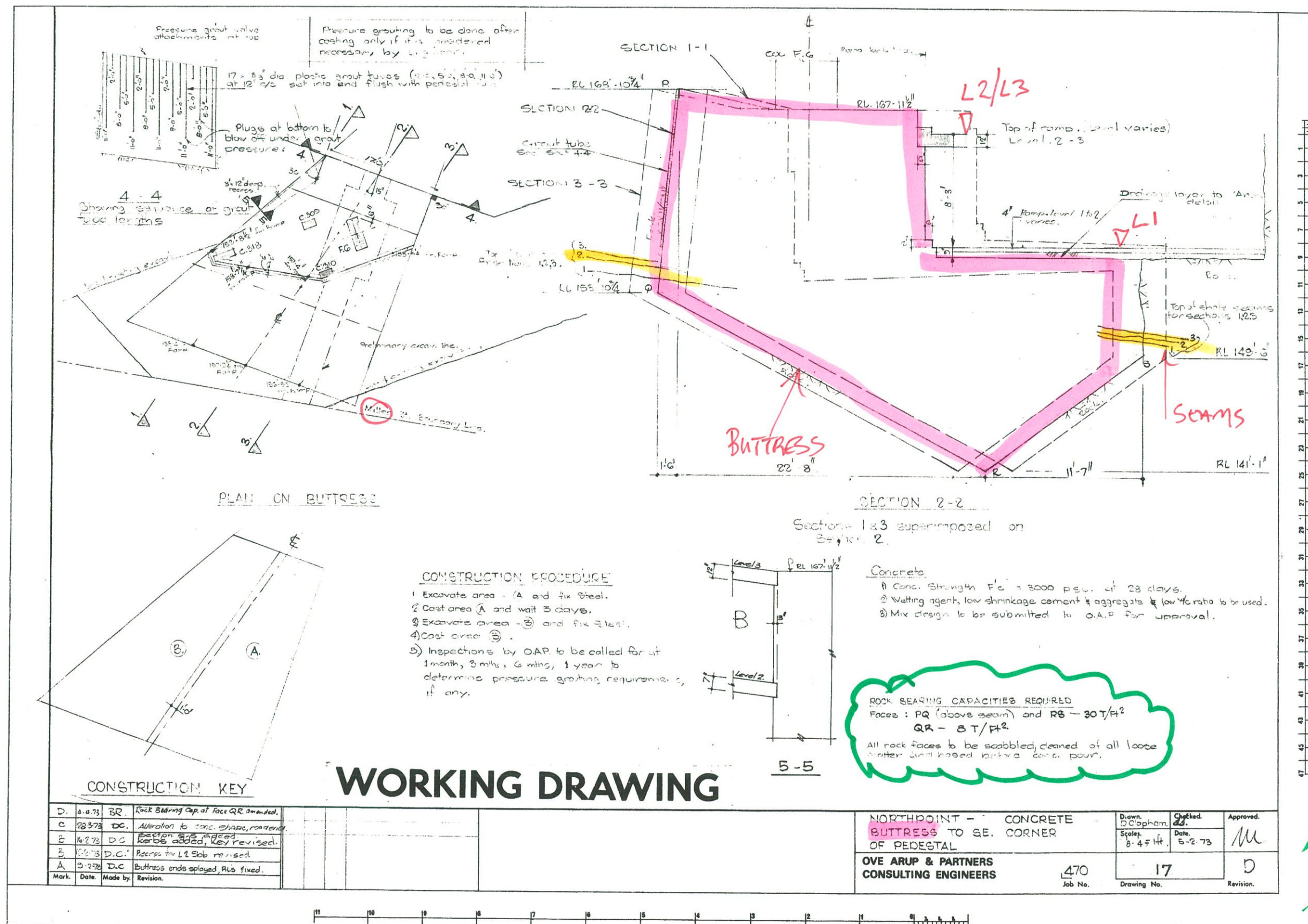
East Shear Wall Ftg. Notes.—
1 Required Pier Foundation Bearing Capacity: 307/ft.
2 Concrete strength f'_c 6000 p.s.i.
3 Level of footing determined by lower of 45° max line shown
or shale seam and is subject to detail inspection and
testing area for bearing capacity.

WORKING DRAWING

Rev.	By	Date	Amendment.
A	JF	24/8/73	Per bases & Ls established Note 3 added

NORTHPOINT	
ONE MILLER STREET & PACIFIC HIGHWAY, NORTH SYDNEY.	
PROPRIETORS	NORTHPOINT PROPERTIES PTY. LIMITED
PROJECT MANAGERS	MAX G. BOWEN (AUST.) PTY. LIMITED * 929 0944
ARCHITECTS	FRANK KOLOS & J. H. BRYANT 110 PACIFIC HIGHWAY NORTH SYDNEY 2060 * 92 0398
STRUCTURAL ENGINEERS	OVE ARUP & PARTNERS 122 WALKER STREET NORTH SYDNEY 2060 * 929 7233
CONSULTING ENGINEERS	D. S. THOMAS & PARTNERS 104 MOUNT STREET NORTH SYDNEY 2060 * 929 8811
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LANDSCAPE CONSULTANTS	BRUCE MACKENZIE & ASSOCIATES 7 RIDGE STREET NORTH SYDNEY 2060 * 92 0319
SHEET TITLE	
FOUNDATION MODIFICATION SCHEME SECTIONS A-A & B-B	
SCALE 1/4" = 1'-0"	DATE 11-8-73
BY 11-8-73	CHECKED 1/4" 470
SEE STRUCTURAL	32





RELATIVE LOCATION OF TUNNEL (NOT TO SCALE)



1. Bar mark G28 to G33, G12 & G17 Blm steel
and mark G86 to G89, G75, G73, G38, 403 Top steel.
Schedule Slugs 'A' to be returned for
splicing with Slugs 'B' by heating to 'cherry red'
and bending straight.

2. Side of constⁿ joint to be rough and clean before adjacent pour

FOR COLUMN STARTERS
TO C.309, 310, 318 & FG SEE DETAIL.

SPLICE LENGTH
#6 = 18" min generally
• = 27" min top steel.

The diagrams illustrate the windward and leeward walls of a rectangular building with a chimney. The building has a width of 40' and a height of 30'. The chimney is 10' high and 10' wide. The wind direction is indicated by arrows. The diagrams are labeled 'Windward Wall' and 'Leeward Wall'.

COL. F.G. COL. 309/310 COL. 318
5'-G' x 2'-O' 2'-O' x 1'-O' 3'-O' x 1'-O'

1. This dry is to be read in conjunction with.
Engineer's dry N 470 (layed)
2. All reinf. to be structural grade deformed bars
unless otherwise stated.
3. Cover to reinf. to be 3" unless otherwise stated
4. Refer to bending bar list 470/174 p1 to 6
5. Notation

T.T. denotes top bars top layer
T. * * Btm.
B.B. * Btm Btm.
A * * Top

SECTION 2-2
Horizontal steel indicated only.
Scale: $\frac{1}{8}'' = 1 \text{ ft.}$

SECTION C-6
Starters to 2" Slab

SECTION 3-3
Horizontal steel indicated only
Scale: $\frac{1}{8} = 1 \text{ ft}$

Horizontal steel indicated only
Scale: $\frac{1}{8} = 1 \text{ ft.}$

Hand-drawn sketch of a structural section showing reinforcement details. It includes labels for "Level 3" at the top, "Level 1.2" at the bottom, and a vertical dimension of "2.6m". A curved arrow indicates a bending moment, and a label "501" is present near the top reinforcement.

SECTION 7-7

WORKING DRAWING

[illegible]

CNR, MILLER STREET & PACIFIC HIGHWAY, NORTH SYDNEY

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CONSULTING ENGINEERS
D. S. THOMAS & PARTNERS
184 MOUNT STREET
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QUANTITY SURVEYORS
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LANDSCAPE CONSULTANTS
BRUCE MACKENZIE & ASSOCIATES
7 RIDGE STREET
NORTH SYDNEY 2060 *

SHEET TITLE

BUTTRESS TO S.E. CORNER
REINFORCEMENT

SCALE: 1" = 1' DRAWN D. Clapham

DATE 15-2-72	CHECKED <i>[Signature]</i>
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SET STRUCTURAL

JOB N°

47

DRG N
17