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# J.J. MARINO & ASSOCIATES

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Consulting Engineers

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A.C.N. 103 562 974

C:\PROJECTS\Belmorgan\Crown Street Wollongong\Design Philosophy.doc

20 August 2007

UrbisJHD  
L21, 321 Kent Street  
SYDNEY NSW 2000

**ATTENTION: MR PAUL ALTREE-WILLIAMS**

Dear Paul,

**RE: DWYER'S REDEVELOPMENT  
CROWN STREET, WOLLONGONG  
PRELIMINARY DESIGN PHILOSOPHY**

At your request, we have reviewed the architectural concept plans for the purpose of assessing whether a feasible structural scheme can be designed and constructed for the proposed development.

As part of our review we have provided a series of sketches, namely Dwyers / Sk\_1 to Dwyers / Sk\_9 inclusive. This letter should be read in accompaniment with these sketches. These sketches show the maximum depth of structural zones required for various areas of the development. Please note that these depths relate to the deepest structural elements, e.g. beams. Beyond the beams we would expect the deepest slab thickness to be 200mm.

Our comments / assumptions are as follows:

- The proposed layout of the residential towers above the Roof level appears suitable for a system such as "Ritek" or equivalent. Our preliminary load rundown calculations have been based on the adoption of such a system, leading to the structural depths for the transfer at Roof Level.
- The remaining roof level was assumed to be trafficable also.
- All structural depths / zones noted are based on post-tensioned concrete design, with the exception of the roof over the cinema zones. Due to the clear spans involved over the cinemas, a steel framed system with a concrete slab on structural formwork was deemed to be the more appropriate solution.
- Indicative locations of columns under (and over in transfer situations) are noted on the sketches.
- Level 5 extends to cover the footprint of the residential tower noted as part of Stage 2 of the development. This level is dedicated to commercial / office use. There is no concrete slab over the cinemas at this level.
- Additional columns added at Level 4 at the "travelator void" East of Grid C negating the need for a deep cantilevered structural zone.
- Columns added within the "inter-cinema" walls all transferring at Level 3.
- 1500 deep transfer beams over loading dock area, spanning approximately 17m to support columns over and storage loads on Level 2.
- Lifts on Grid 10/K commence at Level 1 with lift pits etc extending to Level 1 Basement. 600 thick transfer zone allowed for locally to support the lift shaft walls.
- Basement levels allowed for normal carparking loads with no "heavy" vehicles allowed.
- A 600 wide zone should be allowed for along the entire perimeter of the basement levels to accommodate a shoring wall system.

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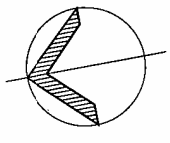
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The above comments present a possible solution for the development. In general, we do not foresee any structural concerns that would prevent the design and construction of the development from proceeding.

We trust this satisfies your current requirements. Should you require clarification on any of the sketches or this report, please do not hesitate to contact our office.

Yours faithfully,

Laki Revellos  
**J.J. MARINO & ASSOCIATES PTY LTD**



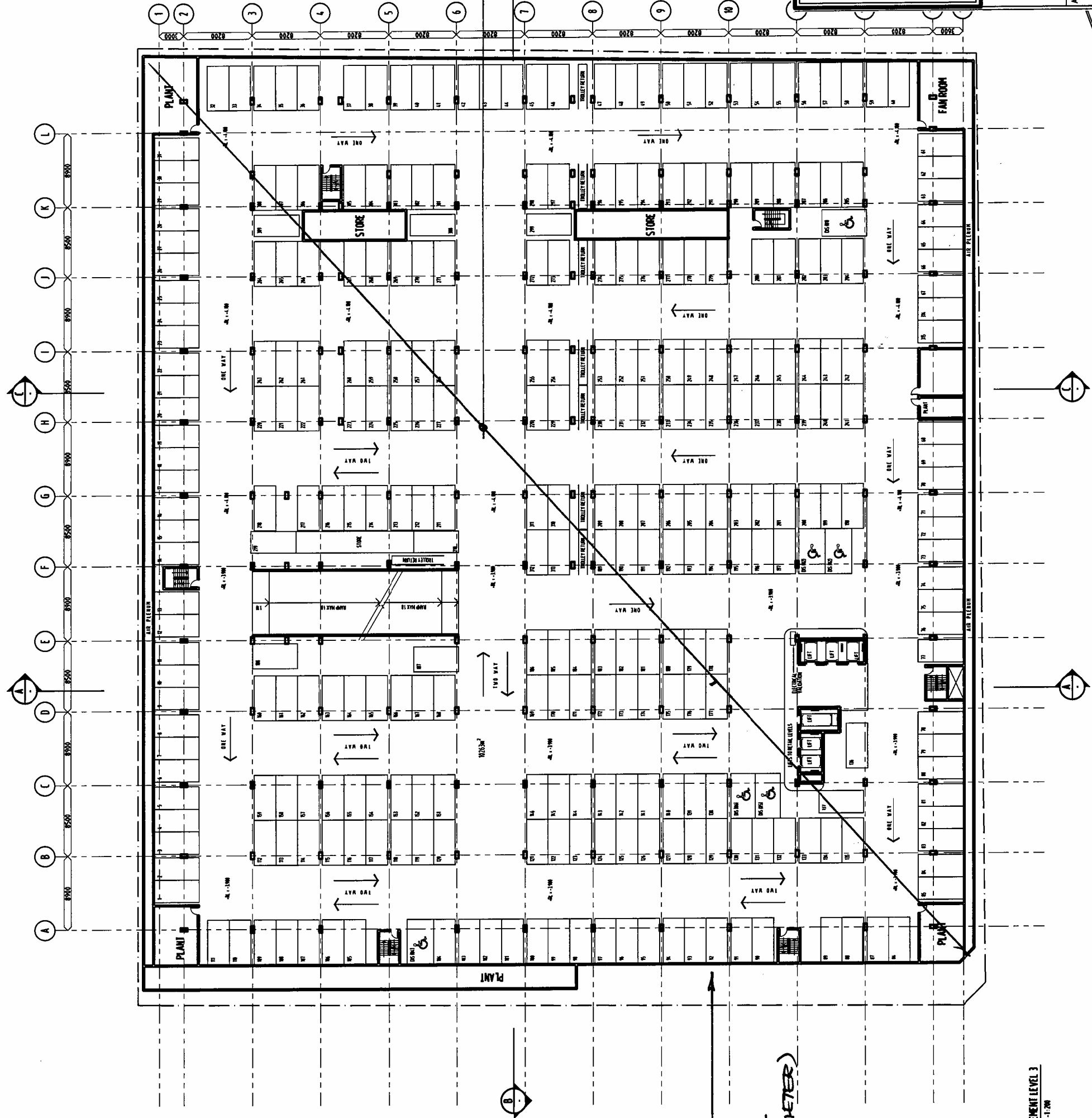
NOT TO SCALE  
FOR INFORMATION  
ONLY  
DATE: 20.08.07

CAR PARK:  
350THK STRUCTURAL  
ZONE.

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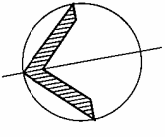
**DWYERS REDEVELOPMENT**  
**LEVEL 3 BASEMENT**  
**STRUCTURAL THICKNESS ZONES**

APPROVED FOR CONSTRUCTION	DATE: 20.08.07	SCALE
	DRAWN	DESIGNED
JOB No. 07-104	DRAWING No. DWYERS/SKI	ISSUE



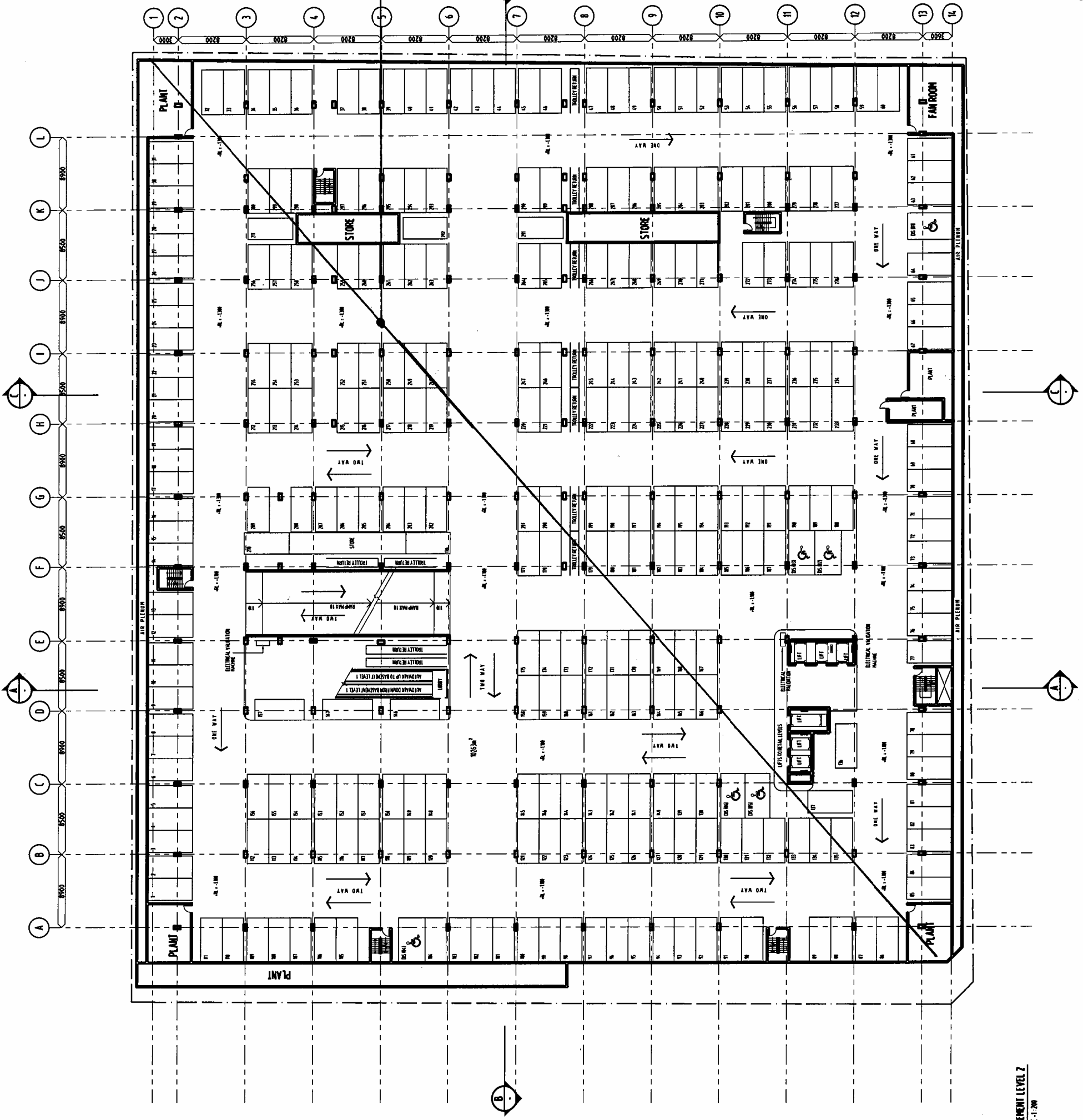
ALLOW 600WIDE  
ZONE FOR  
SHORING WALL  
SYSTEM. (TYPICAL  
FOR ENTIRE PERIMETER)

BASEMENT LEVEL 3  
SCALE: 1:200



NOT TO SCALE  
 ALL DIMENSIONS TO FACE UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS TO FACE UNLESS OTHERWISE SPECIFIED

CARPARK  
 350 STRUCTURAL ZONE.



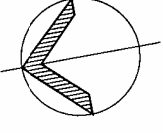
BASEMENT LEVEL 2  
 SCALE: 1:200

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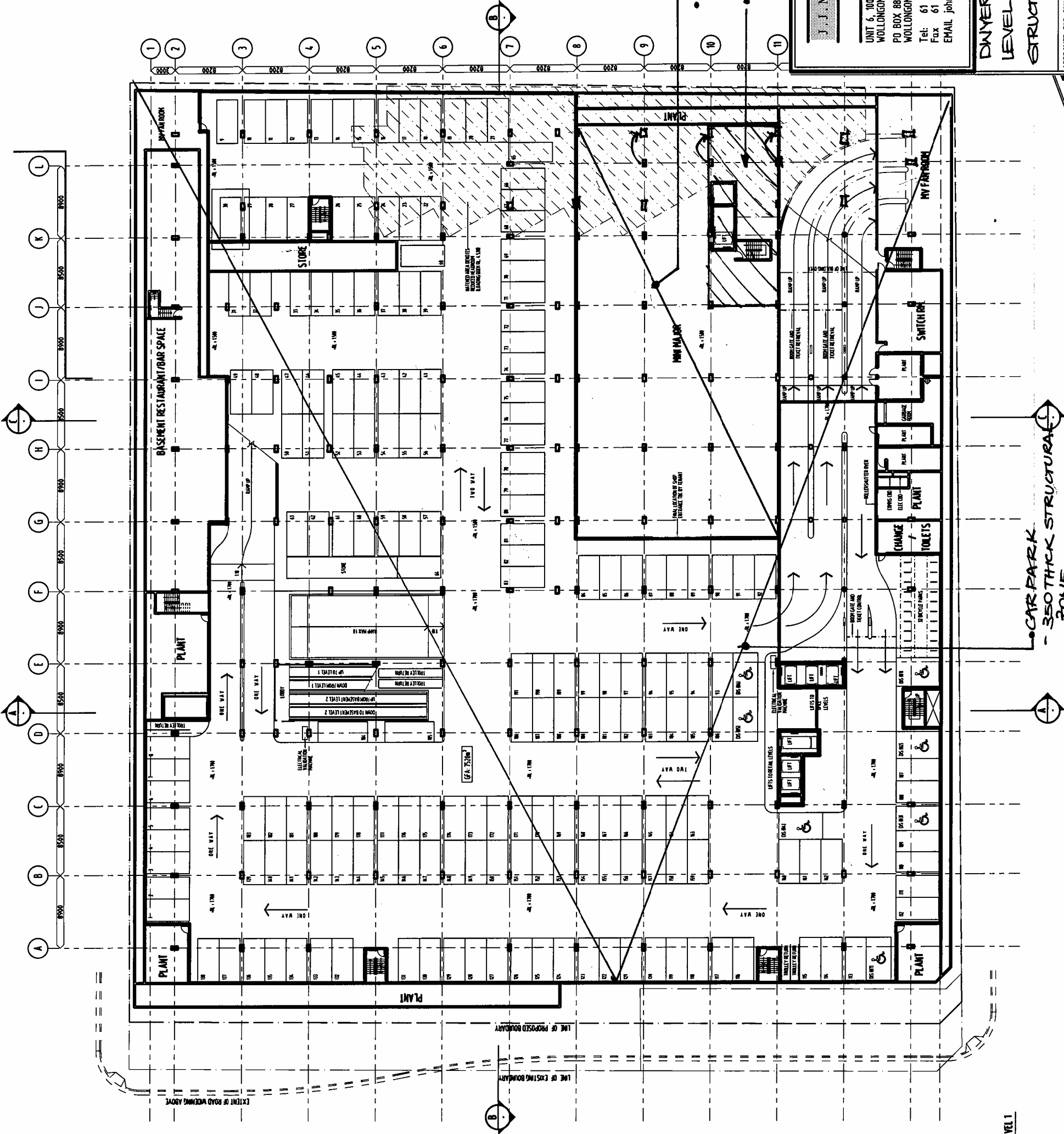
UNIT 6, 100 MARKET STREET  
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**DWYERS REDEVELOPMENT  
 LEVEL 2 BASEMENT  
 STRUCTURAL THICKNESS ZONES**

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	DRAWN: LR	DESIGNED
JOB No: 07-104	DRAWING No: DWYERS / SKZ	ISSUE



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FOR INFORMATION ONLY



MINI MAJOR  
• 400 THK STRUCTURAL ZONE.  
• 600THK ZONE UNDER LIFT-SHAFT. (TRANSFER ZONE)

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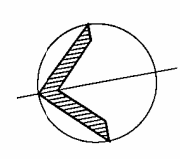
**DWYERS REDEVELOPMENT  
LEVEL 1 BASEMENT  
STRUCTURAL THICKNESS ZONES**

APPROVED FOR CONSTRUCTION	DATE	SCALE
	20.08.07	DESIGNED
	DRAWN	DESIGNED
JOB No.	DRAWING No.	ISSUE
07-104	DWYERS / SK3	

BASEMENT LEVEL 1  
SCALE: 1:100

CAR PARK  
- 350 THK STRUCTURAL ZONE  
• PLANT / SWITCH / FAN ROOMS  
• 380 THK STRUCTURAL ZONE

GOOTHICK STRUCTURAL  
(TRANSFER) ZONE.



DATE: 20.08.07  
SCALE: AS SHOWN  
DRAWN: J.M.  
DESIGNED: J.M.  
ISSUE: 1

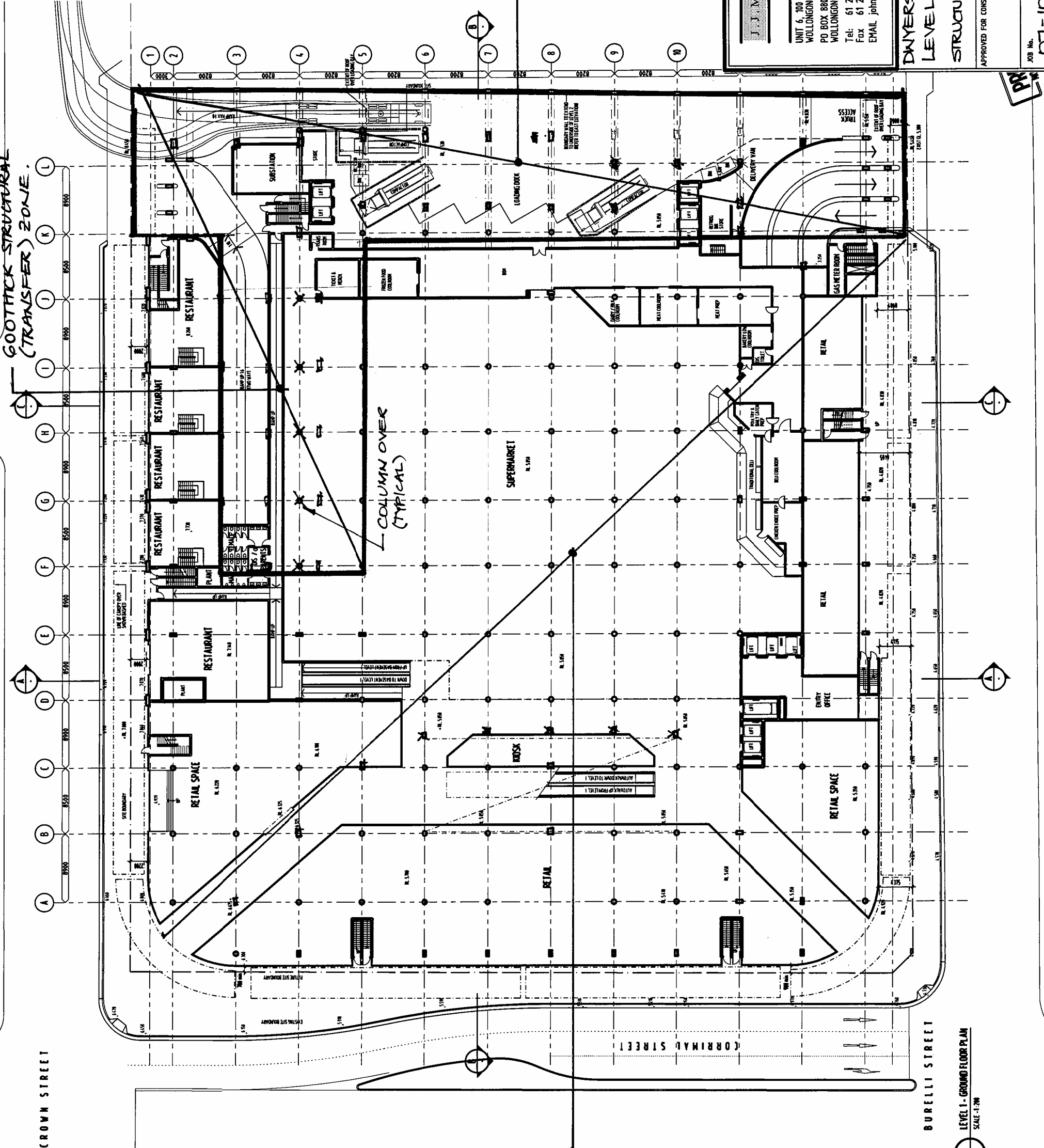
LOADING DOCK:  
GOOTHICK  
STRUCTURAL ZONE

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**DWYERS REDEVELOPMENT**  
**LEVEL 1**  
**STRUCTURAL THICKNESS ZONES**

APPROVED FOR CONSTRUCTION: DATE 20.08.07 SCALE AS SHOWN  
DRAWN: J.M. DESIGNED: J.M.  
JOB No. 07-104 DRAWING No. DWYERS/SK4 ISSUE 1



RETAIL ZONE:  
400THICK  
STRUCTURAL ZONE

LEVEL 1 - GROUND FLOOR PLAN  
SCALE: 1:200

700THICK STRUCTURAL  
(TRANSFER) ZONE

RETAIL ZONE:  
400 THICK  
STRUCTURAL ZONE.

STORAGE AREA  
1500 THK  
STRUCTURAL ZONE  
(TRANSFER ZONE)

DENOTES  
COLUMN OVER  
DWYER'S SITE

DENOTES  
COLUMN UNDER

CONCEPT PLANS

LEVEL 2 FLOOR PLAN

REVISIONS: 01: 01/02/07  
02: 01/02/07  
03: 01/02/07  
04: 01/02/07  
05: 01/02/07  
06: 01/02/07  
07: 01/02/07  
08: 01/02/07  
09: 01/02/07  
10: 01/02/07  
11: 01/02/07  
12: 01/02/07  
13: 01/02/07  
14: 01/02/07

PRELIMINARY  
NOT FOR CONSTRUCTION

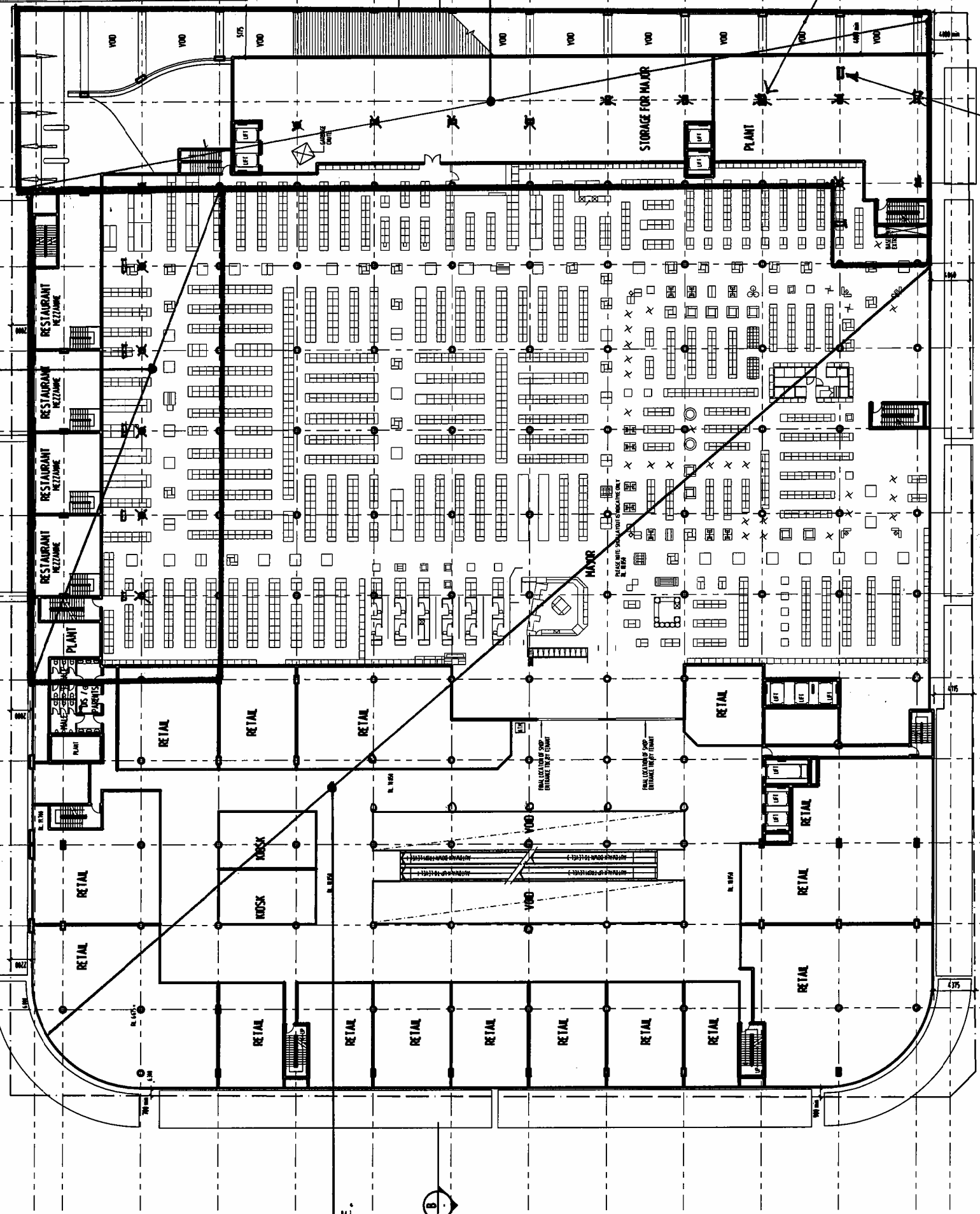
LEVEL 2 FLOOR PLAN  
SCALE: 1:200

1200 @ B1  
FEB 07  
665.965  
A-DA-2206 C

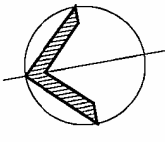
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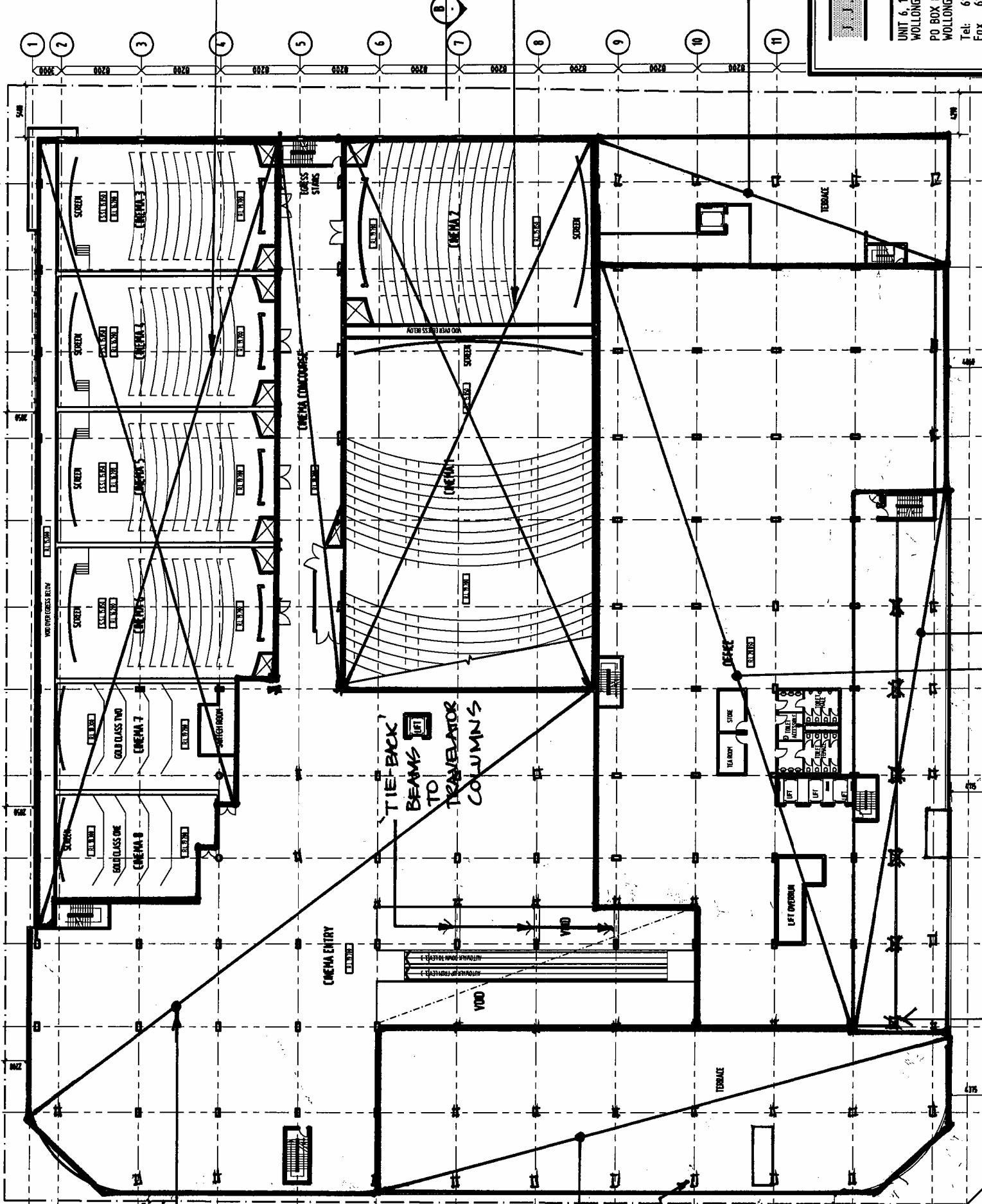
DWYERS REDEVELOPMENT LEVEL 2	
STRUCTURAL THICKNESS ZONES	
APPROVED FOR CONSTRUCTION	DATE: 20.08.07
SCALE	DESIGNED
JOB No. 07-104	DRAWING No. DWYERS / SK5
ISSUE	







PROJ. ENGINEER  
J.J. MARINO & ASSOCIATES  
CONSULTING ENGINEERS



CINEMA ENTRY / CONCOURSE  
400 THK STRUCTURAL ZONE

TERRACE -  
400 THK STRUCTURAL  
ZONE

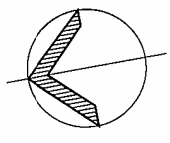
COLUMNS  
UNDER  
TYPICAL.

LEVEL 4 FLOOR PLAN  
SCALE: 1:100

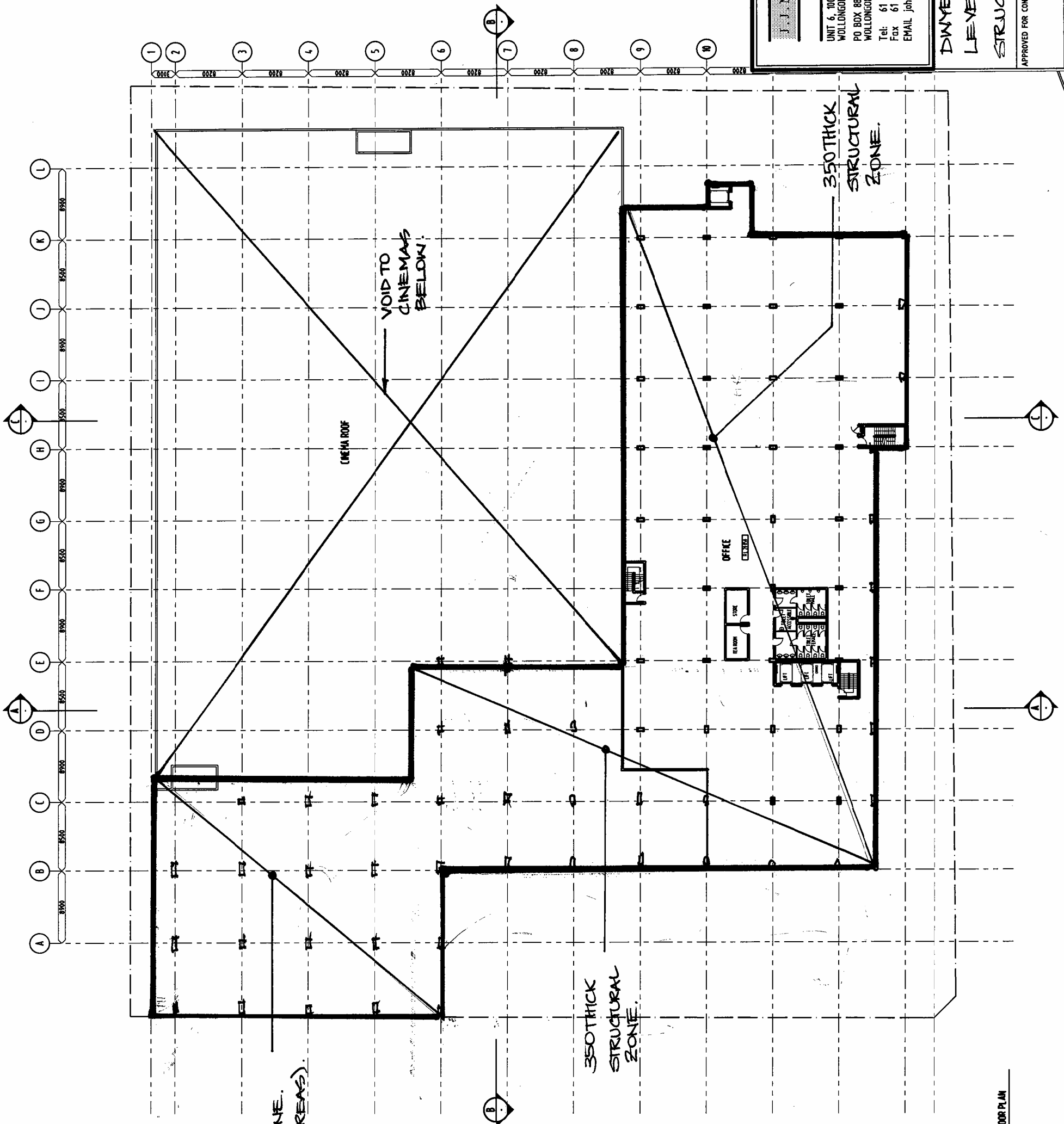
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DWYERS REDEVELOPMENT  
LEVEL 4  
STRUCTURAL THICKNESS ZONES

APPROVED FOR CONSTRUCTION	DATE	SCALE
		DESIGNED
		DRAWN
JOB No.	07-104	DRAWING No.
		DWYERS / SK7
		ISSUE



SCALE: 1:200  
DATE: 08/08/07



350 THICK  
STRUCTURAL ZONE.  
(COMMERCIAL AREAS)

350 THICK  
STRUCTURAL  
ZONE

350 THICK  
STRUCTURAL  
ZONE.

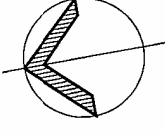
LEVEL 5 FLOOR PLAN  
SCALE: 1:200

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Consulting Engineers

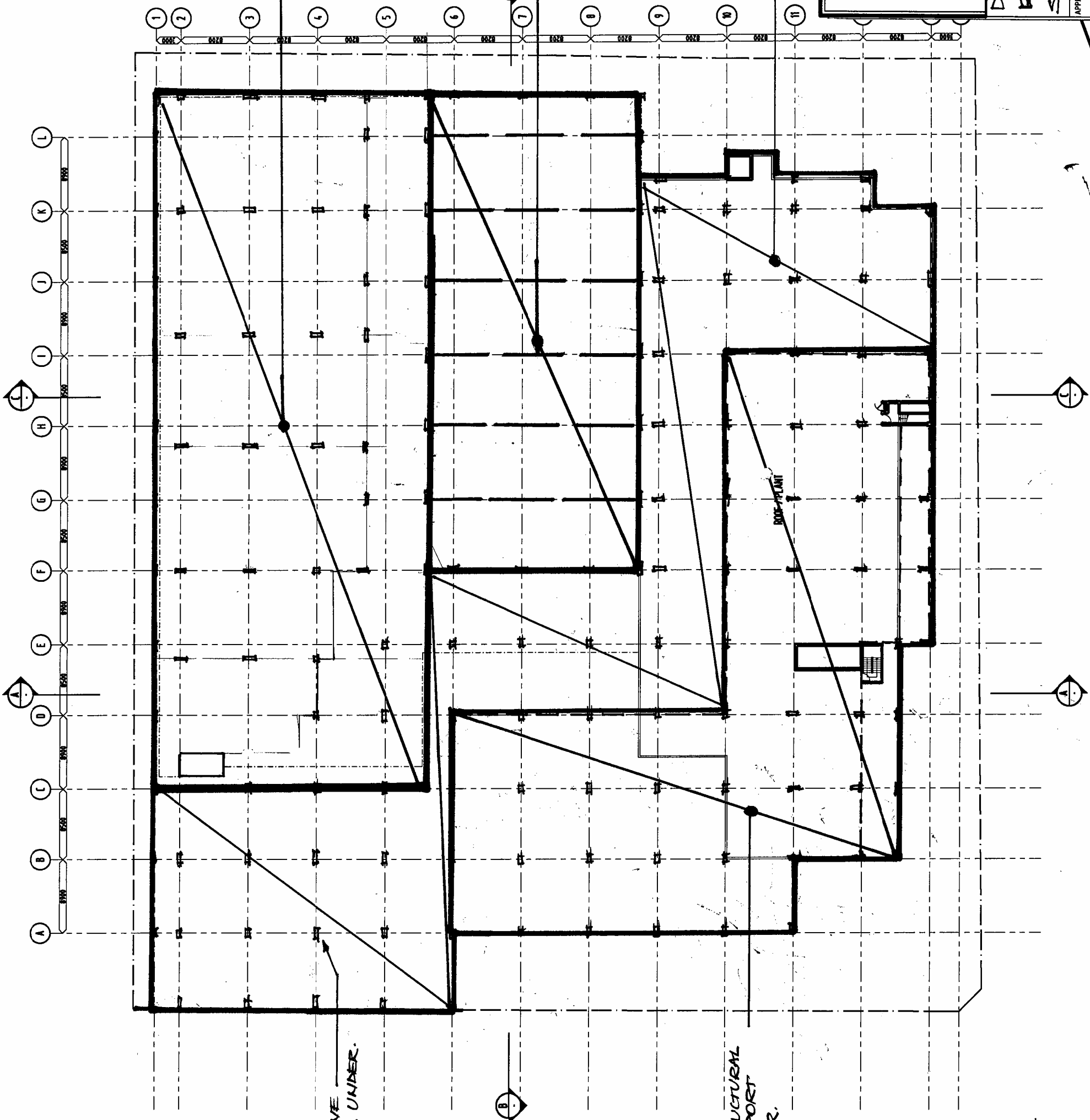
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DWYERS REDEVELOPMENT  
LEVEL 5  
STRUCTURAL THICKNESS ZONES

APPROVED FOR CONSTRUCTION:	SCALE	DESIGNED	ISSUE
DJ 15.08.07	1:200		
DRAWN			
JOB No. 07-104	DRAWING No. DWYERS/SK8		



PROJECT: 07-104  
DATE: 20-08-07  
SCALE: 1:200



700 THK STRUCTURAL ZONE.  
STEEL PRIMARY BEAMS (EAST-WEST) +  
SECONDARY BEAMS @ 2000MAX CTRS +  
150 THK BONDEK SLAB.

2000MM DEEP STEEL TRUSSES (NORTH-SOUTH) +  
SECONDARY BEAMS @ 2000MAX CTRS +  
150 THK BONDEK SLAB.

400 THK STRUCTURAL ZONE FOR TYPICAL ROOF SLAB.

INDICATIVE COLUMNS UNDER. (TYPICAL)

600 THK STRUCTURAL ZONE TO SUPPORT TOWER(S) OVER.

ROOF PLAN  
SCALE: 1:200

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**DWYERS REDEVELOPMENT**  
ROOF LEVEL  
STRUCTURAL THICKNESS ZONES

APPROVED FOR CONSTRUCTION	DATE	SCALE
	20-08-07	
	DRAWN	DESIGNED
JOB No.	DRAWING No.	ISSUE
07-104	DWYERS/SK	

