Our Ref: J03354 Staged CC

12 November 2003

Pittwater Council
PO Box 882
MONA VALE NSW 1660

rec-
129159

Attention: General Manager

Dear Sir/Madam,

Subject: **Staged Construction Certificate J03354**
Development Consent Permit N0632/01
Bungan Lane Car Park, 4 Bungan Lane, Mona Vale

We refer to our engagement in respect of the above and enclose the Construction Certificate for such in accordance with the provisions of Clause 142 of the Environmental Planning and Assessment Regulation 2000.

Also please find enclosed a cheque for $30.00 being the registration fee for the above. It would be appreciated if a receipt in this regard could be forwarded to our firm as soon as possible.

Should you require any further information please do not hesitate to contact the undersigned.

Yours faithfully,

Mark Moran
for ***DLM Certification Pty Ltd***

Cc: **DesignInc**
124 Walker Street
North Sydney NSW 2060

Encl.

New South Wales
Level 1, Suite 102,
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NOTICE TO COMMENCE BUILDING WORKS AND APPOINTMENT OF PRINCIPAL CERTIFYING AUTHORITY – Construction Certificate

DLM CERTIFICATION

Issued under the Environmental Planning and Assessment Act 1979
Section 81A (2) (b) (i) (ii) and Section 81A (2) (c)

Appointment

Please be advised that Mr Simon Dwyer has been appointed as the Principal Certifying Authority for the development at the following location.

Property Description

Address	4 Bungan Lane, Mona Vale	DP	707539
	Lot No. 2		

Description of Development

- Building work – Construction of a three storey public carpark. STAGED (STAGE 1) – KNOWN AS. (STAGES 1-2B per DA.)

Development Consent Details

Development Consent No.	N0632/01	Date of Determination	6 February 2003
Consent Authority	Pittwater Council		

Construction Certificate Details

Construction Certificate No.	J03354	Date of Determination	12 / 11 / 03

Principal Certifying Authority

Name of Accredited Certifier	Simon Dwyer			
Accreditation No.	925			
Contact Numbers	Phone	9799 7466	Facsimile	9799 7566

Compliance with Development Consent

Have all conditions required to be satisfied prior to the commencement of work been satisfied?
YES pursuant to Clause 146 of the Environmental Planning & Assessment Regulation 2000.

Date Work to Commence	17 / 11 / 2003

Signatures:

I hereby consent to the appointment of Simon Dwyer as the Principal Certifying Authority

Pittwater Council.
12/5 Vuko Place
Warriewood NSW 2102.

I hereby accept the appointment as the Principal Certifying Authority

Simon Dwyer
DLM Certification Pty Ltd
Suite 102, 2 Holden Street
Ashfield NSW 2131

New South Wales
Level 1, Suite 102,
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BUNGAN LANE CARPARK

STRUCTURAL DRAWINGS

DRAWING LIST

S0 COVER SHEET

S1 GENERAL NOTES

S2 FOOTING LAYOUT

S3 FOOTING DETAILS

S4 FIRST & SECOND FLOOR LAYOUT

S5 THIRD FLOOR LAYOUT

S6 FLOOR ELEVATIONS

S7 TYPICAL FLOOR DETAILS SHEET 1

S8 TYPICAL FLOOR DETAILS SHEET 2

S9 TYPICAL FLOOR DETAILS SHEET 3

S10 TYPICAL FLOOR DETAILS SHEET 4

S11 TYPICAL FLOOR DETAILS SHEET 5

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR PROJECT No: J 03054
12 NOV 2003
DLM

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P	29-5-03
T1	ISSUED FOR TENDER	L.N.P	23-5-03
P2	GENERALLY REVISED	-	16-5-2003
P1	ISSUED FOR INFORMATION	-	9-5-2003

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MPN GROUP PTY LTD
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EMAIL – email@mpn.com.au FAX. (02) 9922 3041

ARCHITECT : PH: (02) 9957 5401
DESIGNINC SYDNEY

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

COVER SHEET

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: N/A
DATE:	No IN SET	MPN JOB 8822 / DWG No S0

GENERAL NOTES

CONSTRUCTION NOTES:

GENERAL :

G1 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER WORKING DRAWINGS INCLUDING COUNCIL APPROVED ARCHITECTURALS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONSTRUCTION. ANY DISCREPANCY OR VARIATION SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE ENGINEER SHALL BE GIVEN 24 HOURS NOTICE FOR INSPECTIONS AND CONCRETE SHALL NOT BE DELIVERED UNTIL FINAL APPROVAL HAS BEEN OBTAINED.

G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUST. STANDARDS, THE B.C.A. AND RELEVANT WORK COVER AND BUILDING AUTHORITY REGULATIONS EXCEPT WHERE VARIED BY THE CONTRACT. WHERE EXISTING STRUCTURAL ELEMENTS ARE INDICATED TO BE RE-USED, MPN GROUP HAS CONSIDERED THEIR ADEQUACY BASED ON REASONABLE ENGINEERING ASSESSMENT (I.E. EXCLUDING MATERIAL TESTING) THE CONTRACTOR IS TO ADVISE THE ENGINEER UPON DISCOVERY OF LATENT CONDITIONS WHEREBY EXIST. STRUCTURAL ELEMENTS DO NOT MEET STRUCTURAL REQUIREMENTS.

G3 ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED. DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS. U.N.O. DENOTES "UNLESS NOTED OTHERWISE".

G4 ALL WATERPROOFING MEMBRANE, FLASHINGS & WEEPHOLES SHALL BE TO ARCHITECTS OR MANUFACTURERS SPECIFICATION.

G5 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES. DEMOLITION SHALL COMPLY WITH AS 2601.

G6 THE STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS HAVE BEEN DESIGNED FOR LOADINGS IN ACCORDANCE WITH THE RELEVANT AUST. STANDARDS AND USAGE AS INDICATED ON THE ARCHITECTURAL PLANS.
-SUPERIMPOSED LOADS: SDL= 0.2 AT L1 & L2, 1.5 AT L3 kPa, LL= 2.5 kPa U.N.O.
-WIND LOADS : BASIC WIND VEL. Vp=44 m/s, TERRAIN CAT. =2
-EARTHQUAKE DESIGN LOADS TO AS 1170.4 FOR
STRUCT. TYPE : 1 ,μ= 0.80 ,S= 1.0 ,EQUAKE DESIGN CAT= A
-FIRE RESISTANCE LEVEL AS DETAILED : 60 MINUTES U.N.O.

CONCRETE :

C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT EDITIONS OF AS 3600 AND AS 3610 EXCEPT AS VARIED BY THE CONTRACT DOCUMENTS.

C2 CONCRETE COMPONENTS AND QUALITY SHALL CONFORM TO AS 1379 AND ALL REQUIREMENTS OF THE ACSE CONCRETE SPECIFICATION DOCUMENT 1, (EDITION 6), U.N.O. AS FOLLOWS:

ELEMENT	GRADE MPa	SLUMP mm	MAX. AGG. SIZE mm	MIN. CEMENT ** kg/m³
FOOTINGS	N32	80	20	-
PLAIN TOPPINGS, RAMPS, STAIR TREADS.	N40	80	20	-

** CEMENT USED IN S GRADE MIXES TO BE TYPE GP - GENERAL PURPOSE PORTLAND CEMENT IN ACCORDANCE WITH AS 3972.
- ASSESSMENT TO AS 1379, APPENDIX B. - METHOD : PROJECT / PLANT
- MAXIMUM PERMISSIBLE DRYING SHRINKAGE STRAIN IN ACCORDANCE WITH AS 1012 AT 56 DAYS SHALL BE 650με U.N.O. FOR ALL S GRADE MIXES.

C3 MIN. CLEAR COVER TO REINFORCEMENT, TIE-BARS, EMBEDMENTS AND TIE-WIRE SHALL BE AS FOLLOWS U.N.O. COVERS SHOWN COMPLY WITH:
INTERNAL EXPOSURE CLASS : N/A EXTERNAL EXPOSURE CLASS : B2

MIN. CLEAR COVER TO REINF. OF ELEMENT IN mm (INCLUDING REBATES, CHAMFERS, ETC.)	EXPOSURE INTERNAL	EXPOSURE EXTERNAL
SLAB AND 'B' ABEAMS : TOP	20	45 (U.N.O.)
: SOFFIT, SIDES	20	
BEAMS : TOP	25	
: SOFFIT, SIDES	30	
WALLS	20	
COLUMNS	40	
FOOTINGS : FORMED		50
: CAST AGAINST GROUND		75
MEMBERS OTHER THAN FOOTINGS, CAST AGAINST GROUND		50
SLABS / BEAMS CAST AGAINST D.P.M. ON GROUND		40

NOTE: COVERS MAY INCREASE TO SUIT FIRE RATING OR BAR SIZE.

C4 CONSTRUCTION JOINTS SHALL BE PROPERLY FORMED, SCABBLED AND CLEANED, AND LOCATED ONLY WHERE SHOWN OR EXPRESSLY APPROVED BY THE ENGINEER.

C5 NO HOLES, CHASES OR EMBEDMENT OF PIPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

C6 SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS AS SHOWN OR AS OTHERWISE APPROVED BY THE ENGINEER.

C7 MINIMUM LAP FOR ALL FABRICS SHALL BE ONE MESH PLUS 50 mm.

C8 REINFORCEMENT IS SHOWN DIAGRAMMATICALLY. IT IS NOT SHOWN IN TRUE PROJECTION.

C9 REINFORCEMENT SHALL BE TO AS 4671. SYMBOLS
F= 500 GRADE WIRE REINFORCING FABRIC, R= 250 GRADE ROUND BAR,
S= 1025N GRADE DEFORMED BAR, N= D500N GRADE TEMPCORE BAR OR EQUIVALENT.
DESIGNATION CODE OF REINFORCEMENT BARS AS IN EXAMPLE.
No. OF BARS IN GROUP ——— BAR GRADE AND TYPE
└——— 17 N 20 - 250 └——— SPACING IN mm
NOMINAL BAR SIZE IN mm

C10 WHERE TRANSVERSE TIE BARS ARE NOT SHOWN PROVIDE N12-300 LAP 400 mm. SECURELY CHAIR ALL REINFORCEMENT AT 1800 c/c MAX.

C11 WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS APPROVED BY THE ENGINEER. BENDING OF REINFORCEMENT SHALL COMPLY WITH CLAUSE 19.2.3 OF AS 3600.

C12 ALL CONCRETE SHALL BE PLACED AND CURED IN ACCORDANCE WITH AS 3600. SECTIONS 4 AND 19 BY APPLICATION OR RETENTION OF WATER TO THE CONCRETE. WHERE CURING COMPOUND IS USED IT MUST BE APPLIED (A) ONTO SLABS IMMEDIATELY AFTER FINISHING CONCRETE (B) ONTO WALLS AND COLUMNS IMMEDIATELY AFTER REMOVAL OF FORMWORK AND CURING COMPOUNDS SHALL COMPLY WITH AS 3799

C13 ALL MATERIALS, DESIGN, CONSTRUCTION, AND REMOVAL OF FORMWORK SHALL COMPLY WITH AS 3610 AND SECT. 19.6 OF AS 3600.

C14 SLABS AND BEAMS SHALL BEAR ONLY ON THE BEAMS, WALLS, ETC. SHOWN ON THE DRAWINGS. ALL OTHER BUILDING ELEMENTS SHALL BE KEPT 15 mm CLEAR FROM SOFFITS OF STRUCTURE.

FOUNDATIONS :

F1 ALL PIER FOUNDATION MATERIAL SHALL BE APPROVED BY GEOTECH ENGINEER FOR 1500 kPa UNIFORM BEARING CAPACITY U.N.O. BEFORE PLACEMENT OF CONCRETE IN FOOTINGS.
REFER TO GEOTECHNICAL INVESTIGATION REPORT No: 35721 PREPARED BY DOUGLAS PARTNERS DATED : FEB 2003

F2 FOOTINGS NEAR BOUNDARIES SHALL NOT BE LOCATED EITHER HIGHER OR LOWER THAN THE FOOTINGS OF ADJACENT PROPERTIES, UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE GEOTECHNICAL ENGINEER THE BASE OF AN EXCAVATION OR ADJACENT FOOTING SHALL NOT BE LOWER THAN THE ZONE OF INFLUENCE (GENERALLY 1:1) OF ANY OTHER FOOTING OR ADJOINING PROPERTY WITHOUT GEOTECHNICAL ENGINEERS APPROVAL.

F3 FOOTINGS SHALL BE LOCATED CENTRALLY UNDER WALLS AND COLUMNS U.N.O. FOOTINGS SHALL BE CAST AS SOON AS POSSIBLE AFTER EXCAVATION TO AVOID SOFTENING OR DRYING OUT BY EXPOSURE.

F4 RESIDENTIAL FOOTING DESIGN TO AS 2870 FOR SITE CLASS : N/A

MASONRY :

M1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH SECTIONS 2 AND 8 OF AS 3700 U.N.O.

M2 WHERE CONCRETE SLABS & BEAMS BEAR ON MASONRY, TOP COURSE SHALL BE LEVEL, SMOOTH AND COVERED WITH A PREGREASED GALVANISED STEEL SLIDING JOINT MATERIAL.

M3 NO MASONRY WALLS SHALL BE ERECTED ON SUSPENDED SLABS AND BEAMS UNTIL ALL PROPPING HAS BEEN REMOVED.

M4 CLAY AND CALSIL MASONRY SHALL HAVE A CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH OF 20 MPa. CONCRETE BLOCK MASONRY SHALL BE GRADE 15 TO AS 2733. ALL MORTAR SHALL BE CLASS M3 TO AS 3700 U.N.O.

M5 ALL MASONRY SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE AND AT 8M MAXIMUM CENTRES U.N.O.

M6 NO CHASES, RECESSES OR RAKING OF JOINTS ARE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

M7 CONSTRUCT VERTICAL CONTROL JOINTS AT 8 M MAXIMUM CENTRES U.N.O.

M8 NON LOAD BEARING WALLS SHALL BE SEPARATED FROM CONCRETE SOFFIT AND AT VERTICAL CONCRETE FACES BY 15 mm THICK APPROVED COMPRESSIBLE MATERIAL.

M9 ALL MASONRY WALLS SHALL BE SECURED BY CAVITY WALL TIES, HEAD/EDGE RESTRAINT TIES OR REINFORCEMENT TO AS 3700, SECTION 3 AND ENGINEERS APPROVAL THE CONDITION OF TIES IN EXISTING WALLS SHALL BE REFERRED TO THE ENGINEER DURING ALTERATIONS/REFURBISHING WORKS REMEDIAL WORKS SHALL BE CARRIED OUT AS DIRECTED BY THE ENGINEER AS NECESSARY.

M10 ALL STEELWORK BUILT INTO EXPOSED MASONRY OR CONCRETE TO BE HOT DIP. GALV.

STEELWORK NOTES

S1. ALL WORKMANSHIP, MATERIALS, AND ERECTION SHALL BE IN ACCORDANCE WITH CURRENT EDITIONS OF S.A.A. CODES AS 4100 AND AS 1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS. FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL BE SUPERVISED BY A QUALIFIED ENGINEER EXPERIENCED IN SUCH SUPERVISION, TO ENSURE ALL REQUIREMENTS OF THE DESIGN ARE MET.

S2. ALL STEEL SHALL BE IN ACCORDANCE WITH AS 3679 GRADE 300, OR AS 1163 GRADE C350 AS APPROPRIATE.

S3. UNLESS NOTED OTHERWISE, ALL FILLET WELD SHALL BE 6 mm CONTINUOUS CATEGORY SP USING E41XX ELECTRODES. ALL BUTT WELDS (C.P.B.W.) SHALL BE COMPLETE PENETRATION BUTT WELDS TO AS 1554.1 REFER ARCHITECT SPECIFICATION FOR VISIBLE WELD SURFACE FINISH.

S4. TWO SETS OF SHOP DRAWINGS SHALL BE SUBMITTED TO THE CONSULTING ENGINEER AND APPROVAL OBTAINED BEFORE FABRICATION IS COMMENCED. ALL DIMENSIONS AND SETOUTS TO BE OBTAINED FROM ARCHITECTURAL DRAWINGS WHERE NOT NOTED ON STRUCTURAL DRAWINGS.

S5. UNLESS OTHERWISE SPECIFIED OR NOTED ON DRAWINGS, ALL SURFACE TREATMENT SHALL BE IN ACCORDANCE WITH SECTION 5, A.C.S.E. STRUCTURAL STEEL SPECIFICATION, 1992, FOR TYPE R.O.Z.P. PRIMER TO AS K108.

S6. STEELWORK INTENDED TO BE CONCRETE ENCASED SHALL BE UNPAINTED. ENCASING CONCRETE TO BE GRADE N25 MIN. PROVIDING ADEQUATE COVER TO SUIT FIRE RATING OR EXPOSURE CONDITIONS. CONCRETE ENCASEMENT SHALL BE CENTRALLY REINFORCED WITH F41 FABRIC AND/OR R6 BARS AT 150mm CENTRES.

S7. THE CONTRACTOR SHALL PROVIDE AND EMPLOY ANY ADDITIONAL TEMPORARY BRACING ETC. NECESSARY TO ADEQUATELY AND SAFELY HOLD STEELWORK IN POSITION DURING CONSTRUCTION.

S8. PROPRIETARY ITEMS (E.G. PURLINS, BOLTS, ETC.) SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

S9. BRACING MEMBERS SHALL BE SCREW FIXED OR SIMILARLY HUNG FROM PURLINS AT 3000 MAX. CENTRES.

S10. ALL SUNDRY ITEMS SUCH AS GUTTER SUPPORTS, CEILING AND PURLIN CLEATS, ARCHITECTURAL ELEMENTS, FIXTURES, ARE TO BE ALLOWED FOR IN THE PRICING BY THE TENDERER AS PER ARCHITECT'S DETAILS.

S11. ALL BEAMS HAVING A NATURAL CAMBER WITHIN THE STRAIGHTNESS TOLERANCE SHALL BE ERECTED WITH THE CAMBER UP. BEAMS AND TRUSSES OVER 6 METRE SPANS ARE TO BE PRECAMBERED 1 IN 500, UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER.

S12. UNLESS NOTED OTHERWISE, ALL BOLTS, ALL MASONRY ANCHORS AND ALL EXTERNAL BASEPLATES AND ALL STEELWORK SHALL BE HOT DIP GALVANISED. ALL BOLTS SHALL BE PROVIDED WITH APPROVED GALVANISED WASHERS. GALVANISING TO COMPLY WITH AS 1650 OR AS 1214 OR AS/NZS 2312, AS APPROPRIATE. MINIMUM COATING THICKNESS TO BE HDG 900 AS PER TABLE 5.2 OF AS/NZS 2312: 2002.

S13. TB BOLTS TO BE INSTALLED USING APPROVED LOAD INDICATING WASHERS, OR TORQUED TO MANUFACTURER'S SPECIFICATIONS. BOLTING PROCEDURES ARE DENOTED IN THE FOLLOWING MANNER.

IDENTIFICATION MARK AS SHOWN	4.6/S	8.8/S	8.8/TB
BOLT STRENGTH GRADE	4.6	8.8	8.8
BOLT TO AUST. STANDARD	AS 1111	AS 1252	AS 1252
METHOD OF INSTALLATION	SNUG TIGHTENED	SNUG TIGHTENED	FULLY TENSIONED TO AS 4100

S14. ALL HOLES SHALL BE 2 mm LARGER THAN THE NOMINAL BOLT DIAMETER UNLESS NOTED OTHERWISE. SLOTTED HOLES SHALL COMPLY WITH AS 1511.

S15. PROVIDE FIRE PROTECTION TO STRUCTURAL STEEL AS REQUIRED BY BUILDING CODE OF AUSTRALIA.

S16. BASEPLATES SHALL BE FULLY GROUTED BEFORE THE MEMBER IS SUBSTANTIALLY LOADED USING AN APPROVED NON-SHRINK GROUT PLACED BY RAMMING AGAINST FIXED SUPPORTS OR PRESSURE GROUTING.

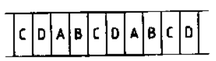
S17. ALL REPAIRS TO DAMAGED HOT DIP GALVANISED SURFACES TO BE REPAIRED IN ACCORDANCE WITH RECOMMENDATIONS OF AS/NZS 2312: 2002.

S18. ALL SERVICES PENETRATIONS THROUGH STEEL WORK (BEAMS OR COLUMNS) TO COMPLY WITH HOLE SIZE AND LOCATION LIMITATIONS AS PER TYPICAL DETAIL, AND TO BE PRE-DRILLED/CUT PRIOR TO HOT DIP GALVANISING OF STEEL MEMBER.

S19. NO SITE WELDING OR CUTTING PERMITTED OF ANY STEELWORK, U.N.O. DETAILED SHOP DRAWINGS TO BE SUBMITTED FOR APPROVAL BY ARCHITECT AND CONSULTING ENGINEERS PRIOR TO FABRICATION

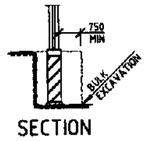
BRICK OR MASS CONCRETE UNDERPINNING CONSTRUCTION NOTES

1. APPROVAL FROM LOCAL GOVERNMENT COUNCIL AND FROM NEIGHBOURS SHALL BE OBTAINED BEFORE COMMENCING EXCAVATION.
2. THE UNDERPINNING SHALL BE CONSTRUCTED IN 25 MPA GRADE MASS CONCRETE OR BONDED BRICKWORK USING SOUND HARD BURNT SOLID CLAY BRICKS AND CEMENT-SAND MORTAR IN PROPORTIONS 1:4.
3. THE NEW UNDERPINNING SHALL BE POSITIONED CENTRALLY UNDER THE EXISTING WALL, AND SHALL HAVE A THICKNESS EQUAL TO, OR GREATER THAN THE WIDTH OF THE EXISTING FOOTINGS DIRECTLY OVER.
4. PARTS PROJECTING OVER BOUNDARY SHOULD BE CUT AWAY
   A) BEFORE DIGGING FOR UNDERPINNING, OR
   B) AFTER UNDERPINNING IS FULLY COMPLETED AND 3 DAYS OF AGE.
5. THE NEW UNDERPINNING SHALL BE BUILT IN SECTIONS NOT GREATER THAN 900MM LENGTHS AND IN SEQUENCE AS SHOWN ON DRAWING, IE. SECTIONS 'A' FIRST, THEN ALL SECTIONS 'B' ETC.
6. THE EXCAVATION SHALL BE CARRIED OUT, TIMBERED AND STRUTTED, IF NECESSARY, IN SUCH A MANNER THAT THE MATERIAL UNDER FOOTINGS ADJACENT TO THE SECTION BEING UNDERPINNED IS FULLY CONTAINED AT ALL TIMES TO PREVENT THE LOSS OF BEARING MATERIAL.
7. THE NEW UNDERPINNING SHALL BE CONSTRUCTED TO WITHIN 40MM OF THE UNDERSIDE OF THE EXISTING FOOTINGS, WHICH SHALL BE THOROUGHLY CLEANED AND THE SPACE BETWEEN RAMMED SOLID, USING EITHER OF THE FOLLOWING METHODS:
   ALLOW AT LEAST 24 HOURS AFTER COMPLETION OF THE NEW BRICKWORK THEN (A) FILL BETWEEN THE NEW AND EXISTING BRICKWORK OVER THEIR FULL AREA WITH A DRY-PACK MIX OF 1 PART PORTLAND CEMENT TO 3 PARTS SHARP SAND RAMMED IN HARD TO MAKE SOLID CONTACT
   OR (B) COMPLETELY FILL THE SPACE WITH AN APPROVED PREMIXED EXPANDING MORTAR SUCH AS 'EMBECON' OR EQUAL, MIXED AND PLACED IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS.
8. THE MATERIAL BEHIND THE WALL AND UNDER THE EXISTING FLOOR SHALL BE RETAINED AS FULLY AS POSSIBLE DURING THE UNDERPINNING OPERATIONS AND ANY CAVITY BEHIND THE BRICKWORK SHALL BE FILLED WITH MORTAR OR CONCRETE AS THE UNDERPINNING IS CONSTRUCTED.
9. EACH SECTION OF UNDERPINNINGS SHALL HAVE BEEN COMPLETED FOR AT LEAST 38 HOURS BEFORE EXCAVATION IS COMMENCED FOR CONSTRUCTION OF AN IMMEDIATELY ADJACENT SECTION.
10. ALLOW FOR WEEPHOLES AT 1500 CENTRES.
11. WHERE THE DEPTH OF UNDERPINNING EXCEEDS 1200, LATERAL STABILITY AGAINST SOIL PRESSURE MAY BE REQUIRED, REFER TO INSPECTION ENGINEER FOR ADVICE.



ELEVATION

PLAN



SECTION

FOUNDATION PILE NOTES

1. ALL PILES TO BE INSTALLED IN ACCORDANCE WITH AS2159 (PILING CODE), AND RECOMMENDATIONS OF DOUGLAS PARTNERS REPORT No.35721, FEB 2003.
2. PILING CONTRACTOR TO CONFIRM TO ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION THE FOLLOWING DETAILS:
   a) PILE TYPE PROPOSED.
   b) METHOD OF CONSTRUCTION.
   c) PILE DIAMETER, REINFORCEMENT, MINIMUM FOUNDATION DEPTHS, ANY PILE CAP DETAILS IN ADDITION TO THOSE SHOWN ON DRAWINGS.
   d) TESTING METHODS TO PROVE PILE CAPACITIES TO AS2159-1995.
3. AT COMPLETION OF INSTALLATION OF PILES, PILING CONTRACTOR TO SUPPLY TO ENGINEER A CERTIFICATE STATING THAT THEY HAVE INSTALLED THE PILES IN ACCORDANCE WITH MPN DRAWINGS AND AS2159, AND THE PILES ARE STRUCTURALLY ADEQUATE FOR THEIR PROPOSED USAGE.
4. ALL LOAD-CARRYING PILES OR PILE GROUPS TO BE CENTERED ON CENTERLINE OF COLUMN OVER. TYPICAL UNLESS NOTED OTHERWISE. PROVIDE SURVEY DATA OF "AS CONSTRUCTED" PILE POSITIONS AND DEPTHS TO ENGINEER PRIOR TO CASTING PILE CAPS OR COLUMNS. ENGINEERS TO BE ADVISED OF ANY NON-CONFORMANCES TO AS2159 PRIOR TO SUBCONTRACTOR LEAVING SITE.

LYSAGHT BONDEK
STRUCTURAL FORMWORK

GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

G2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT SAA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.

G3. ALL DIMENSIONS SHOWN SHALL BE VARIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.

G4. DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATION STABLE AT ALL TIMES.

DESIGN LOAD

D1. THE STRUCTURAL COMPONENTS DETAILED ON THESE DRAWINGS HAVE BEEN DESIGNED IN ACCORDANCE WITH AS 3610-1990 FOR STRUCTURAL FORMWORK, AS 1170 PART 1 - 1989 FOR DESIGN LOADING, AND RELEVANT LOCAL GOVERNMENT ORDINANCES.

D2. UNLESS NOTED OTHERWISE THE FOLLOWING DESIGN LOADS SHALL APPLY

CONSTRUCTION LIVE LOAD	NIL	KPa
SUPERIMPOSED DEAD LOAD	0.2	KPa
LIVE LOAD GENERAL AREA	2.5	KPa

BONDEK

B1. UNLESS NOTED OTHERWISE BONDEK PANELS SHALL BE 1.00MM BMT, AND ZINC COATING TO BE Z450 (450g/m²) COATING

B2. BONDEK PANELS ARE TO BE SECURELY FIXED OR HELD DOWN TO PREVENT DISPLACEMENT DUE TO CONSTRUCTION LOADING OR WIND UPLIFT PRIOR TO CONCRETING.

B3. FIX BONDEK PANELS TO STEELWORK BY PUDDLE WELDING, DRIVE PINS, OR OTHER SUITABLE METHODS. SLIP JOINTS SHALL BE LOCATED AS SHOWN.

B4. FIXING TO MASONRY IS NOT NECESSARY PROVIDED CONCRETE IS PLACED IMMEDIATELY AFTER PANELS ARE LAID. TOP COURSE OF BRICKWORK IS TO BE STRAIGHT AND LEVEL. IF REQUIRED PROVIDE LAYER OF SMOOTH HARD MORTAR. SLIP JOINTS SHALL BE PROVIDED AT ALL MASONRY SUPPORTS UNLESS NOTED OTHERWISE.

B5. BEFORE CONCRETE IS PLACED, ANY ACCUMULATED DEBRIS, GREASE OR ANY OTHER SUBSTANCE WILL NEED TO BE REMOVED TO ENSURE CLEAN BONDING SURFACE. ANY PONDED RAINWATER SHOULD BE REMOVED BY BLOWING OR SWEEPING.

B6. FASTENING OF SIDE LAP JOINTS OF BONDEK SHALL BE IN ACCORDANCE WITH LYSAGHT PUBLICATIONS, AND GENERALLY ONE NO. 10-24x16mm SELF-DRILLING TAPPING SCREW IS REQUIRED MID-SPAN FOR SUPPORT SPACING OF 2750mm OR GREATER. FOR POINT LOAD RATINGS OR EXPOSED SOFFITS ADDITIONAL FIXINGS MAY BE REQUIRED.

B7. UNLESS NOTED OTHERWISE PROPPING OF THE BONDEK SHALL BE IN ACCORDANCE WITH LYSAGHT PUBLICATIONS.

B8. PROPS SHOULD NOT BE REMOVED UNTIL CONCRETE HAS REACHED SUFFICIENT STRENGTH

B9. ALL SITE CUTS OF BONDEK SHEET SHALL HAVE EXPOSED CUT FACES CORROSION TREATED WITH APPROPRIATE SURFACE PREPARATION, PRIMER AND AT LEAST 2 COATS OF INORGANIC ZINC-RICH ALKALI SILICATE PAINT, EQUAL TO PAINT SYSTEM IZS2 IN TABLE 6.3, OF AS/NZS 2312: 2002.

CONCRETE MASONRY NOTES (REINFORCED)

1. CONCRETE MASONRY UNITS SHALL BE STRUCTURAL GRADE 15 IN ACCORDANCE WITH REQUIREMENTS OF AS 3700 AND AS 2733.
2. MORTAR SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED IN THE RATIO BY VOLUME OF 1 PART CEMENT : 1/10 LIME : 3 PARTS SAND AND SHALL COMPLY WITH REQUIREMENTS OF AS 3700.
3. ALL PERPENDS, EXCEPT WHERE REQUIRED FOR WEEPHOLES, ARE TO BE FULLY FILLED WITH MORTAR. LAY BOTTOM COURSE OF BLOCKS ON MORTAR BED.
4. OPENINGS FOR CLEAN-OUT AND INSPECTION ARE TO BE PROVIDED AT THE BOTTOM COURSE OF EACH POUR OF WALL FOR ALL CORES CONTAINING REINFORCEMENT. MORTAR PROTRUSION FROM ALL SUCH CORES IS TO BE CLEANED OUT PRIOR TO PLACING REINFORCEMENT. VERTICAL BARS ARE TO BE TIED TO THE STARTER BARS AT THE INSPECTION OPENINGS.
5. ALL CORES, UNLESS NOTED OTHERWISE, ARE TO BE GROUTED WITH N20 MPa CONCRETE. GROUT SHOULD HAVE A MINIMUM SLUMP OF 250 AT THE TIME OF PLACING. MAXIMUM COURSE AGGREGATE SIZE TO BE 10 mm.
6. THE HEIGHT OF ANY GROUT POUR MUST NOT EXCEED 2600 HIGH FREE DROP. STOP POUR 50 BELOW TOP OF BLOCK TO PROVIDE KEY FOR NEXT POUR.
7. CORE GROUT IS TO BE COMPACTED TO ENSURE COMPLETE FILLING OF CORES, BY RODDING WITH A PLAIN ROUND BAR.
8. PROVIDE TEMPORARY PROPPING TO WALLS WHERE REQUIRED FOR STABILITY DURING CONSTRUCTION.
9. PROVIDE VERTICAL CONTROL JOINTS IN WALLS AT MAXIMUM 10 METRE CENTRES OR WHERE INDICATED ON DRAWINGS.
10. VERTICAL REINFORCEMENT TO BE POSITIONED 55 CLEAR FROM FACE OF BLOCKWORK UNLESS NOTED OTHERWISE.
11. ALL REINFORCEMENT TO BE LAPPED MINIMUM 40 BAR DIAMETER.
12. WATERPROOFING MEMBRANE, DRAINAGE PIPES AND WEEPHOLES TO BE AS REQUIRED BY THE ARCHITECT'S SPECIFICATION.
13. BACKFILL RETAINING WALLS, WHEN APPROVED BY ENGINEER, WITH CLEAN GRANULAR FILLING FREE FROM CLAY OR ORGANIC MATTER.

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P	29-5-03
T1	ISSUED FOR TENDER	L.N.P	23-5-03
P2	GENERALLY REVISED	-	16-5-2003
P1	ISSUED FOR INFORMATION	-	9-5-2003

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ARCHITECT : PH: (02) 9957 5401
DESIGNINC SYDNEY

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

GENERAL NOTES

DESIGN: V.K.M. | DRAWN: A.J.H. | SCALES: N/A

No IN SET	MPN JOB	DWG No
	8822	S1 A

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...d DOCUMENT IS HEREBY ...TO IN THE CERTIFICATION FOR PROJECT No: J 0004
12 NOV 2003
DBM CERTIFICATION

BUNGAN LANE

BOUNDARY

EXISTING ADJACENT BUILDING

MASS CONC. UNDERPINNING TO 300 BELOW BULK EXCAVATION LEVEL, REFER UNDERPINNING PROCEDURE NOTES. COMPLETE PRIOR TO EXCAVATING IF ADJACENT BUILDING STILL STANDING AT TIME OF CARPARK CONSTRUCTION.

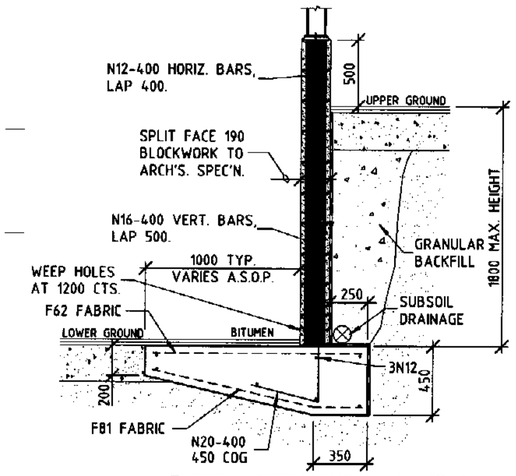
FUTURE DEVELOPMENT

EXISTING ADJOINING CONCRETE RETAINING WALL

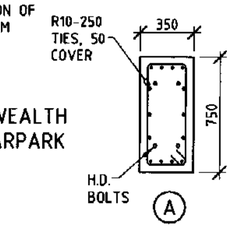
AUSTRALIA POST CARPARK

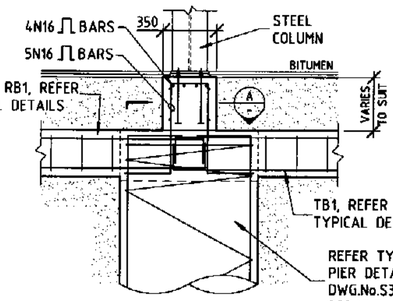
TOP OF BLOCK RETAINING WALL TO BE CUT TO SUIT INSTALLATION OF STEEL RAMP BEAM

COMMONWEALTH BANK CARPARK



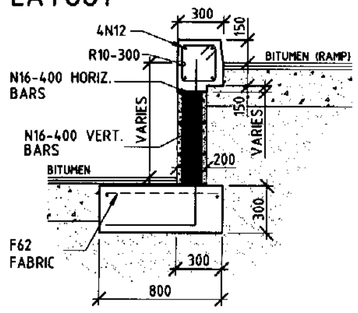
TYPICAL RETAINING WALL RW1



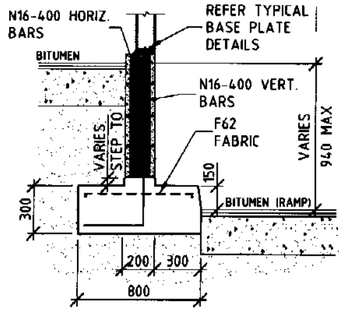


TYPICAL PLINTH DETAIL

FOOTING LAYOUT



RW2



RW3

A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P.	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P.	29-5-2003
T1	ISSUED FOR TENDER	L.N.P.	23-5-2003
P2	GENERALLY REVISED	-	16-5-2003
P1	ISSUED FOR INFORMATION	-	9-5-2003
ISSUE	AMENDMENT	BY	DATE

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ARCHITECT : DESIGNINC SYDNEY
PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

FOOTING LAYOUT

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12 NOV 2003

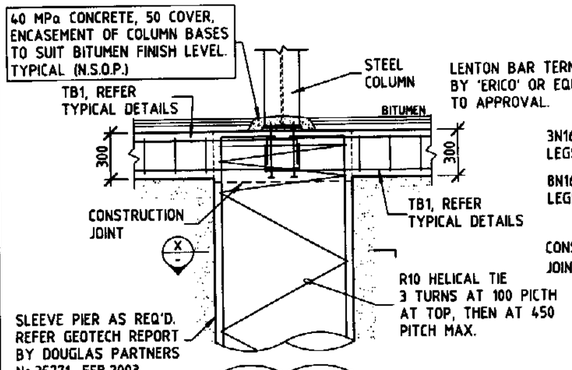
DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:100,20	
	No IN SET	MPN JOB 8822	DWG No S2 A

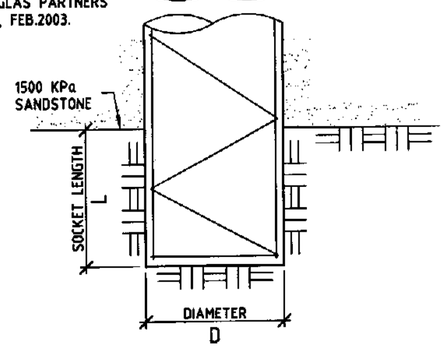
DATE:

CAD REF: J:\8822\STR\PLANS\FTGLAY.DWG, PLOTTED-26-6-2003 11:49:01

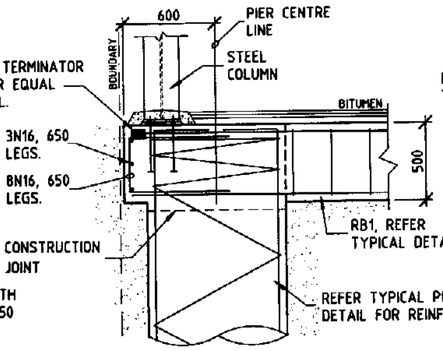
10 20 30 40 50 100 150

40 MPa CONCRETE, 50 COVER, ENCASEMENT OF COLUMN BASES TO SUIT BITUMEN FINISH LEVEL. TYPICAL (N.S.O.P.)





TYPICAL PIER/TB1 DETAIL



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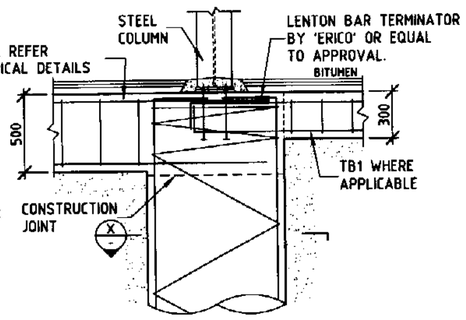
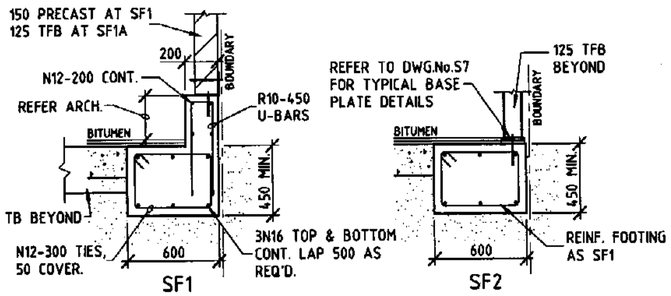
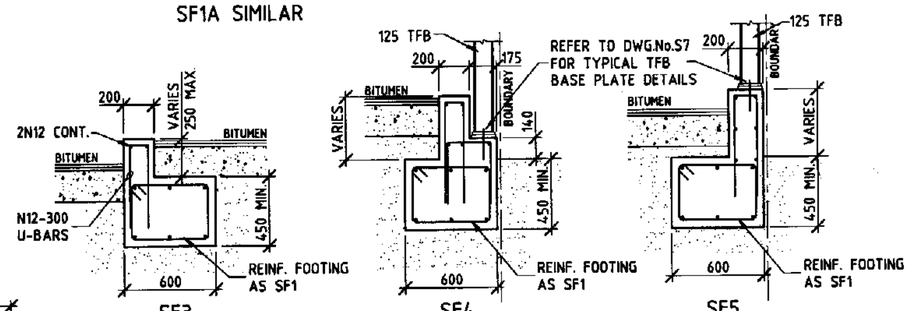
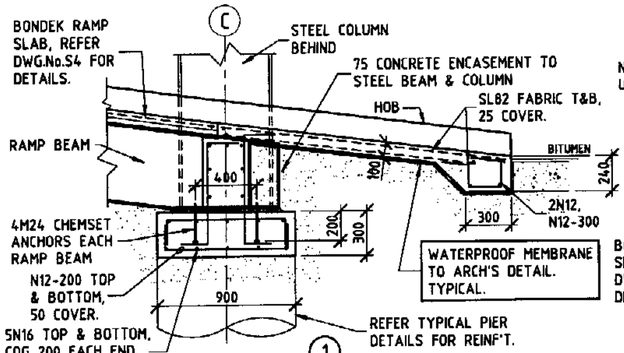


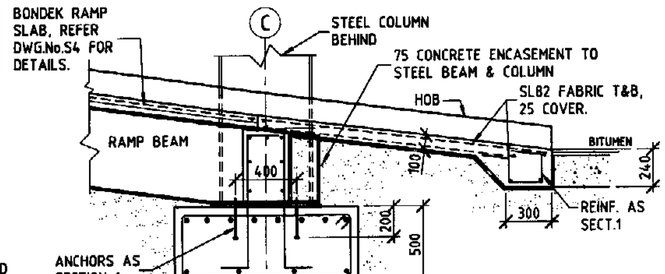
TYPICAL PIER/RB1 DETAIL

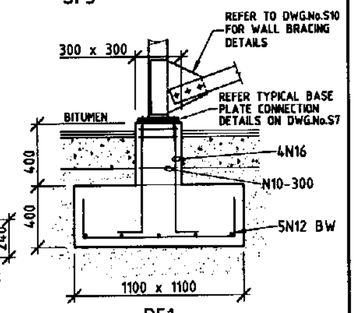


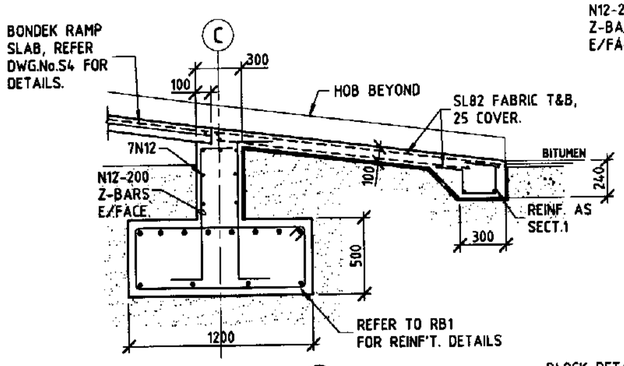


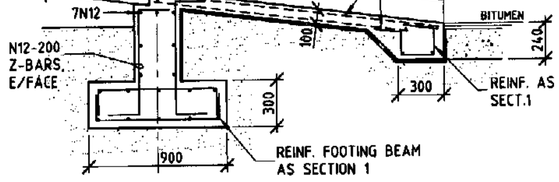


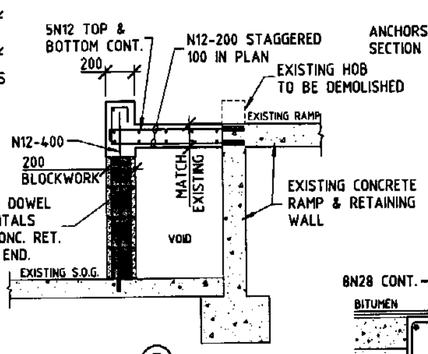
TYPICAL STRIPFOOTING DETAILS

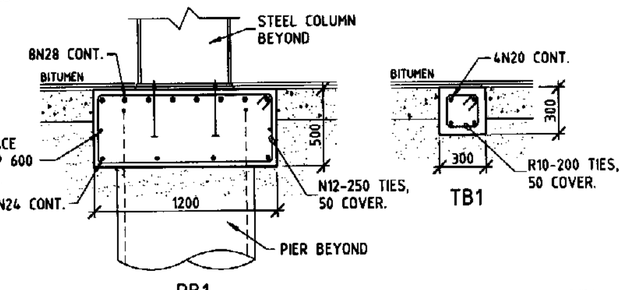


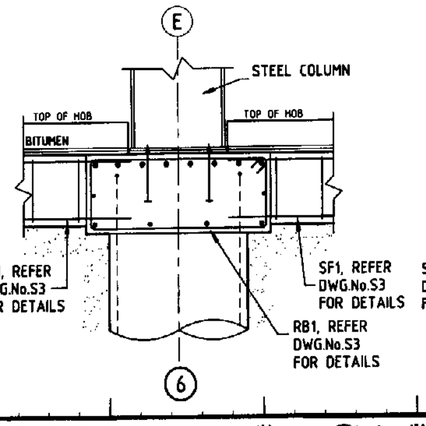


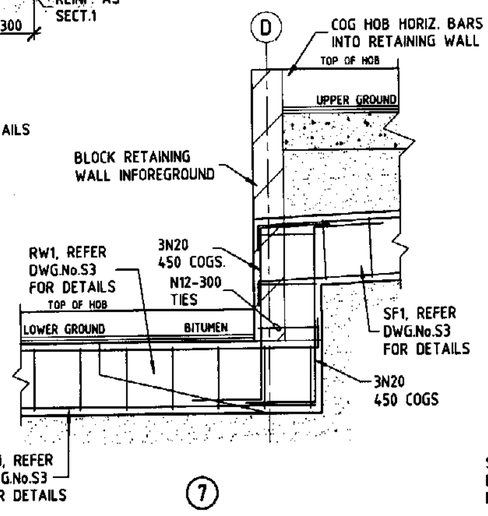


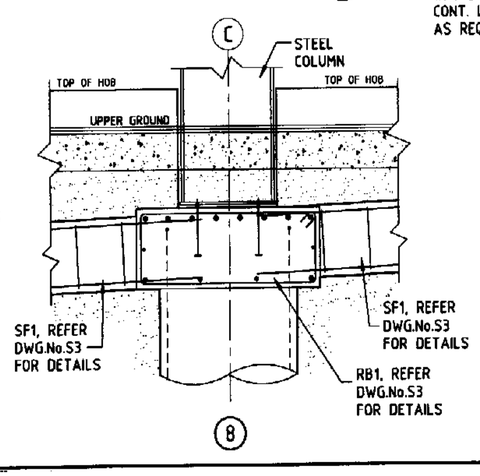


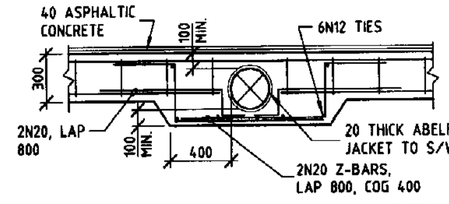




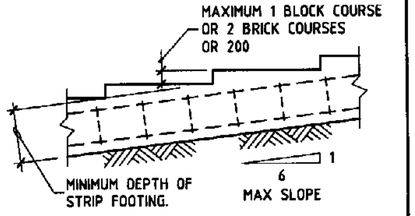








TYPICAL S/W PIPE THRU TIE BEAM DETAIL



STEP IN STRIP FOOTING AT GENTLE SLOPE 1 IN 6 MAX.

LINED BORED PIER SCHEDULE

PIER TYPE	DIAMETER D	SOCKET L	REINF'T.	CONCRETE STRENGTH
P1	900	1000	10N24 + R10 HELIX	N32
P2	900	1500	10N24 + R10 HELIX	N32
P3	900	2000	10N24 + R10 HELIX	N32
P4	900	2500	10N24 + R10 HELIX	N32

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P.	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P.	29-5-2003
T1	ISSUED FOR TENDER	L.N.P.	23-5-2003
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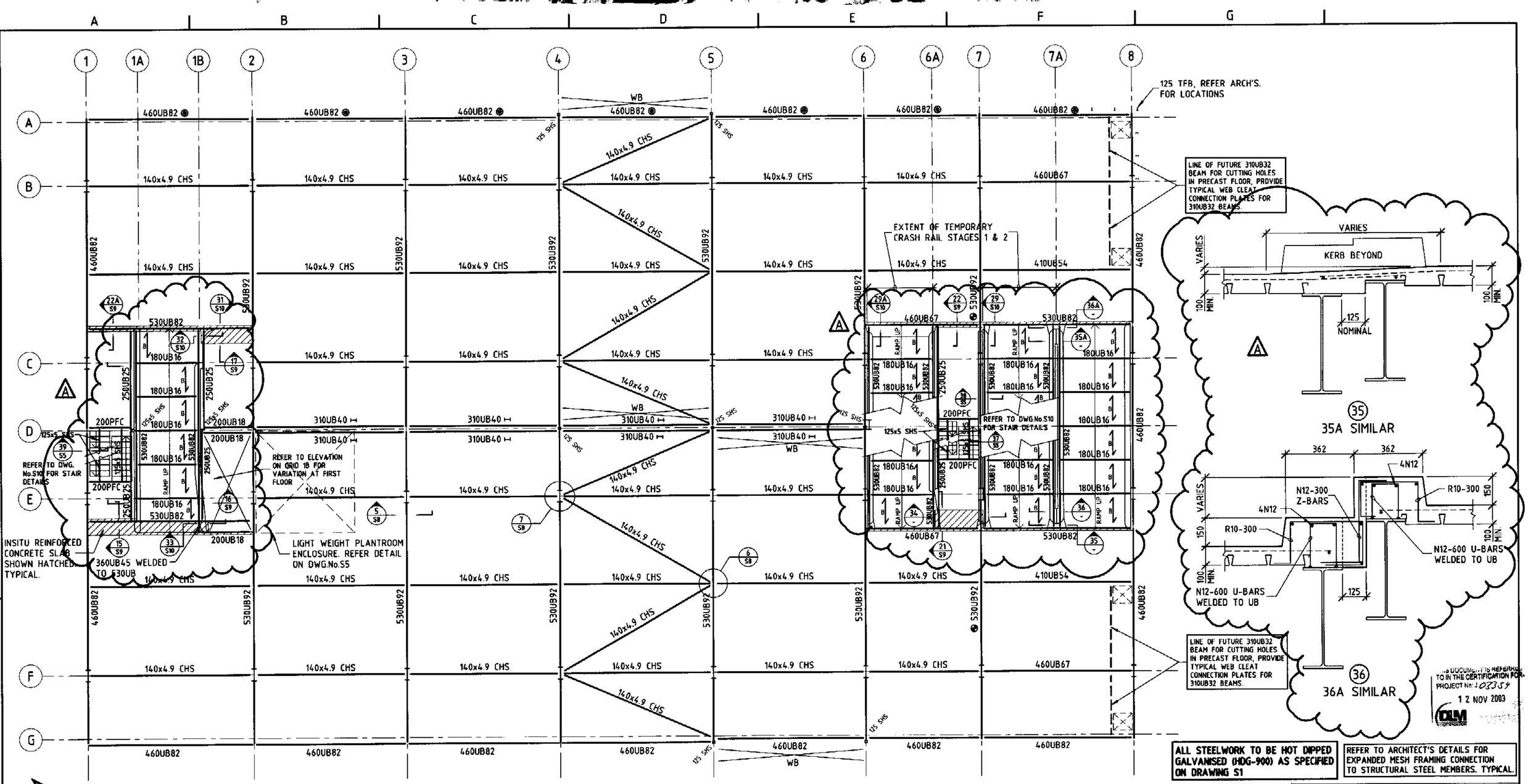
1 2 NOV 2003
DLM CERTIFICATION

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

FOOTING DETAILS

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:20		
	No IN SET	MPN JOB	DWG No	
		8822	S3	A

CAD REF: J:\8822\STR\PLANS\FTGLAY.DWG, PLOTTED-26-6-2003 11:13:49

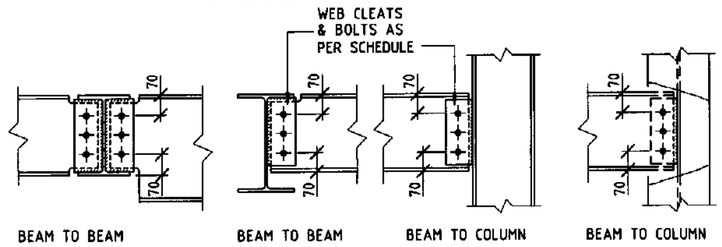


ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

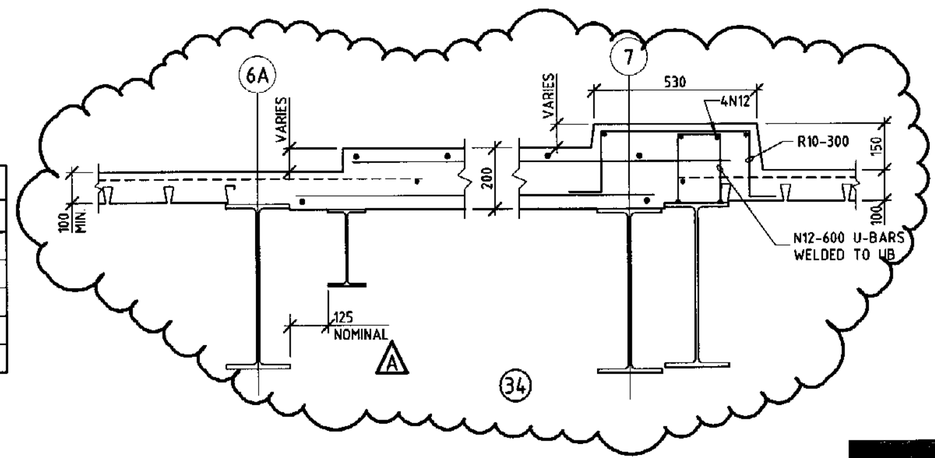
REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

PLAN ON FIRST & SECOND FLOOR

NOTES:
1. TYPICAL FLOORING TO BE 200 THICK RESCRETE HOLLOW CORE FLOOR PLANKS AS SHOWN ON DETAILS OR EQUIVALENT U.N.O.
2. ←B→ INDICATES SPAN OF 100mm THICK CONCRETE ON 0.75mm BONDEK, 40 MPa CONRECTE STRENGTH.
3. ● DENOTES UB WITH FLANGE COVER PLATES AS SHOWN ON ELEVATIONS AND DETAILS.
4. 460UB82 ● INDICATES UB WITH CONTINUOUS PLATE WELDED TO UB AS SHOWN ON DETAILS.
5. 'WB' ON PLAN DENOTES 150x12 PLATE WALL BRACING, REFER TYPICAL DETAIL ON DWG.No.S11.



WEB CLEAT SCHEDULE		
BEAM SIZE	WEB CLEAT	BOLTS
200PFC & 200UC	10 PLATE	2M20 8.8/S
200UB & 250UB	10 PLATE	2M20 8.8/S
310UB & 360UB	10 PLATE	3M20 8.8/S
410UB & 460UB	10 PLATE	4M20 8.8/S
530UB	10 PLATE	5M20 8.8/S



TYPICAL WEB CLEAT CONNECTION DETAILS

NOTE : COPE BEAM FLANGES WHERE REQUIRED

0 10 20 30 40 50 100 150

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T2	RE-ISSUED FOR TENDER	L.N.P 29-5-2003
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P2	GENERALLY REVISED	- 16-5-2003
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ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

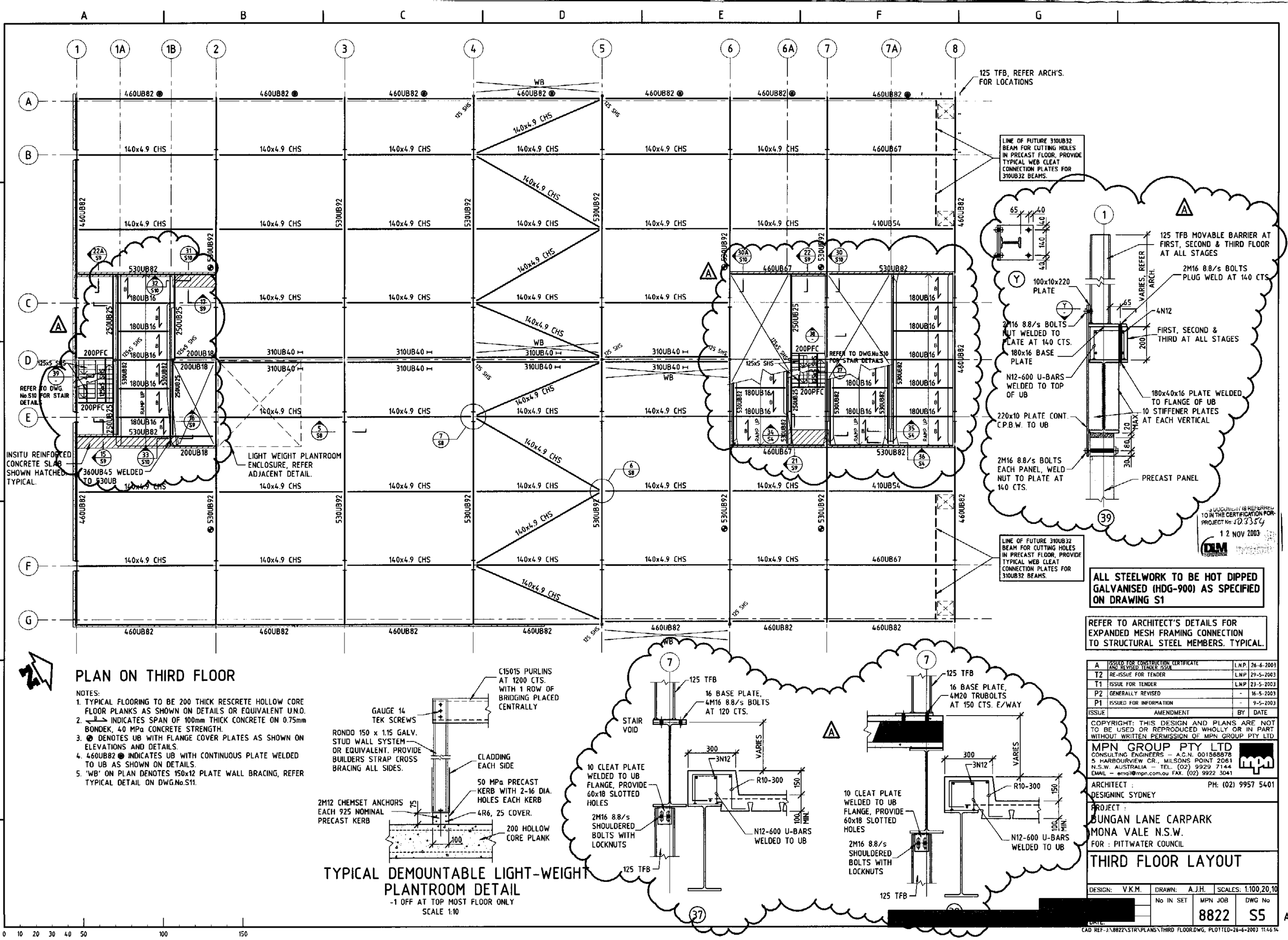
PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

FIRST & SECOND FLOOR LAYOUT

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:100,20,10	
DATE:	No IN SET	MPN JOB 8822	DWG No S4

A

CAD REF-J:\8822\STR\PLANS\FIRST_SECOND FLOOR DWG, PLOTTED-26-6-2003 11:45:58



PLAN ON THIRD FLOOR

NOTES:
1. TYPICAL FLOORING TO BE 200 THICK RESCRETE HOLLOW CORE FLOOR PLANKS AS SHOWN ON DETAILS OR EQUIVALENT U.N.O.
2. ⟷ INDICATES SPAN OF 100mm THICK CONCRETE ON 0.75mm BONDEK, 40 MPa CONCRETE STRENGTH.
3. ⊛ DENOTES UB WITH FLANGE COVER PLATES AS SHOWN ON ELEVATIONS AND DETAILS.
4. 460UB82 ⊛ INDICATES UB WITH CONTINUOUS PLATE WELDED TO UB AS SHOWN ON DETAILS.
5. 'WB' ON PLAN DENOTES 150x12 PLATE WALL BRACING, REFER TYPICAL DETAIL ON DWG.No.S11.

TYPICAL DEMOUNTABLE LIGHT-WEIGHT PLANTROOM DETAIL

-1 OFF AT TOP MOST FLOOR ONLY
SCALE 1:10

A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.M.P.	26-6-2003
T2	RE-ISSUE FOR TENDER	L.M.P	29-5-2003
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5 HARBOURVIEW CR., MILSONS POINT 2061
N.S.W. AUSTRALIA – TEL. (02) 9929 7144
EMAIL – emgil@mpn.com.au FAX. (02) 9922 3041
ARCHITECT : DESIGNINC SYDNEY
PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

THIRD FLOOR LAYOUT

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR PROJECT No: 03354
12 NOV 2003
DLM CERTIFICATION

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:100,20,10	
DATE:	No IN SET	MPN JOB 8822	DWG No S5 A

CAD REF-J:\8822\STR\PLANS\THIRD FLOOR.DWG, PLOTTED-26-6-2003 11:46:14

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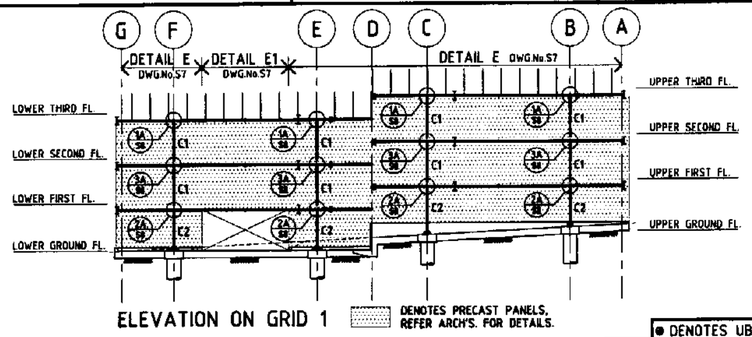
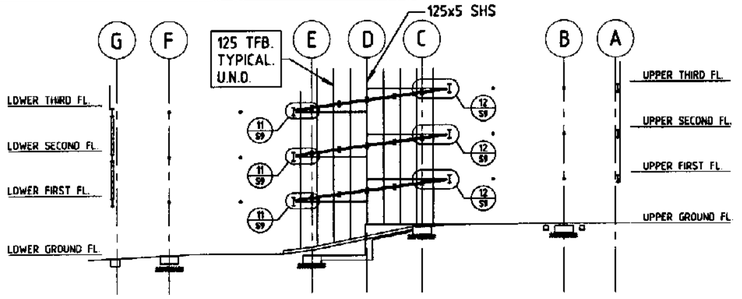


ELEVATION ON GRID 1 — DENOTES PRECAST PANELS, REFER ARCH'S. FOR DETAILS.



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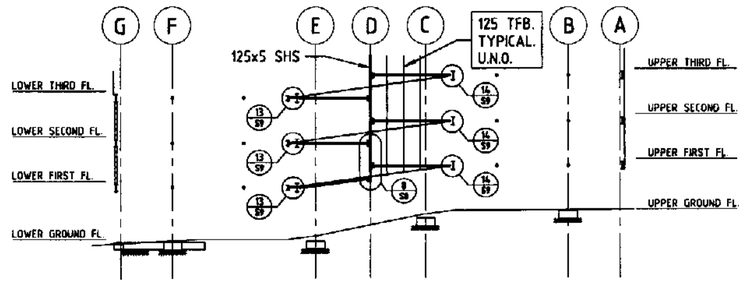

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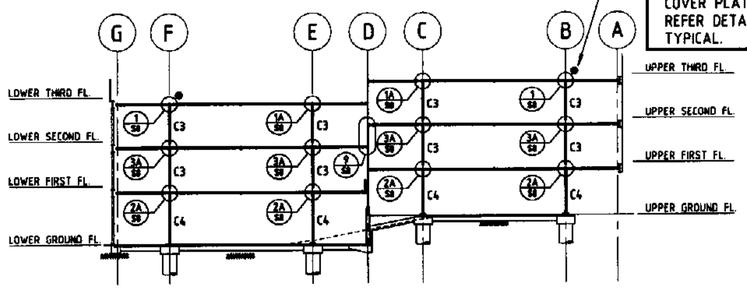

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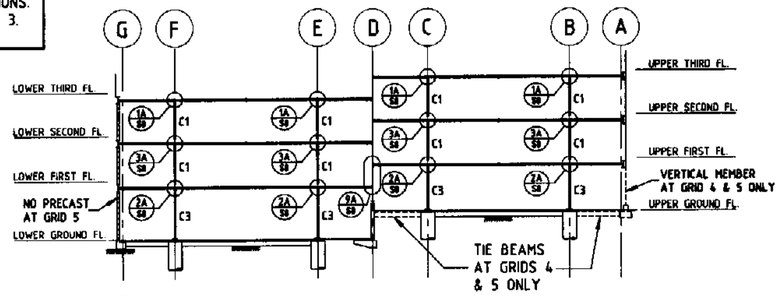
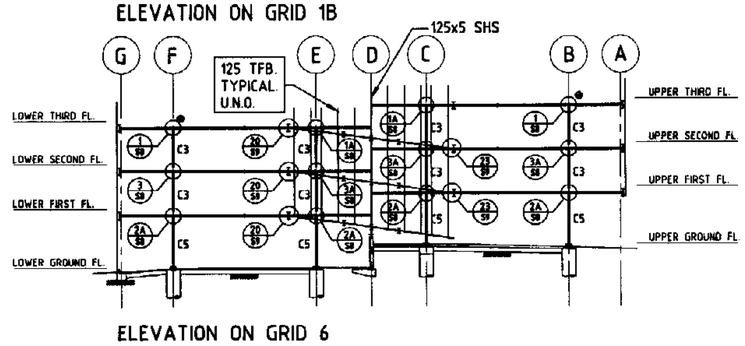
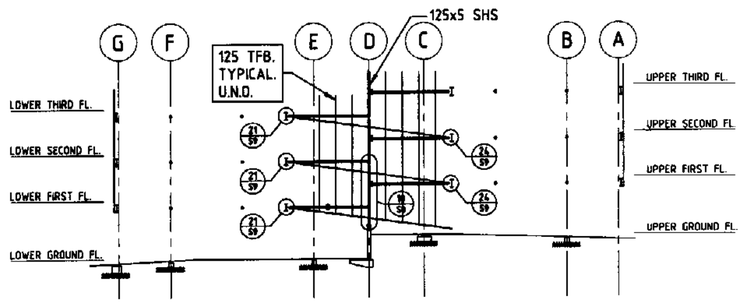


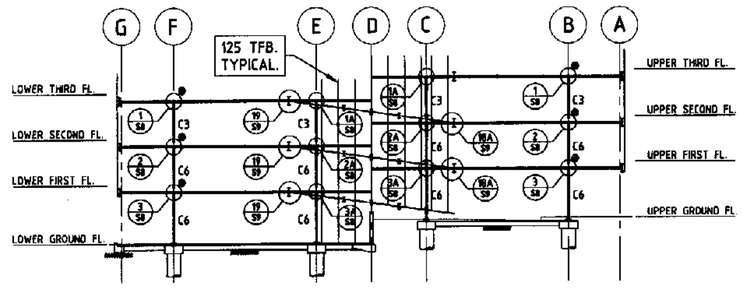
ELEVATION ON GRID 3
ELEVATION ON GRID 4 & 5 SIMILAR U.N.O.



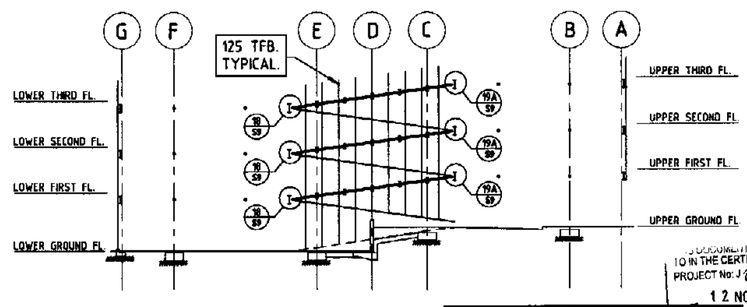
ELEVATION ON GRID 6



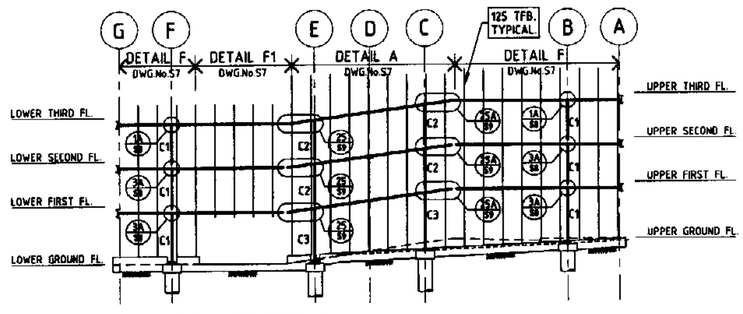
ELEVATION ON GRID 6A



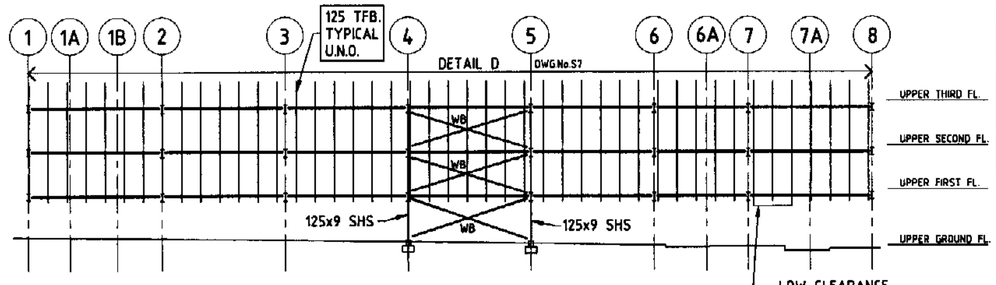
ELEVATION ON GRID 7



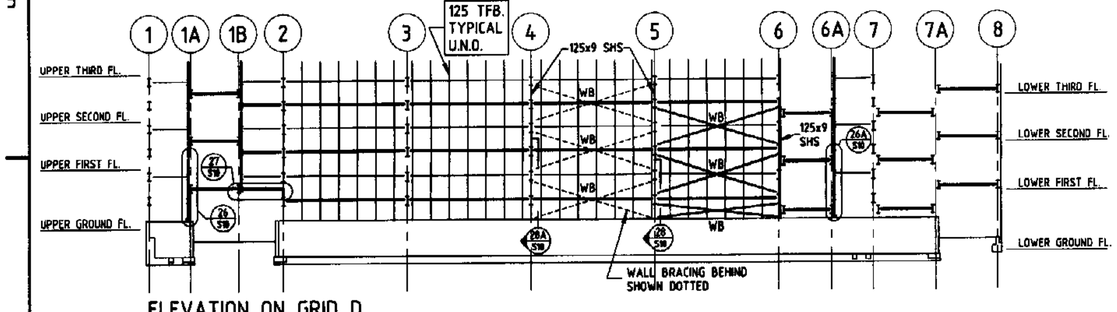
ELEVATION ON GRID 7A



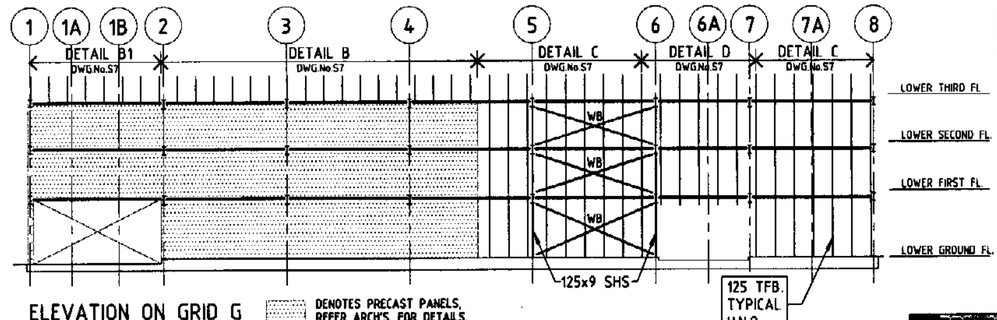
ELEVATION ON GRID 8



ELEVATION ON GRID A
WB DENOTES WALL BRACING, REFER TYPICAL DETAIL.



ELEVATION ON GRID D
WB DENOTES WALL BRACING, REFER TYPICAL DETAIL.



ELEVATION ON GRID G — DENOTES PRECAST PANELS, REFER ARCH'S. FOR DETAILS.
WB DENOTES WALL BRACING, REFER TYPICAL DETAIL.

COLUMN SCHEDULE	
COLUMN TYPE	COLUMN SIZE
C1	460UB74
C2	530UB82
C3	530UB92
C4	610UB101
C5	610UB113
C6	610UB125

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P	29-5-2003
T1	ISSUED FOR TENDER	L.N.P	23-5-2003
P2	GENERALLY REVISED	-	16-5-2003
P1	ISSUED FOR INFORMATION	-	9-5-2003

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ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

FLOOR ELEVATIONS

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:200	
	No IN SET	MPN JOB 8822	DWG No S6 A

DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR PROJECT No: J03354
12 NOV 2003

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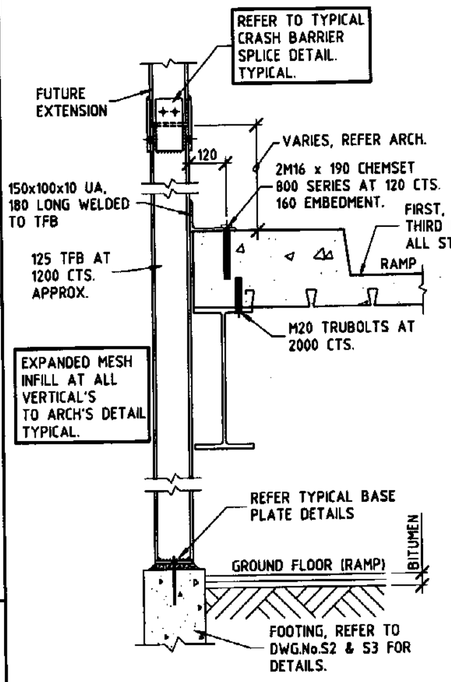
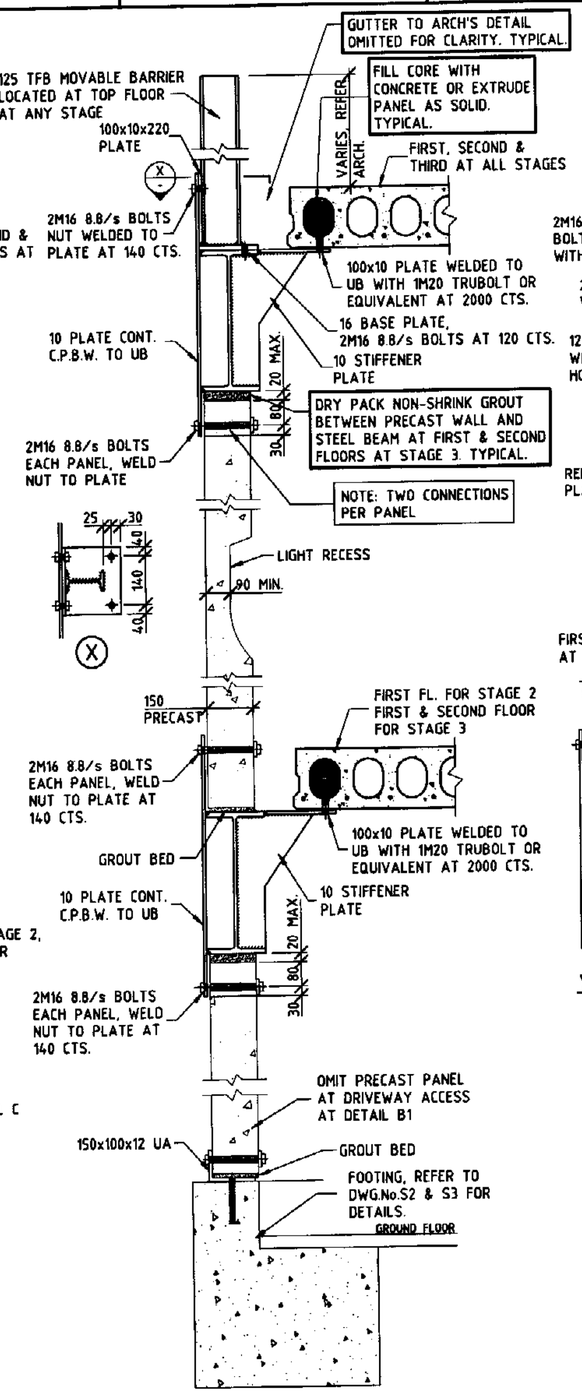
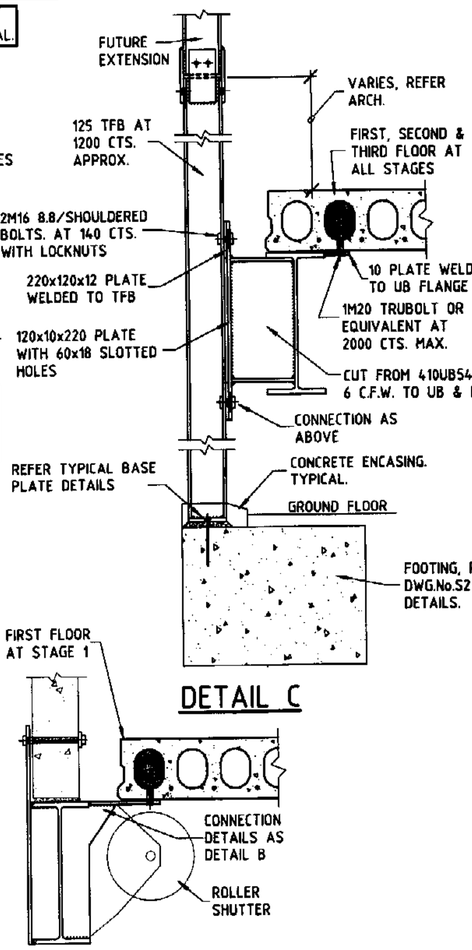


DETAIL A



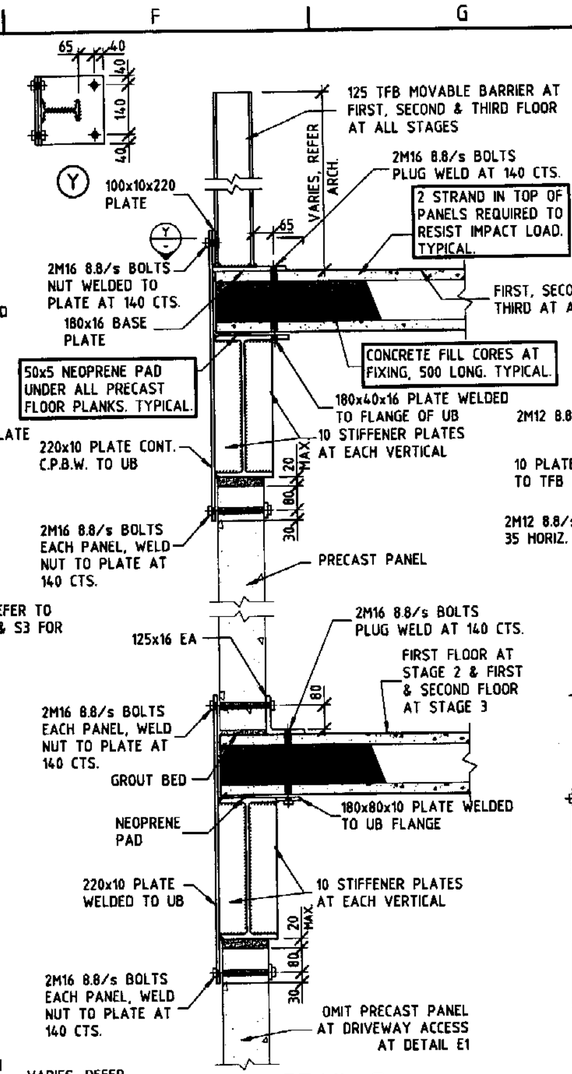
DETAIL B

DETAIL B1 SIMILAR U.N.O.



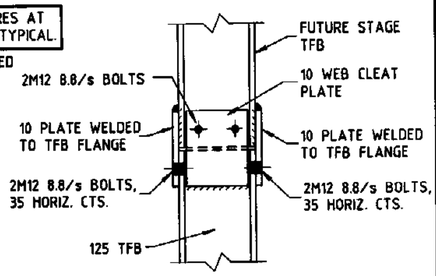
DETAIL C

VARIATION FOR DETAIL B1



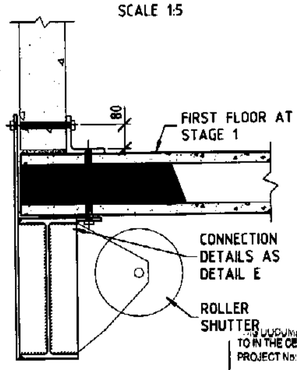
DETAIL E

DETAIL E1 SIMILAR U.N.O.

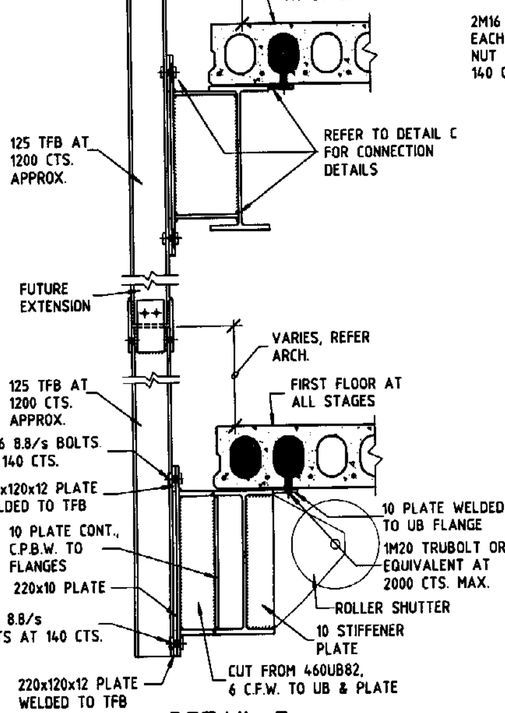


TYPICAL CRASH BARRIER SPLICE DETAIL

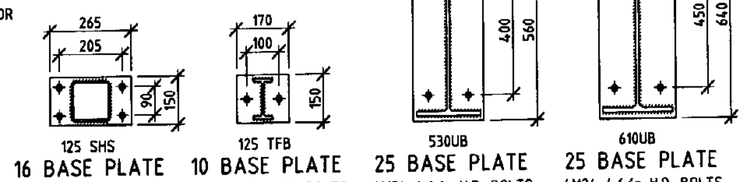
SCALE 1:5



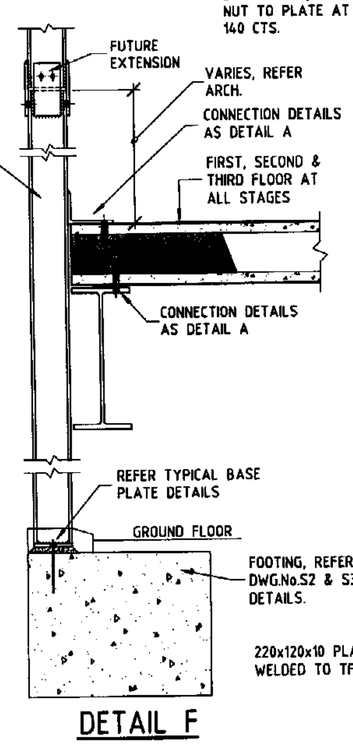
VARIATION FOR DETAIL E1



DETAIL D

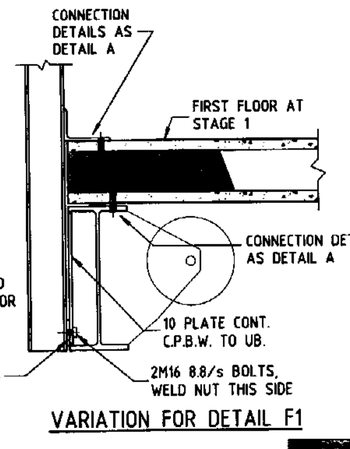


TYPICAL COLUMN BASE PLATE DETAILS



DETAIL F

DETAIL F1 SIMILAR U.N.O.



VARIATION FOR DETAIL F1

ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P.	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P.	29-5-2003
T1	ISSUED FOR TENDER	L.N.P.	23-5-2003
P2	GENERALLY REVISED	-	16-5-2003
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ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

TYPICAL FLOOR DETAILS
SHEET 1

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:10	
	No IN SET	MPN JOB 8822	DWG No S7 A

DATE: 12 NOV 2003

THIS DRAWING IS REFERRED TO IN THE CERTIFICATION FOR PROJECT No: J 03354

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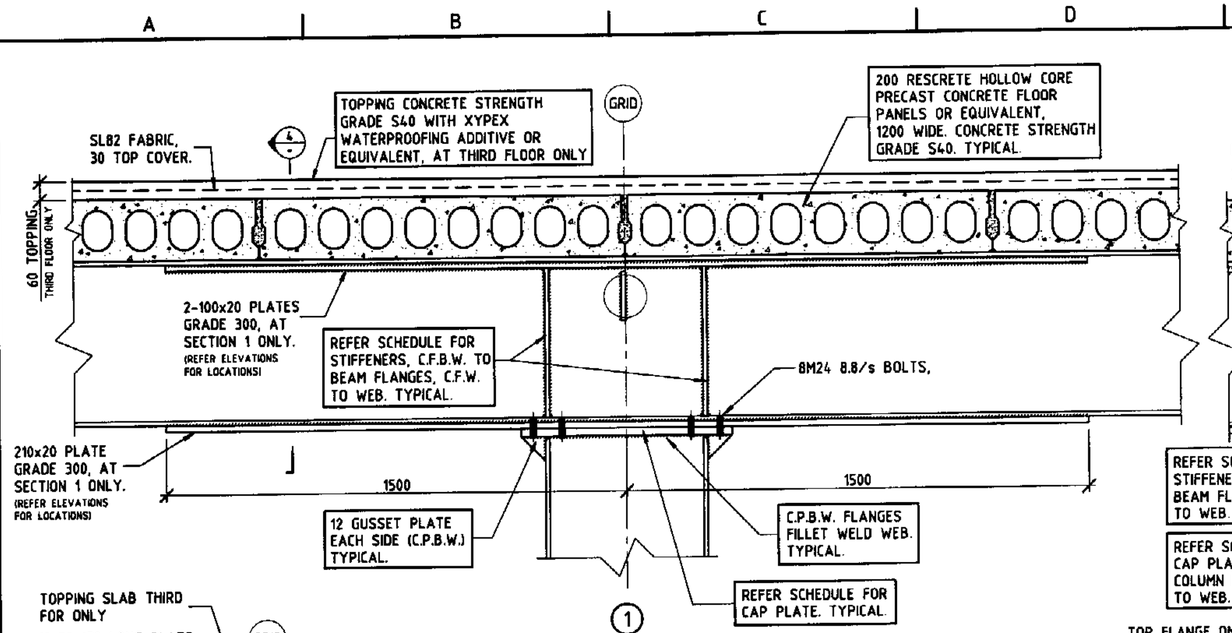
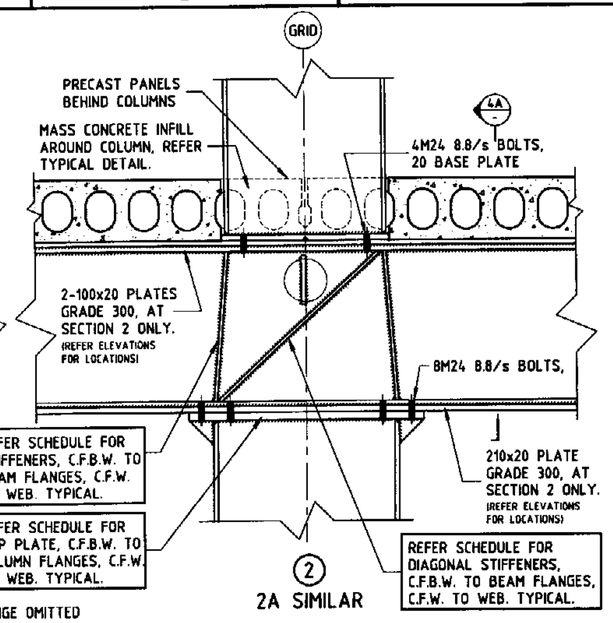
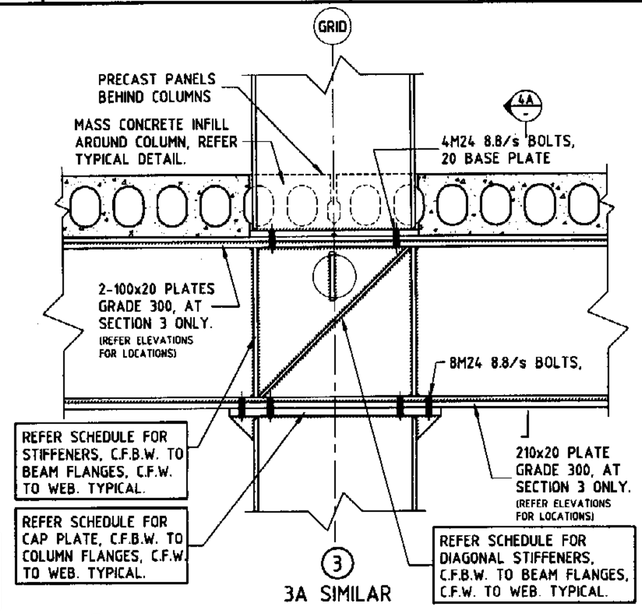
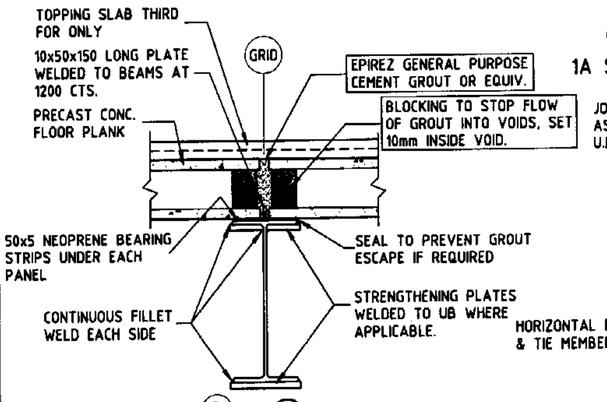
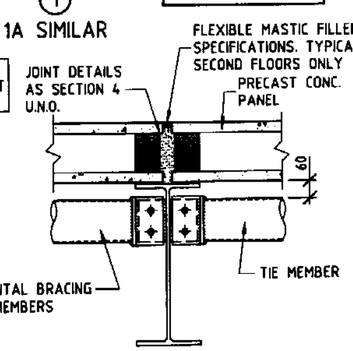
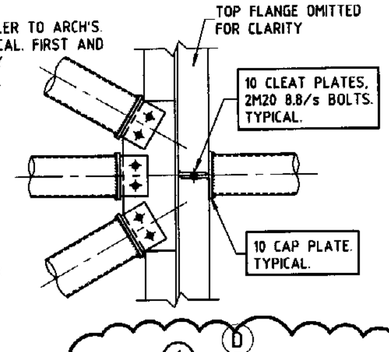


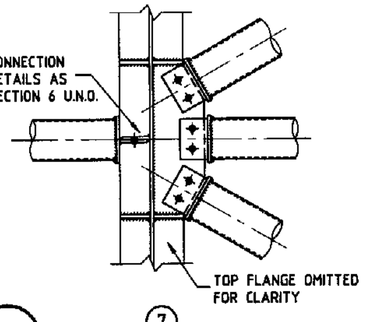


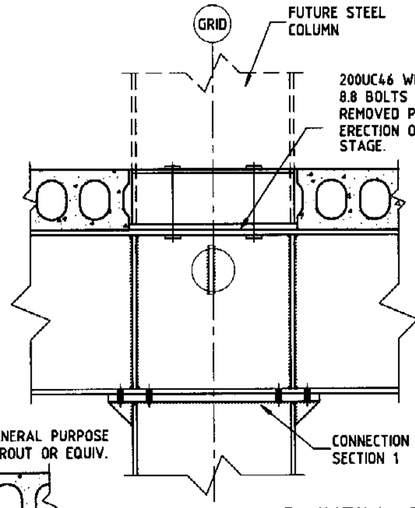


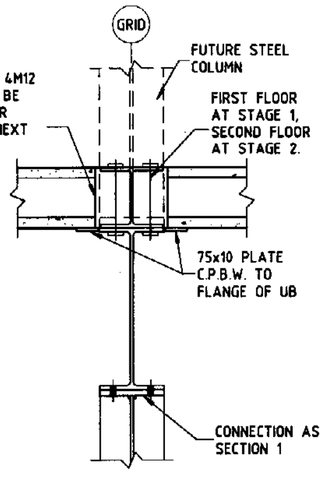




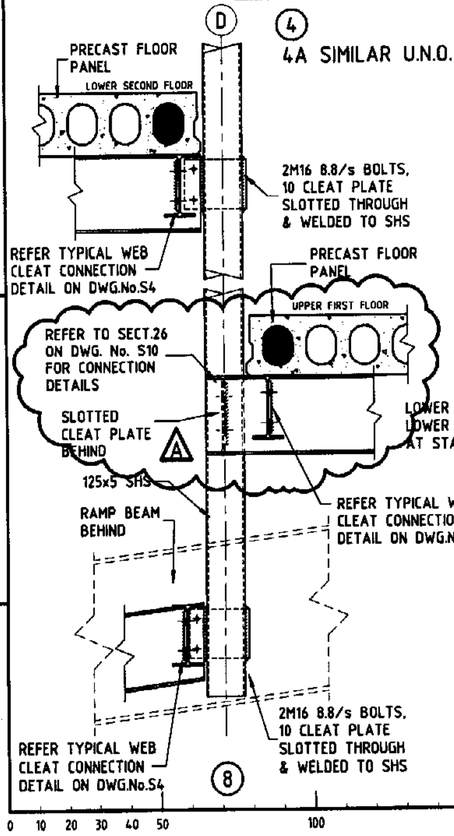


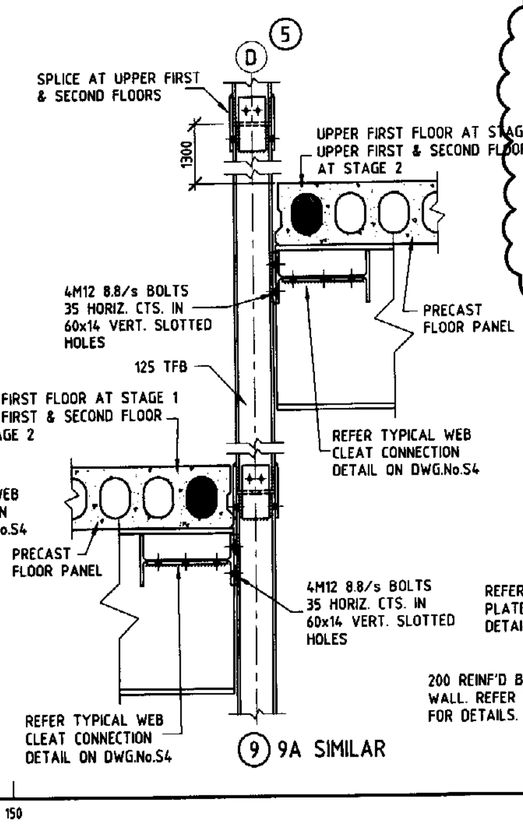


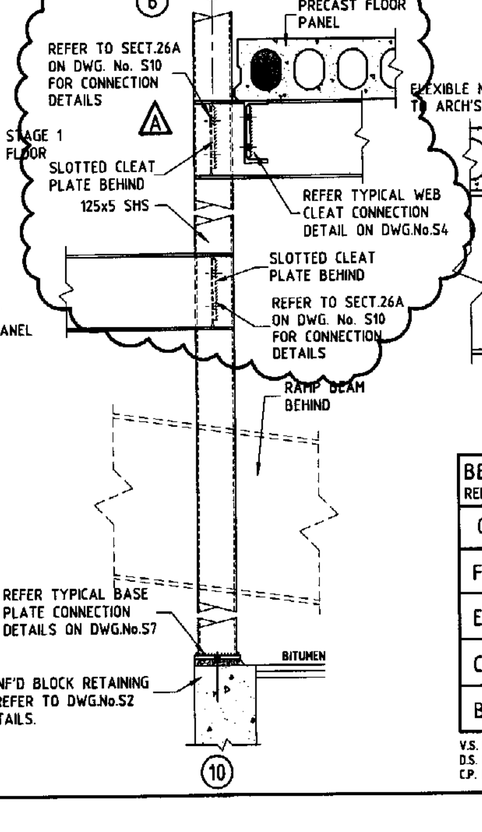


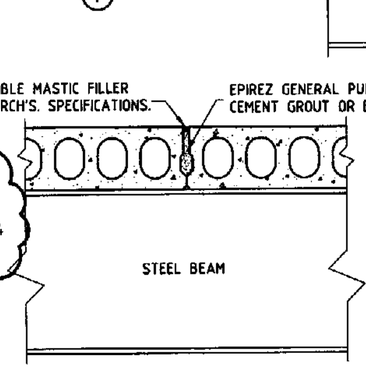


TYPICAL SLAB INFILL DETAILS AT COLUMN









TYPICAL PRECAST PANEL SIDE JOINT

ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

BEAM WEB STIFFENER & COLUMN CAP PLATE SCHEDULE

REFER DETAILS 1, 2 & 3

GRID		1	2	3,4,5	6	7	8
		V.S./D.S./C.P.	V.S./D.S./C.P.	V.S./D.S./C.P.	V.S./D.S./C.P.	V.S./D.S./C.P.	V.S./D.S./C.P.
F	THIRD FL.	10 / - / 20	16 / - / 20	10 / - / 20	16 / - / 20	16 / - / 25	10 / - / 20
	SECOND FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	16 / - / 20
	FIRST FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	16 / - / 20
E	THIRD FL.	10 / - / 20	16 / - / 20	10 / - / 20	16 / - / 20	16 / - / 25	12 / - / 25
	SECOND FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	20 / - / 25
	FIRST FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	20 / - / 25
C	THIRD FL.	10 / - / 20	16 / - / 20	10 / - / 20	16 / - / 20	16 / - / 25	12 / - / 25
	SECOND FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	20 / - / 25
	FIRST FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	20 / - / 25
B	THIRD FL.	10 / - / 20	16 / - / 20	10 / - / 20	16 / - / 20	16 / - / 25	10 / - / 20
	SECOND FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	16 / - / 20
	FIRST FL.	16 / - / 20	25 / - / 25	25 / - / 25	25 / - / 25	25 / 12 / 25	16 / - / 20

V.S. DENOTES VERTICAL STIFFENER PLATE
D.S. DENOTES DIAGONAL STIFFENER PLATE
C.P. DENOTES CAP PLATE

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EMAIL – email@mpn.com.au FAX. (02) 9922 3041
ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

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12 NOV 2003
DLM CERTIFICATION

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

TYPICAL FLOOR DETAILS
SHEET 2

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:10	
	No IN SET	MPN JOB 8822	DWG No S8

DATE:
CAD REF-J:\8822\STR\DETS\TYPICAL DETAILS.DWG. PLOTTED-26-6-2003 11:16:05

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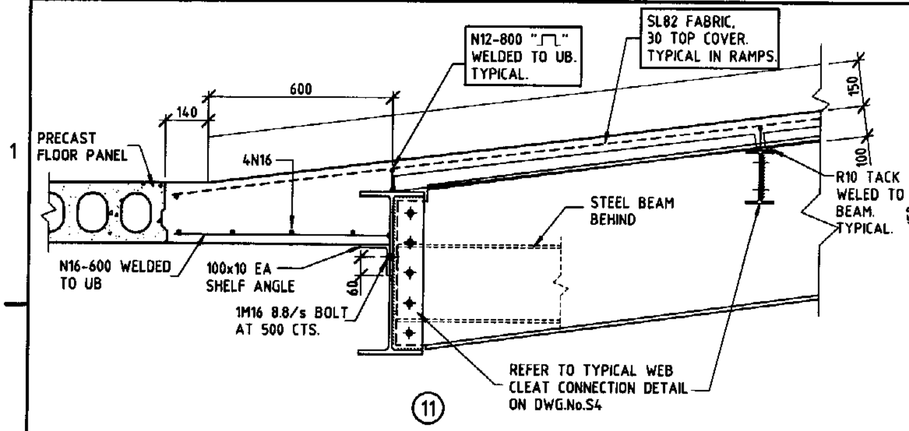

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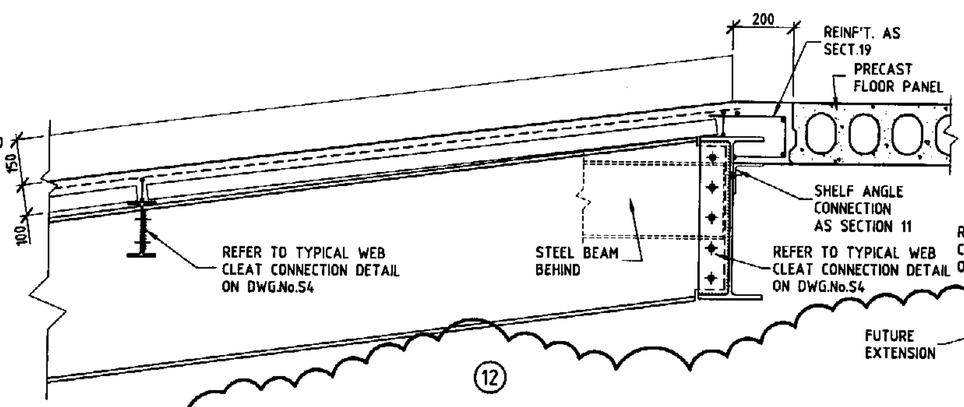

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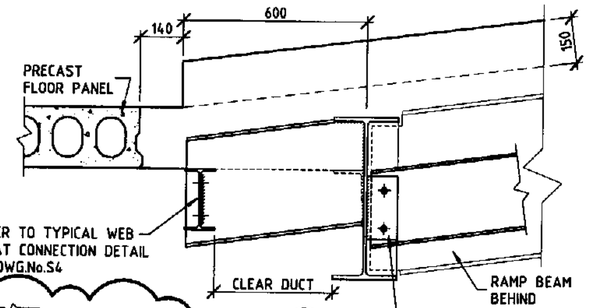

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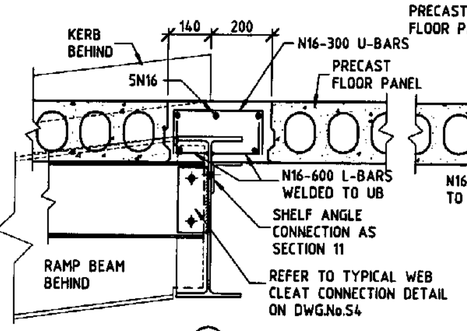

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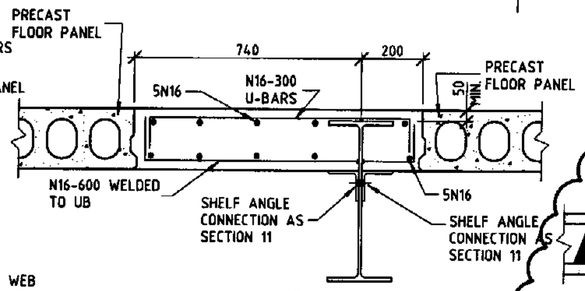

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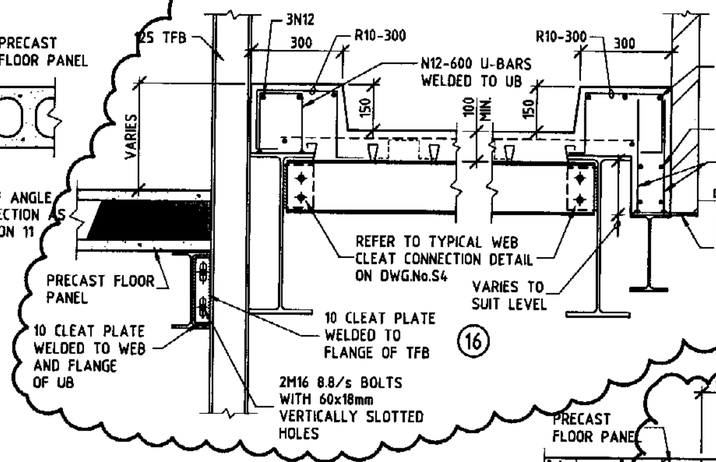

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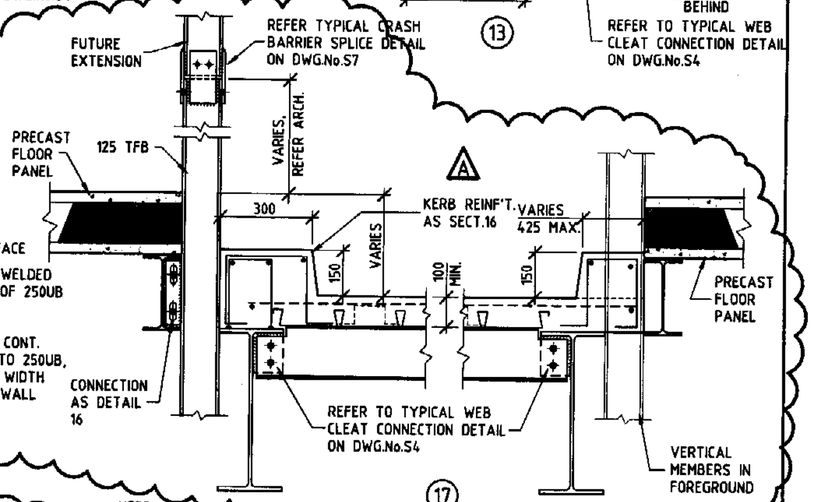

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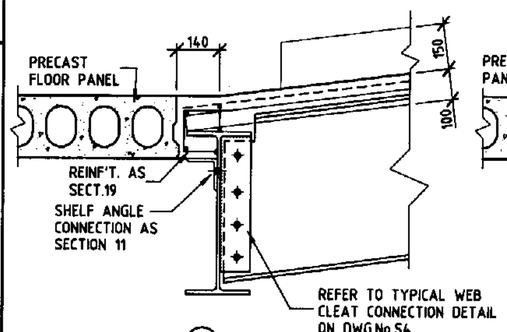

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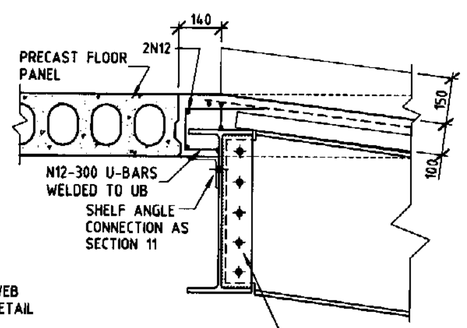

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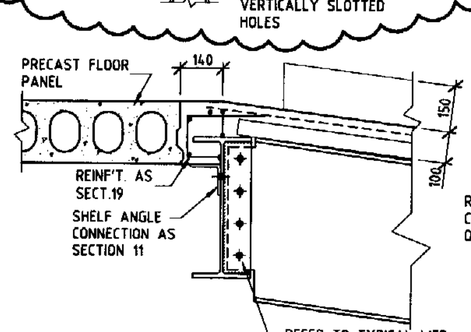

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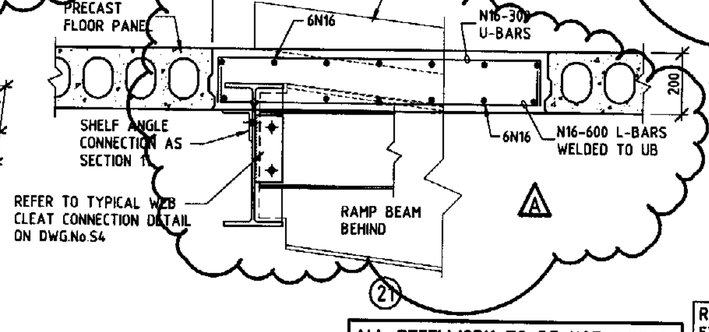

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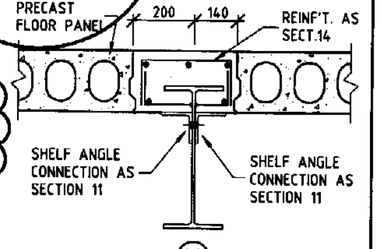

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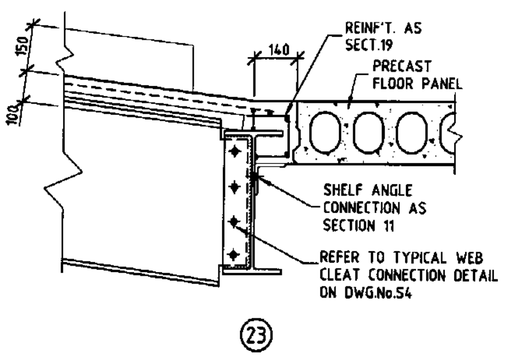

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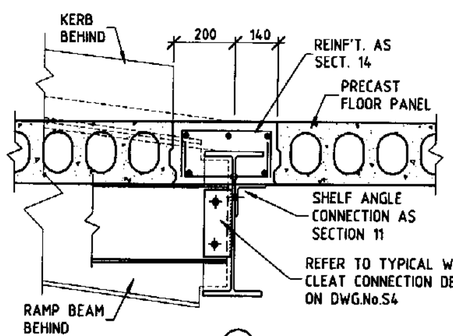

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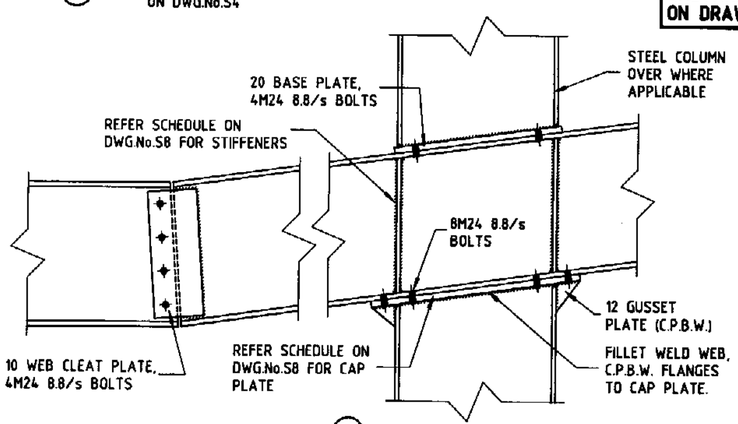

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25A SIMILAR

ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

ISSUE	AMENDMENT	BY	DATE
A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P	26-6-2003
T2	RE-ISSUED FOR TENDER	L.N.P	29-5-2003
T1	ISSUED FOR TENDER	L.N.P	23-5-2003
P2	GENERALLY REVISED	-	16-5-2003
P1	ISSUED FOR INFORMATION	-	9-5-2003

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EMAIL – email@mpn.com.au FAX. (02) 9922 3041

ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

TYPICAL FLOOR DETAILS
SHEET 3

DESIGN: V.K.M. DRAWN: A.J.H. SCALES: 1:10

No IN SET	MPN JOB	DWG No
	8822	S9

A

DATE:

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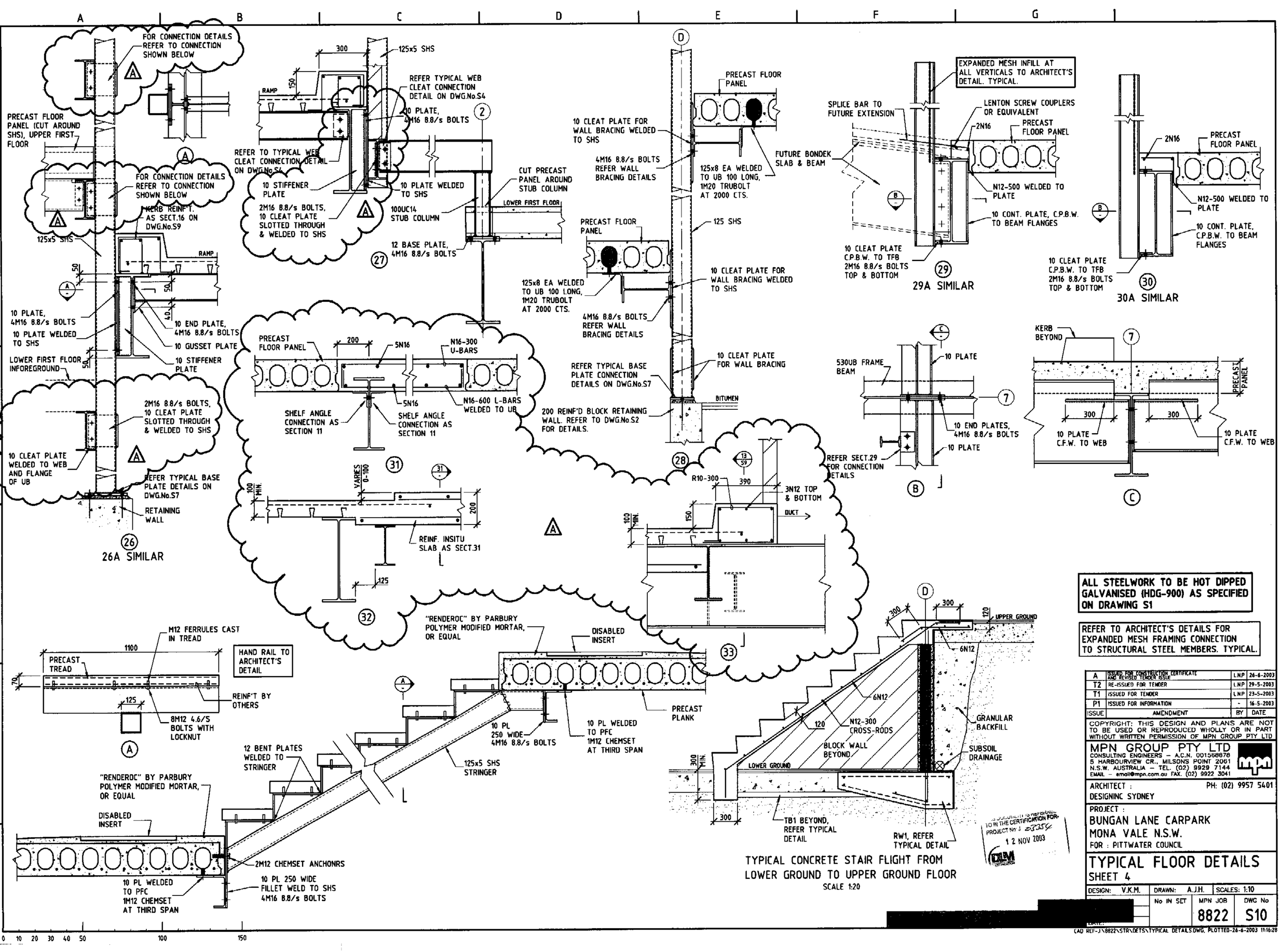

ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

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ARCHITECT : PH: (02) 9957 5401
DESIGNINC SYDNEY

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

TYPICAL FLOOR DETAILS
SHEET 4

DESIGN: V.K.M. DRAWN: A.J.H. SCALES: 1:10

No IN SET	MPN JOB	DWG No	
	8822	S10	A

TO IN THE CERTIFICATION FOR PROJECT No J 03354
12 NOV 2003

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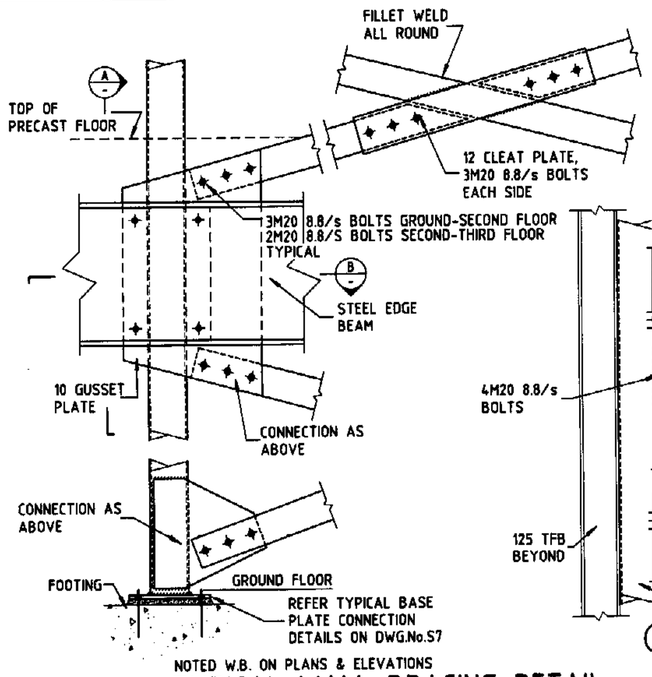
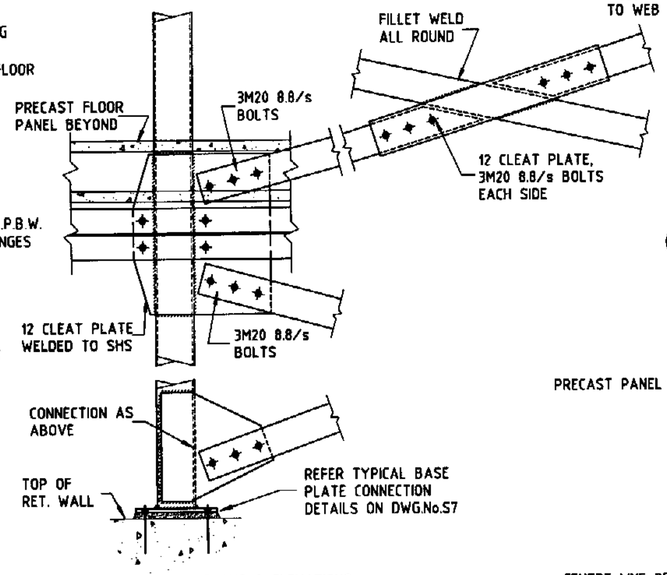
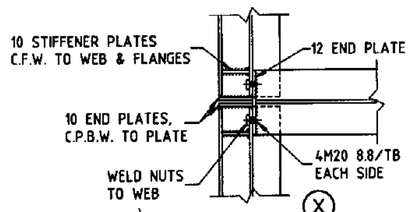


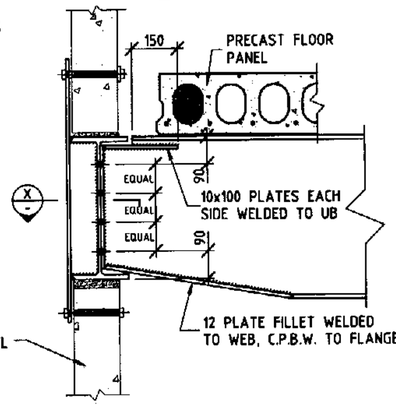
TYPICAL WALL BRACING DETAIL
FOR GRID A & G ONLY

WALL BRACING
150 x 12 GROUND TO SECOND FLOOR
110 x 12 SECOND TO THIRD FLOOR
TYPICAL.

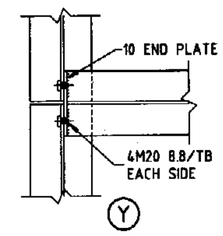


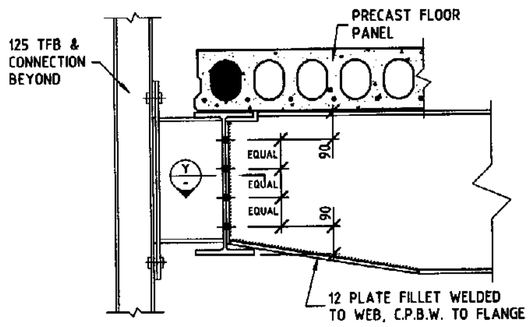
TYPICAL WALL BRACING DETAIL
FOR GRID D ONLY





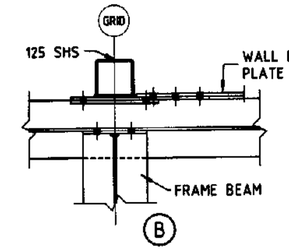
AT JUNCTION OF
GRID G-(1 TO 5) FIRST, SECOND & THIRD FLOORS
GRID G-(6 & 7) FIRST FLOOR ONLY
GRID A-(1 TO 8) FIRST FLOOR ONLY

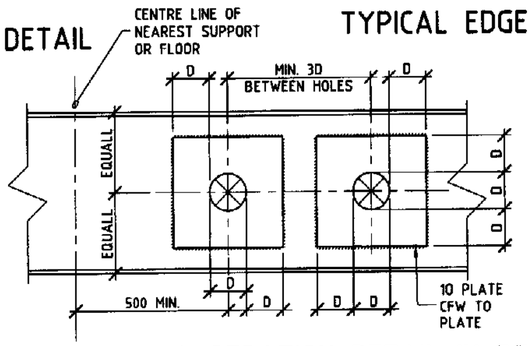




AT JUNCTION OF
GRID G-(6 TO 7) SECOND & THIRD FLOORS
GRID G-(7 & 8) FIRST, SECOND & THIRD FLOORS
GRID A-(1 TO 8) SECOND & THIRD FLOORS

TYPICAL EDGE BEAM TO FRAME CONNECTION DETAILS





THE FOLLOWING CIRCULAR PENETRATIONS MAY BE DRILLED IN BEAM & COLUMN WEBS PRIOR TO THE GALVANISING PROCESS

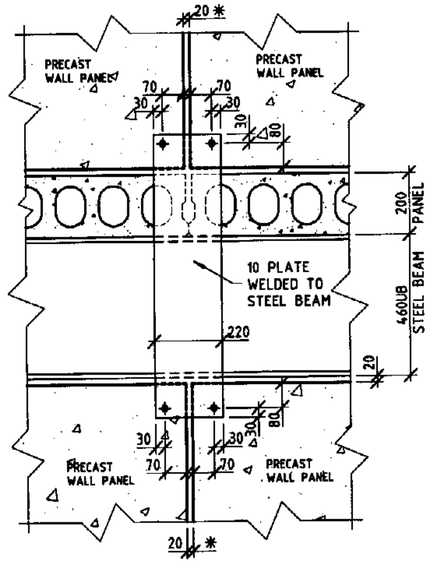
BEAM SIZE	MAX. HOLE DIA. (mm) (D)
610UB	140
530UB	120
460UB	100
250UB	50
200UB	40
180UB	40

NOTE LARGER PENETRATIONS MAY BE ARRANGED WITH THE STRUCTURAL ENGINEERS APPROVAL.

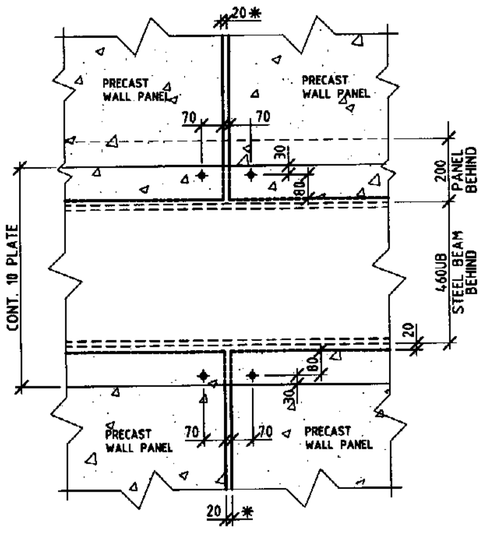
TYPICAL PENETRATION DETAIL IN BEAM & COLUMN WEBS

ALL STEELWORK TO BE HOT DIPPED GALVANISED (HDG-900) AS SPECIFIED ON DRAWING S1

REFER TO ARCHITECT'S DETAILS FOR EXPANDED MESH FRAMING CONNECTION TO STRUCTURAL STEEL MEMBERS. TYPICAL.

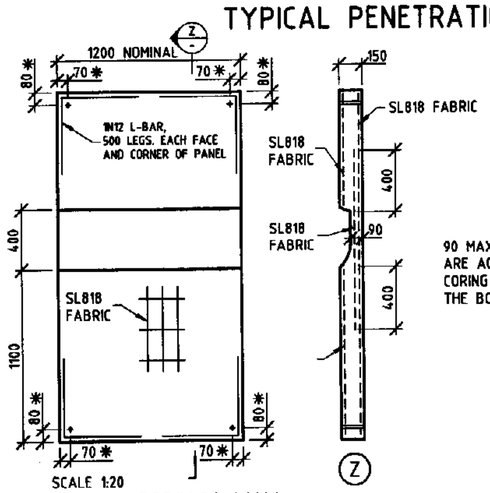


GRID 1 PRECAST WALL CONNECTION DETAIL



GRID G PRECAST WALL CONNECTION DETAIL

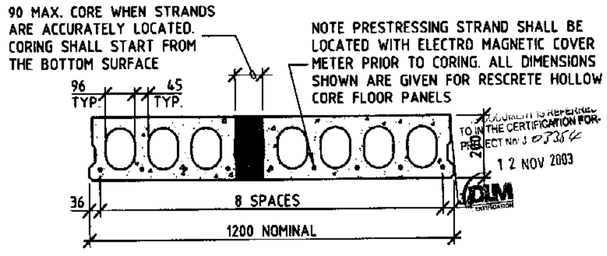
TYPICAL PRECAST WALL CONNECTION DETAILS



SCALE 1:20

TYPICAL PRECAST WALL PANEL ELEVATION

NOTE : ADDITIONAL REINF. FOR HANDLING & TRANSPORTATION AS REQUIRED BY MANUFACTURER



TYPICAL PENETRATION DETAIL IN PRECAST FLOOR PANELS

* DENOTES DIMENSIONS TO BE VERIFIED BY PRECAST MANUFACTURERS

A	ISSUED FOR CONSTRUCTION CERTIFICATE AND REVISED TENDER ISSUE	L.N.P	26-6-2003
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ISSUE	AMENDMENT	BY	DATE

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ARCHITECT : DESIGNINC SYDNEY PH: (02) 9957 5401

PROJECT :
BUNGAN LANE CARPARK
MONA VALE N.S.W.
FOR : PITTWATER COUNCIL

TYPICAL FLOOR DETAILS
SHEET 5

DESIGN: V.K.M.	DRAWN: A.J.H.	SCALES: 1:10	
	No IN SET	MPN JOB 8822	DWG No S11

A

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PROJECT	Bungan Lane
PROJECT NUMBER	210408
DATE	07/08/03
SENDER	trina mcclure
NUMBER OF PAGES	-

☐ FACSIMILE
☐ TRANSMITTAL
■ MEMORANDUM
☐ TELEPHONE CONVERSATION
☐ MINUTES
☐ ORIGINAL TO FOLLOW

210408FEcritique.doc

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04.08.03 DLM requested Part 4a Compliance Certificate from the fire engineer to enable issue of Construction Certificate: request forwarded to AHW same day.

05.08.03 marek (AHW) called tmc to request direct contact number for DLM, with regard to item as requested.

06.08.03 DLM emailed tmc to note:

1/ concerns that alternative solution [ie not complying to BCA] proposed that essential fire safety measures to be included in Fire Safety Schedule, which requires annual inspection by Council: however, DLM felt that there was a conflict of interest, because the owner/client of Bungan Lane was the Council.

2/ that an alternative complying solution had not been fully researched + may still be possible [given that the building was i/ a carpark + ii/ fully sprinklered.

tmc forwarded email to AHW + AHW's fire engineer (Rob Taylor RT, Fire Engineered Solutions) + asked for comment ASAP

07.08.03 RT called + stated that they would not provide compliance certificate, as generally advised by their lawyers.

07.08.03 tmc called/wrote to marek (AHW) + requested written confirmation, by mid-morning 08.08.03 of:

i/ issue with Compliance Certificate.

ii/ comments on possibility of [BCA] complying solution as noted by DLM

07.08.03 **research + discussions with the Practice Unit [T: 9762 8396 Department of Planning, future contact Steve Cullen]** indicate that there are 2 main institutes to which you must belong, before applying for accreditation with the Department of Planning; AIBS (Australian Institute of Building Surveyors), + IEAust (Institute of Engineers Australia). Members of either of these institutes are able to issue Compliance Certificates, but are not obliged to do so: the PCA must satisfy themselves that they have no significant concerns with regard to the alternative solution offered.

AND FINALLY the PCA certifier may accept (in lieu of a compliance certificate) an independent 'Peer Review' of the fire engineered solution, if it is found to be in agreement.

Waterman AHW
Consulting Engineers

AHW

Level 12, South Tower, 1-5 Railway Street, Chatswood, NSW, 2067 T +61 2 9411 9900 F +61 2 9415 1717 E wahw@wahw.com.au www.wahw.com.au

Trina McClure
DesignInc

Date: 18 November 2003
Our Ref: s:\projects\20555\services revisions.doc
Your Ref

per phone 25.11.03

Bungan Lane Carpark
Fire Engineering Revisions

to be amended

Trina,

We have reviewed our documentation in light of the final fire engineering report by SSL. The following amendments are required to the services documents satisfy the report.

Fire Services

1. Delete the Ground Floor drenchers indicated on drawing F-01. ? not sprinklers
2. Delete the future connection points for drenchers on the Ground, First and Second Floors indicated on drawing F-01 and F-02. ✓
3. Add a new sprinkler installation (alarm valve, piping and sprinklers) to serve a new perimeter zone of sprinklers located internal of the building. Sprinklers on this zone shall be located immediately adjacent to and inside all external openings on the North, East and South perimeter walls at no more than 500mm and no less than 300mm from the inside face of the wall. The extent of perimeter zone sprinklers shall include but not be limited to all of the North, East and South openings as follows:
   a) Ground, First and Second Floors – Inside Northern perimeter wall between Grid G to past Grid C. x all of north elevation.
   b) Ground Floor only – Inside Eastern perimeter wall between Grid 1 and Grid 2. (roller door)
   c) Ground Floor only – Inside Southern perimeter wall between Grid E and Grid F. (roller doors)
   d) Ground, First and Second Floors – Inside Eastern perimeter wall between Grid 5 to Grid 8. ✓
4. Re-organise remaining "centre" zone sprinklers on the Ground, First and Second Floors to minimise the need for additional sprinkler heads in compliance with AS2118.1 .
5. Coordinate all new locations of heads and pipework with the builder and other trades with services required to be installed on underside of floor slabs. fire sealing ?

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Waterman AHW Pty Ltd **ACN 100 904 738** **ABN 11 100 904 738**

6. Delete the reference in specification Clause 3.2 for requirement of pressure switches to "Activate Roller Shutters associated with the drencher heads." Note that the pressure switches are still required to control the exhaust fan.

Please contact myself or Scott Brown if you have any questions relating to the above.

Waterman AHW Pty Ltd
Kind Regards,

Ron Lawless
Senior Fire Engineer

PROJECT	Bungan Lane
PROJECT NUMBER	210408
DATE	25.11.03
SENDER	trina mcclure
NUMBER OF PAGES	

■ FACSIMILE
□ TRANSMITTAL MEMORANDUM
□ TELEPHONE CONVERSATION
□ MINUTES
□ ORIGINAL TO FOLLOW
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COMPANY		ATTENTION	FACSIMILE NO	TELEPHONE NO
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SE – MPN Group Pty Ltd	□	viktor mateffy	9922 3041	9929 7144
MEH - AHW	□	marek tomaszewski	9415 1717	9411 9900
	□			
Council	□			
	□			
OTHERS:	□			

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Nathan,

We have finally received construction certification for the Bungan Lane Carpark project, after an interesting run of events. The initial report submitted by FES, as part of AHW's contract to deliver fire services was deemed to **not** comply with BCA regulations when presented to the PCA certifier (Simon Dwyer of DLM) despite a preliminary 'yes' from DLM at an earlier date. DLM felt that there was a conflict of interest, even with covenants in place, as council controls the annual Essential Fire Safety Measures, and council was the client/site owner. This problem was exacerbated by FES's (fire engineer's contracted to AHW) refusal to issue a Compliance Certificate with their option as outlined.

At this point we did extensive research to discover that alternatives reports were available to demonstrate the potential spread of fire relative to building types, based on case studies of actual fires, and heat flux testing. These studies indicated that our building was in compliance, if an additional fire sprinkler circuit is installed at the perimeter of the building, and we instructed AHW to engage a government body (SSL) to certify that option, based on their extensive experience.

In summary, an additional, perimeter independent fire sprinkler system is required, as outlined in SSL's report (copy herewith), and this system would allow us to delete the self closing roller shutter doors as noted into the adjacent sites: these changes will need to be updated on the Fire drawings issued by AHW, as well as our drawings, prior to finalizing the Lump Sum Tender Price, and in line with final selection/engagement of the Building Contractor. We understand that the project is still on hold, as noted in your letter dated 24.09.03, and suggest that any changes are co-ordinated prior to 'restarting' the project, and in conjunction with acquiring an updated Lump Sum Fee for the works.

To this end, I have asked AHW to issue a statement outlining the necessary changes to their drawings, however their statement dated 18.11.03 is incorrect (copy herewith) and I have asked them to rectify

this ASAP. We note herewith that the changes required to our drawings are deletion of the self closing roller shutter doors.

Please find herewith, finally, a copy of the construction certificate for Bungan lane carpark, to include:

1/ "Staged Construction Certificate" by DLM certification, issued 11.11.03

2/ set of drawings (as noted "Staged Construction Certificate" annexure

in addition, please find attached, for your records:

- a report from DesignInc (07.08.03) outlining the critical issues preceding the issue of the construction certificate.
- copy of the (supercede) "Assessment of Potential Fire Spread" by FES, deemed not in compliance with BCA requirements, and without issue of Compliance Certificate.
- copy of final report from SSL "Fire Safety Engineering Assessment" (28.10.03), complying with BCA requirements.
- copy of AHW's letter dated 18.11.03, which is to be updated.

I hope that this delay has not affected your confidence in our team's ability, and note that had the Building Contractor been engaged earlier, we would have sought a much prompter resolution.

kind regards

trina mcclure

sustainable development

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FIRE ENGINEERED SOLUTIONS PTY LTD

Engineering Better Alternative Solutions for the Construction Industry

F.E.S.

ASSESSMENT OF POTENTIAL FIRE SPREAD

Burgan Lane Carpark, Mona Vale

Superseded by Report 2003/132 R2.0 dated July 2003 See DM 12.11.03

Report 2003/132 R2.0

July 2003

Prepared by:	Rob Taylor		10/07/2003

FIRE ENGINEERED SOLUTIONS PTY LTD

ACN 095 962 655

CONSULTING FIRE SAFETY ENGINEERS

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EXECUTIVE SUMMARY

This report documents the findings of a fire safety engineering assessment carried out to assess the potential for fire spread between buildings for the proposed Bungan Lane Carpark at Mona Vale. Fire Engineered Solutions undertook the assessment at the request of Waterman AHW.

The Building Code of Australia (BCA) requires any openings in the external walls of a building of 'Type B' construction which are situated within a prescribed distance from a 'fire source feature' to be protected. The BCA requires this protection of external openings to prevent fire spread between buildings and to satisfy BCA Performance Requirement CP2(c). Hence if the building is adequately separated from adjacent buildings to limit 'to the degree necessary' the potential for fire spread between buildings to occur, Performance Requirement CP2(c) can be considered to be satisfied.

The BCA defines a fire source feature as being the side or rear boundary; or a building on the same allotment. The reason the side or rear boundaries are treated as fire source features is because a building on an adjacent allotment may extend to this location. Even if at the time of construction no building extends to the boundary, this may one day be the case.

We have been asked by our client Waterman AHW to assess protection of opening requirements for Bungan Lane Carpark based on the existing building layout on the adjacent allotments and not in respect to the distance of these openings from the side and rear boundaries. This report therefore assesses the potential for fire spread between buildings based on the Status Quo. The potential for fire spread between our buildings and building on adjacent allotments is assessed taking into account the current location and configuration of those buildings on the adjacent allotments (including buildings currently approved for construction).

The report identifies assumptions and a 'Trial Concept Design' which form the basis of the assessment. The report emphasizes that the assessment is based on the current building layout on adjacent allotments and that changes which occur on adjacent allotments which do not comply with the 'trial concept design' and assumptions identified in this report will require a re-assessment of opening protection requirements for Bungan Lane Carpark.

The report recommends measures which must be implemented to help ensure that an adequate level of fire safety is maintained for the life of the building.

Based on the assessment contained in this report, the proposed carpark design is considered to adequately limit the potential for fire spread between buildings and thus satisfy BCA Performance Requirement CP2(c) subject to the following

1. Compliance with the 'Trail Concept Design' identified in Section 8

2. Should alterations occur to the building evaluated or further redevelopment occur, the degree of protection to the openings would need to be reassessed.

3. The recommendations within this report should be considered as Essential Fire Safety Measures that are identified on the fire safety schedule for this development, and as such all of the fire safety systems should be identified as requiring maintenance and certification at appropriate intervals.

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1. INTRODUCTION

This report documents the findings of a fire safety engineering assessment carried out to assess the potential for fire spread between buildings for the proposed above ground carpark at Bungan Lane. Mona Vale. Fire Engineered Solutions undertook the assessment at the request of Waterman AHW.

Under the deemed-to-satisfy (DTS) provisions of the Building Code of Australia (BCA), any openings within 3m of a fire source feature (FSF) being the side or rear boundary are required to be protected in accordance with Clause C3.4 of the BCA. The subject building has full height openings on the north elevation and the northern portion of the east elevation within 3m of the northern and eastern side boundaries.

Therefore, this alternative solution report has been prepared to assess the potential for fire spread to and from these unprotected openings to determine whether the design complies with the relevant Performance Requirements of the BCA.

The assessment is based on the existing building layout on the adjacent allotments and compliance with the trial concept design identified in Section 8.

2. PURPOSE

The purpose of this assessment is to document the findings of the fire engineering assessment in the form of an Alternative Solution to demonstrate that the design achieves compliance with Performance Requirement CP2(c) of the BCA in accordance with BCA Clause A0.5 (b) (ii) using BCA Assessment Method A0.9(c).

3. SCOPE, LIMITATIONS AND ASSUMPTIONS

3.1 SCOPE, LIMITATIONS AND ASSUMPTIONS

1. The building is assumed to comply with BCA DTS provisions except for unprotected openings assessed in this report.

2. The scope of this Alternative Solution is limited to an assessment of the potential for fire spread from the external openings closer than 3000mm to a Fire Source Feature (FSF).

3. Should alterations occur to the building evaluated or adjacent properties which impact on the assumptions or 'Trial Concept Design' contained in this report then a re-assessment will be required.

4. BUILDING DESCRIPTION

The subject building is a four level above ground carpark.

The building is to comply with BCA DTS provisions with the exception of the following:

- The subject building has a number of full height unprotected external openings on the north elevation and the northern portion of the east elevation within 3m of the northern and eastern side boundaries. These unprotected portions of these external openings are to be a minimum of 3m from the side or rear boundaries of those adjacent allotments where building have been erected or are currently approved to be constructed within 6m of these openings (i.e. openings within 3m of the side or rear boundaries which are not within 6m of adjacent buildings are not proposed to be protected, which does not comply with BCA DTS Clause C3.2).

5. METHODOLOGY

5.1 METHOD OF ACHIEVING COMPLIANCE WITH THE PERFORMANCE REQUIREMENTS OF THE BCA

The approach used to meet the Performance Requirements of the BCA is to formulate an Alternative Solution to demonstrate that the design complies with the relevant Performance Requirements as required by Clause A0.5 (b) (ii). The Assessment Method employed to determine whether the design achieves compliance with the relevant Performance Requirements of the BCA is A0.9 (c)

6. BCA REQUIREMENTS ASSOCIATED WITH THE ALTERNATIVE SOLUTION

Table 6-1 provides a description of the non-compliance and legislative requirements associated with the Alternative Solution.

DTS Provision	Description of non-compliance	Performance Requirement	Meeting Performance Requirements (A0.5)	Assessment Method (A0.9)
C3.2 and C3.4	Non protection of openings situated within 3000mm of the side boundary and a minimum horizontal distance of 6000mm from buildings on the adjacent allotment in lieu of protection complying with BCA Clause C3.4.	CP2(c)	A0.5(b)(ii)	A0.9(c)

Table 6-1 BCA Requirements Associated with the Alternative Solution

7. PERFORMANCE REQUIREMENTS

The Performance Requirement of the BCA that this Alternative Solution relates to is CP2(c), which is set out below:

CP2(c) *A building must have elements which will, to the degree necessary, avoid the spread of fire-*
(c) between buildings,
appropriate to-
(i) the function or use of the building; and
(ii) the fire load; and
(iii) the potential fire intensity; and
(iv) the fire hazard; and
(v) the number of storeys in the building; and
(vi) its proximity to other property; and
(vii) any active fire safety systems installed in the building; and
(viii) the size of any fire compartment; and
(ix) fire brigade intervention; and
(x) other elements they support; and
(xi) the evacuation time.

8. TRIAL CONCEPT DESIGN

The trial concept design for the protection of the identified openings is as follows:

1. The openings situated <3000mm from the side or rear boundaries and >6000mm from buildings on the adjacent allotments are to remain unprotected which does not comply with BCA DTS Clause C3.2. (refer Figure 1 and Figure 2 for areas where unprotected openings within 3m of the side and rear boundaries are proposed to be permitted and not permitted)

2. A caveat shall be placed on the title deeds for the Bungan Lane Carpark identifying that the non-provision of fire resisting construction across external openings in the northern and eastern facades has been based on the existing location of buildings on the adjacent allotments. The Caveat shall state that if further development is approved or undertaken on these adjacent sites then a reassessment of opening protection for Bungan Lane Carpark shall be undertaken.

Additional opening protection and other measures necessary to remain in compliance with the BCA shall be undertaken.

3. The surrounding building location shall form an essential service and shall be certified annually by way of the Annual Fire Safety Statement to ensure that external building openings are protected if they become situated both within 6000mm of an adjacent building and within 3m of the side boundary to which they are exposed.

4. Should alterations occur to the building evaluated or further redevelopment occur, the degree of protection to the openings would need to be reassessed.

5. The recommendations within this report should be considered as Essential Fire Safety Measures that are to be identified on the fire safety schedule for this development. As such all of the fire safety systems should be identified as requiring maintenance and certification at appropriate intervals. Inspections shall be undertaken to ensure adjacent building have not been erected within 6000mm horizontal distance of unprotected openings without a re-assessment of opening protection requirements being undertaken and the requirements of that assessment being approved and implemented.

6. A drawing showing the location of unprotected openings in the external walls of the Bungan Lane Carpark and the locations of existing and currently approved buildings on adjacent allotments shall be produced. Copies of this drawing shall be maintained with Pittwater Council. Prior to approving any development / building work on adjacent allotments, Pittwater Council shall assess whether such building work will extend within 6000mm of unprotected openings in the Bungan Lane Carpark. If the proposed buildings are to extend within 6000mm of unprotected openings in the Bungan Lane Carpark and impact on the assumptions and "Trial Concept Design' outlined in this report, then a re-assessment shall be required to be undertaken for Bungan Lane Carpark. Additional fire safety measures shall be implemented as necessary to comply with the re-assessment and the BCA.

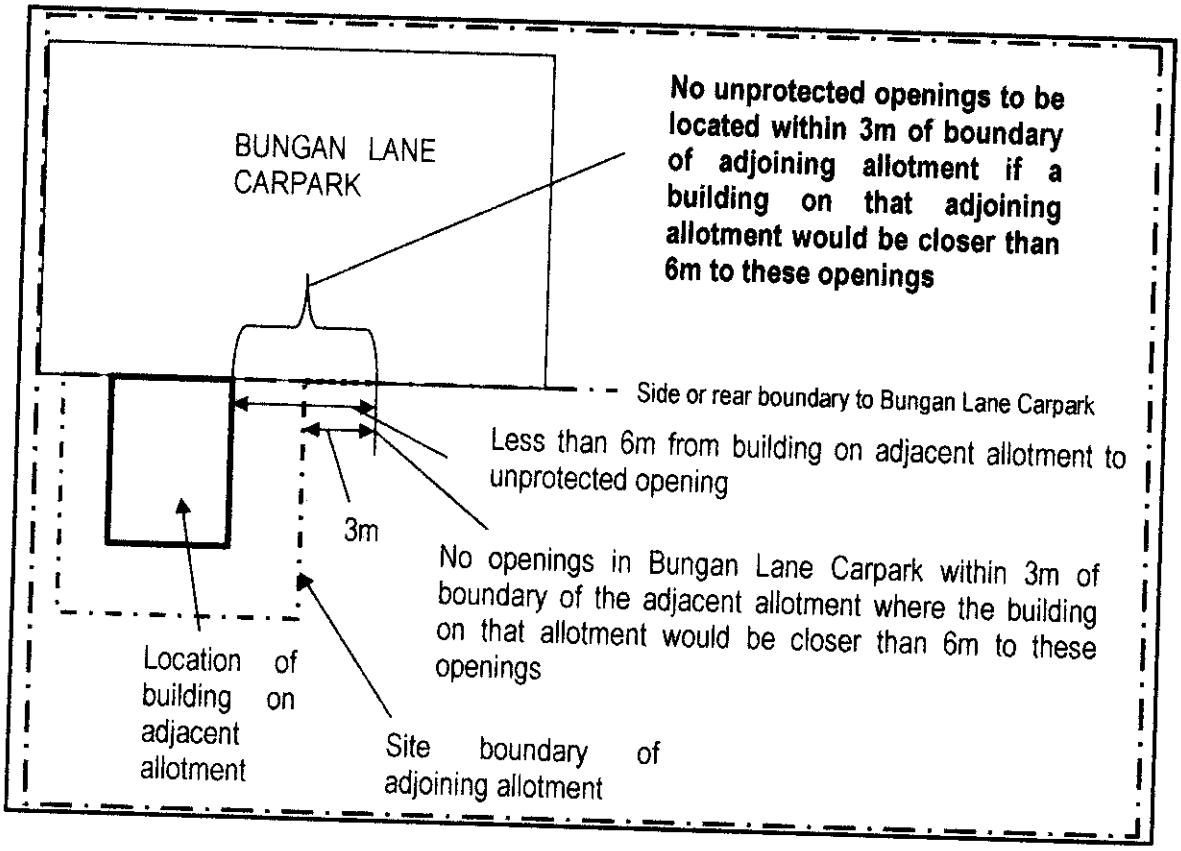

Figure 1 Diagram indicating areas where unprotected openings within 3m of the side and rear boundaries are not permitted

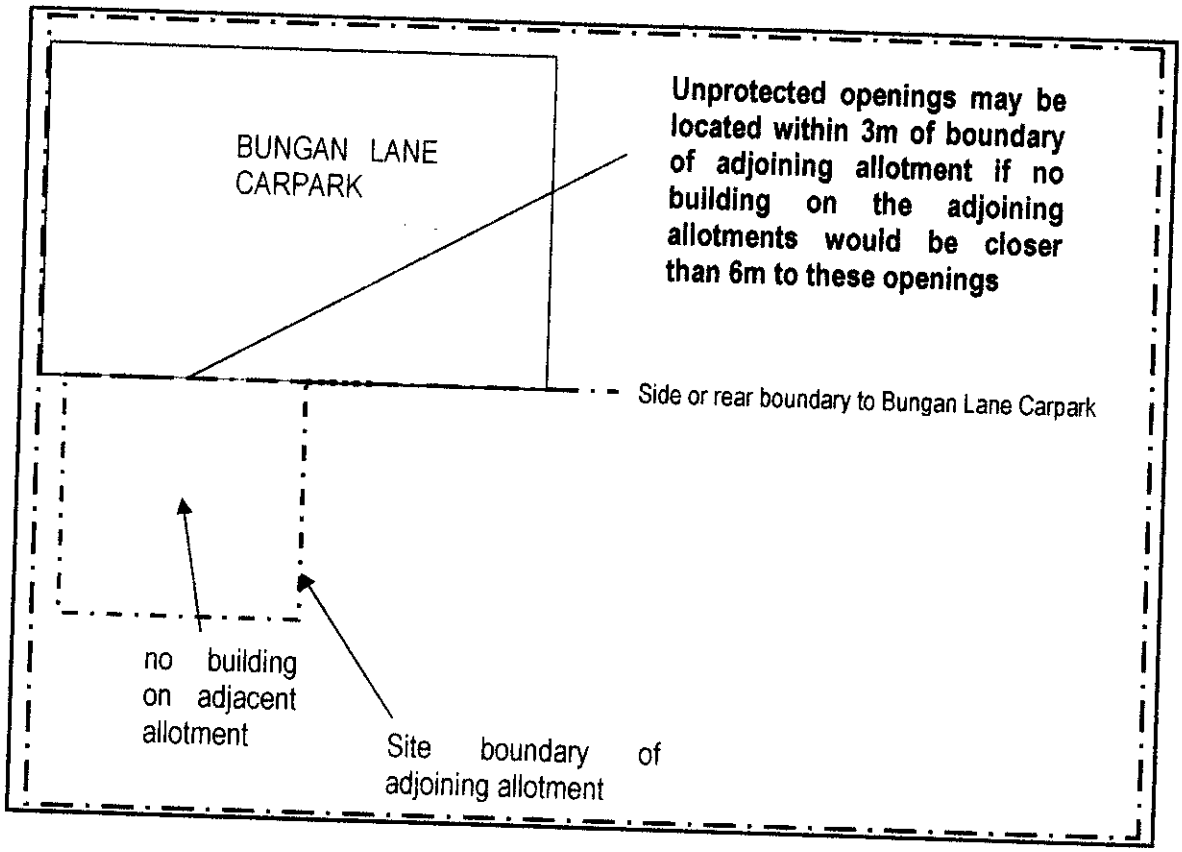

Figure 2 Diagram indicating areas where unprotected openings within 3m of the side and rear boundaries are proposed to be permitted

9. ASSESSMENT OF POTENTIAL FIRE SPREAD TO THE ADJACENT PROPERTIES

9.1 DESCRIPTION OF NON COMPLIANCE WITH BCA DTS PROVISIONS

The building has external openings within 3000mm of the side and rear boundaries to which they are exposed. To limit the potential for fire spread to and from adjacent building via these openings the BCA DTS clause C3.2 requires these openings to be protected.

The Performance Requirement associated with this identified area of non-compliance with BCA DTS provisions is identified as CP2(c). This Performance Requirement relates to limiting the potential for fire spread between buildings to occur.

BCA Clause A0.5 (b) (ii) identifies that a design complies with the BCA if it can be demonstrated that it is capable of achieving equivalent performance to a design complying with BCA DTS provisions.

The following assessment compares the performance of the proposed design in limiting the potential for fire spread between buildings with that of a base case design complying with BCA DTS provisions. Providing it can be demonstrated that the design achieves equivalent performance to the BCA Base Case design then the proposed design can be considered to satisfy the BCA on an equivalence basis in accordance with BCA Clause A0.5 (b) (ii) using assessment method A0.9(c).

9.2 BCA COMPARISON

To compare the performance of the proposed design with that of a base case design complying with BCA DTS provisions it is first necessary to define the different characteristics of the two different design options. The different characteristics of the base case and proposed design options are identified in Figure 3.

Characteristic	Base Case Design	Proposed Design
Minimum distance from side and rear boundaries for unprotected openings	3000mm	100mm
Minimum distance between unprotected openings in the subject building and in a building on an adjacent allotment.	3000mm	3000mm

Figure 3 Characteristics of proposed and base case designs

The aim of BCA Performance Requirement CP2© is to limit the potential for fire spread between buildings. If unprotected openings in one building are too close to unprotected openings in an adjacent building then there is a potential for fire spread to occur between the openings through radiation. The BCA identifies the minimum distance required between openings in different buildings, if these openings are to remain unprotected. The BCA utilises the side and rear boundaries as a means of regulating the distance between unprotected openings in buildings on different allotments.

BCA clause C3.2)(b) (iii) permits unprotected openings where buildings on the same allotment are separated by a distance of 6000mm. BCA Clause C3.2 (b) (i) permits unprotected external openings when buildings are separated from the side boundary by a distance of 3000mm. Hence the BCA permits unprotected openings when buildings on adjacent allotments are separated by a distance of >6000mm. The proposed design requires the unprotected openings to be located a distance of at least 3000mm from the side or rear boundaries when they are also within 6m of buildings on the adjacent allotment. Therefore it is considered to limit the potential for fire spread between these buildings at least to the degree afforded by BCA DTS complying design.

The proposed design is therefore considered to satisfy the BCA on an equivalence basis in accordance with Assessment Method A.09(c).

10. CONCLUSION

The assessment found that the building with unprotected openings situated within 3m of a side or rear boundary is capable of limiting the potential for fire spread between buildings and thus satisfies Performance Requirement CP2(c) of the BCA in accordance with BCA Assessment Method A0.9(c), subject to compliance with the trial concept design identified in Section 8.

11. REFERENCES

- Building Code of Australia 1996 - Volume 1 - Australian Building Codes Board – CCH Limited
- Fire Code Reform Centre – *Fire Engineering Guidelines* – March 1996 – First Edition
- Fire Modelling and Computing, *Firewind 3.5– Computer Software for the Fire Engineering Professional, Version 10*, Sydney, Australia, March 2000.
- Australian Standard 2118.2-1995 – External Wall Wetting Sprinklers

Bungan Lane Carpark, Mona Vale, NSW
Fire Safety Engineering Assessment

SSL

Scientific Services
Laboratory

Bungan Lane Carpark, Mona Vale, NSW
Fire Safety Engineering Assessment

Date	Version	Purpose of Issue	Author(s)	Reviewed
27/08/2003	v01	Draft issue for comment	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory
11/09/2003	v01	Final version issue.	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory
28/10/2003	v02	Final version issue.	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory

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Industry, Science and Resources

INTERNATIONAL QUALITY MANAGEMENT SYSTEM AS/NZS ISO 9001

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1 Introduction

1.1 General

This report details the fire safety engineering assessment undertaken by Scientific Services Laboratory (SSL) on behalf of Waterman AHW.

The assessment examines the proposed alternative design solutions which have been proposed where there are issues of non-compliance with respect to the deemed to satisfy provisions of the Building Code of Australia (BCA) (ABCB 1996).

Based on information provided to SSL it is assumed that the design of the buildings essentially meet the 'Deemed to Satisfy' provisions of BCA 96 except for the non compliance issues identified in the Table 3.1 of this report. Fire safety engineering methodologies, in accordance with the Fire Safety Engineering Guidelines (FSEG) (ABCB 2001), are used to demonstrate that the alternative solutions to these issues meet the performance requirements of BCA 96. The information and drawings for which this assessment is based are detailed in Table 1.1 below.

Table 1.1 Drawings used for assessment

Drawings by	Drawing No.	Plot Date
Design Inc Sydney Pty Ltd	TD 111	23/05/2003
Design Inc Sydney Pty Ltd	TD 112	23/05/2003
Design Inc Sydney Pty Ltd	TD 120	29/05/2003
Design Inc Sydney Pty Ltd	TD 121	29/05/2003
Design Inc Sydney Pty Ltd	TD 122	29/05/2003
Design Inc Sydney Pty Ltd	TD 123	23/05/2003
Design Inc Sydney Pty Ltd	TD 124	23/05/2003
Design Inc Sydney Pty Ltd	TD 130	23/05/2003
Design Inc Sydney Pty Ltd	TD 131	23/05/2003
Design Inc Sydney Pty Ltd	TD 132	29/05/2003
Design Inc Sydney Pty Ltd	TD 133	29/05/2003
Design Inc Sydney Pty Ltd	TD 212	23/05/2003
Design Inc Sydney Pty Ltd	TD 213	23/05/2003
Design Inc Sydney Pty Ltd	TD 213	23/05/2003
Design Inc Sydney Pty Ltd	TD 220	29/05/2003
Design Inc Sydney Pty Ltd	TD 221	23/05/2003
Design Inc Sydney Pty Ltd	TD 222	23/05/2003
Design Inc Sydney Pty Ltd	TD 223	23/05/2003
Design Inc Sydney Pty Ltd	TD 224	23/05/2003

The BCA96 through Clause A0.5 allows compliance with the performance requirements to be achieved either by a complying deemed to satisfy design; an alternative solution complying with the performance requirements or equivalent to the deemed to satisfy design provisions, or a combination of both approaches.

The assessment methodology employed in this assessment is based on the application of engineering judgement backed by appropriate analytical procedures and verification methodologies in the BCA96 in accordance with Clause A0.9 of BCA96.

1.2 Scope of Project

This assessment will address the issues of non-compliance with BCA96, which are identified in the Table 3.1 of this report. These issues relate to the final state of the building. This assessment and report does not address any issues of non-compliance and occupant safety that may arise as a result of partial completion and partial occupation of the building.

The assessment is concerned primarily with the life safety of the occupants. The fire safety systems to achieve this are outlined in the report in principle. The assessment does not consider property protection, business continuity issues, environmental protection and insurance requirements unless these are specifically identified in the scope of work.

Acceptance of alternative solutions instead of the BCA deemed to satisfy complying design requirements may increase the risk of property and contents damage.

The assessment is based on the occurrence of accidental fires originating from a single ignition source with fuel loads and distribution compatible with the use of the building. Fires arising from acts of arson involving introduced fuels and multiple ignition sources do not form part of this assessment.

The fire safety assessment to be carried out is concerned with life safety and has no specific objectives to be considered in regard to:

(i) property loss; and

(ii) community or environmental issues.

1.3 Stakeholders

This report may be relied on by Waterman AHW, Design Inc Sydney Pty Ltd, DLM Consulting, Scientific Services Laboratory and other relevant regulatory authorities. This report should not be relied on by other parties, other than those parties listed above, without the consent of Waterman AHW and Scientific Services Laboratory.

2 Occupant and Building Characteristics

2.1 Building Characteristics

The site is located at Bungan Lane, Mona Vale, NSW.

The proposed building is a split level four (4) - level car park.

The basic construction of the building is taken to be fully compliant with the deemed to satisfy design requirements of the Building Code of Australia 1996, BCA96.

For the purposes of the BCA 96, the subject building is described as follows:

- Classification (Clause A3.2) - Class 7a Car Park
- Rise in Storeys (Clause C1.2) - Rise of 3 storeys,
- Type of construction (Table C1.1) - Type A construction, and
- Effective height (Clause C1.2) - Less than 25 metres.

2.2 Occupant Characteristics

The occupant community characteristics of this type of development are taken to be typical of those found in this class of building.

The occupants in the car park may be classified as transient (i.e temporary carpark users).

It is not anticipated that the occupant characteristics or the usage of the building will change significantly. Any such change would require a re-assessment of the fire safety levels.

3 Non-compliances and Study Objectives

The proposed design solution does not meet some of the deemed to satisfy requirements of the BCA and hence the alternative design solution is required to be shown to meet the relevant performance requirements.

The Building Code of Australia 1996 has 'Objectives', 'Functional Statements' and 'Performance Requirements' relevant to each section of the BCA. BCA96 allows for two types of building design solutions, complying with the 'Deemed to Satisfy Provisions' and formulating 'Alternative Solutions'. Compliance with the BCA is met by satisfying the applicable performance requirements by either a deemed-to-satisfy solution or an alternative building solution.

The clauses of the 'Deemed to Satisfy Provisions' of BCA96, which the specific items of the proposed design do not meet and shall be addressed, are listed below:

Section C, Part C3 - Protection of Openings

The BCA96 deemed-to-satisfy non-compliant clause has been identified by DLM Consulting and is listed in the following table:

Table 3.1. Non compliance

Non-compliance Issue	BCA Clause	Performance Requirement
There are external openings within the carpark structure that are within the required minimum distance of 3.0 m to the site boundary.	C3.2 and C3.4	CP2

The BCA performance requirements identified in relation to the above non-compliance issue is as follows:

CP2 A building must have elements which will, to the degree necessary, avoid the spread of fire-

(a) to *exits*; and

(b) to *sole-occupancy units* and *public corridors*; and

Application:
CP2(b) only applies to a Class 2 or 3 building or Class 4 part.

(c) between buildings; and

(d) in a building, appropriate to-

(i) the function or use of the building; and

(ii) the *fire load*; and

(iii) the potential *fire intensity*; and

(iv) the *fire hazard*; and

(v) the number of *storeys* in the building; and

(vi) its proximity to *other property;* and

(vii) any active *fire safety systems* installed in the building; and

(viii) the size of any *fire compartment*; and

(ix) *fire brigade* intervention; and

(x) other elements they support; and

(xi) the *evacuation time.*

4 Trial Concept Design

4.1 Hazard Identification

An examination of the statistics in regard to casualties due to car park fires shows that in 404 US car park fires there were no fatalities (Denda 1992). Gewain (1989) also examined the US data and concluded that there had been no fatalities in car related structure fires. The data did not indicate if the structures were open or closed. Similarly the ECCS technical committee on open deck car park (ECCS 1993) concluded that European insurance company statistics over many years showed no casualties as a result of car park fires in general. Earlier studies reported by Bennetts (Bennetts et al 1989) also indicate that in US and Canadian experience there were no recorded fatalities in 395 fires. The latter data may have included some of these earlier cases. Nevertheless, the overwhelming conclusion from these studies is that there is an extremely low fire safety hazard in car park.

Extensive research conducted by BHP has demonstrated that in sprinkler protected car parks, there is minimal risk of fire spread between vehicles. The tests have shown that the sprinklers are effective in containing the fire to the vehicle initially ignited. (Bennetts et al 1987, 1990)

4.2 Protective measures

The fire protection measures for the building are understood to be provided in accordance with the deemed-to-satisfy provisions of the BCA. These will include:

- Automatic fire sprinkler system provided throughout the building (Class 7a car park levels) in accordance with AS2118.1 and specification E1.5 of the BCA'96.,
- Fire hydrants (AS 2419) to the building,
- Fire hose reels (AS 1221 and AS 2441) to the building,
- Exit signs and emergency lighting (AS 2293) to the building,

It is taken that the basic construction of the car park will meet the BCA deemed to satisfy requirements with the exception of the non compliances noted in the Table 3.1.

In order to address the non compliance issue, additional sprinklers are proposed. These sprinklers are to be positioned immediately adjacent to the identified external wall openings at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall (internal sprinklers). In order to improve the reliability of the sprinkler system the additional sprinklers are to be independent from

the automatic sprinkler system proposed for the carpark structure. The additional sprinklers are to be fed from a separate monitored isolation valve or from the hydrant system (with monitored valve).

5 Assessment

The external façade openings that are located within the required 3.0 m distance to the subject site boundary occur on the east (adjacent to Turimetta site/PO/retail) and north (CBA Bank Carpark) boundaries. These openings are located within a "Type B Construction FRL" steel and precast concrete demountable carpark comprising ground and three suspended levels with a façade system comprising both precast concrete panels and an open steel framed balustrade. The façade balustrade comprises continuous vertical steel members with steel mesh infill in between. The steel mesh infill on the east elevation extends 1200mm above and 760mm below the top surface of the precast concrete deck. The north elevation façade balustrade is similar in design to the east except that the extent of steel mesh is greater leaving less clear opening.

The balustrades on the east elevation extend approximately 22.3 m and occur on ground and the three elevated levels. The balustrades on the north elevation extend full width of the carpark approximately 33.5 m and occurs on ground and the three elevated levels.

Vehicular access is provided through the carpark at ground level into several adjacent properties. The vehicular openings occur on the north, east and south boundaries and have been designed with water drenched self closing roll down doors having 2.2m clear height and range in width from 3.7 to 5.5m wide.

The carpark in question is sprinkler protected. The sprinkler spray will limit the growth of a potential car fire such that the fire may be suppressed or controlled at a relatively small heat release rate (Bennetts et al 1987, 1990). Using the sprinkler activation model in the FAST program suite it was estimated that the maximum heat release rate of sprinkler controlled fast growth car fire would not exceed 2000 kW. Radiation from this car fire is then estimated to determine the heat flux at the boundary.

According to Drysdale (1999), the radiant heat flux from a heat source can be estimated using the following equation:

$$q = \frac{Q_r}{4\pi r^2}$$

where Q_r is the radiant heat release rate of the fire, r is the distance from the fire source. Assume that the fraction of radiant heat release rate to total heat release rate, Q, is 0.3 and the distance from the fire source to the boundary is in the order of 1 m.

$$q = \frac{Q_r}{4\pi r^2} = \frac{0.3Q}{4\pi r^2} = \frac{0.3\times 2000}{4\times 3.14\times 1^2} = 47.7 \text{ (kW/m}^2\text{)}$$

This value is much less than the allowed heat flux limit in Table CV1 of BCA96. The risk of fire spread to the adjacent buildings is, therefore, minimal.

The sprinkler activation will reduce the incident heat flux beyond the opening. Sprinkler spray could form a water curtain in the vicinity of the sprinkler head. The use of a water curtain for fire protection has been documented in the literature (Coppalle, et. al., 1993). The experimental study by Pretrel and Buchlin (1996) demonstrated that water curtains could effectively attenuate thermal radiation generated by fires, thus preventing fire spread from one side of the curtain to another. The cooling effect of water spray also reduces convective heat transfer across the curtain (Chow and Fong, 1991), thus reducing the heat flux condition on the non fire side.

In addition to the attenuation of the radiant heat flux by a water spray, for the fully open sections of the carpark there would be wetting of possible fuel items within the carpark which would have the effect of further reducing the risk of fire spread.

Fuel loads (engine fuel, car interiors and tyres) in carparks are either generally concealed inside vehicles or located in the lower part of vehicles. Direct exposure of these fuels to thermal radiation from the neighbouring property is unlikely. In case of strong thermal radiation, the sprinklers, particularly the sprinkler heads prescribed to be positioned immediately adjacent to the identified external wall openings (at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall), will activate and offer protection to the vehicles parked adjacent to the carpark structure openings. Therefor, the proposed sprinkler protection will satisfy Clause CV1(b) of BCA96.

6 Conclusion and Recommendation

With respect to the positioning of the identified external wall openings within the perimeter external walls of the Bungan Lane carpark building, it has been established that the openings require some form of protection as a measure of redundancy in order to address the issue of fire spread to the adjacent site buildings.

The roller shutter doors separating the vehicular openings connecting the carpark structures may be deleted. The location of the perimeter carpark wall openings and vehicular openings connecting the carpark structures meet the performance requirement CP2 contingent on the adoption of the requirements listed below:

- Sprinklers are to be positioned immediately adjacent to the identified external wall openings and connecting vehicular openings at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall (internal sprinklers).
- In order to improve the reliability of the sprinkler system the additional sprinklers are to be independent from the automatic sprinkler system proposed for the carpark structure. The additional sprinklers are to be fed from a separate monitored isolation valve or from the hydrant system (with monitored valve).

7 References

ABCB, 'Building Code of Australia 1996 - Volume 1', Class 2 to Class 9 Buildings, Australian Building Codes Board, Canberra, 1996

ABCB, 'Fire Safety Engineering Guidelines - 2001', Australian Building Codes Board, Canberra, 2001

Bennetts I D, Thomas I R. Proe D J, Lewins R R & Almand K H., 1990, "Fire Safety in carparks", BHP Structural Steel Development Group.

Coppalle, A.; Nedelka, D.; Bauer, B., 1993, "Fire Protection: Water Curtains", Fire Safety Journal, Vol. 20, No. 3, 241-255, 1993.

Denda, D. F., 'Parking garage fires', Parking Marketing Research Company, 1992.

Drysdale D. D., 1999, *An Introduction to Fire Dynamics*, 2nd edition, Chichester, John Wiley & Sons.

Gewain R G., 'Fire and life safety in open parking structures', Hughes Associates, February 1989.

Pretrel, H. and Buchlin, J. M., "Experimental Study on the Performance of Water Spray Curtains to Attenuate Thermal Radiation", von Karman Institute, Belgium Industrial Fires III Workshop Proceedings. Major Industrial Hazards. EUR 17477 EN. European Commission. September 17-18, 1996, Riso, Denmark, 185-192 pp, 1996.

STAGED CONSTRUCTION CERTIFICATE
No. J03354

FOR

DESIGNINC

PREMISES

Bungan Lane Car Park
4 Bungan Lane, Mona Vale

Date: 11 November 2003

- ACCREDITED BUILDING CERTIFIERS
- BUILDING & HEALTH SURVEYORS
- PRINCIPAL CERTIFYING AUTHORITY

dlmc@dlmc.com.au
www.dlmc.com.au

STAGED CONSTRUCTION CERTIFICATE No J03354

DLM CERTIFICATION

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Waterrman AHW
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Waterman AHW
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MPN Group
Design Statement – Structural
Dated 26 June 2003 1 page

Annexure 7 – Performance Assessment Documentation

Scientific Services Laboratory Fire Safety Engineering Assessment Report XR0895/R1 dated 28 October 2003	14 pages
Scientific Services Laboratory Part 4a Compliance Certificate No. XR0895/C1 Dated 6 November 2003	2 pages

Annexure 8 – Other Supporting Documentation

Nathan Huon, Pittwater Council Emails – Guidance for DA Conditions Various dates	4 pages

Annexure 9 – Evidence of payment of Council Fees

Long service levy payment	1 page

Annexure 10 – Fire Safety Schedule

Schedule of essential services	1 page

Annexure 11 – Certificate of Accreditation

Certificate of Accreditation	1 page

DLM CERTIFICATION

STAGED CONSTRUCTION CERTIFICATE

Work Completed in accordance with the documentation accompanying the Application for this Construction Certificate (with such modifications verified by the certifying authority as may be shown on that documentation) will comply with the requirements of the Environmental Planning & Regulation 2000 as are referred to in Section 81A(5) of the Environmental Planning & Assessment Act 1979.

Signature of Accredited Certifier:

Date of Endorsement: 11 November 2003

Staged Construction Certificate No.: J03354

Property Details: Bungan Lane Car Park,
4 Bungan Lane, Mona Vale

Description of works: Public Car Park

At least two (2) days prior to commencement of works the notice of commencement of works and appointment of the PCA must be submitted to council in accordance with SS 81A (2) (b) and (c), and/or 81 (4) (b) and (c) of the Environmental Planning and Assessment Act 1979.

Accredited Certifier

Name of Accredited Certifier: Simon Dwyer

Accreditation Body: Department of Infrastructure, Planning and Natural Resources

Registration No.: 925

Contact Numbers: *Phone:* 9799 7466 *Facsimile:* 9799 7566

Consent Details

Development Consent No.: Pittwater Council *Date of Determination:* 5 February 2003

Consent Authority: Pittwater

Information Attached to this Decision

Construction Certificate Application/Details	Annexure 1
Plans and Specification that form part of this Certificate	Annexure 2
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Performance Assessment Documentation	Annexure 7
Other Supporting Documentation	Annexure 8
Evidence of Payment of Council Fees	Annexure 9
Fire Safety Schedule (Existing and Proposed)	Annexure 10
Certificate of Accreditation	Annexure 11

New South Wales
Level 1, Suite 102,
2 Holden St.
Ashfield NSW 2131
P.O. Box 1025
DX 21218 Ashfield

Ph: 02 9799 7466
Fax: 02 9799 7566

Queensland
47 Savoy Drive
Florida Gardens
Gold Coast QLD 4218
P.O. Box 337
Pacific Fair

Ph: 07 5527 6274
Fax: 07 5527 6274

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www.dlmc.com.au

ANNEXURE 1

Construction Certificate Application/Details

CERTIFICATE APPLICATION FORM

In accordance with Clause 138 of the Environmental Planning and Assessment Regulation 2000

I/we the undersigned hereby make application to DLM Certification Pty Ltd for the following service:

(Tick box to nominate service sought)

☑ The issue of a Construction Certificate

☑ The issue of an Occupation Certificate for ☐ interim, ☐ final, ☐ change of use, ☐ occupation/use of a new building

☑ To appoint the person nominated below as the "Principal Certifying Authority" and for that person to notify the Local Authority accordingly.

Applicant Details

Applicant Name	Designing			
Address	124 Walker Street North Sydney NSW 2060			
Contact Numbers	Phone	99575401	Fax	99576257
	E-mail		Mobile	—

Owners Details

Owners Name/s	PITTWATER COUNCIL (NATHAN HUON - PRINCIPAL OFFICER)			
Address	UNIT 12 / 5 VUKO PLACE WARRIEWOOD NSW 2102			
Contact Numbers	Phone	9970 1283	Fax	9970 7384
	E-mail	nathan_huon@pittwater.nsw.gov.au	Mobile	0407 224 102

Property Description

Address	4 Bungan Lane Mona Vale			
Title details	Lot No./s	2	DP	707539

New South Wales
Level 1, Suite 102,
2 Holden St
Ashfield NSW 2131
PO Box 1025
DX 21218 Ashfield

Ph: 02 9799 2466
Fax: 02 9790 7566

Queensland
4 Savoy Drive
Florida Gardens
Gold Coast QLD 4218
P.O. Box 337
Pacific Fair

Ph: 07 5527 6274
Fax: 07 5527 6274

dlmc@dlmc.com.au
www.dlmc.com.au

CERTIFICATE APPLICATION FORM

Description of Development

- Building work, Construction of a three storey public carpark STAGED STAGES 1-26 per DA. (KNOWN AS STAGE 1 per documentation.)

Consent Details

Development Consent No.	N0632/01	Date of Determination	6 February 2003
Consent Authority	Pittwater Council		

Building Code of Australia Classification	Class 7a
Value of Building Works	$2,000,000 STAGE 1.

Certifying Authority Details

Name of Accredited Certifier	Simon Dwyer			
Accreditation No.	925			
Contact Numbers	Phone	9799 7466	Facsimile	9799 7566

Builder/Owner Builder Details

Name	
Contractor Licence No/Permit No (in case of Owner Builder	
Address	

Signatures:

FOR PITTWATER COUNCIL.

Applicant/s

for Dengrille

Consent of Owner/s (if not applicant)

CERTIFICATE APPLICATION FORM

The following Schedule is required to be completed for the purposes of providing information to the Australian Bureau of Statistics

PART A

Particulars of development			
Area of land	1000 M²	Gross floor area of building	3600 M² (STAGE 1)

Current use of all or parts of the building(s)/land (if vacant state 'vacant')?

Location	Use
• 4 BUNGAN LANE	• ON GRADE CAR PARK
•	•
Does the site contain a dual occupancy?	NO
Gross floor area of addition of new building?	AS OVER.

What are the proposed uses of all parts of the building(s)/land?

Location	Use
• 4 BUNGAN LANE	• ON GRADE CAR PARK
•	•
No. of pre existing dwellings	NONE
No. of dw llings to be demolished	NONE
How man dwellings are proposed?	NONE - CARPARK NOT DWELLING
How man storeys will the building consist of?	2 STOREYS (GROUND + FIRST FLOOR)

PART

Material to be used - (place a tick in the ( ) which best describes the materials the new work will be constructed of).

Walls		Code	Roof (NA (OPEN DECK))		Code
Brick ve er	( )	12	Aluminium	( )	70
Full bric	( )	11	Concrete	( )	20
Single b ok	( )	11	Concrete tiles	( )	10
Concret block	( )	11	Fibrous cement	( )	50
Concret masonry	( )	20	Fibreglass	( )	80
Concret	( )	20	Masonry/terra cotta shingle tile	( )	10
Steel	(✓)	60	Slate	( )	20
Fibrou cement	( )	30	Steel	( )	60
Hardip nit	( )	30	Terra cotta tile	( )	10
Timber weatherboard	( )	40	Other	( )	80
Claddi g-aluminium	( )	70	Unknown	( )	90
Curtin lass	( )	50			
Other	( )	80			
Unkno wn	( )	90			
			Frame		
Floor			Timber	( )	40
Conc te	(✓)	20	Steel	(✓)	60
Timb	( )	10	Other	( )	80
Othe	( )	80	Unknown	( )	90
Unkn wn	( )	90			

STAGED CONSTRUCTION CERTIFICATE DOCUMENTATION No J03354

PLANS AND SPECIFICATION THAT FORM PART OF THIS CERTIFICATE:

Architectural documentation & specification as prepared by DesignInc sydney

Drawing No.	Revision	Title	Date
TD001	-	Site Plan	29 May 2003
TD010	-	Ground Floor plan – Stage 1	29 May 2003
TD011	-	First Floor Plan – Sage 1	23 May 2003
TD012	-	Ground Floor Entry/Exit Plan – Stage 1	23 May 2003
TD013	-	Sprikler Riser Cupboard	23 May 2003
TD014	-	Ground Floor plan – Ramp into PO	23 May 2003
TD020	-	Sections – Stage 1	29 May 2003
TD021	-	Sections Stage 1	29 May 2003
TD022	-	Typical Sections West Wall Stage 1	23 May 2003
TD023	-	Typical Sections East Wall Stage 1	23 May 2003
TD024	-	Typical Sections North Wall Stage 1	23 May 2003
TD030	-	Elevations – North and West Stage 1	23 May 2003
TD031	-	Elevations – East and South Stage 1	23 May 2003
TD032	-	Internal Elevtions – East and South Stage 1	29 May 2003
TD033	-	Elevations – North and west Stage 1	29 May 2003
TD040	-	Typical mesh screen details	23 May 2003
TD041	-	Sections thru Precast wall Panels	23 May 2003
TD042	-	Sections thru Demountable balustrade	23 May 2003
TD043	-	Typical Section Trhough Pic. Perf. Front fixed	23 May 2003
TD044	-	Typical roller shutter details – concrete facade	23 May 2003
TD045	-	Typical Roller shutter detail – mesh facade	23 May 2003
TD046	-	Base Details 1	23 May 2003
TD047	-	Base Details 2	23 May 2003
TD048	-	Typical Wall Panel Details	23 May 2003
TD049	-	Corner Details on ground plan Stage 1	23 May 2003
TD050	-	Typical Doorway west elevation	23 May 2003
TD051	-	Plan – Corner Details	23 May 2003
TD052	-	Elevations demountable plant room Stage 1 – First floor	23 May 2003
TD053	-	Mesh & Balustrade Details	23 May 2003
TD054	-	Mesh & Balustrade Details 2	23 May 2003
TD055	-	Top Plan – All Stages	26 May 2003
TD060	-	Plan – Ramp 1 & Stair 1 ground Floor Stage 1	26 May 2003
TD061	-	Plan – Ramp 1 & Stair 1 First Floor Stage 1	23 May 2003
TD062	-	Cross Section Ramp1 & Stair 1 Stage 1	23 May 2003
TD063	-	Section-ramp1 – Stage 1	23 May 2003
TD064	-	Section-Stair 1 – Stage 1	29 May 2003
TD065	-	Plan Ramp 2, 3, 4 & Stair 2 Ground Floor Stage 1	26 May 2003

TD066	-	Plan – Ramp 2 3 4 & Stair 2 First Floor stage 1	26 May 2003
TD111	-	First Floor Plan – Stage 2	23 May 2003
TD112	-	Second Floor Plan – Stage 2	23 May 2003
TD120	-	Sections – Stage 2	29 May 2003
TD121	-	Sections – Stage 2	29 May 2003
TD122	-	Typical Sections – West Wall Stages 1 & 2	29 May 2003
TD123	-	Typical Sections East Wall - Stages 1 & 2	23 May 2003
TD124	-	Typical Sections North Wall (adjacent ramp) Stages 1 & 2	23 May 2003
TD130	-	Elevations North & West Stage 2	23 May 2003
TD131	-	Elevations East & South Stage 2	23 May 2003
TD132	-	Elevations East & South - Stage 2	29 May 2003
TD133	-	Elevations North & West Stage 2	29 May 2003
TD212	-	Second Floor Plan – Stage 3	23 May 2003
TD213	-	Third Floor Plan – Stage 3	23 May 2003
TD220	-	Sections – Stage 3	29 May 2003
TD221	-	Sections – Stage 3	23 May 2003
TD222	-	Typical Sections West ages 1, 2 and 3	23 May 2003
TD223	-	Typical Sections East Wall – Stage 1 2 and 3	23 May 2003
TD224	-	Typical Sections – North Wall (adjacent ramp)	23 May 2003
TD230	-	Elevations – North & West - Stage 3	23 May 2003
TD231	-	Elevtions – East & South Stage 3	23 May 2003
TD232	-	Internal Elevtions South – Stage 3	29 May 2003
TD233	-	Internal Elevations – North & West Stage 3	29 May 2003

Structural documentation & specification as prepared by MPN Group Pty Ltd

Drawing No.	Revision	Title	Date
S0	A	Cover Sheet	26 June 2003
S1	A	General Notes	26 June 2003
S2	A	Footing Layout	26 June 2003
S3	A	Footing Details	26 June 2003
S4	A	First & Second Floor Layout	26 June 2003
S5	A	Third Floor Layout	26 June 2003
S6	A	Floor Elevations	26 June 2003
S7	A	Typical Floor Details Sheet 1	26 June 2003
S8	A	Typical Floor Details Sheet 2	26 June 2003
S9	A	Typical Floor Details Sheet 3	26 June 2003
S10	A	Typical Floor Details Sheet 4	26 June 2003
S11	A	Typical Floor Details Sheet 5	26 June 2003
CC00	-	Cover Sheet & Associated Details	23 May 2003
CC01	-	Carpark Grading	23 May 2003

STAGED CONSTRUCTION CERTIFICATE DOCUMENTATION No J03354

Hydraulic documentation & specification as prepared by Waterman AWH

Drawing No.	Revision	Title	Date
H00	B	Legend, Drawing Register & Sepification Notes	28 May 2003
H01	B	Site Plan	28 May 2003
H02	A	Ground Floor Plan	23 May 2003
H03	A	First & Second Floor Plan	23 May 2003
H04	A	Roof Plan	23 May 2003

Fire Sprinkler Services documentation and specification as prepared by Waterman AWH

Drawing No.	Revision	Title	Date
F01	A	Ground Floor – Fire Sprinker Layout	23 May 2003
F02	A	First & Second Floor	23 May 2003

Mechanical documentation & specification as prepared by Waterman AWH

Drawing No.	Revision	Title	Date
S1-M01	A	Ground Floor – Ventilation Layout	23 May 2003
S1-M02	B	Level 1 Floor – Ventilation Layout	23 May 2003
S2-M01	A	Ground Floor – Ventilation Layout	23 May 2003
S2-M02	A	Level 1 – Ventilation Layout	23 May 2003
S2-M03	B	Level 2 – Ventilation Layout	23 May 2003
S3-M01	A	Ground Floor – Ventilation Layout	23 May 2003
S3-M02	B	Level 1 – Ventilation Layout	23 May 2003
S3-M03	B	Level 2 – Ventilation Layout	23 May 2003

Electrical Services documentation & specification as prepared by Waterman AWH

Drawing No.	Revision	Title	Date
`E01	A	Legend and Single Line Details	23 May 2003
E02	A	Ground Floor Lighting and Power Layout	23 May 2003
E03	A	First and Second Floor – Lighting & Power Layout	23 May 2003
E04	A	Third Floor – Lighting & Power Layout (First floor Stage 1)	23 May 2003

ANNEXURE 3

Copy of Development Consent

Pittwater Council ABN 61 340 837 871
All Correspondence to be addressed to General Manager

Units 9, 11 & 12/ 5 Vuko Place
WARRIEWOOD NSW 2102
Avalon Customer Service Centre
59A Old Barrenjoey Road, AVALON 2107

Postal Address
P.O. Box 882
MONA VALE NSW 1660
DX 9018 MONA VALE

Telephone (02) 9970 1111
Facsimile (02) 9970 7150
Internet www.pittwaterlga.com.au
Email: pittwater_council@pittwater.nsw.gov.au

Business Hours:
8.00am to 6.00pm,
8.00am to 5.00pm,

DA No: N0632/01

11 FEB 2003

11. Feb 2003 MC

copy for nathan

6 February 2003

DESIGNINC SYDN
124 WALKER STRI
SYDNEY NSW 20

Dear Sir/Madam

Development Appl **CARPARK 4 BUNGAN LANE**
MONA VALE NSW

I am pleased to advi attach for your assistance a copy of the Develop copy of the approved plan. The remainder of the pla g the Construction Certificate.

As building works are involved, prior to proceeding with the proposal, it will be necessary for you to lodge a Construction Certificate Application with either Council or an accredited Certifier.

I take this opportunity to direct your attention to Section B of the Consent which details the matters to be satisfied prior to issue of the Construction Certificate.

In addition, pursuant to the provisions of Section 80(10A), of the Environmental Planning and Assessment Act, 1979, the Long Service Levy payable under Section 34 of the Building and Construction Industry Long Service Payments Act, 1996, must be paid prior to issue of the Construction Certificate.

Based on your stated value of development ie $3400000, the Long Service Levy payable is . In the event that you have paid this levy direct to the Building Services Corporation, I will require proof of that direct payment.

Please note that some sections of the Consent may require the lodgement of Building Component Certificates at various stages of the development. These Certificates must be returned to Council or the Accredited Certifier prior to issue of the Occupation Certificate or Subdivision Certificate. **You should also note that both Council and the Accredited Certifier will charge a fee for acknowledging compliance with conditions and the issue of the Occupation or Subdivision Certificates.** . You must nominate either Council or an accredited certifier prior to commencing work.

You will be required to notify Council a minimum of 2 days prior to your commencing work on the site.

If there are any matters relating to this approval which require further explanation, please contact me prior to commencing work on the site.

Yours faithfully

Catherine Otto
DEVELOPMENT OFFICER

Pittwater Council ABN 61 340 837 871
All Correspondence to be addressed to General Manager

Units 9, 11 & 12
5 Vuko Place
WARRIEWOOD NSW 2102

Postal Address
P.O. Box 882
MONA VALE NSW 1660
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Telephone (02) 9970 1111
Facsimile (02) 9970 7150
Internet www.pittwaterlga.com.au
Email: pittwater_council@pittwater.nsw.gov.au

CONSENT NO: N0632/01

ENVIRONMENTAL PLANNING & ASSESSMENT ACT, 1979 (AS AMENDED)

NOTICE TO APPLICANT OF DETERMINATION

OF A DEVELOPMENT APPLICATION

Applicant's Name and Address:

DESIGNINC SYDNEY PTY LTD, 124 WALKER STREET SYDNEY NSW 2060

Being the applicant in respect of Development Application No N0632/01

Pursuant to section 80(1) of the Act, notice is hereby given of the determination by Pittwater Council the consent authority, of Development Application No N0632/01 for:

Public Car Park

At:

Lot 2 DP 707539

BUNGAN LANE CARPARK 4 BUNGAN LANE MONA VALE NSW 2103

Decision:

The Development Application has been determined by the granting of consent based on information provided by the applicant in support of the application, including the Statement of Environmental Effects, and in accordance with plans numbered DA000 (31.5.01), DA001 (1.6.01), DA002 (31.5.01), DA003, DA004, DA005, DA006, DAOO7 dated 31.5.01 , prepared by Designinc Sydney Pty Ltd , as amended in red (shown clouded) or as modified by any conditions of this consent.

In accordance with Part A3 "Classification of Buildings and Structures" of the Building Code of Austra..., it has been determined that the building or part subject of this consent has a Class 7a Classification.

The reason for the imposition of the attached conditions is to ensure that the development consented to is carried out in such a manner as to achieve the objectives of the Environmental Planning and Assessment Act 1979 (as amended), pursuant to section 5(a) of the Act, having regard to the relevant matters for consideration contained in section 79C of the Act and the Environmental Planning Instruments applying to the land, as well as section 80A of the Act which authorises the imposing of the consent conditions.

Endorsement of date of consent 05/02/2003

Angus Gordon
GENERAL MANAGER

Per:

Pittwater Council ABN 61 340 837 871
All Correspondence to be addressed to General Manager

Units 9, 11 & 12/ 5 Vuko Place
WARRIEWOOD NSW 2102
Avalon Customer Service Centre
59A Old Barrenjoey Road, AVALON 2107

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CONDITIONS OF DEVELOPMENT CONSENT

This Consent is not an approval to commence building work. The works associated with this consent can only commence following the issue of the Construction Certificate.

PRESCRIBED CONDITIONS

Part A. (non standard conditions)

1. The design of the building is to be amended to modify the module between grids 4 and 5 in the manner described in the letter from Designic to the Council dated 21 August 2002 in order to provide for on going natural ventilation of the car park. Full details incorporating the requirements of these conditions (other than where the details relate to the dispensation to be sought under S82 of the Local Government Act 1993 for fire stairs) are to be submitted to the Council and Council's approval of the details be sought and be given prior to the grant of a Construction Certificate.

2. The access through the car park to the adjoining properties from Bungan Lane is to be provided in accordance with the plan submitted by Designic on behalf of the applicant accompanying the letter dated 21st August, 2002. The Council's legal position with respect to such access and any documentary arrangements relating thereto is to be confirmed prior to the use of such access. (Note that this condition is not intended to abrogate Council's rights as a landowner in terms of the negotiation of any agreement with the owners of the adjoining properties). Temporary access to neighbouring sites during any construction period(s) is to be managed on a day to day basis to the satisfaction of Council.

3. The easement for footway that burdens Lot 102 in favour of land in Vol. 7885 Fol 73 (refer to Registrar General's Dealing H 309959) is to be either extinguished or provision made for footway access in accordance with Dealing H309959 or such other footway access as may be acceptable to the respective owners of the lands that benefit from the easement and the Council.

4. The Bungan Lane façade is to incorporate an additional vertical façade element between grids 2 and 3 (West Elevation) on the submitted plans identical to the vertical façade element that is proposed over the car park entry to the satisfaction of Council.

5. Regular monitoring of the local traffic, pedestrian and parking conditions is to be carried out and is to be reported at least once per annum to Council's Traffic Committee in terms of the need to implement the measures recommended by the SRDAC in its letter of 20 September 2001. This monitoring is to continue and is to consider any implementation of the adjoining or nearby developments proposed to access Bungan Lane through the proposed public car park unless advised otherwise by the Council's Traffic Committee that such reporting is no longer required.

6. The roof deck lighting of the proposed car park is to be adjusted or modified from time to time to minimise future spillage of light from this source onto any neighbouring residential properties now or in the future.

7a. The public car park is to comply with the following requirements which have been taken from the report prepared by Access Australia dated 11 October 2001 as submitted to Council:

> All stairs to have closed risers, handrails which comply with AS1428.1 Clause 6 on both sides, nosings with 30% luminance contrast, and tactile ground surface indicators at the top and bottom of each flight.

Pittwater Council ABN 61 340 837 871
All Correspondence to be addressed to General Manager

Units 9, 11 & 12/ 5 Vuko Place
WARRIEWOOD NSW 2102
Avalon Customer Service Centre
59A Old Barrenjoey Road, AVALON 2107

Postal Address
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Email: pittwater_council@pittwater.nsw.gov.au

Provide a minimum of 2 accessible car spaces and an accessible path of travel on the lower eastern side of the ground floor to provide equitable access to any potential new retail development. An accessible pedestrian path of travel is to be provided between the eastern and western ground floor levels to allow both sides of the ground floor to be accessible to people with disabilities.

To assist people with vision impairment, columns within the carpark are to be painted or have a section in a contrasting colour.

To ensure safety for all users of the carpark a dedicated accessible pedestrian path of travel is to be constructed from the carpark to the street. A ramped path of travel should have a maximum gradient of 1:14 for a maximum length of 9m before a level landing. Handrails, which comply with AS1428.1 Clause 6, are to be installed on both sides and tactile ground surface indicators to be located at top and bottom of ramp.

Construct a kerb ramp adjacent to the accessible entry/exit to allow for a continuation of the accessible path of travel to the shopping centre.

To ensure safety for people with disabilities a clearly marked pedestrian path is to be provided from the accessible car spaces to the pedestrian entry/exit.

- Increase number of accessible car spaces to comply with Pittwater Council's DCP 26 requirement of 3%. Accessible car spaces are to be located together in a bay.

Install vertical signage to designate each accessible car space as well as directional and ground signage to comply with AS2890.1

7b In addition to the dedicated accessible path of travel to be constructed from the car park to Bungan Lane footpath, a second pedestrian access to the lane is to be provided at the south western corner of the car park. All pedestrian paths of travel on each level are to be suitably paint marked on the ground and exit and entry signs provided to the satisfaction of Council

8 The setback areas adjacent to the north and south elevations are to be landscaped to the satisfaction of Council. Details of the proposed landscaping are to be submitted and approved by Council prior to the approval of a Construction Certificate.

9. Stages of Development for the purposes of the grant of Construction Certificates

For the purposes of the Granting of a Construction Certificate (s) the proposal may be divided into one or more of the following stages in this sequence:
Stage 1 - Ground Floor (Including associated entry/exit works)
Stage 2A - First Floor (Southern Half)
Stage 2B - First Floor (Northern Half)
Stage 3A - Second Floor (Southern Half)
Stage 3B - Second Floor (Northern Half)
In addition to the above, prior to the grant of a Construction Certificate(s) for the following stages the applicant shall either comply with the Building Code of Australia (BCA) or shall obtain a dispensation from the BCA under S 82 of the Local Government Act, 1993, (or its equivalent) in respect of the enclosure of fire stairs:
Stage 4A - Third Floor (Southern Half)
Stage 4B - Third Floor (Northern Half)

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Stage 5A - Fourth Floor (Southern Half)
Stage 5B - Fourth Floor (Northern Half)

Part B (Standard Conditions):

A3. **Excavations and backfilling**

1. All excavations and backfilling associated with the erection or demolition of a building must be executed safely and in accordance with appropriate professional standards.

2. All excavations associated with the erection or demolition of a building must be properly guarded and protected to prevent them from being dangerous to life or property.

A5. **Support for neighbouring buildings**

Where excavations extend below the level of the base of the footings of a building on an adjoining allotment of land, the person causing the excavation must preserve and protect the building from damage and, if necessary, underpin and support the adjoining building in an approved manner. The person causing the excavation must give the owner of the adjoining property at least seven (7) days written notice of their intention to excavate below the level of the base of the footing. The person must also furnish the adjoining property owner with particulars of the proposed work.

A6. **Protection of public places**

1. If the work involved in the erection or demolition of a building:

   a. is likely to cause pedestrian or vehicular traffic in a public place to be obstructed or rendered inconveniently, or

   b. involves the enclosure of a public place,

   a hoarding or fence must be erected between the work site and the public place.

2. If necessary, an awning or other structure is to be erected, sufficient to prevent any substance from, or in connection with, the work falling into the public place.

3. The work site must be kept lit between sunset and sunrise if it is likely to be hazardous to persons in the public place.

4. Any such hoarding, fence or awning is to be removed when the work has been completed.

NOTE: Hoardings and temporary awnings erected on or over public places are required to be subject to a separate approval from Council.

A7. **Signs to be erected on building and demolition sites**

A sign must be erected in a prominent position on any work site on which work involved in the erection or demolition of a building is to be carried out other than when work is carried out inside an existing building or where the premises is to be continuously occupied (both during and outside working hours):

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1. stating that unauthorised entry to the work site is prohibited, and
2. showing the name of the person in charge of the work site and a telephone number at which that person may be contacted outside working hours.

B. MATTERS TO BE SATISFIED PRIOR TO ISSUE OF CONSTRUCTION CERTIFICATE

NOTE: The issue of partial or limited Construction Certificates is not permissible under the terms of this consent unless otherwise specifically stated. All outstanding matters referred to in this section are to be submitted to the accredited certifier together. Incomplete Construction Certificate applications/details cannot be accepted.

B9. Details of ventilation are to be provided to Council prior to the issue of the Construction Certificate.

B10. Three sets of detailed working drawings that comply in all respects with the Building Code of Australia (except as may be provided for under S82 of the Local Government Act, 1993) and the conditions of the Development Consent are to be submitted prior to the release of the Construction Certificate (s).

B19. Three sets of Drainage details showing **on-site stormwater detention** facilities, are to be submitted prior to release of the Construction Certificate. Such details are to be accompanied by a certification by a qualified practising Civil Engineer with corporate membership of the Institute of Engineers Australia (M.I.E), or who is eligible to become a corporate member and has appropriate experience and competence in the related field, confirming that the plans/details comply with Council's Policy and Guidelines for the on-site detention of stormwater- Feb 1996. The details shall include disposal of the site stormwater from the OSD facility to a public drainage system (ie. kerb and gutter or natural watercourse.)

B20. Three sets of Drainage details showing **site stormwater management** are to be submitted prior to the release of the Construction Certificate. Such details are to be accompanied by a certificate from either a Licensed plumber or qualified practising Civil Engineer with corporate membership of the Institute of Engineers Australia (M.I.E), or who is eligible to become a corporate member and has appropriate experience and competence in the related field, that the stormwater management system complies with the requirements of section 3.1.2 "Drainage" of the Building Code of Australia Housing Provision and AS/NZS 3500.3.2 - Stormwater Drainage. The details shall include disposal of site stormwater to a public system (if the site is in a known slip area the stormwater disposal system must comply with the recommendations of a Civil (Geotechnical) Engineer's report).

B25. A Certificate is to be submitted by a qualified Engineer with corporate membership of the Institute of Engineers Australia (M.I.E), or who is eligible to become a corporate member and has appropriate experience and competence in the related field, Architect or Surveyor, confirming to the satisfaction of Council or the accredited certifier that the proposed means of access to and within the site complies with the requirements of Council's policy DCP No. E3 "Driveways and Internal Roadways" and AS 2890.1 - 1993: Parking Facilities - Off-street Car Parking.

NOTE: Prior to the submission of the Construction Certificate, a crossing application with appropriate fees is to be made to Council for the levels required for the construction of the concrete footpath and gutter crossing. The levels provided by Council are to be incorporated into the design of the internal driveway.

B37. A schedule of **essential fire safety measures** required to be installed within and/or in

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association with the building including the minimum standard for performance of each measure is to be submitted prior to release of the Construction Certificate. The schedule is to include a signed statement from an Accredited Certifier/Fire Engineer confirming that all essential fire safety measures as required by the Building Code of Australia (subject to any dispensation granted under s82 of the local Government Act, 1993) have been listed so as to ensure the safety of persons in the building in the event of an outbreak of fire.

B60. Three sets of Structural Engineering details relating to the building are to be submitted prior to release of the Construction Certificate. Each plan/sheet is to be signed by a qualified practising Structural Engineer with corporate membership of the Institute of Engineers Australia (M.I.E), or who is eligible to become a corporate member and has appropriate experience and competence in the related field.

B61. A Schedule of Works prepared by a qualified practising Structural Engineer with corporate membership of the Institute of Engineers Australia (M.I.E), or who is eligible to become a corporate member and has appropriate experience and competence in the related field is to be submitted in respect of the following items:

1. The details and location of all intercept drains, provided uphill of the excavation, to control runoff through the cut area.
2. The proposed method of disposal of collected surface waters is to be clearly detailed;
3. Procedures for excavation and retention of cuts, to ensure the site stability is maintained during earthworks.

B66. A Section 73 Compliance Certificate under the Sydney Water Act 1994 must be obtained. Application must be made through an authorised Water Servicing Coordinator. For details see Customer Services, e-Developer at www.sydneywater.com.au or telephone 13 20 92.

C. MATTERS TO BE SATISFIED PRIOR TO COMMENCEMENT OF WORK

NOTE: It is an offence to commence works prior to issue of a Construction Certificate.

C6. A certificate prepared by an appropriate qualified person is to be submitted for the following building components, certifying to the satisfaction of Council or the Accredited Certifier that the nominated works have been carried out in accordance with the Building Code of Australia, relevant Australian Standards and any conditions of Development Consent. Works are not to progress past this point until Council or the Accredited Certifier has confirmed that this condition has been satisfied (see copy of form attached).

Where this confirmation of compliance is issued by a private certifier, for the purposes of keeping a public record, a copy of the letter is to be forwarded to Council within 5 working days of the date of issue.

C6a. Building setout BS-1

C6b. Erosion Controls ER-1

C14. Prior to commencement of work, the applicant is to supply Council/Accredited Certifier and relevant adjoining property owners with a dilapidation report relating to the adjoining buildings on all elevations, except that elevation which faces Bungan Lane .

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D. CONDITIONS TO MINIMISE THE IMPACT OF THE DEVELOPMENT ON THE NATURAL AND BUILT ENVIRONMENT

D3. A total of 6 car spaces of the car parking provision shall be designated disabled parking. Such spaces are to be sign-posted and kept clear and available at all times.

D4. Car parking spaces for persons with disabilities shall have clear minimum dimensions of 3.5m x 5.5m. There shall be a minimum ceiling height of 2.5m of parking spaces for disabled persons.

D5. Car parking spaces for persons with disabilities shall have appropriate pavement and pillar signage.

D6. Directional signage to parking spaces for persons with disabilities shall be provided from the entry to the car park.

D7. Kerb ramps shall be provided at all street and pedestrian crossings.

D11. Any proposed demolition works shall be carried out in accordance with the requirements of AS2601-1991 "The Demolition of Structures".

Amongst others, precautions to be taken shall include compliance with the requirements of the WorkCover Authority of New South Wales, including but not limited to:

1. Protection of site workers and the general public.
2. Erection of hoardings where appropriate.
3. Asbestos handling and disposal where applicable.
4. Any disused service connections shall be capped off.

Council is to be given 48 hours written notice of the destination/s of any excavation or demolition material. The disposal of refuse is to be to an approved waste disposal depot.

D12. In order to ensure safe handling of asbestos materials, the re-use or sale of asbestos building materials is prohibited.

D13. The car park is to provide a total of 252 car spaces.

D20. Temporary sedimentation and erosion controls are to be constructed prior to commencement of any work to eliminate the discharge of sediment from the site.

D21. Sedimentation and erosion controls are to be effectively maintained at all times during the course of construction and shall not be removed until the site has been stabilised or landscaped to the Principal Certifying Authority's satisfaction.

D22. An all weather accessway at the front of the property consisting of 50-75mm aggregate or similar material at a minimum thickness of 200mm and 15 metres long laid over geotechnical fabric is to be constructed prior to commencement of works.

D23. Adequate measures shall be undertaken to remove clay from vehicles leaving the site so as to maintain public roads in a clean condition.

D24. Disturbed areas shall be rehabilitated with indigenous plant species landscaped and treated by approved methods of erosion mitigation such as mulching, and revegetation with native grasses or other suitable stabilising processes within fifteen days of the completion of works.

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D41. Materials and colour schemes are to be in accordance with the samples submitted to Council with the application. No white or light coloured roofs are permitted.

D60. The footpath and adjacent roadway is to be kept free of obstruction by building materials and/or plant. All concrete trucks, pumps and associated plant are to be kept wholly within the site. No concrete or slurry is to be discharged into the street or the street drainage system.

D89. The hours of construction are restricted to between the hours of 7.00am and 5.00pm Monday - Friday and 7.00am to 1.00pm on Saturdays. No works are to be carried out on Sundays or Public Holidays. Internal building work may be carried out at any time outside these hours, subject to noise emissions from the building or works not being audible at any adjoining boundary.

E. MATTERS TO BE SATISFIED PRIOR TO ISSUE OF OCCUPATION CERTIFICATE

NOTE: The issue of interim or partial Occupation Certificates is not permissible within the terms of this consent unless otherwise specifically stated. Prior to the issue of an Occupation Certificate the principal certifying authority is to ensure that Council's assets, including road, kerb and gutter and drainage facilities adjacent or near to the site have not been damaged as a result of the works. Where such damage has occurred, it is to be repaired to Council's written satisfaction prior to the issue of an Occupation Certificate or suitable arrangements put in place to effect those repairs at a future date to Council's written satisfaction. Should this process not be followed, Council will pursue action against the principal accredited certifier in relation to the recovery of costs to effect such works.

NOTE: It is an offence to occupy the building or part thereof to which this consent relates prior to issue of an Occupation Certificate.

E5. All parking areas and driveways are to be sealed to an all weather standard, line marked, signposted and maintained prior to occupation/use of the site.

E6. In order to avoid vehicular conflict, the ingress and egress crossings shall be suitably sign posted.

E10. A certificate prepared by an appropriate qualified person is to be submitted for the following building components, certifying to the satisfaction of Council or the accredited certifier that the nominated works have been carried out in accordance with the Building Code of Australia, relevant Australian Standards and any conditions of Development Consent. Works are not to progress past this point until Council or the Accredited Certifier has confirmed that this condition has been satisfied (see copy of form attached).

Where this confirmation of compliance is issued by a private certifier, for the purposes of keeping a public record, a copy of the letter is to be forwarded to Council within 5 working days of the date of issue.

E10a. Pest control PST-1

E10c. Ground floor levels FL-1

E10d. Footings/slabs/piers/retaining walls FN-1

E10f. Wall, roof frames and window location FM-1

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E10h. Masonry construction, accessories and weatherproofing MC-1

E10i. Subsequent floor levels FL-2

E10j. Stair construction ST-1

E10k. Balustrading adequacy BA-1

E16. On completion of the erection of the building, the Owner of the building shall submit to Council or the accredited certifier a **Fire Safety Certificate** with respect to each essential fire safety measure installed in association with the building - as listed on the Fire Safety Schedule. Such certificate must be received by Council or the accredited certifier prior to occupation of the building.

Copies of the Fire Safety Certificate(s) must also be forwarded by the Owner to the Commissioner of the NSW Fire Brigades, and copies displayed in a prominent location specif in the schedule, within the building.

E86. The **building** is not to be occupied or used until an Occupation Certificate has been issued, confirming that the project complies with the relevant standards and the conditions of development consent. The request for an Occupation Certificate is to be accompanied by a copy of all of the Compliance Certificates required by the conditions of development consent (see copy of form attached).

F. MATTERS TO BE SATISFIED PRIOR TO ISSUE OF SUBDIVISION CERTIFICATE

Nil

G. ADVICE

G23. Failure to comply with the relevant provisions of the Environmental Planning and Assessment Act, 1979 (as amended) and/or the conditions of this Development Consent may result in the serving of penalty notices (on-the-spot fines) under the summary offences provisions of the above legislation or legal action through the Land and Environment Court, again pursuant to ' above legislation.

G24. The applicant is also advised to contact the various supply and utility authorities, ie Sydney Water, Sydney Electricity, Telstra etc. to enquire whether there are any underground utility services within the proposed excavation area.

G25. It is the Project Manager's responsibility to ensure that all of the Component Certificates/certification issued during the course of the project are lodged with Council. Failure to comply with the conditions of approval or lodge the Component Certificates/certification will prevent Council from issuing the Occupation Certificate or the Building Certificate.

G26. In accordance with Section 80A(1)(d) and (e) of the Act, any consent given shall be void if the development to which it refers is not commenced within two (2) years after the date of approval, provided that Council may, if good cause be shown, grant an extension of renewal of such consent beyond such period.

NOTE: Council may be prepared to consider an extension of this Consent period for a further 12 months, however, the request for extension would have to be received during the initial 2 year period.

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G27. To ascertain the date upon which the determination becomes effective, refer to Section 83 of the Environmental Planning and Assessment Act, 1979 (as amended).

G28. Should any of the determination not be acceptable, you are entitled to request reconsideration under Section 82A of the Environmental Planning and Assessment Act, 1979. Such request to Council must be made in writing together with a $500 fee, within 28 days from the date of determination.

G29. If you are dissatisfied with this decision, Section 97 of the Environmental Planning and Assessment Act, 1979, gives you a right of appeal to the Land and Environment Court within 12 months of the date of endorsement of this Consent.

ANNEXURE 4

Building Code of Australia – Compliance Details

STAGED CONSTRUCTION CERTIFICATE DOCUMENTATION No J03354

Building Code of Australia – Compliance Details

(Building Code of Australia 1996 - incorporating Amendment Number 13)

Classification	7a
Rise in Storeys	Rise of 1 storey
Type of Construction	Type C Construction
Effective Height	Less than 25 metres
Section B 'Structure'	Compliance achieved.
Section C 'Fire Resistance and Stability'	Compliance achieved. Subject Alternate solution for protection of external wall openings
Section D 'Access and Egress'	Compliance achieved.
Section E 'Services and Equipment'	Compliance achieved.
Section F 'Health and Amenity'	Compliance achieved.

ANNEXURE 5

Exclusions/Limitations

STAGED CONSTRUCTION CERTIFICATE DOCUMENTATION No J03354

EXCLUSIONS/LIMITATIONS

This Construction Certificate is limited to the works associated with Stage 1 of the construction works approved pursuant to Development Consent No. 632/01 issued by Pittwater Council on 6 February 2003.

Stage 1 works include the ground and first floor slabs and associated fit-out and service works only.

ANNEXURE 6

Compliance Certificate/
Evidence of Suitability

COMPANY	DLM Certification
ATTENTION	mark moran
PROJECT	Bungan Lane Carpark – Construction Certification
PROJECT NUMBER	210408
DATE	03/07/03
SENDER	trina mcclure

☐ FACSIMILE
☐ TRANSMITTAL
■ CERTIFICATE
☐ EMAIL
☐ MINUTE
☐ ORIGINAL TO FOLLOW

DESIGNINC SYDNEY
77 PACIFIC HIGHWAY NORTH SYDNEY NSW 2060
TELEPHONE +612 9957 5401 FACSIMILE +612 9957 4259
www.designinc.com.au EMAIL sydney@designinc.com.au

210408_PCAcert.doc

Adelaide
Brisbane
Canberra
Melbourne
Perth
Sydney
Tasmania
Jakarta
Manila
Shanghai

Architecture Urban Design Landscape Interiors

We hereby certify that Bungan Lane Carpark has been designed to:

1. AS2890.1 – 1993 (excluding table 2.3, ref. statement from hydraulic engineer herewith, dated 03.07.03).

2. BCA Table C1.1 Type B construction, extract herewith from Table 4.2 Carparks (open deck or sprinklered):

Building Element:	*FRL (in minutes)class 7a bldg Structural Adequacy/Integrity/Insulation*	
	Loadbearing	*Non Loadbearing*
External Wall		
(i) Less than 3m from a fire source feature	*NA*	*-/60/60*
Internal Wall	*NA*	*-/-/-*
Fire Wall		
• *From the dir. used as a carpark*	*NA*	
• *From the dir. not used as a carpark (as req'd table 4)*	*NA*	
Column		
(a) supporting only roof	*NA*	
(b) steel column	*60/-/- or 26m2/tonne **	
(c) other columns	*NA*	
Beam		
(a) Less than 3m from a fire source feature.		
(i) Steel Floor beam in continuous contact with a concrete floor slab.	*60/-/- or 30m2/tonne **	
(ii) Any other beam.	*NA*	
Fire-resisting stair shaft	*NA ***	
Floor Slab and vehicle ramp	*-/-/-*	

* see fax from MPN dated 10.02.03
** refer DLM fax dated 17.04.03

3. BCA Spec C1.10 for Class 7a building [with non combustible materials].

4. BCA D2.7 Installations in exits [none, except for fire fighting units, allowed under D2.7.1 commentary]

5. D 2.13 Goings + Risers: ref to architectural drawings TD060-068

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6. D 2.14 Landings: ref to architectural drawings TD060-068
7. D 2.15 Threshold: ref to architectural drawings TD060-068
8. D 2.16 Balustrades or other barriers: ref to architectural drawings TD060-068
9. D 2.17 Handrails: ref to architectural drawings TD060-068
10. D 3.2 General Access requirements: ref to architectural drawings, complete set.
11. D 3.5 Disabled Carparking: ref to architectural drawings, complete set.
12. D 3.6 Signage for accessible facilities: refer to Architectural Specification; J201-C-signs (for parking to AS2890.1, and J207 – Signage Schedule
13. D 3.8 Tactile Indicators: ref to architectural drawings TD060-068 + Architectural Specification, Appendix A – Schedule of Finishes.

signed..Trina mcclure..... TRINA MCCLURE Position: Project Architect

dated..9/.08.03.....

Waterman AHW
Consulting Engineers

AHW

DESIGN STATEMENT

Project: Proposed Carpark at 4 Bungan Lane, Mona Vale, for Pittwater Council

We, being Waterman AHW Pty Ltd, confirm that the design provisions as nominated on the drawing schedule below for hydraulic and fire services are in accordance with the following table:

Essential Service	Standard of Design
Fire Hydrant System	BCA Clause E1.3; AS 2419.1
Fire Hose Reel System	BCA Clause E1.4; AS 2441
Fire Sprinkler System	BCA Clause E1.5 & AS 2118
Portable fire extinguishers	BCA Clause E1.6; AS 2444

The design of the above-mentioned services is indicated on the following Waterman AHW drawings:

Drawing No.	Rev	Title
20555-H00	B	Hydraulic Services Legend, drawing register and spec
20555-H01	B	Hydraulic Services Site Plan
20555-H02	A	Hydraulic Services Ground Floor
20555-H03	A	Hydraulic Services First and Second Floor plans
20555-H04	A	Hydraulic Services Roof Plan
20555-F01	A	Fire Services Ground Floor
20555-F02	A	Fire Services Level 1 and 2

copy Pittwater

Date: June 26, 2003

Signed: .....

Name: MAREK TOMASZEWSKI

Position: Director

Waterman AHW
Consulting Engineers

DESIGN STATEMENT

Project: Proposed Carpark at 4 Bungan Lane, Mona Vale, for Pittwater Council

I, David Tennent of Waterman AHW Pty Ltd, consulting engineers, confirm that the design of the On-site detention for the abovementioned project is in accordance with the Pittwater Council publication 'Policy & Guidelines for On-site Detention'.

The design of the above-mentioned design is indicated on the following Waterman AHW drawings:

Drawing No.	Rev	Title
20555-H00	B	Hydraulic Services Legend, drawing register and spec
20555-H01	B	Hydraulic Services Site Plan
20555-H02	A	Hydraulic Services Ground Floor
20555-H03	A	Hydraulic Services First and Second Floor plans
20555-H04	A	Hydraulic Services Roof Plan

Date: June 28, 2003

Signed: .....

Name: DAVID TENNENT

Position: ASSOCIATE

Contractor Licence No: 104802C

ATTACHMENT M1
MECHANICAL VENTILATION DESIGN CERTIFICATE VENTILATION, ACOUSTICS, FIRE PRECAUTIONS, SMOKE HAZARD MANAGEMENT

ADDRESS: Bungan Lane Carpark, 4 Bungan Lane Mona Vale NSW 2103

DEVELOPMENT APPLICATION NO: N0632/01

CONSTRUCTION CERTIFICATE NO: J03354

Pursuant to the provisions of Section 93 of the Local Government Act 1993 (i), I hereby certify that the design of the new/altered mechanical ventilation system meets the current requirements of the Building Code of Australia (ii) and in particular is designed in accordance with the following:

a) The Council approved Architectural plans (nominate drawing numbers and attach a list)
b) AS1668 Parts 1 and 2; and Sydney Ventilation Code where appropriate.
c) All conditions based on recommendations of the NSW Fire Brigade. (iii)

I am an appropriately qualified and competent person in the area of mechanical ventilation and as such can certify that the design and performance of mechanical ventilation systems comply with the Building Code of Australia, AS1668 and other relevant Codes.

I possess Indemnity Insurance to the satisfaction of the building owner or my principal.

Date of Development Consent (Compulsory):
Date/s of Construction Certificate (Compulsory):
Full Name of Certifier: Scott Walkden-Brown
Qualifications and Experience: (iv) BE (mech) UTS, 11 Years experience in industry
Address of Certifier: L12, South Tower, 1 Railway Street, Chatswood NSW 2067
Phone Numbers: Bus: 9411 9900 Mobile: N/A Fax: 9415 1717
Signature: ..... Date: 25/6/03
Name of Employer, (Self or Company): Waterman AHW Pty Ltd

Certified Mechanical Drawing numbers and revision list:

S1-M00 Rev A, S1-M01 Rev A, S1-M02 Rev B, S2-M01 Rev A, S2-M02 Rev B, S2-M03 Rev B, S3-M01 Rev A, S3-M02 Rev B, S3-M03 Rev B

Bungan Lane Carpark,
4 Bungan Lane
Mona Vale NSW 2103

Certificate Of Compliance
DESIGN OF ELECTRICAL SERVICES

We hereby certify that the following listed electrical services has been designed in accordance with the relevant clauses of the BCA and Australian Standards.

Artificial Lighting	BCA Clause F4.4 and AS 1680.0
Emergency lighting	BCA Clauses E4.2, E4.4 and AS 2293.1
Exit signs	BCA Clauses NSW E4.6 and E4.8 and AS 2293.1

.....

Geoff Walker
Associate Director
for and behalf of WAHW Consulting Engineers Pty Ltd

Date: 27/06/03

S:\Projects\20555\designcert.doc

RECORD OF

☒ *MEMO*
☐ *CONVERSATION*
☐ *MEETING*

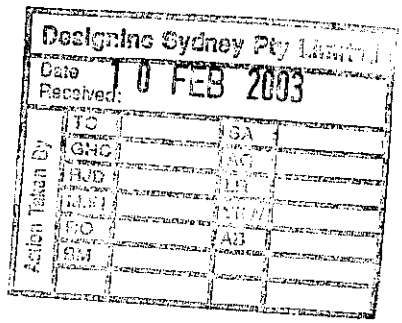
MPN GROUP PTY LTD
CONSULTING ENGINEERS
5 HARBOURVIEW CR., A.C.N. 001 568 878
MILSONS POINT, 2061 TEL:9929-7144,FAX:9922-3041

To	**Mr Michael Nash**	☒ Fax to No	99574259
Of	**DESIGNINC**	☐ Post ☐ Messenger	Date 10/02/03
From	Les Pal	☐ File Only	Page 1 of 1
Project	**Bungan Lane Carpark Mona Vale**	Job No	**8822**
Re :	Fire Rating		

Michael,

This is to confirm information given in our telephone conversation, that according to our interpretation of Table 3.9 of the BCA the above carpark will have an FRL (fire resistance level) of 60/60/60 since it will be sprinklered and the structural frame columns and beams will have an ESA/M (the ratio of exposed surface area to mass per unit length) equal or less than 26 and 30 m^2/tonne respectively.

Regards
Les



MPN GROUP
CONSULTING ENGINEERS
STRUCTURAL AND CIVIL

VKM:LC
8822VKM01.DOC

26 June 2003

DLM Certification Pty Ltd
Level 1, Suite 102
2 Holden Street
ASHFIELD 2131

Attention: **Mr Mark Moran**
Principal Certifying Authority

Dear Sir,

RE: BUNGAN LANE CARPARK, MONA VALE

DESIGN CERTIFICATION AS TO COMPLIANCE WITH THE BUILDING CODE OF AUSTRALIA

We, MPN GROUP PTY LIMITED, Consulting Engineers, Level 6, 5-9 Harbourview Cr, Milsons Point 2061 being professional engineers, certify that structural drawings numbered 8822-S0 to S11, Revision A inclusive, were based on architect's drawings numbered as per attached list and were prepared:

a) under the supervision of a professional structural engineer certified under NPER; and
b) in accordance with the relevant structural requirements of the Building Code of Australia.

In making this certification, we have also relied on the following:

- AS1170 Loading Code series, including references to it from AS 2890.1;
- AS4100 Steel Structures Code
- AS3600 Concrete Structures Code
- AS3700 Masonry Structures Code

This certificate shall not be construed as relieving any other party of their responsibilities.

Yours faithfully
MPN GROUP PTY LIMITED

VIKTOR MATEFFY

ANNEXURE 7

Performance Assessment Documentation

Bungan Lane Carpark, Mona Vale, NSW
Fire Safety Engineering Assessment

SSL
Scientific Services Laboratory

Bungan Lane Carpark, Mona Vale, NSW
Fire Safety Engineering Assessment

Date	Version	Purpose of Issue	Author(s)	Reviewed
27/08/2003	v01	Draft issue for comment	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory
11/09/2003	v01	Final version issue.	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory
28/10/2003	v02	Final version issue.	Russell Kilmartin Fire Safety Engineer, Scientific Services Laboratory	Dr Yaping He Senior Fire Safety Engineer, Scientific Services Laboratory

Report No: XR0895/R1
File No: XR0895
k:\fse\001 jobs\xr0850 - xr0899\xr0895 - bungan lane carpark\reports\final xr0895r1 v01 rk.doc

This report shall not be reproduced, except in full, without the written consent of the Director SSL.

SCIENTIFIC SERVICES LABORATORY
177 Salmon St, Port Melbourne, Vic, 3207 Telephone (03) 9248 4900 Fax (03) 9646 5165
A Business Unit of the Australian Government Analytical Laboratories (AGAL)
Industry, Science and Resources

INTERNATIONAL QUALITY MANAGEMENT SYSTEM AS/NZS ISO 9001

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1.3 Stakeholders 2

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4 Trial Concept Design 6
4.1 Hazard Identification 6
4.2 Protective measures 6

5 Assessment 8

6 Conclusion and Recommendation 10

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1 Introduction

1.1 General

This report details the fire safety engineering assessment undertaken by Scientific Services Laboratory (SSL) on behalf of Waterman AHW.

The assessment examines the proposed alternative design solutions which have been proposed where there are issues of non-compliance with respect to the deemed to satisfy provisions of the Building Code of Australia (BCA) (ABCB 1996).

Based on information provided to SSL it is assumed that the design of the buildings essentially meet the 'Deemed to Satisfy' provisions of BCA 96 except for the non compliance issues identified in the Table 3.1 of this report. Fire safety engineering methodologies, in accordance with the Fire Safety Engineering Guidelines (FSEG) (ABCB 2001), are used to demonstrate that the alternative solutions to these issues meet the performance requirements of BCA 96. The information and drawings for which this assessment is based are detailed in Table 1.1 below.

Table 1.1 Drawings used for assessment

Drawings by	Drawing No.	Plot Date
Design Inc Sydney Pty Ltd	TD 111	23/05/2003
Design Inc Sydney Pty Ltd	TD 112	23/05/2003
Design Inc Sydney Pty Ltd	TD 120	29/05/2003
Design Inc Sydney Pty Ltd	TD 121	29/05/2003
Design Inc Sydney Pty Ltd	TD 122	29/05/2003
Design Inc Sydney Pty Ltd	TD 123	23/05/2003
Design Inc Sydney Pty Ltd	TD 124	23/05/2003
Design Inc Sydney Pty Ltd	TD 130	23/05/2003
Design Inc Sydney Pty Ltd	TD 131	23/05/2003
Design Inc Sydney Pty Ltd	TD 132	29/05/2003
Design Inc Sydney Pty Ltd	TD 133	29/05/2003
Design Inc Sydney Pty Ltd	TD 212	23/05/2003
Design Inc Sydney Pty Ltd	TD 213	23/05/2003
Design Inc Sydney Pty Ltd	TD 213	23/05/2003
Design Inc Sydney Pty Ltd	TD 220	29/05/2003
Design Inc Sydney Pty Ltd	TD 221	23/05/2003
Design Inc Sydney Pty Ltd	TD 222	23/05/2003
Design Inc Sydney Pty Ltd	TD 223	23/05/2003
Design Inc Sydney Pty Ltd	TD 224	23/05/2003

The BCA96 through Clause A0.5 allows compliance with the performance requirements to be achieved either by a complying deemed to satisfy design; an alternative solution complying with the performance requirements or equivalent to the deemed to satisfy design provisions, or a combination of both approaches.

The assessment methodology employed in this assessment is based on the application of engineering judgement backed by appropriate analytical procedures and verification methodologies in the BCA96 in accordance with Clause A0.9 of BCA96.

1.2 Scope of Project

This assessment will address the issues of non-compliance with BCA96, which are identified in the Table 3.1 of this report. These issues relate to the final state of the building. This assessment and report does not address any issues of non-compliance and occupant safety that may arise as a result of partial completion and partial occupation of the building.

The assessment is concerned primarily with the life safety of the occupants. The fire safety systems to achieve this are outlined in the report in principle. The assessment does not consider property protection, business continuity issues, environmental protection and insurance requirements unless these are specifically identified in the scope of work.

Acceptance of alternative solutions instead of the BCA deemed to satisfy complying design requirements may increase the risk of property and contents damage.

The assessment is based on the occurrence of accidental fires originating from a single ignition source with fuel loads and distribution compatible with the use of the building. Fires arising from acts of arson involving introduced fuels and multiple ignition sources do not form part of this assessment.

The fire safety assessment to be carried out is concerned with life safety and has no specific objectives to be considered in regard to:

(i) property loss; and

(ii) community or environmental issues.

1.3 Stakeholders

This report may be relied on by Waterman AHW, Design Inc Sydney Pty Ltd, DLM Consulting, Scientific Services Laboratory and other relevant regulatory authorities. This report should not be relied on by other parties, other than those parties listed above, without the consent of Waterman AHW and Scientific Services Laboratory.

2 Occupant and Building Characteristics

2.1 Building Characteristics

The site is located at Bungan Lane, Mona Vale, NSW.

The proposed building is a split level four (4) - level car park.

The basic construction of the building is taken to be fully compliant with the deemed to satisfy design requirements of the Building Code of Australia 1996, BCA96.

For the purposes of the BCA 96, the subject building is described as follows:

- Classification (Clause A3.2) - Class 7a Car Park
- Rise in Storeys (Clause C1.2) - Rise of 3 storeys,
- Type of construction (Table C1.1) - Type A construction, and
- Effective height (Clause C1.2) - Less than 25 metres.

2.2 Occupant Characteristics

The occupant community characteristics of this type of development are taken to be typical of those found in this dass of building.

The occupants in the car park may be classified as transient (i.e temporary carpark users).

It is not anticipated that the occupant characteristics or the usage of the building will change significantly. Any such change would require a re-assessment of the fire safety levels.

3 Non-compliances and Study Objectives

The proposed design solution does not meet some of the deemed to satisfy requirements of the BCA and hence the alternative design solution is required to be shown to meet the relevant performance requirements.

The Building Code of Australia 1996 has 'Objectives', 'Functional Statements' and 'Performance Requirements' relevant to each section of the BCA. BCA96 allows for two types of building design solutions, complying with the 'Deemed to Satisfy Provisions' and formulating 'Alternative Solutions'. Compliance with the BCA is met by satisfying the applicable performance requirements by either a deemed-to-satisfy solution or an alternative building solution.

The clauses of the 'Deemed to Satisfy Provisions' of BCA96, which the specific items of the proposed design do not meet and shall be addressed, are listed below:

Section C, Part C3 - Protection of Openings

The BCA96 deemed-to-satisfy non-compliant clause has been identified by DLM Consulting and is listed in the following table:

Table 3.1. Non compliance

Non-compliance Issue	BCA Clause	Performance Requirement
There are external openings within the carpark structure that are within the required minimum distance of 3.0 m to the site boundary.	C3.2 and C3.4	CP2

The BCA performance requirements identified in relation to the above non-compliance issue is as follows:

CP2 A building must have elements which will, to the degree necessary, avoid the spread of fire-

(a) to *exits*; and

(b) to *sole-occupancy units* and *public corridors*; and

Application:
CP2(b) only applies to a Class 2 or 3 building or Class 4 part.

(c) between buildings; and

(d) in a building, appropriate to-

(i) the function or use of the building; and

(ii) the *fire load*; and

(iii) the potential *fire intensity*; and

(iv) the *fire hazard*; and

(v) the number of *storeys* in the building; and

(vi) its proximity to *other property;* and

(vii) any active *fire safety systems* installed in the building; and

(viii) the size of any *fire compartment*; and

(ix) *fire brigade* intervention; and

(x) other elements they support; and

(xi) the *evacuation time.*

4 Trial Concept Design

4.1 Hazard Identification

An examination of the statistics in regard to casualties due to car park fires shows that in 404 US car park fires there were no fatalities (Denda 1992). Gewain (1989) also examined the US data and concluded that there had been no fatalities in car related structure fires. The data did not indicate if the structures were open or closed. Similarly the ECCS technical committee on open deck car park (ECCS 1993) concluded that European insurance company statistics over many years showed no casualties as a result of car park fires in general. Earlier studies reported by Bennetts (Bennetts et al 1989) also indicate that in US and Canadian experience there were no recorded fatalities in 395 fires. The latter data may have included some of these earlier cases. Nevertheless, the overwhelming conclusion from these studies is that there is an extremely low fire safety hazard in car park.

Extensive research conducted by BHP has demonstrated that in sprinkler protected car parks, there is minimal risk of fire spread between vehicles. The tests have shown that the sprinklers are effective in containing the fire to the vehicle initially ignited. (Bennetts et al 1987, 1990)

4.2 Protective measures

The fire protection measures for the building are understood to be provided in accordance with the deemed-to-satisfy provisions of the BCA. These will include:

- Automatic fire sprinkler system provided throughout the building (Class 7a car park levels) in accordance with AS2118.1 and specification E1.5 of the BCA'96.,
- Fire hydrants (AS 2419) to the building,
- Fire hose reels (AS 1221 and AS 2441) to the building,
- Exit signs and emergency lighting (AS 2293) to the building,

It is taken that the basic construction of the car park will meet the BCA deemed to satisfy requirements with the exception of the non compliances noted in the Table 3.1.

In order to address the non compliance issue, additional sprinklers are proposed. These sprinklers are to be positioned immediately adjacent to the identified external wall openings at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall (internal sprinklers). In order to improve the reliability of the sprinkler system the additional sprinklers are to be independent from

the automatic sprinkler system proposed for the carpark structure. The additional sprinklers are to be fed from a separate monitored isolation valve or from the hydrant system (with monitored valve).

5 Assessment

The external façade openings that are located within the required 3.0 m distance to the subject site boundary occur on the east (adjacent to Turimetta site/PO/retail) and north (CBA Bank Carpark) boundaries. These openings are located within a "Type B Construction FRL" steel and precast concrete demountable carpark comprising ground and three suspended levels with a façade system comprising both precast concrete panels and an open steel framed balustrade. The façade balustrade comprises continuous vertical steel members with steel mesh infill in between. The steel mesh infill on the east elevation extends 1200mm above and 760mm below the top surface of the precast concrete deck. The north elevation façade balustrade is similar in design to the east except that the extent of steel mesh is greater leaving less clear opening.

The balustrades on the east elevation extend approximately 22.3 m and occur on ground and the three elevated levels. The balustrades on the north elevation extend full width of the carpark approximately 33.5 m and occurs on ground and the three elevated levels.

Vehicular access is provided through the carpark at ground level into several adjacent properties. The vehicular openings occur on the north, east and south boundaries and have been designed with water drenched self closing roll down doors having 2.2m clear height and range in width from 3.7 to 5.5m wide.

The carpark in question is sprinkler protected. The sprinkler spray will limit the growth of a potential car fire such that the fire may be suppressed or controlled at a relatively small heat release rate (Bennetts et al 1987, 1990). Using the sprinkler activation model in the FAST program suite it was estimated that the maximum heat release rate of sprinkler controlled fast growth car fire would not exceed 2000 kW. Radiation from this car fire is then estimated to determine the heat flux at the boundary.

According to Drysdale (1999), the radiant heat flux from a heat source can be estimated using the following equation:

$$q = \frac{Q_r}{4\pi r^2}$$

where Q_r is the radiant heat release rate of the fire, r is the distance from the fire source. Assume that the fraction of radiant heat release rate to total heat release rate, Q, is 0.3 and the distance from the fire source to the boundary is in the order of 1 m.

$$q = \frac{Q_r}{4\pi r^2} = \frac{0.3Q}{4\pi r^2} = \frac{0.3\times 2000}{4\times 3.14\times 1^2} = 47.7 \text{ (kW/m}^2\text{)}$$

This value is much less than the allowed heat flux limit in Table CV1 of BCA96. The risk of fire spread to the adjacent buildings is, therefore, minimal.

The sprinkler activation will reduce the incident heat flux beyond the opening. Sprinkler spray could form a water curtain in the vicinity of the sprinkler head. The use of a water curtain for fire protection has been documented in the literature (Coppalle, et. al., 1993). The experimental study by Pretrel and Buchlin (1996) demonstrated that water curtains could effectively attenuate thermal radiation generated by fires, thus preventing fire spread from one side of the curtain to another. The cooling effect of water spray also reduces convective heat transfer across the curtain (Chow and Fong, 1991), thus reducing the heat flux condition on the non fire side.

In addition to the attenuation of the radiant heat flux by a water spray, for the fully open sections of the carpark there would be wetting of possible fuel items within the carpark which would have the effect of further reducing the risk of fire spread.

Fuel loads (engine fuel, car interiors and tyres) in carparks are either generally concealed inside vehicles or located in the lower part of vehicles. Direct exposure of these fuels to thermal radiation from the neighbouring property is unlikely. In case of strong thermal radiation, the sprinklers, particularly the sprinkler heads prescribed to be positioned immediately adjacent to the identified external wall openings (at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall), will activate and offer protection to the vehicles parked adjacent to the carpark structure openings. Therefor, the proposed sprinkler protection will satisfy Clause CV1(b) of BCA96.

6 Conclusion and Recommendation

With respect to the positioning of the identified external wall openings within the perimeter external walls of the Bungan Lane carpark building, it has been established that the openings require some form of protection as a measure of redundancy in order to address the issue of fire spread to the adjacent site buildings.

The roller shutter doors separating the vehicular openings connecting the carpark structures may be deleted. The location of the perimeter carpark wall openings and vehicular openings connecting the carpark structures meet the performance requirement CP2 contingent on the adoption of the requirements listed below:

- Sprinklers are to be positioned immediately adjacent to the identified external wall openings and connecting vehicular openings at a distance of no more than 500 mm and no less than 300 mm from the inside face of the external wall (internal sprinklers).
- In order to improve the reliability of the sprinkler system the additional sprinklers are to be independent from the automatic sprinkler system proposed for the carpark structure. The additional sprinklers are to be fed from a separate monitored isolation valve or from the hydrant system (with monitored valve).

7 References

ABCB, 'Building Code of Australia 1996 - Volume 1', Class 2 to Class 9 Buildings, Australian Building Codes Board, Canberra, 1996

ABCB, 'Fire Safety Engineering Guidelines - 2001', Australian Building Codes Board, Canberra, 2001

Bennetts I D, Thomas I R. Proe D J, Lewins R R & Almand K H., 1990, "Fire Safety in carparks", BHP Structural Steel Development Group.

Coppalle, A.; Nedelka, D.; Bauer, B., 1993, "Fire Protection: Water Curtains", Fire Safety Journal, Vol. 20, No. 3, 241-255, 1993.

Denda, D. F., 'Parking garage fires', Parking Marketing Research Company, 1992.

Drysdale D. D., 1999, *An Introduction to Fire Dynamics*, 2nd edition, Chichester, John Wiley & Sons.

Gewain R G., 'Fire and life safety in open parking structures', Hughes Associates, February 1989.

Pretrel, H. and Buchlin, J. M., "Experimental Study on the Performance of Water Spray Curtains to Attenuate Thermal Radiation", von Karman Institute, Belgium Industrial Fires III Workshop Proceedings. Major Industrial Hazards. EUR 17477 EN. European Commission. September 17-18, 1996, Riso, Denmark, 185-192 pp, 1996.

SSL
Scientific Services Laboratory
AUSTRALIAN GOVERNMENT ANALYTICAL LABORATORIES
[illegible]

Part 4a Compliance Certificate

Issued under Environmental Planning and Assessment Act 1979
Section 109C (1) (a) and Clause 138 of the Environmental Planning and Assessment Regulations 2000

Applicant

Name	Designinc
Address	124 Walker Street North Sydney NSW 2060
Contact No: phone:	9957 5401
Fax:	9957 4259

Development Consent Number or Complying Development Certificate (Where in force)

Development Consent Number	N0632/01
CDC number	NA
Date of determination	6 February 2003

Construction Certificate (Where in force)

Certificate No	NA
Date of issue	NA

Description of development (where relevant)	Construction of multi-storey car parking structure with open sections of external facade.

Subject land

Address	Bungan Lane, Mona Vale, NSW
Lot, DP/MPS etc	Lot 2, DP 707539

Type of Certificate

Nominate type of certificate	Fire safety engineering certificate (Part 4a) for identified issues.

NOV 12 '03 10:42AM SCIENTIFIC SERVICES LABORATORY

☐ Classification of building or proposed building

Details of the classification of the building in accordance with the BCA (eg class 1 (a))	Class 7a - Carpark structure

☐ Specified aspect of development complies with prescribed requirements

Details of the development and specific aspect of the development and the prescribed requirements it complies with	With respect to the issue of protection of external openings within the building facade the proposed design satisfies the performance requirement CP2 of the BCA'96. Ref: SSL Fire Safety Engineering Report XR0895/R1.

Inspection date

Date of inspection of building/subdivision works	-not applicable-

Certificate

I, Mahmut Horasan, of Scientific Services Laboratory, certify that:
The above described aspect of development complies with the prescribed requirements referred to above.

Signature

Date of Issue **Thursday, 6 November 2003**
Certificate Number **XR0895/C1**
Plans approved

List of plans where relevant	n/a

Certifier

Name of certifier	Mahmut Horasan
Accreditation No (if accredited)	Fire Safety Engineer, NSW. Registration No. 6477
Contact No	03-9248 4900
Address	177 Salmon Street Port Melbourne Vic 3207

* For the purposes of notifying a council under clause 79(2) of the Regulation of the issue of a Compliance certificate and accredited certifier must forward all sections of this form, including all attachments to the relevant council where they have not been previously forwarded to the Council.

ANNEXURE 8

Other Supporting Documentation

Subject: Bungan Lane Carpark - DA Conditions
Date: Wed, 11 Jun 2003 16:56:45 +1000
From: Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au
To: "trina mcclure" <tmcclure@sjph.com.au>

Trina,

Further to your fax today please note:

Condition 4 - Council has reveiwed and accepted the proposed facade treatment per this condition.
Condition 8 - This condition is not relevant due to the construction to the boundary. Additional landscaping not required by the consent is to be provided to the street frontage. This work will be spearately arranged,

Regards

Nathan Huon

This email and any materials contained or attached to it ("Contents") may contain
The contents may also be subject to copyright. Any unauthorised copying, disclosur
Any views expressed in the contents are those of the individual sender, except whe
Pittwater Council
www.pittwaterlga.com.au

Subject: Bungan Carpark - Condition 7a
Date: Thu, 12 Jun 2003 16:24:36 +1000
From: Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au
To: "trina mcclure" <tmcclure@sjph.com.au>

Trina,

As previously discussed the number of accessible spaces provided at stage 1 is based on the proportion required for the total number of spaces in the carpark. Further it was considered that as the adjacent sites are providing the required number of accessible spaces on their own sites it would not be of any advantage to provide accessible spaces on the lower ground level as it was likely that the spaces would be used. In summary it was considered that the prime location for the required accessible spaces was on the upper ground level where more convenient access to the street was available.

Regards

Nathan Huon

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Any views expressed in the contents are those of the individual sender, except whe
Pittwater Council
www.pittwaterlga.com.au

DA # 74

Subject: Re: Bungan carpark - Condition B61
Date: Thu, 12 Jun 2003 17:38:22 +1000
From: Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au
To: trina mcclure <tmcclure@sjph.com.au>

No trina,

The whole condition relates to during construction as confirmed by the development officer.

The whole condition is not relevant to our work.

Nathan

trina mcclure <tmcclure@sjph.com.au>

12/06/2003 04:53 PM

To: Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au
cc:
Subject: Re: Bungan carpark - Condition B61

nathan,
B61.1 ?!!

Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au wrote:

Sorry Trina, Condition B61 was the condition that I was referring to.

DA B61

Nathan

trina mcclure <tmcclure@sjph.com.au>

12/06/2003 04:21 PM

To: Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au
cc:
Subject: Re: Bungan carpark - Condition B61

nathan,
please confirm which DA condition is not required,
thanks,
trina

Nathan_Huon/Pittwater_Council@pittwater.nsw.gov.au wrote:

Further to our discussion regarding the above I have discussed the purpose of this condition with Council's senior development officer who has advised that this condition is usually applied to situations where there is basement construction. As such he has advised that this condition would not appear to be relevant to this situation where no basement construction or interception of upstream surface water is required. Please advise if you require further clarification.

Regards

Subject: Re: bungan lane: falls to top slab stage 1
Date: Thu, 03 Jul 2003 10:40:32 +1000
From: "David Tennent" <David@ahw.com.au>
To: <tmcclure@designinc.com.au>

Trina,
We confirm that the proposed falls of 1:200 on the upper carpark level are acceptable and comply with code.

Regards,

David Tennent
Hydraulic Engineer
****
Waterman AHW Pty Ltd
PO Box 192, Chatswood NSW 2057
Level 12 The South Tower, 1-5 Railway Street, Chatswood NSW 2067
p: 02 9411 9922
f: 02 9415 1717
m: 0411 497 794
e: david@ahw.com.au
****

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Ref AP 28901
falls plan (1)

ANNEXURE 9

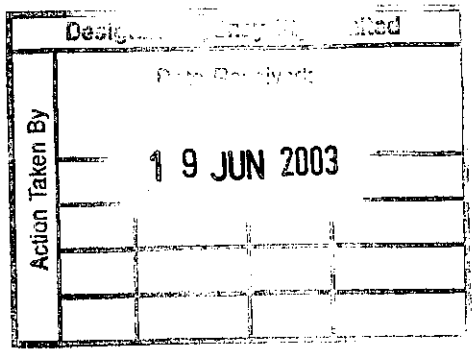
Evidence of Payment of Council Fees

Council

Nathan Huon
Principal Officer -
Major Special Projects
B.Build (Const Econ), A/Dip Civ Eng

Unit 9/5 Vuko Place, Warriewood NSW 2102
P.O. Box 882, Mona Vale NSW 1660
DX9018 Mona Vale

el:(612) 9970 1283, Fax: (612) 9970 7384
obile: 0407 224 102
ternet: www.pittwaterlga.com.au
mail: nathan_huon@pittwater.nsw.gov.au



Pittwater Council

OFFICIAL RECEIPT

16/06/2003 Receipt No 116717

To FOR AND ON BEHALF OF
PITTWATER COUNCIL

4 BUNGAN LANE
MONA VALE

Applic	Reference	Amount
GL Re	QLSL-Buil	$4,000.00
	1 X DA: N0632/01	

Total:	$4,000.00
Amounts Tendered	
Cash	$0.00
Cheque	$4,000.00
Card	$0.00
Money Order	$0.00
Agency Rec	$0.00
Total	$4,000.00
Rounding	$0.00
Change	$0.00
Nett	$4,000.00

Printed 16/06/2003 2:37:34
Cashier NAnass

ANNEXURE 10

Fire Safety Schedule

STAGED CONSTRUCTION CERTIFICATE DOCUMENTATION No J03354

FIRE SAFETY MEASURES THAT FORM PART OF THIS CERTIFICATE

Issued in accordance with 168 (1) (c) of the Environmental Planning and Assessment Regulation 2000

Fire Safety Measure	Standard of performance	Proposed
Automatic fire suppression	Spec E1.5, AS 2118.1	Yes
Emergency lighting	E4.4, E4.2, AS/NZS2293.1	Yes
Exit signs	E4.5, E4.8, AS/NZS2293.1	Yes
Fire hydrants	E1.3, AS2419.1	Yes
Fire Safety Engineering	Report prepared by Scientific Service Laboratory	Yes
Fire seals	C3.15	Yes
Hose reels	E1.4, AS2441	Yes
Paths of travel	Part D1 of the BCA	Yes
Portable fire extinguishers	E1.6, AS2444	Yes
Wall wetting drencher system	C3.4, AS 2118.1 & SSL report	Yes
Warning and operational signs	D2.23, E3.3, Form 15B	Yes

ANNEXURE 11

Certificate of Accreditation

t

NSW ACCREDITATION SCHEME
BUILDING SURVEYORS AND ALLIED PROFESSIONS

CERTIFICATE OF ACCREDITATION

This is to certify that

SIMON DWYER

is accredited in New South Wales as an Accredited Certifier at the following levels

Accredited Certifier Grade 1

Principal Certifying Authority Grade 1

This accreditation commences on 12 November 2002 and expires on 11 November 2003

Registration No. 925

Sue Holliday
Director General

planning

R/129159

TAX INVOICE

INTERCOAT RECEIPT

BUNGAN LANE CARPARK
MONA VALE

GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS AND PITTWATER COUNCIL'S SPECIFICATION FOR CIVIL WORKS. THESE DRAWINGS SHALL TAKE PRECEDENCE OVER THE SPECIFICATION FOR CIVIL WORKS WHEN DISCREPANCIES ARISE.
2. THE CONTRACTOR SHALL GIVE NOTICE TO COUNCIL'S ENGINEER IN ACCORDANCE WITH COUNCIL'S SPECIFICATION WHEN INSPECTIONS ARE REQUIRED.
3. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM SITE ALL STRUCTURES, CAR BODIES, CONCRETE, FENCES, ETC. AS REQUIRED.
4. PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR SHALL VERIFY THE LOCATION OF EXISTING SERVICES AND STRUCTURES WHETHER OR NOT SHOWN ON THE DRAWINGS. ANY DAMAGE TO EXISTING SERVICES AND STRUCTURES SHALL BE RECTIFIED AT THE CONTRACTOR'S EXPENSE. 10mm COMPRESSIBLE FILLER MATERIAL SHALL BE PLACED AROUND EXPOSED SERVICES AND STRUCTURES. ALL SERVICE COVERS SHALL BE ADJUSTED TO SUIT FINISHED SURFACE LEVELS.
5. THE CONTRACTOR SHALL ENSURE THAT EXISTING SERVICES SUPPLY IS MAINTAINED AT ALL TIMES. WHERE SERVICES ARE AFFECTED BY NEW WORKS, THE CONTRACTOR SHALL INSTALL ALTERNATIVE/ NEW SUPPLIES.
6. THE CONTRACTOR SHALL MAINTAIN SERVICES AND ALL WEATHER ACCESS AT ALL TIMES TO ADJOINING PROPERTIES.
7. TO MINIMISE DISRUPTION THE CONTRACTOR SHALL STAGE THE WORKS TO THE SATISFACTION OF THE SUPERINTENDENT.
8. PRIOR TO THE REMOVAL OF TREES THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL. GRUB HOLES SHALL BE BACKFILLED WITH APPROVED MATERIAL PLACED AND COMPACTED TO 98% STANDARD COMPACTION.
9. TEMPORARY DRAINAGE MEASURES SHALL BE INSTALLED TO DIVERT/ COLLECT SURFACE AND SUB-SURFACE WATER DURING CONSTRUCTION.
10. THE CONTRACTOR SHALL PROVIDE SUITABLE EROSION & SEDIMENT CONTROL MEASURES TO ENSURE THAT NO SILT OR BUILDING MATERIALS ENTER THE EXISTING DRAINAGE SYSTEM.
11. WHEN OTHER CONTRACT WORK IS IN PROGRESS THAT REQUIRES ACCESS AND CO-ORDINATION WITH THIS CONTRACT, THIS CO-ORDINATION WILL BE THE CONTRACTOR'S RESPONSIBILITY.
12. ALL NEW WORKS SHALL BE SMOOTHLY TRANSITIONED INTO EXISTING WORKS.
13. CONCRETE FOOTPATHS ARE TO HAVE 5mm DEEP DUMMY JOINTS (DJ) AT A DISTANCE EQUAL TO THE PATHS WIDTH & EVERY THIRD JOINT IS TO BE A FULL DEPTH EXPANSION JOINT WITH BITUMEN INFILL MATERIAL.
14. ALL FOOTPATHS, BATTERS AND AREAS OUTSIDE THE CARRIAGEWAY SHALL BE RE-VEGETATED AS SOON AS PRACTICALLY POSSIBLE AFTER FORMATION. BATTERS SHALL BE TOPSOILED (100mm) AS SOON AS PRACTICALLY POSSIBLE. BATTER SLOPES SHALL BE MAX. 2(H) : 1(V) UNLESS NOTED OTHERWISE.
15. DIMENSIONS OF ANY DETAIL SHALL NOT BE SCALED. DIMENSIONS, IF IN DOUBT, SHALL BE VERIFIED BY THE SUPERINTENDENT.
16. ALL SURVEY DATA AND CONTROL PROVIDED BY STEVE DAVEY AND ASSOCIATES. THIS DATA SHALL BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION.

GROUND PREPARATION NOTES

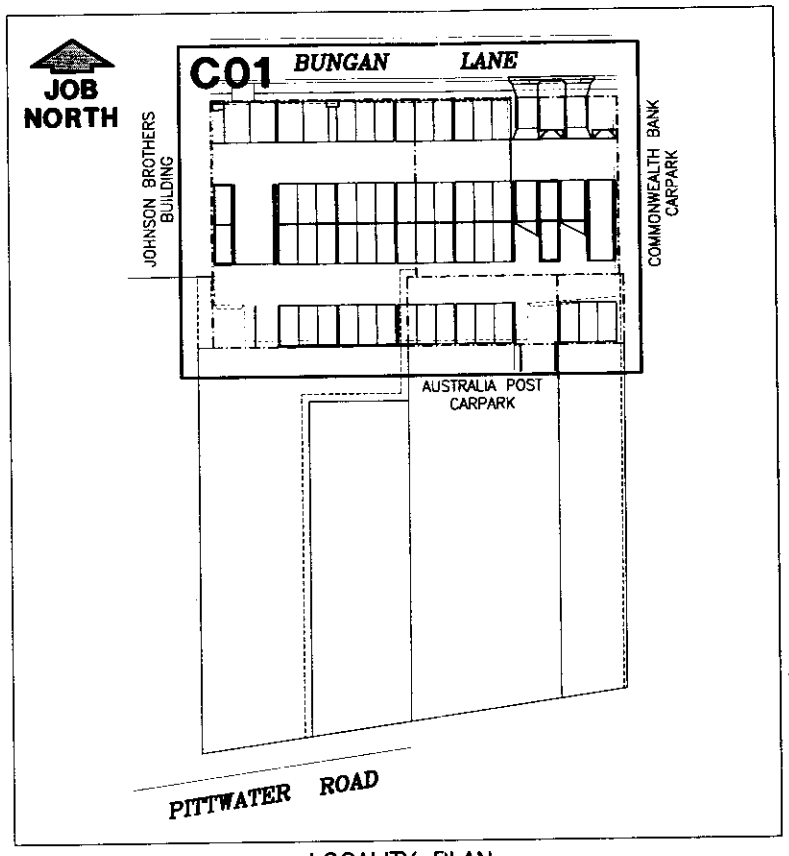
1. REMOVE ALL TOP SOIL (MINIMUM OF 150mm) AND ANY REMAINING VEGETATION, RUBBLE OR BUILDING DEBRIS.
2. SUBGRADE TO BE COMPACTED TO A MINIMUM DENSITY RATIO OF 100% STANDARD COMPACTION. MOISTURE CONTENT SHALL BE MAINTAINED WITHIN ± 2% OF O.M.C.
3. PROOF ROLL THE SUBGRADE SURFACE WITH A SMOOTH DRUM ROLLER OF NOT LESS THAN TEN TONNES DEAD WEIGHT. REMOVE ANY AREAS THAT MOVE VISIBLY AND REPLACE WITH SELECT FILL PLACED IN LAYERS NOT GREATER THAN 150mm LOOSE THICKNESS AND COMPACT TO A MINIMUM DENSITY RATIO OF 100% STANDARD COMPACTION. MOISTURE CONTENT SHALL BE MAINTAINED WITHIN ± 2% OF O.M.C.
4. COMPACTION OF BASE TO BE 98% MODIFIED COMPACTION. BEFORE PLACING THE WEARING COURSE A ROLLER TEST IS TO BE CARRIED OUT WITH A 12t ROLLER AND IS TO BE APPROVED BY THE GEO-TECH OR ENGINEER.
5. COMPACTION SHALL BE CONTROLLED BY A REGISTERED SOIL LABORATORY IN ACCORDANCE WITH THE RTA'S SPECIFICATION.
6. PAVEMENT DESIGN BASED ON CBR4.
7. REFER TO GEOTECHNICAL REPORT No.35771 PREPARED BY DOUGLAS PARTNERS. "PROPOSED MULT-LEVEL CARPARK, BUNGAN LANE, MONA VALE" FOR ALL BOREHOLE INFORMATION, FOUNDATION DETAILS AND FILLING PROCEDURES AND MATERIALS.

SEDIMENT RUN-OFF CONTROL DURING EARTHWORKS

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN SOIL EROSION AND SEDIMENT CONTROL MEASURES GENERALLY IN ACCORDANCE WITH THE GUIDELINES OF THE NSW SOIL CONSERVATION SERVICE AND AS NECESSARY TO PREVENT RUN-OFF FROM SITE OF SEDIMENT RESULTING FROM HIS WORKS. SUCH MEASURES SHALL ALSO COMPLY WITH THE PUBLIC WORKS PUBLICATION; "MANAGEMENT OF SOIL AND SEDIMENT EROSION - CONSTRUCTION SITE" (BLUE BOOK).
2. GRADE FINISHED SURFACE TO SHED WATER EVENLY WITHOUT CHANNELING.
3. ALL DISTURBED AREAS AND STOCKPILES TO BE STABILISED WITHIN 48 HOURS. DUST IS TO BE SUPPRESSED BY WATERING
4. TRUCKS AND VEHICLES LEAVING THE SITE SHALL NOT SPREAD DIRT ONTO THE EXTERNAL ROADS.
5. NO DISTURBANCE OF SITE PERMITTED OTHER THAN IMMEDIATE AREA OF THE WORKS.
6. EROSION CONTROL MEASURES TO BE INSPECTED AND MAINTAINED AFTER EVERY STORM.

TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC MANAGEMENT MEASURES WHICH ARE TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION.
2. TRAFFIC CONTROL EXTERNAL TO THE SITE TO COMPLY WITH RTA GUIDELINES AND AS1742.3.
3. THE CONTRACTOR SHALL REMOVE EXISTING LINE MARKING WHERE APPLICABLE. THIS SHALL BE VERIFIED BY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF THESE WORKS.
4. EXISTING SIGNS TO BE RELOCATED OR REMOVED SHALL BE CONFIRMED ON SITE BY THE SUPERINTENDENT.
5. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL ASPHALTIC CONCRETE SEAL.



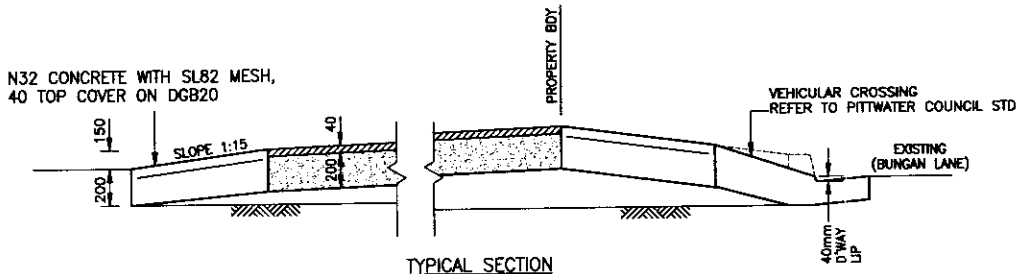
LOCALITY PLAN
1:500

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

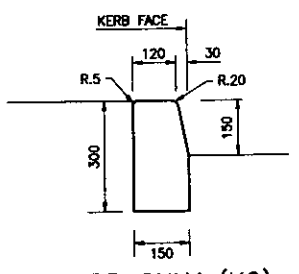
KERB AND GUTTER (KG)
1:10

LEGEND

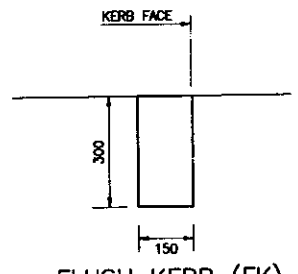
- KO — PROPOSED KERB ONLY
- FK — PROPOSED FLUSH KERB
- PROPOSED SOLID WALL – CONCRETE PANEL DETAIL REFER STRUCTURAL DWG 8822/S
- PROPOSED MESH WALL DETAIL REFER STRUCTURAL DWG 8822/S
- EF — SILT FENCE
- +10.03 — DESIGN FINISHED LEVEL
- EXISTING KERB TO REMAIN
- EXISTING KERB TO BE DEMOLISHED
- EXISTING TREE (TO REMAIN)
- EXISTING TREE (TO BE REMOVED)
- CONCRETE INFILL (REFER PITTWATER COUNCIL STANDARD)
- ASPHALT SURFACE 40mm AC14 200mm DGB20 COMPACTED SUBGRADED
- LANDSCAPING (REFER TO ARCHITECT'S DETAILS)
- DRAINAGE PIT (REFER AHW DWG 20555/H02)
- GRATED DRAIN (REFER AHW DWG 20555/H02)
- BOLLARDS (REFER ARCHITECT'S DETAILS)
- BIKE RACK 300x300x300 MASS CONC. PADS FOOTINGS



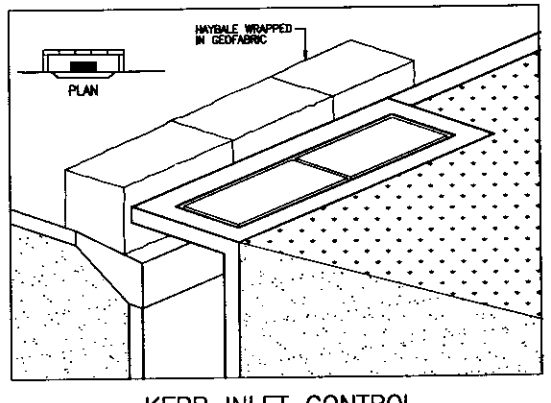
TYPICAL SECTION
SECTION A – RAISED THRESHOLD AT ENTRY/ EXIT
N.T.S.



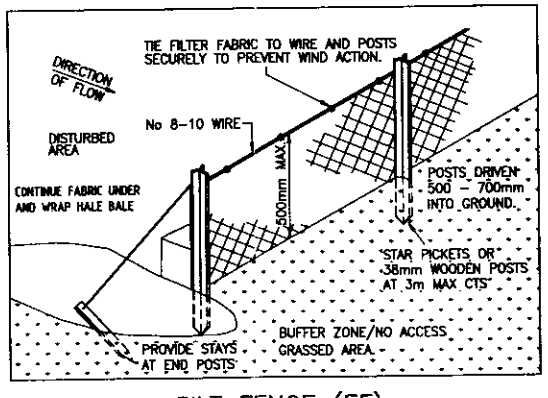
KERB ONLY (KO)
1:10



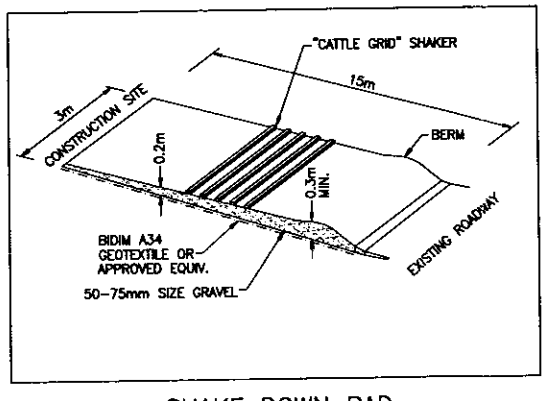
FLUSH KERB (FK)
1:10



KERB INLET CONTROL
N.T.S.



SILT FENCE (EF)
NTS



SHAKE DOWN PAD
N.T.S.

1:500 0 10 20 30 40 50m

ISSUE	AMENDMENT	BY	DATE
T1	ISSUED FOR TENDER	MAC	23.05.03
P1	ISSUED FOR INFORMATION	MAC	09.05.03

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DesignInc Sydney P/L
124 WALKER STREET, NORTH SYDNEY NSW 2060
PH (02) 9957 5401 FAX (02) 9957 4259

BUNGAN LANE CARPARK
BUNGAN LANE
MONA VALE

COVER SHEET & ASSOCIATED DETAILS NTS

DESIGN: MAC	DRAWN: JW	SCALES: 1:500
CHKD:	APPRD:	DATE:
SHEET 1 OF 2	MPN JOB 8822	DWG No C00 T1

FOR TENDER PURPOSES ONLY

CAD REF-J:\8822\CIV\LAY\C00.DWG, PLOTTED-23-5-2003 16:07:00

JOB NORTH

BUNGAN LANE

LINE OF KERB

STEP RAMP (REFER TO ARCHITECTS DETAILS)

DEMOLISH AND REMOVE EXISTING PEDESTRIAN CROSSING AND REINSTATE KERB & GUTTER

300x300x300 MASS CONC. PAD FOOTING TYPICAL

STEP RAMP (REFER TO ARCHITECTS DETAILS)

MATCH KERB TO EXISTING

CONSTRUCT NEW VEHICULAR CROSSING REFER TO PITTWATER COUNCIL DETAIL

MATCH KERB TO EXISTING

INSTALL BOLLARDS 300mm TO KERB, ON 300x300x300 MASS CONC. PAD FOOTING TYPICAL (REFER ARCHITECT'S DETAILS)

300x300x300 MASS CONC. PADS FOR BIKE RACKS TYPICAL

STEP RAMP (REFER TO ARCHITECTS DETAILS)

300x300x300 MASS CONC. PAD FOOTING TYPICAL

PEDESTRIAN CROSSING

CONCRETE PATH

INVERT

150mm

1000

1350

2% (TYP.)

RETAINING WALL REFER STRUCTURAL DWG 8822/S

ON GRADE RAMP

RAMP

ON GRADE RAMP

2 DP 707539 BITUMEN CARPARK

2 DP 715158 BITUMEN CARPARK

2 DP 230780

102 DP 788439

101 DP 788439

1 DP 230780 (POST OFFICE)

RIGHT OF CARRIAGEWAY 2.055 WIDE

300x300x300 MASS CONC. PAD FOOTING TYPICAL

APPROXIMATE LOCATION SEWER FROM SEWER PLAN

EASEMENT TO DRAIN WATER 1 WIDE

CONC. PIT

EXG. EDGE OF RAMP

CHAIN WIRE FENCE

WIRE FENCE

101 DP 794195 (TURMETTA P/L) VACANT

2 DP 359120 (TURMETTA P/L) VACANT

FOR STORMWATER DRAINAGE REFER TO AHW DWG 20555/H02

FOR NOTES AND LEGEND REFER TO DWG C00

1:100

0 2 4 6 8 10m

ISSUE			
T1	ISSUED FOR TENDER	MAC	23.05.03
P1	ISSUED FOR INFORMATION	MAC	09.05.03
ISSUE	AMENDMENT	BY	DATE

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124 WALKER STREET, NORTH SYDNEY NSW 2060
PH (02) 9957 5401 FAX (02) 9957 4259

BUNGAN LANE CARPARK

BUNGAN LANE
MONA VALE

CARPARK GRADING

DESIGN: MAC	DRAWN: JW	SCALES: 1:100
CHKD:	APPRD:	DATE:
SHEET 2 OF 2	MPN JOB 8822	DWG No C01 T1

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J033854
12 NOV 2003
DLM CERTIFICATION

FOR TENDER PURPOSES ONLY

CAD REF-J:\8822\CIV\LAY\C01DWG, PLOTTED-23-5-2003 16:06:37

Hydraulic Services
4 Bungan Lane, Mona Vale

Drawing Schedule

20555-H00	COVER SHEET, SPECIFICATION & LEGEND
20555-H01	SITE PLAN
20555-H02	GROUND FLOOR PLAN
20555-H03	FIRST & SECOND FLOOR PLAN - LEVEL 2 FOR INFORMATION ONLY
20555-H04	THIRD FLOOR PLAN - FOR INFORMATION ONLY

Legend

PIPE LINES

- STORMWATER DRAINAGE
- COLD WATER
- FIRE HYDRANT
- EXISTING STORMWATERDRAINAGE
- EXISTING WATER MAIN

SYMBOLS

- PIPE DROPPER
- PIPE RISER
- PIPE CONTINUES
- FLOW DIRECTION
- CW – SERVICE
- SERVICE SIZE
- FLOW DIRECTION
- FHR – FIRE HOSE REEL
- FH – FIRE HYDRANT
- FIRE HYDRANT BOOSTER
- ISOLATION VALVE
- STORMWATER PIT GRATED
- COLD WATER METER
- STREET HYDRANT

ABBREVIATIONS

DP	DOWNPIPE
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
IL	INVERT LEVEL
RPZD	REDUCED PRESSURE ZONE DEVICE
RL	REDUCED LEVEL
SV	STOP VALVE
SW	STORMWATER
SWP	STORMWATER PIT

Specification Notes

GENERAL REQUIREMENTS

DEFINITIONS
DRAWINGS - THE HYDRAULIC SERVICES DRAWINGS AND ASSOCIATED ARCHITECTURAL AND OTHER SERVICES DRAWINGS ASSOCIATED WITH THE PROJECT.

LOCAL AUTHORITY - THE RELEVANT AUTHORITY HAVING JURISDICTION OVER THE WORK IN THE AREA OF THE WORKS.

PROVIDE - MANUFACTURE, SUPPLY, INSTALL, TEST, SERVICE AND CERTIFY ALL MATERIALS AND COMPONENTS REQUIRED FOR THE ITEM.

MAIN CONTRACTOR - THE BUILDER OVER SEEING THE ENTIRE WORKS.

STAGING
THIS CONTRACT IS TO BE BUILT IN THREE STAGES, POSSIBLY OVER SEVERAL YEARS. EACH STAGE SHALL BE BUILT SO THAT IT IS COMPLETELY OPERATIONAL WITHOUT THE NEED TO BUILD THE FOLLOWING STAGES. EACH STAGE SHALL ALSO BE BUILT WITH ALLOWANCES FOR THE FUTURE STAGES. TENDER PRICES TO BE LISTED ACCORDINGLY.
STAGE 1 - GROUND FLOOR AND FIRST FLOOR.
STAGE 2 - SECOND FLOOR.
STAGE 3 - THIRD FLOOR.

DUE ALLOWANCES SHALL BE MADE FOR THE CAPPING OFF, CONNECTION AND EXTENSION OF EACH SERVICE AT EACH STAGE, AND FOR COMMISSIONING OF THE FIRE SERVICES AT EACH STAGE.

GENERAL
ALL WORK SHALL BE CARRIED OUT BY AND UNDER THE SUPERVISION OF A LICENSED PLUMBER IN STRICT CONFORMITY WITH THE ARCHITECTURAL PLANS AND HYDRAULIC DRAWINGS AND SPECIFICATIONS AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF AUSTRALIA, LOCAL AUTHORITIES, AS 3500 AND OTHER RELEVANT AUSTRALIAN STANDARDS.

WORK IS TO BE CARRIED OUT TO THE SATISFACTION OF THE ARCHITECT.

DRAINAGE INDICATED IS BELOW THE FLOOR UNLESS NOTED OTHERWISE

ALL WATER SERVICES SHOWN AT HIGH LEVEL UNLESS NOTED OTHERWISE

SITE VISIT
DURING THE TENDER PERIOD, VISIT THE SITE TO BECOME FAMILIAR WITH THE SITE CONSTRAINTS AND EXTENT OF WORKS. VARIATIONS DUE TO OBVIOUS SITE CONSTRAINTS WILL NOT BE APPROVED.

SCOPE OF WORKS
PROVIDE ALL MATERIALS AND LABOUR NECESSARY TO PROVIDE A COMPLETE, WORKING AND SERVICEABLE INSTALLATION BASED ON THE DRAWINGS AND SPECIFICATION.

DIMENSIONS
THE DRAWINGS ARE INDICATIVE ONLY. ALL DIMENSIONS MUST BE CONFIRMED ON SITE BEFORE ANY SITEWORK OR OFF-SITE FABRICATION TAKES PLACE.

MATERIALS
ALL MATERIALS USED IN THE WORK SHALL BE NEW AND OF THE BEST QUALITY AND TYPE AVAILABLE TO CONFORM WITH THE RELEVANT AUSTRALIAN STANDARDS AND BEAR THE REQUIRED STANDARDS MARK AND WATERMARK.

SAFETY
ENSURE THAT ALL TOOLS AND EQUIPMENT ARE MAINTAINED IN A SOUND CONDITION AND ARE SAFE FOR USE AND OPERATED IN A SAFE MANNER. PLANT AND EQUIPMENT ARE TO BE LOCATED SO AS NOT TO IMPEDE THE PASSAGE OF VEHICLES OR PEDESTRIAN TRAFFIC. THE CONTRACTOR SHALL NOT AT ANY TIME, LEAVE THE WORKS IN AN UNSAFE CONDITION OR IN A CONDITION THAT MAY CAUSE DAMAGE TO OTHER EXISTING WORK.

COORDINATION
COORDINATE SERVICES WITH ALL OTHER TRADES AND WORKS ON THE SITE. REVIEW ALL AVAILABLE EXISTING SERVICES DOCUMENTATION.

SERVICES IN GENERAL

EXISTING SERVICES
EXISTING SERVICES SHOWN ON THE DRAWINGS ARE INDICATIVE ONLY AND MAY NOT BE COMPLETE. LOCATE AND CONFIRM ALL EXISTING SERVICES RELEVANT TO THE WORKS, PRIOR TO CARRYING OUT ANY WORK.

SERVICES FOR OTHER TRADES
CONFIRM LOCATION AND SIZE OF ALL SERVICES REQUIRED FOR USE BY OTHER TRADES.

FIXINGS
DUE TO THE CORROSIVE NATURE OF THE CARPARK ENVIRONMENT, FIXINGS FOR PIPEWORK AND EQUIPMENT SHALL BE EPOXY COATED GALVANISED MILD STEEL OR 316 STAINELESS STEEL AS APPROPRIATE.

STORMWATER DRAINAGE

PIPEWORK MATERIAL
PIPEWORK SHALL BE UPVC DRAINAGE WASTE AND VENT (DWV) GRADE WITH SOLVENT WELDED JOINTS.

GUTTERING
THE GUTTERING SHALL BE COLORBOND OR AS MAY BE SPECIFIED BY THE ARCHITECT. ALLOWANCE SHALL BE MADE IN EACH STAGE FOR INSTALLATION OF GUTTERING AT THAT LEVEL, AND FOR REPLACEMENT AT SUBSEQUEST STAGES.

STORMWATER PITS
STORMWATER PITS SHALL BE PRECAST CONCRETE WITH CLASS 'C' GALVANISED GRATES AND LOCKDOWNS AND STEP IRONS IF REQUIRED BY CODE.

GRATED DRAINS SHALL BE EQUAL TO 'ACO DRIANS' MODEL K100 SYSTEM WITH INTERCEPT DUCTILE IRON GRATES AND LOCKDOWNS.

WATER SERVICE

STANDARDS
THE INSTALLATION IS TO BE IN ACCORDANCE WITH AS3500.1, NSW CODE OF PRACTICE FOR PLUMBING AND DRAINAGE AND LOCAL AUTHORITY REQUIREMENTS.

PIPEWORK MATERIAL
COLD WATER PIPEWORK SHALL BE COPPER TUBE TYPE 'B' WITH SILVER BRAZED JOINTS.

PIPEWORK CHASED IN WALLS SHALL BE LAGGED WITH KEMLAG OR EQUIVALENT MATERIAL.

PIPE SIZES NOMINATED ON THE DRAWINGS ARE INTERNAL BORE SIZES.

WATER MAIN EXTENSION
ALLOW TO LIASE WITH THE WATER MAIN CONTRACTOR FOR THE INSTALLAION OF TEE AND VALVES FOR CONNECTION.

HYDRANT SERVICE

STANDARDS
THE INSTALLATION IS TO BE IN ACCORDANCE WITH AS2419.1

PIPEWORK MATERIAL
PIPEWORK SHALL BE VICTAULIC GALVANISED MILD STEEL WITH MECHANICAL JOINTS.

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J033 54
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Eng	Description
B	28.05.03	D.T.	D.T.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	D.T.	D.T.	STAGE 1 TENDER ISSUE

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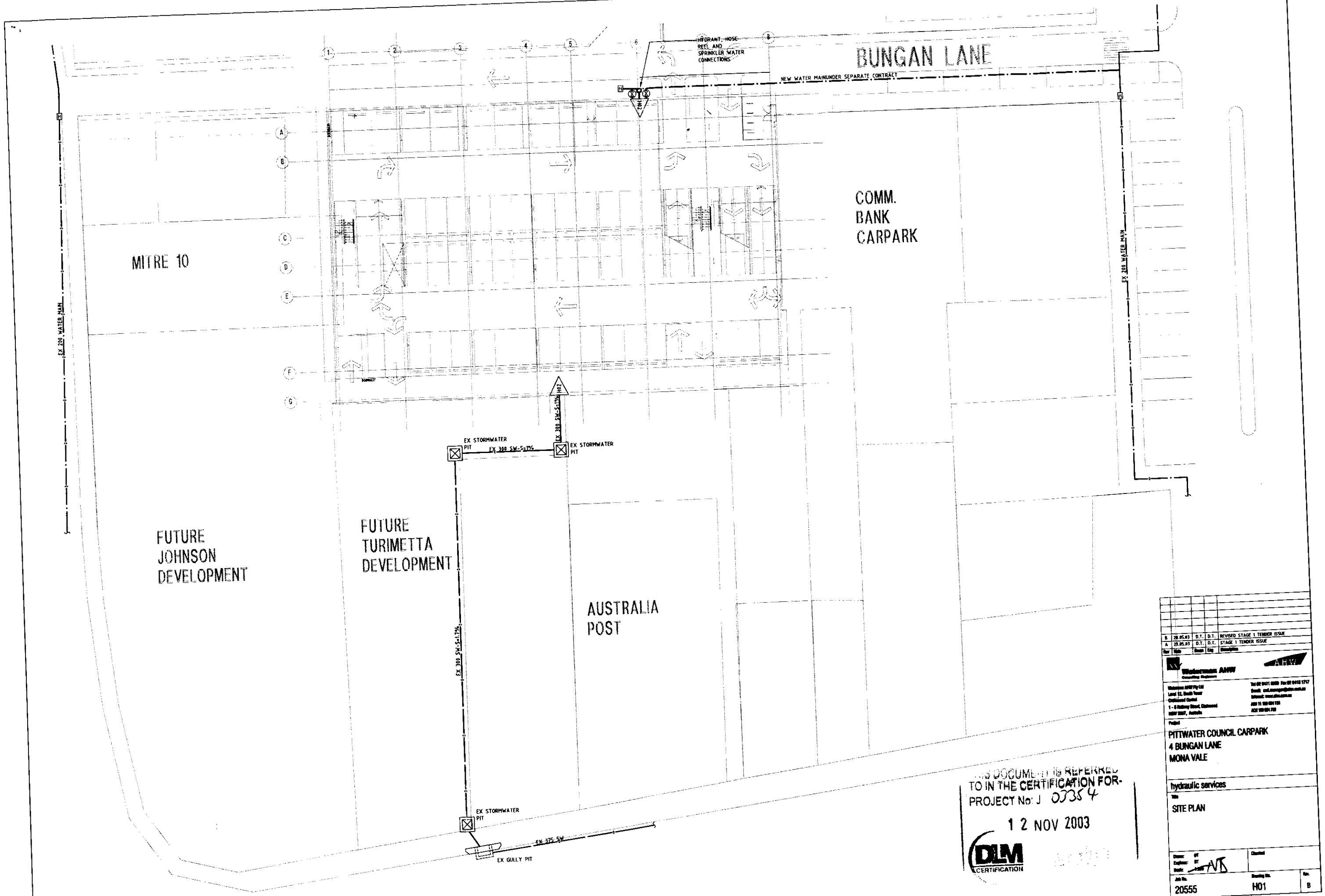
Wilkinson AHW Pty Ltd
Level 12, South Tower
Chatswood Central
1 - 5 Railway Street, Chatswood
NSW 2067, Australia
Tel 02 9411 6000 Fax 02 9411 1717
Email: and.mcintyre@ahw.com.au
Internet: www.ahw.com.au
ABN 11 100 004 720
ACN 100 004 720

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

hydraulic services

Title
LEGEND, DRAWING REGISTER & SPECIFICATION NOTES

Drawn: DT	Checked
Engineer: DT	
Scale:	
Job No. 20555	Drawing No. H00
	Rev. B



Rev	Date	Drawn	Chkd	Description
B	29.05.03	D.T.	D.T.	REVISED STAGE 1 TENDER ISSUE
A	29.05.03	D.T.	D.T.	STAGE 1 TENDER ISSUE

Wakerman AHW

PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

hydraulic services

SITE PLAN

Job No. 20555 | Drawing No. H01 | Rev. B

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

HYDRANT 2 POINT SUCTION/BOOSTER ASSEMBLY

EXTEND AND CONNECT TO PROPOSED WATER MAIN

25 WATER METER ASSEMBLY AND RPZD

SPRINKLER TEST DRAIN WITH 0.3 HIGH BUND
RL9.92
IL9.36
0.45X0.45

100 SPRINKLER SUPPLY LEFT CAPPED OFF 150mm ABOVE SLAB

PROVIDE ACCESS GATE AT BASE OF EACH DOWNPIPE

GRATED DRAIN

100 FH @ HIGH LEVEL
32 FHR @ HIGH LEVEL

SWP RL10.00 IL9.23 0.6 X 0.6 MEDIUM DUTY GRATE

SWP RL10.00 IL9.10 0.6 X 0.6 MEDIUM DUTY GRATE

SWP RL9.80 IL9.50 0.6 X 0.6 MEDIUM DUTY GRATE

SWP RL9.80 IL9.40 0.6 X 0.6 MEDIUM DUTY GRATE

150 SW

100 SW

EXTEND OF INUNDATION FOR STORMWATER DETENTION. MAX DEPTH OF WATER 180mm AT RL8.48 PROVIDING 5.8m3 WATER STORAGE

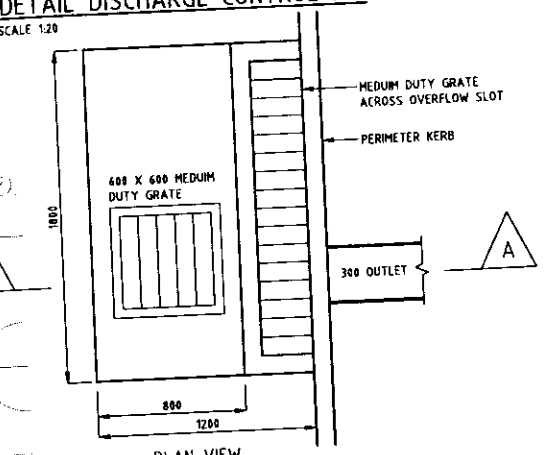
CLASH WITH TIE BEAM

EXTEND EXISTING 300 SW TO PIT. CONFIRM INVERT LEVEL OF EXISTING 300 SW PRIOR TO COMMENCEING IN-GROUND DRAINAGE WORKS

PROPOSED DISCHARGE CONTROL PIT
RL8.40
IL7.90
2.0X1.6m
PSD = 136L/S
REFER DETAIL THIS DRAWING

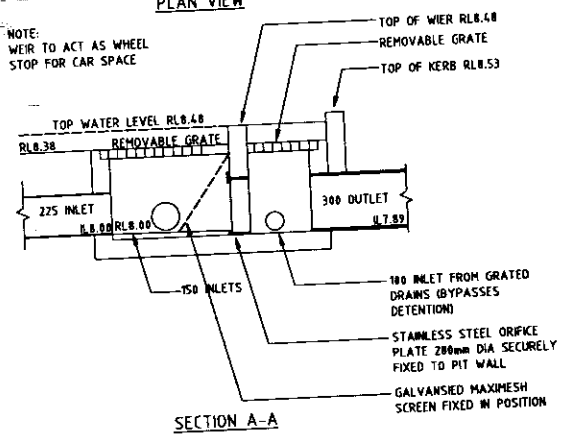
DETAIL DISCHARGE CONTROL PIT

SCALE 1:20



PLAN VIEW

NOTE:
WEIR TO ACT AS WHEEL STOP FOR CAR SPACE



SECTION A-A

OSD CALCULATIONS

Area of site	1847 m2
Increase in impervious area	70 m2
Exsiting impervious	1777 m2
% of site draining through OSD	96.21 %
Pre-developed % impervious	3.79 %
Post-developed % increase in impervious area	184.7 m2
Area draining though OSD	
Factors taken from Council Policy	
A	0.0311
B	0.00648
C	0.001
Site Storage Requirement (SSD)	5.81 m3
Permitted Site Discharge (PSD)	136 L/s
Above ground storage PSD	109 L/s
Volume required below ground	0.8715 m3
Orifice Plate Calculations	
Top Water Level RL:	8.48 m
Centre line of orifice RL:	8.04 m
Head over orifice	0.44 m
Permissable discharge through orifice	109 l/s
Formula Dia = ((0.48 x 0.0118)/sqrt(1.525))^0.5	
Dia =	0.280 m

Rev	Date	Prepared	Chkd	Description
A	23.05.03	D.T.	D.T.	STAGE 1 TENDER ISSUE

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Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

hydraulic services

Title
GROUND FLOOR PLAN

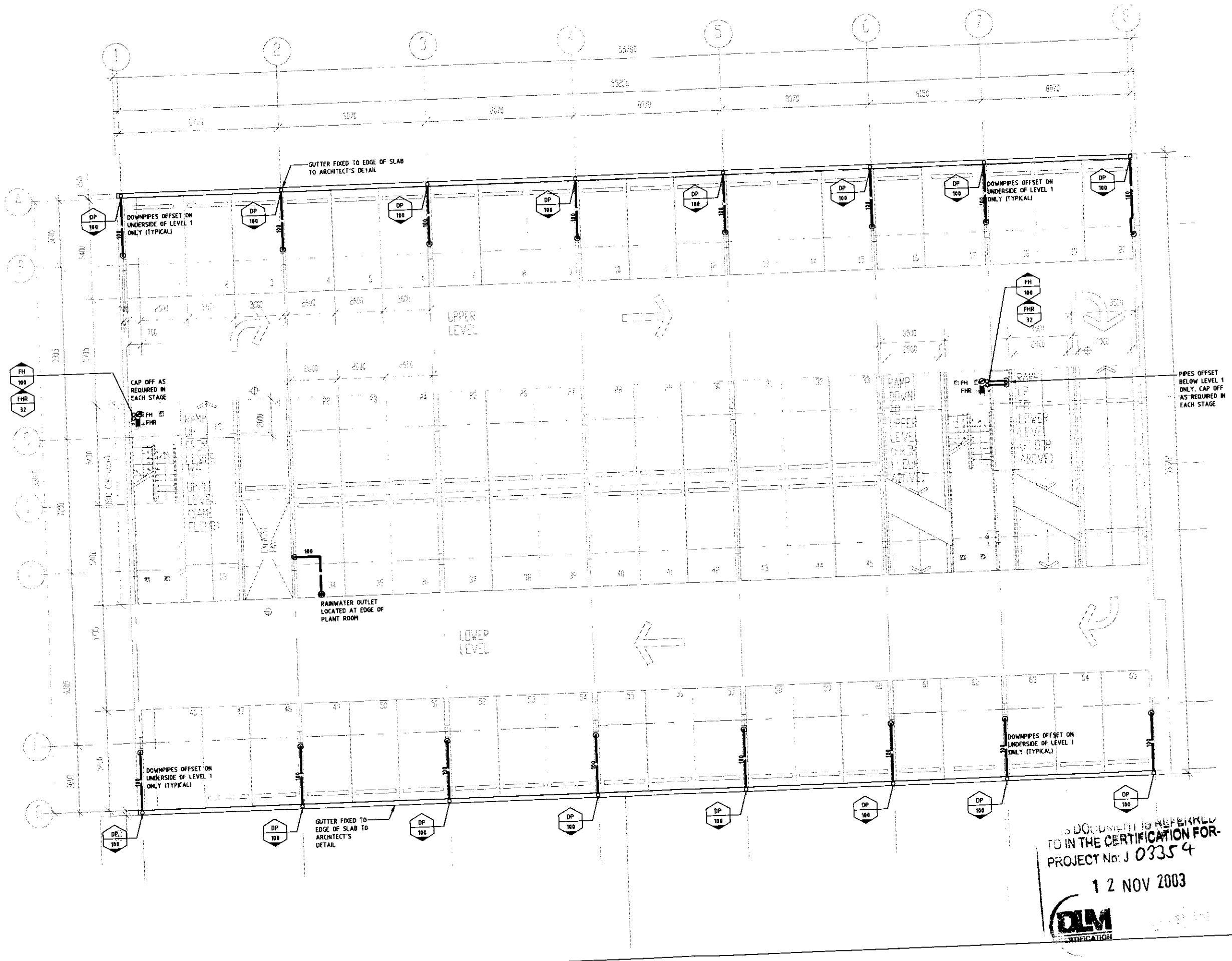
Drawn: DT
Engineer: DT
Checked
Scale: 1:100 @ A1 NTS

Job No. 20555
Drawing No. H02
Rev. A

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

NOTE

01. STAGE 1 WORKS IS GROUND FLOOR AND LEVEL 1 ONLY.
LEVEL 2 &3 ARE FOR INFORMATION ONLY.



THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 0335 4
12 NOV 2003
QLM CERTIFICATION

A	23.05.03	D.T.	D.T.	STAGE 1 TENDER ISSUE
Rev	Date	Drawn	Chkd	Description

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Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

hydraulic services

Title
FIRST & SECOND FLOOR PLANS

Drawn: DT
Engineer: DT
Scale: 1:100 @ A1 NTS

Checked

Job No. 20555
Drawing No. H03
Rev. A

GUTTER FIXED TO EDGE OF SLAB TO ARCHITECT'S DETAIL

GUTTER FIXED TO EDGE OF SLAB TO ARCHITECT'S DETAIL

DP 100

FH 100

FHR 25

UPPER LEVEL

LOWER LEVEL

IN THE CERTIFICATION FOR-
PROJECT No: J 0335 4
12 NOV 2003

No.	Date	Drawn	Chkd	Description
A	23.05.03	D.T.	D.T.	FOR INFORMATION ONLY

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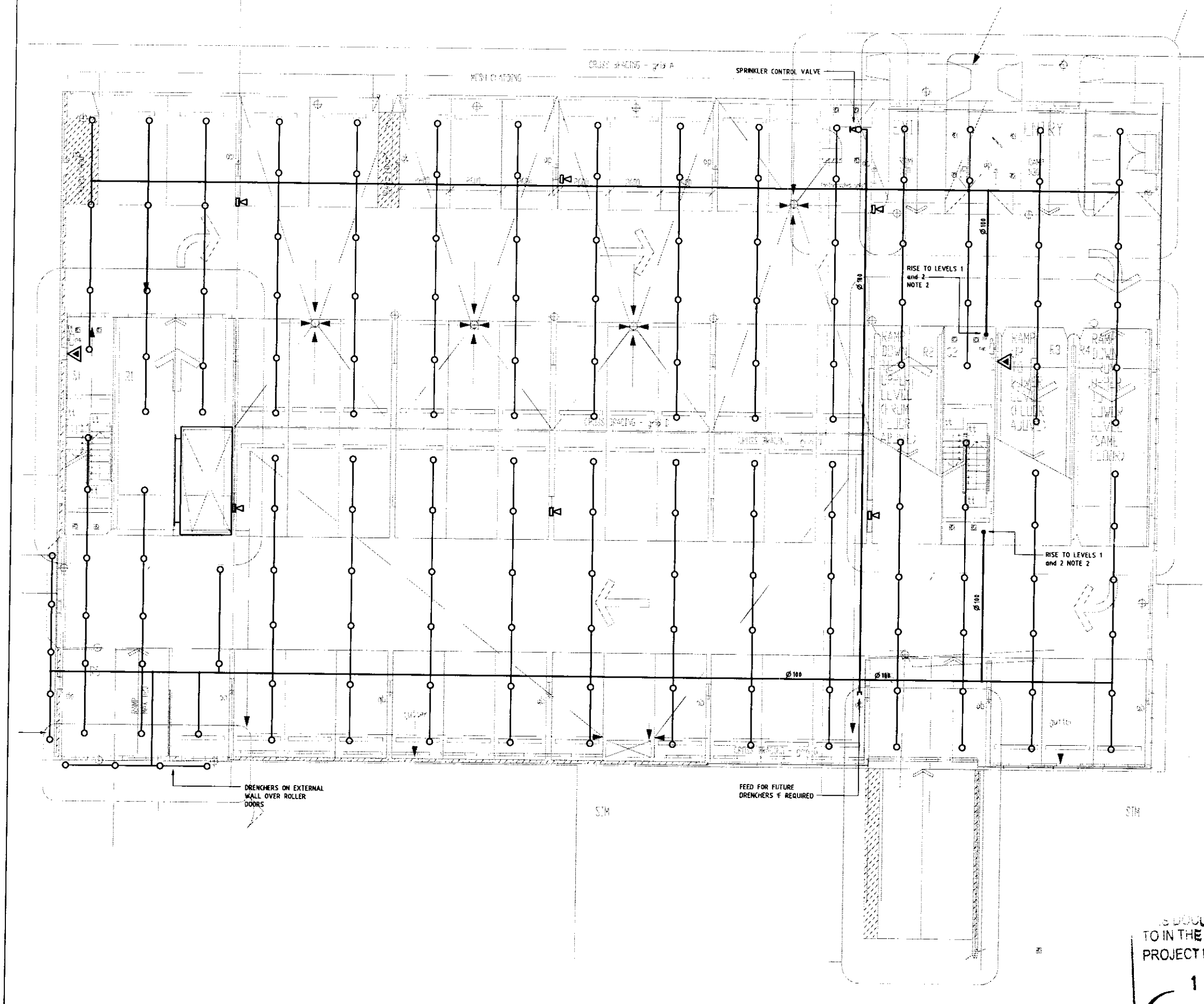
Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

hydraulic services

Title
ROOF PLAN

Drawn: DT
Engineer: DT
Checked: AHW

Job No. 20555
Drawing No. H04
Rev. A



LEGEND

- EXPOSED SPRINKLER
- EWIS HORN
- 4.5kg DCP EXTINGUISHER (IN ENCLOSURE WITH BREAK GLASS)
- 3.5kg CO_2 EXTINGUISHER (IN ENCLOSURE WITH BREAK GLASS)

NOTE

01. ALL PIPEWORK, FITTINGS AND SUPPORT HANGERS TO BE GALVANISED ANTI CORROSIVE FIXINGS.

02. STAGE 1 WORKS ONLY HAS SPRINKLERS/DRENCHES INSTALLED ON GROUND FLOOR. CAP OFF RISER, FEEDS FOR FUTURE CONNECTION TO LEVEL 1 & LEVEL 2 (LATER STAGES)

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM

Rev	Date	Drawn	Dsg	Description
A	23.05.03	L.H.	D.S.	STAGE 1 TENDER ISSUE

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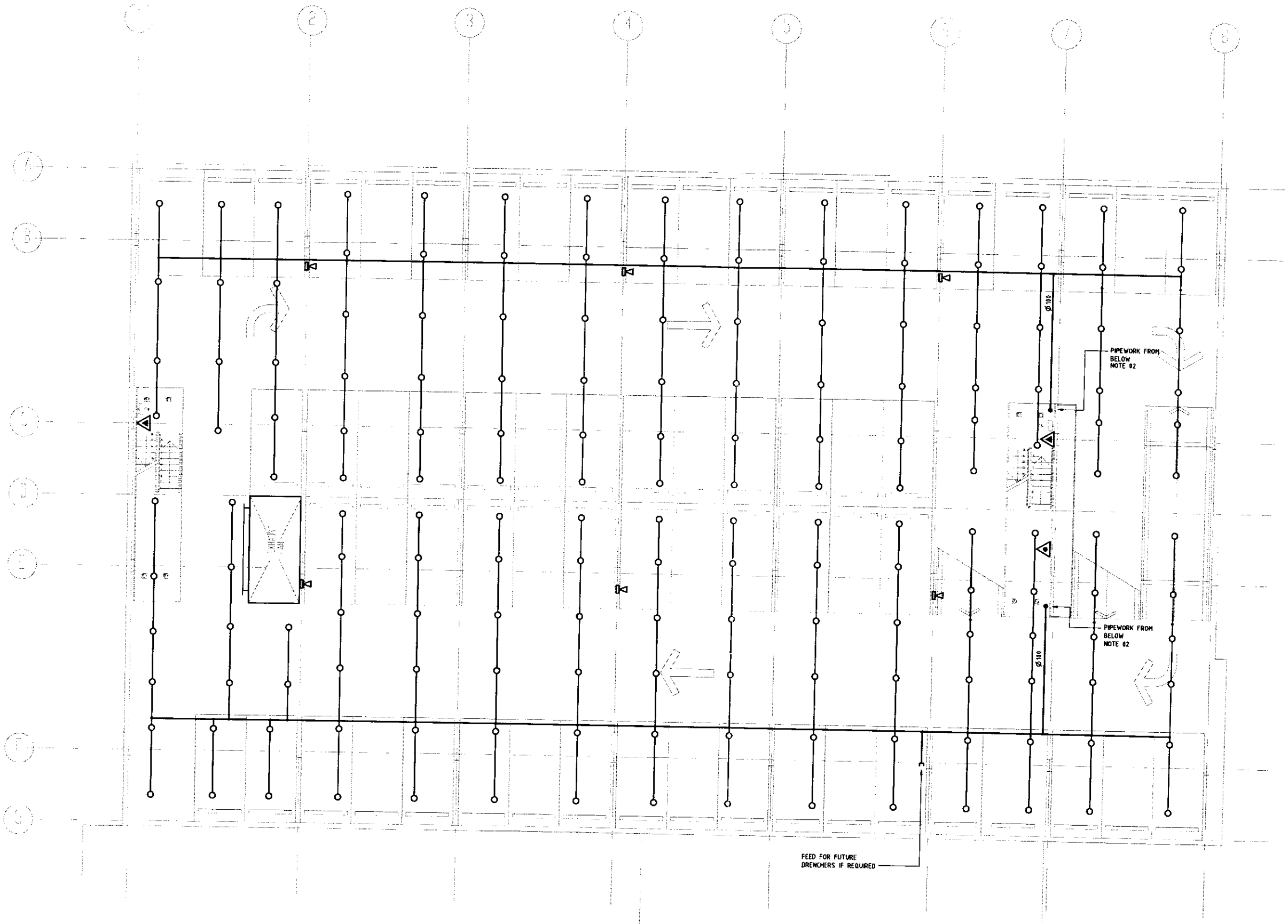
Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

fire sprinkler services

Title
GROUND FLOOR
FIRE SPRINKLER LAYOUT

Drawn: L.H.
Engineer: R.G.
Scale: NTS
Checked

Job No. 20555
Drawing No. F01
Rev. A



LEGEND

- EXPOSED SPRINKLER
- EWIS HORN
- 4.5kg DCP EXTINGUISHER
- 3.5kg CO_2 EXTINGUISHER

NOTE

01. ALL PIPEWORK, FITTINGS AND SUPPORT HANGERS TO BE GALVANISED ANTI CORROSIVE FIXINGS.

02. EXTEND RISERS FROM LEVEL BELOW AND CAP FOR FUTURE CONNECTION TO ABOVE. LEVEL 1 IS STAGE 2 WORKS & LEVEL 2 IS STAGE 3 WORKS.

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Dsg	Description
A	23.05.03	LH.	D.S.	FOR INFORMATION ONLY

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ACN 000 694 720

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

fire sprinkler services

Title
FIRST and SECOND FLOOR
FIRE SPRINKLER LAYOUT

Drawn: LH.
Engineer: N.G.
Scale: NTS
Checked

Job No. 20555
Drawing No. F02
Rev. A

Mechanical Services
Pittwater Council Car Park
Bungan Lane

Drawing Schedule

Stage 1

20555-S1-M01	Ground Floor Ventilation Layout
20555-S1-M02	Level 1 Ventilation Layout

Stage 2

20555-S2-M01	Ground Floor Ventilation Layout - For Information Only
20555-S2-M02	Level 1 Ventilation Layout - For Information Only
20555-S2-M03	Level 2 Ventilation Layout - For Information Only

Stage 3

20555-S3-M01	Ground Floor Ventilation Layout - For Information Only
20555-S3-M02	Level 1 Ventilation Layout - For Information Only
20555-S3-M03	Level 2 Ventilation Layout - For Information Only

NOTES

01. DRAWINGS TO BE READ IN CONJUNCTION WITH THE ASSOCIATED SPPECIFICATION.

02. CO-ORDINATE ALL GRILLES AND ACCESS PANELS WITH ARCHITECTURAL DOCUMENTATION.

03. CONSTRUCTION SHALL BE CO-ORDINATED WITH OTHER TRADES.

04. ALL ROOF INTAKE/OUTLET LOCATIONS SHALL BE CO-ORDINATED WITH THE BUILDER AND THE ARCHITECT BEFORE INSTALLATION.

05. MINIMUM CLEARANCE IN CAR PARK AND ENTRY AREA TO BE 2200mm UNDER LOWEST POINT OF DUCTWORK.

07. REFER TO SPECIFICATION FOR MATERIALS CORROSION CONTROL.

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 033554
12 NOV 2003
DLM CERTIFICATION

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MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

2900x4500 HEAVY DUTY GRILLE, C/W OBD, FITTED TO UNDERSIDE OF PLENUM - 16,000 L/s

300mm DEEP SHEETMETAL PLENUM FITTED TO UNDERSIDE OF RISER SHAFT

2000x200 DUCTWORK, STIFFENED APPROPRIATELY, CONNECT TO SHEET METAL PLENUM UNDER RISER SHAFT AND TRANSFORM TO 1000x300 AS INDICATED

1000x350

1040x600 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J033654
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drwn	Chkd	Description
A	23.05.03	I.M.	S.B.	STAGE 1 TENDER ISSUE

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ACN 100 004 705

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 1

Title
GROUND FLOOR
VENTILATION LAYOUT

Drawn: I.M.
Engineer: S.B.
Scale: 1:100

Checked

Job No. 20555

Drawing No. S1-M01

Rev. A

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MESH CLADDING

CROSS BRACING

MAKE-UP AIR ALONG THIS SIDE

NOTE: THIS FLOOR IS NATURALLY VENTILATED IN STAGE 1

SOLID WALL - LINER PANELS

RAMP TO LOWER LEVEL (SAME FLOOR)

EXHAUST FAN

MCC-1

CAR PARK EXHAUST FAN - DISCHARGE TO PLANTROOM ROOF

PLANTROOM WALL

PROVIDE ATTENUATORS AND ACOUSTIC TREATMENT IN ACCORDANCE WITH SPECIFICATION

DRAIN FAN/DUCT TO FLOOR WASTE

Top of ceiling finished ready for steel fixings ref to RL of ceiling on 1300mm HIGH

DEMOUNTABLE BALUSTRADE

SOLID WALL - CONCRETE PANELS

MESH CLADDING w/ CLR. MEMBERS

SUMP

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

Rev	Date	Drawn	Chkd	Description
B	29.05.03	I.M.	S.B.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	I.M.	S.B.	STAGE 1 TENDER ISSUE

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ACN 193 914 038

Project

PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 1

Title

LEVEL 1 FLOOR
VENTILATION LAYOUT

Drawn	A.J.	Checked
Engineer	B.H.	
Scale	1:100	

Job No.	Drawing No.	Rev.
20555	S1-M02	B

...DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

EXISTING 2000x4500 HEAVY DUTY GRILLE, C/W OBD, FITTED TO UNDERSIDE OF PLENUM, REBALANCE TO 17,500 L/s

EXISTING 300mm DEEP SHEETMETAL PLENUM FITTED TO UNDERSIDE OF RISER SHAFT

EXISTING 2000x200 DUCTWORK TRANSFORM TO 1000x300

EXISTING 1000x800 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

EXIT

ENTRY

RAMP DOWN

RAMP UP

gutter

gutter

CROSS SKATING - grid B

CROSS SKATING - grid C

Drawing for Stage 1

Rev	Date	Drawn	Eng	Description
A	23.05.03	I.H.	S.B.	FOR INFORMATION ONLY

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ABN 11 100 004 720
ACN 100 004 720

Project

PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 2

Title

GROUND FLOOR
VENTILATION LAYOUT

Owner:	I.H.	Checked
Engineer:	S.B.	
Scale:	1:100	

Job No.	Drawing No.	Rev.
20555	S2-M01	A

PROJECT No: J 03354

12 NOV 2003

DLM CERTIFICATION

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

BUILDERSWORK SHAFT TO BE CONTINUED TO SLAB ABOVE

NEW 4500x800 EXHAUST AIR GRILLE C/W OBD FITTED TO SIDE OF BUILDERSWORK RISER - 10,500 L/s

NEW 2000x200 DUCTWORK, STIFFENED APPROPRIATELY, CONNECT TO RISER SHAFT AND TRANSFORM TO 1000x300 AS INDICATED

1000x300

NEW 1000x800 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

CAR PARK EXHAUST FAN TO BE RELOCATED TO LEVEL 2 PLANTROOM DIRECTLY ABOVE

EXISTING PLANTROOM WALLS TO BE DEMOLISHED

MCC1 TO BE RELOCATED TO LEVEL 2

BOUNDARY

RAMP DOWN TO UPPER LEVEL FROM LOWER LEVEL

RAMP UP TO LOWER LEVEL FROM UPPER LEVEL

RAMP DOWN FROM UPPER LEVEL TO LOWER LEVEL

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 033S4
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Chkd	Description
A	23.05.03	E.M.	S.R.	FOR INFORMATION ONLY

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ABN 11 100 004 226
ACN 100 004 226

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 2

Title
LEVEL 1
VENTILATION LAYOUT

Drawn: E.M.		Checked	
Engineer: R.S.			
Scale: 1:100			
Job No. 20555	Drawing No. S2-M02	Rev. A	

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MESH CLADDING

CROSS BRACING - GRID A

FFL13.42

NOTE: THIS FLOOR IS NATURALLY VENTILATED IN STAGE 2

FFL13.42

FFL13.42

MAKE-UP AIR ALONG THIS SIDE

SOLID WALL CONCRETE PANELS

CROSS BRACING - GRID D

MESH WALL

CROSS BRACING - GRID B

FFL11.955

FFL11.955

CAR PARK EXHAUST FAN AND ACOUSTIC TREATMENT RELOCATED FROM LEVEL 2 - DISCHARGE TO ATMOSPHERE

NEW PLANTROOM WALL

MCC1 FROM LEVEL 1

BUILDERSWORK RISER SHAFT FROM BELOW

FFL11.925

MAKE-UP AIR ALONG THIS SIDE

SOLID WALL CONCRETE PANELS

MESH CLADDING WITH SPRINKLER

CROSS BRACING - GRID G

DEMOUNTABLE BALUSTRADE

FFL11.895

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drwn	Chg	Description
B	29.05.03	I.H.	S.B.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	I.H.	S.B.	FOR INFORMATION ONLY

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Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 2

Title
LEVEL 2
VENTILATION LAYOUT

Drawn: I.M.
Engineer: S.B.
Scale: 1:100

Checked

Job No. 20555
Drawing No. S2-M03
Rev. B

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

NOTE: NO CHANGES TO THIS FLOOR IN STAGE 3

EXISTING 2000x4500 HEAVY DUTY GRILLE, C/W OBD, FITTED TO UNDERSIDE OF PLENUM - 17,500 L/s

EXISTING 300mm DEEP SHEETMETAL PLENUM FITTED TO UNDERSIDE OF RISER SHAFT

EXISTING 2000x200 DUCTWORK TRANSFORM TO 1000x300

EXISTING 1000x800 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

Rev	Date	Drwn	Chg	Description
A	23.05.03	I.M.	S.B.	FOR INFORMATION ONLY

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Project

PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 3

Title

GROUND FLOOR
VENTILATION LAYOUT

Drawn: A.A.
Engineer: B.M.
Scale: 1:100

Checked

Job No. 20555

Drawing No. S3-M01

Rev. A

PLANS TO BE USED IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MESH CLADDING

MAKE-UP AIR ALONG THIS SIDE

2 EXISTING 1800x800 AND 2440x800 EXHAUST AIR GRILLES C/W OBD FITTED TO SIDE OF BUILDERSWORK RISER - 10,500 L/s TOTAL

EXISTING 2000x200 DUCTWORK TRANSFORM TO 1000x300

EXISTING 1000x800 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

B	29.05.03	I.M.	S.B.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	I.M.	S.B.	FOR INFORMATION ONLY
Rev	Date	Drawn	Eng	Description

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ACN 103 004 720

Project

PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 3

Title

LEVEL 1
VENTILATION LAYOUT

Drawn: I.M.
Engineer: S.B.
Scale: 1:100

Checked

Job No. 20555

Drawing No. S3-M02

Rev. B

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03384
12 NOV 2003
DLM CERTIFICATION

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

2 NEW 1800x800 AND 2400x800 EXHAUST AIR GRILLES C/W OBD FITTED TO SIDE OF BUILDERSWORK RISER - 10,500 L/s TOTAL

NEW 2800x200 DUCTWORK, STIFFENED APPROPRIATELY, CONNECT TO RISER SHAFT AND TRANSFORM TO 1000x300 AS INDICATED

NEW 1000x800 HEAVY DUTY GRILLE C/W OBD - 2800 L/s

EXISTING CAR PARK EXHAUST FAN RELOCATED FROM LEVEL 2 - DISCHARGE THROUGH PLANTROOM ROOF TO ATMOSPHERE

EXISTING PLANTROOM WALL

HCC1 (EXISTING)

BUILDERSWORK RISER SHAFT FROM BELOW

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

Rev	Date	Drawn	Eng	Description
B	29.05.03	LM.	S.B.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	LM.	S.B.	FOR INFORMATION ONLY

Wedgerman AHW Consulting Engineers

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ACN 000 000 000

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 3

Title
LEVEL 2
VENTILATION LAYOUT

Drawn: LM.
Engineer: S.B.
Scale: 1:100

Checked

Job No. 20555
Drawing No. S3-M03
Rev. B

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 00364
12 NOV 2003
CERTIFICATION

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MESH CLADDING

CROSS BRACING - SEE DWG S-A

MAKE-UP AIR ALONG THIS SIDE

FFL1345

FFL1342

NOTE: THIS FLOOR IS NATURALLY VENTILATED IN STAGE 2

FFL1342

FFL1345

CROSS BRACING - SEE DWG S-A

MESH WALL

RAMP DOWN FROM UPPER TO LOWER LEVEL (SAME FLOOR)

FFL1955

FFL1955

CAR PARK EXHAUST FAN AND ACOUSTIC TREATMENT RELOCATED FROM LEVEL 2 - DISCHARGE TO ATMOSPHERE

NEW PLANTROOM WALL

MCC1 FROM LEVEL 1

BUILDERSWORK RISER SHAFT FROM BELOW

FFL1925

MAKE-UP AIR ALONG THIS SIDE

S.LID WALL CONCRETE PANELS

MESH TO ALONG WATER SPRINKLER

CROSS BRACING - SEE DWG

FFL1942

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

THIS DRAWING IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Chg	Description
B	21.05.03	I.M.	S.B.	REVISED STAGE 1 TENDER ISSUE
A	23.05.03	I.M.	S.B.	FOR INFORMATION ONLY

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NSW 2067, Australia

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Email: mail.manager@wilder.com.au
Internet: www.wilder.com.au
ABN 11 103 894 720
ACN 103 894 720

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 2

Title
LEVEL 2
VENTILATION LAYOUT

Drawn: I.M.
Engineer: S.B.
Scale: 1:100

Checked

Job No. 20555

Drawing No. S2-M03

Rev. B

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR THROUGH OPEN SIDED WALL

MAKE-UP AIR ALONG THIS SIDE

NOTE: NO CHANGES TO THIS FLOOR IN STAGE 3

EXISTING 2000x4500 HEAVY DUTY GRILLE, C/W OBD, FITTED TO UNDERSIDE OF PLENUM - 17,500 L/s

EXISTING 300mm DEEP SHEETMETAL PLENUM FITTED TO UNDERSIDE OF RISER SHAFT

EXISTING 2000x200 DUCTWORK TRANSFORM TO 1000x300

EXISTING 1000x600 HEAVY DUTY GRILLE C/W OBD - 2000 L/s

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

MAKE-UP AIR ALONG THIS SIDE

IN THE CERTIFICATION FOR-
PROJECT No: J 03384
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Chkd	Description
A	23.05.03	I.H.	S.D.	FOR INFORMATION ONLY

Wilkinson AHW
Consulting Engineers

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

mechanical services - Stage 3

Title
GROUND FLOOR
VENTILATION LAYOUT

Drawn: A.J.	Checked
Engineer: B.M.	
Scale: 1:100	
Job No. 20555	Drawing No. S3-M01
	Rev. A

Electical Services
Pittwater Council Car Park
Bungan Lane

Drawing Schedule

20555-E01	Legend And Single Line Details
20555-E02	Ground Floor Lighting & Power Layout
20555-E03	First And Second Floor Lighting & Power Layout - For Information Only
20555-E04	Third Floor Lighting & Power Layout (First Floor in Stage 1)

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TO IN THE CERTIFICATION FOR-
PROJECT No: J 03354
12 NOV 2003
CERTIFICATION

POWER

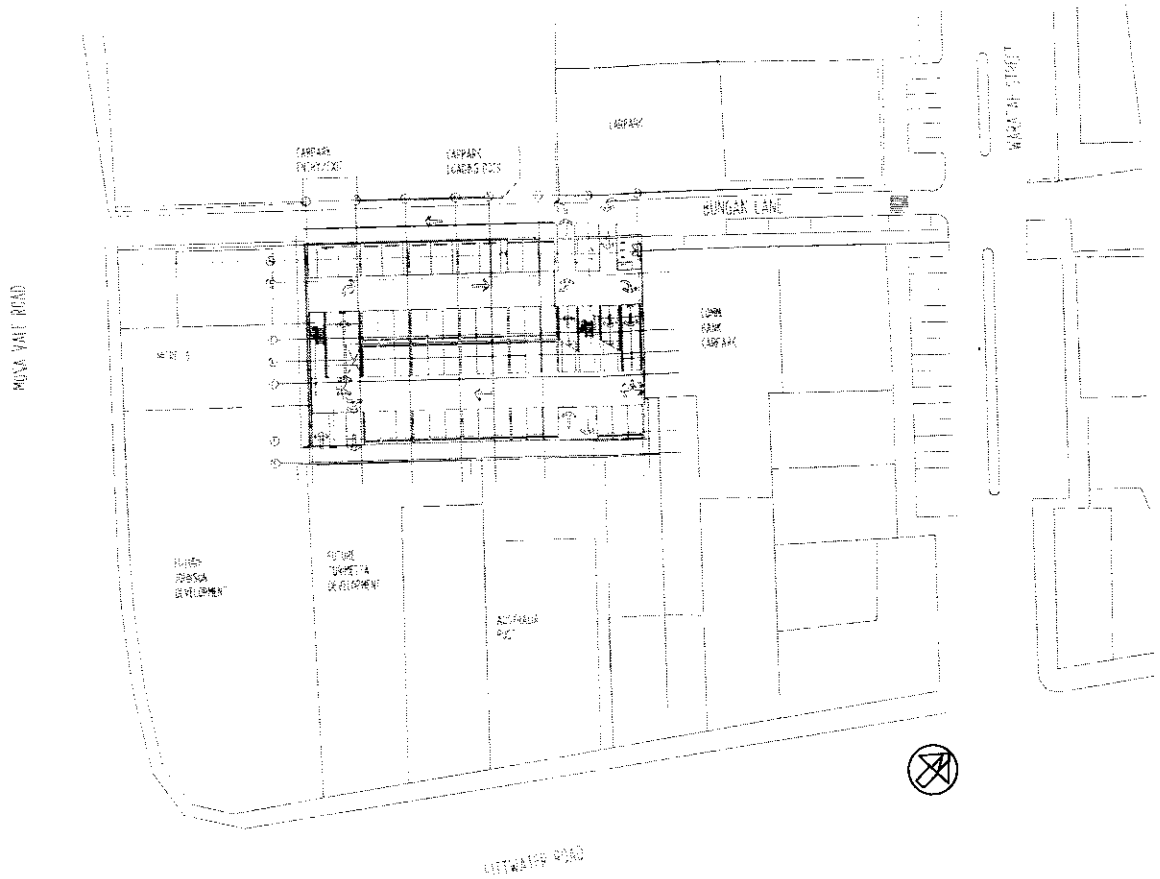
- ELECTRICAL MAIN SWITCHBOARD
- ELECTRICAL DISTRIBUTION BOARD
- METER PANEL
- SINGLE 10A 240V SOCKET OUTLET WEATHERPROOF TYPE EQUAL TO CLIPSAL IP66 SERIES MOUNTING HEIGHT SHOWN ADJACENT
- MECHANICAL SERVICES SWITCHBOARD/CONTROL PANEL (PROVIDED BY MECHANICAL SERVICES SUBCONTRACTOR)
- MECHANICAL SERVICES SWITCHBOARD/CONTROL PANEL (PROVIDED BY MECHANICAL SERVICES SUBCONTRACTOR)

LIGHTING

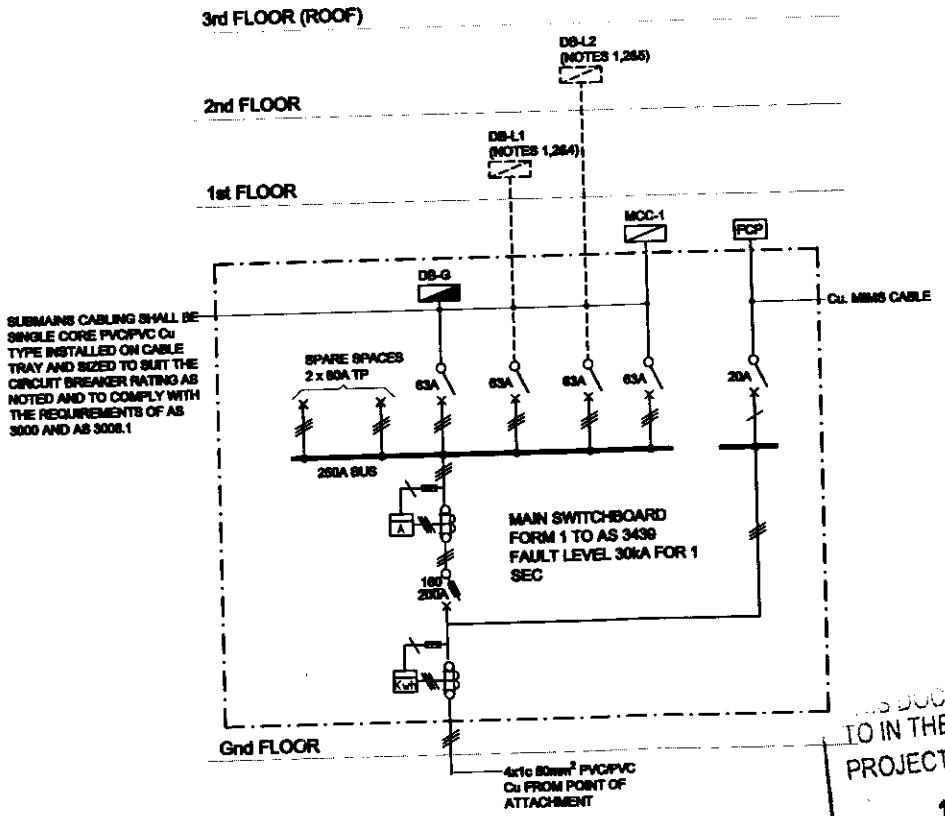
- A — 2 x 36WATT SURFACE MOUNTED WEATHERPROOF FLUORESCENT LUMINAIRE EQUAL TO PIERLITE LIGHTING SDW SERIES
- CW — SIMILAR TO TYPE "A" AND COMPLETE WITH INTEGRAL EMERGENCY BATTERY AND INVERTER TO OPERATE ONE LAMP W-DENOTES LUMINAIRE MOUNTED STAIR HAND RAILING
- E — 1 X 36W WALL MOUNTED EXTRUDED ALUMINIUM FLUORESCENT LUMINAIRE INSTALLED CONTINUOUSLY AND SHALL BE EQUAL TO AUSTUBE 75 SERIES
- C — DUAL HEAD 250W METAL HALIDE POST TOP CAR PARK LUMINAIRE EQUAL TO SYLVANIA LIGHTING NIGHTSTAR Cat. No 50802 COMPLETE WITH 6m GAVLANISED POLE AND POWDER COATED IN A COLOUR TO BE SELECTED BY THE ARCHITECT. THE FITTINGS SHALL BE STAGGERED TO MATCH THE CAR PARK ROOF LEVEL THAT IS ONE OF THE FITTINGS SHALL BE 1.45m LOWER DOWN FROM THE TOP OF THE POLE.
- D — SIMILAR TO TYPE "C" EXCEPT SINGLE HEAD AND COMPLETE WITH GLARE SHIELD AND 6m POLE GALVANISED AND POWDER COPATED COMPLETE WITH 6m GAVLANISED POLE AND POWDER COATED IN A COLOUR TO BE SELECTED BY THE ARCHITECT
- WP EXIT — 10WATT FLUORESCENT MAINTAINED MODE WEATHERPROF EMERGENCY EXIT LUMINAIRE EQUAL TO STANILITE LIGHTING IP65 WEATHERPROOF SERIES
- WP EXIT — 10WATT FLUORESCENT MAINTAINED MODE POLE MOUNTED WEATHERPROOF EMERGENCY EXIT LUMINAIRE EQUAL TO STANILITE LIGHTING WEATHERPROOF SERIES COMPLETE WITH 2.7m HIGH GALVANISED POLE
- F — 150 WATT METAL HALIDE FLOOD LIGHT FOR CAR PARK SIGNAGE EQUAL TO WE-EF PIA340 SERIES COMPLETE WITH 700mm OUTREACH ARM AND GLARE SHIELD
- FUTURE INGROUND LIGHT FITTING

MISCELLANEOUS

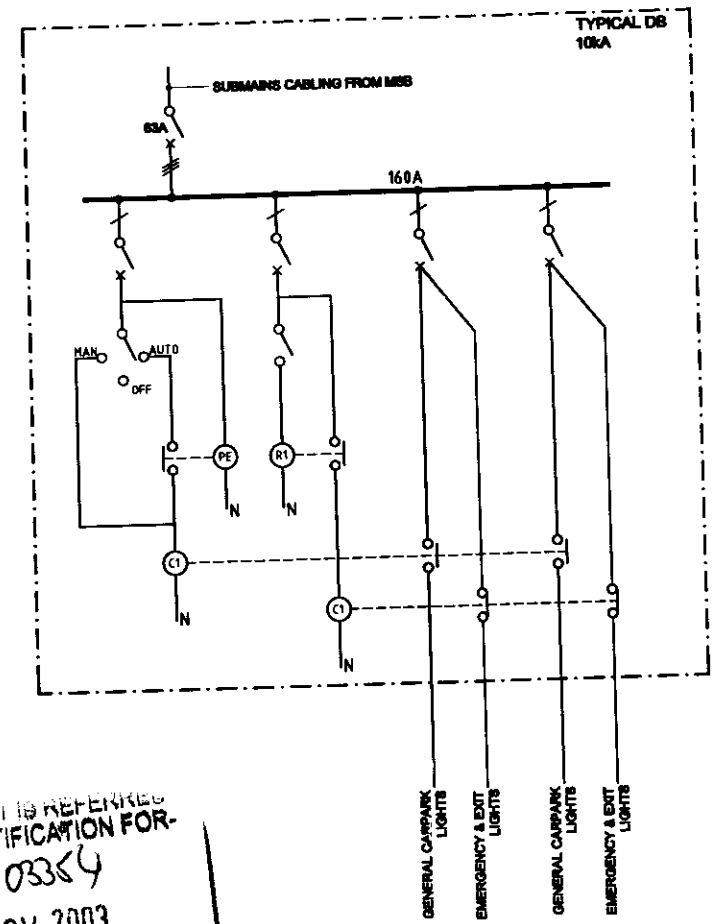
- 20A — MINIATURE CIRCUIT BREAKER RATING AS NOTED
- NORMALLY OPEN CONTACTS
- NORMALLY CLOSED CONTACTS
- 160 200A — COMBINED FUSE SWITCH FUSE RATING ABOVE LINE CARTRIDGE SIZE NOTED BELOW LINE
- kWh — SUPPLY AUTHORITY METERS AND ASSOCIATED CT EQUIPMENT
- A — SUPPLY AUTHORITY AMMETER AND ASSOCIATED CT EQUIPMENT
- PE — PHOTO ELECTRIC CELL
- KEY OPERATED MOMENTARY SWITCH
- FCP — FIRE SHUTTER CONTROL PANEL (BY FIRE SERVICES SUBCONTRACTOR)
- C1 — CONTACTOR COIL
- R1 — LATCHING TIMED RELAY, INSTANT CLOSE 1.5HR DELAY TO OPEN.



LOCATION PLAN



SINGLE LINE DIAGRAM
MAIN SWITCHBOARD



SINGLE LINE DIAGRAM
TYPICAL DISTRIBUTION BOARD

NOTES

01. THE CAR PARK WILL BE CONSTRUCTED IN THREE STAGES AS FOLLOWS:
- STAGE 1 - GROUND AND 1st FLOOR
- STAGE 2 - 2nd FLOOR
- STAGE 3 - 3rd FLOOR

02. DURING EACH STAGE THE TOP FLOOR SHALL BE THE ROOF LEVEL. LIGHTING AND POWER SHALL BE INSTALLED AS PER THE 3rd FLOOR AS SHOWN ON DRAWING E04 ARRANGEMENT. ALL SUBCIRCUITS SHALL ORIGINATE FROM THE DISTRIBUTION BOARD OF THE LEVEL BELOW.

03. THE EXACT LOCATION OF ALL EQUIPMENT SHALL BE CONFIRMED ON SITE PRIOR TO INSTALLATION.

03. ALL EMERGENCY AND EXIT LUMINAIRES SHALL BE USED VIA AN UNSWITCHED ACTIVE.

04. DB-L1 SHALL BE INSTALLED AS PART OF STAGE 2 WORKS

05. DB-L2 SHALL BE INSTALLED AS PART OF STAGE 3 WORKS

06. REFER TO DRAWING 20555-E03 FOR SIGNAGE LIGHTING

...S DOCUMENT IS REFERRED
TO IN THE CERTIFICATION FOR-
PROJECT No: J 08354
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Check	Dwg	Description
A	23.05.03	S.U.	L.T.	STAGE 1 TENDER ISSUE

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ABN 11 109 004 705
ACN 109 004 705

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

electrical services

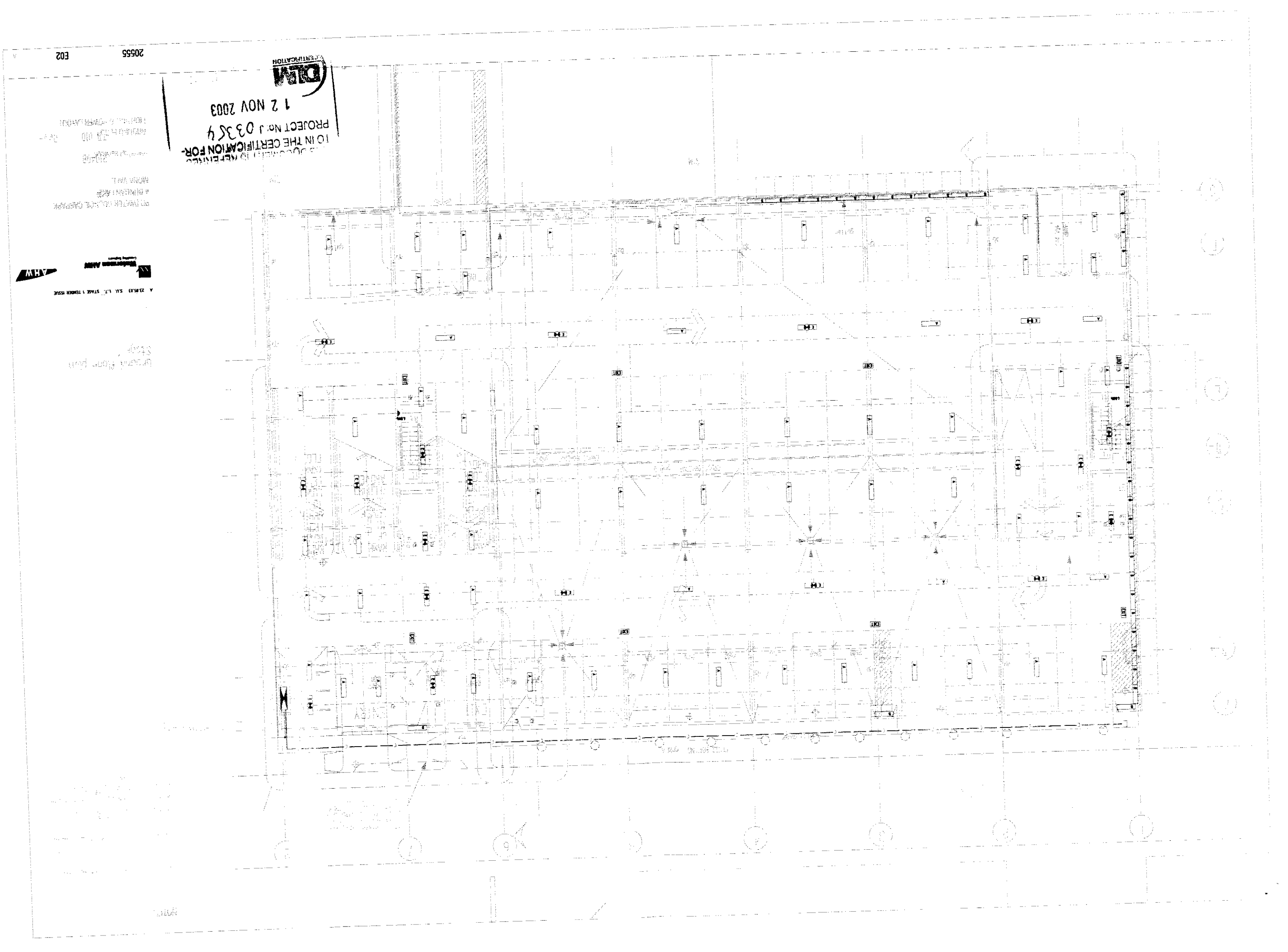
Title
LEGEND AND SINGLE LINE DETAILS

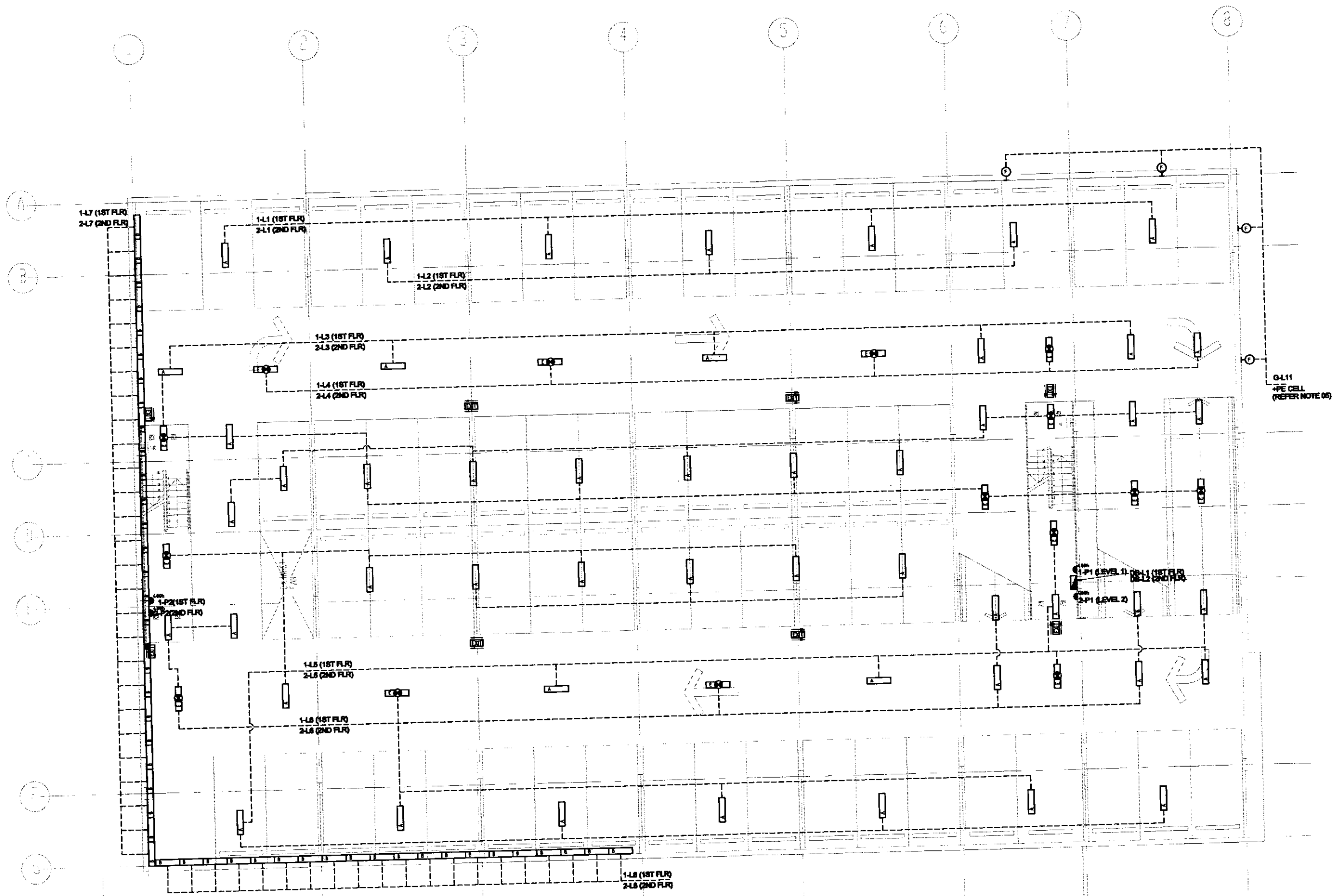
Drawn:	S.K.H.	Checked
Engineer:	L.T.	
Scale:	NTS	

Job No.	Drawing No.	Rev.
20555	E01	A

1 2 NOV 2003
PROJECT No: J 03364
10 IN THE CERTIFICATION FOR-

20555 E02





NOTES

01. FOR LEGEND REFER TO DRAWING E01.

02. THE EXACT LOCATION OF ALL EQUIPMENT SHALL BE CONFIRMED ON SITE PRIOR TO INSTALLATION.

03. ALL EMERGENCY AND EXIT LUMINAIRES SHALL BE WIRED VIA A DEDICATED UNSWITCHED ACTIVE TO THE REQUIREMENTS OF AS 2293.1.

04 REFER TO ELECTRICAL SPECIFICATION AND DRAWING E01 FOR STAGING WORKS.

05. FLOOD LIGHTS SHALL BE MOUNTED ABOVE THE SIGNAGE. REFER TO ARCHITECTURAL DETAIL FOR EXACT LOCATION OF SIGNAGE.

06. FOR MOUNTING ARRANGEMENT OF TYPE 'B' LIGHT FITTINGS REFER TO ARCHITECTURAL DRAWING DETAIL.

THIS DOCUMENT IS REFERRED TO IN THE CERTIFICATION FOR-
PROJECT No: J
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Dsg	Description
A	23.05.03	S.U.	L.T.	FOR INFORMATION ONLY

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Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

electrical services

Title
FIRST and SECOND FLOOR
LIGHTING & POWER LAYOUT

Drawn: S.K.U.	Checked
Engineer: L.T.	
Scale: 1:100	
Job No. 20555	Drawing No. E03
	Rev. A

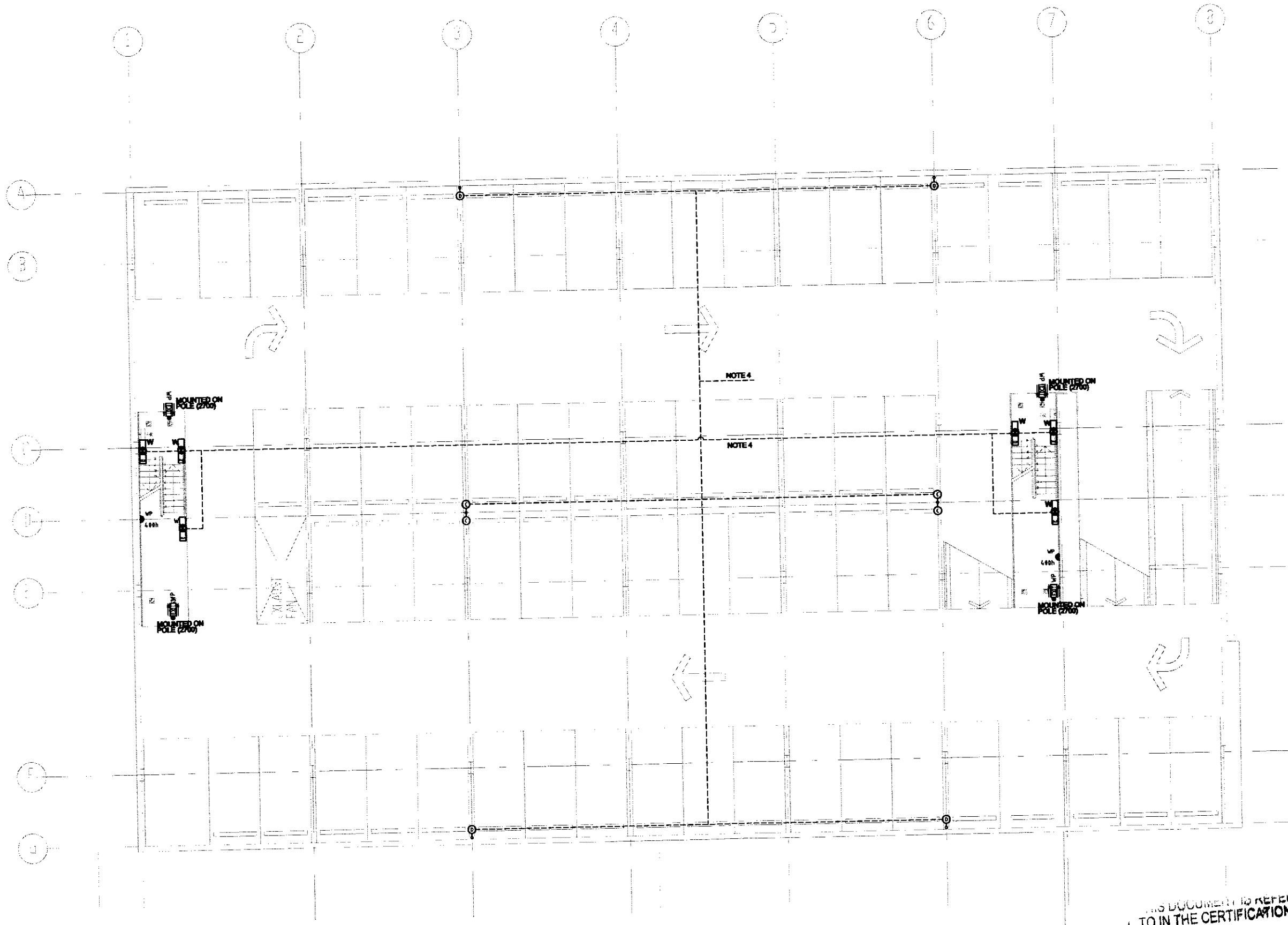
NOTES

01. FOR LEGEND REFER TO DRAWING E01.

02. THE EXACT LOCATION OF ALL EQUIPMENT SHALL BE CONFIRMED ON SITE PRIOR TO INSTALLATION.

03. ALL EMERGENCY AND EXIT LUMINAIRES SHALL BE WIRED VIA A DEDICATED UNSWITCHED ACTIVE TO THE REQUIREMENTS OF AS 2293.1.

04. REFER TO ELECTRICAL SPECIFICATION AND DRAWING E01 FOR STAGING WORKS.



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PROJECT No: J
12 NOV 2003
DLM CERTIFICATION

Rev	Date	Drawn	Eng	Description
A	23.05.03	S.U.	L.T.	STAGE 1 TENDER ISSUE

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Consulting Engineers

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ABN 11 100 004 720
ACN 100 004 720

Project
PITTWATER COUNCIL CARPARK
4 BUNGAN LANE
MONA VALE

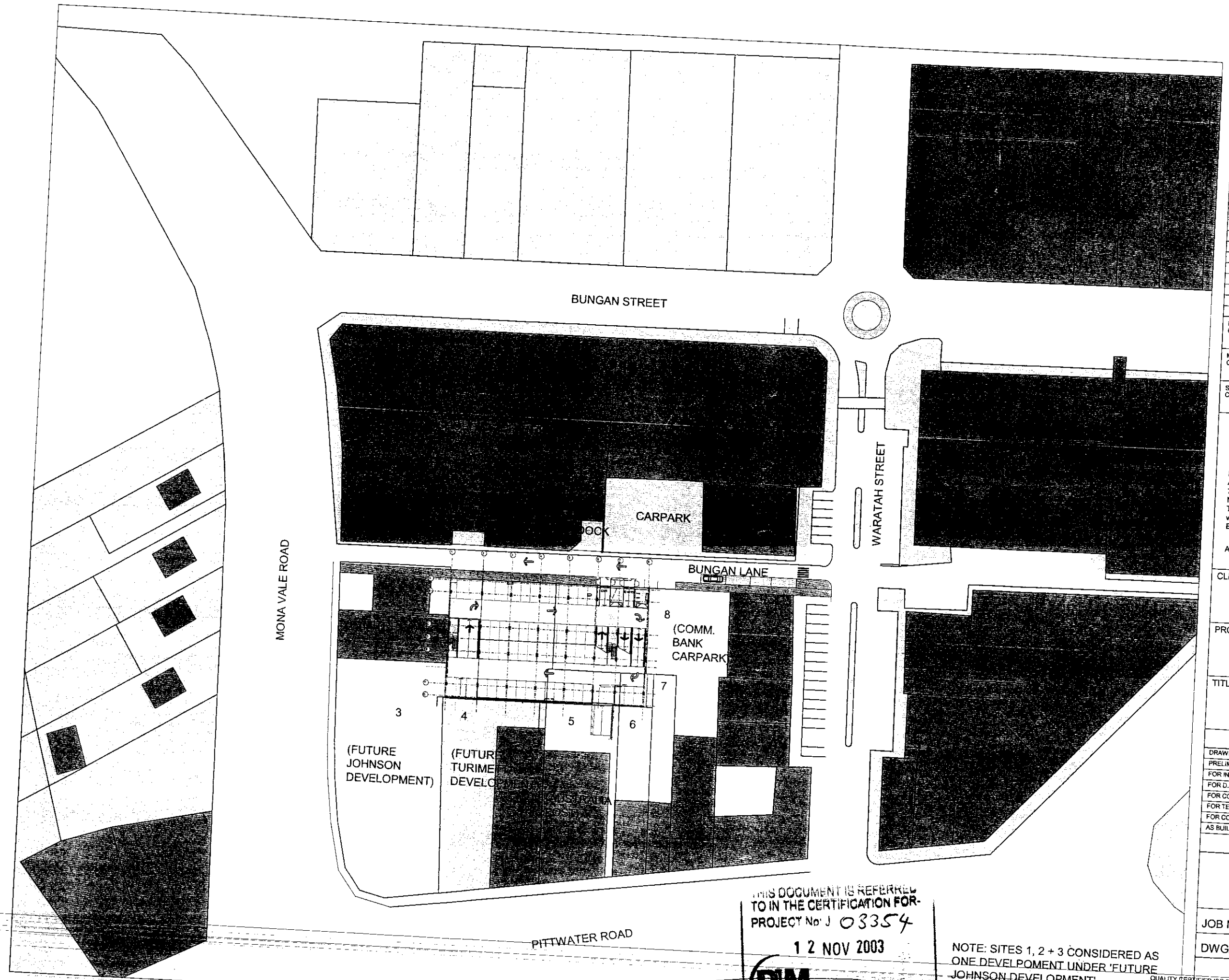
electrical services

Title
THIRD FLOOR
LIGHTING & POWER LAYOUT
(FIRST FLOOR IN STAGE 1)

Drawn: S.K.U.	Checked
Engineer: L.T.	
Scale: 1:100	

Job No.	Drawing No.	Rev.
20555	E04	A

Bungan Lane Carpark
Stage 1 Works



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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	SITE PLAN

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DWG/REV Nº.	TD 001

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SITE PLAN

FOR TENDER

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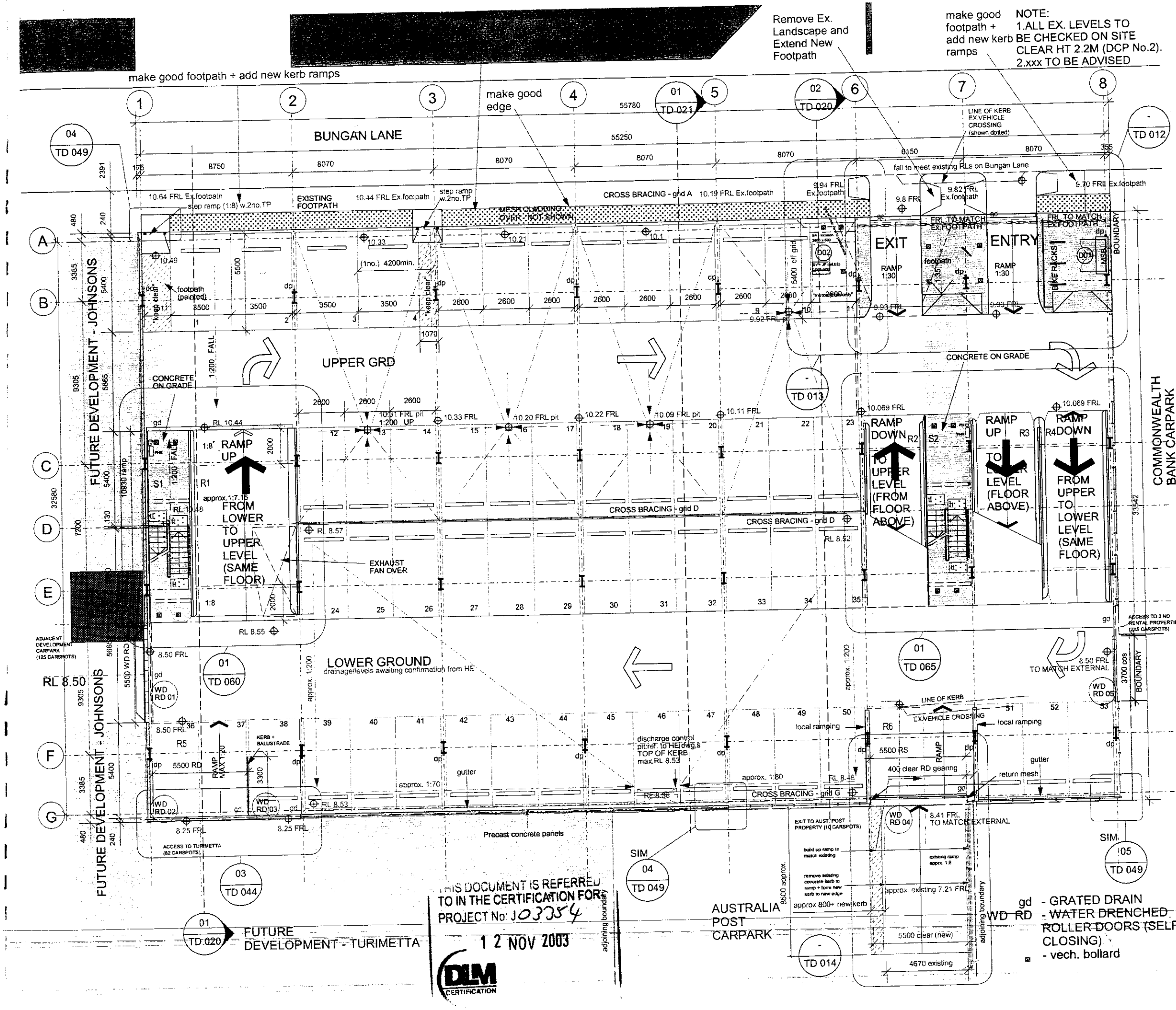
12 NOV 2003
DLM CERTIFICATION

NOTE: SITES 1, 2 + 3 CONSIDERED AS ONE DEVELPOMENT UNDER 'FUTURE JOHNSON DEVELOPMENT'



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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**Ground floor plan- Stage 1**

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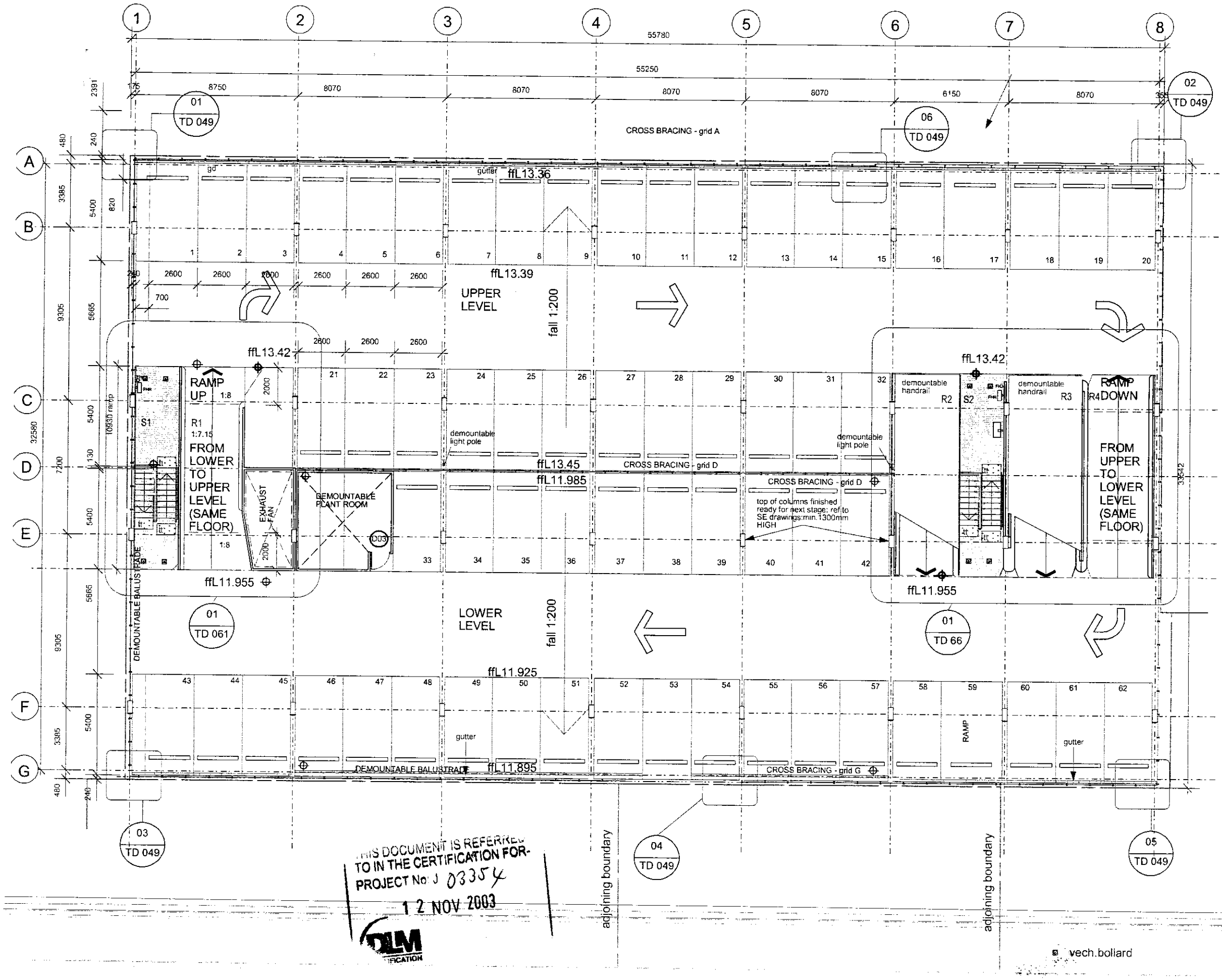

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	First floor plan STAGE 1

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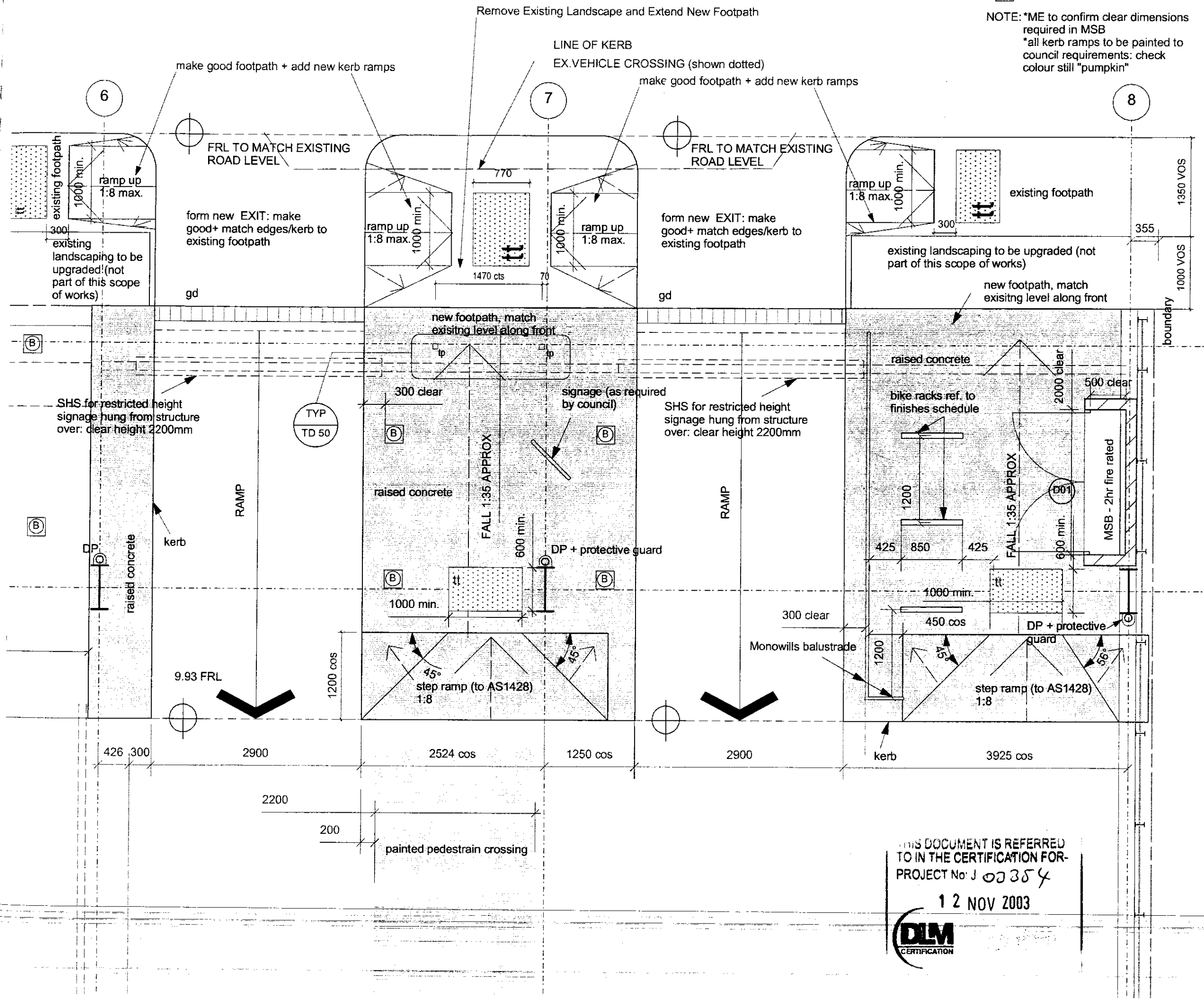

B bollards - ref to finishes schedule

NOTE: *ME to confirm clear dimensions required in MSB
*all kerb ramps to be painted to council requirements: check colour still "pumpkin"

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**Ground floor entry / exit plan - Stage 1**

DRAWING STATUS	REVIEWED BY	SIGNATURE	DATE
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SCALES	1:50
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DWG/REV N°.	TD 012 Rev-

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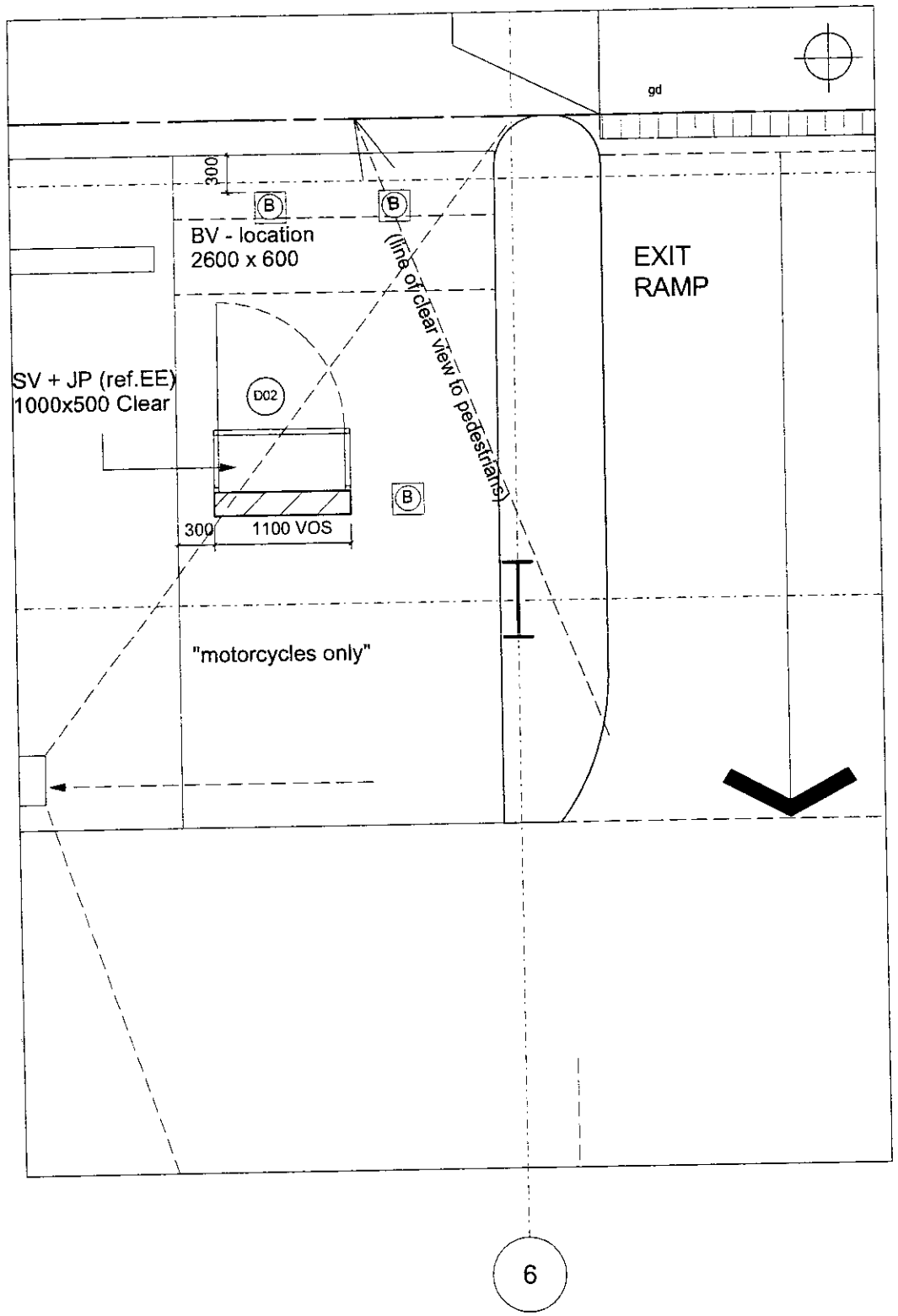
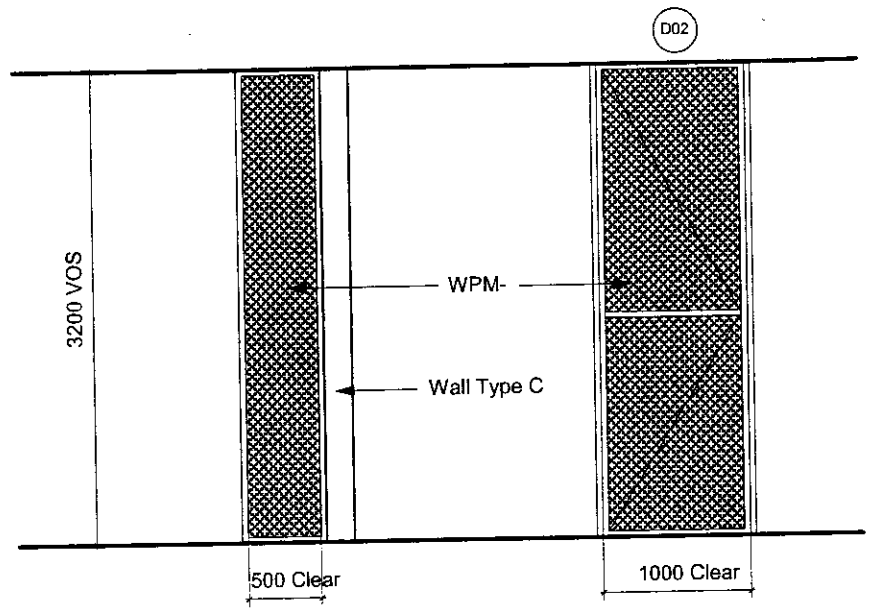
12 NOV 2003
DLM CERTIFICATION



01 Plan Sprinkler Riser Cupboard

B bollard

NOTE: MESH PANELS (WPM-) SPOT WELDED TO FRAME, WHOLE PANEL HOT DIPPED GALVANISED (AFTER MESH WELDED ON)



02-3 Elevations Sprinkler Riser Cupboard

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PROJECT No: J 03354
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Architecture Urban Design Landscape Interiors

CLIENT: Pittwater Council
units 9,11+12 5 Vuko Place
Warriewood NSW 2102
t: 02 9970 1111
f: 02 9970 7150

PROJECT: Bungan Lane Carpark
Mona Vale

TITLE: **Sprinkler Riser Cupboard**

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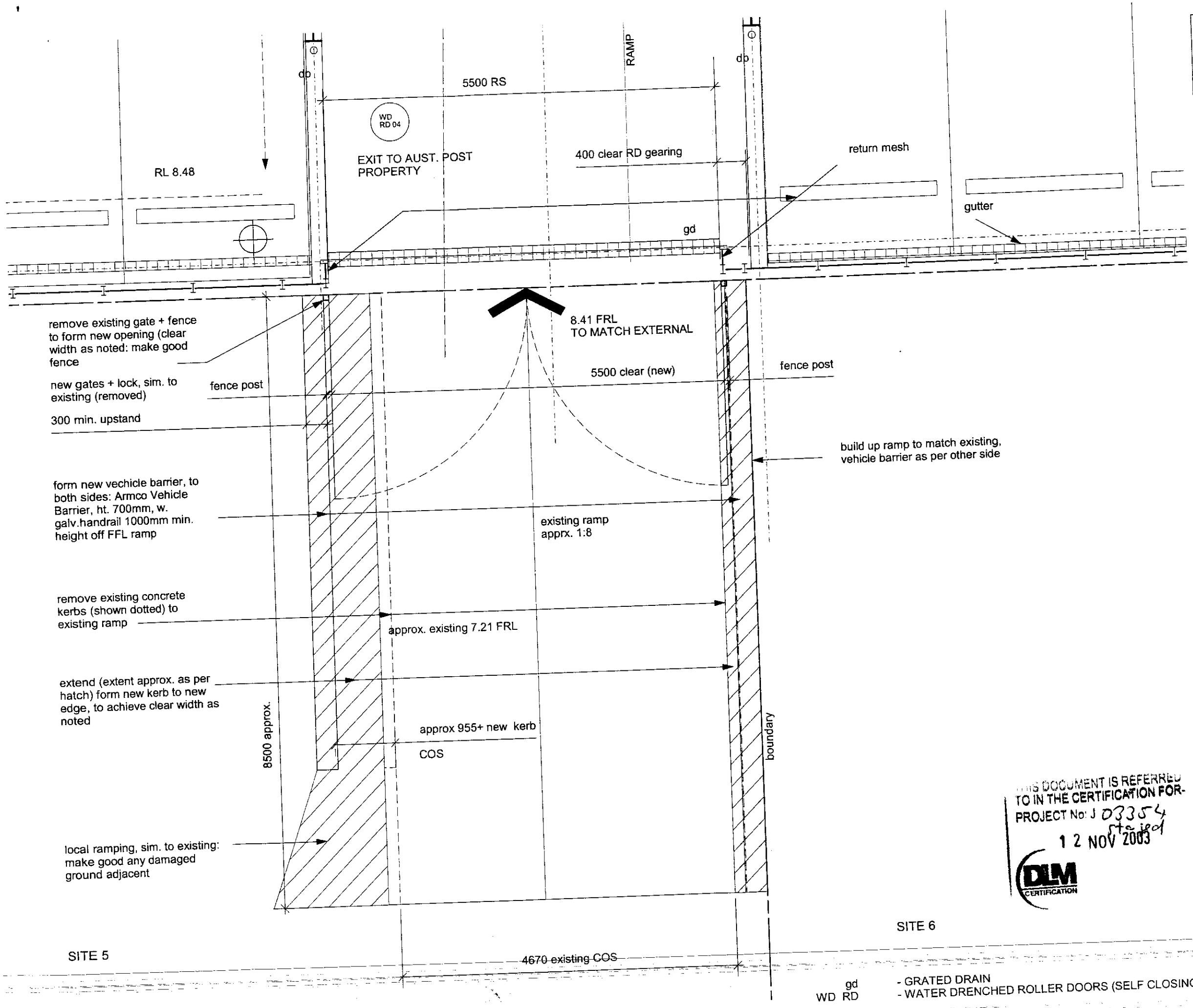

gd - GRATED DRAIN
WD RD - WATER DRENCHED ROLLER DOORS (SELF CLOSING)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**Ground floor plan** **Ramp into PO - R6**

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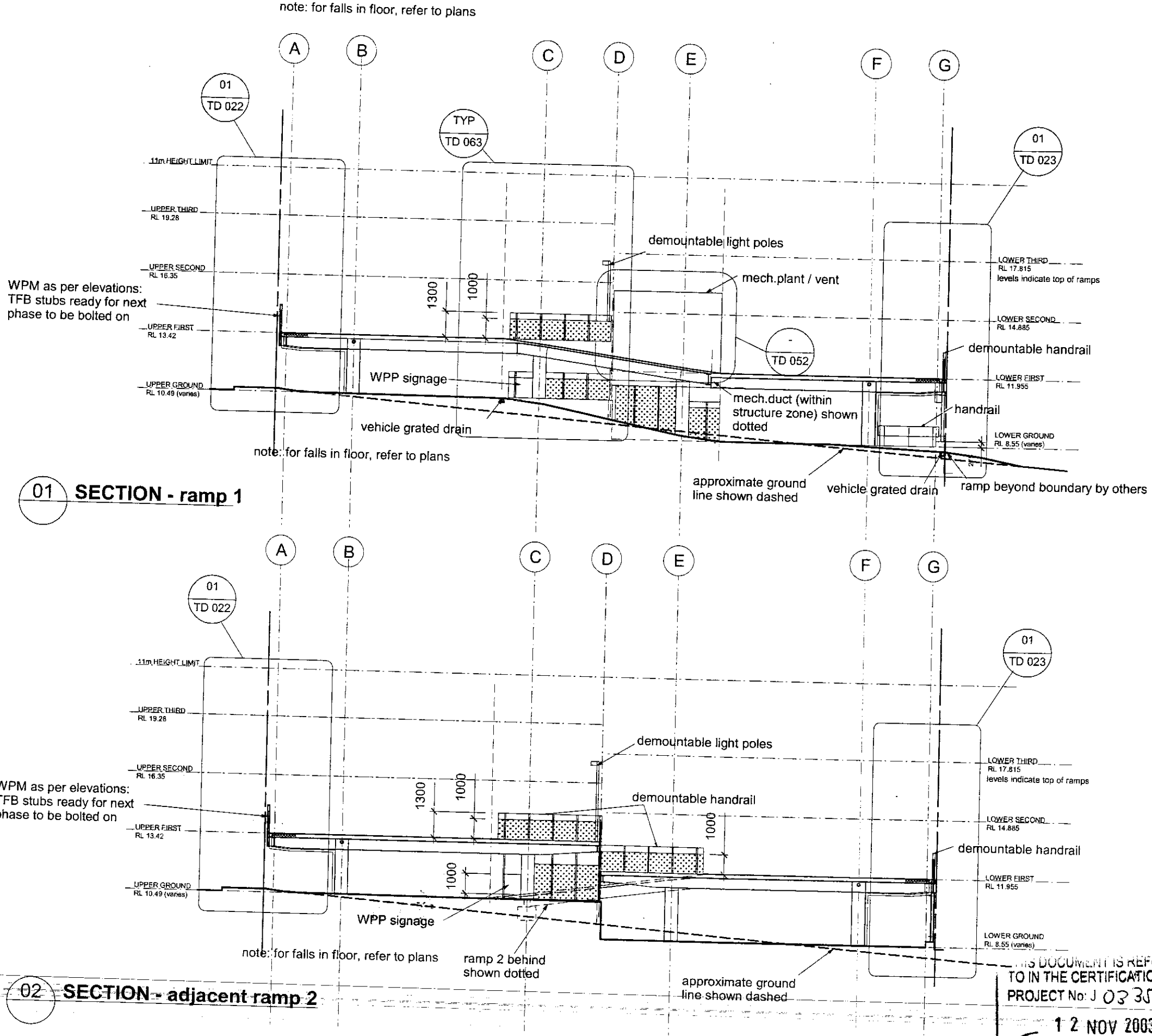

01 **SECTION - ramp 1**

02 **SECTION - adjacent ramp 2**

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Sections STAGE 1

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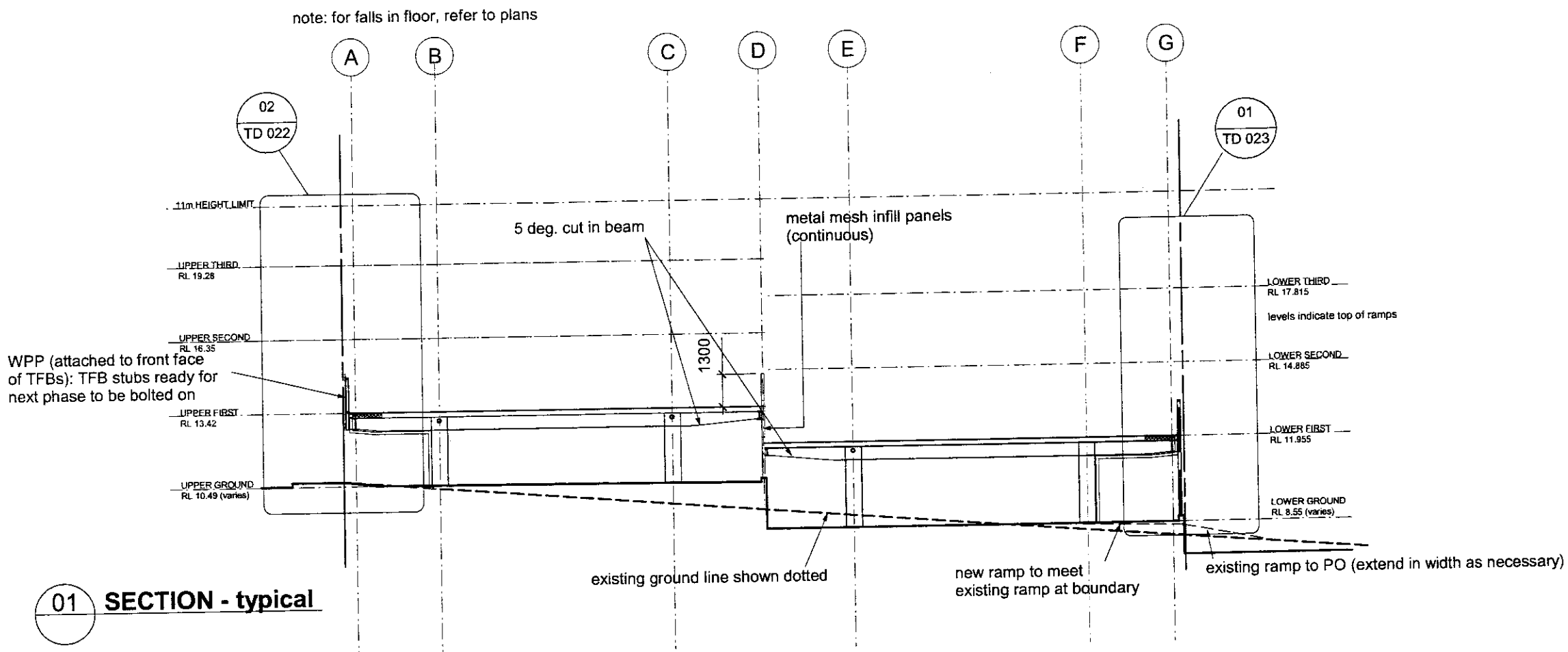

01 **SECTION - typical**

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Sections STAGE 1

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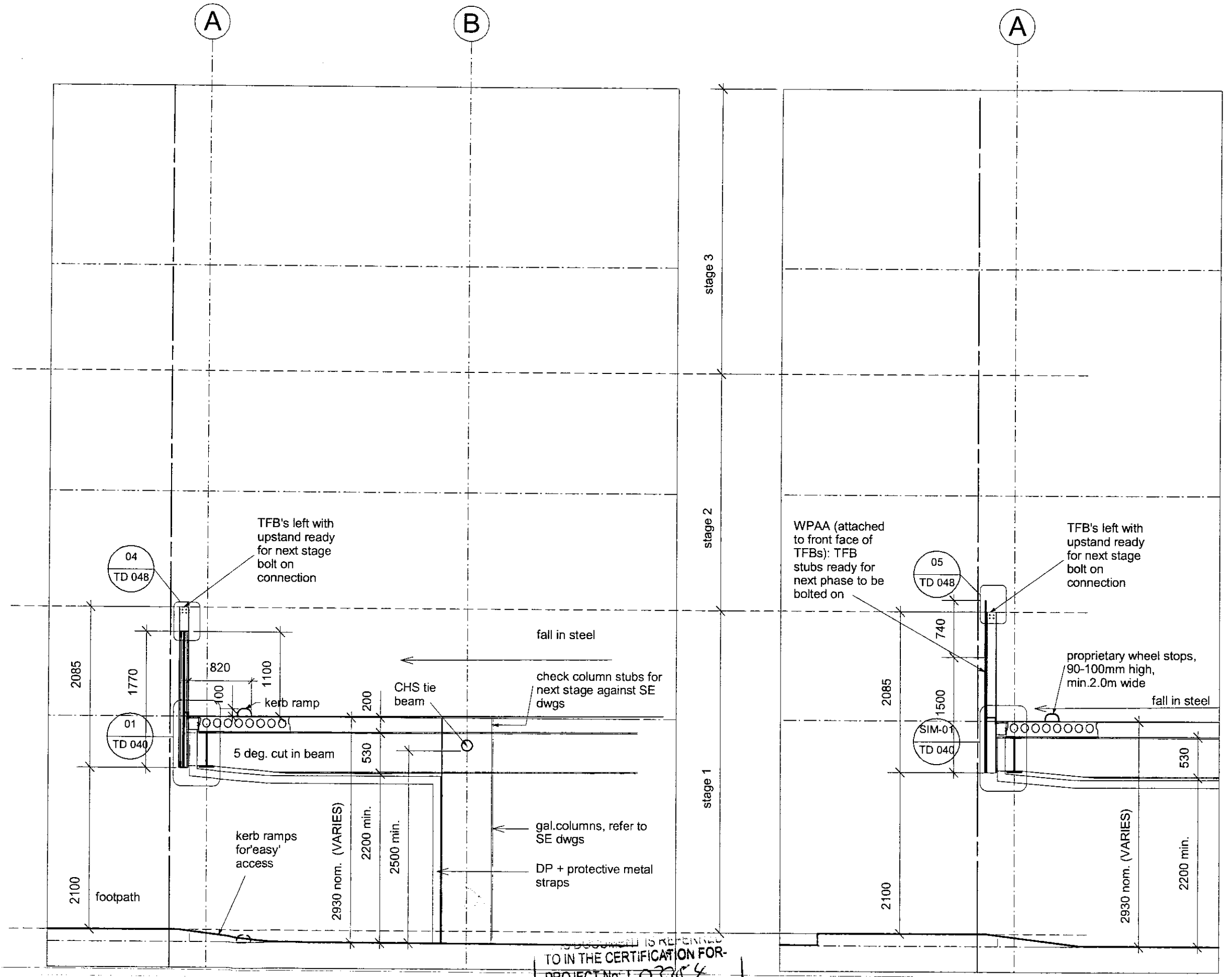

01 TYPICAL SECTION EXPANDED MESH, WEST WALL

NOTE: all structure to be checked against SE dwgs

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02 TYPICAL SECTION 'PIC PERF', WEST WALL

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections WEST WALL STAGE 1

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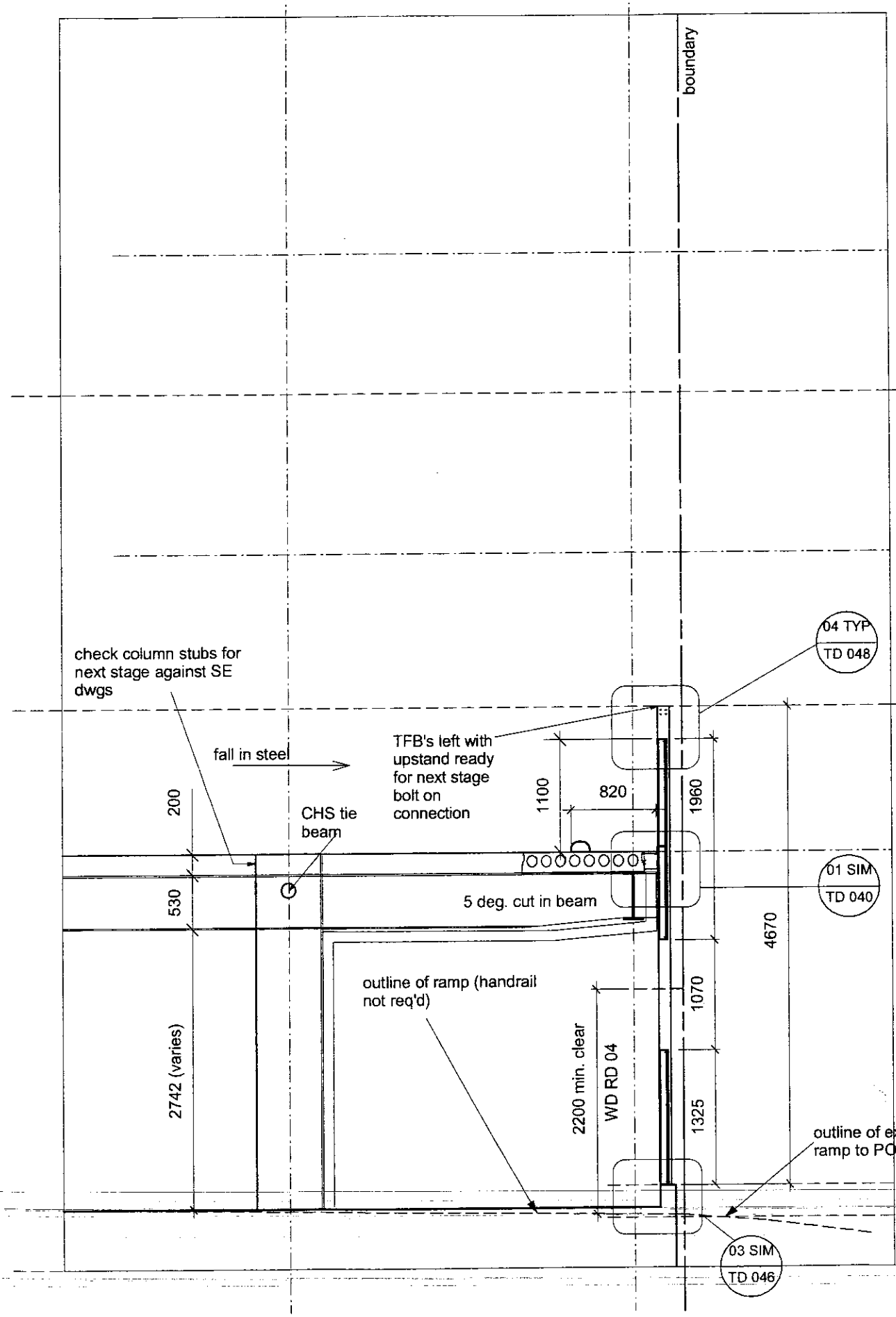
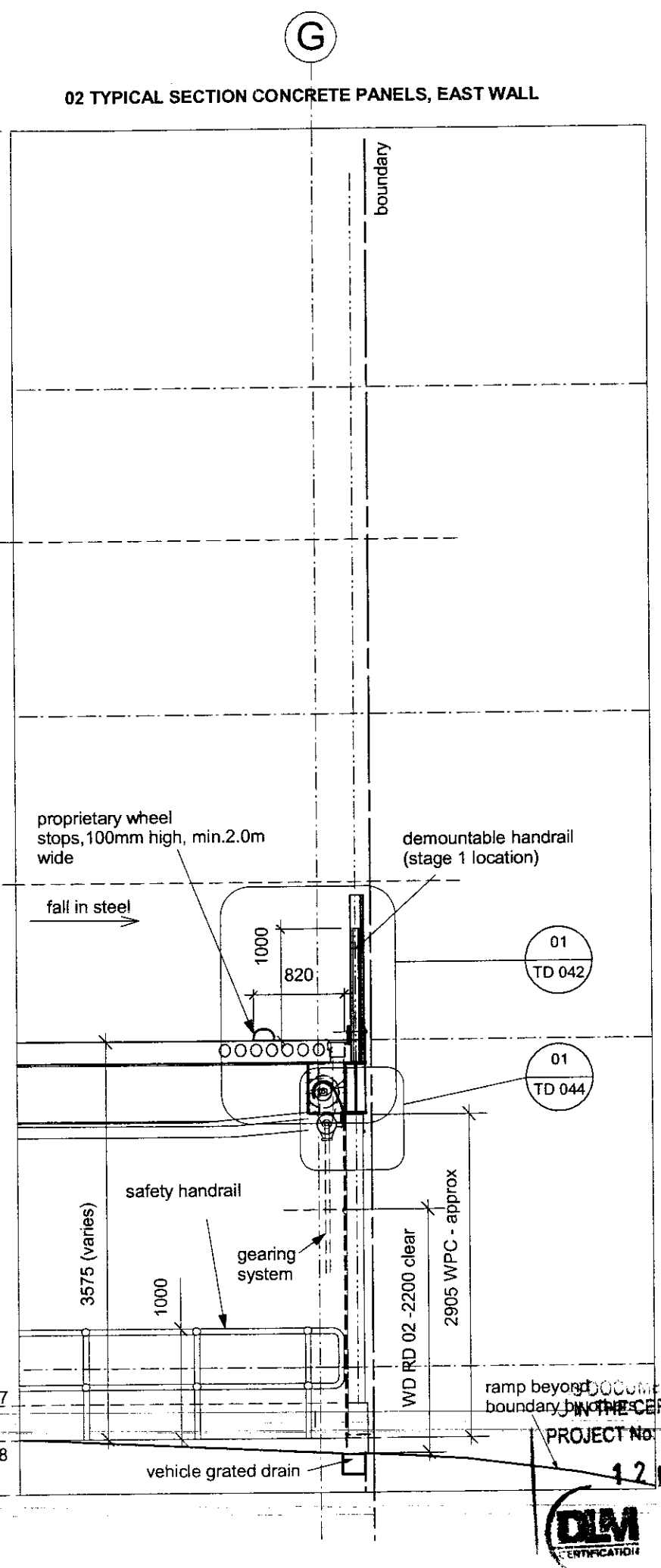
01 TYPICAL SECTION EXPANDED MESH, EAST WALL



02 TYPICAL SECTION CONCRETE PANELS, EAST WALL



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Architecture Urban Design Landscape Interiors

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections EAST WALL STAGE 1

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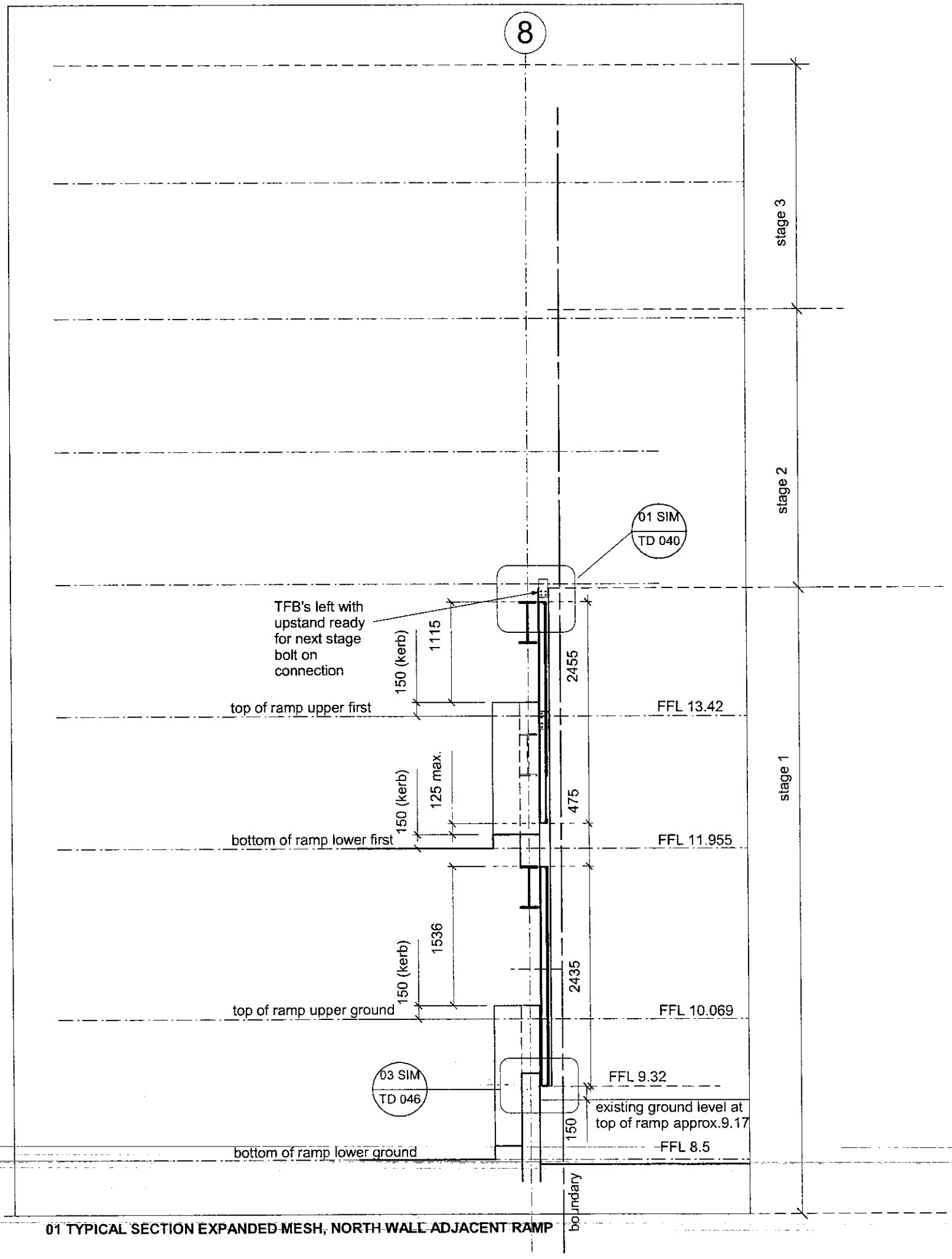

01 TYPICAL SECTION EXPANDED MESH, NORTH WALL ADJACENT RAMP

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections NORTH WALL (adjacent ramp) STAGE 1

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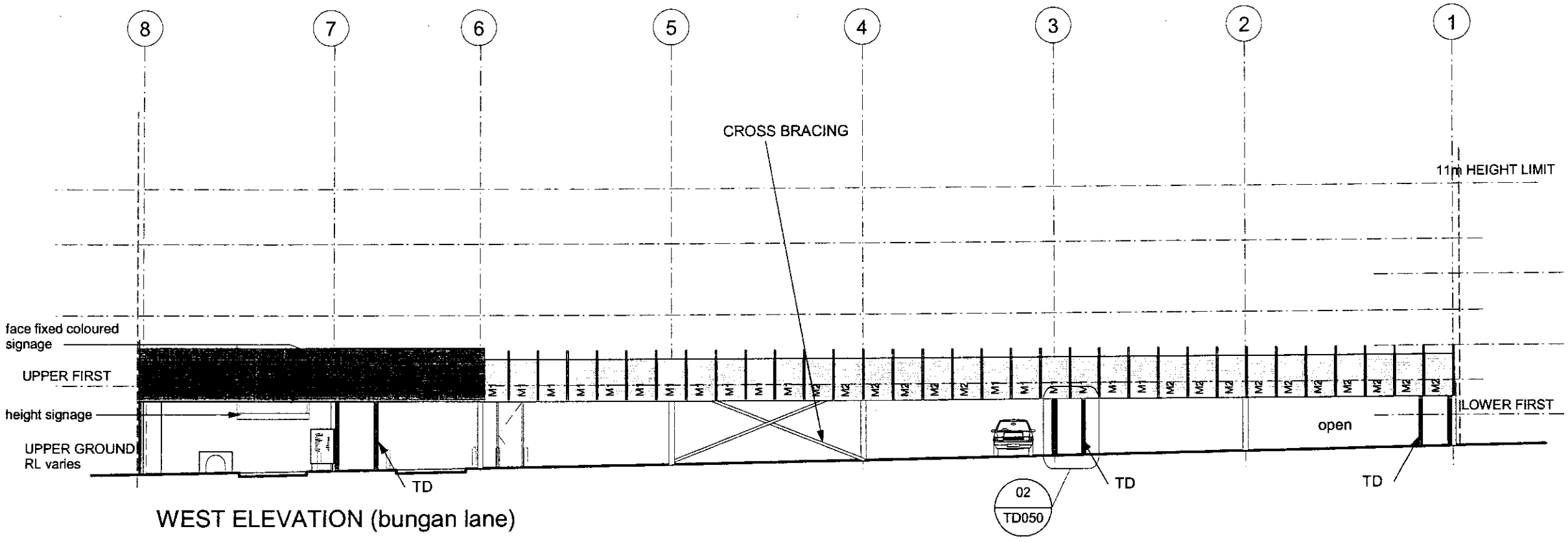
FOR TENDER

WD RD 05 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

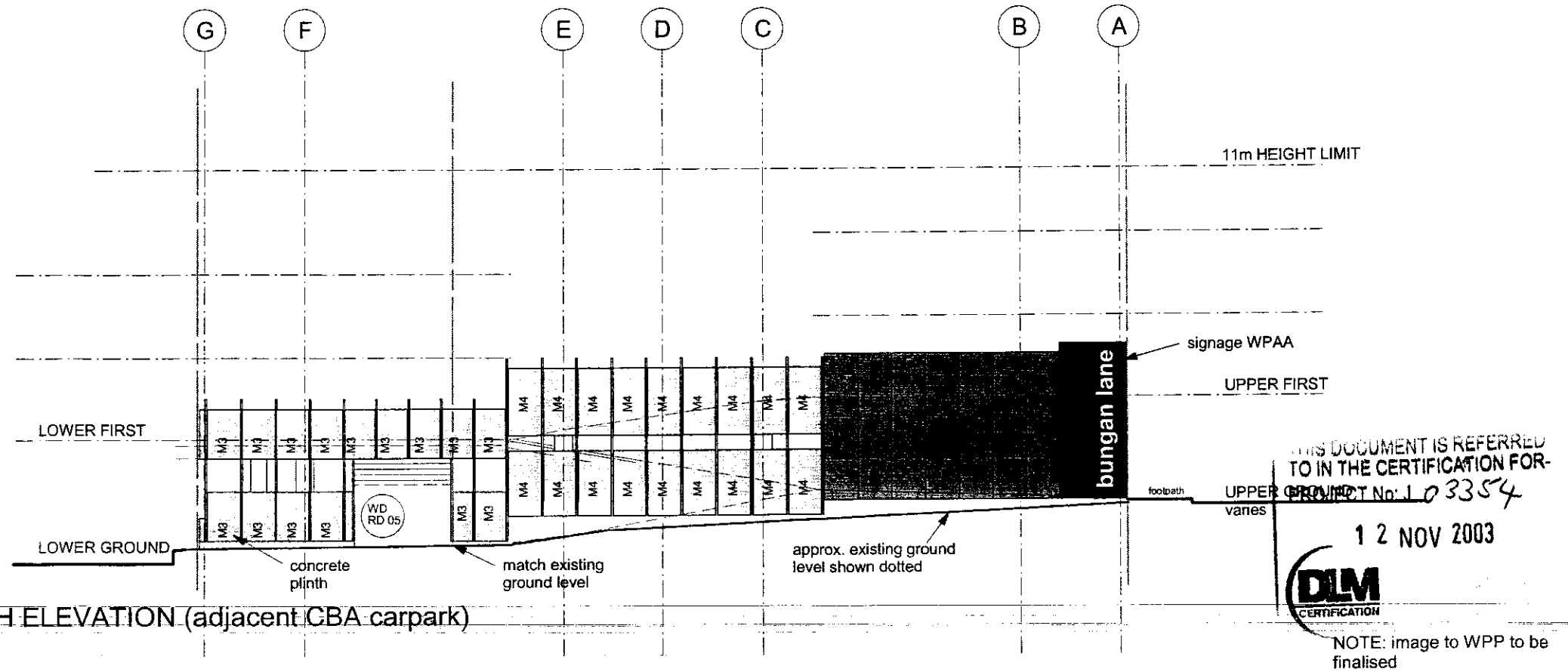
WPM- (as per finishes schedule)

WPP (col. as per finishes schedule)

WPAA (col. as per finishes schedule)



WEST ELEVATION (bungan lane)



NORTH ELEVATION (adjacent CBA carpark)

NOTE: image to WPP to be finalised

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations north + west STAGE 1

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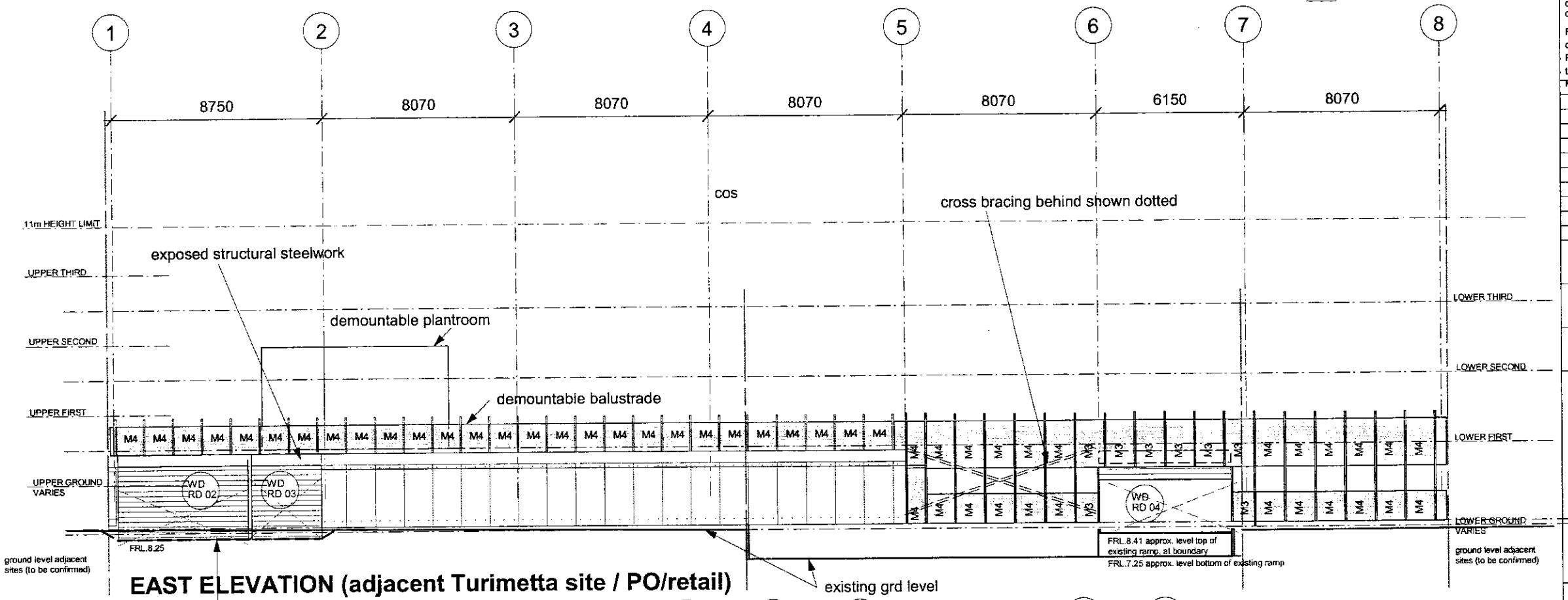
WD RD 04 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

NOTE: COLOURS INDICATIVE TO PANEL TYPE, NOT COLOURS

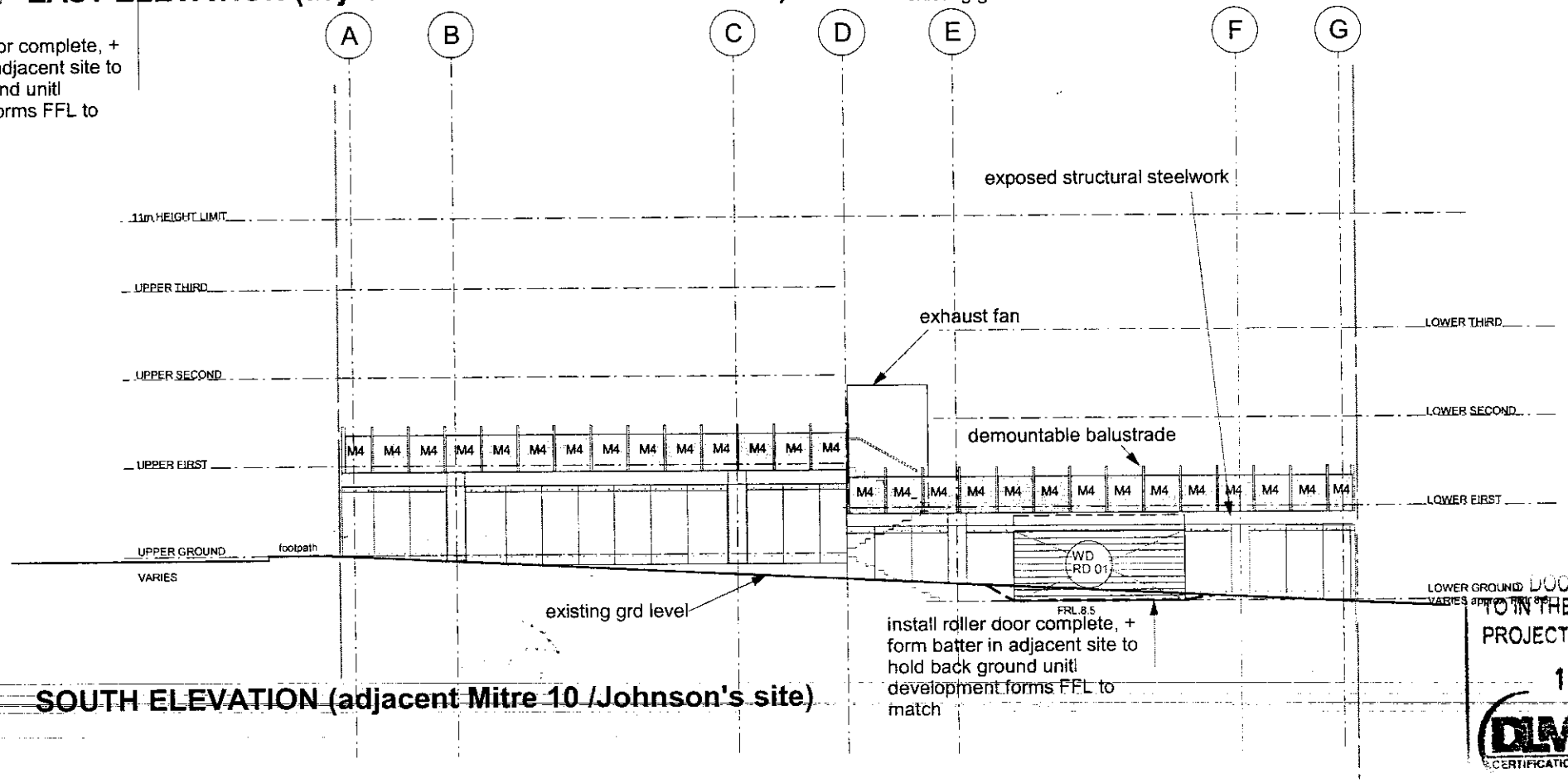
WPM- (as per finishes schedule)

CONCRETE PANELS



EAST ELEVATION (adjacent Turimetta site / PO/retail)

install roller door complete, + form batter in adjacent site to hold back ground unitl development forms FFL to match



SOUTH ELEVATION (adjacent Mitre 10 /Johnson's site)

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations east + south STAGE 1

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NOTE: COLOURS INDICATIVE TO PANEL TYPE, NOT COLOURS

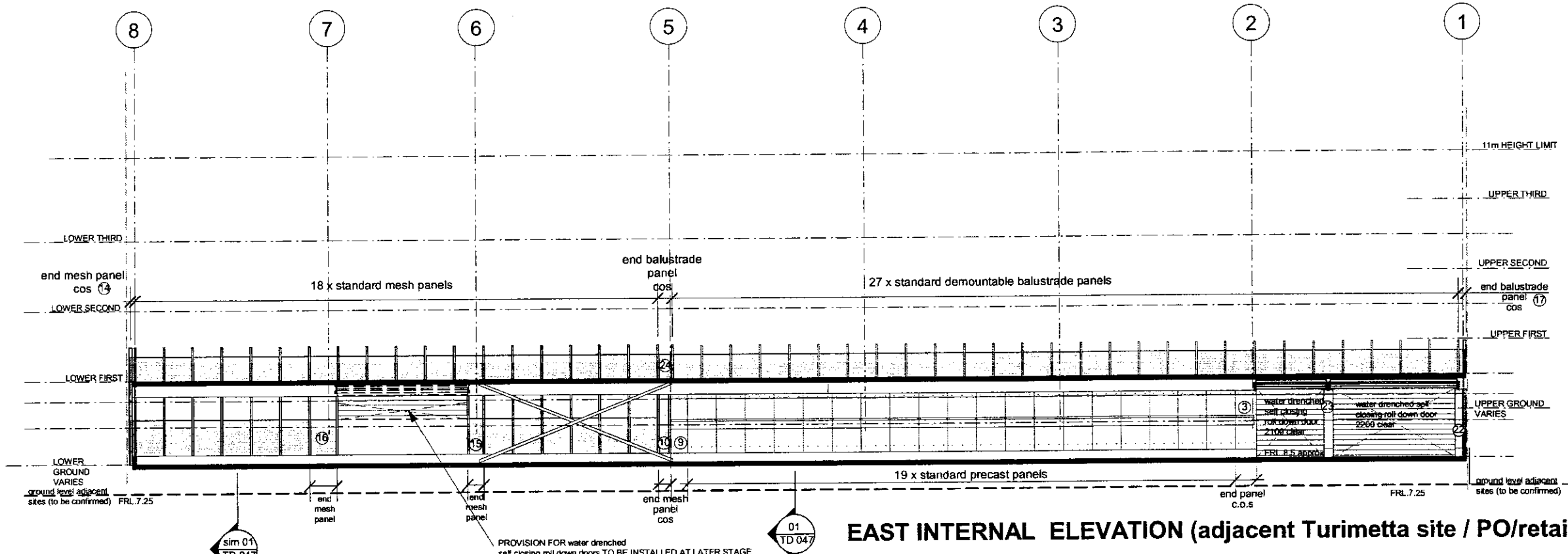
NOTE: ALL NON-REGULAR CONCRETE PANEL SIZES TO BE VERIFIED ON SITE. REFER TO DWG TD 041

NOTE: COLUMNS NOT SHOWN

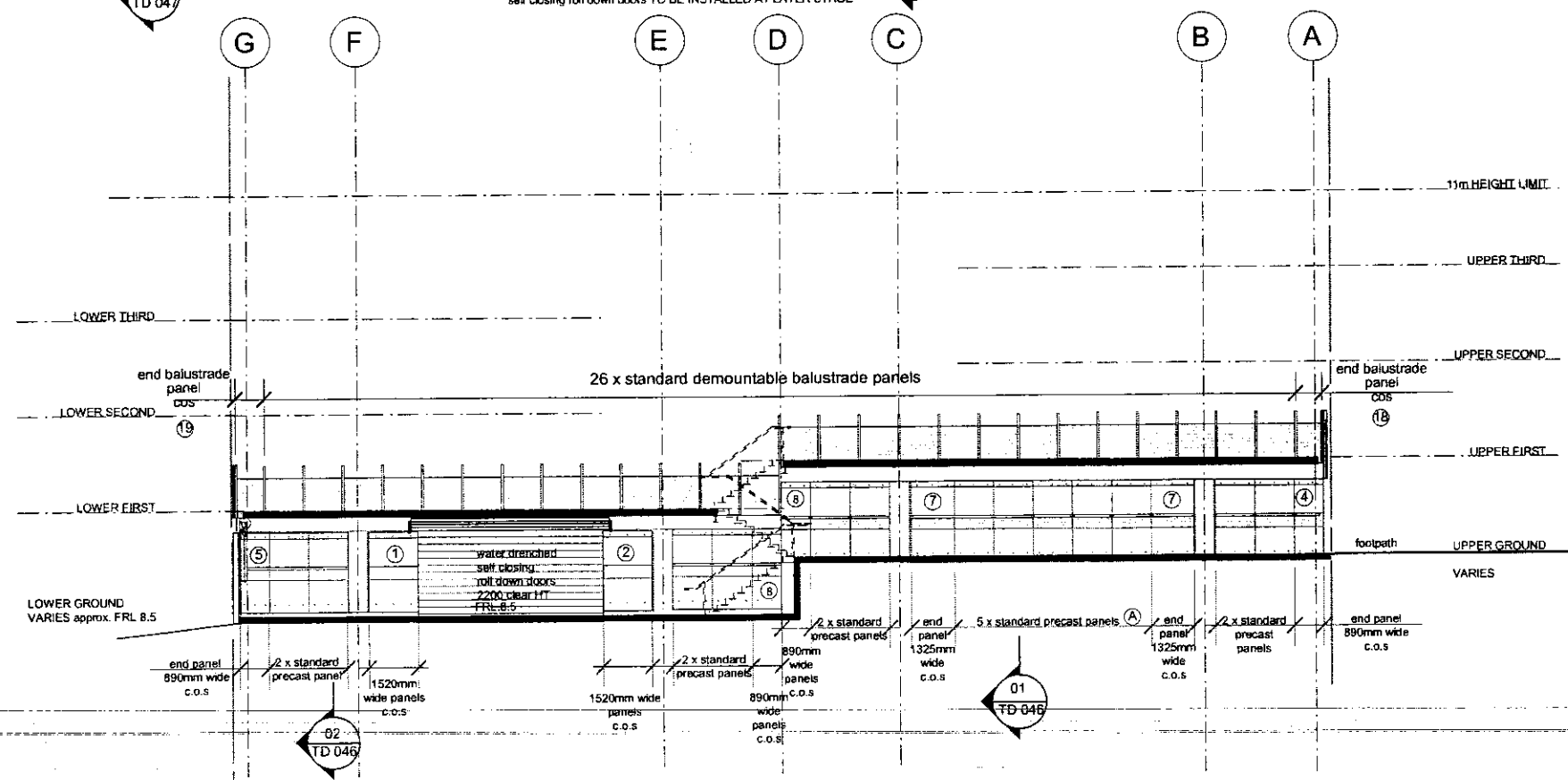
Ⓐ CONCRETE PANEL TYPE as per DWG TD041

WPM- (as per finishes schedule)

CONCRETE PANELS



EAST INTERNAL ELEVATION (adjacent Turimetta site / PO/retail)



SOUTH INTERNAL ELEVATION (adjacent Mitre 10 /Johnson's site)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**internal elevations east + south STAGE 1**

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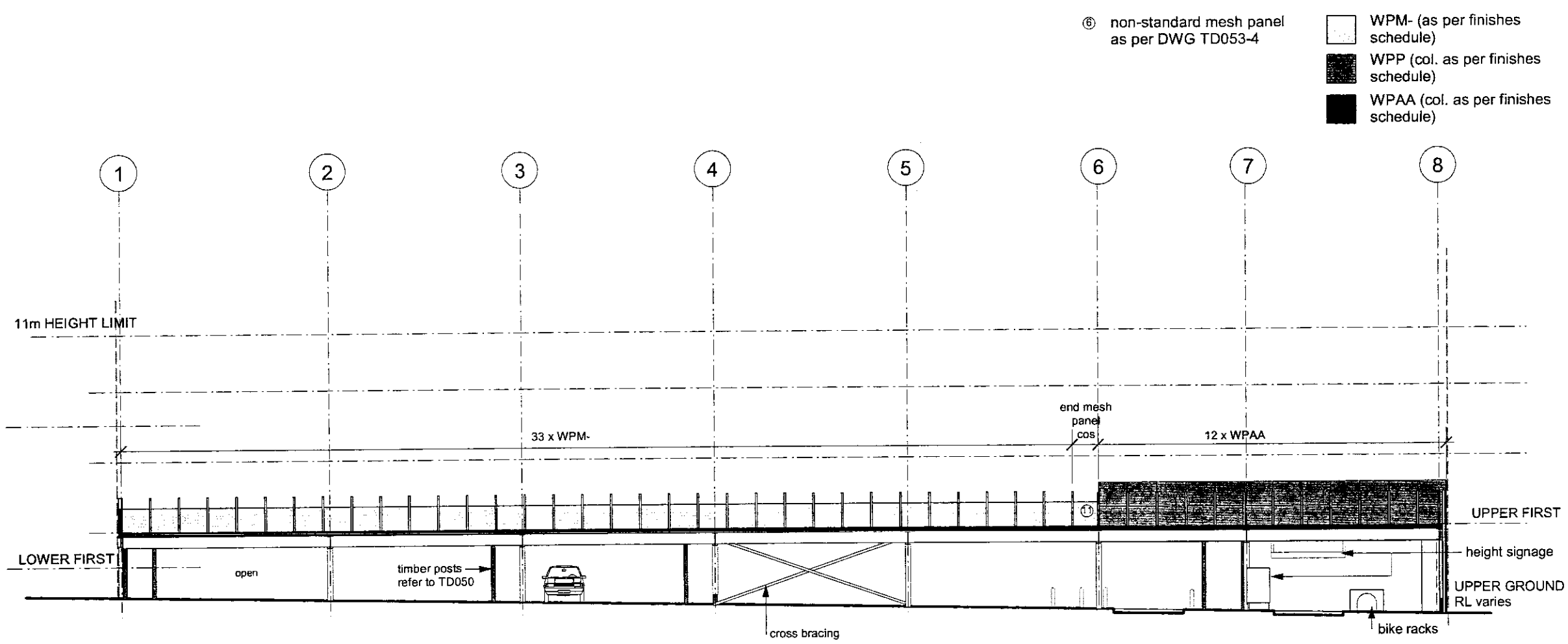
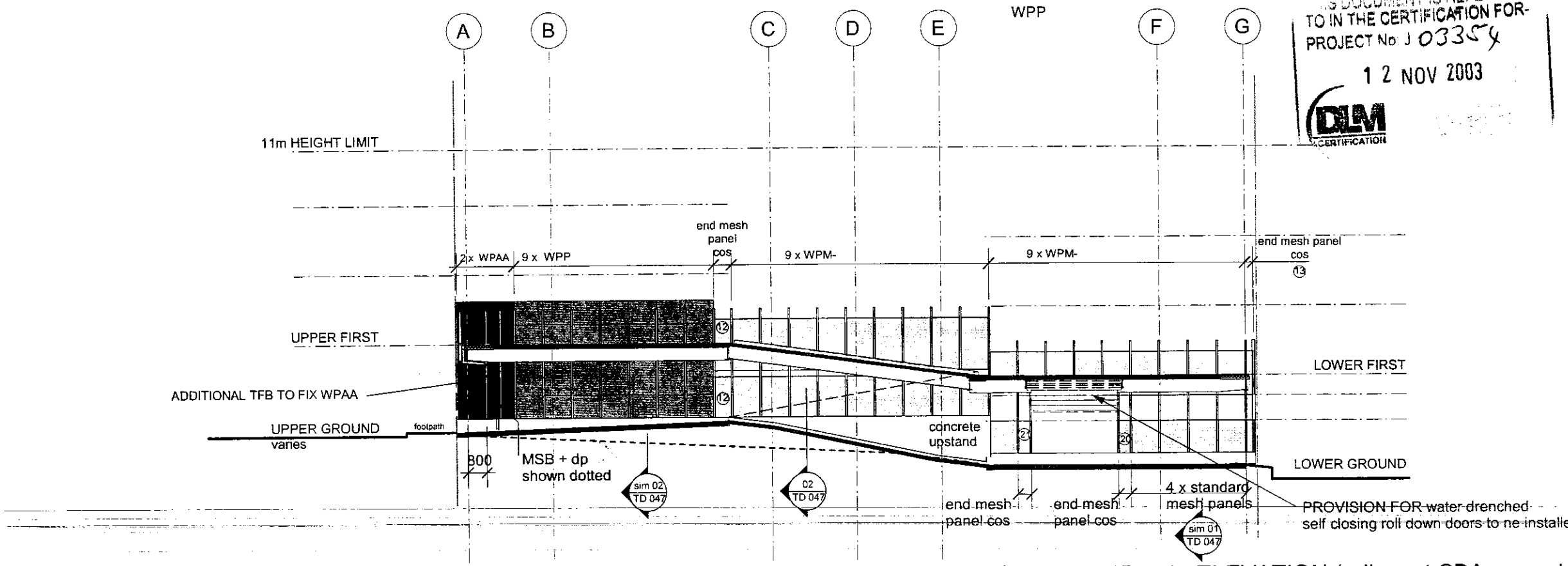


WEST INTERNAL ELEVATION (bungan lane)



NORTH INTERNAL ELEVATION (adjacent CBA carpark)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**elevations north + west STAGE 1**

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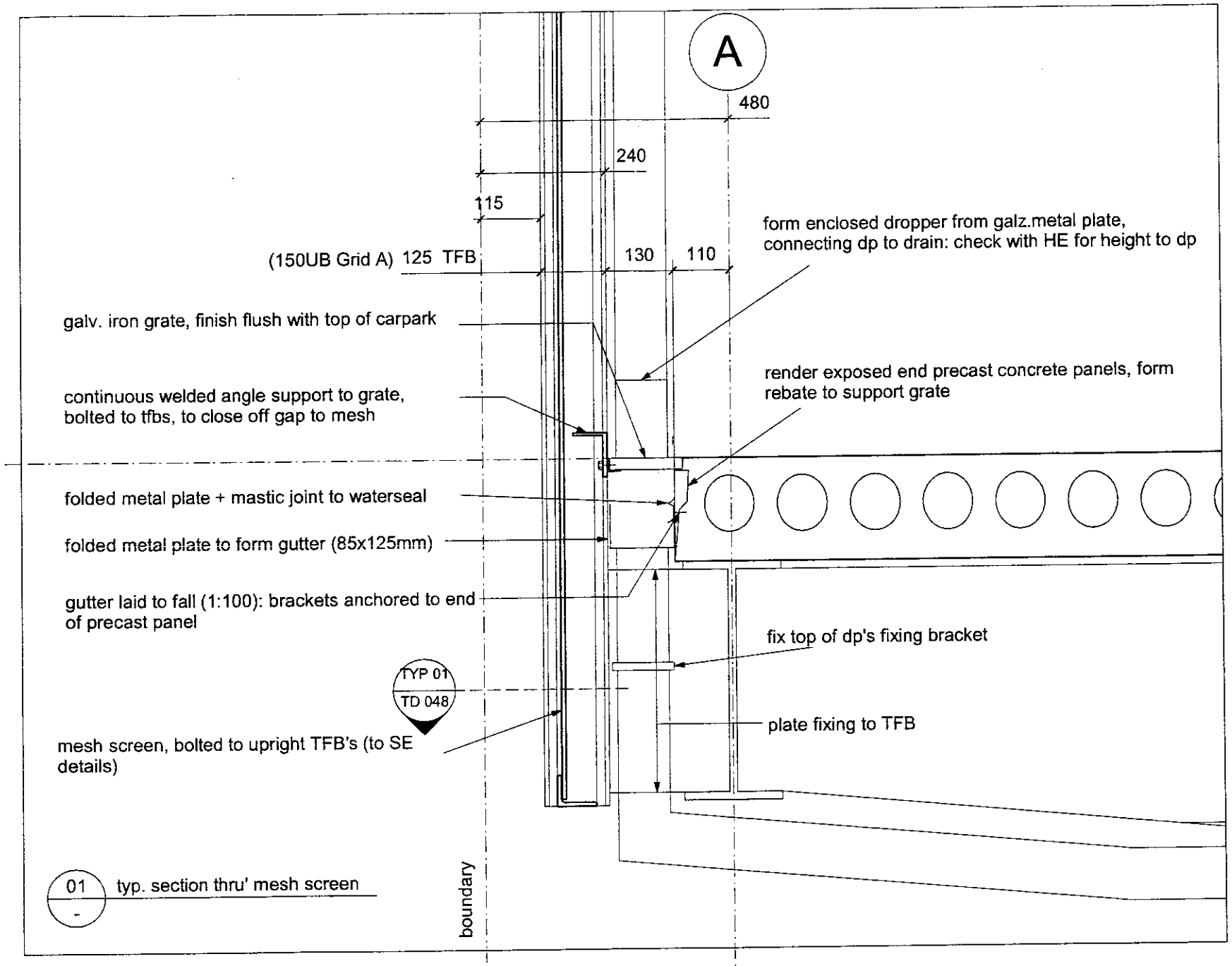
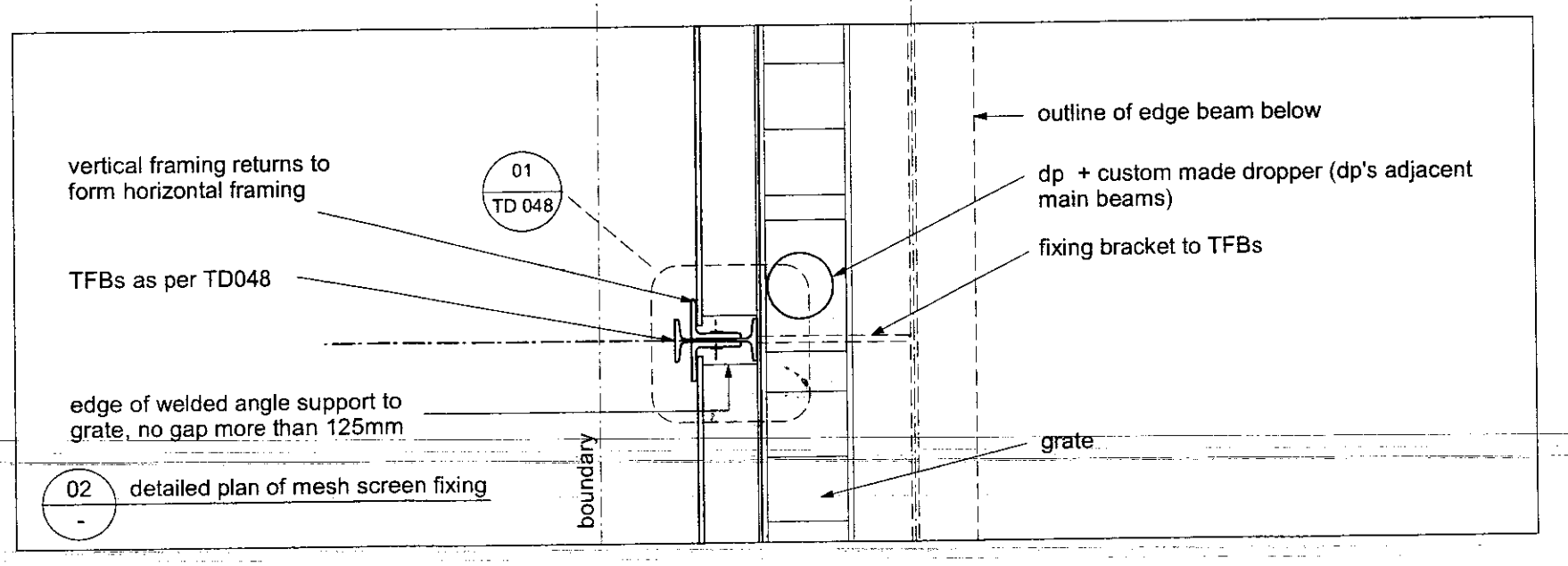


01 / - typ. section thru' mesh screen



02 / - detailed plan of mesh screen fixing

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Typical mesh screen details

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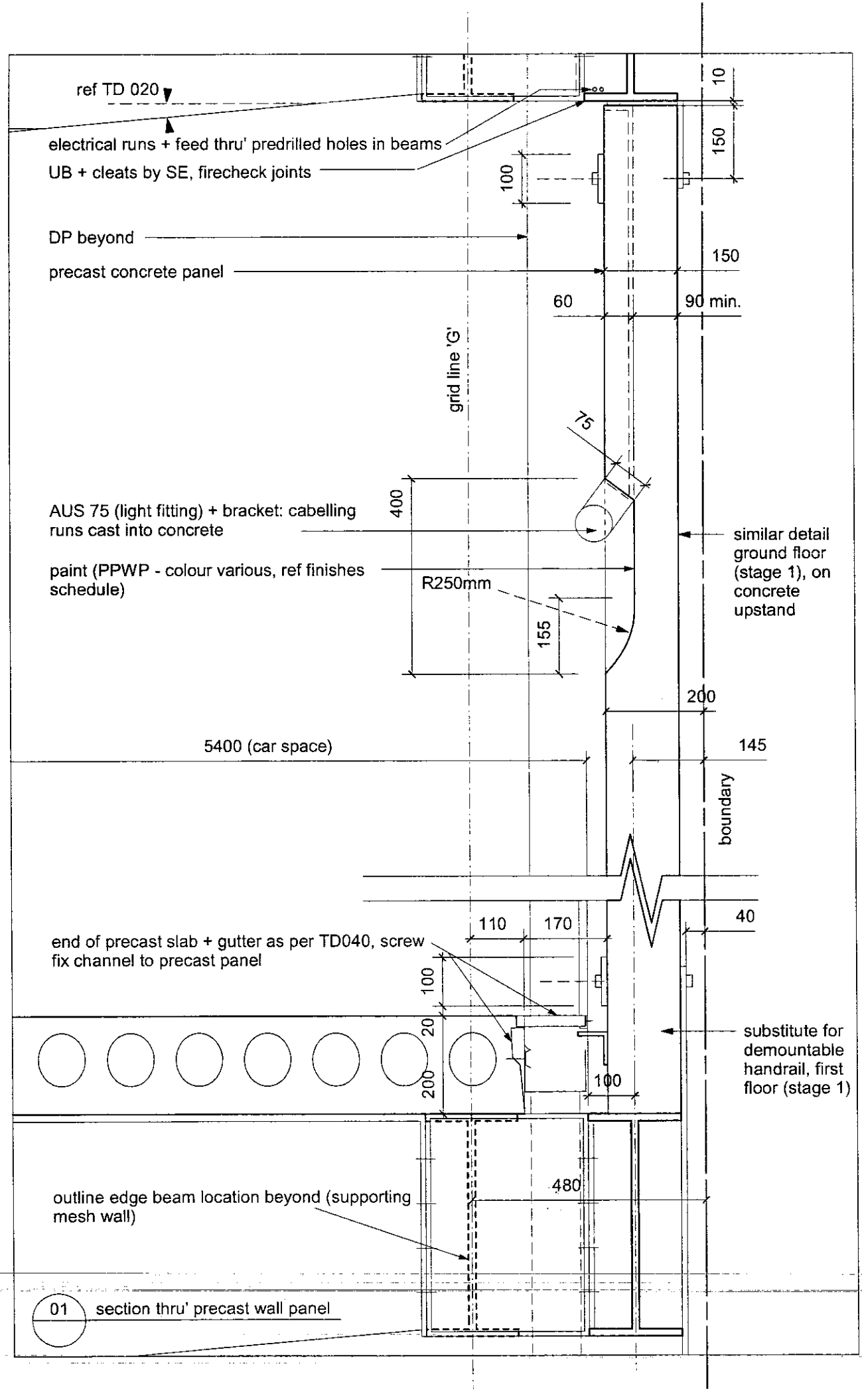
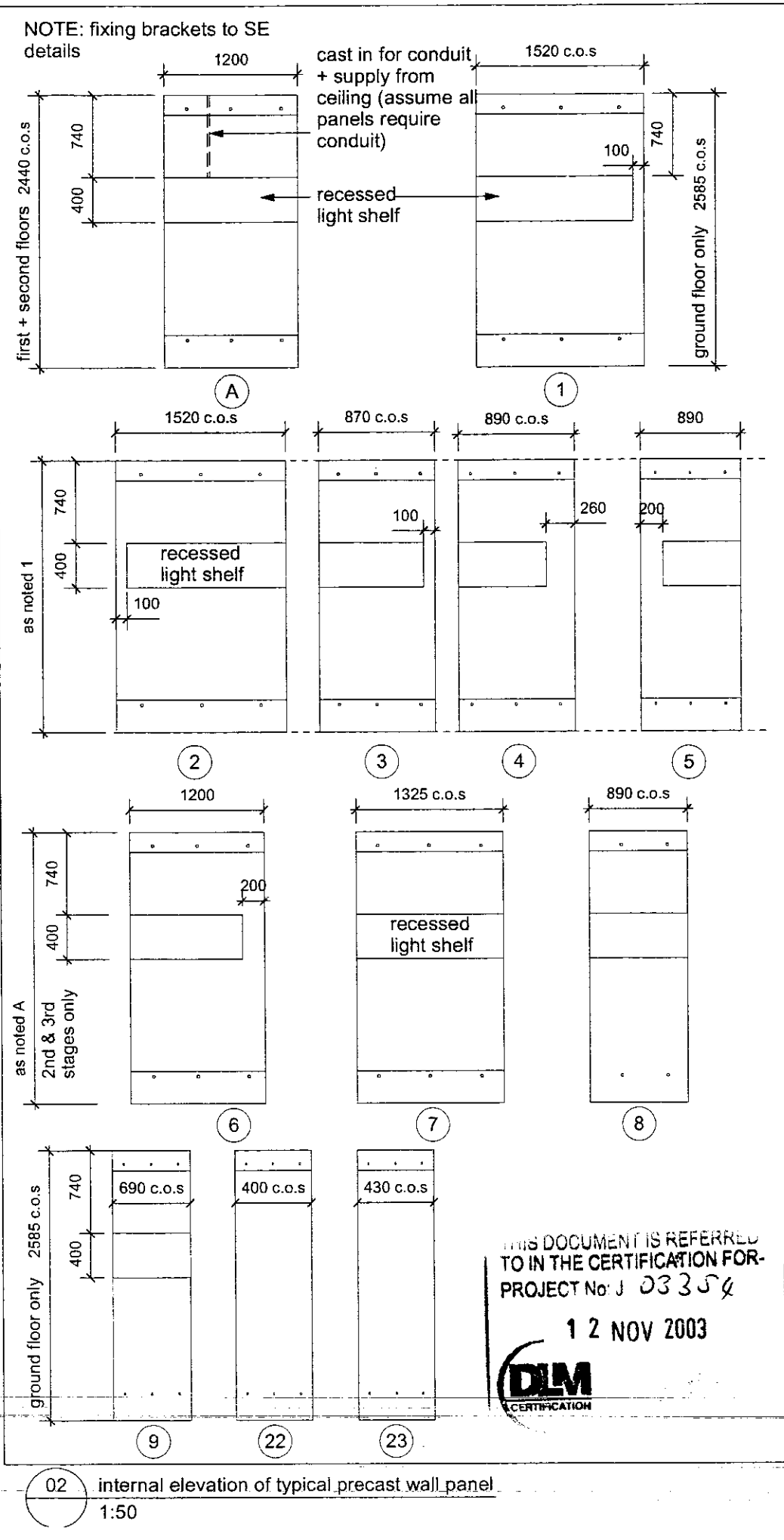


01 section thru' precast wall panel



02 internal elevation of typical precast wall panel
1:50

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**section thru' precast wall panels**

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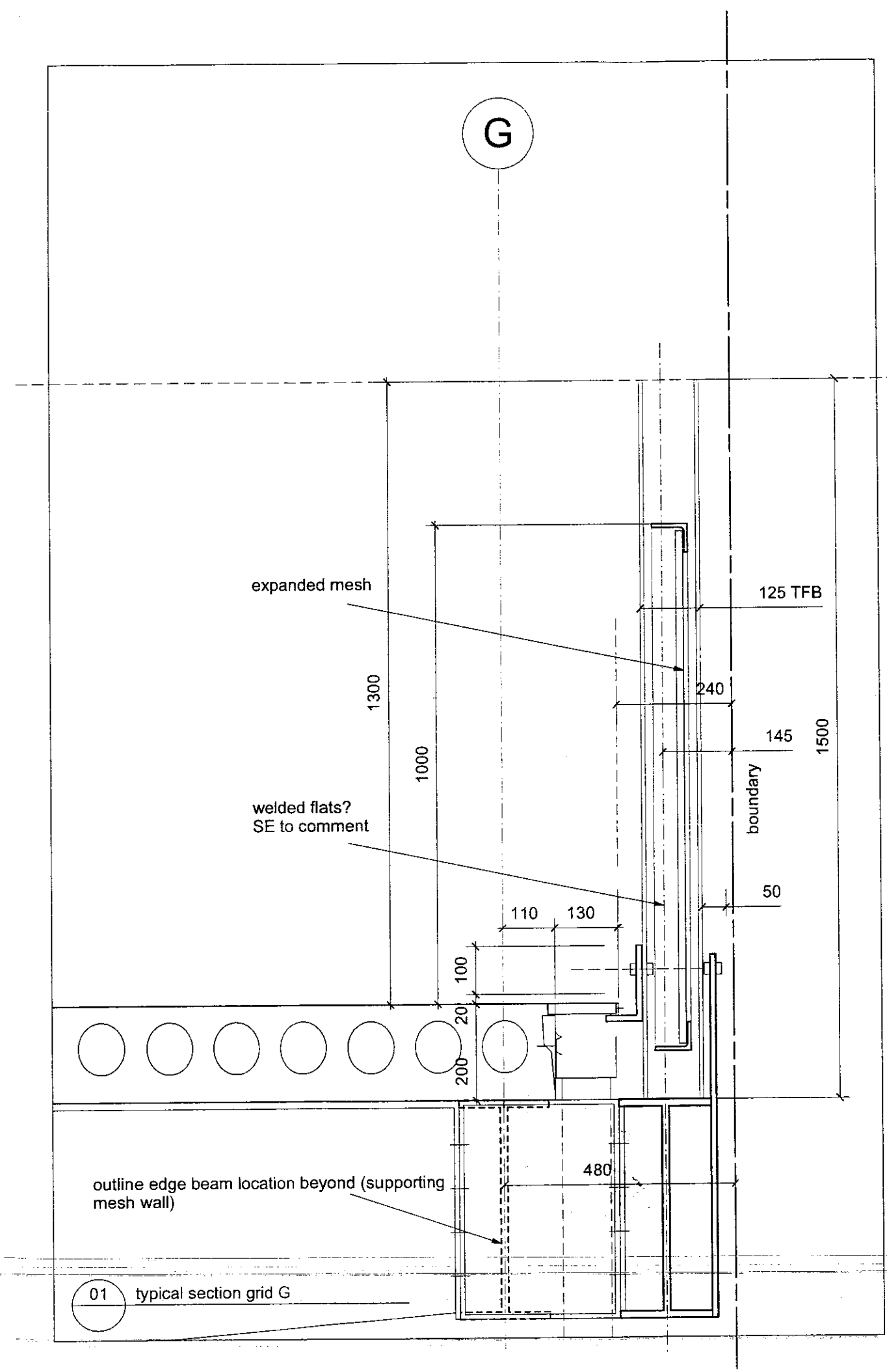
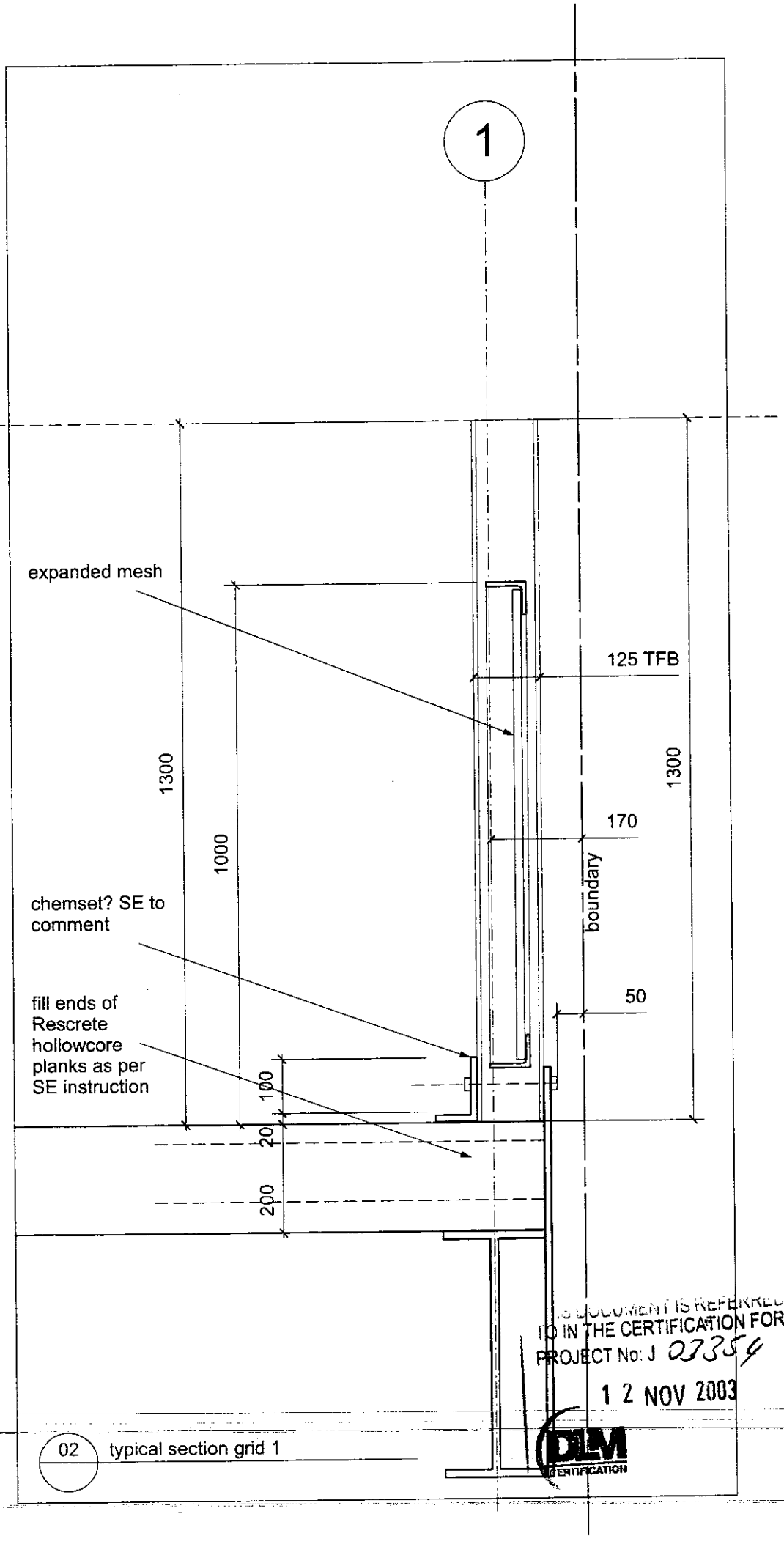


01 typical section grid G



02 typical section grid 1

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**section thru'** **demountable balustrade**

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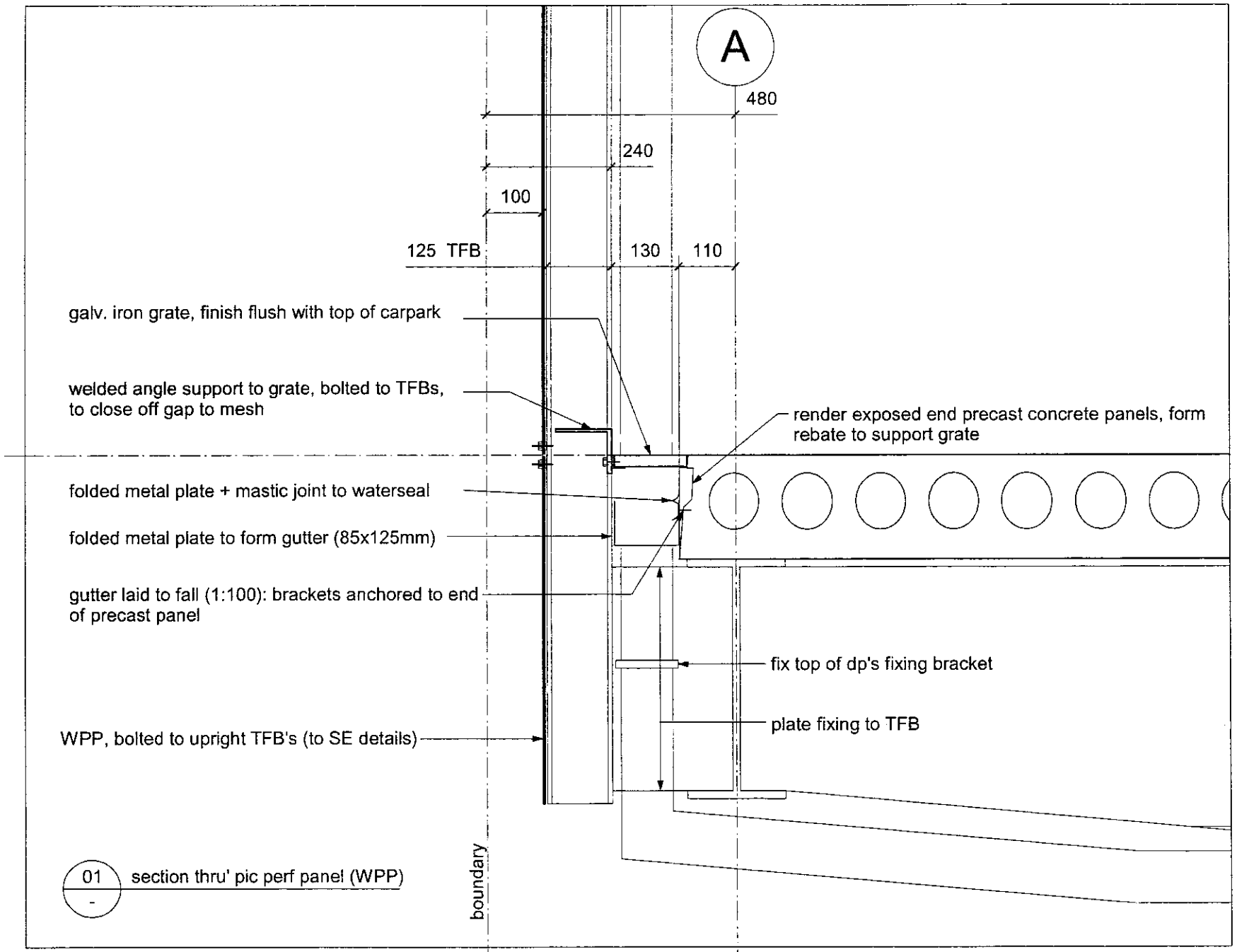

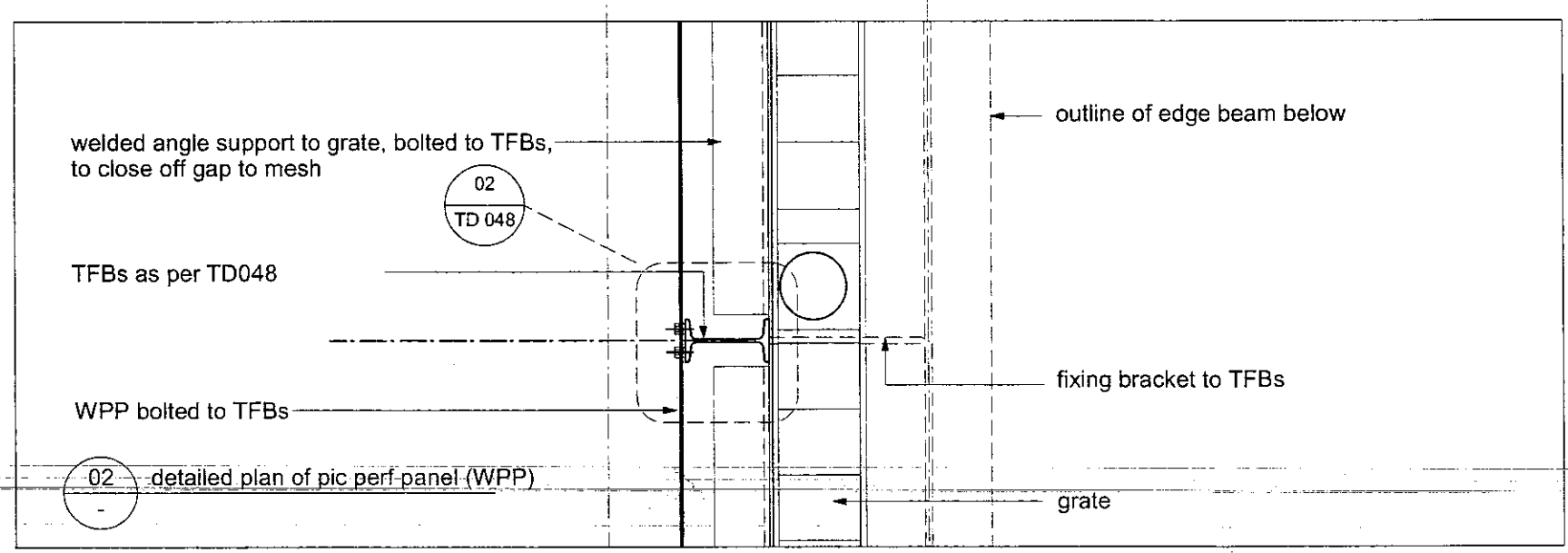

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Typical Section through Pic. perf.- front fixed

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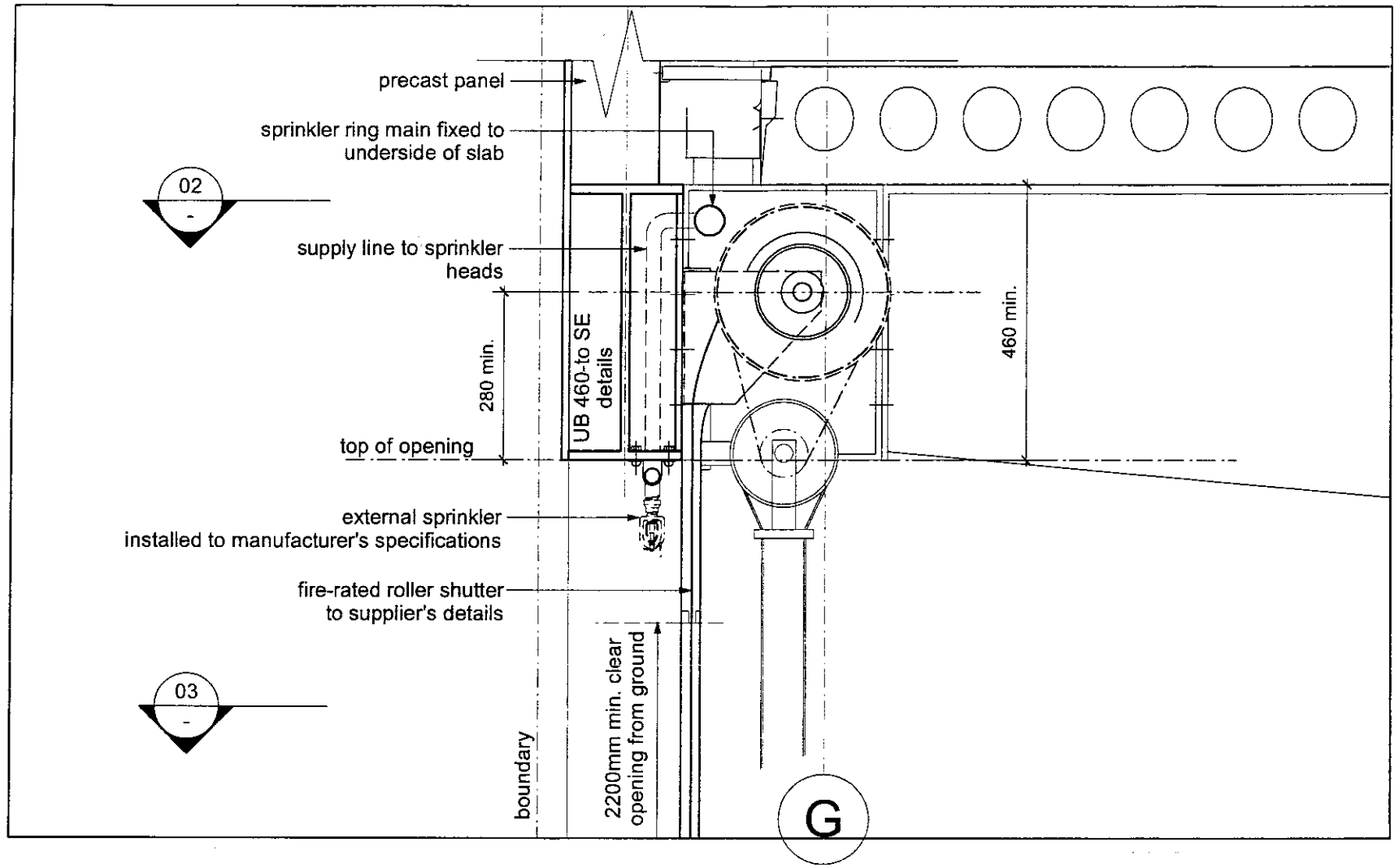


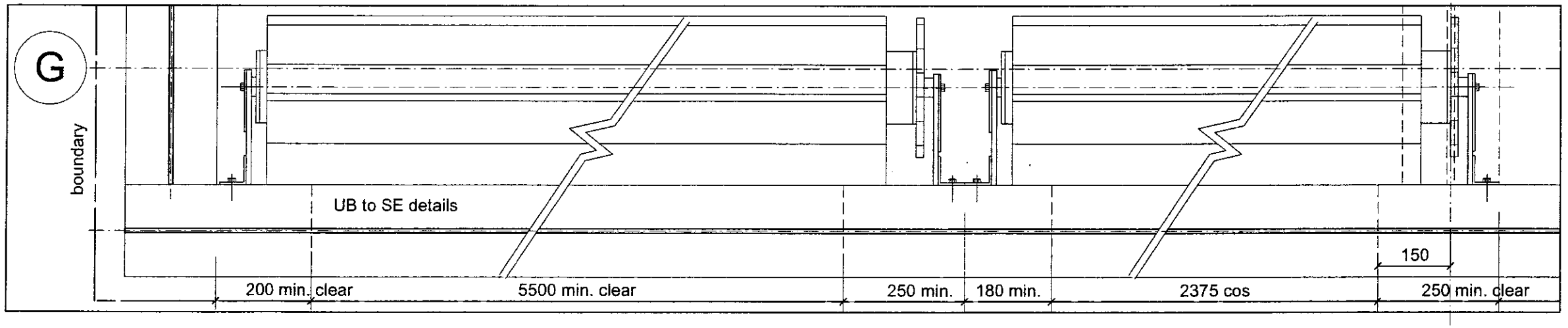
01 - typ. section through roller shutters

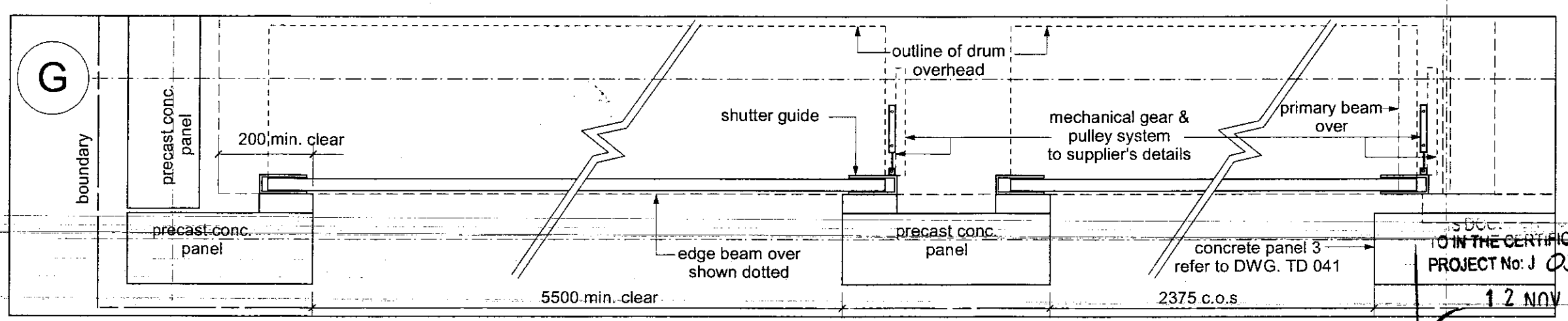
NOTE: installation of rollershutters (WD-RD) 1,2 + 3 part of this scope of works; provision for roller shutters (WD-RD) 4+5 part of this scope of works, but actual installation not part of this scope of works.

02 - detailed plan of roller shutters

03 - detailed plan of roller shutters(guides & posts)

2





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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical roller shutter detail concrete facade

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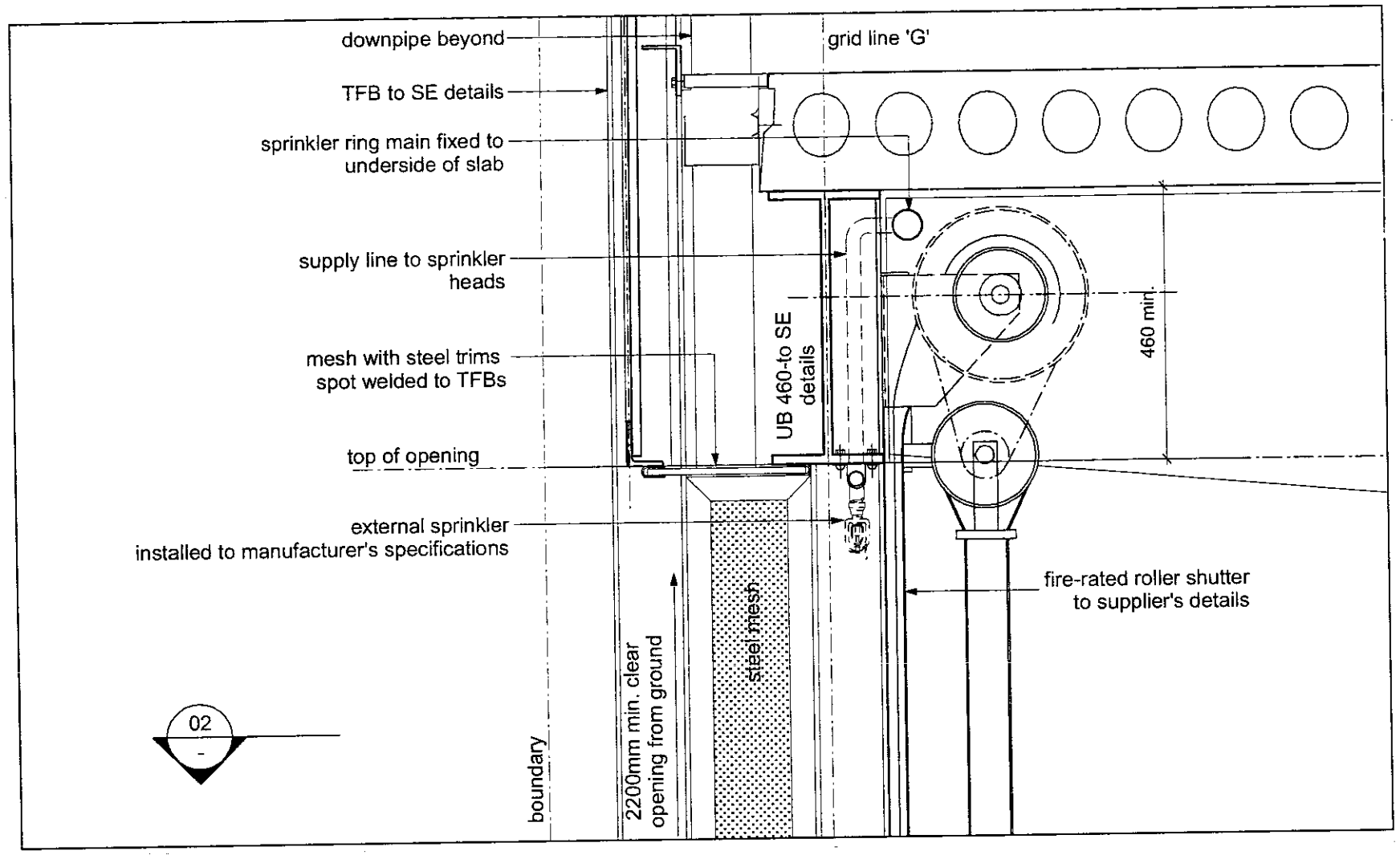
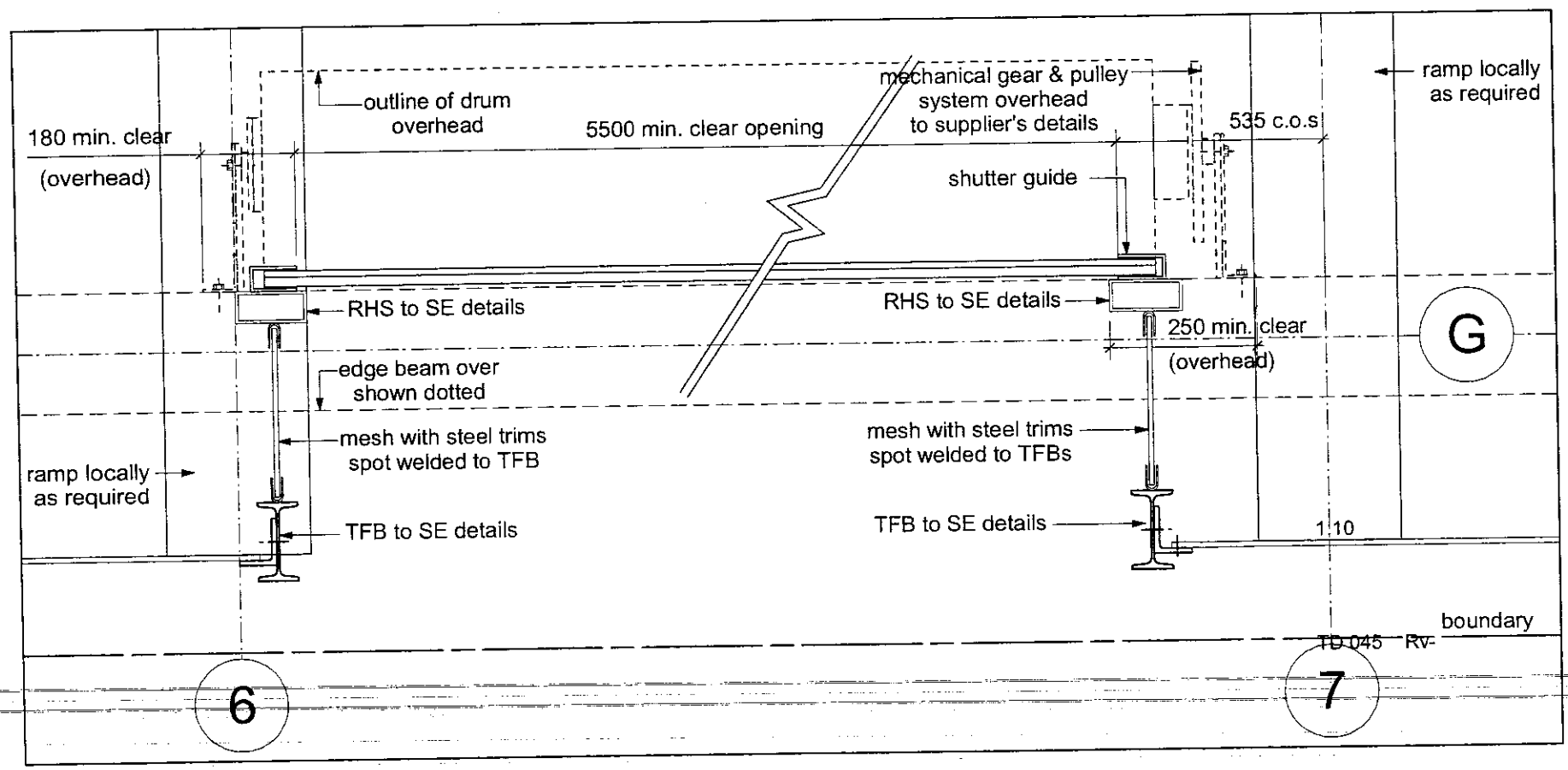


01 - typ. section through roller shutters



02 - detailed plan of roller shutters

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CLIENT: Pittwater Council
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Warriewood NSW 2102
t: 02 9970 1111
f: 02 9970 7150

PROJECT: Bungan Lane Carpark
Mona Vale

TITLE: typical roller shutter detail mesh facade

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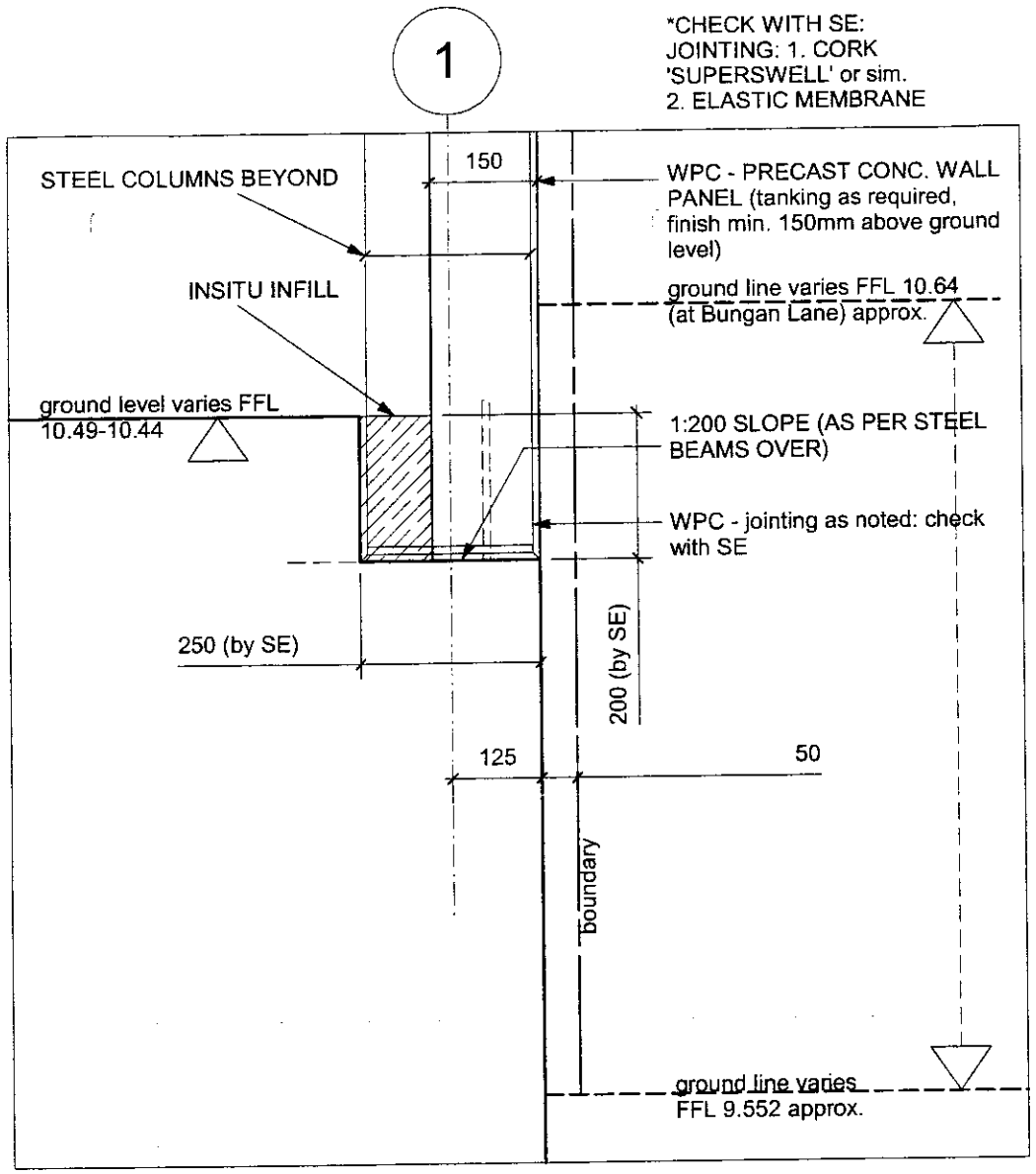
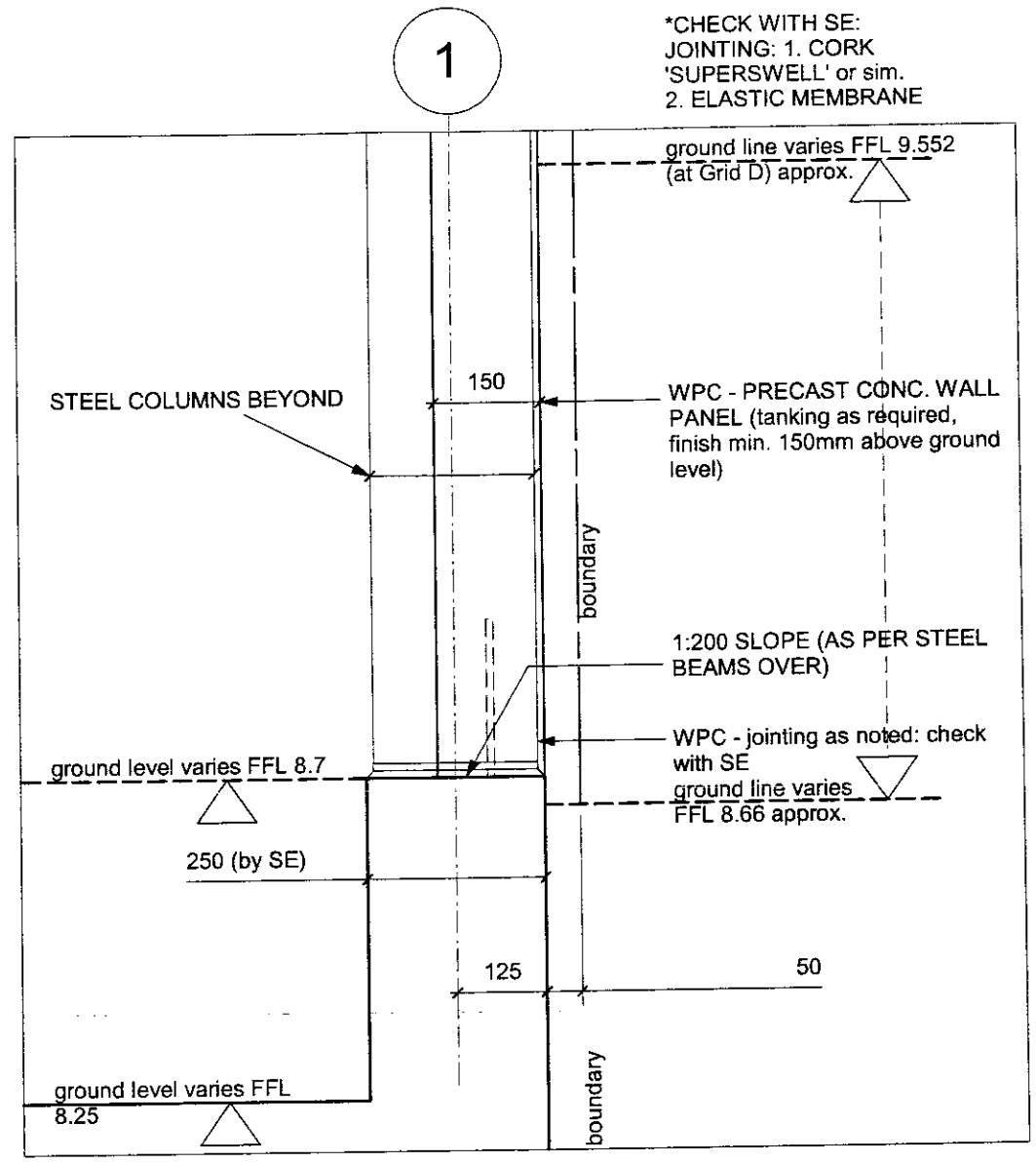
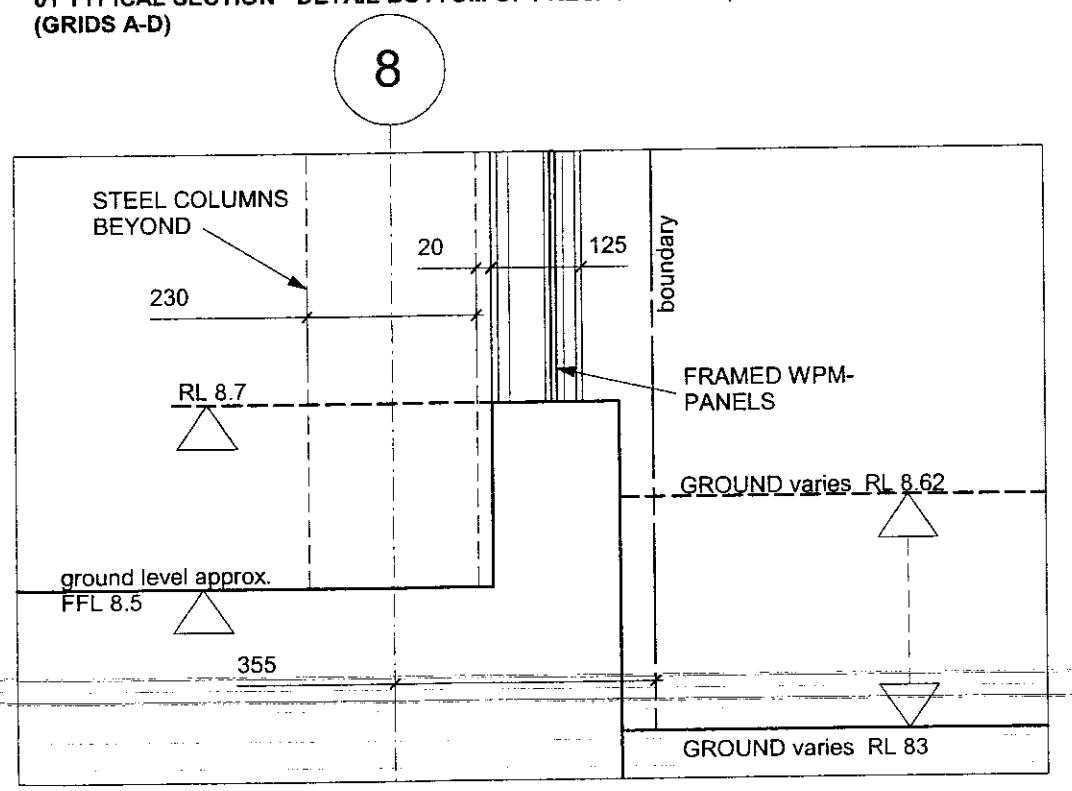


01 TYPICAL SECTION - DETAIL BOTTOM OF PRECAST PANEL, SOUTH WALL (GRIDS A-D)



02 TYPICAL SECTION - DETAIL BOTTOM OF PRECAST PANEL, SOUTH WALL GRIDS D-G



03 TYPICAL SECTION - DETAIL BOTTOM OF PRECAST PANEL, NORTH WALL EDGE OF ROLLER SHUTTER TO GRID-G (FOR REST REFER TO TD047-DETAIL 02)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**base details 1**

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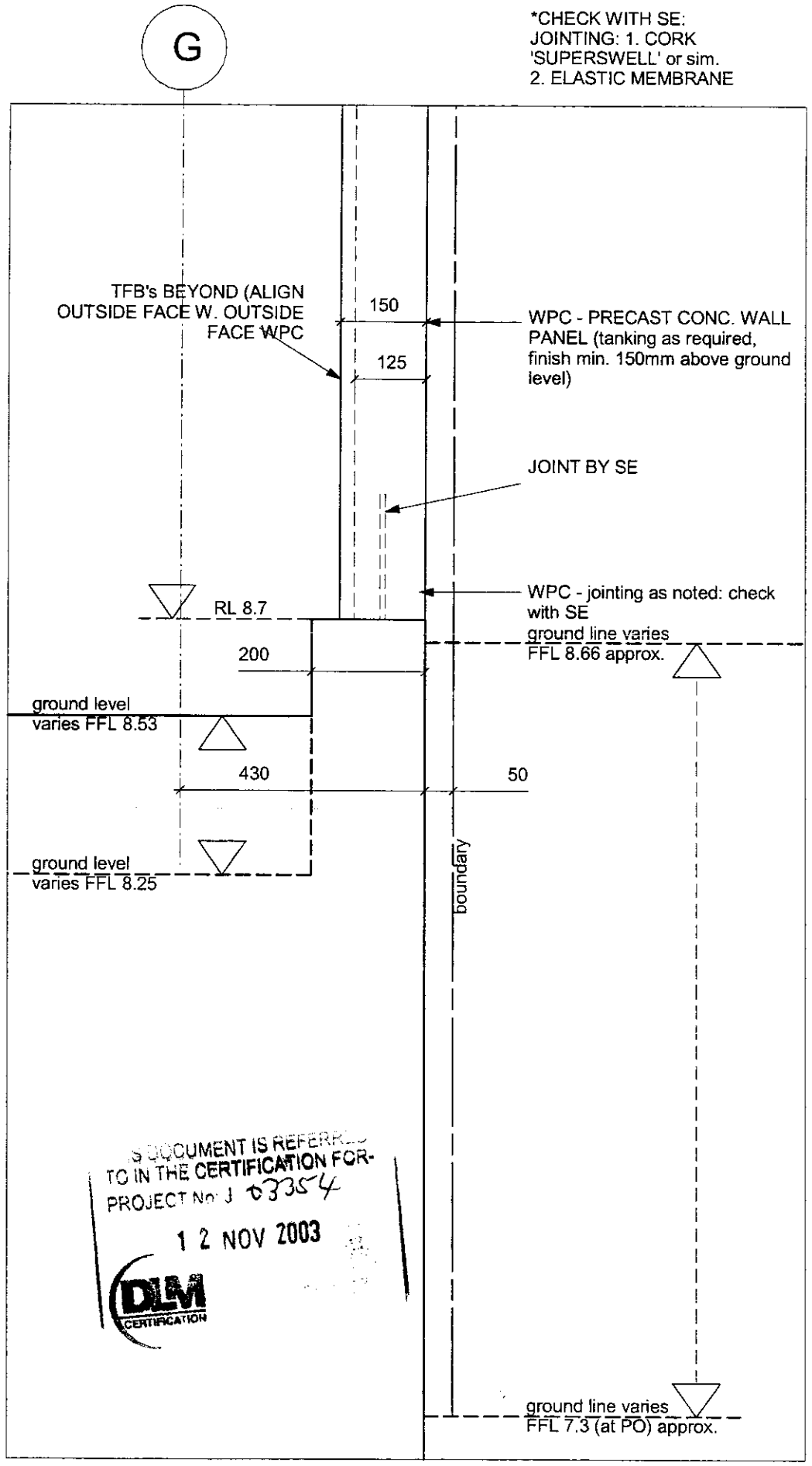

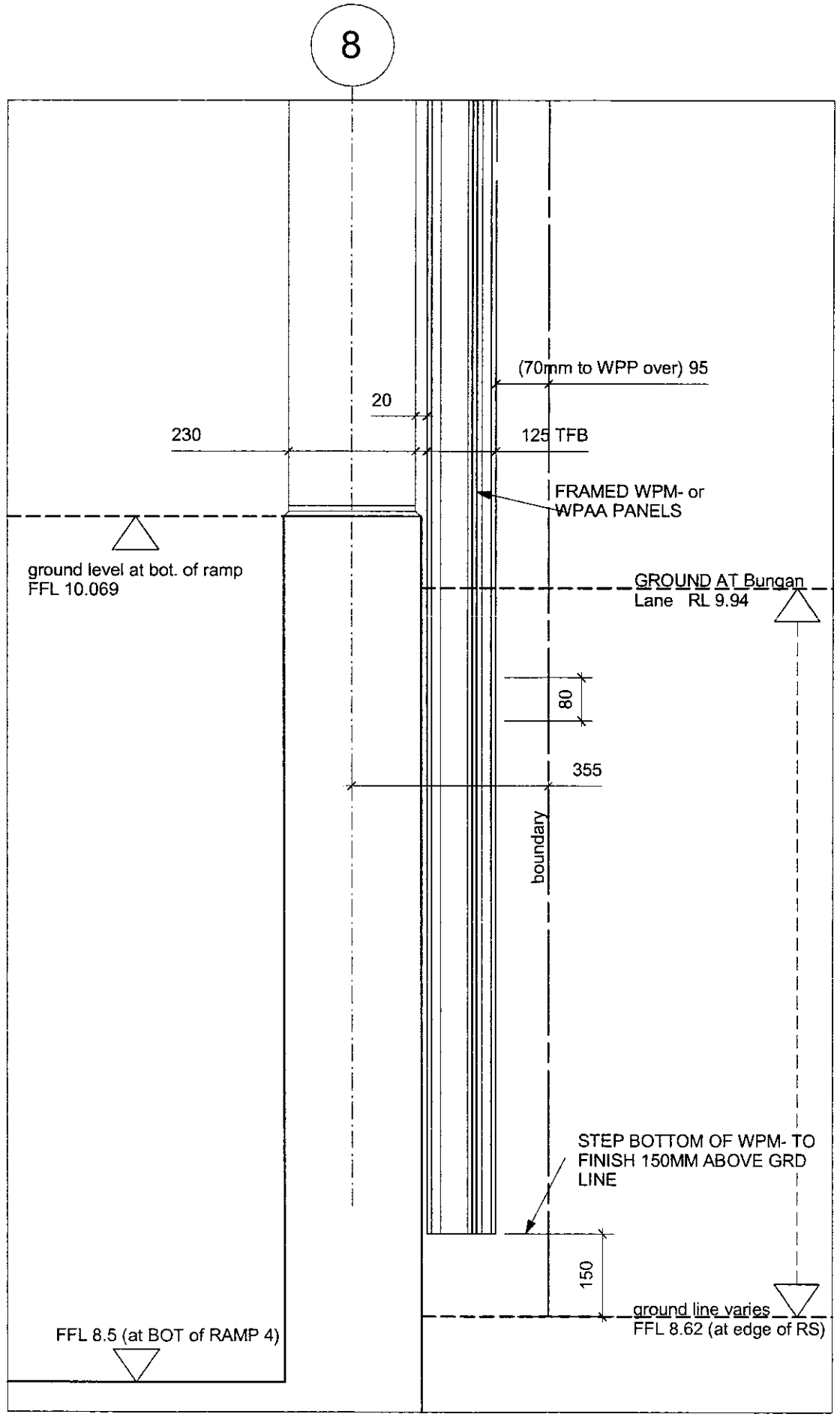

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01 TYPICAL SECTION - DETAIL BOTTOM OF PRECAST PANEL/TFB, EAST WALL (GRIDS 1-8)

02 TYPICAL SECTION DETAIL BOTTOM OF TFB/WPM-, NORTH WALL (GRID EDGE OF RS - A

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**base details 2**

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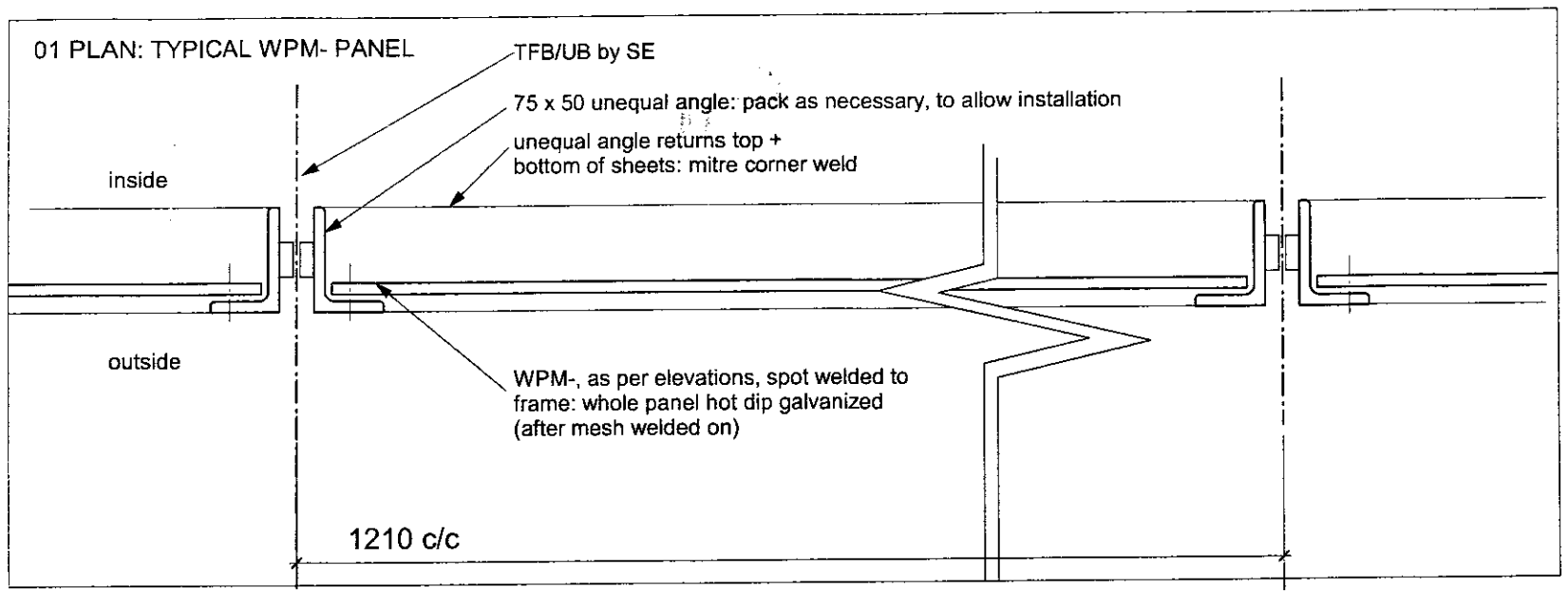

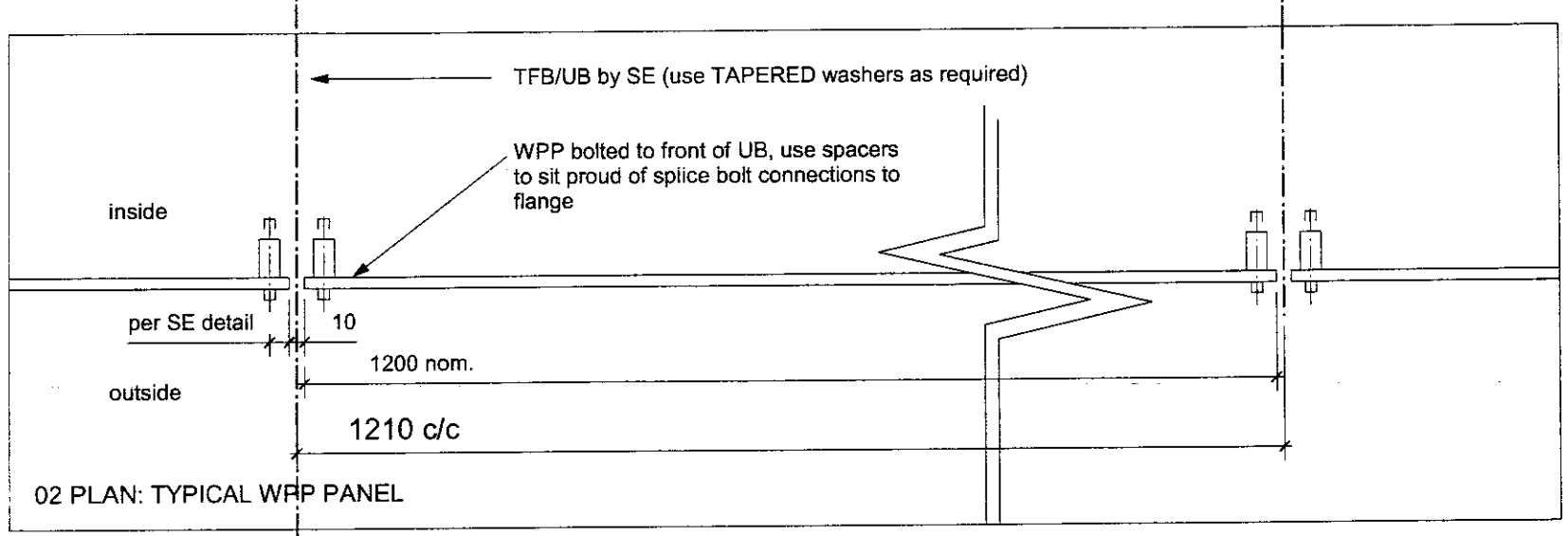

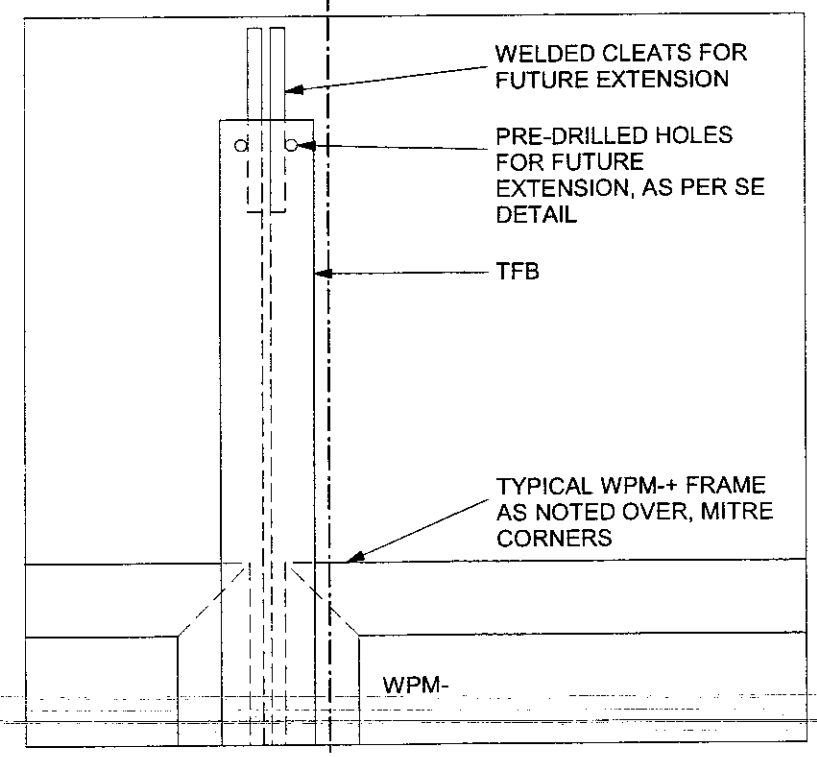

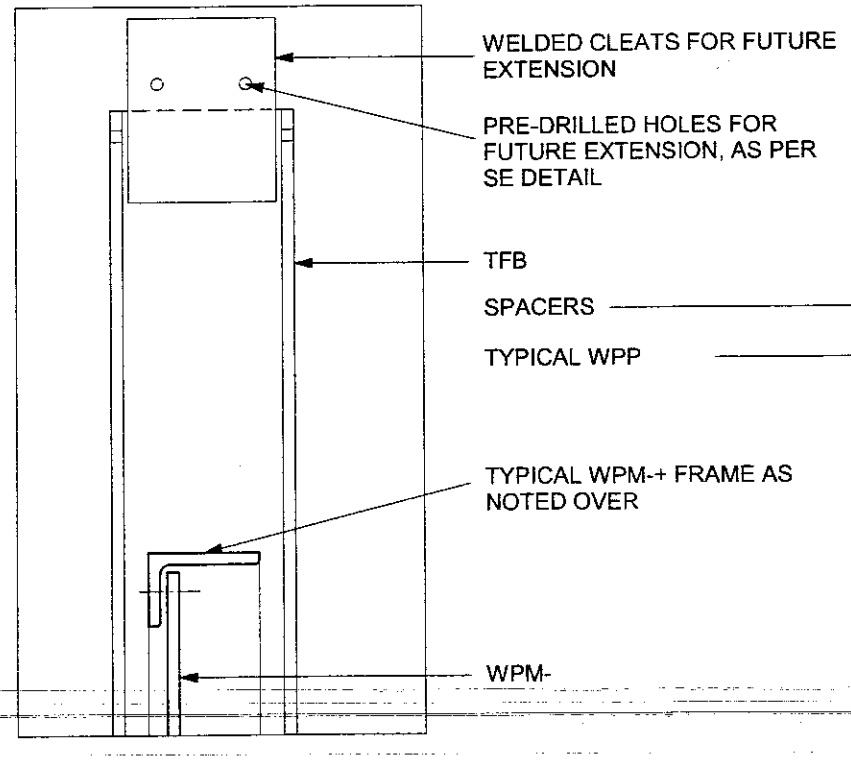

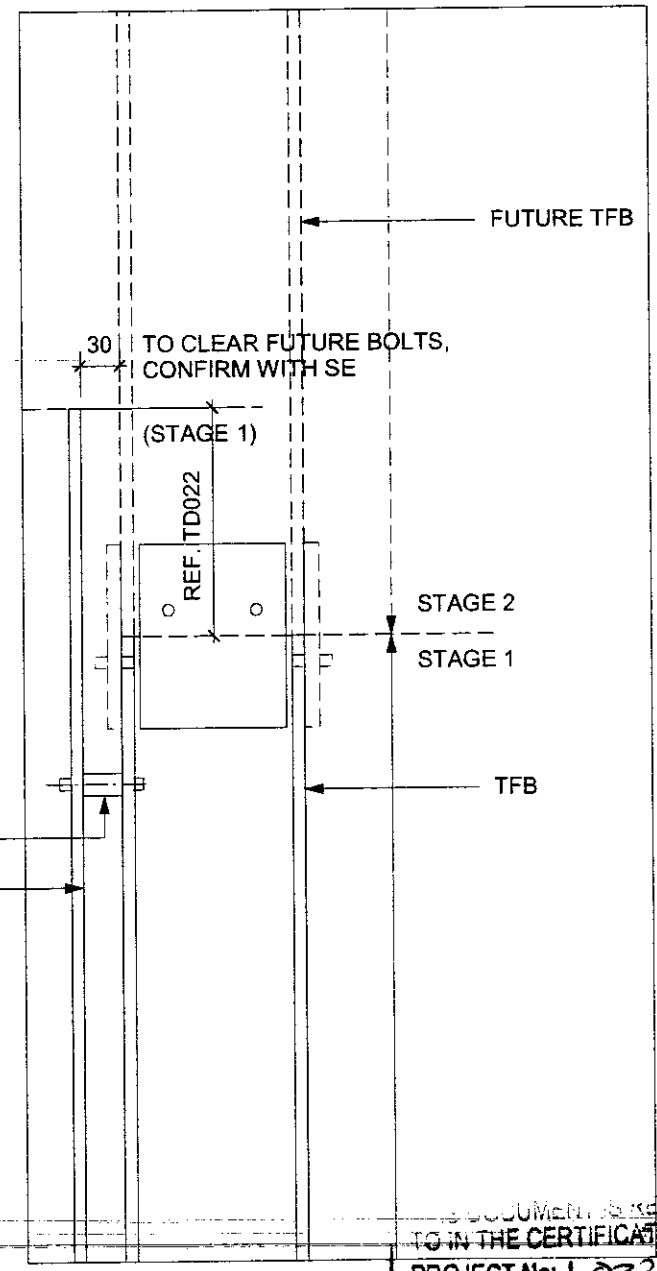

NOTE: MESH PANELS (WPM-) SPOT WELDED TO FRAME, WHOLE PANEL HOT DIPPED GALVANISED (AFTER MESH WELDED ON)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	TYPICAL WALL PANEL DETAILS

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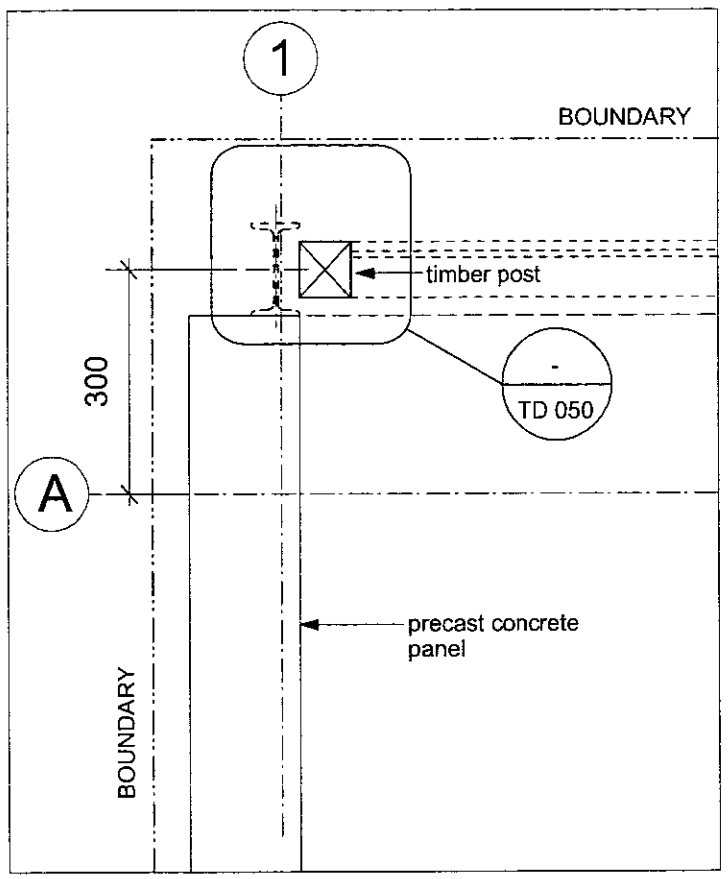
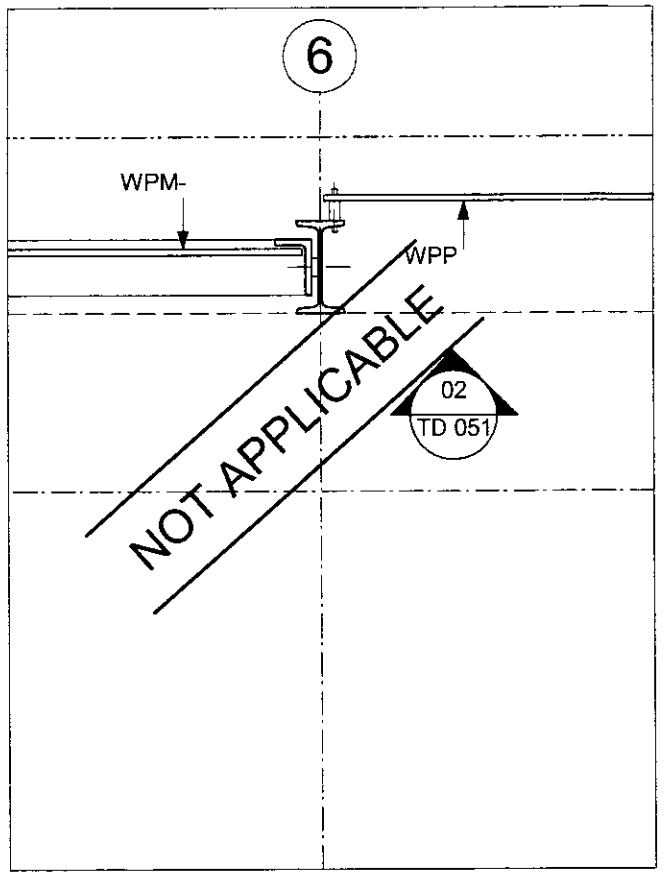


01 mesh to pic perf-eastern side



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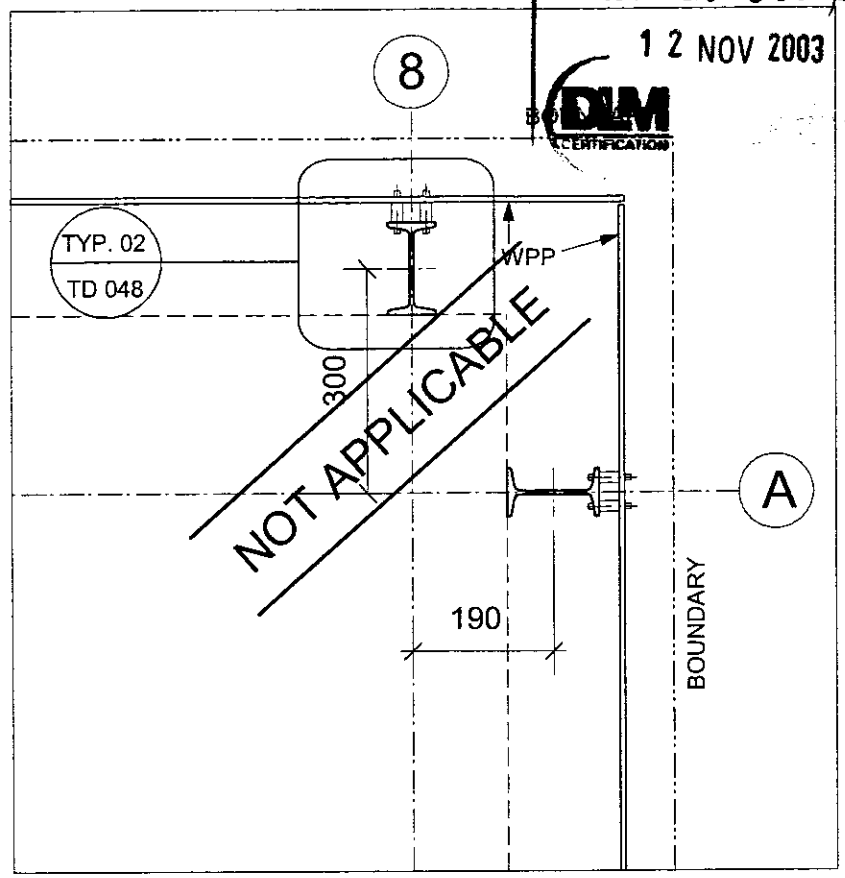
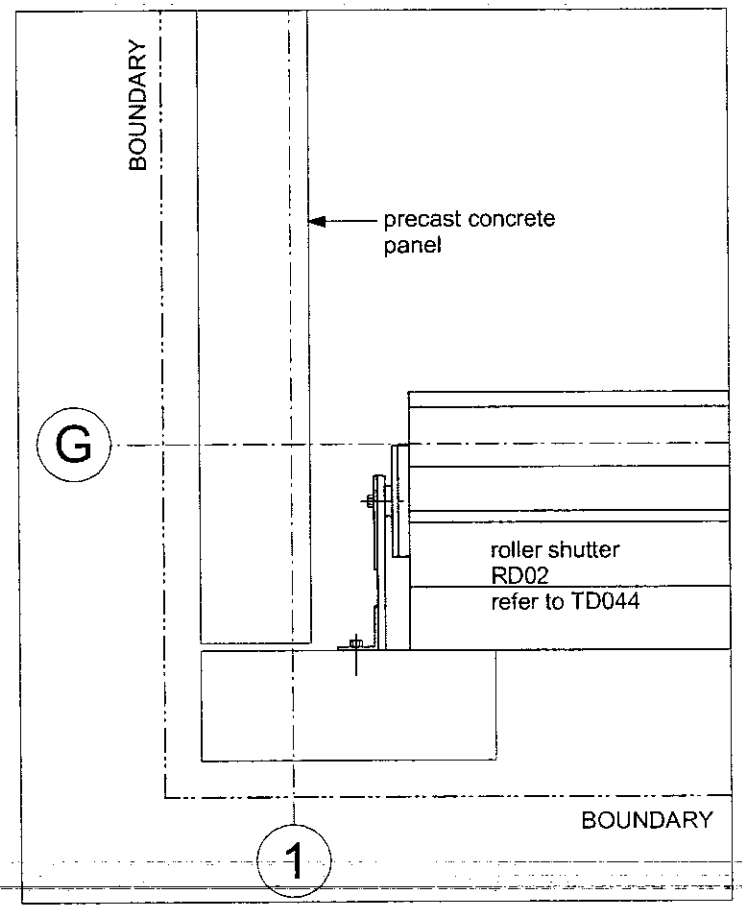


02 north-west corner



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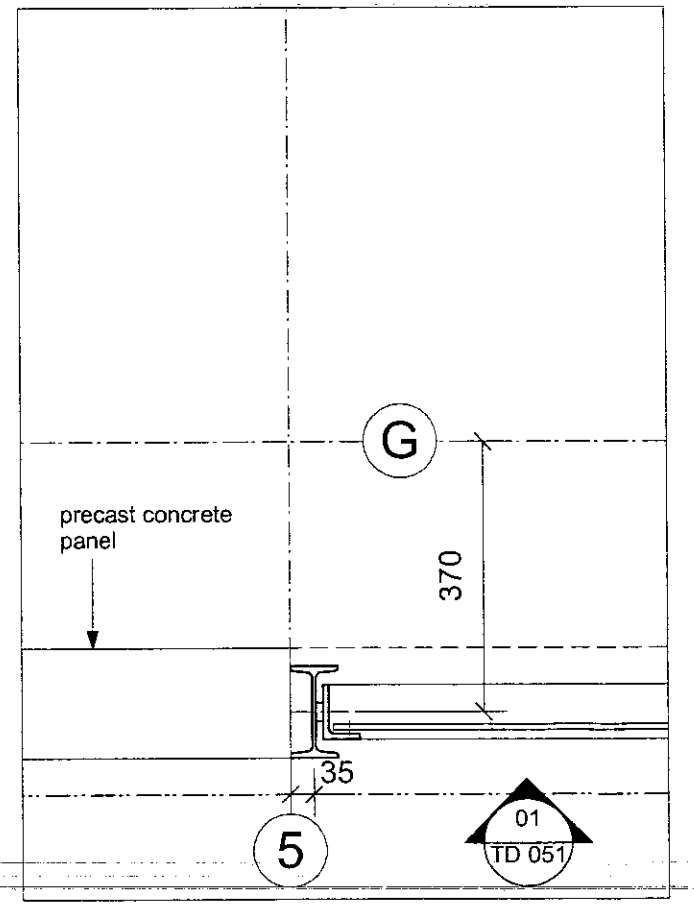
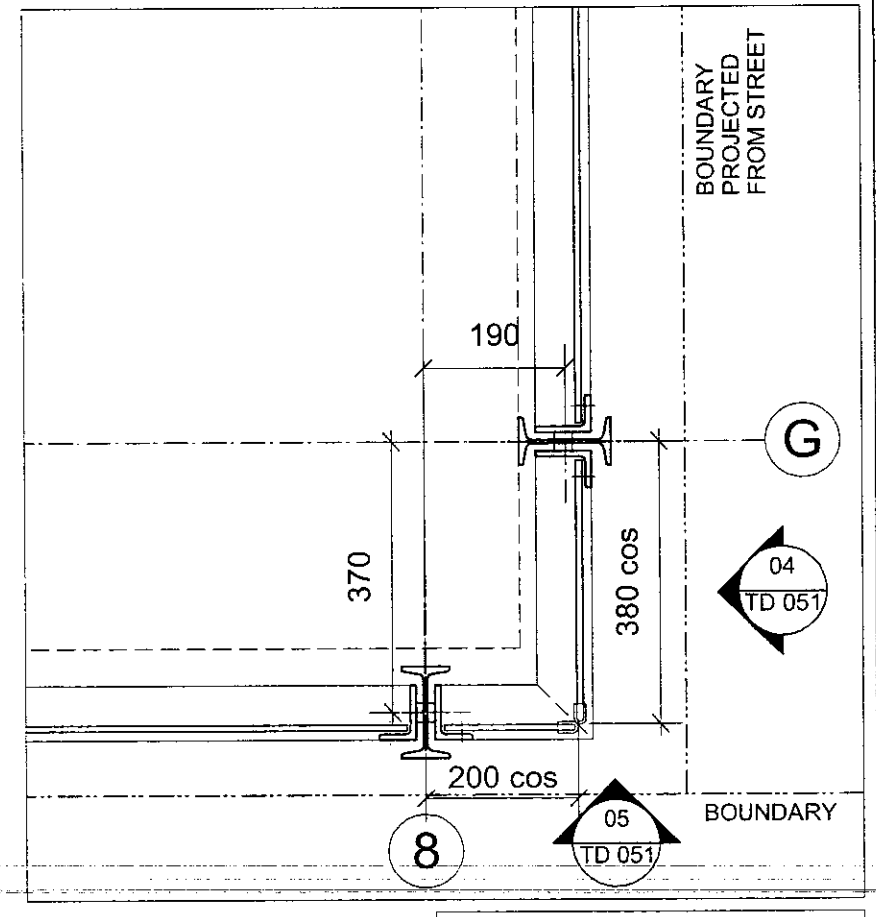


04 concrete panel to mesh connection



05 north-east corner

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NOTE: FOR DIMENSIONS OFF BOUNDARY REFER TO TD047 & TD048

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**corner details on ground plan STAGE 1**

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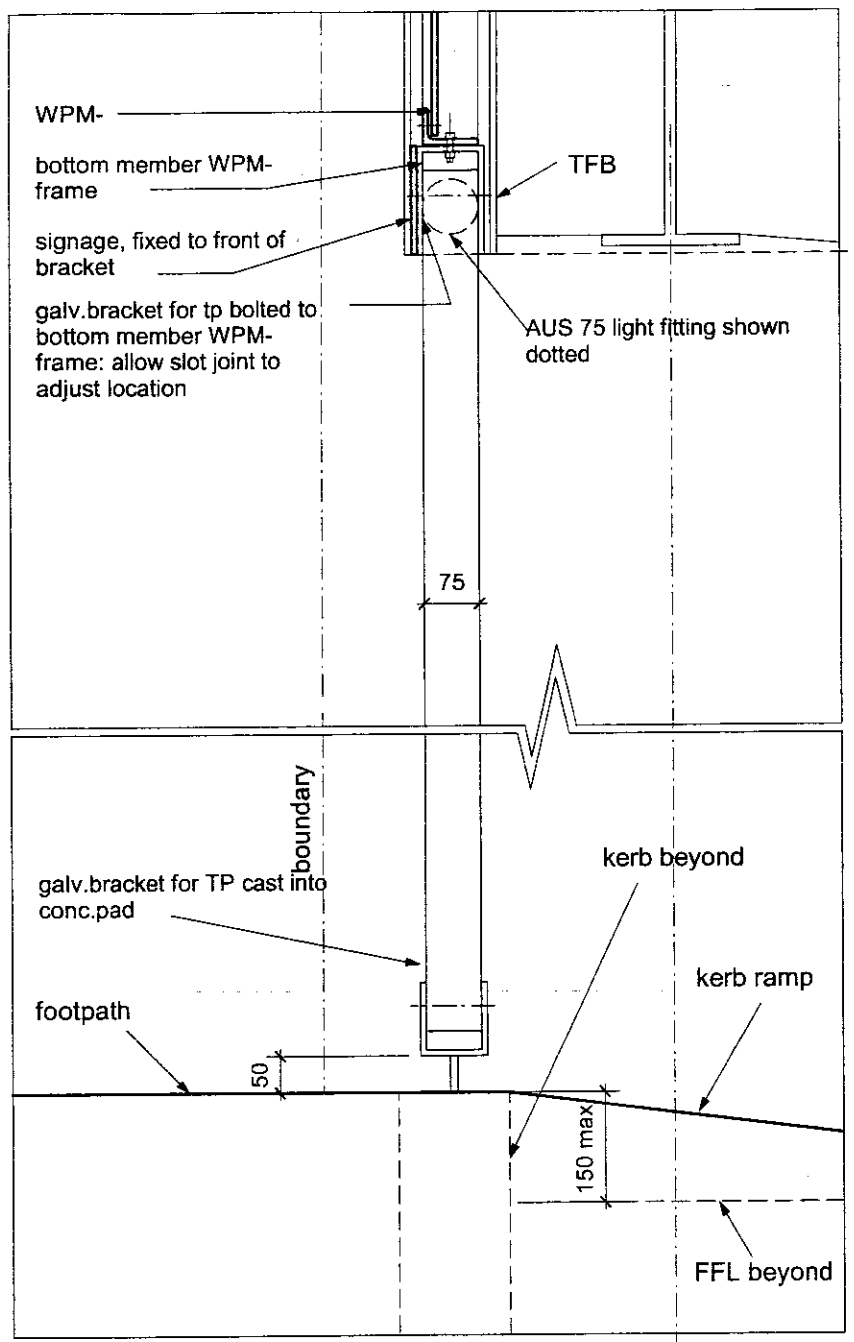
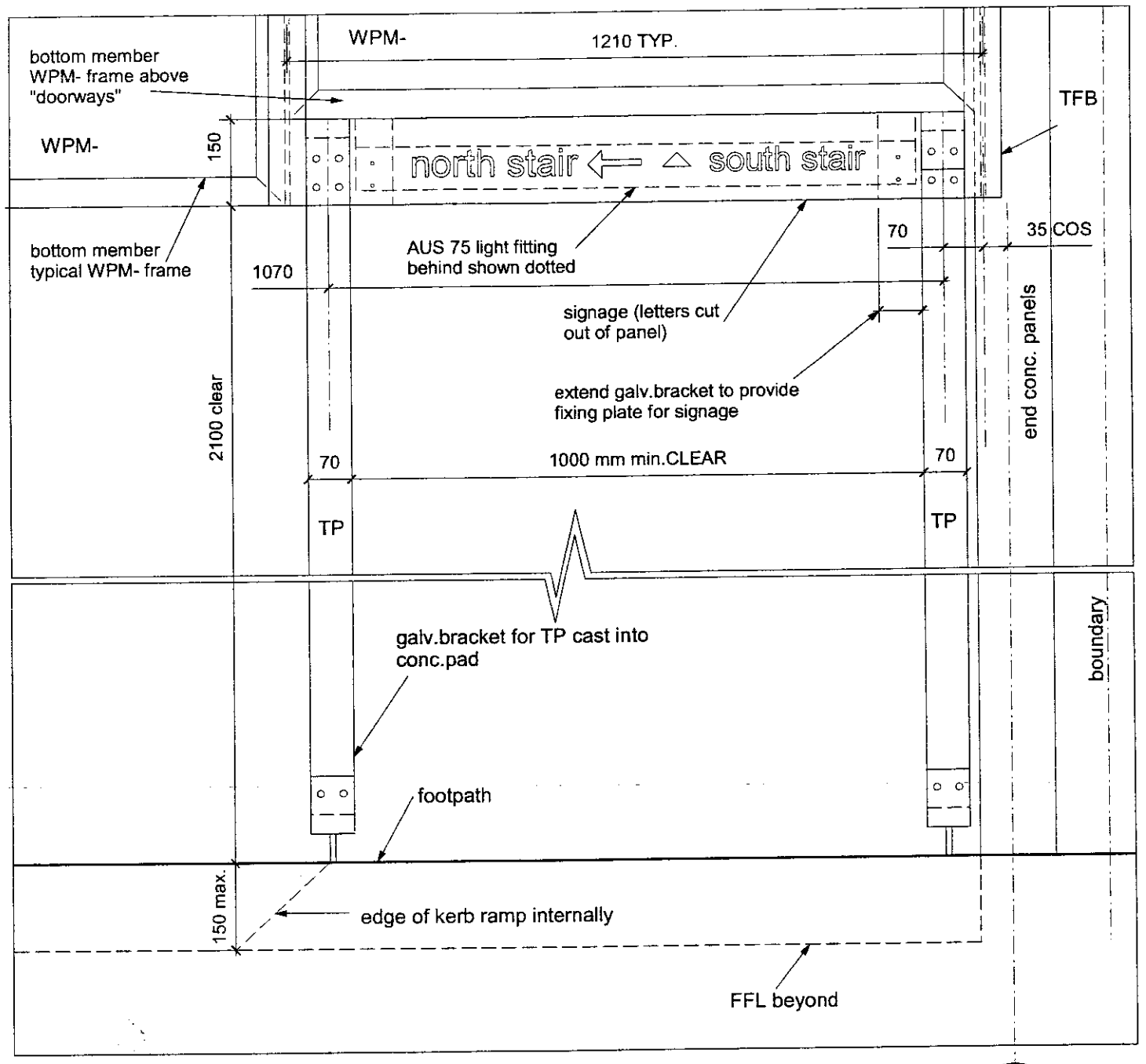


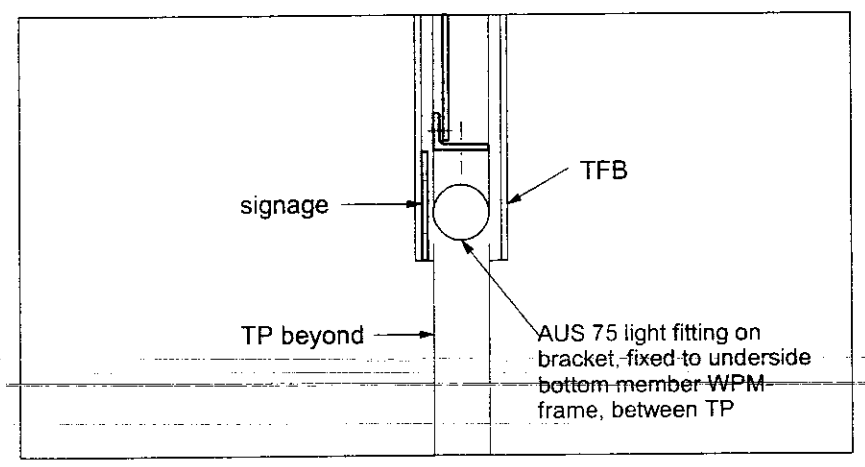
01 - section thru' typ step ramps onto footpath, grid A

A



02 - elevation typ step ramps onto footpath, grid A

1



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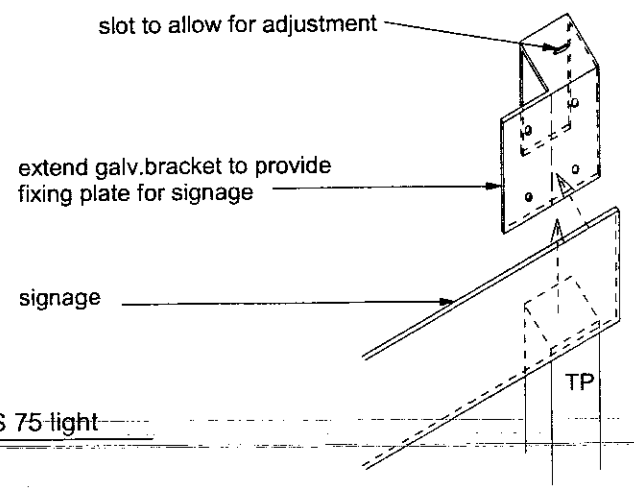

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical "doorway" west elevation

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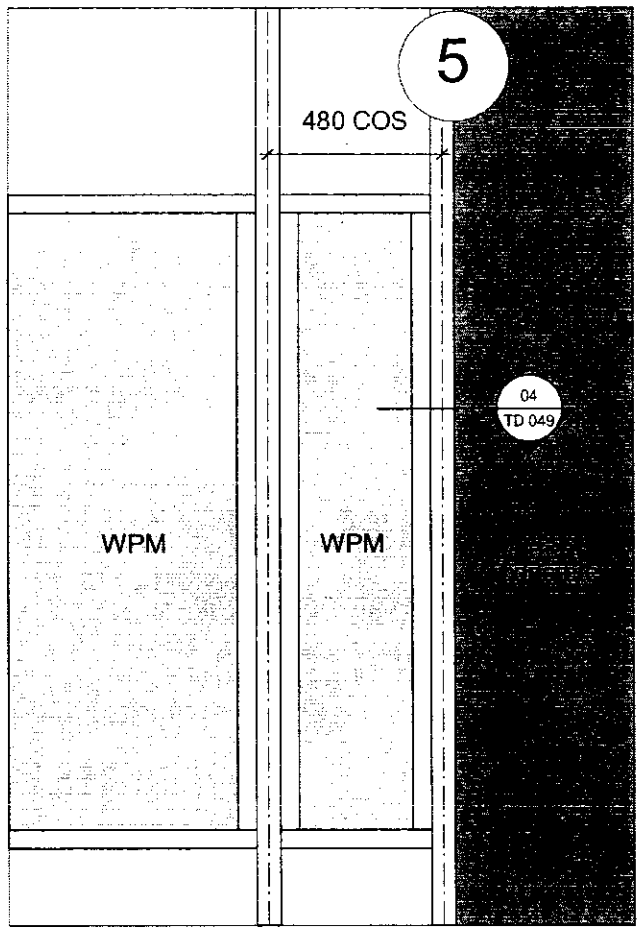
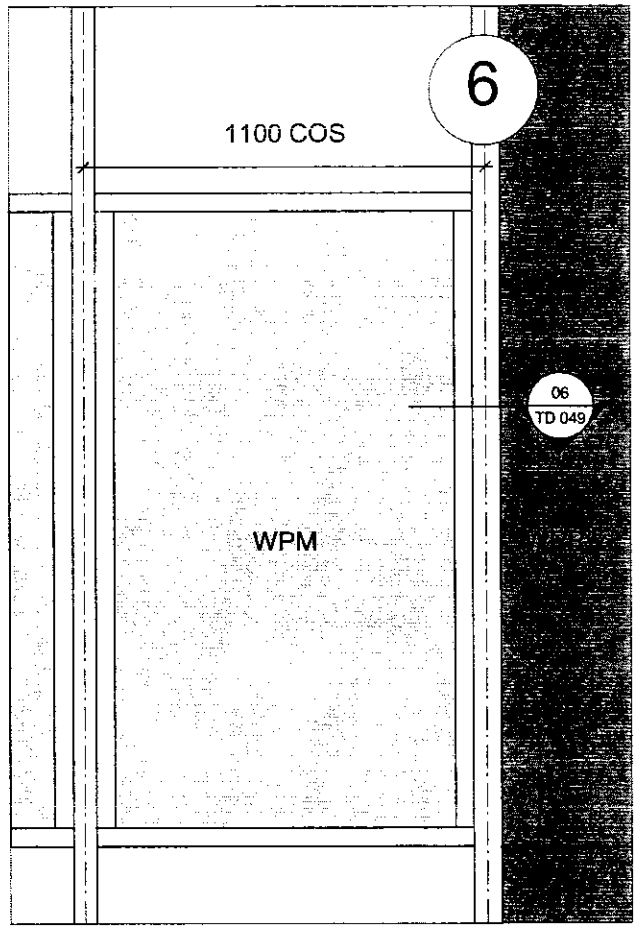


1 mesh (10)



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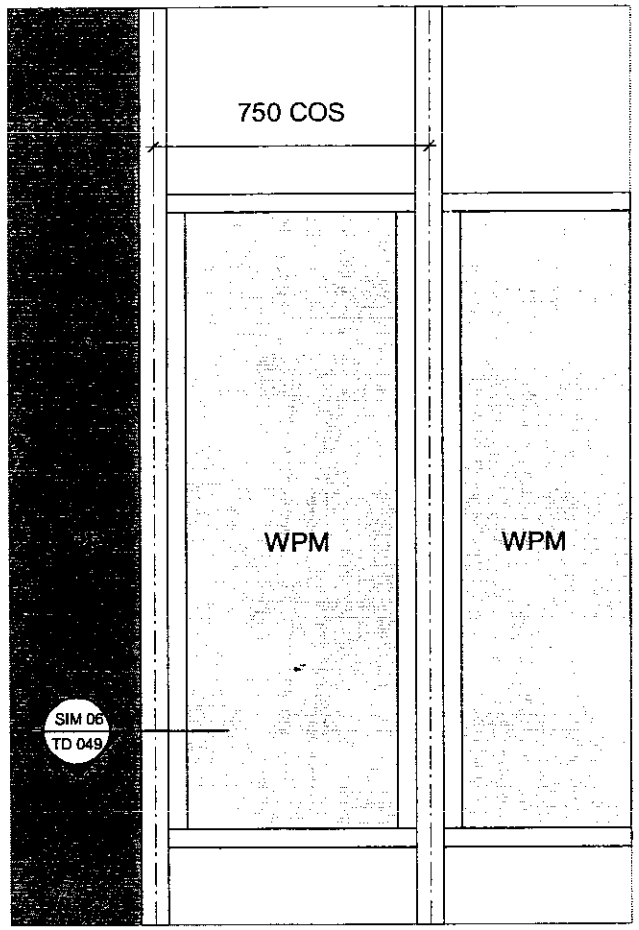

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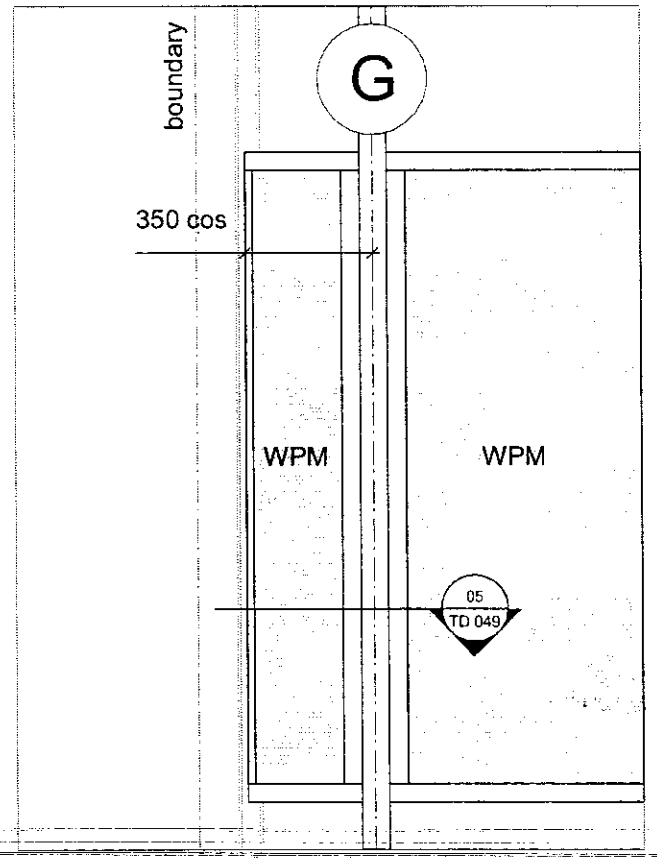
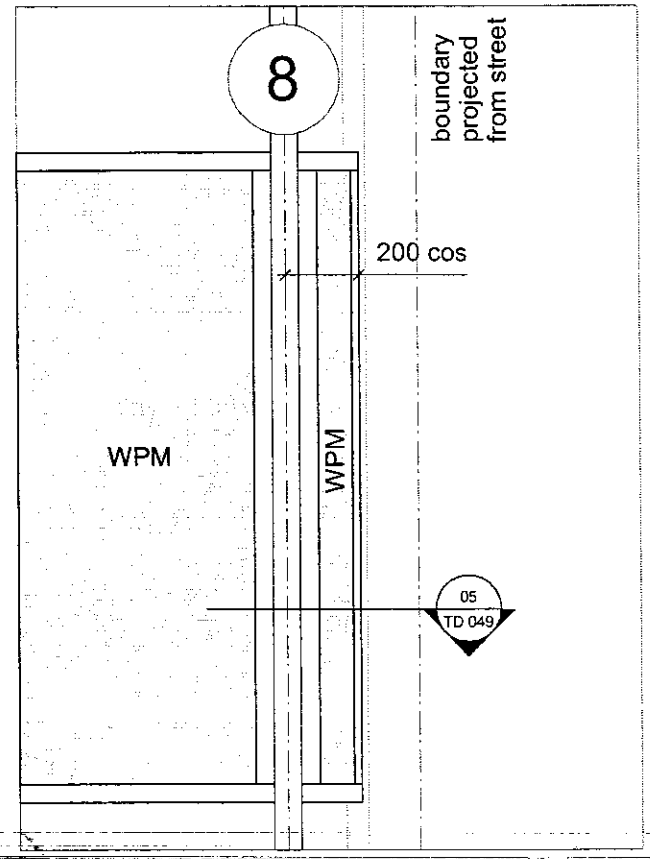


4 mesh (13)



5 mesh (14)

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NOTE: TO BE READ INCONJUNCTION WITH TD232 & TD234

NOTE: MESH PANELS (WPM-) SPOT WELDED TO FRAME, WHOLE PANEL HOT DIPPED GALVANISED (AFTER MESH WELDED ON)

NOTE: FOR DIMENSIONS OFF BOUNDARY REFER TO TD047 & TD048

NOTE: FOR HEIGHTS OF PANEL REFER TO TD222

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**PLAN: corner details**

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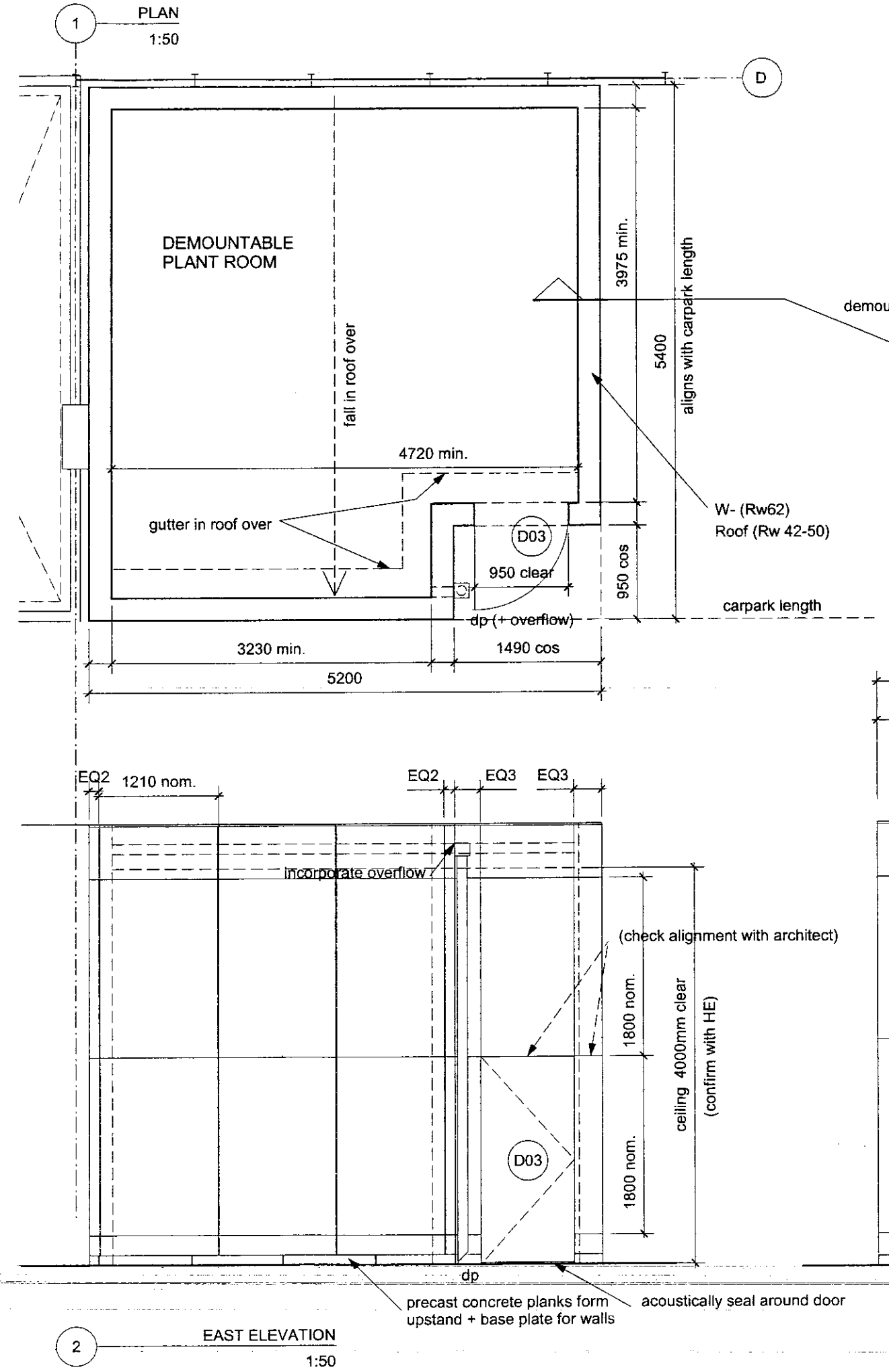
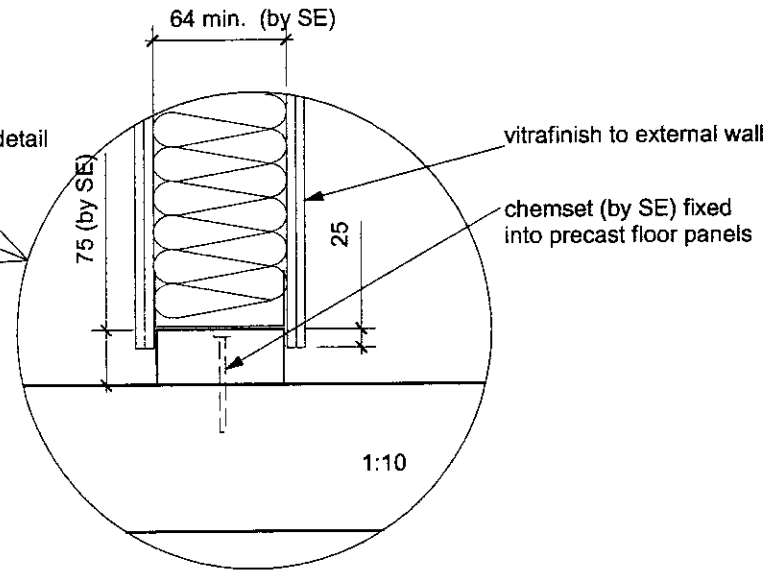
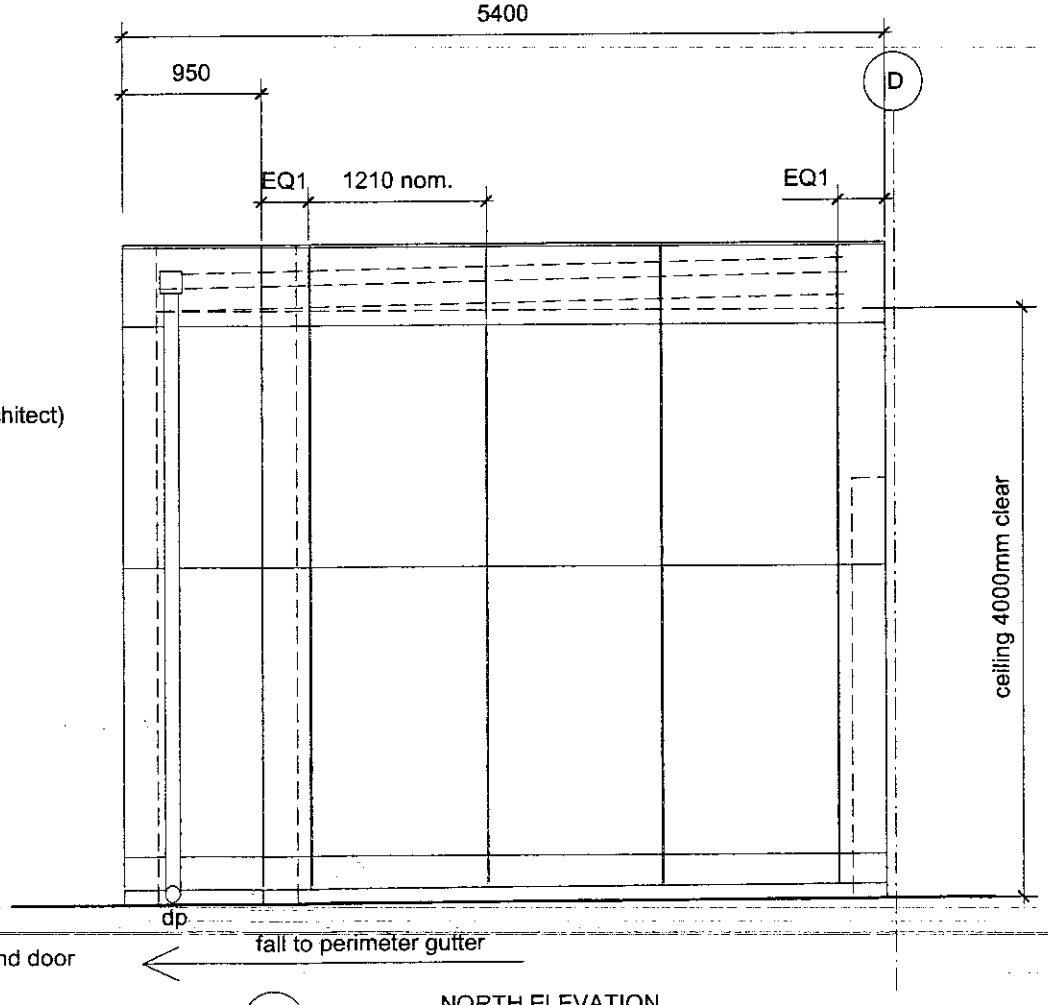




* countersink screws, flush finish with epoxy or sealant suitable for Vitra-application
* horizontal + vertical joints w. polyurethane sealant(black) + backing strips
* provide flashing to door head detail
* 'flush' parapet detail
* colour Vitra-finish to be agreed with architect
* flexible sealanr=t FR gyproc fire mastic or similar (confirm with Acoustic Engineer)

2 EAST ELEVATION
1:50



3 NORTH ELEVATION
1:50

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bilgola Lane Carpark Mona Vale
TITLE	elevations demountable plant room stage 1, first floor

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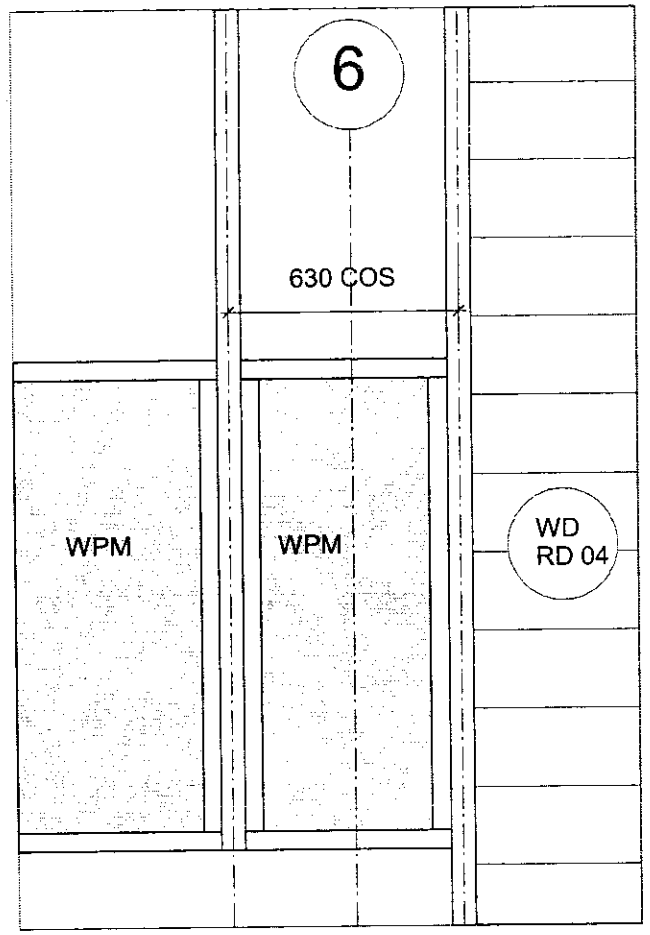

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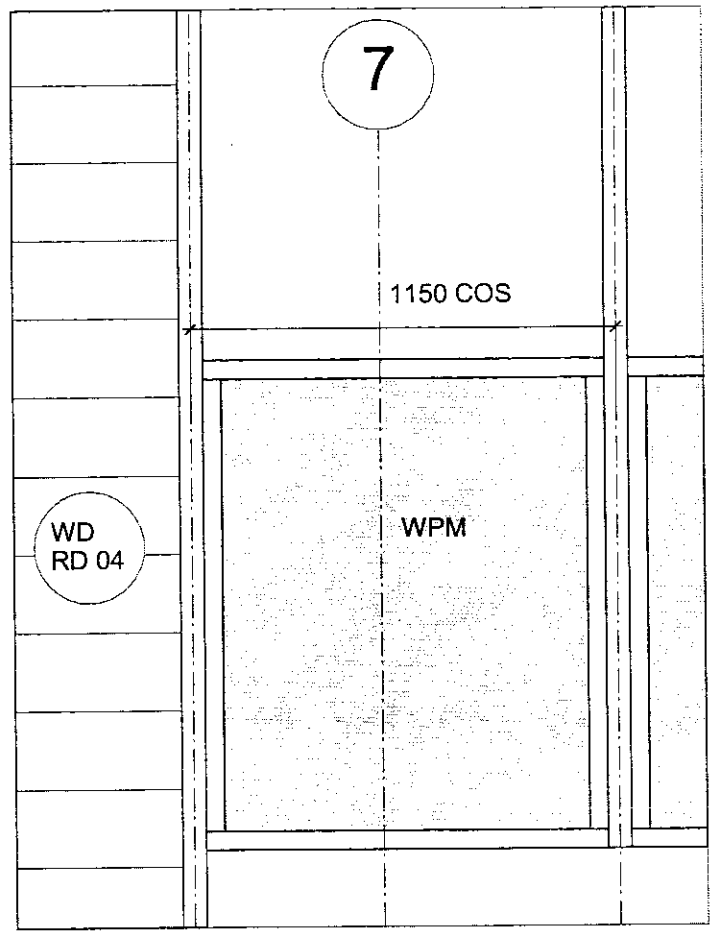
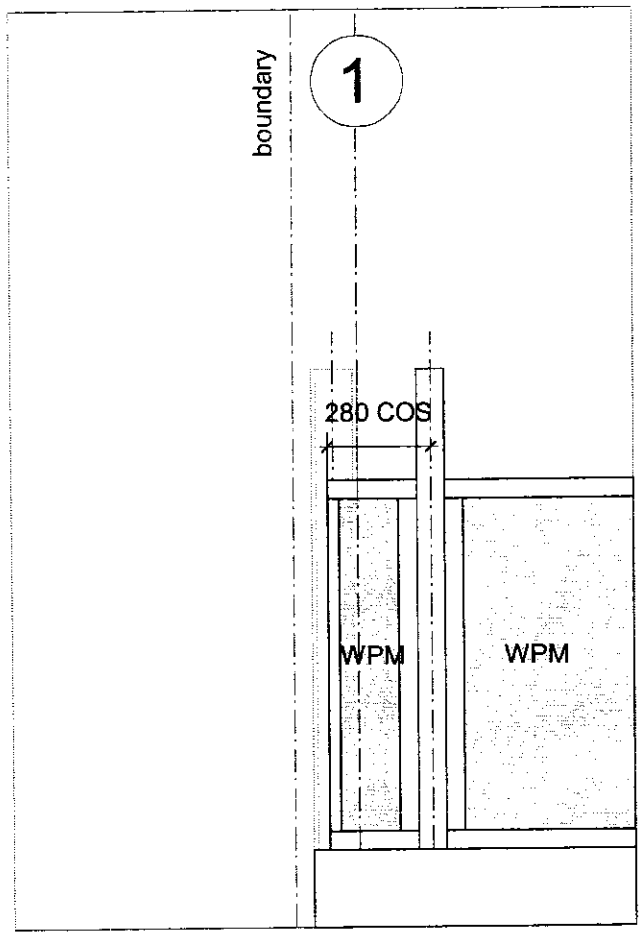
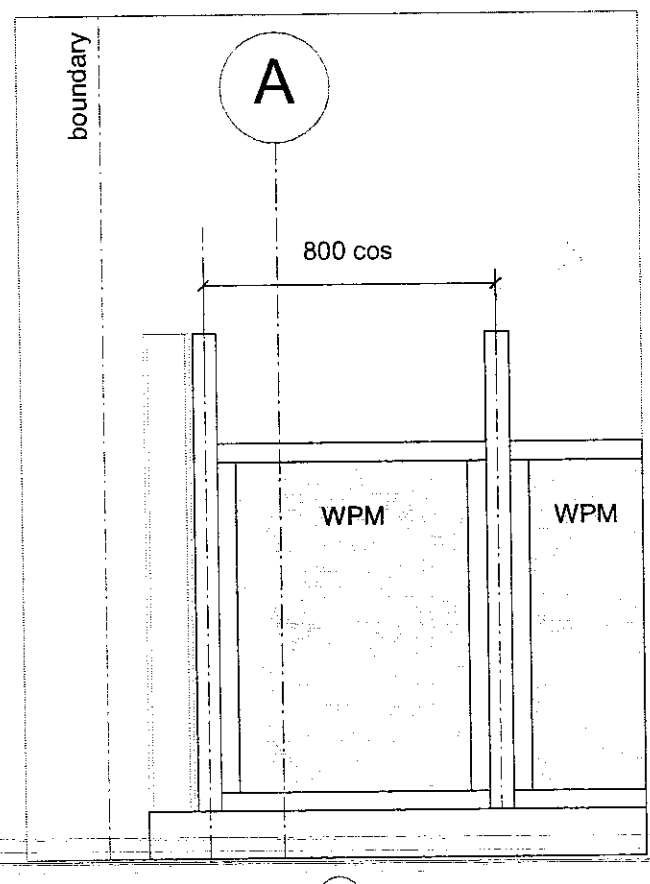


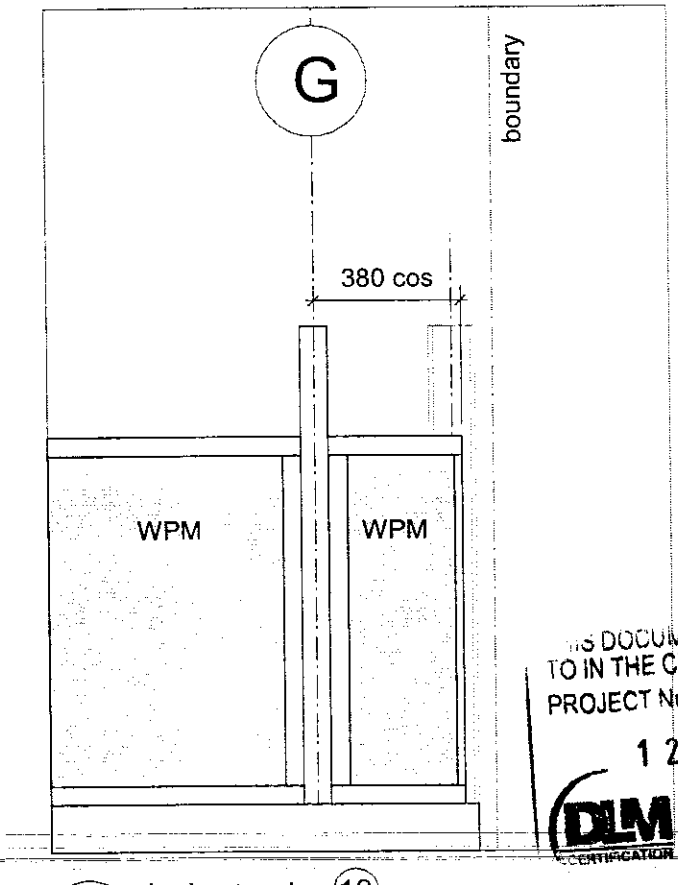
2 mesh (16)



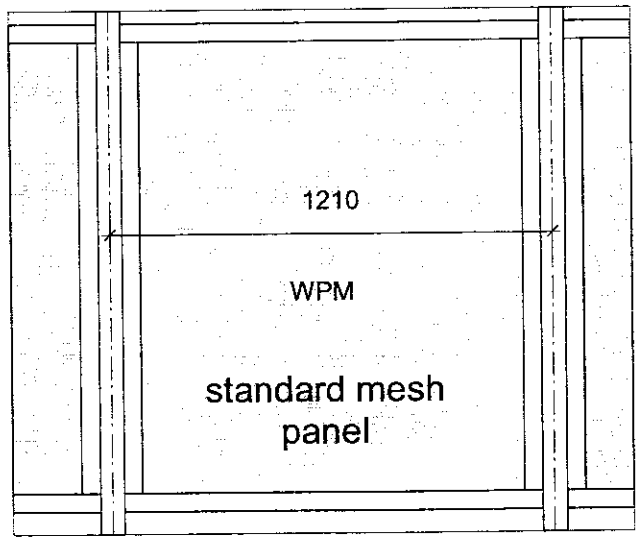
3 balustrade (17)



4 balustrade (18)



5 balustrade (19)



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NOTE: FOR DIMENSIONS OFF BOUNDARY REFER TO TD047 & TD048

NOTE: FOR HEIGHTS OF PANEL REFER TO TD222 & TD223

NOTE: FOR FIXING DETAILS REFER TO STRUCTURAL ENGINEER'S DRAWINGS

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**mesh & balustrade details**

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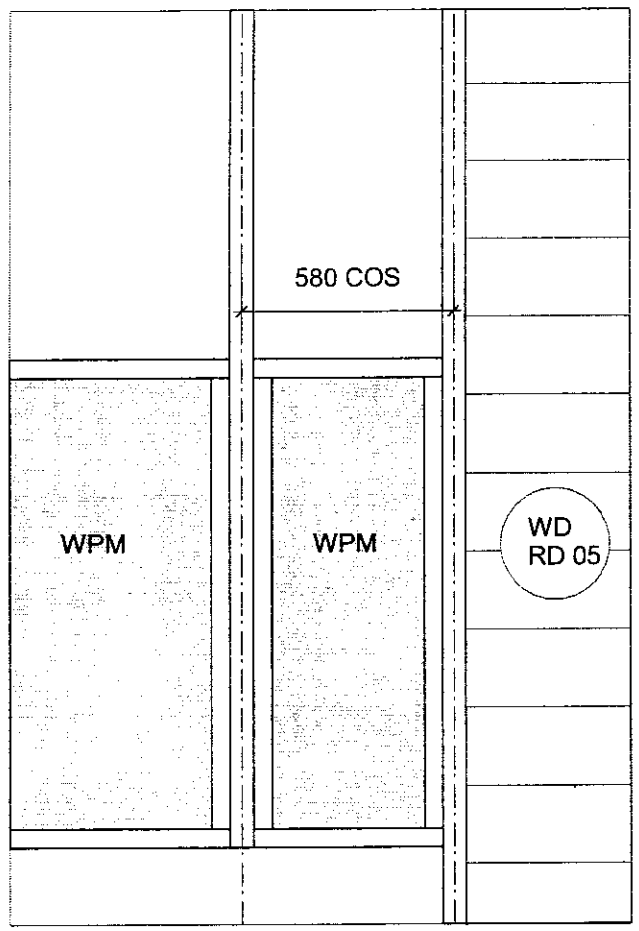

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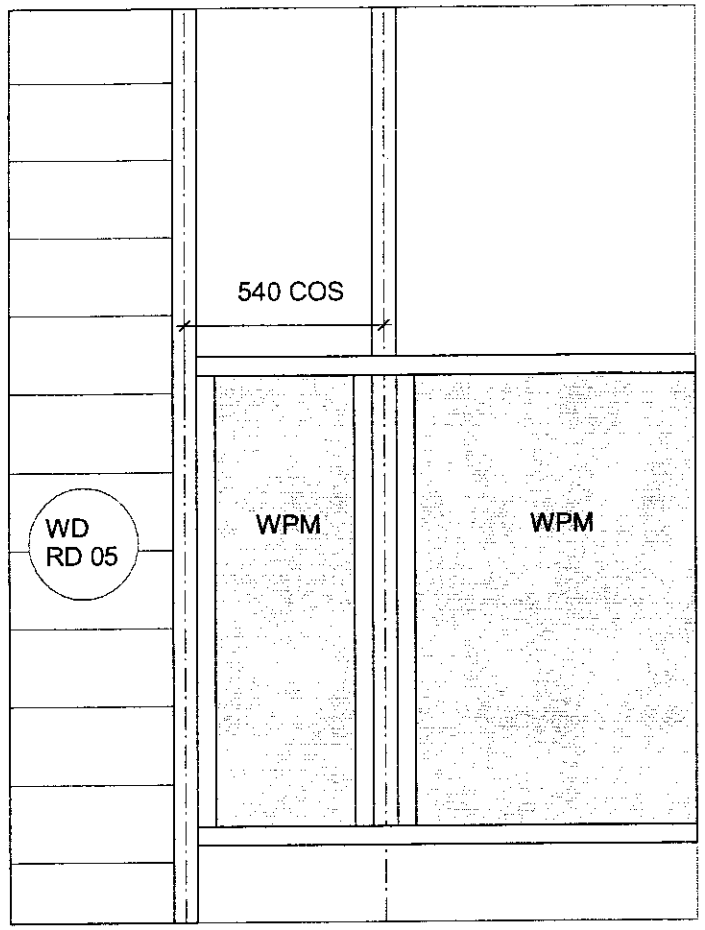
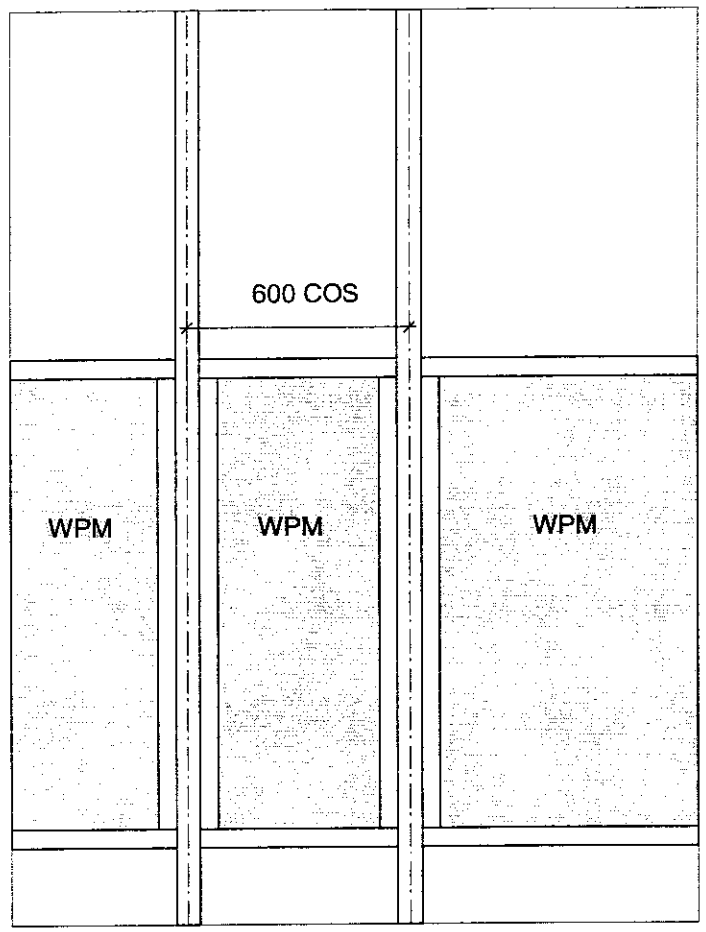


2 mesh (21)



3 balustrade panel (24)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**mesh & balustrade details 2**

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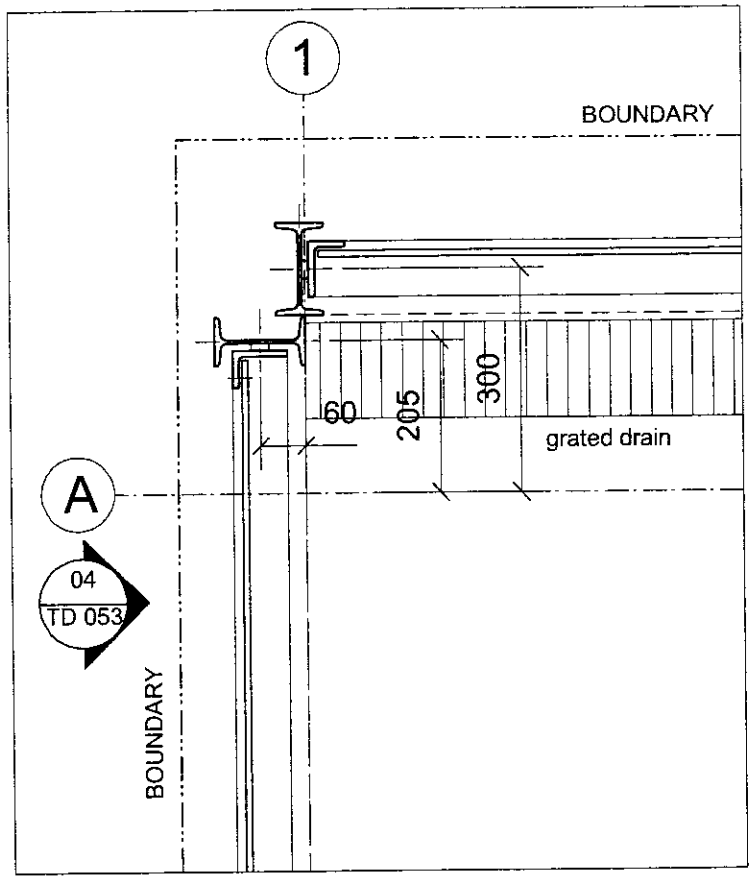
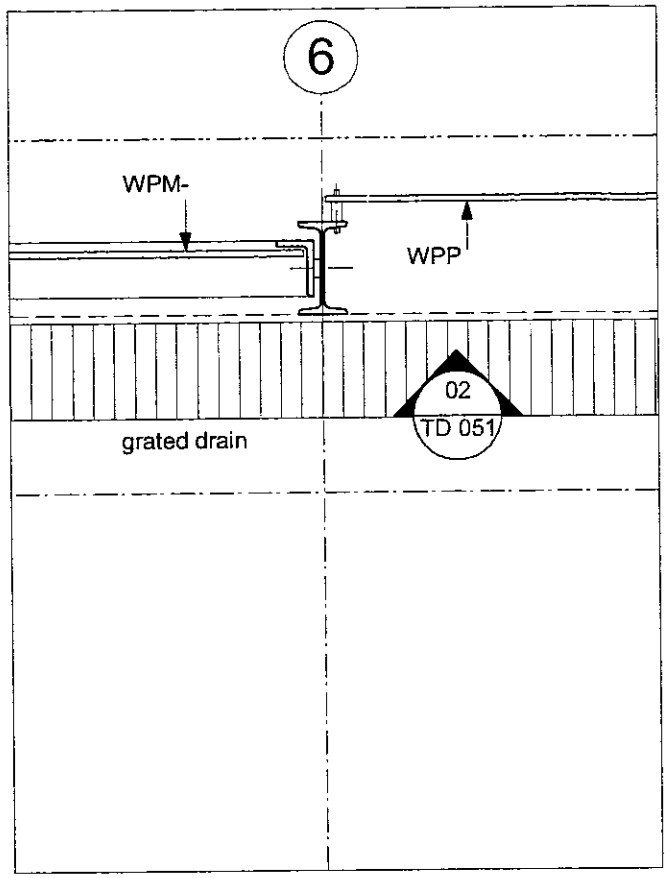
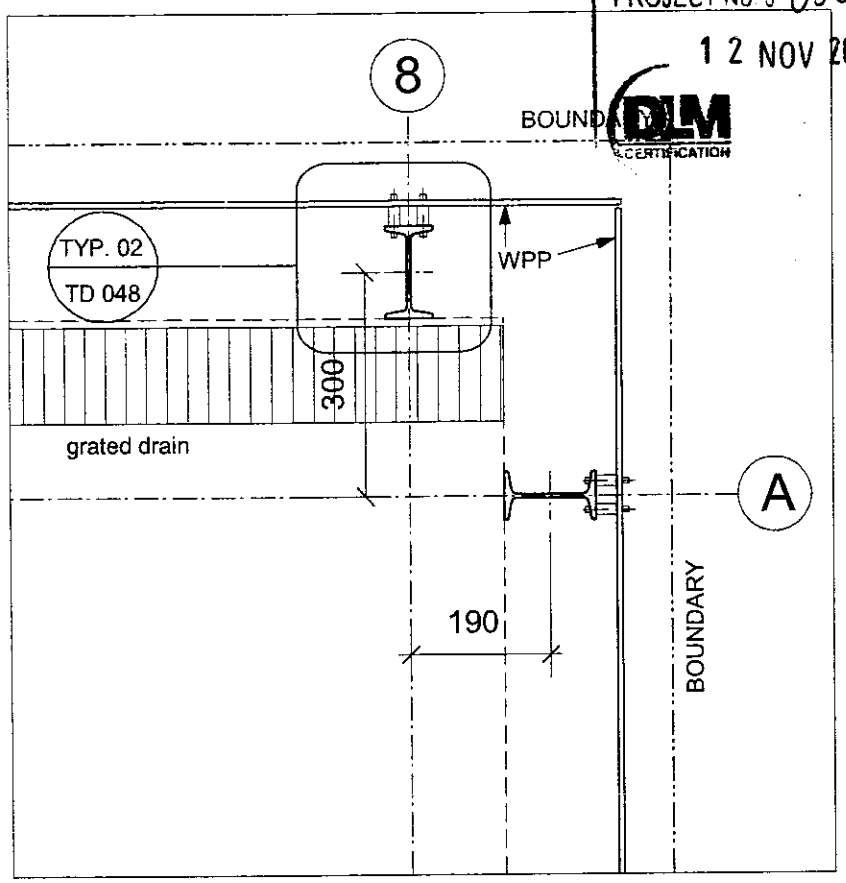


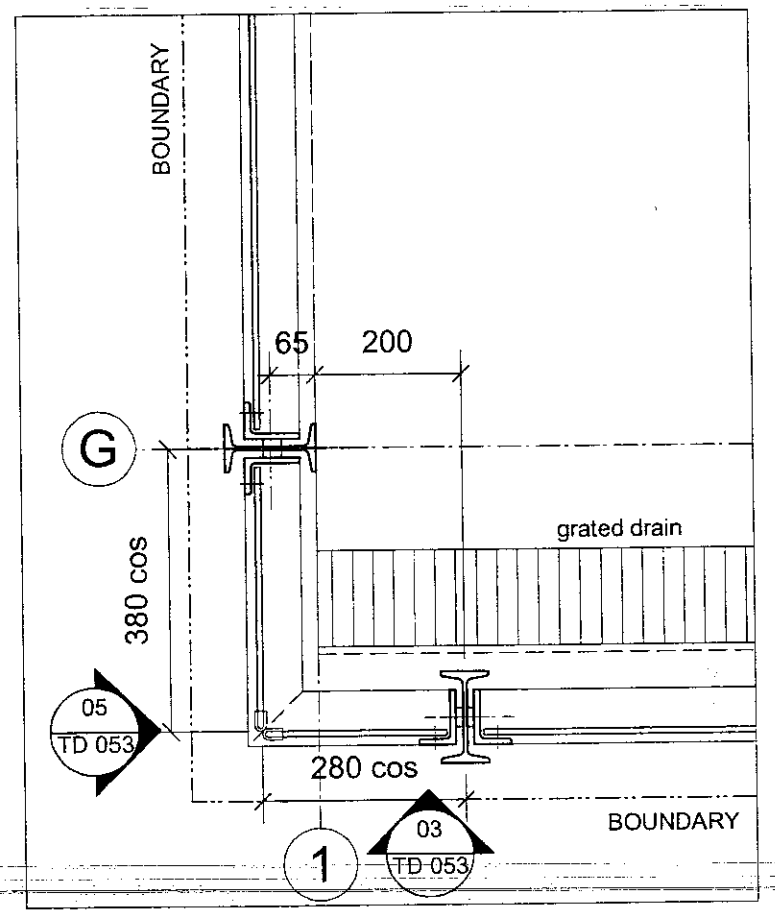
01 demountable balustrade-south-west corner



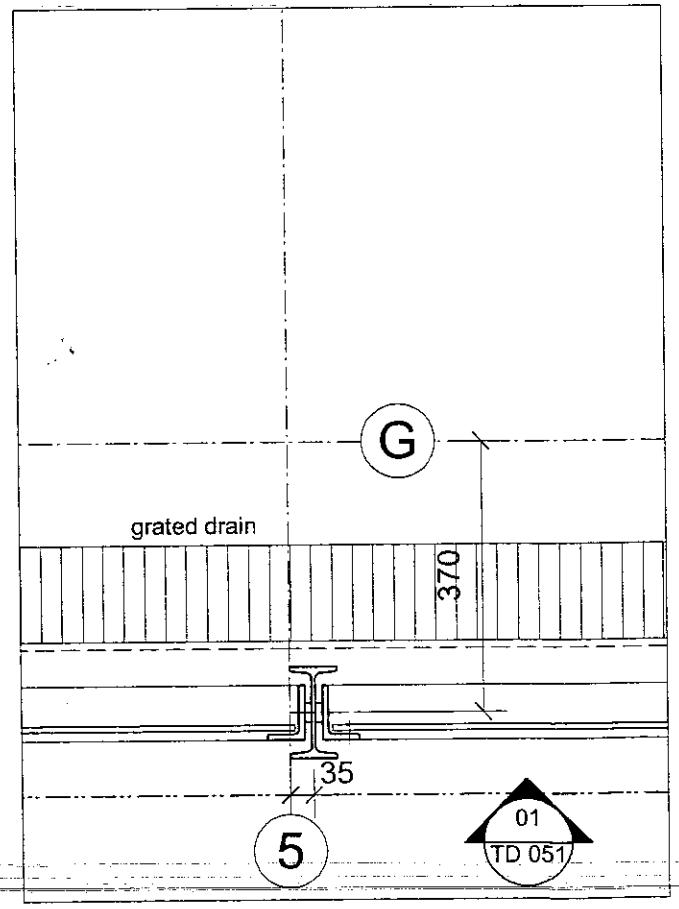
06 mesh to pic perf-eastern side



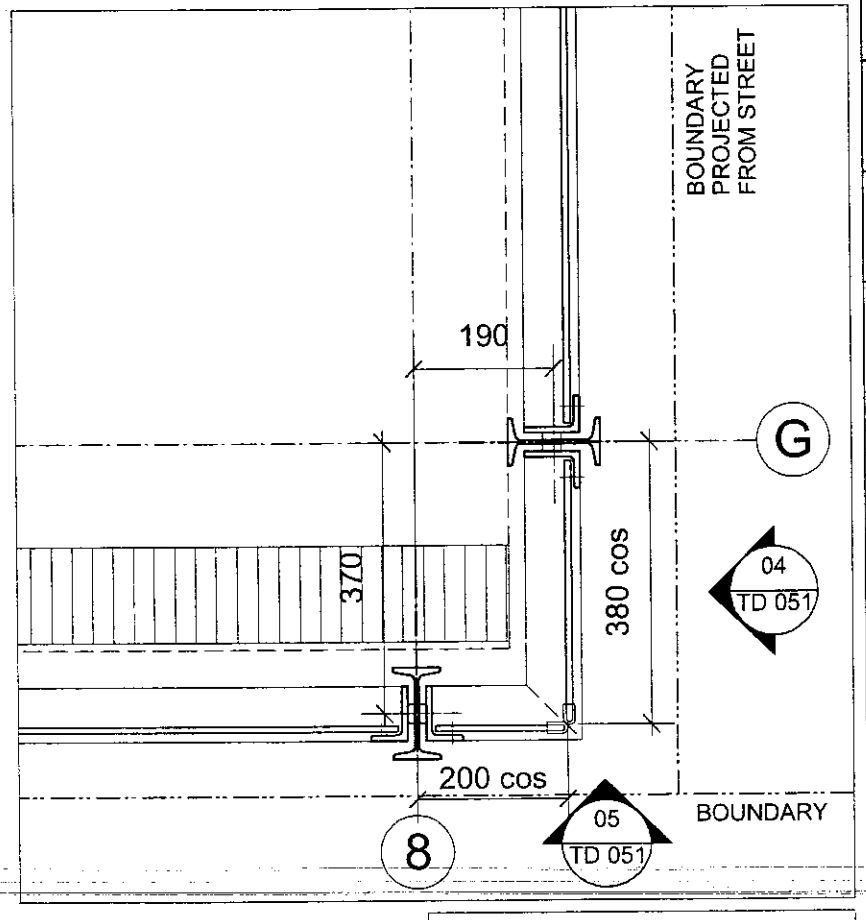
02 north-west corner



03 demountable balustrade-south-east corner



04 mesh connection on grid '5'



05 north-east corner

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**top plan - all stages**

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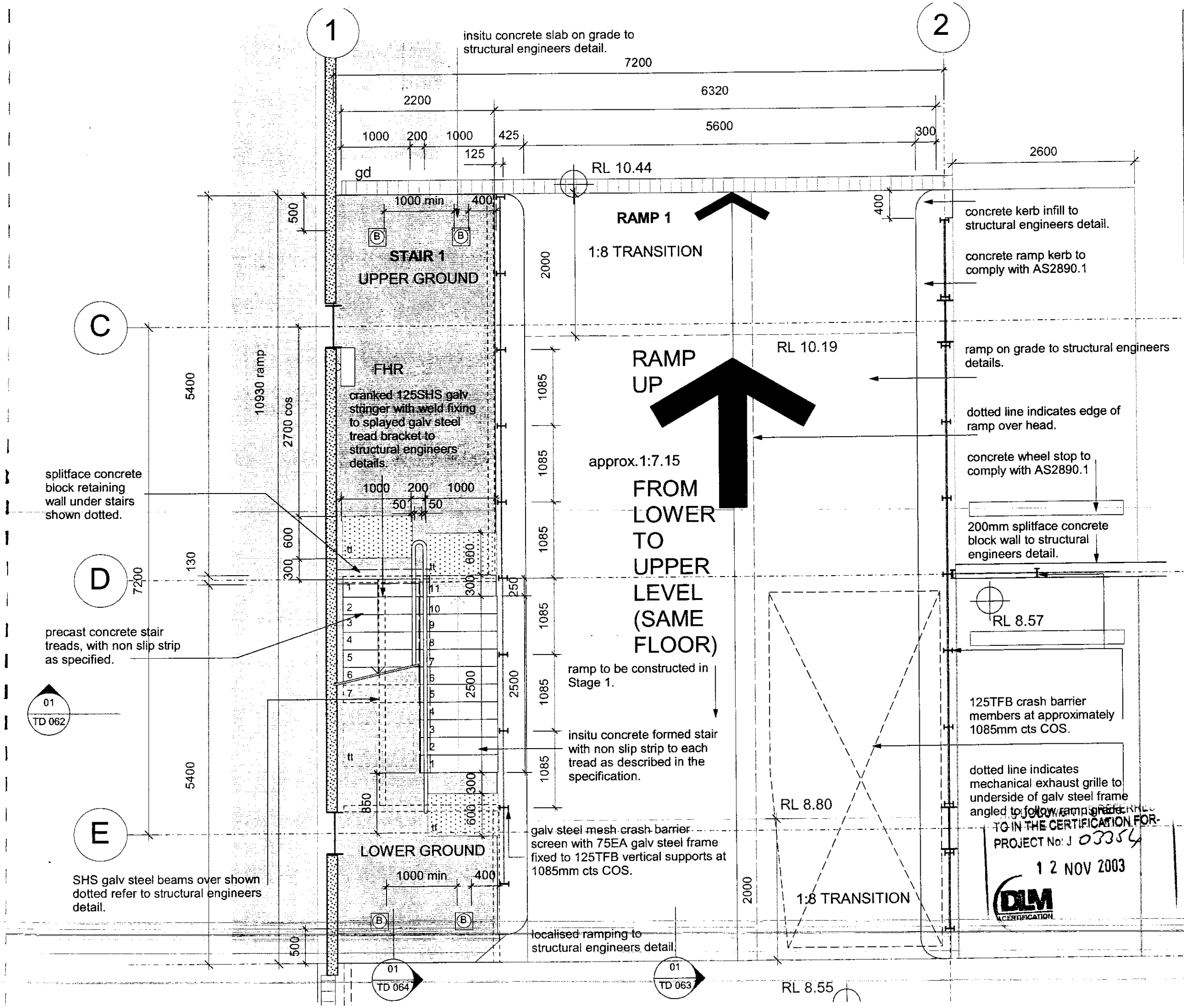

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**plan- ramp 1 & stair 1** **Ground Floor Stage 1**

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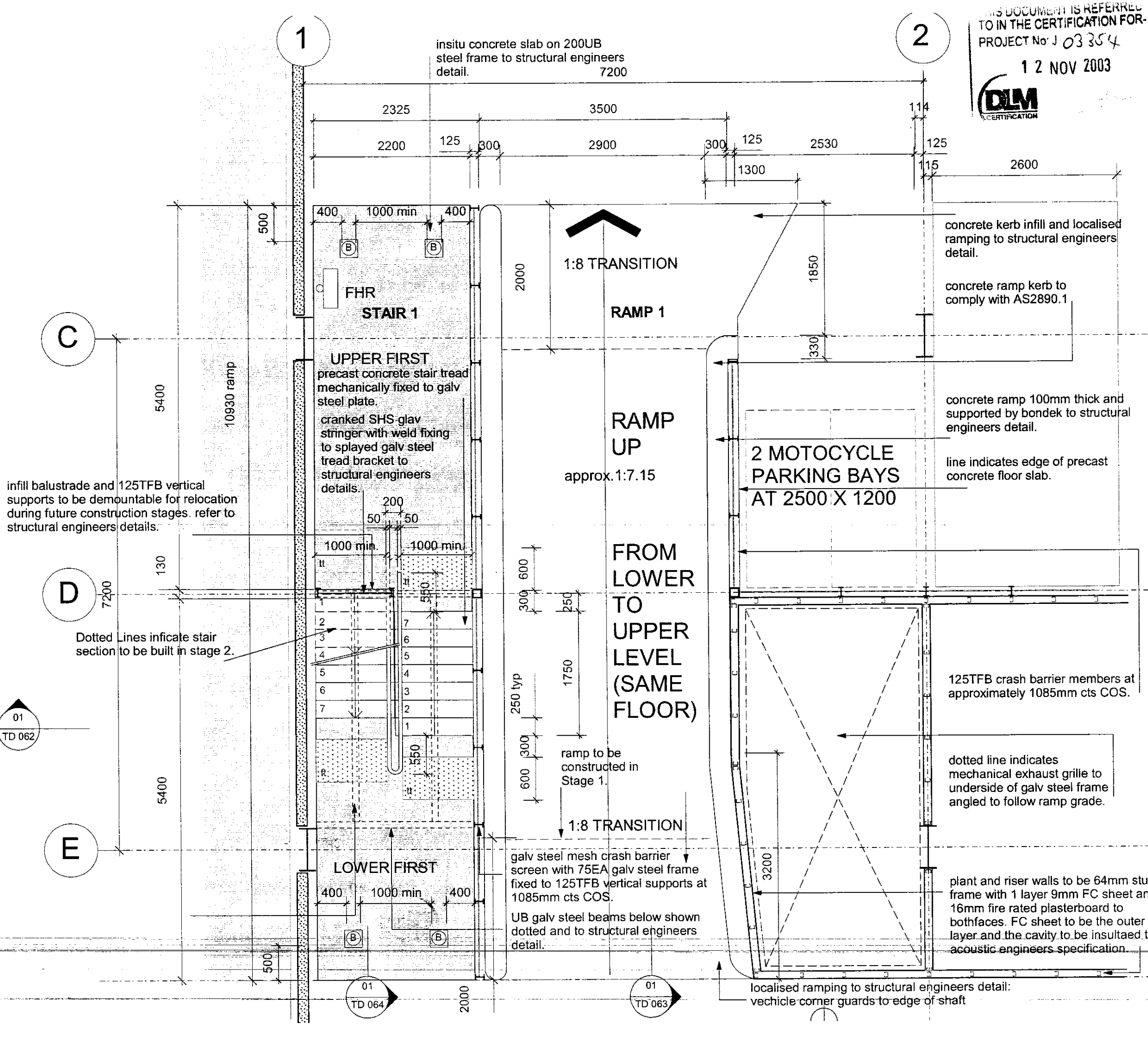

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**plan- ramp 1 & stair 1** **First Floor Stage 1**

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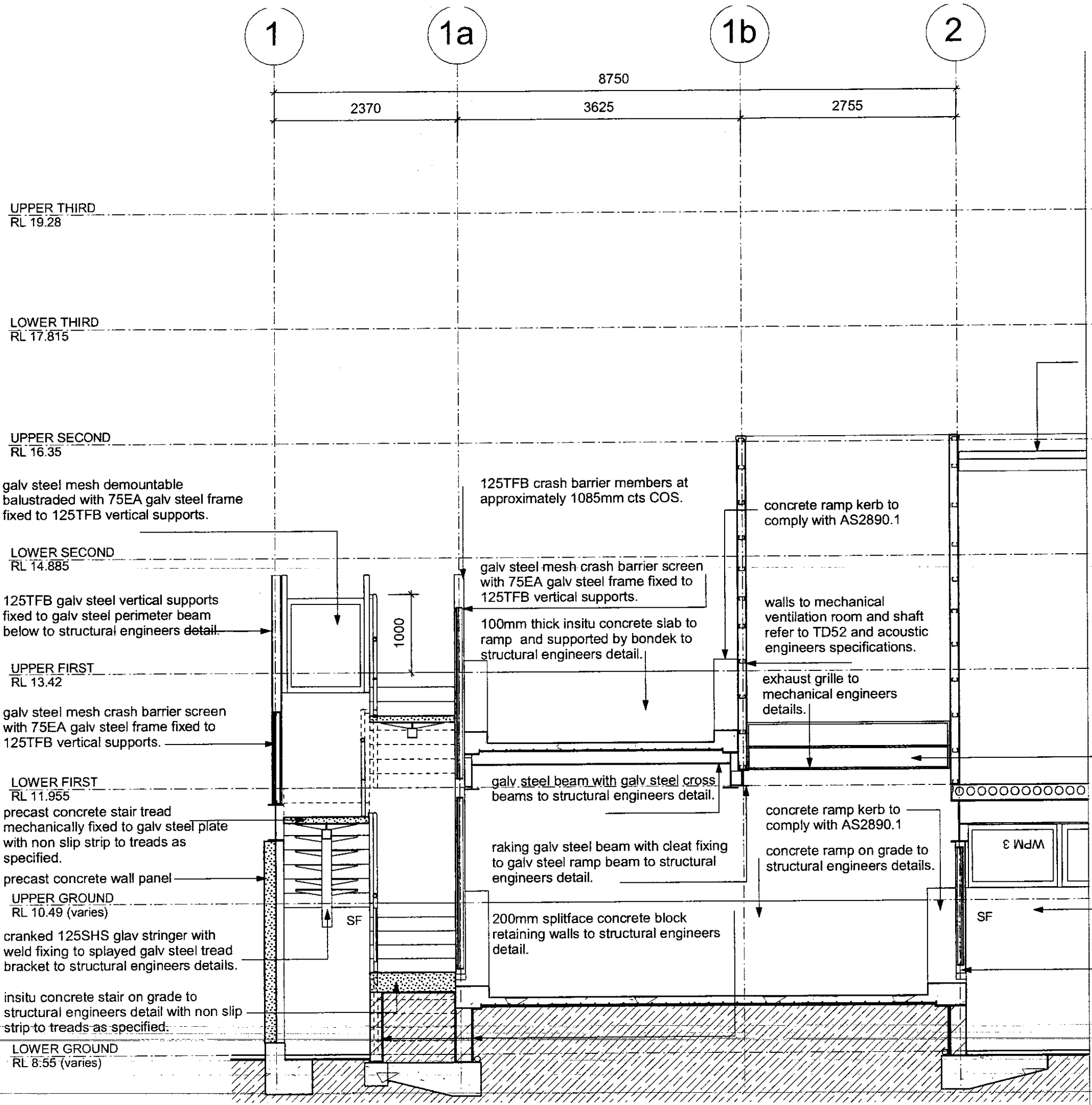

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**cross section- ramp 1 & stair 1 Stage 1**

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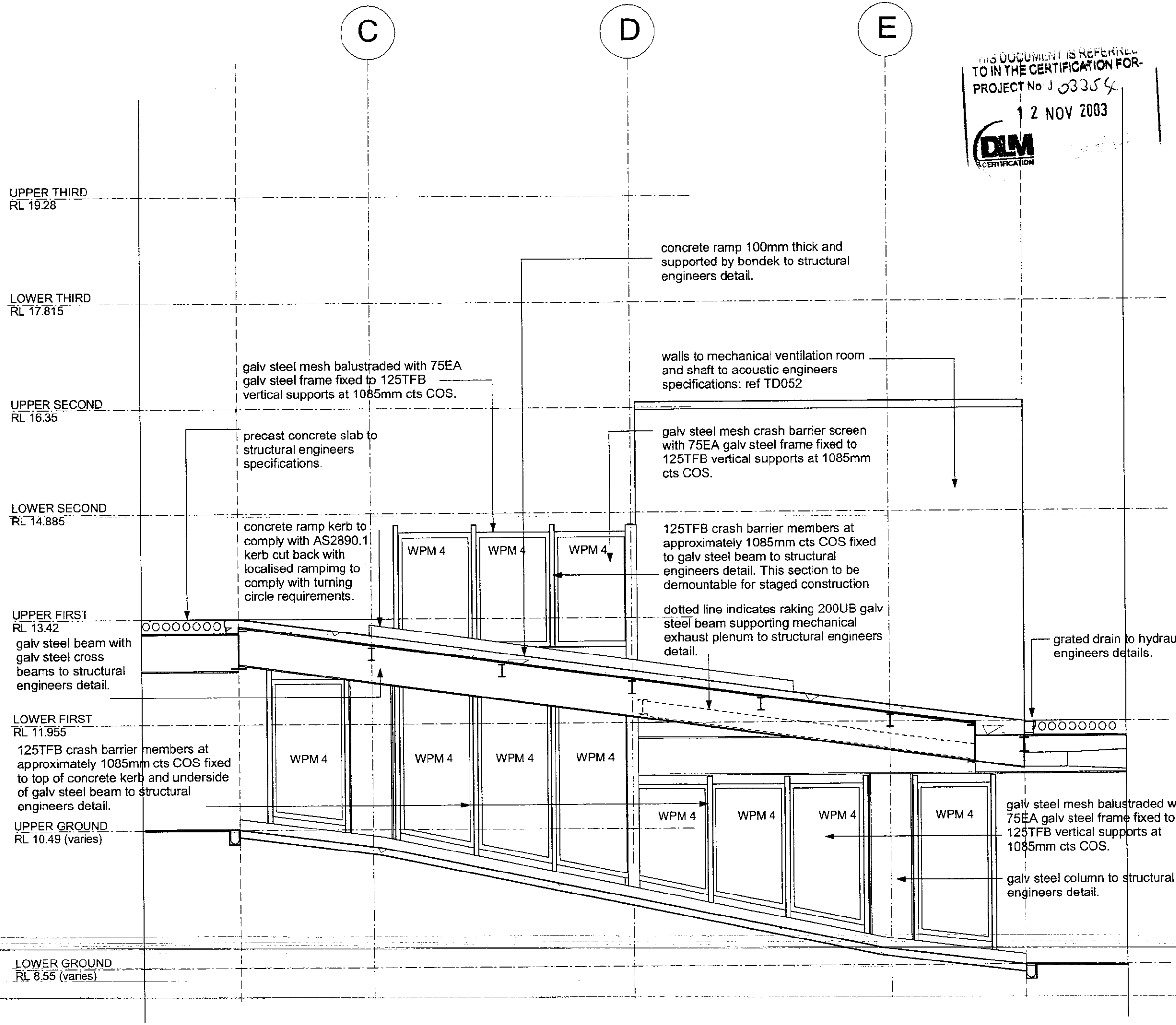

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**section- ramp 1** **Stage 1**

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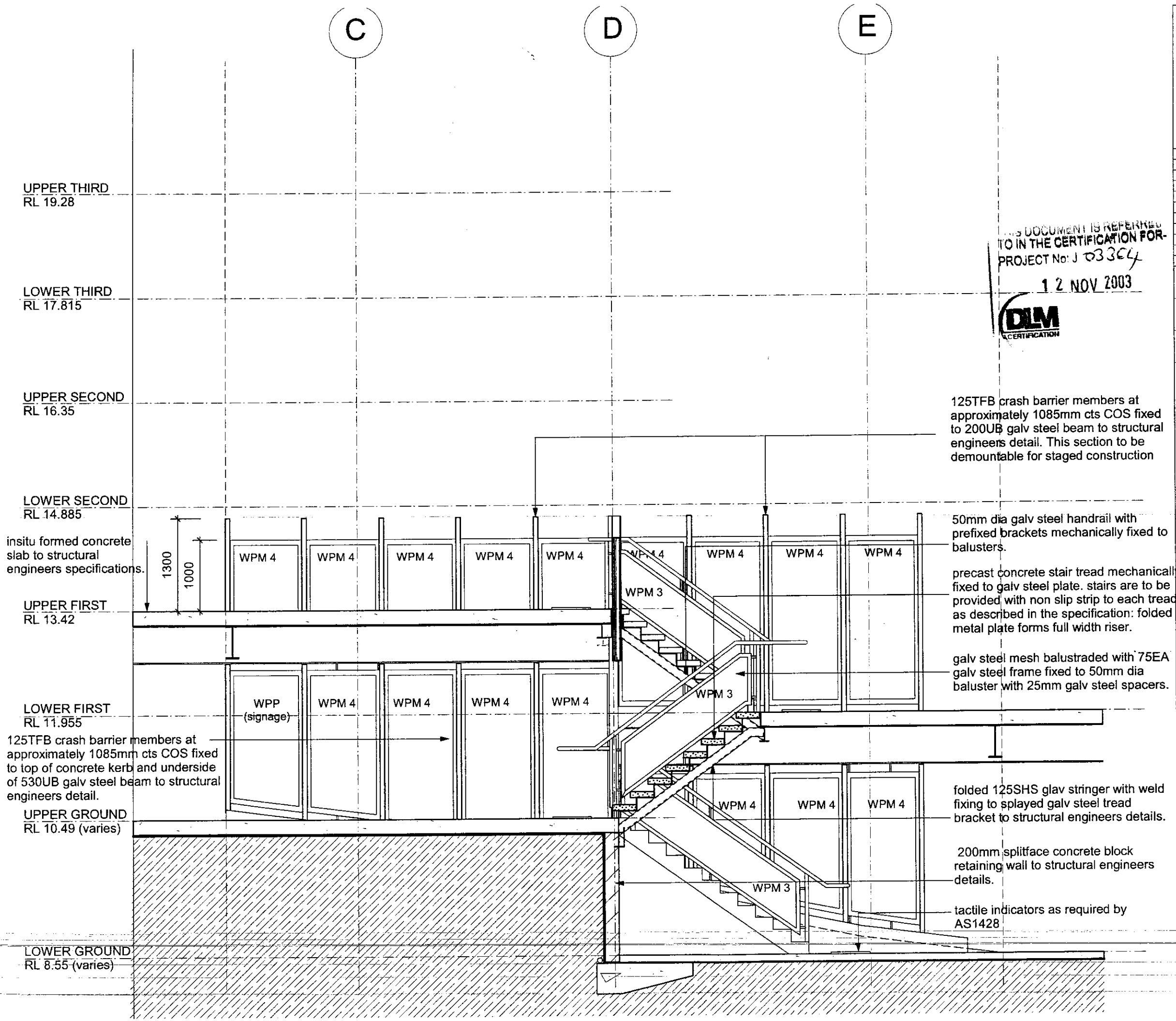

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**section- stair 1** **Stage 1**

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6 7 8

precast concrete slab on grade to structural engineers detail.

6150 8070

3590 2450 3850 125 3850

130 125 125 125

300 2990 300 2200 300 3250 300 300 3250 300

400 localised ramping to structural engineers detail. 400 635 localised ramping to structural engineers detail. 1025

10.069 FRL 10.069 FRL

23 400 400 500 400 1000 min 400 300 300

1865 2000 RAMP 2 STAIR 2 UPPER GROUND FHR 1085 1:8 TRANSITION RAMP 3 2000 concrete kerb infill to structural engineers detail. RAMP 4 2000

C

5400

RAMP DOWN TO UPPER LEVEL (FROM FLOOR ABOVE)

precast concrete stair tread mechanically fixed to galv steel plate.

cranked SHS galv stringer with weld fixing to splayed galv steel tread bracket to structural engineers details.

1000 min. 200 1000 min.
50 50

345 345 1085 1085 1085

RAMP UP approx.1:7.15 TO LOWER LEVEL (FLOOR ABOVE)

RAMP DOWN approx.1:7.15 FROM UPPER TO LOWER LEVEL (SAME FLOOR)

7200

D

300 600 300 600 300 600 300 600 1085 2500

1 2 3 4 5 6 7 tt 11 10 9 8 7 6 5 4 3 2 1 tt

01 TD 067

5400

E

galv steel mesh crash barrier screen with 75EA galv steel frame fixed to 125TFB vertical supports at 1085mm cts COS.

galv steel beams over head shown dotted and to structural engineers detail.

concrete ramp kerb to comply with AS2890.1

concrete ramp 100mm thick and supported by bondek to structural engineers detail.

LOWER GROUND

400 1000 min 400

localised ramping to structural engineers detail.

125TFB crash barrier members at approximately 1085mm cts COS.

1865 35 500 300 625 300

1:8 TRANSITION

02 TD 020 SIM.01 TD 064 01 TD 068

precast concrete slab on grade to structural engineers detail.

gd

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**plan- ramp 2, 3, 4 & stair 2** **Ground Floor Stage 1**

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6 7 8

C D E

insitu concrete slab on galv steel frame to structural engineers detail.

6150 8070

3590 2450 3850 125 3850

130 2990 300 400 300 2200 125 400 400 1000 min 400 635 3250 300 300 1025 3250 300

localised ramping to structural engineers detail.

1:8 TRANSITION

concrete kerb infill to structural engineers detail.

1865 2000 RAMP 2 500 STAIR 2 FHR UPPER FIRST 1085 RAMP 3 2000 300 300 2000 RAMP 4

5400

handrail to be relocated during stage 2 (shown dotted) construction. 125TFB to be mechanically fixed to the exposed edge of the concrete slab.

1000 200 1000 50 50

1085 1085 1085

approx.1:7.15

RAMP DOWN

approx.1:7.15

FROM UPPER TO LOWER LEVEL (SAME FLOOR)

ramp to be constructed in Stage 1.

7200

Dotted Lines inficate stair section to be built in stage 2.

ramp to be constructed in Stage 2 shown dotted

ramp to be constructed in Stage 2 shown dotted

1750

galv steel mesh crash barrier screen with 75EA galv steel frame fixed to 125TFB vertical supports at 1085mm cts COS.

galv steel beams shown dotted and to structural engineers detail.

concrete ramp kerb to comply with AS2890.1

concrete ramp 100mm thick and supported by bondek to structural engineers detail.

01 TD 067

5400

localised ramping to structural engineers detail.

LOWER FIRST

400 1000 min 400

localised ramping to structural engineers detail.

ramp to be constructed in Stage 1.

125TFB crash barrier members at approximately 1085mm cts COS.

1865 2000 1055 625 300 625 300

415 300 550

02 TD 020

670 localised ramping to structural engineers detail. 600

SIM.01 TD 064 500 815

01 TD 068 1025

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**plan- ramp 2, 3, 4 & stair 2** **First Floor Stage 1**

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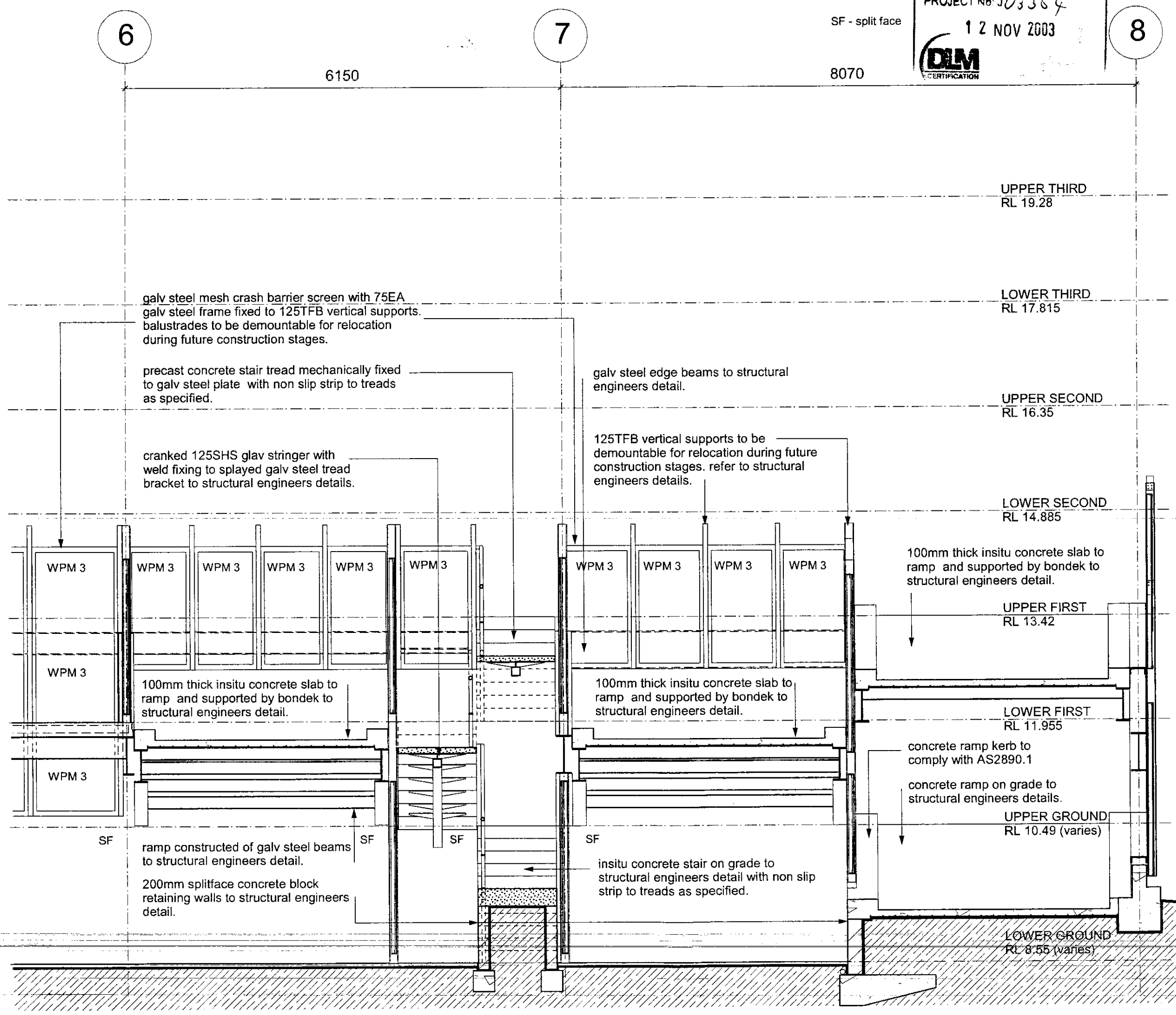

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**cross section- ramps 2, 3, 4 & stair 2** **Stage 1**

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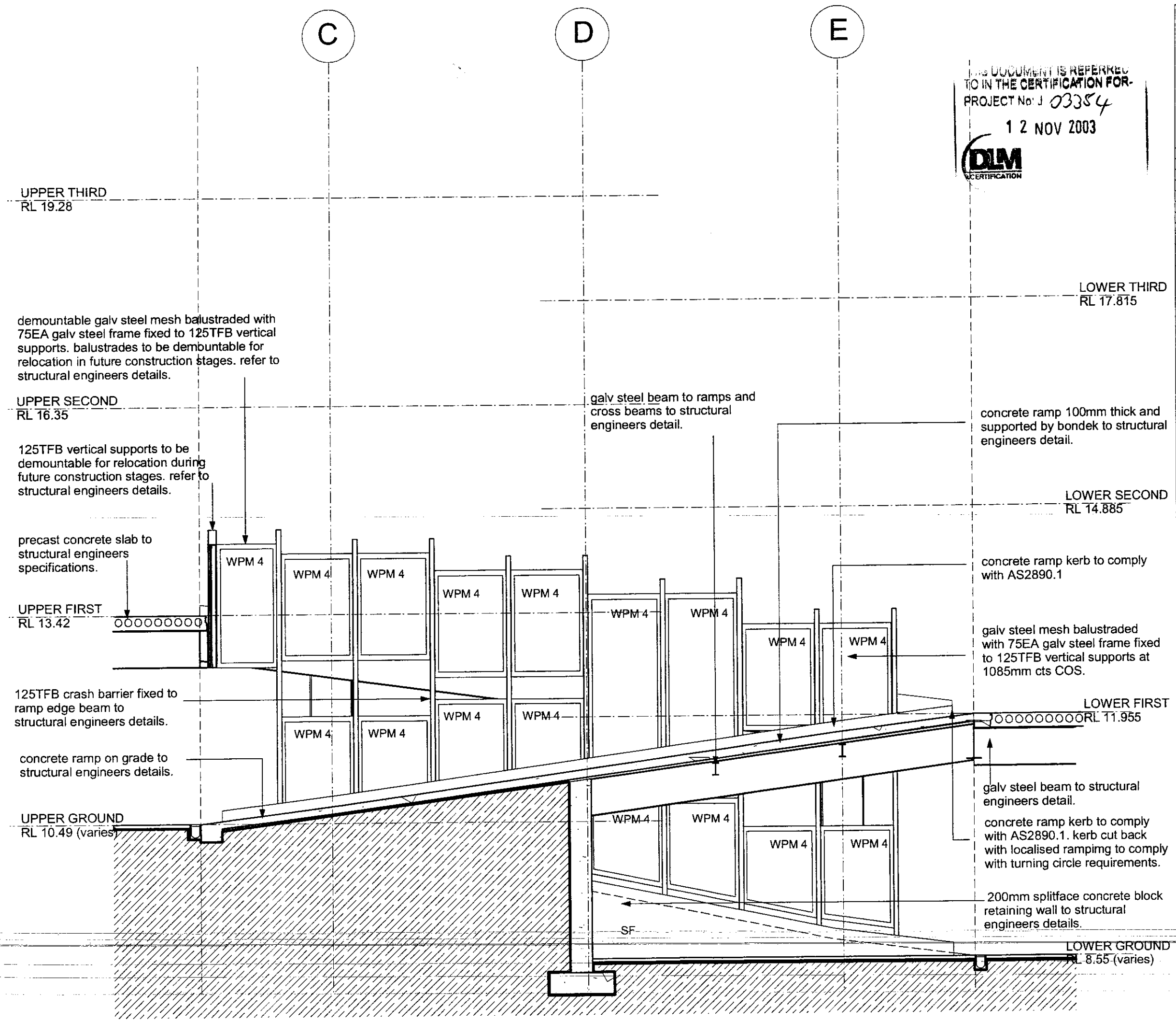

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	**section ramp 3** **Stage 1**

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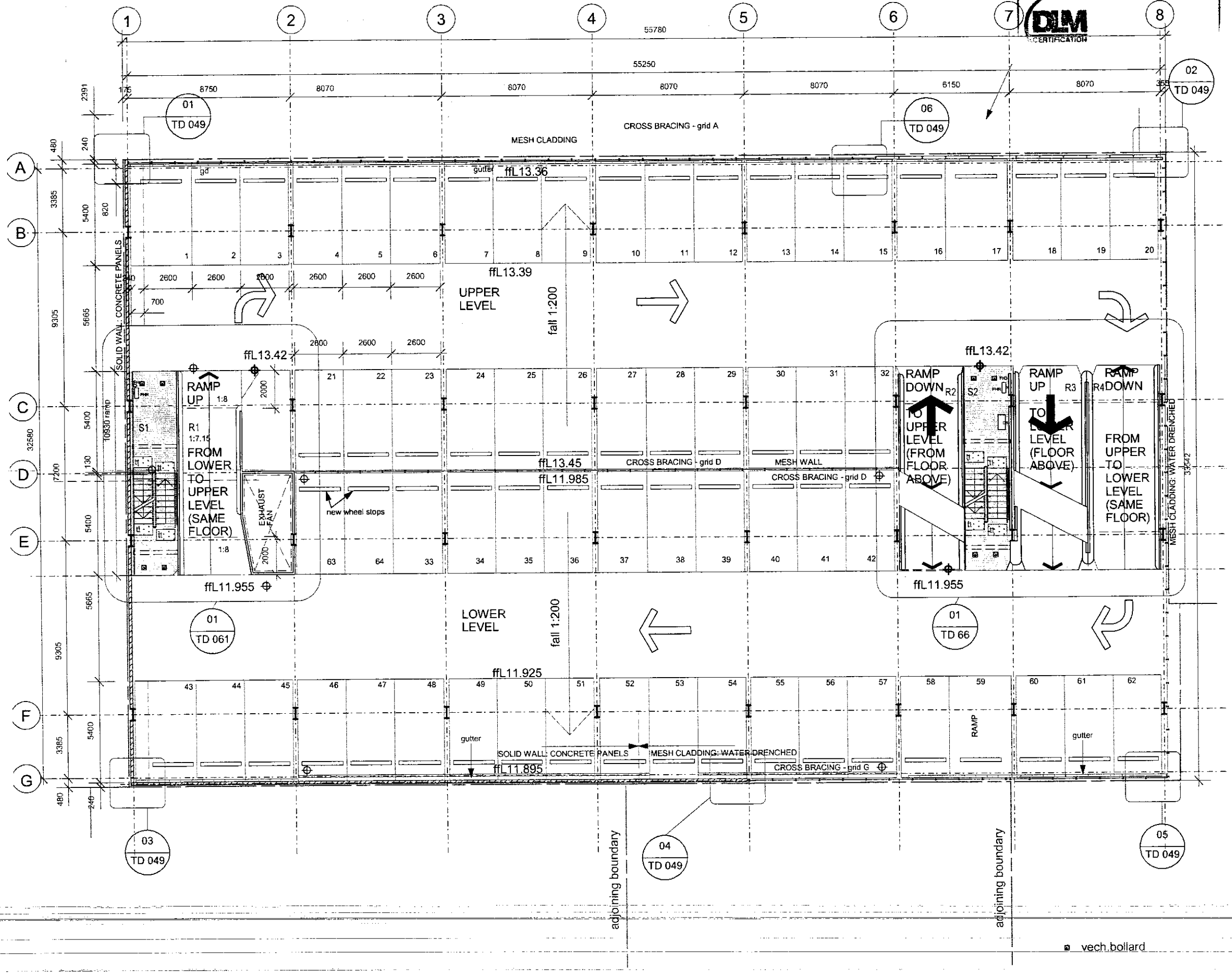

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1	18.03.03	layout grids 1-2 amended to co-ordinate with johnson's site layout	tmc
2	01.04.03	general notes added: prelim issue to DLM (BCA cons.)	tmc
3	08.04.03	stairs moved: levels fixed	tmc
4	22.04.03	grids A-G realigned to suit detail sheets TD040 + 041	tmc

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units 9,11+12 5 Vuko Place
Warriewood NSW 2102
t: 02 9970 1111
f: 02 9970 7150

PROJECT: Bungan Lane Carpark
Mona Vale

TITLE: First floor plan
STAGE 2

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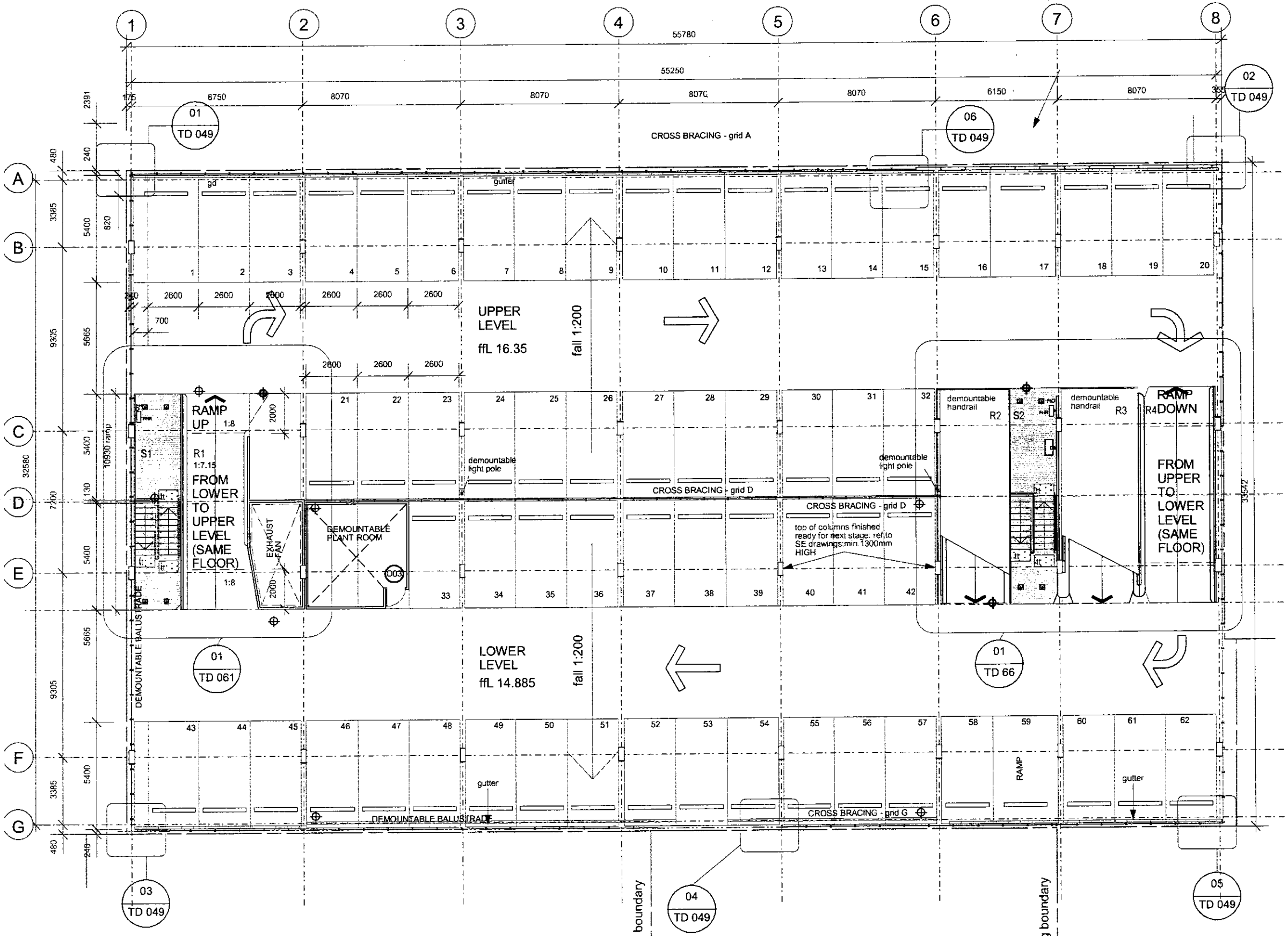

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Second floor plan STAGE 2

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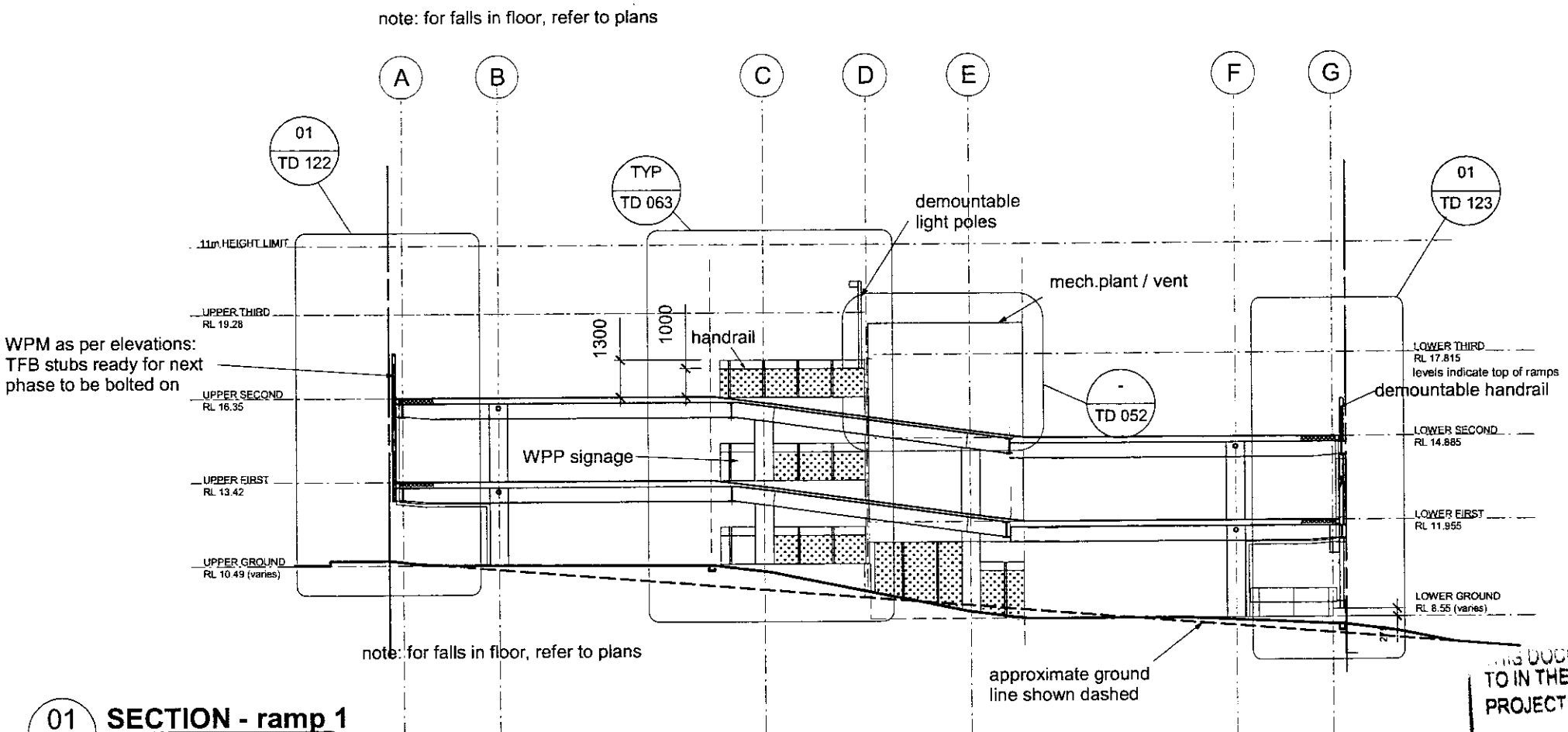
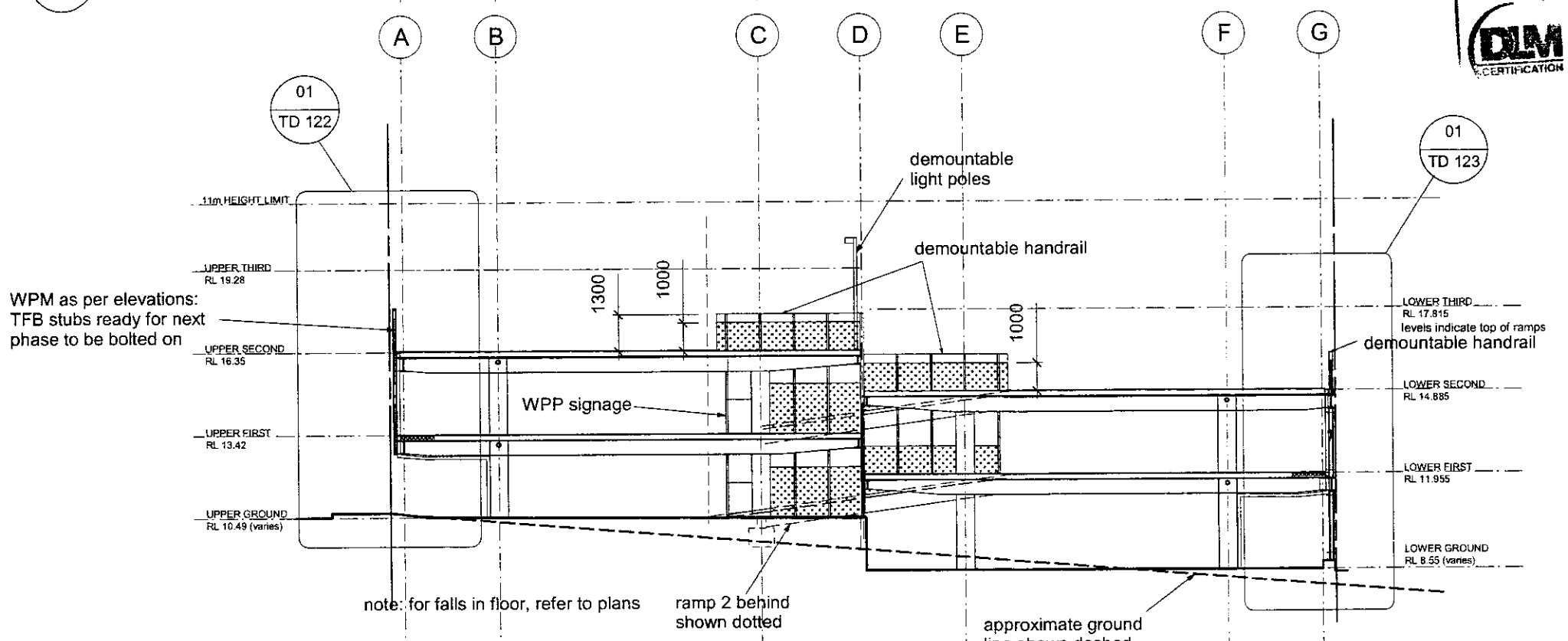


01 **SECTION - ramp 1**



02 **SECTION - adjacent ramp 2**

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Sections STAGE 2

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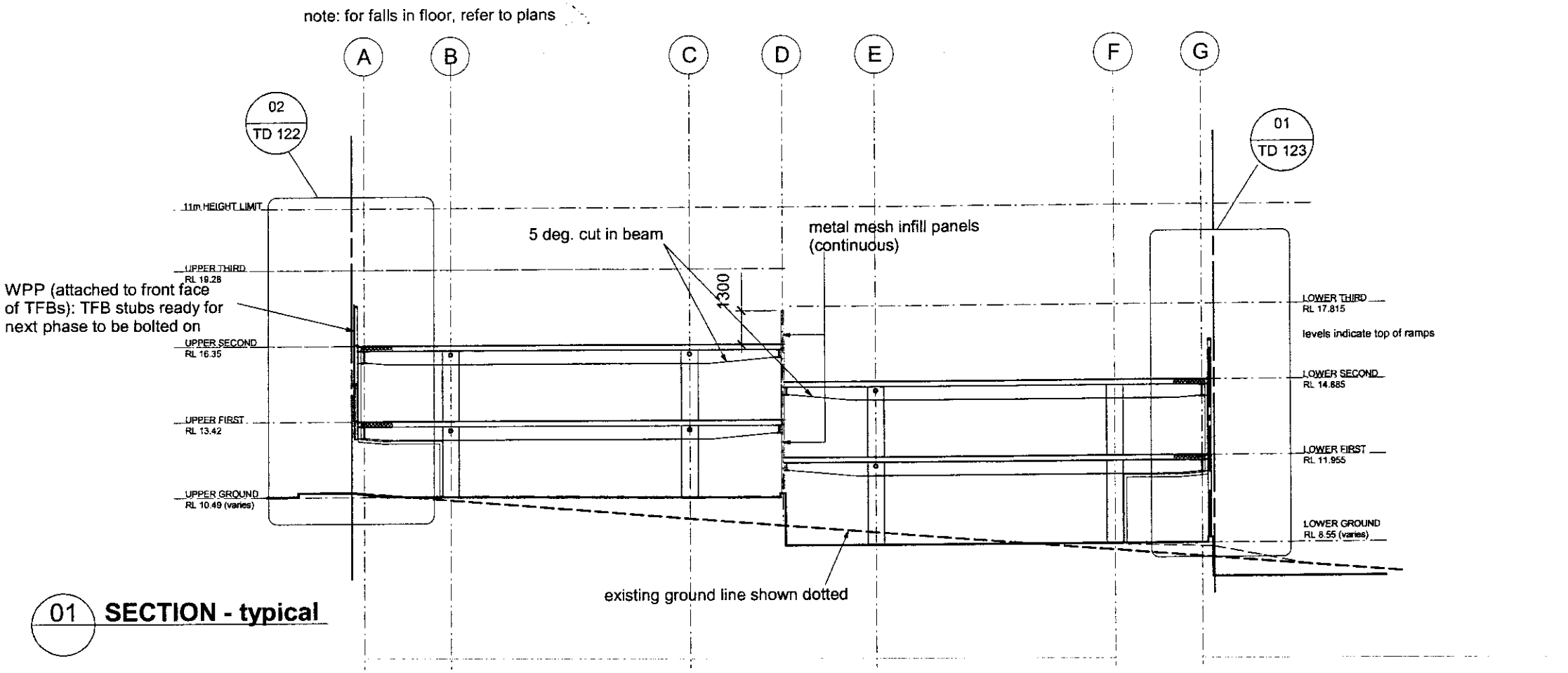

01 **SECTION - typical**

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CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Sections STAGE 2

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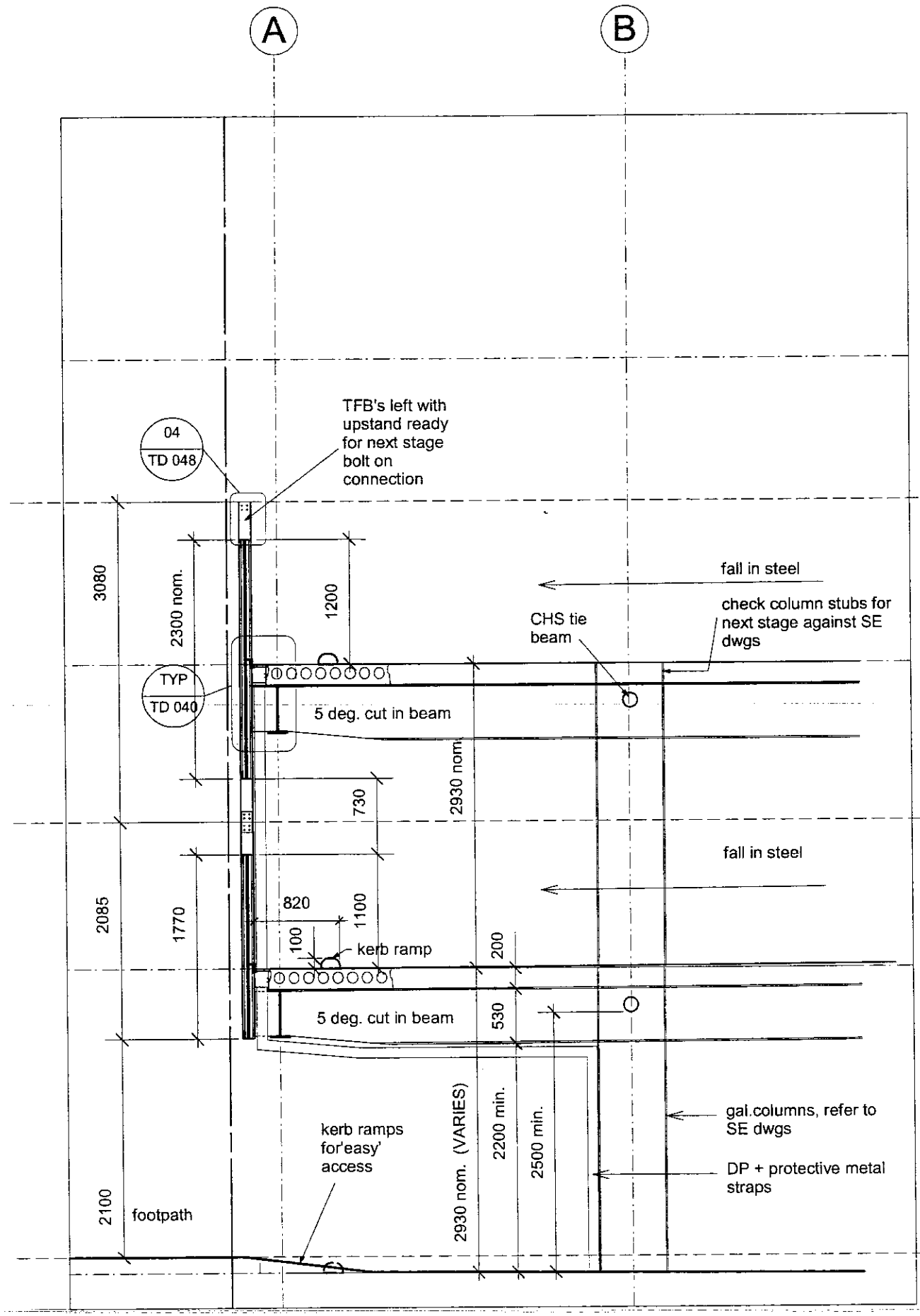

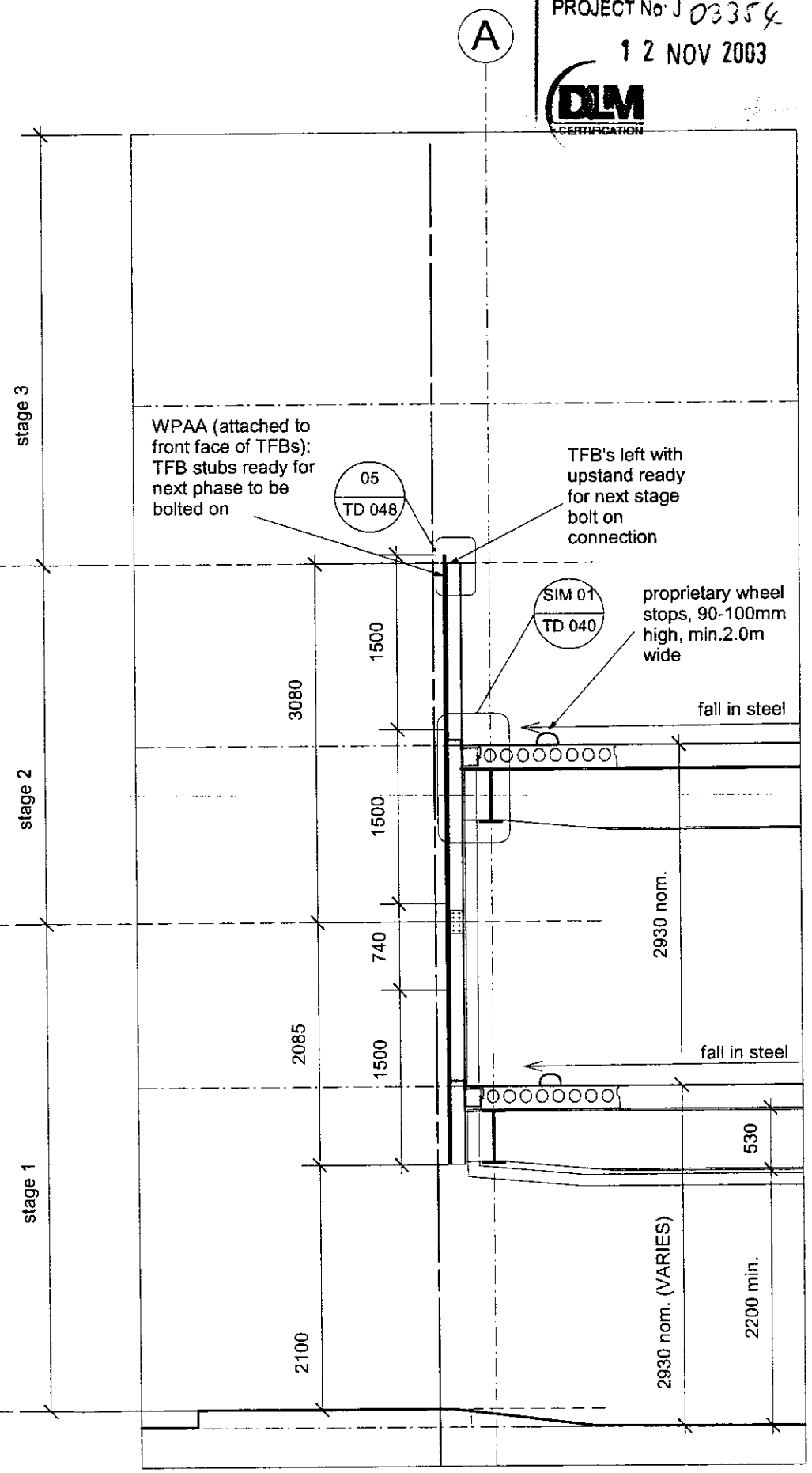

01 TYPICAL SECTION EXPANDED MESH, WEST WALL

02 TYPICAL SECTION 'PIC PERF', WEST WALL

NOTE: all structure to be checked against SE dwgs

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections WEST WALL STAGES 1, 2

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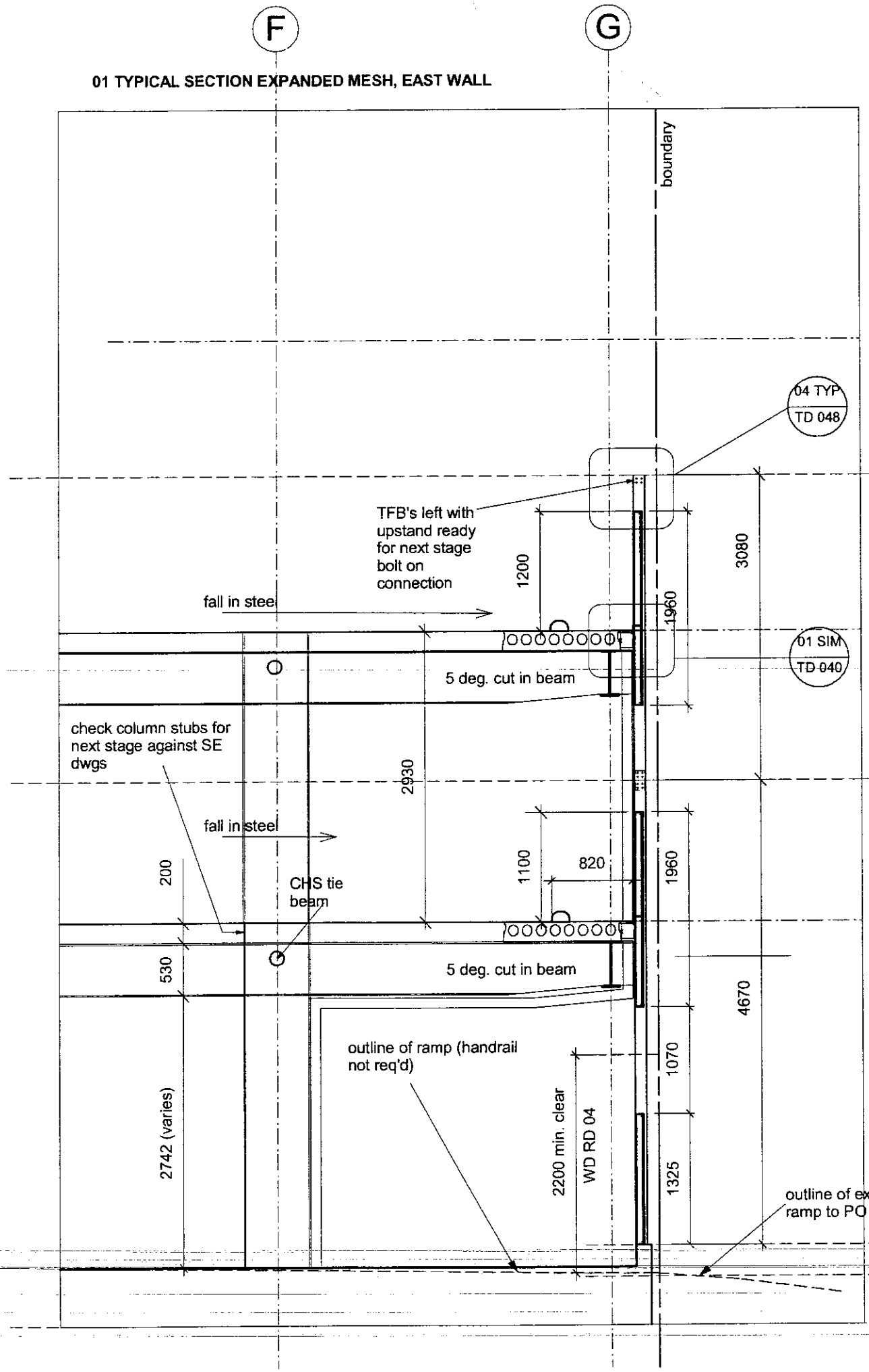
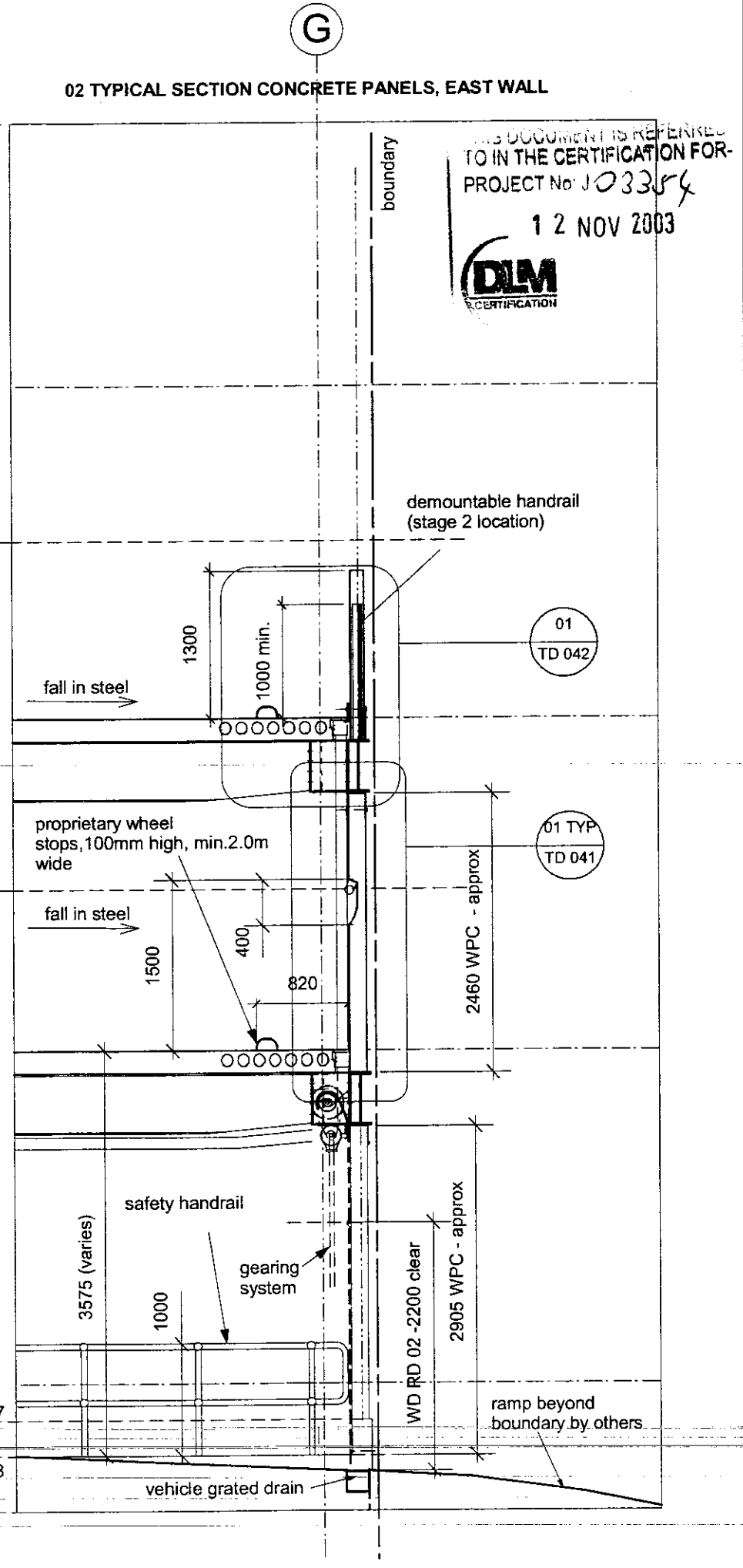
NOTE: all structure to be checked against SE dwgs

01 TYPICAL SECTION EXPANDED MESH, EAST WALL



02 TYPICAL SECTION CONCRETE PANELS, EAST WALL



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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections EAST WALL STAGES 1 + 2

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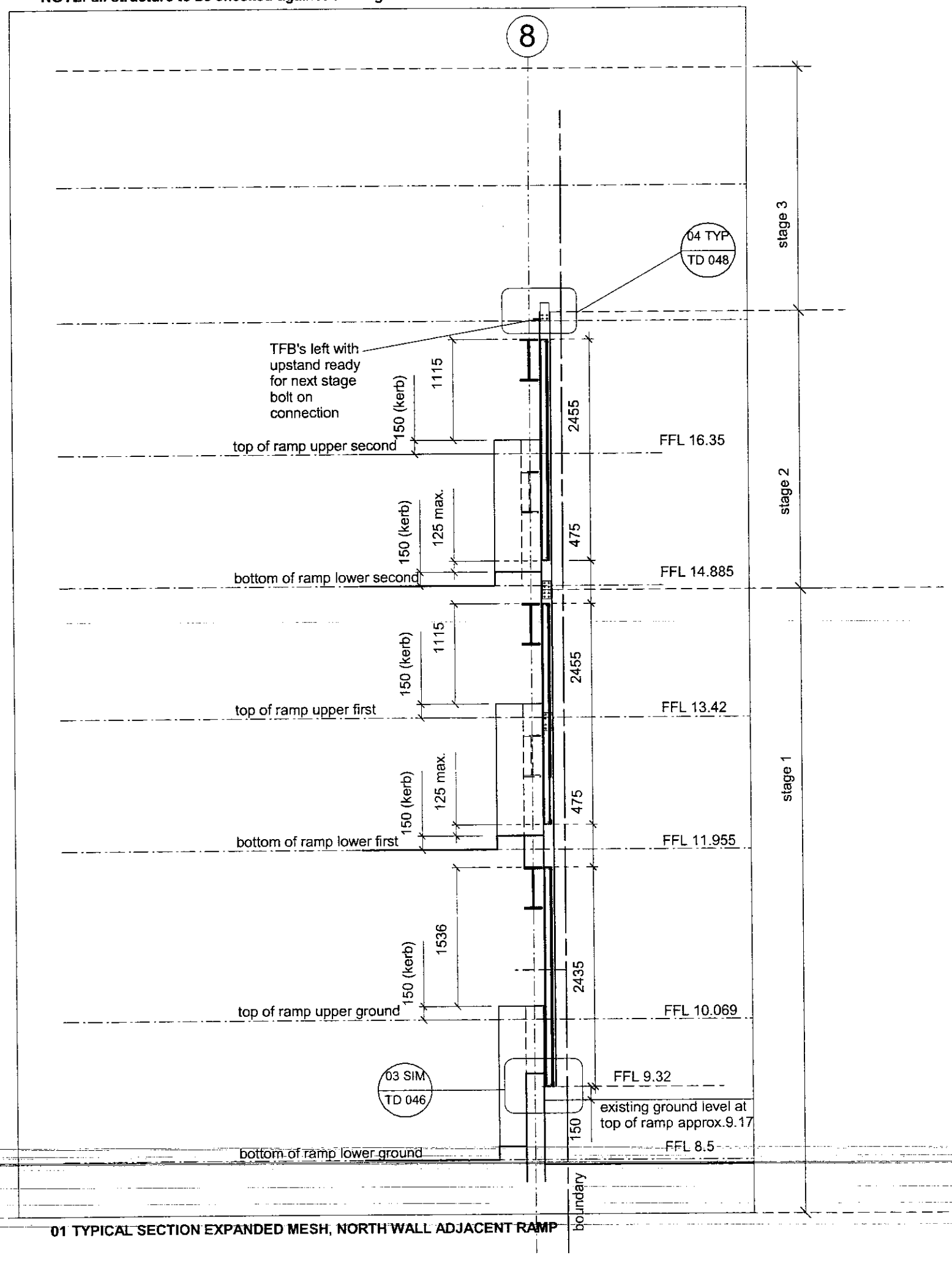

01 TYPICAL SECTION EXPANDED MESH, NORTH WALL ADJACENT RAMP

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections NORTH WALL (adjacent ramp) STAGES 1 + 2

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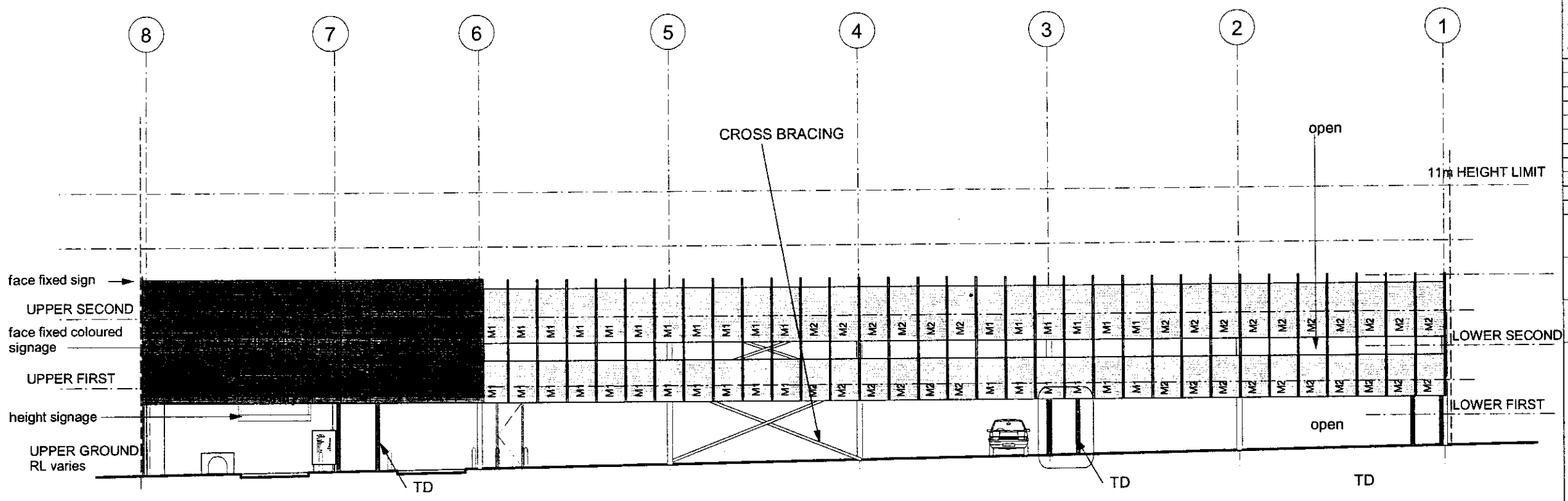
WD RD 05 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

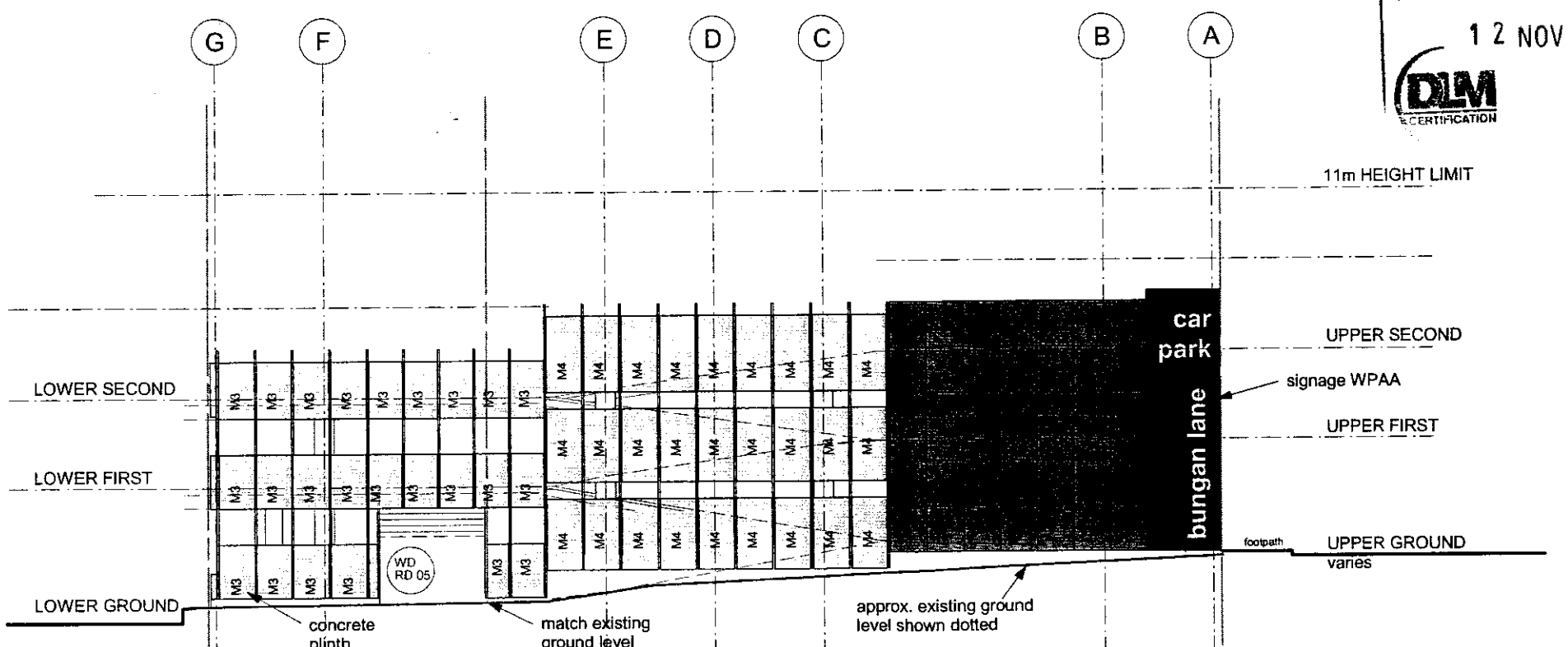
WPM- (as per finishes schedule)

WPP (col. as per finishes schedule)

WPAA (col. as per finishes schedule)



WEST ELEVATION (bungan lane)



NORTH ELEVATION (adjacent CBA carpark)

NOTE: image to WPP to be finalised

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t: 02 9970 1111
f: 02 9970 7150

PROJECT: Bungan Lane Carpark
Mona Vale

TITLE: elevations
north + west
STAGE 2

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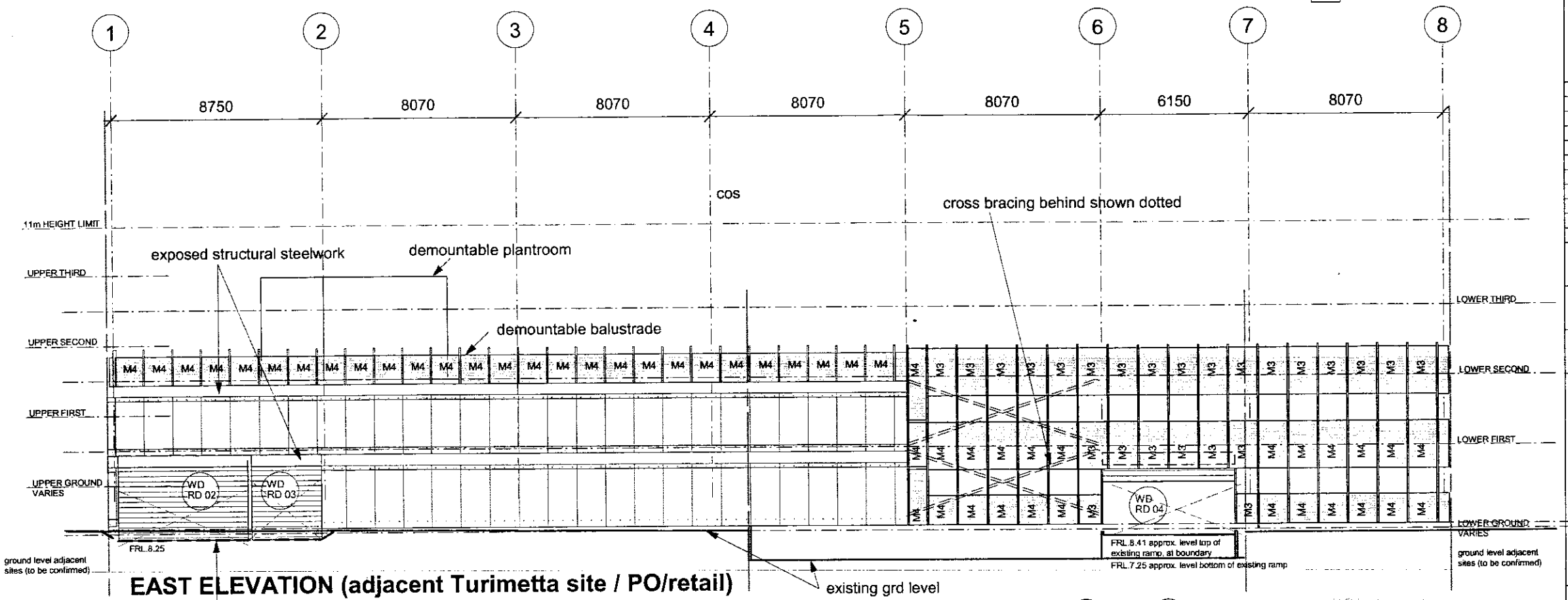
WD RD 04 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

NOTE: COLOURS INDICATIVE TO PANEL TYPE, NOT COLOURS

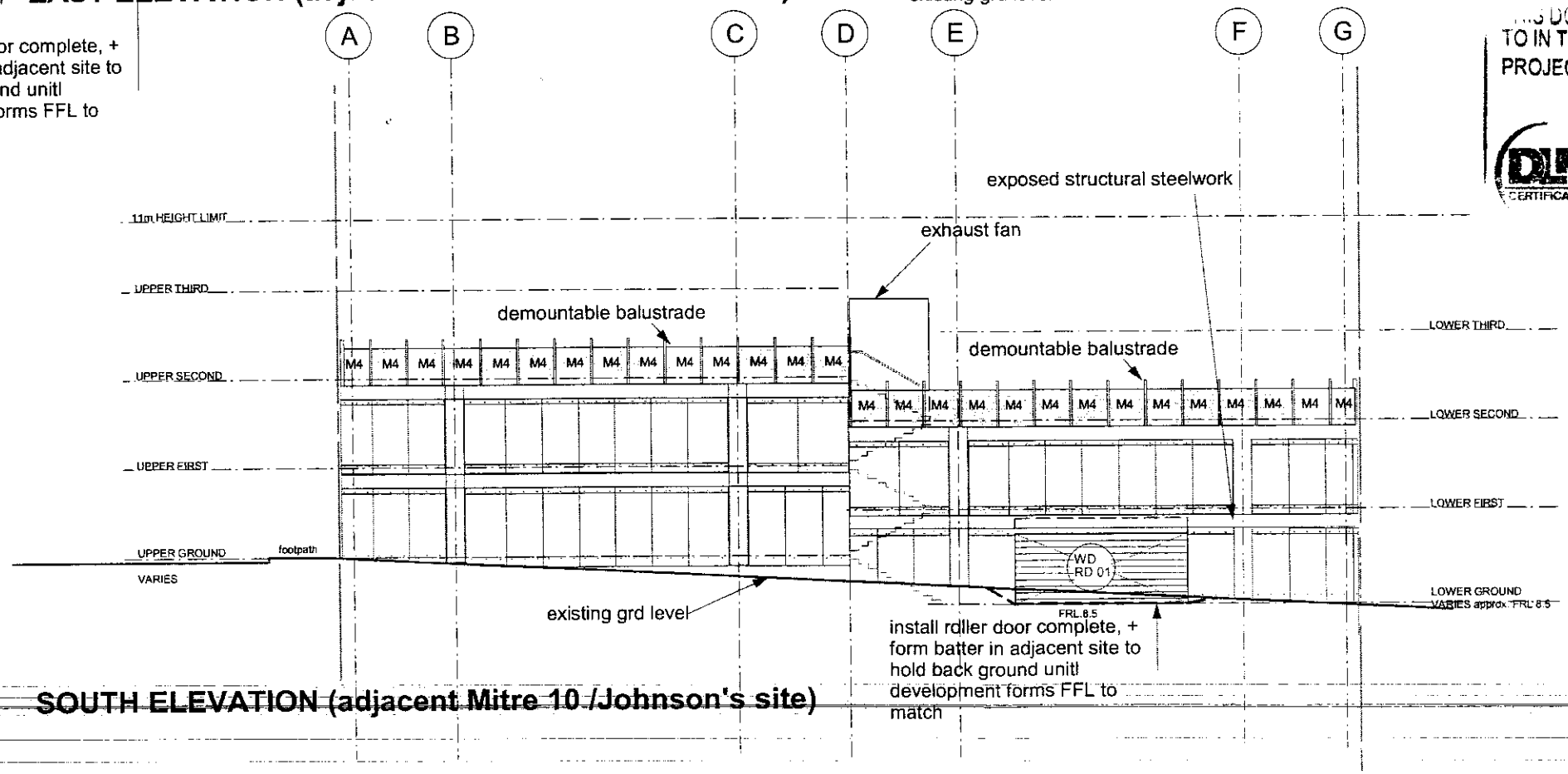
WPM- (as per finishes schedule)

CONCRETE PANELS



EAST ELEVATION (adjacent Turimetta site / PO/retail)

install roller door complete, + form batter in adjacent site to hold back ground until development forms FFL to match



SOUTH ELEVATION (adjacent Mitre 10 /Johnson's site)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations east + south STAGE 2

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NOTE: COLOURS INDICATIVE TO PANEL TYPE, NOT COLOURS

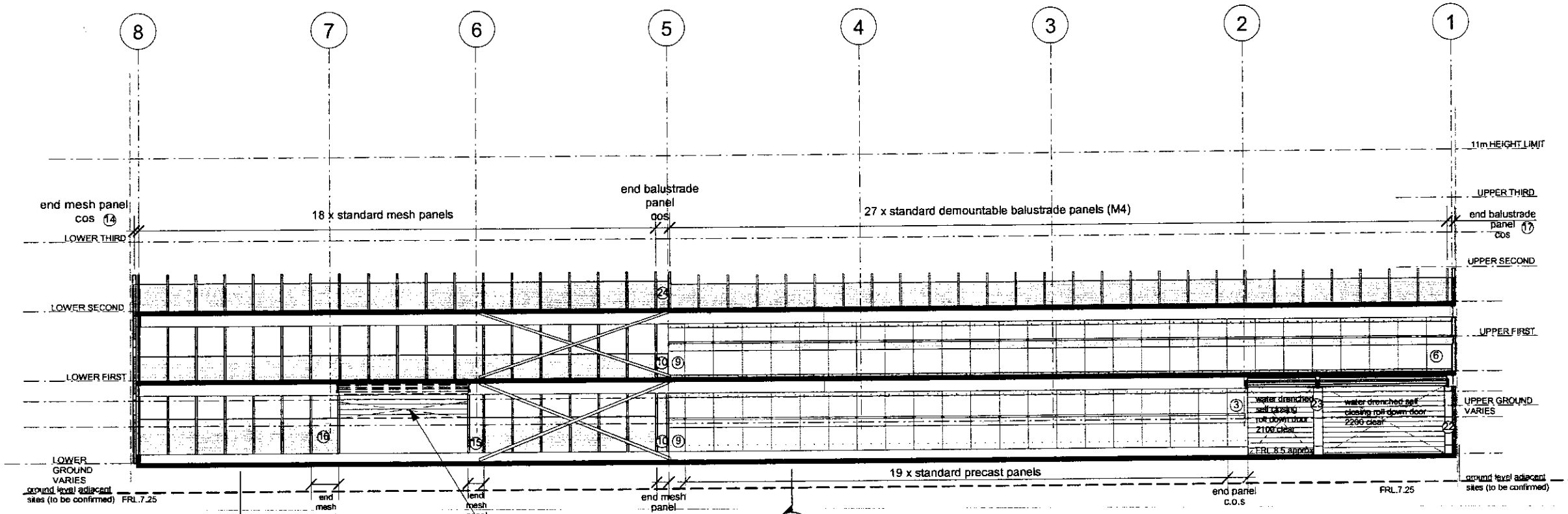
NOTE: ALL NON-REGULAR CONCRETE PANEL SIZES TO BE VERIFIED ON SITE. REFER TO DWG TD 041

NOTE: COLUMNS NOT SHOWN

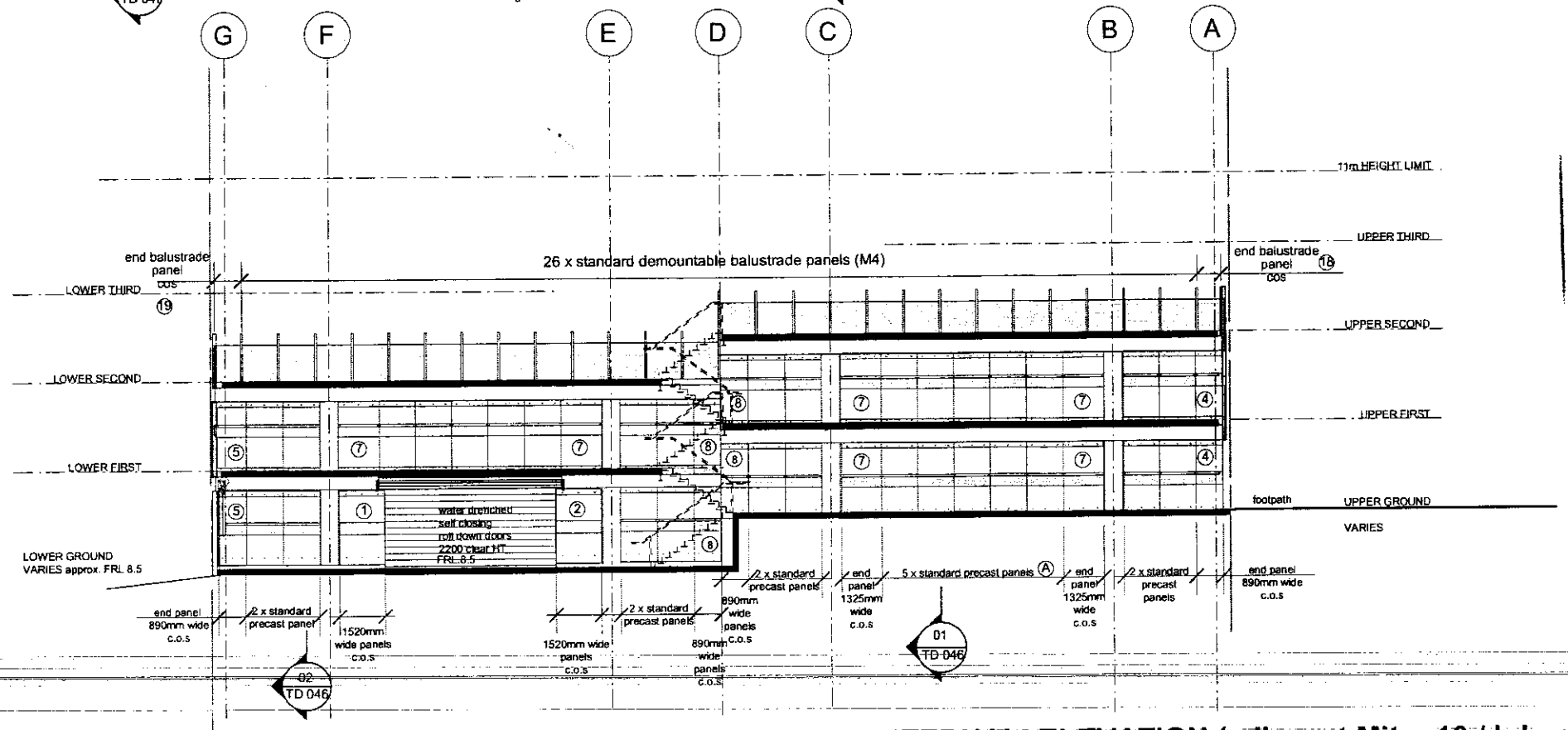
Ⓐ CONCRETE PANEL TYPE as per DWG TD041

WPM- (as per finishes schedule)

CONCRETE PANELS



EAST INTERNAL ELEVATION (adjacent Turimetta site / PO/retail)



SOUTH INTERNAL ELEVATION (adjacent Mitre 10 /Johnson's site)

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations east + south STAGE 2

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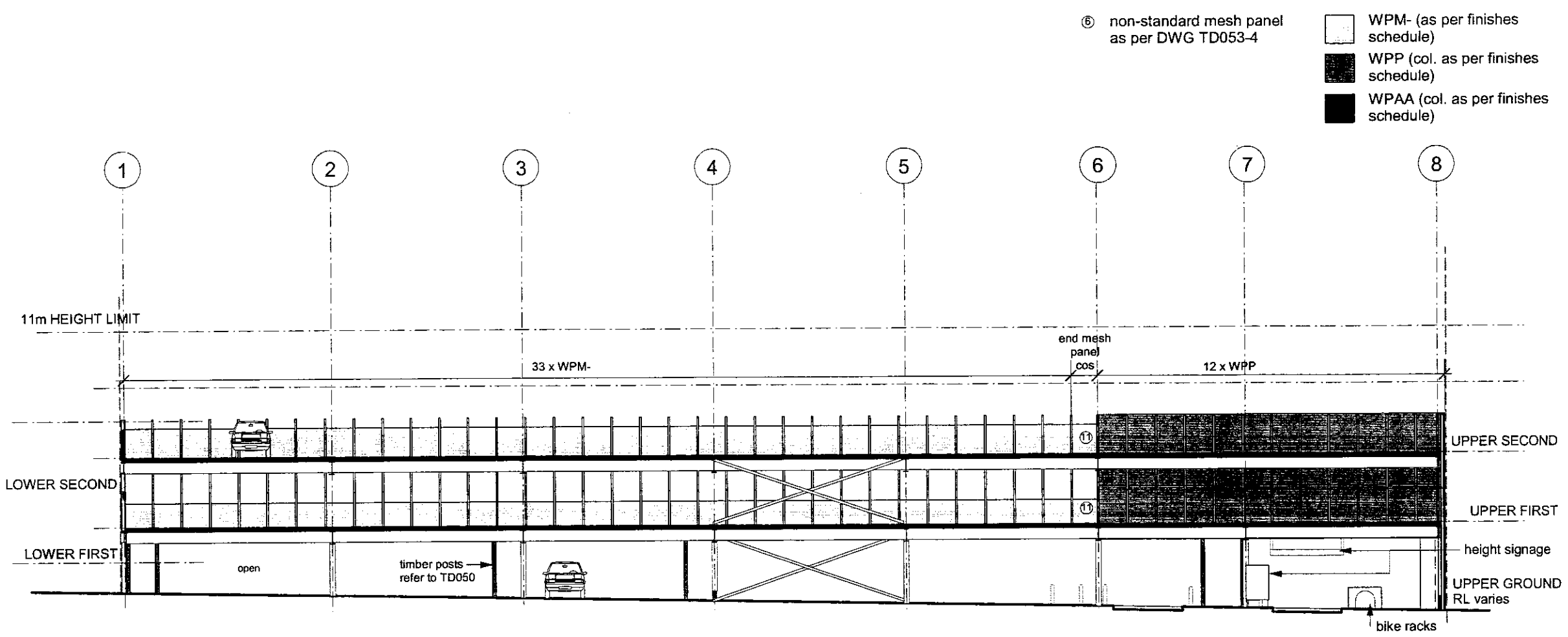
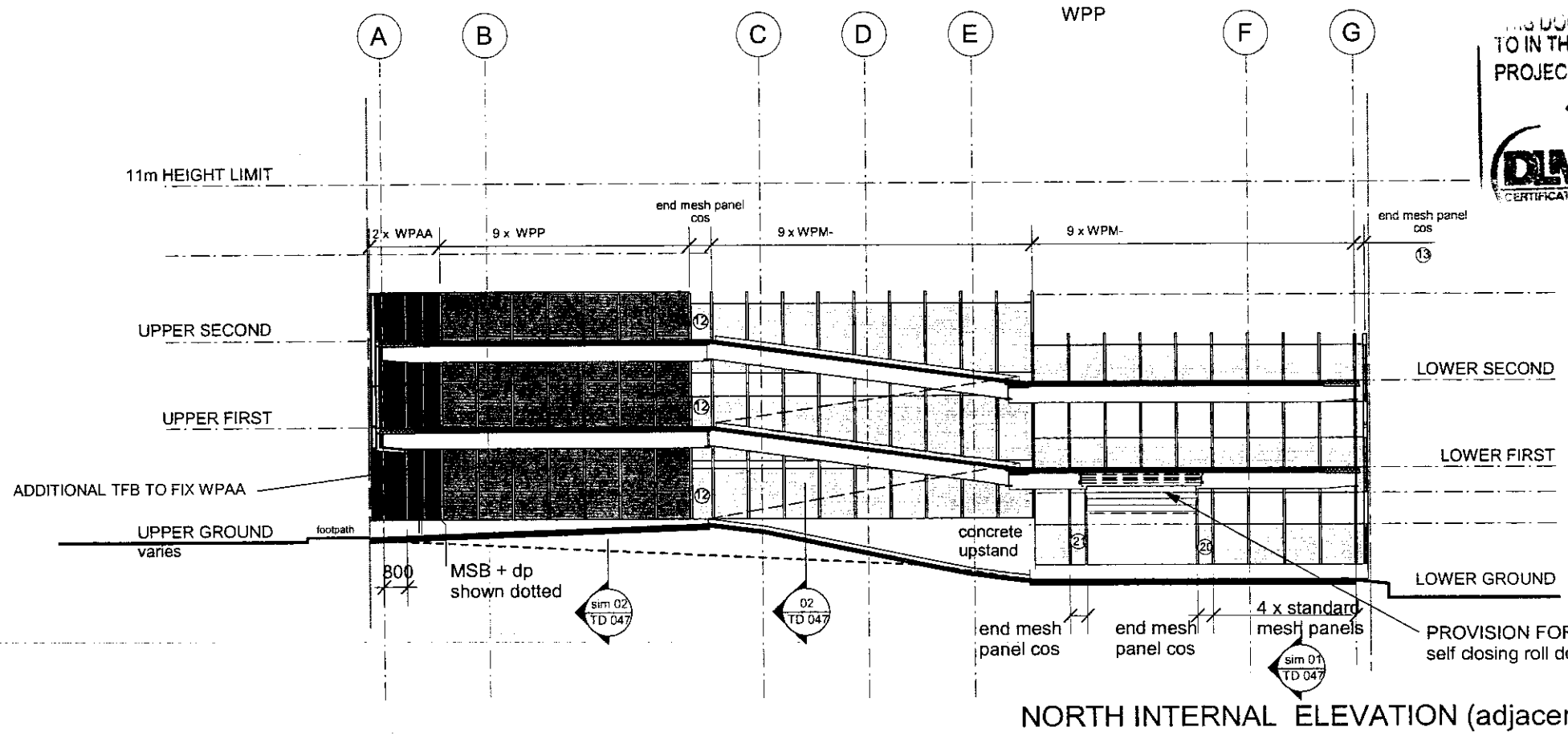


WEST INTERNAL ELEVATION (bungan lane)



NORTH INTERNAL ELEVATION (adjacent CBA carpark)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations north + west STAGE 2

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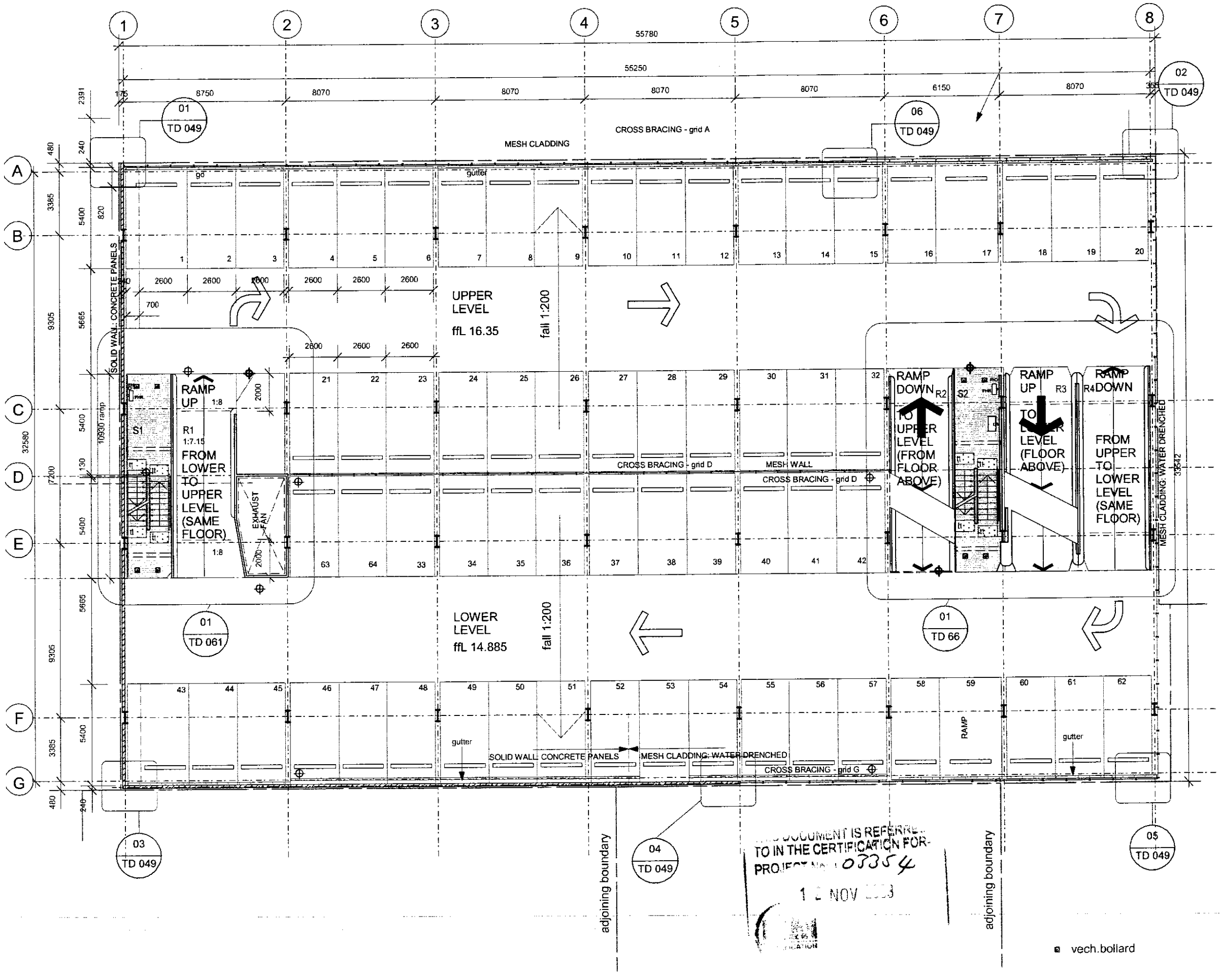

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1	18.03.03	layout grids 1-2 amended to co-ordinate with johnson's site	
		layout	tmc
2	01.04.03	general notes added: prelim issue to DLM (BCA cons.)	tmc
3	08.04.03	stairs moved: levels fixed	tmc
4	22.04.03	grids A-G realigned to suit detail sheets TD040 + 041	tmc

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TITLE	**second floor plan** **STAGE 3**

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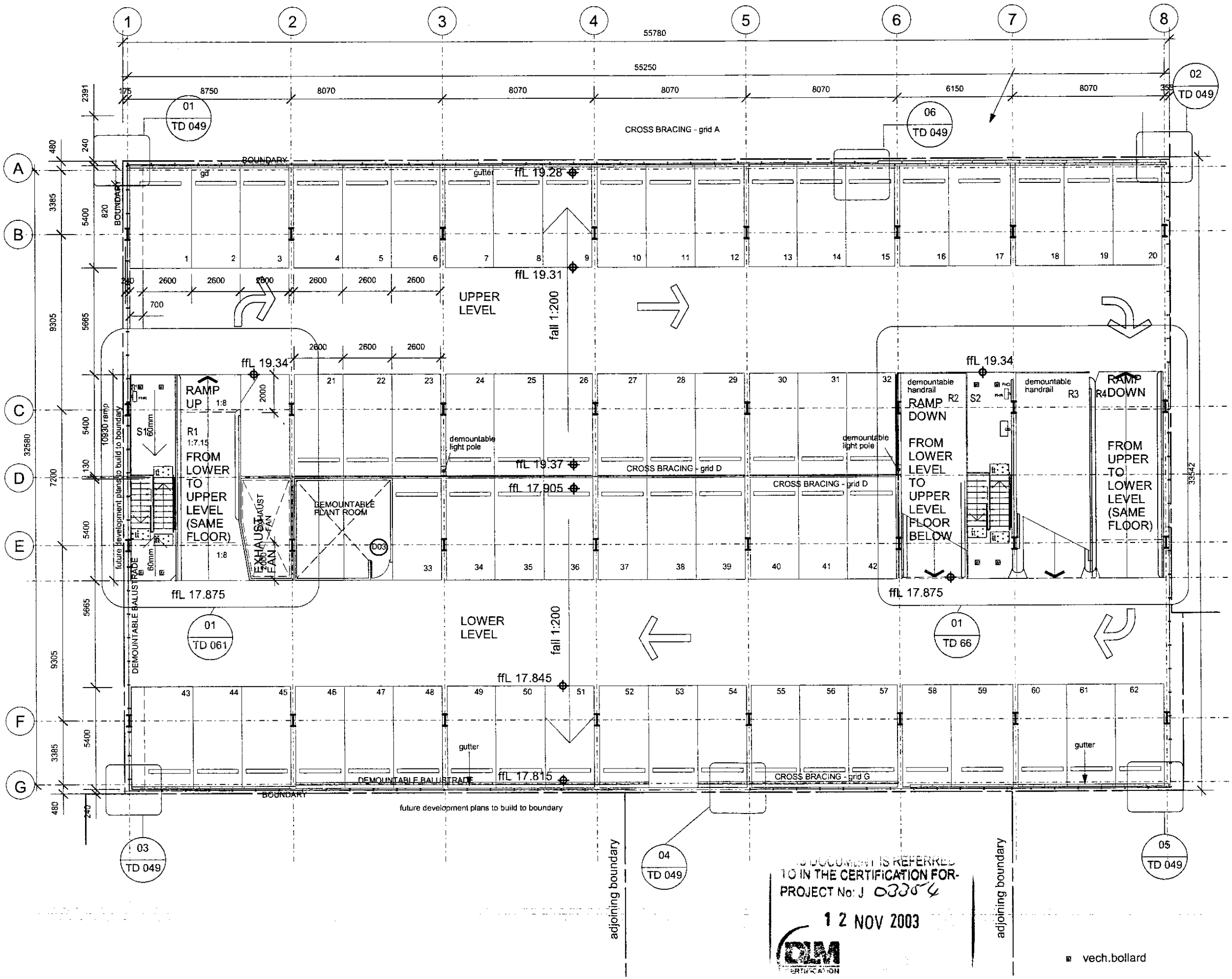

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TITLE	third floor plan STAGE 3

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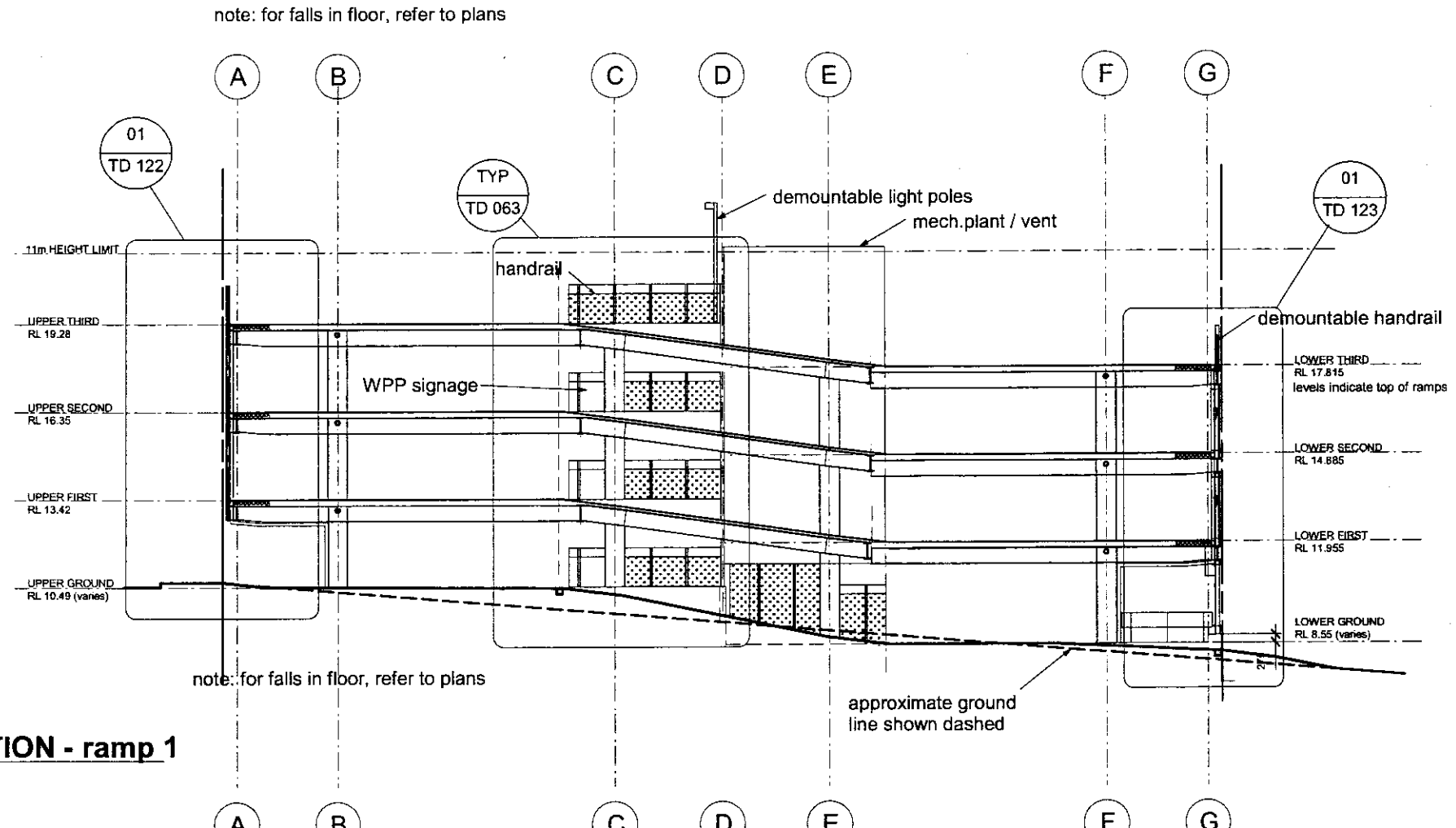
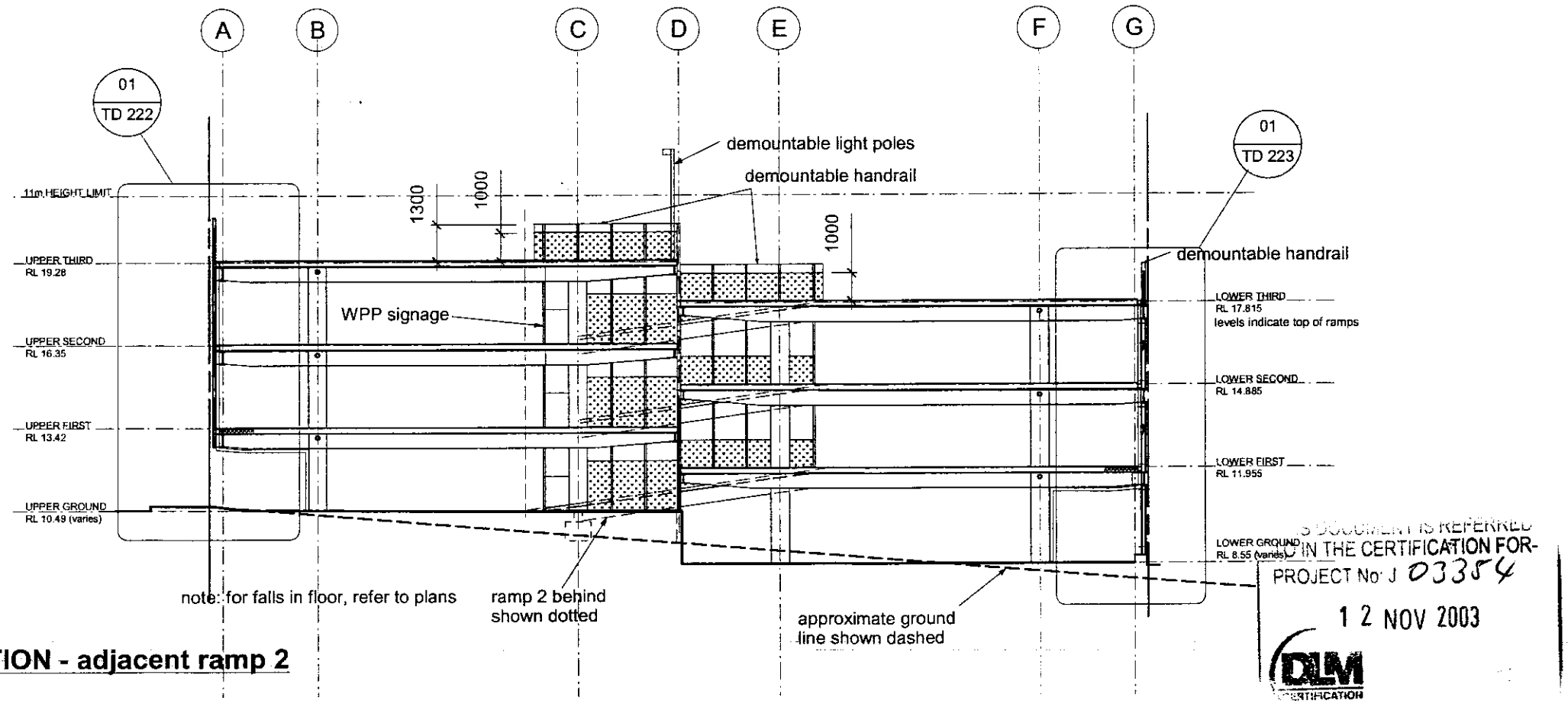


01 SECTION - ramp 1



02 SECTION - adjacent ramp 2

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	Sections STAGE 3

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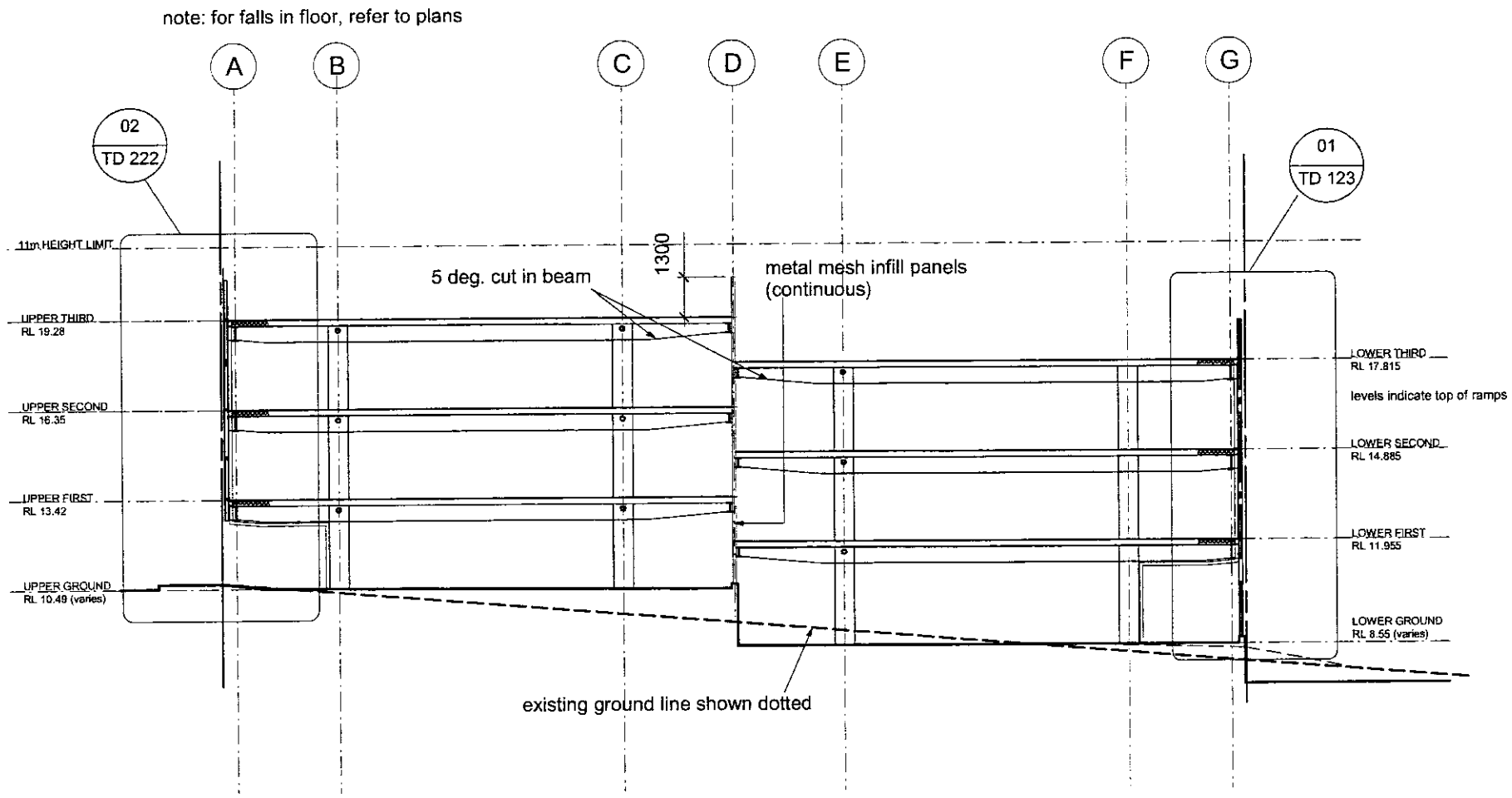

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TITLE	Sections STAGE 3

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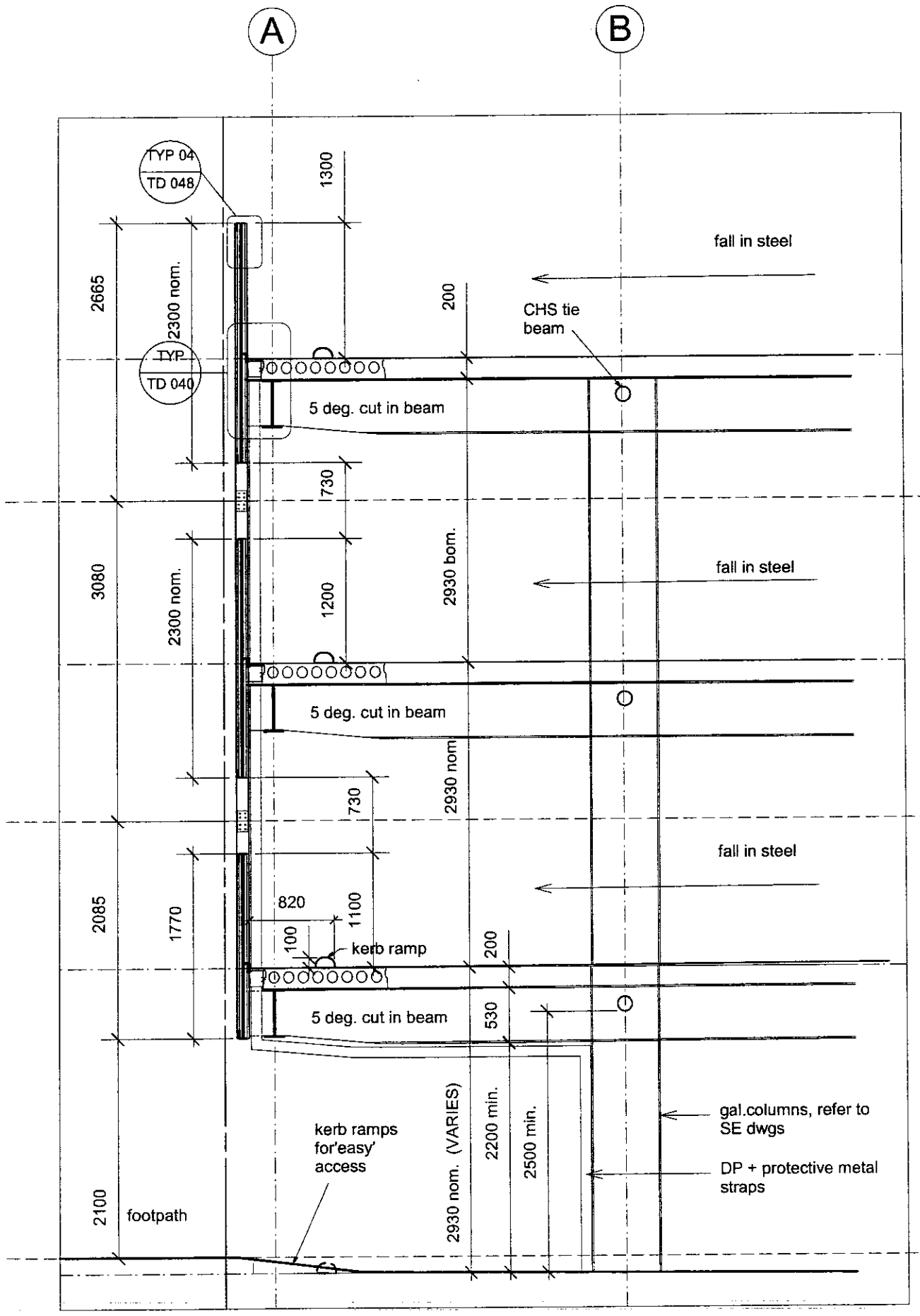
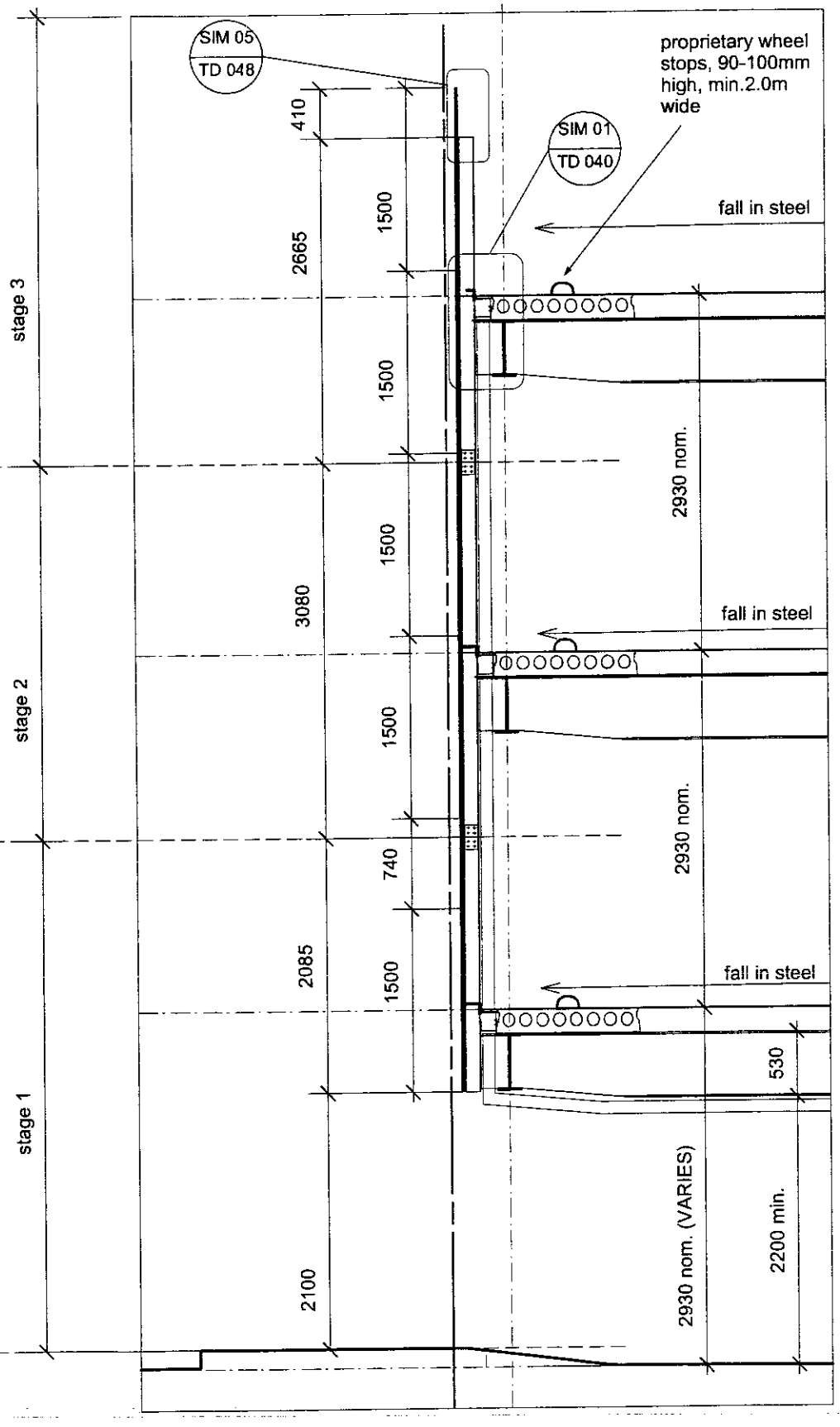


01 TYPICAL SECTION EXPANDED MESH, WEST WALL

NOTE: all structure to be checked against SE dwgs



02 TYPICAL SECTION 'PIC PERF', WEST WALL

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections WEST WALL STAGES 1, 2 + 3

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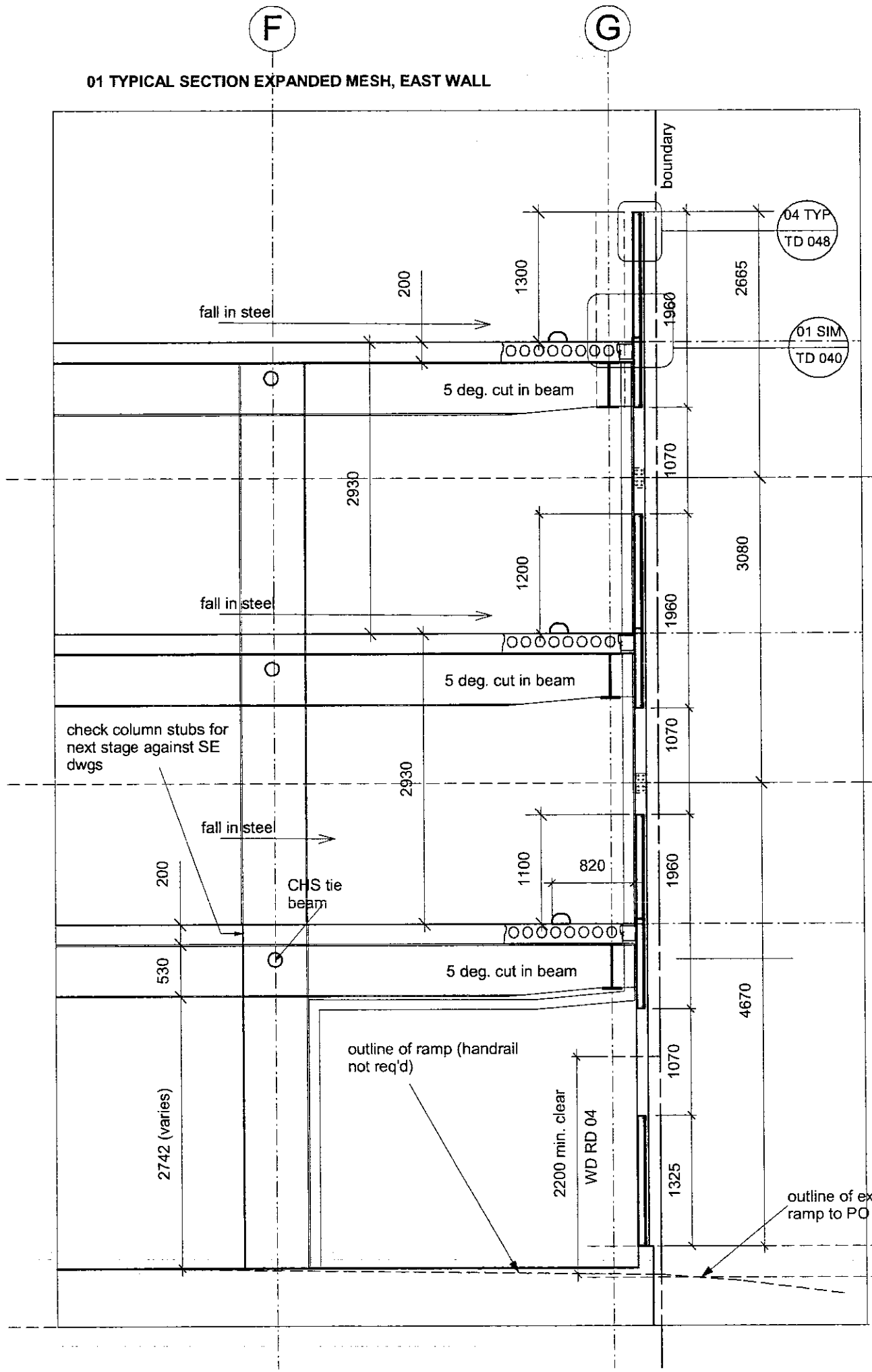
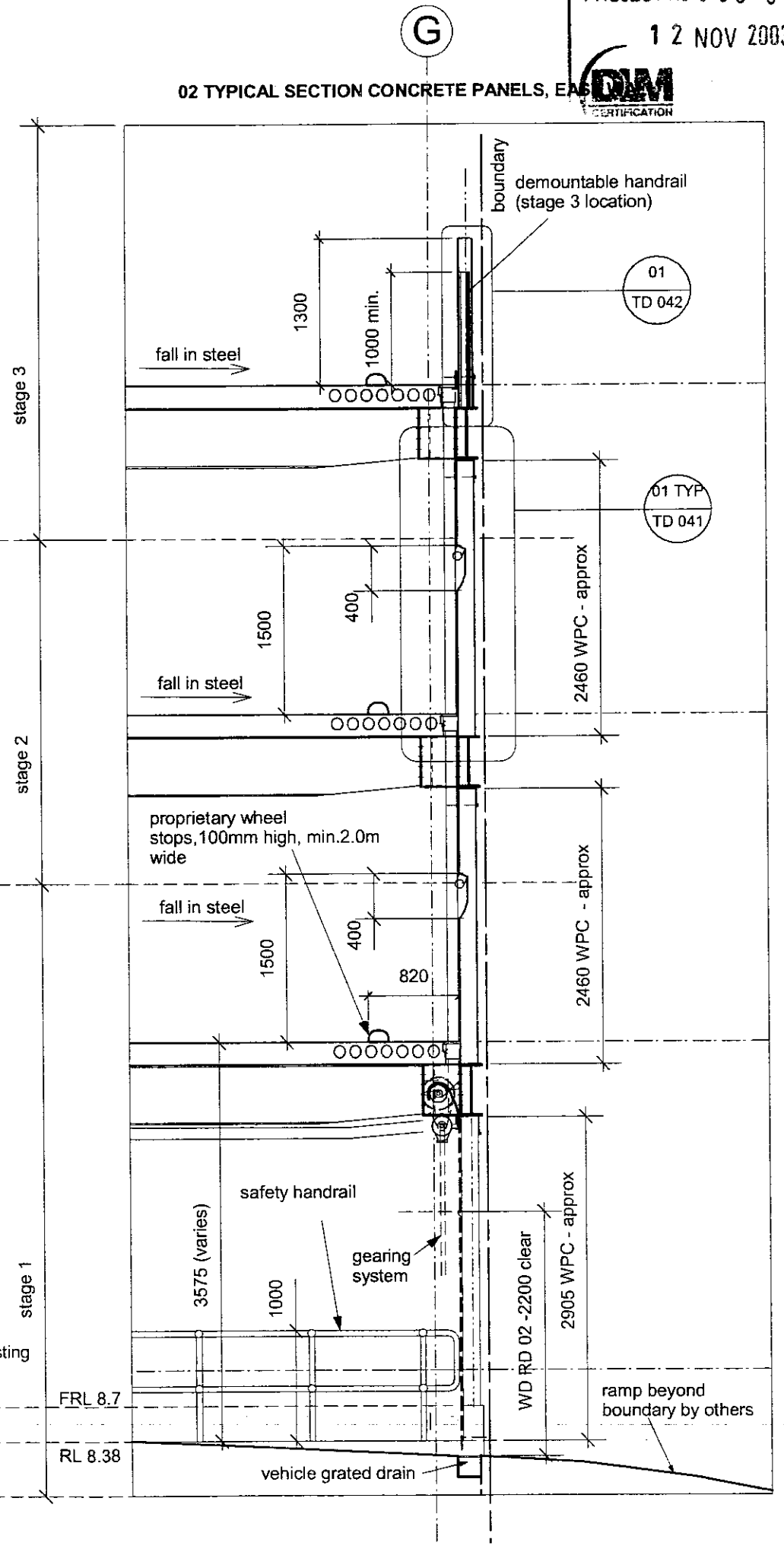


02 TYPICAL SECTION CONCRETE PANELS, EAS



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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections EAST WALL STAGE 1,2 + 3

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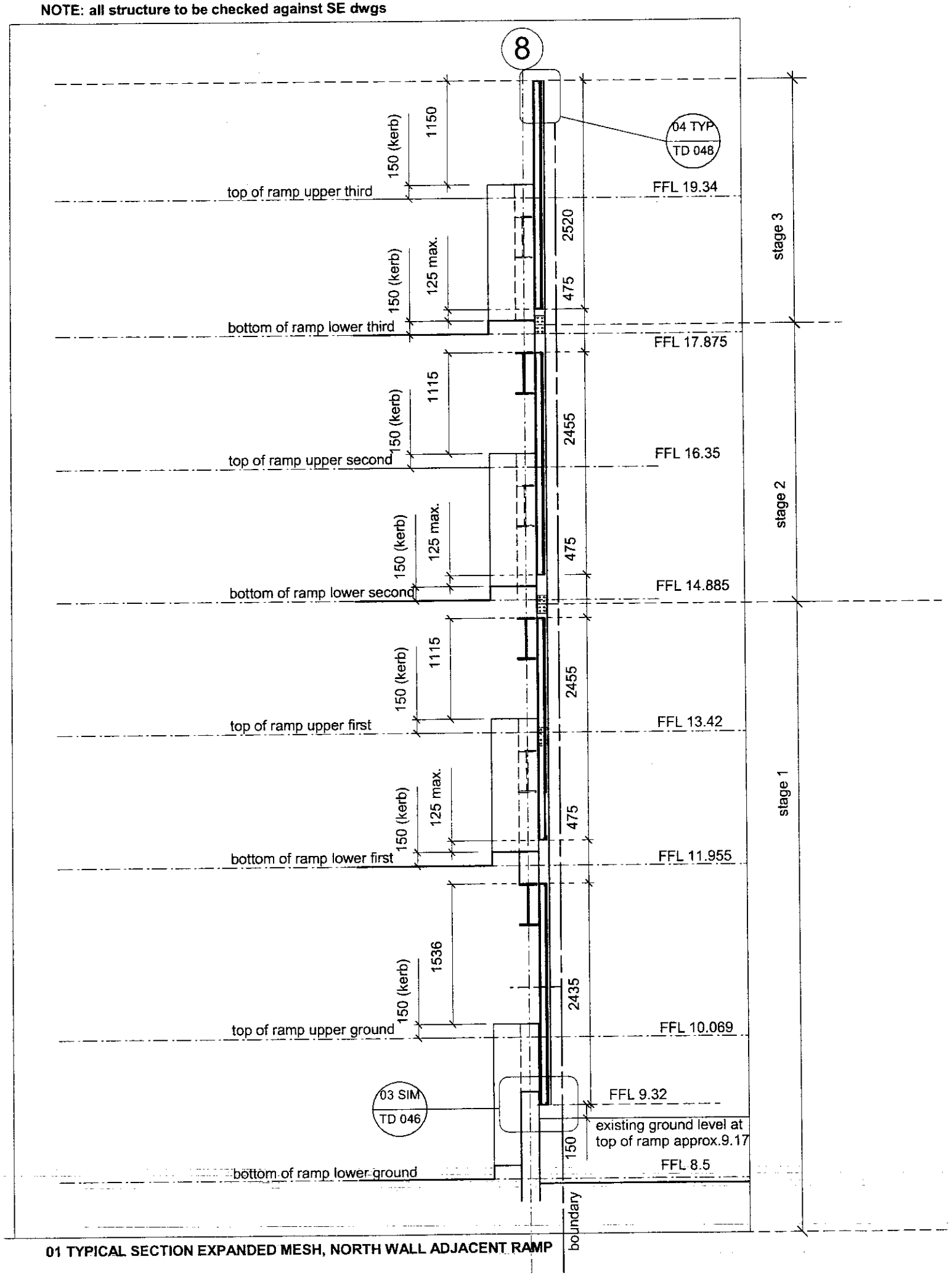
NOTE: all structure to be checked against SE dwgs



01 TYPICAL SECTION EXPANDED MESH, NORTH WALL ADJACENT RAMP

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Architecture Urban Design Landscape Interiors

CLIENT	Pittwater Council units 9,11+12 5 Vuko Place Warriewood NSW 2102 t: 02 9970 1111 f: 02 9970 7150
PROJECT	Bungan Lane Carpark Mona Vale
TITLE	typical sections NORTH WALL (adjacent ramp) STAGE 1,2 + 3

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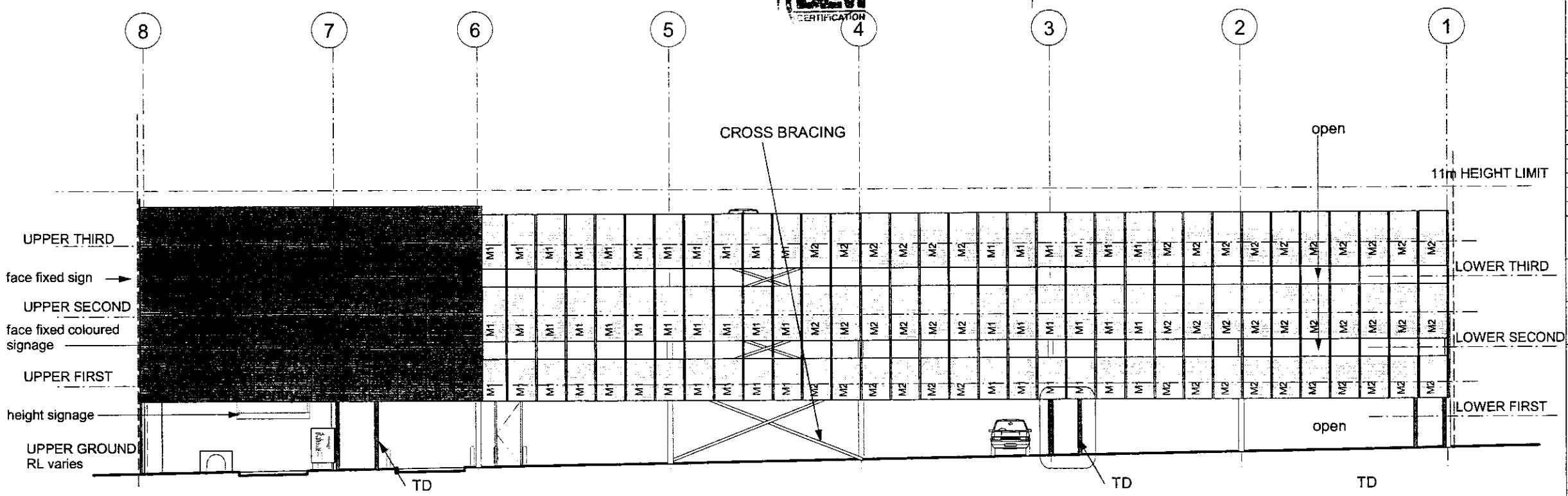
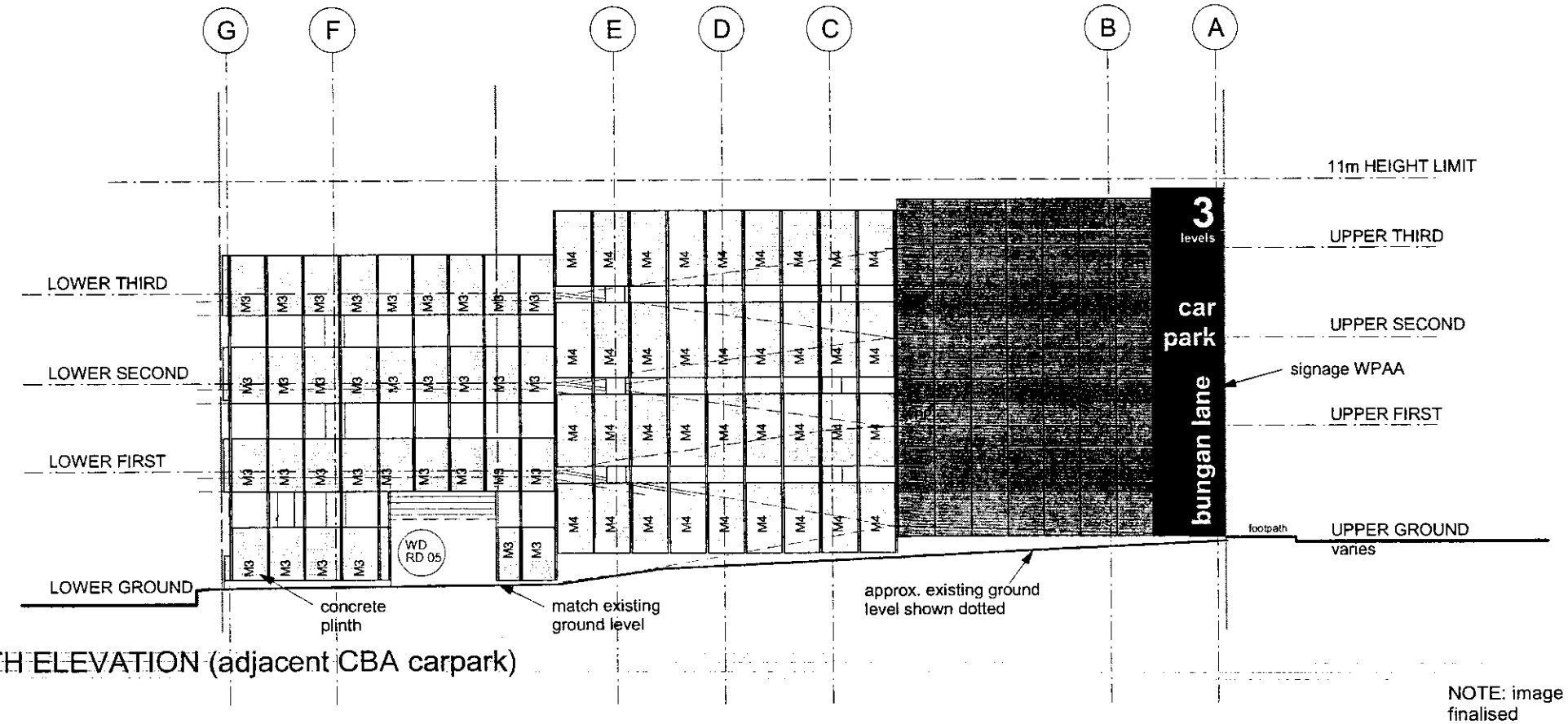
WD RD 05 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

- WPM- (as per finishes schedule)
- WPP (col. as per finishes schedule)
- WPAA (col. as per finishes schedule)



WEST ELEVATION (bungan lane)



NORTH ELEVATION (adjacent CBA carpark)

NOTE: image to WPP to be finalised

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations north + west STAGE 3

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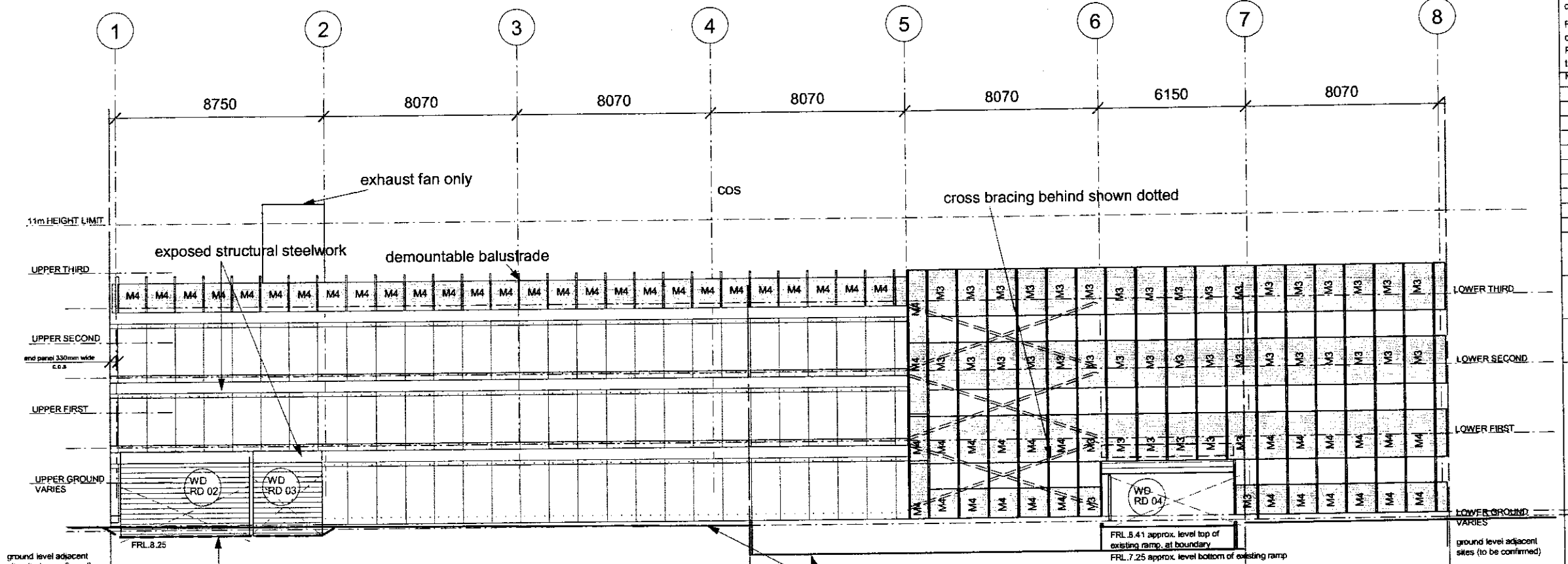
WD RD 04 roller shutter to installed at later stage - steel will include for connection cleats/stiffeners, stage 1

NOTE: COLOURS INDICATIVE TO PANEL TYPE, NOT COLOURS

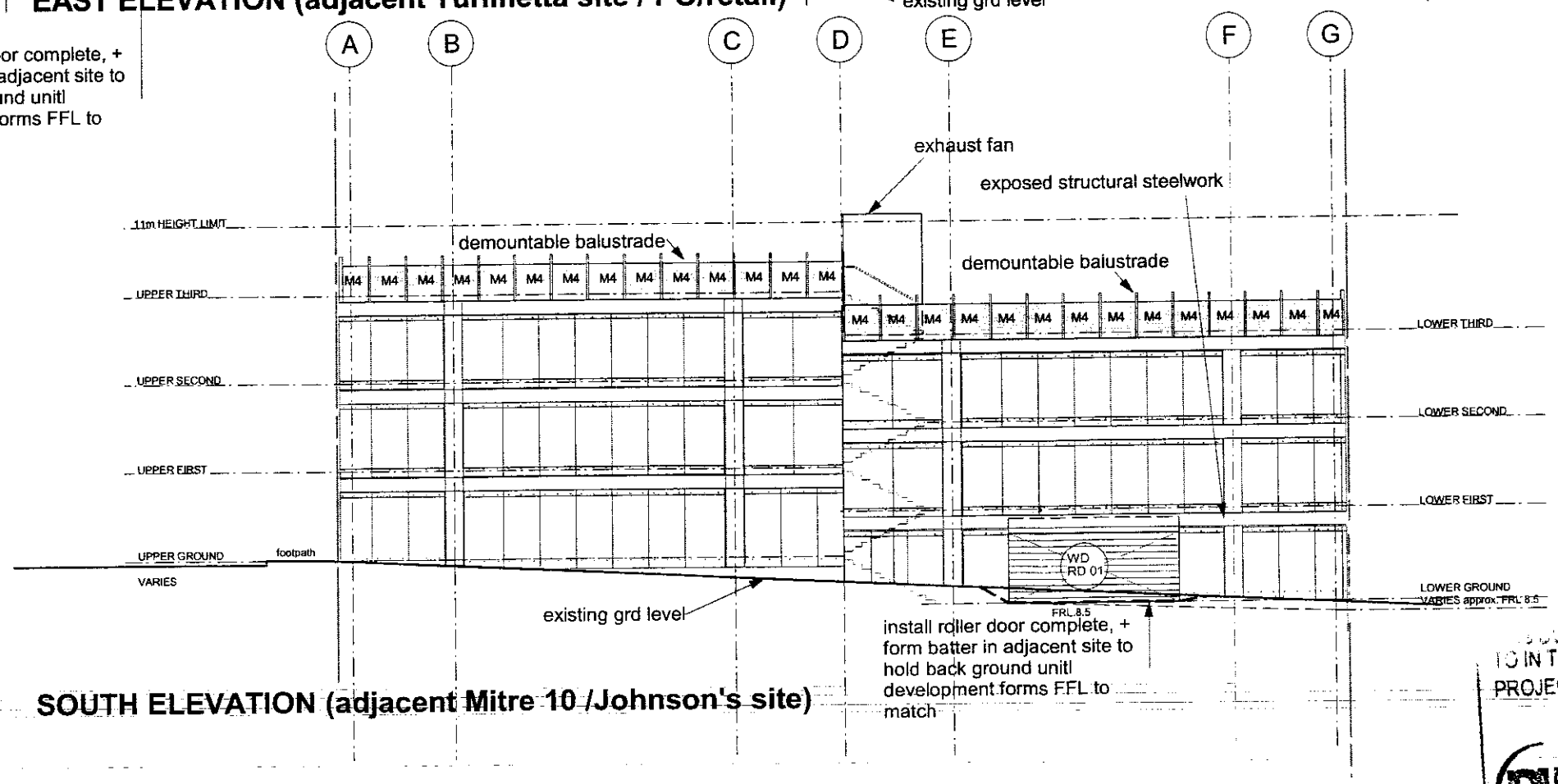
WPM- (as per finishes schedule)

CONCRETE PANELS



EAST ELEVATION (adjacent Turimetta site / PO/retail)

install roller door complete, + form batter in adjacent site to hold back ground unitl development forms FFL to match



SOUTH ELEVATION (adjacent Mitre 10 /Johnson's site)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	elevations east + south STAGE 3

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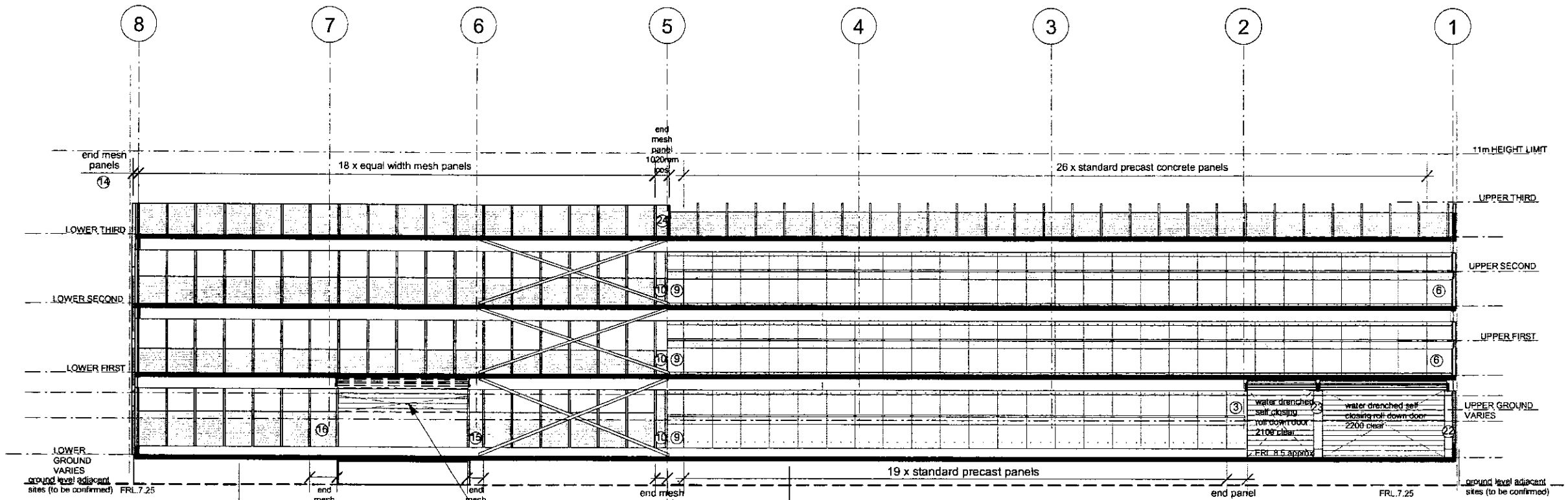
NOTE: ALL NON-REGULAR CONCRETE PANEL SIZES TO BE VERIFIED ON SITE. REFER TO DWG TD 041

NOTE: COLUMNS NOT SHOWN

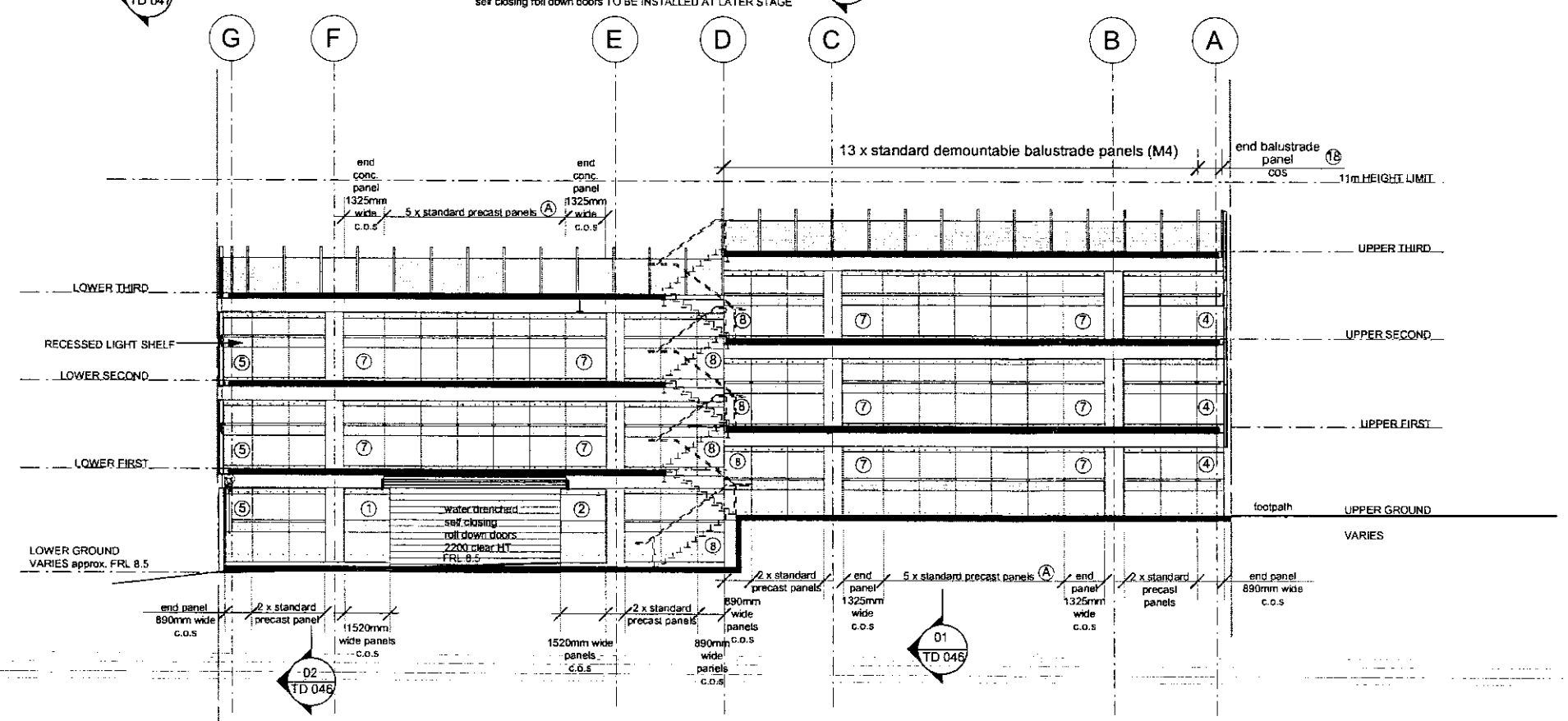
Ⓐ CONCRETE PANEL TYPE as per DWG TD041

WPM- (as per finishes schedule)

CONCRETE PANELS



EAST INTERNAL ELEVATION (adjacent Turimetta site / PO/retail)



SOUTH INTERNAL ELEVATION (adjacent Mitre 10 /Johnson's site)

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PROJECT	Bungan Lane Carpark Mona Vale
TITLE	internal elevations south STAGE 3

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