



Certificate for Design

Issued in accordance with the Building Code of Australia - Part A2.2(a)(iii)

Structural Engineering Works – (applicable New South Wales only)

Development consent number	SSD 5752-2012
Construction certificate number	N/A
Project name & address	Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) – Convention, Exhibition and Entertainment Centres (Core Facilities)

Class of Building or Structure	9b	RBG Job No.: 12076
Description of work to be Certified	Interactive Display System Structural Support This certifies that all primary and secondary structure supporting various elements of the interactive display system have been designed in accordance with relevant Australian standards listed. The majority of the interactive display has been incorporated into base build structure. General arrangement drawings have been attached identifying the associated buildings. This certificate also includes the design of stand-alone way finding sign structures. Refer drawing PP-ST-D-700005.	
Type of certificate	Design of Structural Components for the work described above.	
Standards used in the design & installation	Australian Standards and Codes relevant to the structural component and as referenced in the Building Code of Australia. Refer to attached Project Design Criteria list for standards and codes specific to this project.	
Certificate Details	(a) The structural elements of the work described above have been designed in accordance with the BCA, related Australian Standards, and accepted engineering principles; and (b) The structural design has been verified by a suitably qualified engineer who has not been involved in the original design.	
Issuer	I, Matt Harding CPEng No. 3434912 Signed:  Date: 1st December 2015 For and on behalf of Robert Bird Group Pty Ltd	

Compliance Certificate for Design

Issued in accordance with the Building Code of Australia - Part A2.2(a)(iii);
 NSW EP&A Act 1979 – Part 4A; NSW EP&A Reg. 2000 – Part 8

Structural Engineering Works – (applicable New South Wales only)

Attachments	Drawing Transmittal; Project Design Criteria
Plans approved	Draft Standard text for consultant reports_HQ, CO_ST_D_206420_G, CO_ST_D_530001_G, EX_ST_D_203700_Y, EX_ST_D_520028_F, EX_ST_D_530070_A, PP_ST_D_700005_A, TH_ST_D_217120_E, TH_ST_D_217121_C, TH_ST_D_217123_B, TH_ST_D_530031_D, TH_ST_D_530032_D, Digital Wayfinding Site Plan



Project Design Criteria

(Tick all standards appropriate to the project)

Attachment to 'Certificate for Design'

Project name & address	Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) – Convention, Exhibition and Entertainment Centres (Core Facilities)
RBG Job No.:	12076

Standards / Codes

- ☒ AS 1170 Structural Design Actions
- ☐ Part 0 - General Principles
- ☒ Part 1 - Permanent, Imposed and other actions
- ☒ Part 2 - Wind actions
- ☐ Part 3 - Snow & Ice actions
- ☒ Part 4 - Earthquake actions in Australia
- ☐ AS 1288 Glass in Buildings - Selection and Installation
- ☐ AS 1657 Fixed Platforms, Walkways, Stairs and Ladders - Design, construction and installation
- ☐ AS 1664.1 Aluminium Structures – Limit State Design
- ☐ AS 1664.2 Aluminium Structures – Allowable Stress Design
- ☐ AS 1684 Residential Timber-framed Construction
- ☐ AS 1720 Timber Structures
- ☐ AS 2159 Piling – Design and Installation
- ☐ AS 2327 Composite Structures
- ☐ AS 2870 Residential Slabs and Footings – Construction
- ☒ AS 3600 Concrete Structures
- ☐ AS 3700 Masonry Structures
- ☒ AS 4100 Steel Structures
- ☐ AS 4600 Cold-formed Steel Structures
- ☐ AS 4678 Earth Retaining Structures

Other:

Building Code of Australia

- ☒ Fire Rating Requirements (Appendix – New South Wales)

Other:

Introduction

This report supports a State Significant Development Application (SSD 15_7047) submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Application seeks approval for an integral component of the core facilities for the Sydney international convention, exhibition and entertainment precinct (SICEEP) Project at Darling Harbour. More specifically relating to the establishment of a precinct-wide Interactive Display System (IDS). The IDS comprises digital and static signage components and, amongst other things, will be used for public information, building identification and wayfinding.

Darling Harbour will become home to Australia's largest convention and exhibition facilities and Sydney's largest red carpet entertainment venue. Opening in late 2016, the new world-class exhibition, convention and entertainment facilities are aimed at ensuring Sydney remains the choice in Australia and Asia Pacific for the competitive business events industry.

This SSDA follows the approval and current assessment of a number of SSDAs within the SICEEP site, including:

- SSDA1 which secured approval for the core convention, exhibition and entertainment facilities of the SICEEP Project;
- SSDA2, a staged application that established a Concept Proposal for a new mixed use neighbourhood at Darling Harbour known as Darling Square;
- SSDA3, SSDA4, SSDA5, and SSDA 7 which related to three detailed proposals for use of the development plots within Darling Square;
- SSDA 6 which secured approval for the construction of the ICC Hotel;
- SSDA 8 for the fit out, subdivision and installation of illumination/lighting to ICC Sydney Hotel;
- SSDA 9, which is under assessment and seeks approval for a mixed-use residential development for the south-east plot (Stage 2 DA); and
- SSDA 10, which is under assessment and seeks approval for Darling Square and the community facility/lifestyle development for the north plot (Stage 2 DA).

Overview of Proposed Development

The Interactive Display System is designed to play a part in wide ranging improvements to connectivity and accessibility and will help visitors to Darling Harbour find their way around. The application (SSDA 11) will seek consent to construct and operate a collection of fixed building identification signs, and digital media platforms, which will be permanently situated throughout the convention, exhibition and entertainment precinct and associated public domain. The Interactive Display System will consist of:

- building identification signs;
- wayfinding signs;
- video signs / screens;
- information signs; and

- advertising signs.

Background

The NSW Government considers that a precinct-wide renewal and expansion of the existing convention, exhibition and entertainment centre facilities at Darling Harbour is required, and is committed to Sydney reclaiming its position on centre stage for hosting world-class events with the creation of SICEEP.

Following an extensive and rigorous Expressions of Interest and Request for Proposals process, Darling Harbour Live - a consortium comprising AEG Ogden, Lend Lease, Capella Capital and Spotless was announced by the NSW Government in December 2012 as the preferred proponent to transform Darling Harbour and create SICEEP.

Key features of the Preferred Precinct Plan (refer to **Figure 1**) include:

- Delivering world-class convention, exhibition and entertainment facilities, including:
 - Up to 40,000m² exhibition space;
 - Over 8,000m² of meeting rooms space, across 40 rooms;
 - Overall convention space capacity for more than 12,000 people;
 - A ballroom capable of accommodating 2,000 people; and
 - A premium, red-carpet entertainment facility with a capacity of 8,000 persons;
- Providing a hotel complex at the northern end of the precinct;
- A vibrant and authentic new neighbourhood at the southern end of the precinct, called 'Darling Square', including apartments, student accommodation, shops, cafes and restaurants;
- Renewed and upgraded public domain that has been increased by a hectare, including an outdoor event space for up to 27,000 people at an expanded Tumbalong Park; and
- Improved pedestrian connections linking to the proposed Ultimo Pedestrian Network drawing people between Central, Chinatown and Cockle Bay Wharf as well as east-west between Ultimo/Pymont and the City.

On 22 August 2013 a critical step in realising the NSW Government's vision for the SICEEP Project was made with approval of the core facilities of the SICEEP Project, comprising the new, integrated and world-class convention, exhibition and entertainment facilities along with ancillary commercial premises and public domain upgrades.



Figure 1 –SICEEP Precinct Plan

Site Description

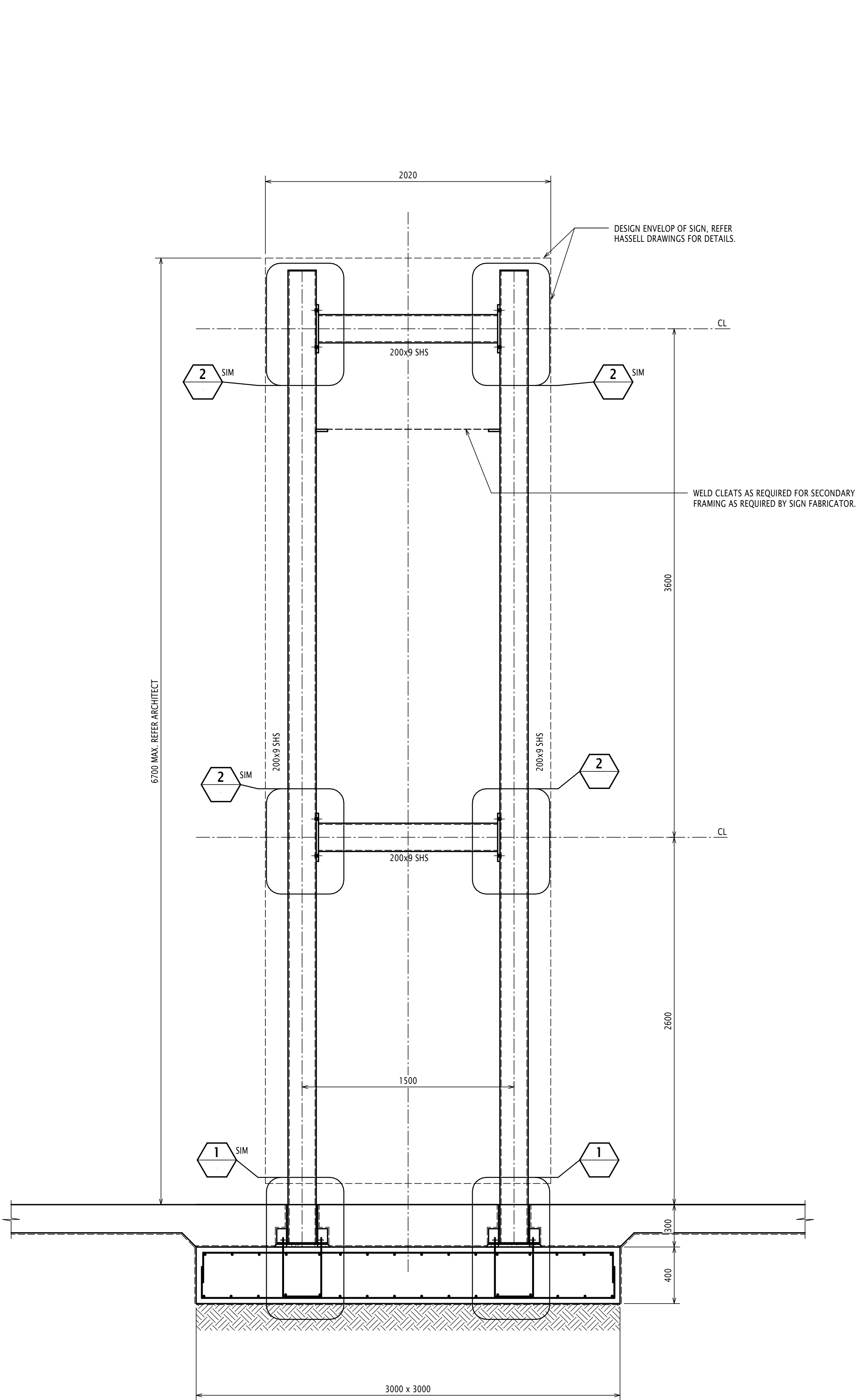
The SICEEP Site is located within Darling Harbour. Darling Harbour is a 60 hectare waterfront precinct on the south-western edge of the Sydney Central Business District that provides a mix of functions including recreational, tourist, entertainment and business.

With an area of approximately 20 hectares, the SICEEP Site is generally bound by the Light Rail Line to the west, Harbourside shopping centre and Cockle Bay to the north, Darling Quarter, the Chinese Garden and Harbour Street to the east, and Hay Street to the south.

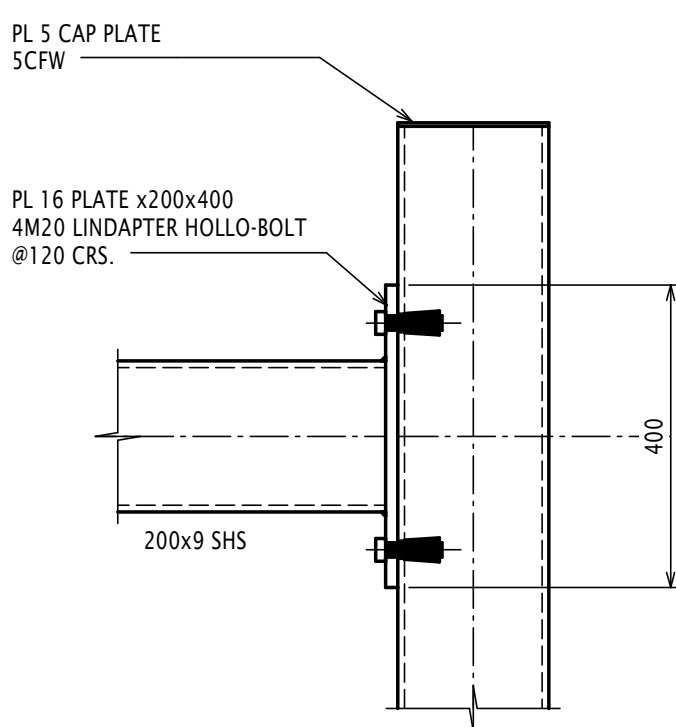
Figure 2 shows the SICEEP site.



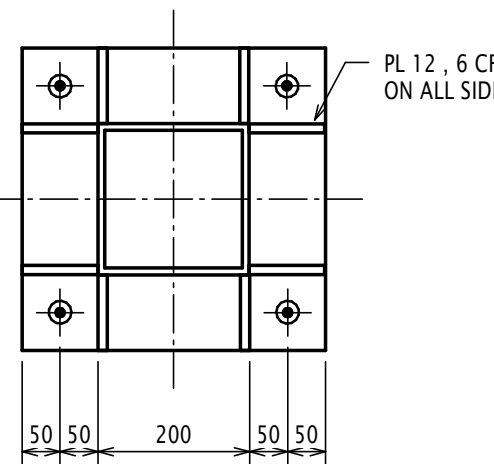
Figure 2 – Aerial Photograph of the SICEEP Site



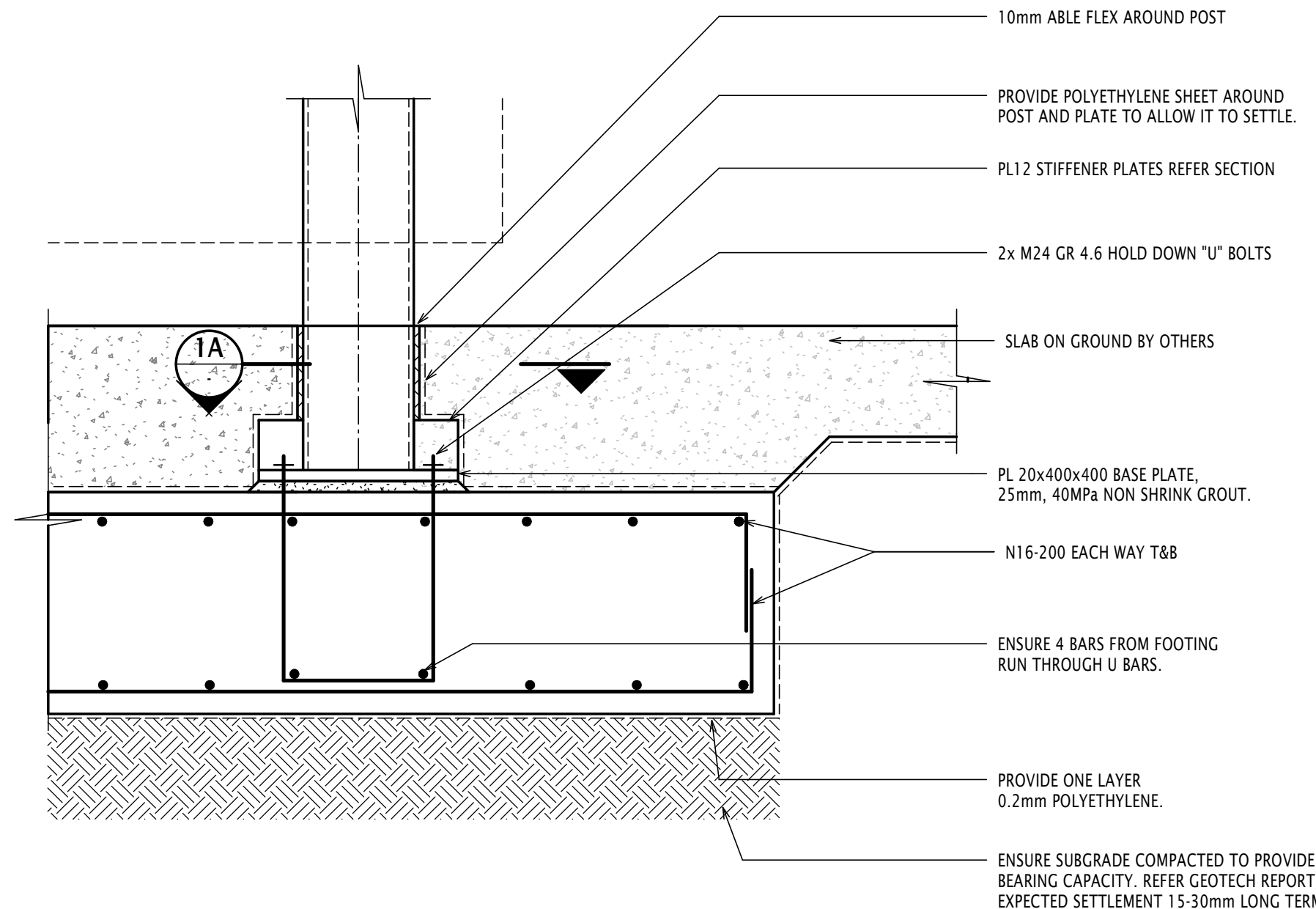
SIGNAGE SUPPORT FRAME - ELEVATION
SCALE 1 : 20



DETAIL 2
SCALE 1 : 10



DETAIL 1A
SCALE 1 : 10



DETAIL 1
SCALE 1 : 10

CONCRETE NOTES :
REFER NOTES ON COVER SHEET
MIN CONG. STRENGTH AT 28 DAYS

LOCATION	FL
FOOTINGS	N12

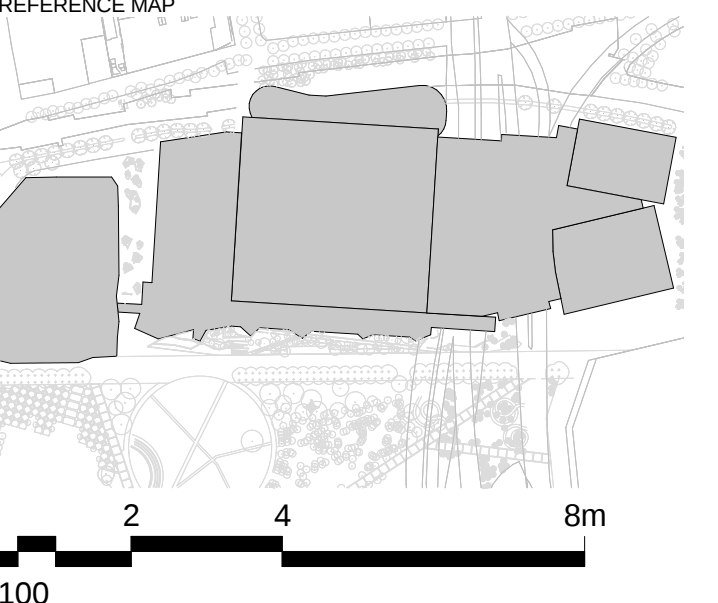
CONCRETE COVER

LOCATION	COVER
FOOTINGS	50 mm

NOTE:
REFER PROJECT GENERAL NOTES
SHEET PP_ST_D_010005 FOR CONCRETE
AND STEEL NOTES

- DESIGN LOADS
- DESIGNED FOR SIGN DIMENSIONS AS PER HASSELL DRAWING PP_L_D_0_00_0_05 (MAX 800 Kg CLADDING AND SCREENS)
 - MAX WIND PRESSURE 1.4 kPa FOR V1000 WIND PRESSURE.
 - MINIMUM 50 KPa BEARING CAPACITY UNDER FOOTING.

APPROVED FOR CONSTRUCTION



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REV	DESCRIPTION	BY	APP	DATE
A	ISSUED FOR CONSTRUCTION	CY	MH	01/12/15

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PROJECT

SICEEP_DARLING HARBOUR
SITE WIDE

DRAWING TITLE

WAYFINDING SIGNAGE DETAIL

STATUS

STRUCTURAL DRAWINGS

SCALE @ A0 / 50% @ A2

SCALE	DESIGNER	DESIGN CHK	APPROVED
1:10:150	G.VELASQUEZ	M.HARONG	T.AMENDHARNO

PROJECT NUMBER

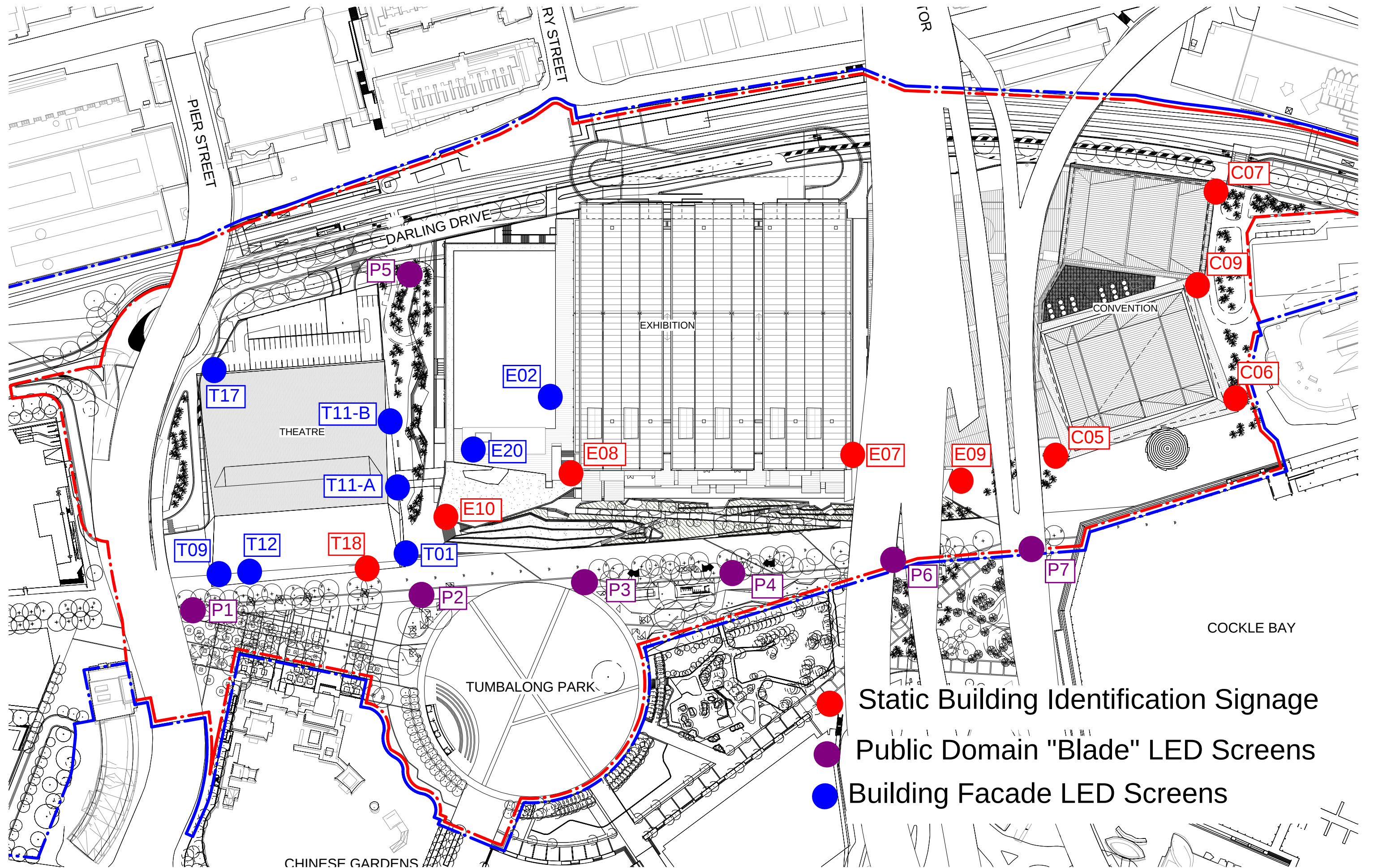
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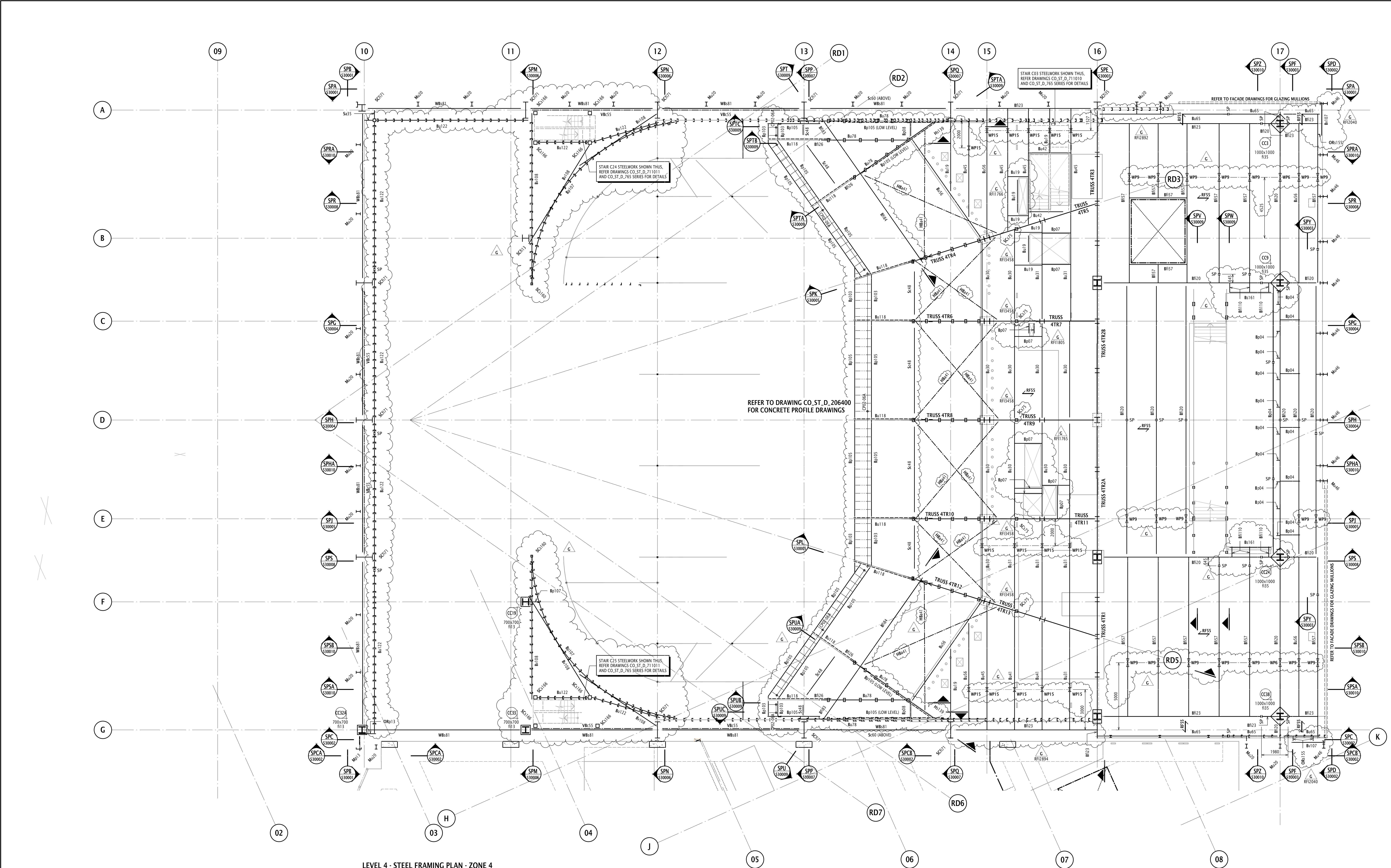
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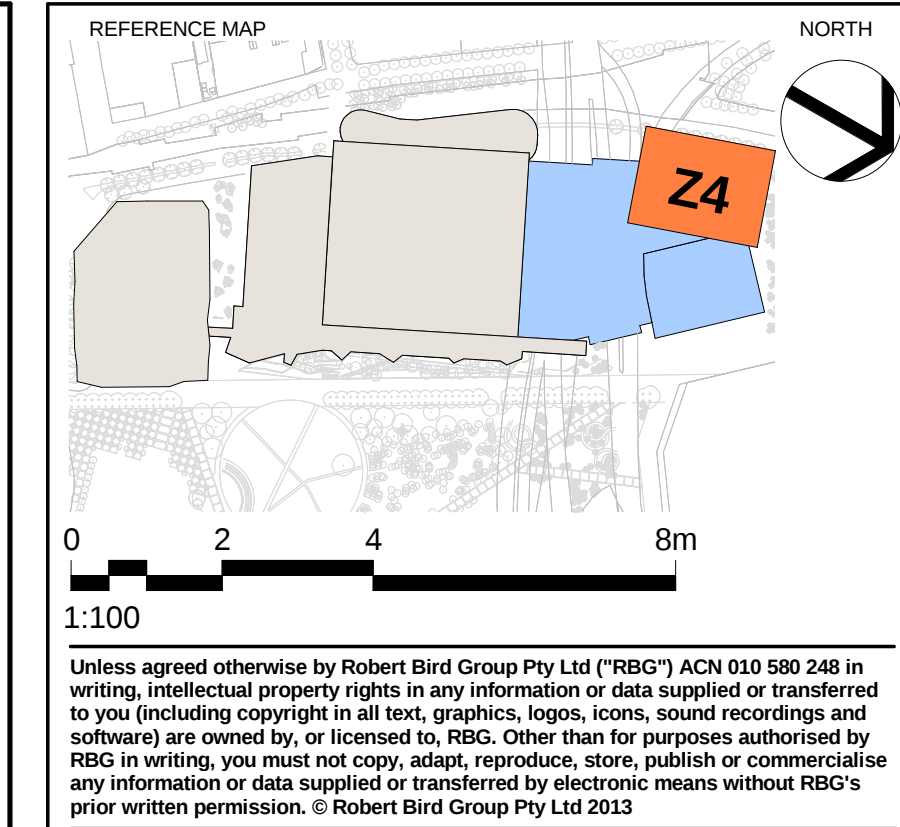
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A





LEVEL 4 - STEEL FRAMING PLAN - ZONE 4
SCALE 1:100



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REV	DESCRIPTION	BY	APP	DATE
01	ISSUED FOR INFORMATION	CM	MH	13.02.15
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04	ISSUED FOR INFORMATION	CM	MH	21.02.14
05	RE-ISSUED FOR BULK ORDER	CM	MH	25.02.14
06	RE-ISSUED FOR BULK ORDER	DS	MH	28.02.14
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08	RE-ISSUED FOR BULK ORDER	CM	MH	29.03.14
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G	SECONDARY STEELWORK ADDED, REVISED AS CLOUDED & UPDATED TO RYS AS NOTED	CM	MH	13.02.15
F	ISSUED FOR CONSTRUCTION	CM	MH	08.04.14
E	REVISED AND RE-ISSUED FOR BULK ORDER	CM	MH	20.03.14
D	COLUMN C21A ADDED, TRUSS 4TR2A & 4TR3A ADDED, BEAM SPICES ADDED	CM	MH	13.03.14
C	RE-ISSUED FOR BULK ORDER	DS	MH	28.02.14
B	RE-ISSUED FOR BULK ORDER	CM	MH	25.02.14
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AECOM	HYDRAULIC SERVICES LEVEL 2, 9 CASTLE LEE ROAD, MILLERS POINT NSW 2000 (02) 8036 8370
ARM	CIVIL / TRAFFIC SERVICES 3/5-1 WALKER ST. NORTH SYDNEY NSW 2000 (02) 8907 9000
Hyder	

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PROJECT
**SICEEP_DARLING HARBOUR
ICC**

DRAWING TITLE
**MEETING LEVEL
LEVEL 4 STEEL FRAMING PLAN
ZONE 4
RL24.6**

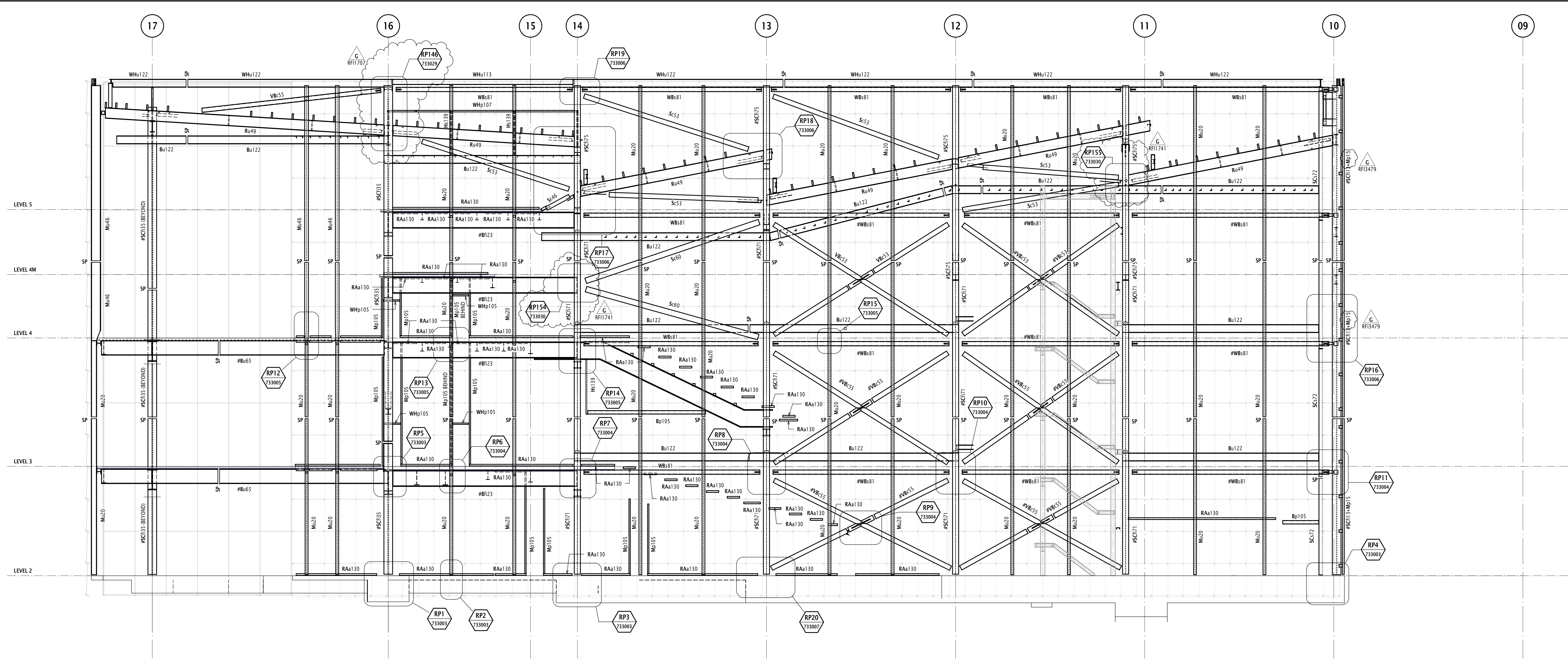
STATUS
STRUCTURAL DRAWINGS

SCALE @ A0 / 50% @ A2	DRAWN	DESIGNER	DESIGN CHK	APPROVED
1:100	G.MURPHY	B.COLLINS	D.ZHANG	M.HARDING
PROJECT NUMBER	DRAWING NUMBER	REV		
12076B	CO_ST_D_206420	G		

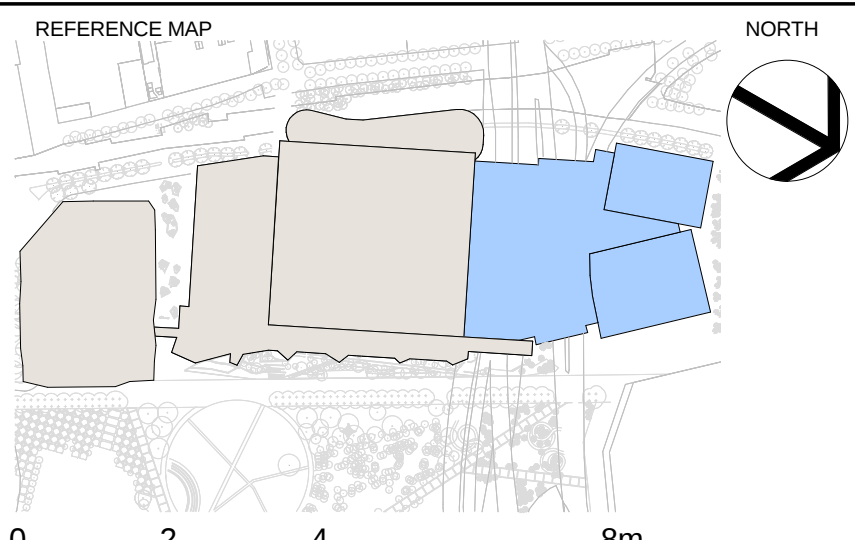
NOTE:
• REFER TO DRAWING PP.ST.D.010005 FOR GENERAL NOTES
• REFER TO DRAWINGS PP.ST.D.880001 AND PP.ST.D.880002 FOR STEELWORK SCHEDULES
• F/S - DENOTES FAR SIDE
• N/S - DENOTES NEAR SIDE
• B/S - DENOTES BOTH SIDES
• ALL BEAMS WITHIN PRE-FUNCTION SLAB TO HAVE 610x75 S/S. HEADED SHEAR STUDS AT 200 CENTRES, TYPICAL.
• REFER TO RELEVANT GENERAL ARRANGEMENT PLANS FOR SLAB THICKNESSES FOR TOP OF STEEL LEVELS
• DENOTES PENETRATION IN WEB
• WP - OF STEEL BEAM, REFER TO DRAWING CO.ST.D.733018 FOR DETAILS.

NOTE:
• REFER TO ALL STEELWORK ELEVATIONS FOR FIRE RATING REQUIREMENTS (S.A.O.)
• ALL FLOOR STEELWORK EXCEPT LOWER BOWL, LOGGIE & CATWALK STEELWORK IS TO BE 2 HOUR FIRE RATED.

APPROVED FOR CONSTRUCTION



NOTE:
- REFER TO DRAWING PP-ST-D-010005 FOR GENERAL NOTES
- REFER TO DRAWINGS PP-ST-D-880001 AND PP-ST-D-880002 FOR STEELWORK SCHEDULES
- ALL BEAMS WITHIN PRE-FUNCTION SLAB TO HAVE Ø19x75 S31 HEADED SHEAR STUDS AT 200 CENTRES, TYPICAL
DENOTES STEEL MEMBERS TO BE 2 HOUR FIRE RATED
ELB1 DENOTES ELASTOMERIC BEARING, REFER DRAWING CO-ST-D-733013 FOR DETAILS



0 2 4 8m
1:100
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REV	DESCRIPTION	BY	APP	DATE
G	SECONDARY STEELWORK ADDED, REVISED AS CLIMBING & UPDATED TO RFS AS NOTED	GM	MH	11.02.15
F	UPDATED FOR RFS 1602	GM	MH	01.05.14
E	REVISED AND RE-ISSUED FOR BULK ORDER	GM	MH	20.02.14
D	REVISED AND RE-ISSUED FOR BULK ORDER	GM	MH	07.03.14
C	RE-ISSUED FOR BULK ORDER	PS	MH	28.02.14
B	RE-ISSUED FOR BULK ORDER	GM	MH	25.02.14
A	ISSUED FOR BULK ORDER	GM	MH	21.02.14
02	ISSUED FOR INFORMATION	GM	MH	17.02.14
01	ISSUED FOR INFORMATION	SP	ML	01.08.13

ARCHITECT	PRINCIPAL DESIGN CONSULTANT
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AECOM				
ARM				
Hyder				

CLIENT	LEND LEASE BUILDING PTY LTD
	LEVEL 2, PIER B9, 23 HICKSON RD, SYDNEY NSW 2000 (02) 9346 3000

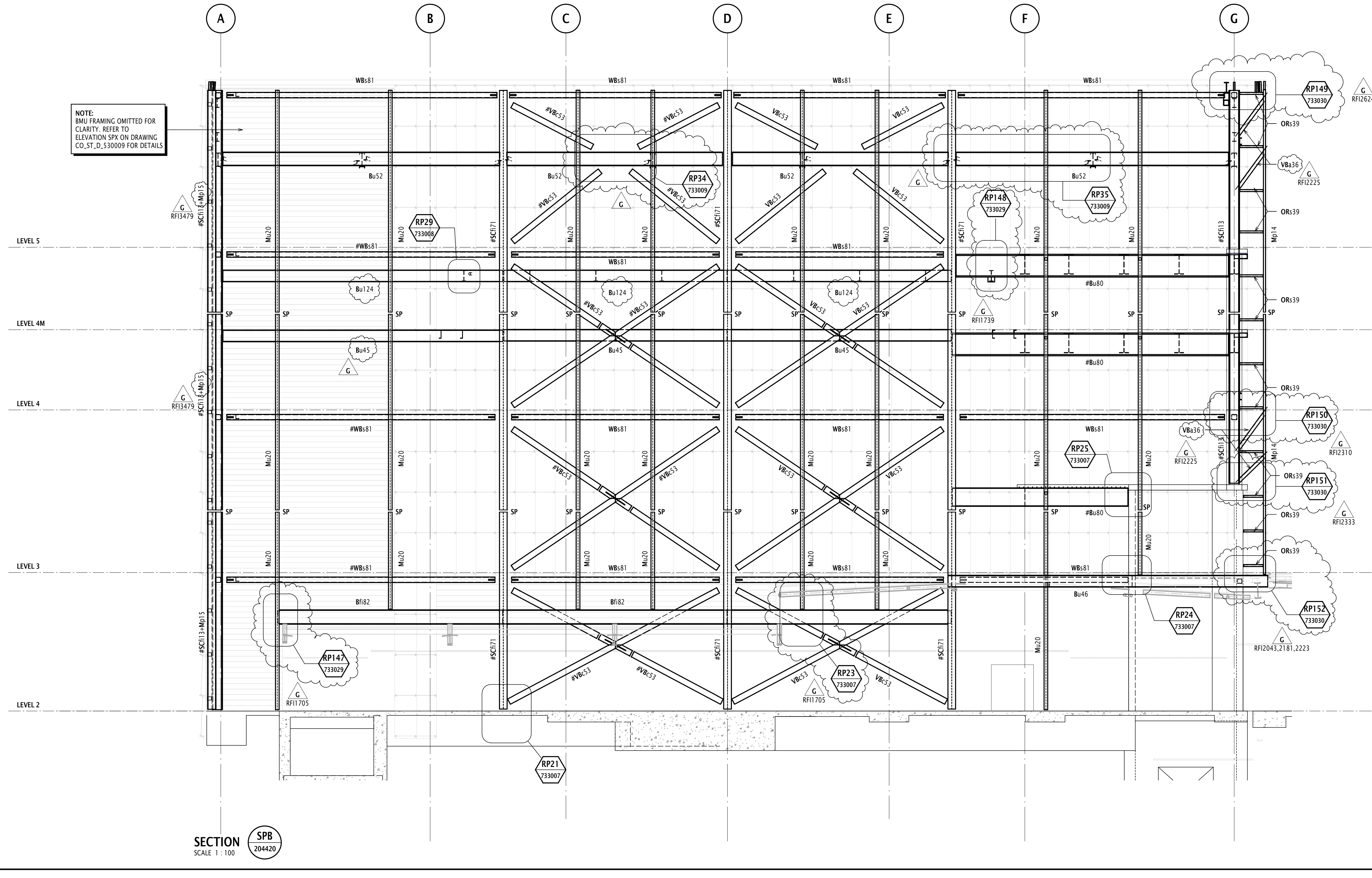
PROJECT	SICEEP_DARLING HARBOUR ICC
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DRAWING TITLE	DHT STEEL FRAMING SECTIONS SHEET 1
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STATUS	STRUCTURAL DRAWINGS
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SCALE	@ A0 / 50% @ A2
DESIGNER	G.MURPHY
DESIGN CHK	B.COLLINS
APPROVED	D.ZHANG
PROJECT NUMBER	12076B
DRAWING NUMBER	CO-ST-D-530001
REV	G

APPROVED FOR CONSTRUCTION



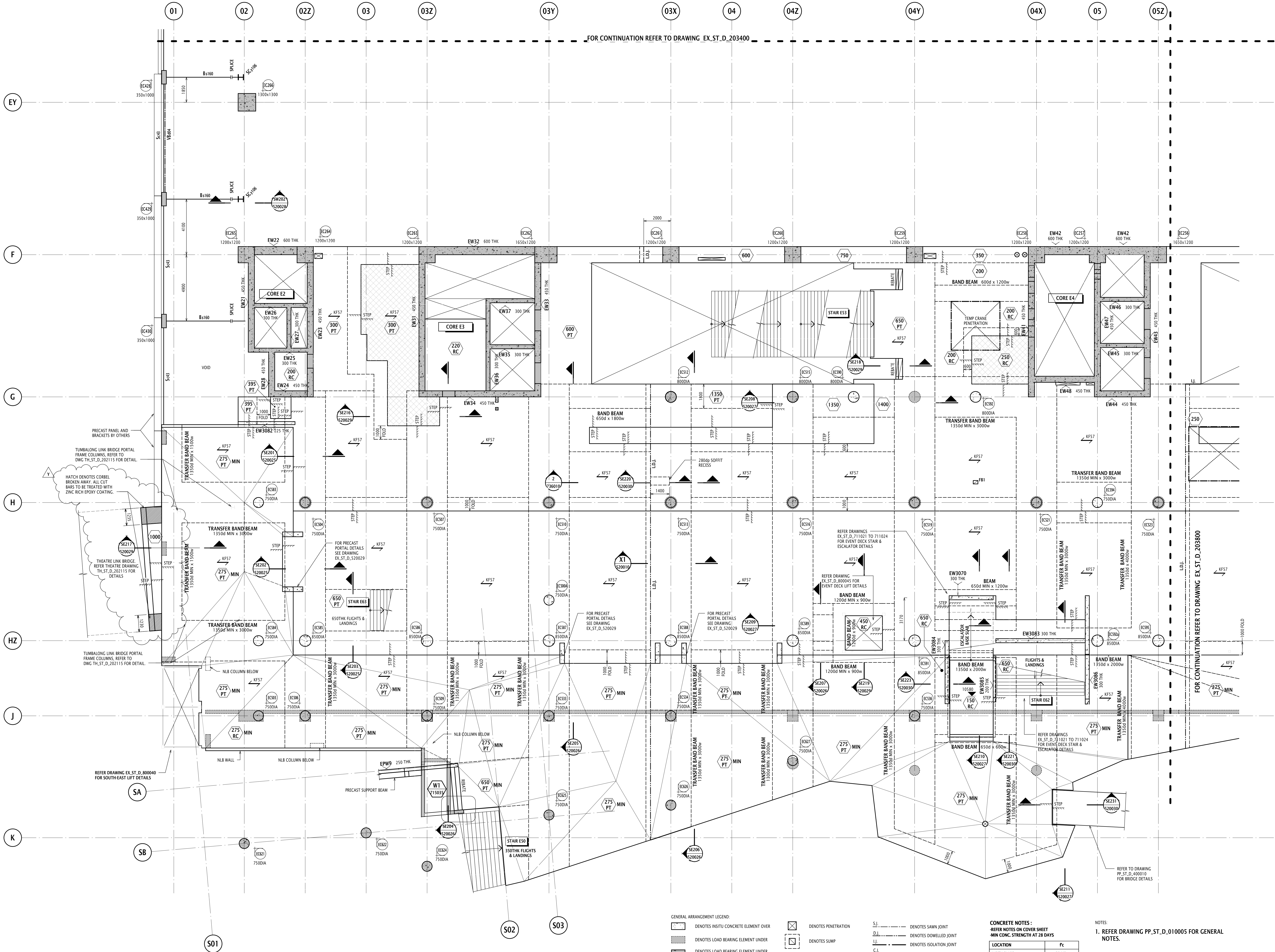
NOTE:
- DIMENSION FRAMING OMITTED FOR CLARITY, REFER TO ELEVATION SPA ON DRAWING CO-ST-D-530009 FOR DETAILS

SECTION SPA
SCALE 1:100
204420

SECTION SPB
SCALE 1:100
204420

C:\Users\Glen.Murphy\Documents\BCHL_CTL_STO_Glen.Murphy.v4

12/02/2015 7:18:07 PM



RL 12.0 LOWER EXHIBITION - CONCOURSE GENERAL ARRANGEMENT PLAN - ZONE 7
SCALE 1:100
SLABS TO BE 200 THICK UNO

NOTE: TOP OF EXTERNAL SLABS TO BE CAST TO FALLS. REFER ARCHITECTS DRAWINGS FOR DETAILS.

GENERAL ARRANGEMENT LEGEND

- INSTRUMENT CONCRETE ELEMENT OVER
- INSTRUMENT CONCRETE ELEMENT UNDER
- INSTRUMENT CONCRETE ELEMENT UNDER AND NOT IN CONCRETE ELEMENT OVER
- INSTRUMENT PRECAST ELEMENT OVER
- INSTRUMENT BLOCKWORK TYPE REFER EX-ST_D_830000 SERIES DRAWINGS FOR SCHEDULE AND TYPICAL DETAILS
- INSTRUMENT WET AREA SET DOWN
- INSTRUMENT EXISTING SLAB TO BE MAINTAINED
- INSTRUMENT EXTENT OF KINGFLOOR SLAB

- INSTRUMENT PENETRATION
- INSTRUMENT SLUMP
- INSTRUMENT SLAB STEP
- INSTRUMENT SLAB THICKNESS
- INSTRUMENT COLUMN NUMBER AND SIZE
- INSTRUMENT WALL NUMBER & DIRECTION ELEVATION IS VIEWED
- INSTRUMENT SPAN OF KINGFLOOR KFS7 TO BE USED AS SACRIFICIAL FORMWORK ONLY. PROPPING BY OTHERS.

- INSTRUMENT SAWN JOINT
- INSTRUMENT DOWELLED JOINT
- INSTRUMENT ISOLATION JOINT
- INSTRUMENT CONSTRUCTION JOINT
- INSTRUMENT EXPANSION JOINT
- INSTRUMENT MOVEMENT JOINT
- INSTRUMENT LOCKABLE DOWEL JOINT

NOTE: REFER ARCHITECTS DRAWINGS FOR ALL STEPS AND FALLS IN SLABS

CONCRETE NOTES

REFER NOTES ON COVER SHEET
MIN CONC. STRENGTH AT 28 DAYS

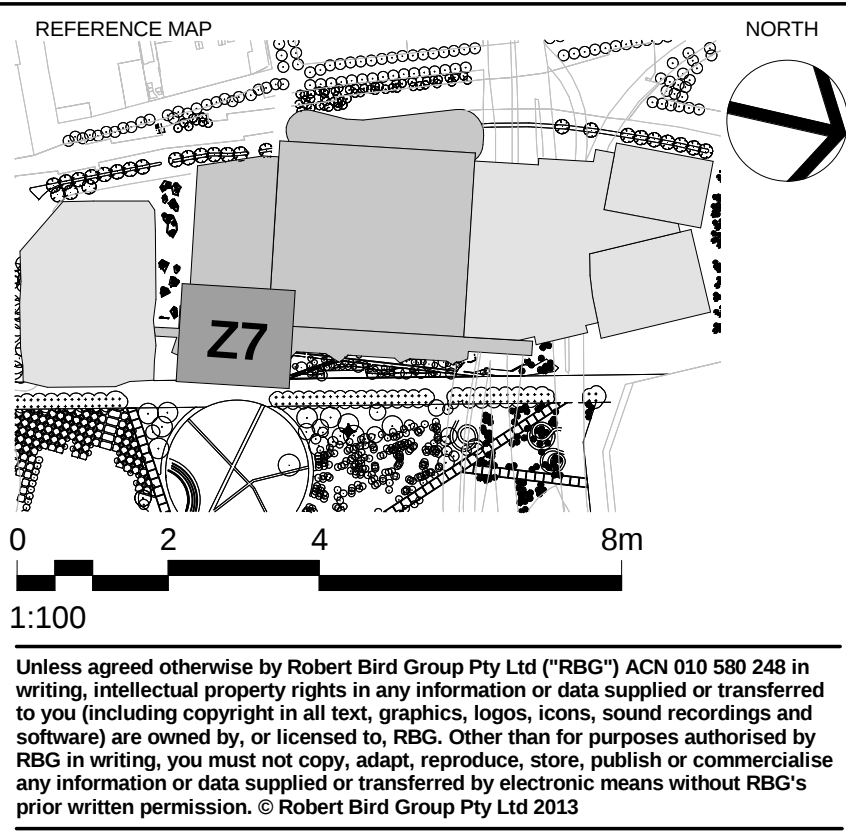
LOCATION	Fc
INSITU SLABS	50 MPa

CONCRETE COVER

LOCATION	COVER
INTERNAL SLABS	30mm
EXTERNAL SLABS	45mm

NOTES

- REFER DRAWING PP-ST_D_010005 FOR GENERAL NOTES.



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DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS

REFER COVER SHEET FOR NOTES UNLESS NOTED OTHERWISE

REV	DESCRIPTION	BY	APP	DATE
1	LINK BRIDGE CORREL REVISIONS UPDATED TO	CV	TA	01.10.15
2	ARCHITECTS DETAIL REF R1 10053	CV	TA	01.10.15
3	LINK BRIDGE CORREL REVISIONS REF R1 10053 & R1 1431	CV	TA	01.10.15
4	W CRO 1 COLUMBIA REVISIONS	AC	MM	05.07.15
5	V HOLD HANDED REVISIONS FOR CONSTRUCTION	SCW	MM	29.06.15
6	U COLUMBIA ECSSA REVISIONS AS CLOUDED	AC	MM	04.06.15
7	T REVISIONS AS CLOUDED	CV	TA	26.03.15
8	S REVISIONS AS CLOUDED	AC	TA	11.03.15
9	R SOUTH EAST ENTRY ENTRY UPDATED	AC	MM	26.02.15
10	Q REVISIONS AS CLOUDED	HM	MM	13.02.15
11	P REVISIONS AS CLOUDED	HC	MM	23.01.15
12	N REVISIONS AS CLOUDED	HM	MM	09.12.14
13	M REVISIONS AS CLOUDED	BM	PS	23.10.14
14	L BAND BEAM ADDED	HM	MM	23.10.14
15	K NOTE AND SECTION TAG ADDED	HM	MM	23.10.14
16	J REVISIONS AS CLOUDED	MM	TA	25.09.14
17	I KINGFLOOR ADDED TO SLABS	MM	TA	19.09.14
18	G REVISIONS AS CLOUDED	HC	PS	02.09.14
19	F APPROVED FOR CONSTRUCTION	LT	TA	22.08.14
20	E APPROVED FOR CONSTRUCTION	LT	TA	16.08.14
21	D ISSUED FOR REVIEW	LT	TA	31.07.14
22	C ISSUED FOR INFORMATION	LT	PS	21.05.14
23	B ISSUED FOR IS2	HC	PS	09.05.14
24	A ISSUED FOR IS2	LT	PS	05.03.14
25	12 ISSUED FOR IS2	LT	PS	28.02.14
26	11 ISSUED FOR INFORMATION SECTIONS ADDED	LT	DLH	05.02.14
27	10 ISSUED FOR TENDER	LT	DLH	13.01.14
28	09 ISSUED FOR INFORMATION	AW	DLH	18.10.13
29	08 ISSUED FOR INFORMATION	AP	DLH	11.03.13
30	07 ISSUED FOR INFORMATION	LT	DLH	24.09.13
31	06 ISSUED FOR INFORMATION	LT	DLH	27.08.13
32	05 ISSUED FOR INFORMATION	LT	JP	01.08.13
33	04 DESIGN STAGE 1 - IS1	LT	JP	24.07.13
34	03 DESIGN STAGE 1 - IS1	LT	JP	12.07.13
35	02 ISSUED FOR INFORMATION	LT	JP	03.07.13
36	01 SCHEMATIC DESIGN FREEZE	LT	JP	14.06.13

ARCHITECT - PRINCIPAL DESIGN CONSULTANT

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PROJECT
SICEEP DARLING HARBOUR
ICC EXHIBITION CENTRE

DRAWING TITLE
GENERAL ARRANGEMENT PLAN
LOWER EXHIBITION - CONCOURSE
LEVEL 2 (RL 12.0)
ZONE 7

STATUS
STRUCTURAL DRAWINGS

SCALE @ A0 / 50% @ A2
SCALE 1:100

PROJECT NUMBER
12076D

DRAWING NUMBER
EX_ST_D_203700

REV
Y

APPROVED FOR CONSTRUCTION